FUNDING POPULATIONS AND PAYING PROVIDERS: THE ROLE OF FINANCIAL RISK IN THE NEW ZEALAND PRIMARY HEALTH CARE STRATEGY

BY

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Abstract

This thesis examines how funding changes in the New Zealand Primary Health Care Strategy (NZPHCS), introduced in 2002, altered the magnitude, locus and management of financial risk in the New Zealand primary health care sector, and the consequences for cost, equity and care delivery objectives. A simplified model of a primary health care system is developed to explore how the funding changes influenced, and were influenced by, existing institutions and arrangements in the New Zealand sector. Drawing on industrial organisation, transaction cost economics, health economics and health care policy literatures and analysis, financial risk sharing between the government and private entities before and after the NZPHCS implementation is assessed. The effects of the policy on a range of indicators assessing the relative, theoretically-expected changes in costs and equitable allocation of financial and health care resources are identified.

The NZPHCS was intended to reduce service user fees, foster an integrated multidisciplinary approach to primary care delivery, reduce health inequalities and encourage the promotion and maintenance of healthy populations. Progress towards these objectives was disappointing. The government abrogated responsibility for managing financial risks associated with uncertainty about funded individuals' future care needs when replacing fee-for-service funding with capitation funding of individuals within a population. Very small, risk-averse care providers became the primary risk pool managers. Via legacy balance-billing arrangements, much higher risk management costs have likely been passed on to service users in either or both of higher-than-expected fees and more variable care quality. Those with the greatest needs for primary care, and those whose fees the government intended to reduce most, have most probably borne a disproportionately higher share of the additional financial risk management costs.

If the New Zealand primary health care system is to evolve towards the one envisaged by the NZPHCS, the government should assume a share of responsibility for managing financial risks associated with utilisation uncertainty. A mixed funding model, proposed and evaluated against the NZPHCS and three other policy options,

provides risk management arrangements most likely to be conducive to delivering the desired cost and equity objectives. At the same time it provides a more stable path towards a fully government-funded New Zealand primary health care sector than the current arrangements.

The findings specifically address the New Zealand context. However, the model and analytical framework developed are applicable to a wide range of primary health care policies, notably where partial private funding is either utilised or contemplated, and changes from service-based to population-based funding are being considered.

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This research is dedicated to the memory of my late parents, Victor Howell and Barbara Johnson, who nurtured my love of learning and encouraged my persistent questioning of everything I encountered. It is also dedicated to my family: Alan, Miriam and James Malthus and John, Dylan and Ashleigh Howell. Your unconditional support and encouragement, and permission to sometimes prioritise the research over yourselves, is greatly appreciated.

Table of Contents

List of Tables

List of Figures

List of Abbreviations

0FU6:	Zero Fees for Under Six Years
0FU13:	Zero Fees for Under 13 Years
AFIP:	Approved Fee Increase Process
CSC:	Community Services Card
DHB:	District Health Board
DHBSS:	District Health Board Shared Services
FC:	First Contact
GMS:	General Medical Services
HFA:	Health Funding Authority
HUHC:	High Use Health Card
IPA:	Independent Practitioners' Association
IPIF:	Integrated Performance Improvement Framework
MC:	Managed Care
MCO:	Managed Care Organisation
MoH:	Ministry of Health
NACS:	Notional Averaged Consultation Subsidy
NZHS:	New Zealand Health Strategy
NZPHCS:	New Zealand Primary Health Care Strategy
PHO:	Primary Health Organisation
PSAAP:	PHO Services Agreement Amendment Protocol
PCWG:	Primary Care Working Group
RHA:	Regional Health Authority
RNZCGP:	Royal New Zealand College of General Practitioners
VLC:	Very Low Cost

Glossary of Terms

adverse selection	Occurs when agreement terms are unduly advantageous for one group of potential participants whose identity is unknown to the other party – the uninformed party is exposed to higher costs than expected arising from the biased participation. For example, health insurance pools are biased because the agreement is more beneficial for individuals with higher expected needs for care, which is unknown to the insurer.
AFIP	Approved Fee Increase Process. A quasi-regulatory process introduced in 2006 to limit increases in 'posted' care provider fees to no more than historically-observed sector cost increases, allowing for anticipated increases in government capitation payments.
balance-bill	A fee set by a service provider, and paid by the service user, when the insurance benefit plus any co-payment required by the risk pool, and paid to the care provider, does not cover the fee charged for care supplied. Under the NZPHCS, all payments by service users to care providers are balance-bills, enabling care providers to recover the costs of care not covered by government subsidies.
carve-out	Removing the obligation from a care provider's contract to supply care of a particular type or to a given individual. Carve-outs limit the exposure of providers to unpredictable risks associated with particular care types or enrolled individuals.
contingent liability	An obligation to make a payment of a given size, or on given terms, in the event that a defined event occurs.
contract	A legally enforceable promise, either oral or written, that involves obligations on each party.
contractual risk	Uncertainty that affects the ability of the parties to an agreement (contract) to achieve the outcomes intended from a transaction.
controllable risk	A risk arising from one party acting opportunistically whose effects on the other party may be mitigated (controlled) by the use of incentives.
co-payment	An obligation for a service user to pay a designated share of the cost of care funded by a risk pool. A co-payment is distinguished from balance-billing (set by and paid to the care provider) as it is set by the risk pool. Under the NZPHCS, all service user payments are set by and paid to the care provider, so there are no explicit insurer-determined co-payments.

correlated risk	Where the likelihood of any member of a pool making a claim in a defined period is influenced by the likelihood of any other member making a claim (or that member making another claim).
cost increase risk	A random risk arising when exogenous factors (outside the primary health care system itself) lead to the costs of care increasing (e.g. global financial circumstances, inflation).
cost variation risk	A random risk arising when exogenous factors (outside the control of sector participants) lead to the costs of providing an identical service of identical quality to vary between care providers (e.g. due to higher premises rental, higher labour costs etc.).
costs of risk management	The costs of managing the consequences of uncertainty affecting the achievement of objectives
cream-skimming	A special case of adverse selection where insurers can use information about an individual's expected needs for care to deny pool membership to individuals whose expected claims will exceed the premiums paid for membership, thereby increasing the pool's risk exposure and reducing expected profitability.
deductible	A fixed fee charged by a risk pool to a service user when a claim on it is made.
DHB	District Health Board – regional statutory body charged with maintaining the health of its constituent population.
financial risk	The financial consequences of the effects of uncertainty on meeting objectives
fiscal risk	The risk borne by government when calls on public funding vary from those expected.
HFA	Health Funding Authority – centralised government purchasing agency operating from 1998-2001.
implicit contract	A shared understanding that is not legally enforceable, but where the parties consider it to be binding on one another's behaviour.
incentive	A contractual term aligning the activities of an informed party with the objectives of an uninformed one by assigning at least some of the costs (benefits) associated with the risk of the informed party using its information in a way that affects the

uninformed party's outcome.

independent risk Where the likelihood of any one member of a pool making a claim in a defined period is not influenced by the likelihood of any other member making a claim (or that member making another claim).

information asymmetry A state where different parties have different information about a state, event or outcome.

insurance premium The fee charged by a risk pool in exchange for assuming a contingent liability. Distinguished from an individual's risk premium, which is the sum an individual is prepared to pay to the pool to replace financial uncertainty with certain payment in the event that the contingent event crystallises.

IPIF Integrated Performance Improvement Framework. The set of incentive contract arrangements (from July 1, 2014) paying bonuses to PHOs for the achievement of specific performance outputs. Replaced the PHO Performance Programme (PP) introduced in 2005.

moral hazard Where one party to an agreement acts in a manner made possible by the terms of an agreement to benefit disproportionately at the expense of the other party; a classic example is the tendency for insured individuals to consume more care when it is subsidised by insurance benefits than if they had to pay for the care themselves.

NACS Notional Averaged Consultation Subsidy. The equivalent of a fee-for-service subsidy in a capitated system. Calculated by dividing the capitation payment by the expected number of consultations provided to an average member of a given capitation category.

PCWG Primary Care Working Group – established in August 2015 from meetings of the PSAAP (see below) group to provide the Minister with guidance by 30 October 2015 on primary care funding, sustainability and workforce arrangements.

PHO Primary Health Organisation – non-profit community-governed entities established under the New Zealand Primary Health Care Strategy to manage government funding and purchase First Contact care for their enrolled populations.

posted fees Fees reported to DHBs and advertised by PHOs as those expected to be charged by care providers for standard consultations. Fees actually charged can vary from those posted at the care provider's discretion.

PSAAP	PHO Services Agreement Amendment Protocol – the partnership-based arrangement between DHB and PHO representatives via which agreements can be developed for the delivery of certain primary health care services.
random risk	A risk that is neither predictable nor able to be influenced by any party.
regulatory risk	A special case of contractual risk arising from government regulations.
RHA	Regional Health Authority – one of four decentralised geographically-specific government purchasing agencies operating from 1993-1997.
risk	The effect of uncertainty on meeting objectives.
risk adjustment	The statistical process of calculating the relationship between a set of characteristics and an expected outcome. In primary health care, risk adjustment is usually associated with predicting the expected costs of care that will be required to meet the needs of a population of enrolled individuals exhibiting specific pre-determined characteristics.
risk aversion	The preference for a certain outcome to an uncertain outcome with a higher expected return.
risk management	Activities undertaken to ameliorate the consequences of the manifestation of uncertainty on the achievement of objectives.
risk neutral	The state of being indifferent to receiving a fixed sum or the risky prospect with an expected value equal to the fixed sum.
risk pooling	A means of managing individuals' risks by aggregation. Assuming the risks are independent of each other, risk pooling allows more efficient management of financial risks than individual management by risk-averse individuals.
risk premium	The sum a risk bearer is willing to pay to receive a certain income over its random (uncertain) equivalent. Distinguished from an insurance premium, which is the fee actually paid to a risk pool for a certain contingent payment if the uncertain event crystallises. Welfare is increased if the insurance premium charged is less than an individual's risk premium.
risk reserve	A fund held by risk pools to meet financial obligations when the costs of paying contingent liabilities (actual claims) exceeds expected costs.

risk tolerance	A measure of the willingness to bear risk.
skimping/stinting	A special case of moral hazard where care providers deliberately under-supply care quality and/or quantity in order to increase profitability; distinguished from reduction in care quality and/or quantity in order to break even financially.
stop-loss	An arrangement enabling an entity to be relieved of bearing the costs related to abnormal demand; for example, a service user may be relieved of the obligation to make co-payments once a threshold of payments in a given time period has been passed, or a provider may be remunerated differently if demand for care exceeds expected levels by an abnormally large amount.
supply-side risk-sharing	Contractual arrangements requiring service providers to bear some or all of the costs of ordering or supplying unnecessary or over-costly care
THA	Transitional Health Authority – established in 1997 to oversee the amalgamation of purchasing responsibilities of the four RHAs; disestablished in 1998 following the establishment of the HFA.
underpayment risk	Arises when contracted funding is insufficient to meet the expected costs of delivering the expected quantity and quality of care; can be mitigated by balance billing.
underwriter	The entity providing assurance that a risk pool will be able to meet all financial claims on it.
unnecessary utilisation risk	A controllable risk arising when service users consume more care than is strictly necessary, either from their own choice (due to subsidies), or when suppliers provide (or order) more, or more costly care, than is required (supplier-induced demand).
utilisation variation	Uncertainty faced by individuals in relation to their future utilisation of primary health care services.
utilisation variation risk	The risk that the actual amount of care used by an individual in a given period differs from the amount expected and funded.

Definitions of Mathematical Variables and Equations

Variable	Definition	Reference
AR, AR_1	Average revenue per consultation $AR=K/q$ $AR_1=vq+f_1k_1/q$	 Figure 4.1; 4.2 Figure 4.2
b	Contingent benefit payment made by a risk pool to a service user	Figure 5.1; 5.3
c	Average cost per consultation $c=\sum_{l=1}^{L}(t_l+b_l)/L$ $c=\frac{sd}{q}+\frac{\sum_{l=1}^{q}t_l}{q}+\frac{\sum_{l=1}^{q}b_l}{q}$	Figures 4.1; 4.2 Figure 5.2 Figure 5.3
dc	Deductible or co-payment made by a service user to a risk pool	Figure 5.1; 5.3
ε	Utilisation variation risk $\varepsilon=\sum_{g=1}^{n}p_g+\sum_{j=1}^{m}(dc_j-b_j)$ for g enrolled individuals generating m contingent claims $\varepsilon=K/Q-K/q$ under NZPHCS arrangements	Figure 5.1; 5.3 Section 5.2 Section 6.2.2
f	Average fee charged by a provider for a standard consultation to recover average costs $f=c=\sum_{l=1}^{L}(t_l+b_l)/L$ $f=c=\frac{sd}{q}+\frac{\sum_{l=1}^{q}t_l}{q}+\frac{\sum_{l=1}^{q}b_l}{q}$	Figure 5.2 Figure 5.2 Figure 5.3
i	Individual's contribution to an insurance premium	Figure 5.1; 5.3
K, K_1	Provider's total fixed capitation revenue $K=\sum_{g=1}^{n}k_g$, where k_g is the capitation fee paid for each of $g=1,\ldots n$ enrolled individuals	Figures 4.1; 4.2 Section 5.4
$NACS$	Notional averaged consultation subsidy $NACS=K/Q$	Section 5.4
op	Out-of-pocket payment by a service user $op_l=dc_l+t_l$ for a given instance of subsidised care (l)	Sections 5.3; 5.4
p	Insurance premium for an individual $p=i+s$	Figure 5.1; 5.3
Q	Expected number of consultations to be delivered under capitation agreement	Figures 4.1; 4.2
q	Actual number of consultations delivered	Figures 4.1; 4.2
R	Provider revenue $R=K+vq$	Section 5.4
s	Sponsor's contribution towards an insurance premium	Figure 5.1; 5.3
sd	Service delivery fee – a fixed payment made by a risk pool to a care provider for specific services delivered (other than capitated First Contact)	Figure 5.3
t	Top-up or balance-billing fee paid by a service user to a care provider $t_l=f_l-b_l$ for a given instance of fee-for-service subsidised care (l)	Section 5.3
v	Provider's variable revenue per consultation	Figure 4.2

1. Introduction

This chapter provides the background and motivation for this research, identifies three research questions which will be investigated and lays out the process in which this thesis will seek to answer them.

1.1 Background

The New Zealand Primary Health Care Strategy (NZPHCS, the strategy) was announced in 2001. Implementation in the New Zealand primary health care sector began in 2002. Its three major objectives were to (King, 2001):

- change sector culture from a focus on delivery of services to ill individuals to the promotion and maintenance of health within the population;
- redress inequalities in health states within that population by reallocating resources to increase access to, and use of, primary health care amongst targeted sub-populations; and
- foster the development of an integrated multidisciplinary team-based approach to primary health care delivery.

That these would be achieved cost-effectively was presumed to be a fourth, albeit unarticulated, objective.

Three instruments were introduced to achieve these objectives. Cumming (2002) summarises them as:

- a substantial increase of government funding to the sector to expand services provided and reduce cost-based barriers to access and use of care (fiscal instrument);
- new, non-profit community-based Primary Health Organisations (*PHOs*) as contracting and co-ordinating intermediaries between government District Health Board (*DHB*) funders and care providers (structural instrument); and
- replacement of historic *fee-for-service* government funding with *capitation* payments (contractual instrument).

The instruments had been proposed variously by three extensive, but separate, reviews of the New Zealand primary health sector undertaken in the late 1990s by the Health Funding Authority (HFA, 1998), the Royal New Zealand College of General

Practitioners (RNZCGP, 1999) and the National Health Committee (NHC, 2000). Together, the changes appeared to align New Zealand primary health policy with contemporary interpretations of objectives originating from the Alma-Ata Declaration (WHO, 1978). These were that cost-effective health policies should:

- foster a change in focus from individual care delivery interventions in the event of illness towards the promotion of improved health states within populations (WHO, 2008; Starfield, 2003);
- allocate resources according to health need; and
- ensure access to and use of health care is not unduly constrained by ability to pay (WHO, 2010).

In the New Zealand context, increased government funding was intended to reduce service user fees and thereby increase access to and use of primary health care, especially amongst financially disadvantaged and high-need populations (NHC, 2000). Replacing fee-for-service with capitation funding reoriented funding policy from paying for services to funding the care of specific populations (Coster & Gribben, 1999 commissioned for NHC, 2000). Capitation payment was also intended to increase efficiency and to reduce inequalities in health states by financially incentivising care providers to identify, and assume responsibility for improving the health states of, previously-underserved individuals in high-need and disadvantaged populations (Crengle, 1999; Tukuitonga, 1999; Cumming, 1999; all commissioned for NHC, 2000). PHOs, based upon community-governed entities emerging amongst third-sector providers (Crampton, 1999; commissioned for NHC, 2000), were created to oversee the purchase and co-ordination of primary health care service delivery to achieve the NZPHCS objectives.

Together, the three instruments fundamentally changed the way the New Zealand primary health care sector was funded. The fiscal instrument changed the government's share of sector costs. Government funding to offset the costs of visits to primary health care providers increased by 43% over the first three years of the policy (Hefford, Crampton & Foley, 2005). The structural instrument changed the recipients of government funding from General Practitioners (GPs) caring for service users to PHOs charged with purchasing and co-ordinating a wide range of primary care services for their enrolled populations. The contractual instrument changed the way government funding was disbursed from fee-for-service to capitation. Capitated funding for care delivery passed in the first instance to PHOs. However, PHOs for the most part forwarded it directly on to providers – both GPs and new entities – via back-to-back contracts provided initially by the Ministry of Health (MoH) and subsequently District Health Board Shared Services (*DHBSS*) (Smith, 2009; Howell, 2005). Thus, capitated funding of PHOs became the capitated payment of the government share of providers' revenues for delivering *First Contact* (FC) primary care. The service users' share, however, continued to be a fee-for-service payment.

1.2 Motivation

The NZPHCS was predicated upon changing the government's role from funding services to funding populations. Funding populations was manifested as capitation funding of PHOs. Capitation funding of PHOs became capitation payment of the government's share of revenues in the PHOs' contracts with care providers via passing-on in the back-to-back contracts. Government capitation funding thus directly replaced fee-for-service funding in provider revenues. But funding populations is not seamlessly interchangeable with funding services because of the role of *risk pooling* in health care systems. Figure 1.1, from Cutler & Zeckhauser (2000), drawing on Arrow (1963), illustrates.

Arrow (1963) identified that health care (which both he and Cutler & Zeckhauser termed 'medical care') comprises a tripartite insurance-based system which leads to health care being provided more efficiently to those needing it than if patients are required to pay the full cost of care when utilising it. Patients uncertain about their future needs for health care can manage the *financial risk* of facing large uncertain future costs by paying a fee (an *insurance premium*) into a *risk pool* (the Insurer in Figure 1.1) in exchange for the pool paying an agreed sum when uncertainty crystallises into certain need for care. The pool converts the insurance premiums paid by, or on behalf of, all patient-members (or *individuals*) into benefits paid for the subset of members needing care in any given period (*service users*). Insurance benefits offset patients' costs of obtaining the necessary care from providers. As the insurance payment need not meet the full costs of care, the patient may be required to pay an additional sum to the provider as a *balance-billing fee* (Glazer & McGuire, 1993). The patient (in both individual and service user states), insurer and provider thus constitute Cutler & Zeckhauser's 'Triad'.

Figure 1.1 The Medical Care Triad

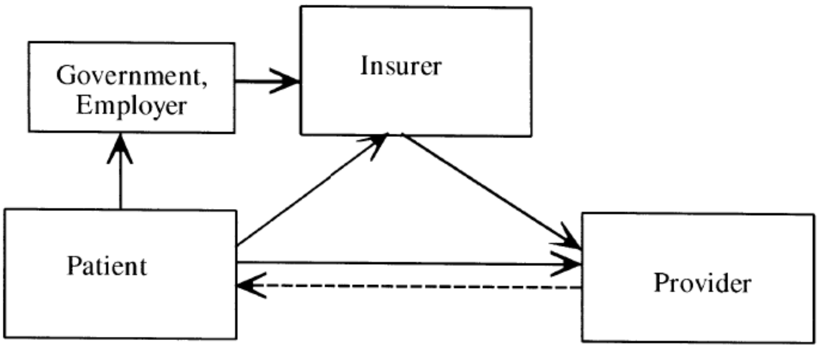


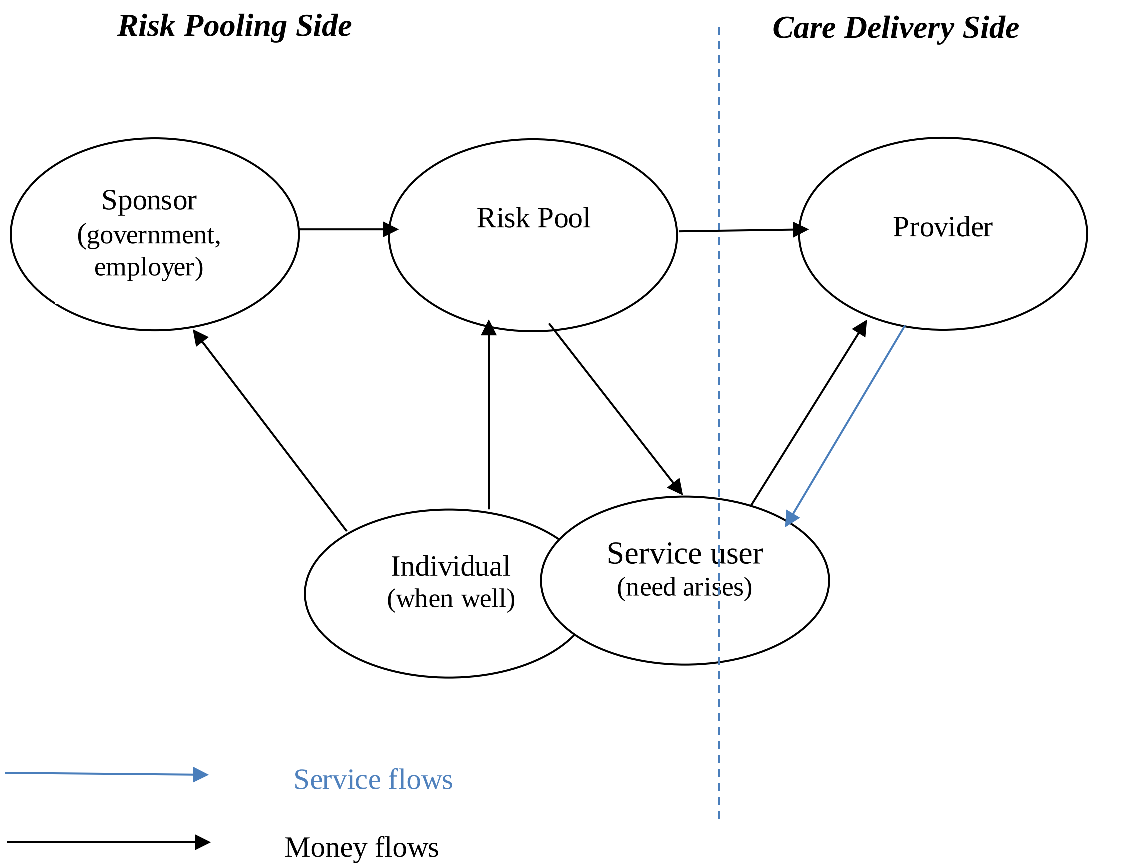
Figure 1. The medical care triad. Solid lines represent money flows; the dashed line represents service flows.

Source: Cutler & Zeckhauser (2000), p. 566.

Figure 1.1 also demonstrates that the individual-patients' participation in the risk pool can be subsidised, or sponsored, by a fourth party, such as an employer in worker-based insurance arrangements or the government in social insurance arrangements. Although the sponsor pays some or all of the insurance premium, this usually requires some financial exchange with the patient in the uninformed state of an individual seeking to manage future financial uncertainty. In government-funded arrangements, this is typically achieved via the taxation system. In employer-funded arrangements it recognises an insured individual's expected reduction in wages or salary when an employer subsidises health insurance relative to when the employer does not.

Figure 1.2 augments the medical care triad to recognise the distinction in states between the patient as an insured individual and as a service user. It also distinguishes the interactions between insured individuals and the risk pool on the risk pooling side of a health care system from the interactions between the risk pool, providers and service users on the care delivery side of the system. Its focus on functions rather than funding origins enables clarity in determining where the boundaries of government activity lie in various government-funded systems. For example, the government may choose to be solely a premium sponsor, in which case its involvement is limited to funding individual pool members. It may choose to be both premium sponsor and manage the risk pool, in which case it funds care supplied to service users. Furthermore, it may also opt to deliver the care itself, via government-owned-and-operated health care facilities, in which case it is all of sponsor, risk pool operator and provider.

Figure 1.2 Augmented Medical Care Triad



In the New Zealand context, government funding pre-NZPHCS took the form of fee-for-service payments on the care delivery side of the system. A government-funded and managed risk pool funded the care delivered to service users. Under the NZPHCS, government capitation funding became an individual-based premium sponsorship on the risk pooling side. The locus of responsibility for risk pool management shifted in the first instance from the government to PHOs.

However, Arrow (1963) also identified that the presence of insurance subsidies led to a second set of financial risks in health care systems, because service users do not pay the full costs of care when it is utilised. Both providers and service users may act opportunistically by utilising more care, or more expensive care than is required (*unnecessary utilisation*). If unnecessary utilisation occurs, the total costs of care supplied will increase, and care funded by the risk pool may not be delivered to those to whom it offers the most benefit. To the extent that the higher costs of these opportunistic actions fall on the risk pool, it can enter into agreements with both providers and service users that provide financial incentives to discourage the high cost-causing actions (Pauly, 1968; Newhouse, 1996). Responsibility for risks controlled by service users may be shared by the risk pool via obligations for the service users to pay *deductibles* and *co-payments* (Zeckhauser, 1970; 1974; Zweifel & Manning, 2000). *Supply-side risk sharing* shares responsibility for *controllable risk* factors between the risk pool and providers (Ellis & McGuire, 1986; 1988; 1993; 2007). Relative to fee-for-service payments, which share no financial risk between the risk pool and providers, capitation payments are one means by which supply-side risk sharing can be achieved (Robinson, 2001; Danzon, 1997).

By replacing fee-for-service subsidy payments to providers with capitation payments, the NZPHCS introduced fundamental changes to the assignment and management of financial risk in the New Zealand primary health sector.

1.3 Problem Statement and Research Questions

When implementing the NZPHCS, the Government was very prescriptive in the manner in which it set capitation funding levels paid to PHOs. Government funding was allocated across population groups based upon the age, gender, ethnicity and income of the individuals they comprised (Appendix 1), making the government a sponsor funding risk pools (Figure 1.2). However, the same capitation arrangements funding the risk pools on the risk pooling side of Figure 1.2 were also used to manage the level of fees charged on the care delivery side.

The NZPHCS was explicit that its intention in changing from fee-for-service to capitation funding was to induce changes in the ways PHOs and providers allocated and delivered care on the care delivery side of Figure 1.2. The policy was thus predicated upon using financial *incentives* to achieve the desired outcomes. However, the policy made no references to the role of risk pooling, or how changes in responsibility for its management could influence the likelihood of achieving its desired policy objectives.

The policy instruments were introduced into a primary health care sector where well-established arrangements existed on the care delivery side, but where risk pool management had previously been a government responsibility. But with no clearly-articulated risk pooling arrangements, and conflation of capitation funding of individuals on the risk pooling side of Figure 1.2 with capitation payment of providers on the care delivery side, it was uncertain where risk pooling would be managed. It was also unclear, given the conflation, whether the financial incentives inherent in the capitation payment of providers would lead to the same ability to achieve the policy objectives as assumed when the same funding was paid as a premium subsidy to a dedicated, but unidentified, risk pool.

Consequently, three research questions are raised which will be addressed in this thesis:

1. How have the changes to government funding introduced by the NZPHCS altered:

(a) the magnitude; and

(b) the allocation of responsibility for managing;

financial risk in the New Zealand primary health care sector?

2. How have the magnitude and allocation of responsibility for managing financial risk in the New Zealand primary health care sector affected the likelihood of achieving policy objectives to:

(a) constrain cost and fee growth;

(b) allocate financial and health care resources equitably between:

   i. individuals and population sub-groups;

   ii. service users; and

   iii. providers; and

(c) incentivise collaborative and team-based care delivery?

3. What policy changes (if any) would increase the likelihood of achieving the desired objectives?

1.4 Thesis Outline

This thesis draws upon industrial organisation, transaction cost economics, health economics and health care policy literatures to conduct an institutional analysis of the New Zealand primary health care system before and after the implementation of the NZPHCS to address the research questions.

Starting from Figure 1.2, a simplified transaction-based institutional model of a primary health care sector is developed. The model is used to explore in greater detail how the various interactions in a primary health care sector influence the magnitude and allocation of the different forms of financial risk. The financial risk characteristics are mapped to a range of indicators enabling evaluation of their relative effects on the achievement of various generic and NZPHCS-specific cost and equity policy objectives. The model and mapping framework are applied first to the arrangements prevailing in the New Zealand primary health care sector prior to the implementation of the NZPHCS. This establishes a counterfactual against which the effects of the NZPHCS can be assessed. The model and mapping framework are then applied to the arrangements following the introduction of the NZPHCS. Changes are identified, and their theoretically-expected relative effects on the achievement of the policy objectives assessed. Finally, four alternative policy changes are evaluated using the same analytical process, but benchmarked to the theoretically-expected outcomes of the NZPHCS arrangements in order to inform future policy-making in the New Zealand primary health sector.

The thesis proceeds as follows. Chapter 2 describes the institutional and policy context of the NZPHCS, its derivation, introduction and subsequent changes made up to 2014. The performance of the Strategy against its articulated objectives is also reviewed. Chapter 3 proposes that the seamless substitution of government capitation funding of populations for the government share of service provider revenues under the NZPHCS has resulted in some unusual treatment of financial risk in the New Zealand primary health care sector, which may in part account for the uneven achievement of the articulated objectives. The methodological approach to be used in answering the financial risk-related research questions posed in this chapter is discussed and evaluated. Chapter 4 summarises the relevant theories from industrial organisation, transaction cost economics, health economics and primary health care public policy that will be drawn upon to develop the analytical framework used for the inquiry. In Chapter 5 the simplified model of a primary health care system is developed, and the relevant risk management characteristics mapped to a range of metrics indicative of the desired policy objectives. In Chapter 6 the model and mapping framework are applied to analyse the theoretically-expected allocation and management of financial risk in the New Zealand primary health care system prior to the NZPHCS implementation, and the effects on the achievement of the desired policy objective of the three primary instruments. Chapter 7 then uses the framework to examine the expected effects of a range of alternative funding and contractual instruments. These could be introduced into the New Zealand primary health care sector as it currently stands to increase the likelihood of furthering progress towards cost containment, equity and service delivery objectives. Chapter 8 summarises and concludes.

2. The NZPHCS: Context, Description and Implementation

This chapter begins by describing the philosophy, objectives and features of the NZPHCS. Next, the New Zealand primary health care sector into which it was introduced is discussed. The three NZPHCS funding changes are then described, and how each has been interpreted and applied in the New Zealand primary health care sector is discussed. This discussion includes the development and adaptation of the original policy instruments, and describes how they are applied at June 2015. Next, three amendments introduced between 2002 and 2015 are outlined: an *Approved Fee Increase Process* (*AFIP*); a PHO performance improvement programme; and a ministerial request for PHO consolidation. The chapter concludes by reviewing the performance of the NZPHCS against its espoused objectives of: constraining cost growth; increasing equity in access and use of health care and therefore health outcomes; and changing the philosophy and delivery of primary care in New Zealand.

2.1 The NZPHCS: Philosophy, Objectives and Features

Consistent with contemporary primary health care policies predicated upon the Alma-Ata Declaration, the NZPHCS envisioned that “people will be part of the primary health care services that improve their health, keep them well, are easy to get to and co-ordinate their ongoing care” (King, 2001, p. 9). Resources would be “directed at those areas that will ensure the highest benefits for our population, focusing in particular on tackling inequalities in health” (MOH, 2000). It would be “a system where services are organised around the needs of a defined group of people” (King, 2001, p. 5). Its principles also included the promotion of health, timely and equitable access to all services regardless of ability to pay, and active involvement of consumers and communities (Figure 2.1).

The policy anticipated a philosophical change from an individual- and provider-focused sector to a population-based one (Figure 2.2), where “primary health care services will focus on better health for a population and actively work to reduce health inequalities between different groups” (ibid, p. 6). Reducing health inequalities between sub-populations with poorer health status, notably of Maori and Pacific Island ethnicity and lower socio-economic status, formed part of a wider contemporary New Zealand-specific “Closing the Gaps” social policy (Clark, 2000).

Figure 2.1 New Zealand Health Strategy Principles

NEW ZEALAND HEALTH STRATEGY PRINCIPLES

- Acknowledging the special relationship between Māori and the Crown under the Treaty of Waitangi.
- Good health and wellbeing for all New Zealanders throughout their lives.
- An improvement in health status of those currently disadvantaged.
- Collaborative health promotion and disease and injury prevention by all sectors.
- Timely and equitable access for all New Zealanders to a comprehensive range of health and disability services, regardless of ability to pay.
- A high performing system in which people have confidence.
- Active involvement of consumers and communities at all levels.

Source: King (2001) p. 2

The NZPHCS formed part of the New Zealand Health Strategy (NZHS) introduced in 2000 (King, 2000). The NZHS was part of reforms replacing centralised separated purchasing and provision of government-funded health care with devolved, integrated arrangements centred on government-owned and funded District Health Boards (DHBs). Twenty-one (now twenty, following a merger) DHBs were charged with improving the health of, and reducing health inequalities between, all individuals living within their geographical catchments. DHBs are resourced using a population-based funding formula (*PBFF*) (Penno, Audas & Gauld, 2012), and may self-provide or enter into service delivery contracts with third parties to achieve their objectives. The NZPHCS focus on teamwork in, and connectedness of, primary care to other parts of the health and social sectors reflected the NZHS priority to encourage integrated care within local DHB areas (Alderwick, Ham & Buck, 2015).

Figure 2.2 A Change in Philosophy

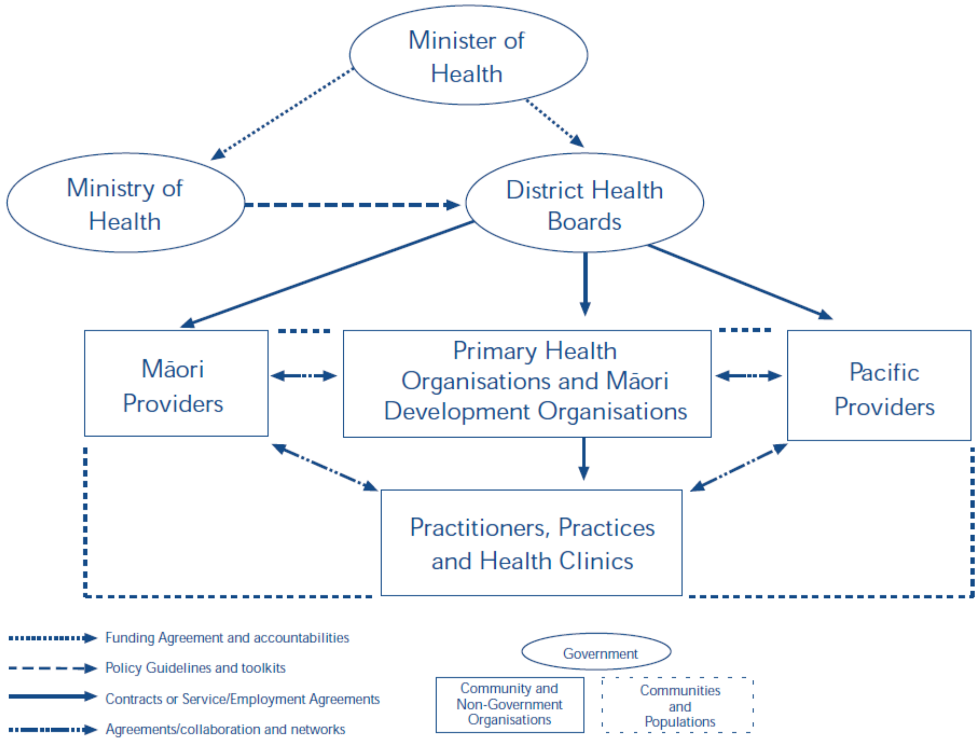
Old	New
Focuses on individuals	Looks at health of populations as well
Provider focused	Community and people-focused
Emphasis on treatment	Education and prevention important too
Doctors are principal providers	Teamwork – nursing and community outreach crucial
Fee-for-service	Needs-based funding for population care
Service delivery is monocultural	Attention paid to cultural competence
Providers tend to work alone	Connected to other health and non-health agencies

Source: King (2001) p. 6

NZPHCS implementation completed the NZHS transition from centralised government purchasing of health care services to devolved, localised population-focused DHBs. Figure 2.3 illustrates the structural and contractual relationships in the primary health care sector under the NZPHCS. Three key institutional instruments were deployed to bring about the desired changes (Cumming, 2002):

- a substantial increase of government funding to the sector to expand services provided and reduce cost-based barriers to access and use of care (fiscal instrument);
- new, non-profit community-based Primary Health Organisations (PHOs) as contracting and co-ordinating intermediaries between government District Health Board (DHB) funders and care providers (structural instrument); and
- replacement of historic fee-for-service government funding with capitation payments (contractual instrument).

Figure 2.3 The New Primary Health Care Sector



Source: King (2001) p. 5.

2.2. The New Zealand Primary Health Care Context

The rationale for these instruments, and their expected contribution towards an integrated primary health care system reducing inequalities between different population groups, are informed by examining the New Zealand primary health care sector context and the evolution of the institutional arrangements prevailing in it when the NZPHCS was implemented.

Historically, New Zealand primary health care service delivery has been dominated by general medical practitioners (*GPs*) (Gauld, 2009; Hay, 1989). GPs operate predominantly as sole practitioners or in small local partnerships and limited liability companies. IPAC's 2006 survey of 36 indicator practices covering 5% of the population reported 58.7% of GPs being owners. Only eight (23.5%) were not owned directly by some combination of staff members, including practice nurses and administrators (IPAC, 2007, p. 30). Only three of these eight reported ownership by a community trust, DHB or District Council. The remaining five reported ownership arrangements with some staff association – for example, a family trust employing the owner GP and other staff, or where the practitioners were shareholders in another company that owned the practice. By 2015, only 39% of GPs responding to the RNZCGP workforce survey of the College's 4576 fellows, members and associates were practice owners or partners (53.4% response). Of the respondents, 77% reported working for a practice owned by GPs working in the practice, a PHO or a GP organisation; 10% for a community, iwi, university or DHB-owned firm; 7% for fully or partly corporate-owned entities; and 6% other (RNZCGP, 2015, p. 64).

Although the IPAC and RNZCGP surveys are not directly comparable, they are indicative of a marked decline over recent years in GP practice ownership and an increase in employee/contractor status. The RNZCGP survey reveals female and younger GPs are much less likely to be practice owners. General practices have rarely comprised of more than four or five Full-Time-Equivalent (FTE) practitioners. IPAC (2007, p. 22) indicates an average of 3.97. However, part-time practitioners are becoming more common in an aging and increasingly female workforce (RNZCGP, 2015; 2009; 1999; Raymont e*t al*., 2004). From 1999 to 2012 the number of GPs per 100,000 population declined from 84 to 74 (RNZCGP, 2015, p. 24).

The predominant service delivery method has been a standard GP consultation for First Contact care, although over time the number and range of nurse-provided consultations increased (McKinlay, 2006). One-to-one consultations between a health care professional and a service user have prevailed under the NZPHCS. In April 2014, 1029 primary care providers enrolled 4,297,032 individuals (over 95% of the population). In the 2013 calendar year they delivered 12.4 million GP consultations and 2.6 million nurse consultations (Ministry of Health, 2014).

Government Subsidy Origins

From 1941 to 1991, the government paid universal fee-for-service subsidies for consultations provided by GPs (Hay, 1989; Brown & Crampton, 1997). From the 1960s salary subsidies were paid for practice nurses (McKinlay, 2006).

The Social Security Act 1938 provided for a fully government-funded capitation scheme for GP service provision. However, the arrangement proved unacceptable to the vast majority of GPs as it removed their commercial autonomy to set patient fees, and proposed government funding fell short of provider costs. The fee-for-service subsidy arrangement ultimately implemented in 1941 was the only government funding option acceptable to the GPs' negotiator, the Medical Association (Wright-St Clair, 2001). Although provision for capitation funding was retained, it remained unpopular amongst GPs. Interest in it increased in the 1990s, but in 2001 only 28% of GPs received capitation payment (Macdonald, 2002).

As government payments persistently fell below the average GP fee for standard primary care consultations, both capitated and fee-for-service-funded providers routinely charged service users a fee to balance their revenues with their costs (Wright-St Clair, 2001). The fee was commonly called a '*co-payment*' (e.g. Macdonald, 2002; Malcolm, Wright & Barnett, 1999), but as it was set by providers and not a third-party funder, it was more correctly a '*balance-billing fee'* (as per Glazer & McGuire, 1993). GPs collectively have strongly resisted subsequent proposals for a fully government-funded sector (Brown & Crampton, 1997).

Initially, a separate government–underwritten Social Security Fund collected Social Security Tax contributions at 7.5% of income, from which, amongst other health and social insurance claims on it, fee-for-service consultation subsidies were paid (*Encyclopaedia of New Zealand 1966*, n.d.). Social Security Tax contributions never fully covered claims on the Fund, and successive governments failed to increase the tax rates, so each year the Fund was topped up from general taxation. From 1964 explicit Social Security Tax payments ceased. GP consultation and nurse salary subsidies were subsequently paid from general taxation revenues appropriated annually by the Ministry of Health (Social Security Act 1964).

Consistent with the Social Security Fund's insurance origins, service users were initially expected to pay the full GP fee and claim the subsidy as a reimbursement. This arrangement created significant barriers to care for service users with restricted cash flows. Transaction costs were also high. Both obstacles were overcome by the Fund paying providers directly (Hay, 1989). In effect, GPs collected the subsidies on behalf of eligible service users to whom they had provided consultations. However, unlike Australia's Medicare bulk-billing arrangements, GPs were not required to obtain explicit authorisation from service users to collect the subsidies. Instead, the arrangements were given effect in legislation, where the government subsidies were termed General Medical Services (*GMS*) payments (New Zealand Parliament, 2009). As GPs acted exclusively as the first point of contact, and as gatekeepers to other services for individuals needing health care, these government-subsidised services have also been referred to as ‘First Contact’ services. These arrangements, combined with the payment of nurse salary subsidies to the GP-employer, created the impression that the government funded providers rather than service users.

Structural and Contractual Reforms: 1990s

The fee-for-service benefit set by the government was reviewed only infrequently, so its share of the average GP consultation cost fell over time. Hence service user fees increased, creating barriers to some individuals accessing care (NHC, 2000). In 1991 universal benefits were replaced by targeted subsidies based upon age (children under 15 years), family income (Community Services Card: *CSC*-holders) and utilisation frequency (High Use Health Card: *HUHC*-holders). Non-targeted service users - at least 50% (Malcolm et al.,1999) and up to 60% (Austin, (2004) of the population - paid the full, unsubsidised GP fee.

Funding for pharmaceuticals, laboratory tests and other services to which GPs act as gatekeepers was managed separately from GP subsidies (Malcolm et al., 1999). These services continue to be outside the NZPHCS. They are managed via separate DHB contracts along with other primary health services not historically provided by GPs. These include services such as subsidised dentistry (including payment of fee-for-service subsidies to private providers – Ministry of Health, 2011), sexual health and midwifery services. Some PHOs and providers have non-NZPHCS contracts with their DHBs for these services.

During the 1990s structural reforms led to the separation and delegation of purchasing authority for many primary health care services from the MoH to four Regional Health Authorities (*RHAs*) (Ashton, 1993) and ultimately (via the Transitional Health Authority – *THA*) the single centralised Health Funding Authority (*HFA*) (Ashton, Cumming & McLean, 2004; Gauld, 2000). A variety of alternative forms of primary care funding and service delivery emerged (Coster & Gribben, 1999; Barnett & Barnett, 2004). However, the MoH continued to pay GMS fee-for-service subsidies for the majority of GP consultations. RHAs and the HFA experimented with capitation funding models, leading to an increase in uptake of this funding option. Budget-holding for pharmaceutical and laboratory spending were trialled, and separate contracts were let for specialised services such as education and the prevention and treatment of specific illnesses (e.g. asthma, diabetes) (Coster & Gribben, 1999; Malcolm et al., 1999). All primary care providers could bid for contracts to deliver subsidised services previously restricted to government provision (e.g. minor surgery), or subject to exclusive contracts between the government and selected providers (e.g. subsidised well child health services, for which the Plunket Society had previously held a monopoly franchise). Hence, the range of services provided at GP-owned primary care providers likely increased.

In response to the structural and funding changes, Independent Practitioner Associations (*IPAs*), sometimes referred to as Primary Care Organisations (PCOs) (Macdonald, 2002), formed to co-ordinate the interests of practice-owning GPs (Thorlby et al., 2012). IPAs facilitated GP participation in contracts for new government-funded services complementary to traditional GP consultations (Cordery & Howell, 2012; Gauld, 2009; RNZCGP, 1999). Some also worked with RHAs and the HFA to facilitate capitation contracting trials (Macdonald, 2002). One IPA worked with its DHB to trial a global budget arrangement for purchasing all general practice services (including GMS, practice nurse subsidy, maternity, immunisation, rural practice bonus) along with pharmaceuticals, laboratory services and administration (Kirk *et. al.*, 2002).

New RHA- and HFA-managed government funding could be used to purchase primary care services from non-GP providers. Consequently, the number and range of third-sector community-governed primary care providers serving specific consumer groups based on geographic (e.g. rural), ethnic (notably Maori) and differentiated health need (e.g. youth aged between 10 and 24) criteria increased. Community-governed providers were observed to make greater use of multi-disciplinary care delivery teams than their GP-governed counterparts (Crengle, 1999; Coster & Gribben, 1999; Crampton, Woodward & Dowell, 2001; Barnett & Barnett, 2001). Whether multidisciplinary team care arose from clinically-motivated initiatives or as a pragmatic response by some communities to an inability to attract GPs as either provider-owners or salaried staff is unclear (Howell & Cordery, 2013). Capitation-funded multidisciplinary care was motivated by GP recruitment difficulties in at least one case (Seddon, Reinken & Daldy, 1985). However, a multi-disciplinary team-based approach explicitly underpinned the clinical methodology of a new youth health service funded by the HFA during this period (Kapiti Youth Support, 2015).

Notwithstanding these changes, the historic GP-centric model of primary care predicated upon fee-for-service payments continued to dominate. Despite the devolution of funding and responsibility for other primary care to the RHAs and HFA, the MoH continued to pay GPs directly for GMS services. This arrangement avoided disruption to the historic nationally-agreed arrangements and was strongly supported by the New Zealand Medical Association and IPAs. However, it fragmented government funding and the responsibilities and accountabilities for care purchased with it (Ashton, 2005).

The National Health Committee (NHC) Review

By the late 1990s support for health care policies motivated by the Alma-Ata Declaration and integrated care objectives was strong. However, implementing change in New Zealand was frustrated by the fragmentation of budgets across contracts and services between traditional general practice and other primary and secondary health care service providers, associated cost-shifting and the lack of control over aggregate sector spending (Malcolm et al., 1999; Coster & Gribben, 1999). For example, central registers of individuals receiving care at capitated providers were not maintained, so these individuals were not prevented from receiving additional fee-for-service-subsidised care from other providers. Capitated providers could utilise this loophole to opt out of supplying some services (e.g. after-hours care) without compromising their enrolees' access to necessary services (Macdonald, 2002). Unequal service utilisation by different groups (by geography, ethnicity and socio-economic status) within the wider population was also considered a significant issue. For example, Gribben (1999) and Barnett, Coyle & Kearns (2000) found lower rates of GP utilisation amongst less affluent groups than more affluent comparators in Auckland and Christchurch respectively. Also, Davis et al. (1997a, 1997b) found GP utilisation rates for Maori and Pacific Island patients in the Waikato in 1992 were slightly lower than those for Pakeha patients. Fragmented funding and service provision were deemed to pose difficulties in developing comprehensive, co-ordinated plans to address health disparities arising from unequal access to and utilisation of resources (both financial and care) (NHC, 2000, drawing on, *inter alia*, Cumming, 1999, Coster & Gribben, 1999; Crengle, 1999 & Malcolm et al., 1999).

Extensive sector reviews undertaken by the HFA (HFA, 1998), the Royal New Zealand College of General Practitioners (RNZCGP, 1999) and the National Health Committee (NHC, 2000) came to broadly similar conclusions about future policy directions. In December 2000 the NHC recommended (NHC, 2000; p. 5):

1. reorientation of the sector towards a "broad primary health care approach with a focus on health promotion, early intervention and disease prevention";
2. increased government spending on primary health care services "with the intention of moving to fully funded care over the next five years";
3. funding "largely through capitation in order to support population-based approaches, rapidly address(ing) existing inequities in funding and improve accountability for better health outcomes";
4. primary health care organisations "funded to deliver essential services to their enrolled populations through interdisciplinary teams"; and
5. government-funded workforce initiatives to "train primary health care practitioners to work in the new environment".

2.3 The NZPHCS Funding Changes

The NZPHCS was announced in 2001 (King, 2001). Its three instruments (PHOs, increased funding and capitation contracting) gave partial effect to the NHC recommendations.

2.3.1 Structural Change: PHOs

PHOs were the structural centrepiece of the NZPHCS (Figure 2.3). Based upon the NHC and HFA reviews, they appear to have been intended to function in the manner of Managed Care Organisations (MCOs) (as per Glied, 1999), actively engaging in meeting enrolee needs by procuring services from a wide range of practitioner types in addition to traditional GP providers.

Funded principally by population-based capitation payments, PHOs were contractually accountable initially to the MoH, and subsequently their DHBs, for providing first-line services to, and maintaining and improving the health of, their enrolled populations (Cumming, 2002). PHOs' responsibilities encompassed the development of, contracting for and co-ordination of part- or fully-government-funded primary health care services provided by multidisciplinary teams to their enrolled populations (Figure 2.3). Simultaneously, they were required to involve their communities in their governing processes, be responsive to community needs and preferences, and include all contracted providers and practitioners in their decision-making (Mays & Blick, 2008; Hefford, et al., 2005; Ashton, 2005; Cumming, 2002). Their non-profit status was mandated "in order to ensure that public funds are not diverted from health services to private gain" (King, 2000; p. 14).

PHOs: Description

PHO formation and enrolment was rapid. The first PHO was formed in July 2002. By 2005, over 80 were in operation (Howell, 2005). Nearly half the New Zealand population enrolled at a PHO within the first 15 months (Hefford et al., 2005).

In July 2015 32 PHOs enrolling 4,349,596 individuals (94.6% of the New Zealand population) were contracted by 18 DHBs (MoH, 2015). One DHB (South Canterbury) undertakes PHO activities internally. Two DHBs (Taranaki and Tairawhiti) are served by a health network (Midlands Health Network) contracted to another DHB (Waikato). The Midlands Health Network is registered as operating in four DHB areas (Lakes, Tairawhiti, Taranaki and Waikato), but operates as a single legal entity, and not as four separate PHOs (only one entry in the Charities Register). One PHO (National Hauora Coalitition) serves a subset of the population in a DHB area (Tairawhiti) other than the one in which it is primarily contracted (Counties Manukau). Ten DHBs registered only one PHO serving the entire area. The maximum number of PHOs in a DHB area is four (Capital and Coast, Counties-Manukau). The average number of PHOs per DHB is 1.8. PHO enrolment numbers range from 8,854 (Ngati Porou Hauora Charitable Trust, Tairawhiti DHB) to 812,734 (ProCare Networks Limited, Auckland DHB). The average is 135,925.

PHOs: Functional and Operational Implications

Although PHOs are the structural centrepiece of Figure 2.3, the NZPHCS is silent on the nature of their transactional relationships with sub-populations of either enrolled individuals or service users.

In effect, providers mediate the relationship between enrolled individuals and PHOs (MoH, 2014). Individuals opt to enrol with a single provider. To receive government funding, providers must affiliate exclusively with a single PHO. The PHO becomes the agent receiving all government funding for all affiliated providers' enrolees. Some funding is retained in the PHO – typically management fees and funding to develop new services - but most is passed through under back-to-back contracts to the enrolling care provider (Smith, 2009). PHOs compete for providers who bring their enrolees and associated capitation revenue streams to the PHO. PHOs' discretionary income is thus highly dependent upon their relationships with contracted care providers. Providers opting not to contract with a PHO forgo higher levels of NZPHCS funding for both their patients and the PHOs with which they might have contracted (Howell, 2005).

Thus, providers (and not PHOs) are functionally and commercially central in the NZPHCS primary health sector. The more enrolees a provider brings as a proportion of the PHO's total enrolled population, the greater is its commercial power over the PHO. If GP-owned providers are able to co-ordinate their activities – quite possible under the aegis of IPA membership – then effective control resides with them, regardless of the NZPHCS aspirations for mixed PHO governance boards with provider and community representation (Howell & Cordery, 2013).

Raymont & Cumming (2013, p 13) observe "it is uncertain whether PHOs should be seen as a network of providers or whether they should be seen as independent planners, funders and purchasers of community-based services". The distinction is important for the exercise of PHO control and accountability: provider networks will generally be primarily accountable to their members rather than operating as independent contracting entities primarily accountable to the individuals over whose primary health care funding they have been given stewardship, as envisaged for PHOs (Howell, 2005). This raises the question of whether PHOs are able to act sufficiently independently to institute changes to resource allocations and sector philosophy that deviate from the interests of constituent care providers, or to enter into a wide range of new contracts with non-GP providers.

The vast majority of New Zealanders are enrolled in PHOs comprised of providers owned or managed by IPA affiliates. These PHOs are generally managed by IPA-owned or affiliated entities (e.g. Compass Health, ProCare, South Link and Pinnacle - Howell & Cordery, 2013). Two PHOs have since been fully subsumed into IPA-managed entities (Pegasus in Canterbury and Compass in Wellington).

2.3.2 Fiscal Change: Increased Funding

The major fiscal changes, as summarised by Mays & Blick (2008), were:

- a substantial increase in the quantum of government funding applied to the sector (albeit, for budgetary reasons, introduced over several years);
- a commitment to annual increases in that funding to maintain its purchasing power in the face of underlying sector cost increases; and
- the extension of eligibility for government subsidies to the entire enrolled population and not just those targeted by their age and income characteristics.

Increased government spending in part addressed a comparatively lower public share of primary health care costs in New Zealand than in comparator countries (NHC, 2000). Higher subsidies were proposed to increase access to, and use of, care by higher-needs individuals in particular (King 2001). In the short term, this was expected to reduce demands for primary health care on other parts of the health sector where treatment was less cost-effective (e.g. presentation at hospital emergency facilities) (NHC, 2000). In the long term, more frequent and better-targeted primary care, by way of innovative new forms of prevention and care delivery, was expected to lead to better health states and fewer hospital admissions amongst targeted groups (Tan, Carr & Reidy, 2012).

Despite initial hopes that increased government funding might reduce service user fees close to zero (NHC, 2000), the NZPHCS stopped short of fully funding primary health care. Consequently, providers continued to balance-bill service users (Cumming & Gribben, 2007). The primary objective of increased government funding, at least initially, was reducing service user fees (Mays & Blick, 2008). A direct dollar-for-dollar substitution between increased government funding and reduced service user fee payments was expected, as would have occurred under increases in the historic fee-for-service funding arrangements. This was confirmed when the Prime Minister announced that the 2006 funding increases meant that “700,000 people aged between 45 and 64 would now pay $27 less for doctor visits … if they enrolled with a primary health organisation” (Stuff, 2006).

A Phased Implementation

As it was not possible to increase government funding in one step, a phased implementation was undertaken. Each budget year up to 2007, additional tranches of funding were applied to increase the capitation payments for, and reduce the fees paid by, new population categories. The first categories to receive increased funding were children and adults aged 65+ years; the last were adults aged 25 to 44 years. From 2007 to 2015, government funding increases in aggregate were confined to meeting the effects of expected population growth and inflationary increases in the costs of providing primary health care services. Individual capitation payment level increases from 2007 to 2015 reflected only the latter effect. In July 2015, capitation payments were increased for children aged between six and twelve years attending providers agreeing not to charge fees for services delivered.

At the outset, government funding was allocated on the basis of individual age, gender and CSC-holding status as proxies for individual need, and the type of PHO at which they were enrolled. PHOs were initially classified as Access and Interim, depending upon whether or not the proportion of their enrolled populations exhibiting targeted ethnicity and socioeconomic characteristics exceeded 50%. Access PHOs initially received higher levels of funding than Interim PHOs for all enrolees except CSC-holders. Hence Access PHOs received higher funding for enrolees not actually exhibiting the ethnicity and socioeconomic characteristics on which Access funding was predicated.

Although fees paid by all Access enrolees reduced at the outset, the greatest reductions were enjoyed by previously unsubsidised non-CSC holders at Access practices. In order to maintain the higher levels of government funding for, and hence lower fees paid by, CSC holders enrolled at Interim PHOs, their capitation payments were initially set at similar levels to those paid for enrolees at Access PHOs. As each new population group became eligible for increased government funding, the capitation payments at Interim and Access PHOs for that population group converged, and the distinction between CSC and non-CSC status disappeared from the capitation formulae. From 2006 the sole remaining payment difference between Access and Interim funding categories was for capitation groups 00-04 and 05-14, and the Access/Non-Access distinction attached to the enrolling provider, and not the PHO.

As each new group became eligible for higher government funding, CSC-holding status ceased to be a fee-payment differentiator, at least in advertised prices. All service users could expect to pay the same fee at any given provider, even though CSC-holders were relatively less able to afford it. Consequently, a new income-related inequity between CSC-eligible and non-eligible service users was introduced. This new inequity was addressed by a new provider-level funding distinction perpetuating differences in fees paid based upon provider, and not individual, characteristics. Beginning in 2006, any provider agreeing to charge fees below a specified level could receive higher capitation payments for all enrolled individuals and become known as a Very Low Cost (*VLC*) provider. From 2009, only providers with more than 50% of enrolled individuals in Deprivation Quintile Five, or had Maori or Pacific ethnicity could become VLC providers (Primary Care Working Group, 2015) (*PCWG*).

In the absence of fully funded care, the government indicated an intention that NZPHCS funding would increase over time in line with increases in sector costs. Clause F.21(2)(a) of version 3 of the PHO Services Agreement effective from 1 July 2015 states "it is the government's intention to regularly adjust the amounts payable for First Level Services [general practice consultations] to maintain the value of those payments" (PSAAP, 2015). It is presumed similar clauses appeared in previous years' agreements. Such an undertaking addressed the historic problem of the government's share of sector funding falling due to political reluctance to review subsidies, resulting in real increases in service user fees as GP costs rose (NHC, 2000; Brown & Crampton, 1997; Malcolm et al., 1999).

In 2006 DHBs instituted a weak form of fee regulation aimed at constraining the extent to which care providers could increase their fees (Sapere, 2011) (discussed subsequently). In part, this responded to concerns that fees may not have fallen as much as expected because some providers were extracting some of the higher government payments in higher salaries and practice profits, rather than reducing fees (Gauld, 2008; Cumming & Mays, 2011). It also addressed the concern that fees might rise to such an extent that they would again compromise access to care.

2.3.3 Contractual Change: Capitation Payment

The substantive NZPHCS contractual change was replacing historic government-funded fee-for-service consultation and practice nurse salary subsidies paid to GPs with ‘First Level’ (or ‘First Contact’ – FC) capitation payments made in the first instance to PHOs. Despite reservations expressed about limited empirical evidence and potentially perverse effects upon practitioner behaviour (Cumming, 1999), capitation payment was recommended by the NHC review, because it was held to “support population-based approaches, rapidly address existing inequities in funding and improve accountability for better health outcomes” (NHC, 2000: p 29). It was also held to:

- incentivise a shift in emphasis away from the treatment of illness towards the maintenance of health (Gauld, 2009; 2008; Langton & Crampton, 2008; Cumming & Mays, 1999; Coster & Gribben, 1999);
- be a means of redistributing resources away from organisations whose (potentially lower-need) patients used a lot of care to organisations with higher-need patients (Cumming, 2002; Coster & Gribben, 1999); and
- provide financial incentives to widen the range of services provided beyond the historic general practitioner consultations (notably the use of lower-cost nurses and team-based service provision) (Penno, Audas & Gauld, 2012; Mays & Blick, 2009: Smith, 2009; McDonald et al., 2008; Buetow, 1999).

FC payments cover 48 categories based upon enrolled individuals’ age, gender and historic use of services, and characteristics of the care provider at which they are enrolled. The payment schedules applying at July 2015 and July 2014 are in Appendix 1. The capitation categories have not changed since 2006. Funding levels have increased annually as allowed for in government Budget appropriations.

Analysis of PHO annual financial statements for the 2012-13 financial year contained in Appendix 2 indicates that almost certainly over half the PHOs examined were passing on FC capitation funding intact to care providers. That is, PHOs were not entering into separate remuneration arrangements with providers for the delivery of FC care. Circumstantial evidence from the reports strongly suggests that the vast majority of the remainder were also passing on FC funding to providers in this manner. FC capitation revenues, therefore, have apparently been treated (for the most part) in the same manner as the historic GMS payments, as a revenue stream from government to care providers. Indeed, the MoH initially provided back-to-back contract templates for PHOs to facilitate this process, likely in the belief that it would ensure additional government funding would pass through to service users directly in lower fees.

Three additional sources of capitated funding also appear to have been passed through to providers. Although paid per enrolee, they depend upon care provider and not enrolee characteristics. They are: additional fees per enrolee for rural providers depending on their Rural Ranking score (RR); Zero Fees for Under Six Year Olds (0FU6) for providers agreeing to refrain from billing for services supplied to children under six years old; and Very Low Cost Access (VLC) payments for all enrolees if a provider meeting certain guidelines regarding the average socioeconomic status of its enrolees opts to constrain service user fees within predetermined bounds (noting that VLC providers cannot also claim 0FU6 payments) (MoH, 2015a). In July 2013, 296 providers covering an enrolled population of 1,295,553 (around 30% of all enrolees) received VLC funding (Brown & Underwood, 2013). Whilst RR payments are intended to compensate higher underlying expended and opportunity costs for rural providers, VLC and 0FU6 capitation payments are intended to compensate care providers for revenues foregone by charging lower service user fees than other providers not receiving the additional funding.

Additional new capitated funding streams were paid to meet PHO administration costs (Management Services); for health promotion; and to develop new initiatives to facilitate the registration of, and care delivered to, individuals and population groups with high needs and/or historically under-represented in primary care utilisation (Services to Increase Access – SIA – funding). These payments are for the most part retained by PHOs, or passed to IPA management firms, to support administration and the delivery of non-FC services.

A further capitated category – Care Plus – was established in 2004 to provide additional funding to PHOs for individuals with diagnosed complex clinical needs and assessed to benefit from at least an additional two hours of care over the coming six months (MoH, 2014a). Care Plus was intended to replace the historical High Use Health Card (HUHC), which had enabled higher subsidies to be paid to reduce the subsequent fees charged to individuals utilising 12 or more consultations in the preceding 12 months (CGB, 2007). In the 2007/8 financial year Care Plus accounted for 4.4% of public funding supplied to PHOs (calculations based on Mays & Blick, 2008: p 13). In Quarter 3 2015, only 0.5% of enrolled individuals exhibited HUHC status (MoH, 2015), suggesting that the substitution was nearly complete.

The only remaining fee-for-service NZPHCS payments are for administering vaccines. Outside the NZPHCS, the Accident Compensation Corporation (ACC) pays fee-for-service subsidies for primary care provided to treat physical injuries (Accident Compensation (Liability to Pay or Contribute to Cost of Treatment) Regulations 2003). ACC payments comprised 9.5% of practice revenues in IPAC's 2006 survey; immunisation comprised 3.2%. Capitation-based NZPHCS funding comprised 47.1% and fee revenue 39.9% (IPAC, 2007 p 32).

2.4 Amendments

Since its inception, a number of changes have been made to the NZPHCS. These include a quasi-regulatory fee increase approval process, a PHO performance management programme and a PHO consolidation and reserve minimisation exercise.

2.4.1 Fee Increase Approval Process

The Acceptable Fee Increase Process (AFIP) was introduced in 2006 (GPNZ, 2006), likely because service user fees initially did not fall as much as expected (MoH, 2004). As some provider incomes had initially increased substantially, it was suggested that some practitioners may have been extracting higher government subsidies rather than passing them on in service user fee reductions (Cumming & Mays, 2011).

Developed by consulting firm LECG for DHBs (Davies et al., 2006), and repeated annually (Sapere, 2011), the process takes account of both historic cost increases and proposed government capitation fee increases (Figure 2.4) to determine whether the fees for the coming year proposed by a care provider fall within acceptable guidelines (Figure 2.5). Proposed increases falling outside the guidelines are referred for detailed review. AFIP thus confirms and replicates the focus upon provider revenues that characterised the initial capitation-setting process.

A provider's acceptable fee increase is calculated by allowing its revenue (based on the current year's capitation income and service user fees) to increase by no more than the input-cost related adjustment rate (ICRA, Figure 2.4), calculated using historic cost indexes. The projected increase in revenues attributable to increases in government funding (Future Funding Track Adjustments (FFTA, Figure 2.4)) is then taken into account. If the FFTA exceeds the ICRA then a fee reduction is indicated. This occurred in 2005/6 (the last year of the rollout of increased government payments), 2011/12 and 2012/13 (where global macroeconomic effects resulted in costs increasing very much more slowly than experienced historically). Whereas fee decreases were expected in 2005/6, it does not appear that providers were required to reduce fees in either 2011/12 or 2012/13, as only increases in fees outside the guidelines are referred for detailed consideration.

Figure 2.4 Breakdown of Fee Increase Factors

Table 2: Input-cost related adjustment rate

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Input-cost related adjustment factor for total fee	2.6%	3.9%	4.4%	3.7%	4.8%	3.01%	1.09%	1.41%

Table 3: Future Funding Track adjustments

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11*	2011/12*	2012/13
FFT adjustment	2.8%	3.3%	2.6%	2.8%	3.1%	2.0%	2.0%	1.49%

*= Cost pressures adjustment

Source: Davies & Canler (2012), pp 13, , 14.

Figure 2.5 Acceptable Fee Increases, 2005/06 to 2012/13

		2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Level of reasonable patient co-payment GP fee increase	Assuming: 80/20 split	1.8%	6.3%	11.4%	7.5%	11.5%	7.05%	-2.53%	1.11%
	70/30 split	2.1%	5.3%	8.5%	5.9%	8.7%	5.37%	-1.02%	1.24%
	60/40 split	2.3%	4.8%	7.0%	5.1%	7.3%	4.53%	-0.26%	1.30%
	50/50 split	2.4%	4.5%	6.1%	4.7%	6.5%	4.02%	0.19%	1.34%

Source: Davies & Canler (2012), p 15.

DHB Shared Services (DHBSS) (formerly DHBNZ) provides spreadsheet templates to assist care providers to determine whether proposed fee changes fall within the annual guidelines (DHBSS, 2015). Two options are given:

(a) Option A calculates total revenue by adding capitation revenue for the enrolled population to notional fee revenue, assuming enrolled individuals consume the expected capitated number of consultations in both years.

(b) Option B adds capitation income from the enrolled patient base to actual fee revenue derived from consultations delivered to each capitation category in the last year. It assumes the actual number of consultations delivered in the past year will be delivered in the subsequent year.

Care providers choose the option used.

In the 2006/7 year fee increases for 90 practices (slightly under 10% of the practice population) were referred for detailed consideration. By late 2007, of 67 completed reviews, 53 (84%) had resulted in the requested increases being approved (Mays & Blick, 2008). This fell to 19 reviews in each of 2011 and 2012, of which 70% were finally approved (Topham-Kindley, 2013). However, the average fees paid are still higher than was expected given government funding levels, and actual fees paid vary substantially.

2.4.2 PHO Performance Management Programme

The PHO Performance Management Programme, subsequently renamed the PHO Performance Programme (PP) was introduced in 2005. It provided additional financial incentives to PHOs to induce providers to exert more effort on a range of tightly-specified activities. The targeted activities provided opportunities for nurses to expand their activities. Under the PP PHOs received additional payments of up to $6 including GST ($5.22 excluding GST) per enrolee per annum for meeting a range of administrative and clinical objectives. These included the reporting of enrolment statistics, and enrolee participation in childhood and influenza immunisation, breast screening, cervical cancer screening, ischaemic cardiovascular disease detection, cardiovascular risk detection, diabetes detection and follow-up and smoking cessation initiatives (MoH, *n.d.*).

From 1 July 2014, the programme transitioned to the Integrated Performance and Incentive Framework (IPIF) (MoH, 2015b). The IPIF rearranged the measures and payment weightings given to various PP activities for the 2014-15 year, and removed high-needs targets from consideration. The objective was to better integrate primary health care activities with wider DHB and national objectives and to provide a more easily-measured set of targets. Whilst the initial focus of the incentive framework was on "the performance relationships between primary care and district health boards", it "can be expanded to include the broader health system as it matures over time" (MoH, 2015b). The IPIF was put on hold in June 2015 when the Minister of Health announced that no new initiatives would be introduced in the 2015/16 year (Coleman, 2015).

The PP and IPIF provided PHOs with additional capitated revenue streams and arguably have introduced some incentives to counter the tendency for capitated providers to *skimp* and *stint* on care quantity and quality. However, funding is paid to PHOs so it is not clear that either the revenue streams or contractual obligations will be passed on to providers. Even if all targets are met, the payments are small and the rewarded activities constitute only a small share of day-to-day provider activities. Initially, it was expected that PHOs would prioritise elements and co-ordinate provider attention given to them. As the PP transitioned to the IPIF the desired targets became more precisely specified, but the focus remains on the relationship between DHBs and PHOs.

Some PHOs have taken additional steps to enhance co-ordination (e.g. Pegasus pays providers $160 per meeting to attend sessions focused on communication and care integration – Timmins & Ham, 2013), but these initiatives appear to be in addition to any obligations for FC contract delivery, PP and IPIF, not as part of it. The effects of PP and IPIF are therefore unclear.

2.4.3 PHO Consolidation and Reserve Minimisation

In August 2009 the Ministerial Review Group appointed to report on reform options for New Zealand's publicly-funded health system found that bureaucratic burden was preventing the health sector from delivering efficient and effective care across all sectors (The Treasury, 2009). A particular concern was administrative inefficiency arising from the large number of PHOs (over 80) and the small scale (fewer than 3000 enrolees) of some of them (Ryall, 2009). In December 2009 the Minister instructed DHBs to "work actively with your PHOs to review their configuration and to look at how services could be improved by consolidating PHOs within your district" with a view to "move resources from the back office to the front line so that New Zealanders will receive more responsive primary health care closer to where they live", and increased cohesion of the system as a whole (Ryall, 2009a). By December 2011, the number of PHOs had reduced to 31 (Cordery & Howell, 2012) (32 in July 2015). PHO consolidation has likely increased the span of control of provider-led IPA entities over PHO operation and governance.

In June 2009 the Minister also expressed concern about the extent to which PHOs were retaining reserve funds, understood to be in the order of tens of millions of dollars, and requested data to inform "work on what delays we are facing in turning funding into patient services" (Cameron, 2009). By June 2011 reserves held by PHOs had reduced by one third, and income held in advance of services provided had fallen by 23 percent (McMillan, 2012). Analysis of PHO annual reports in 2013 shows little evidence of reserves held for any purpose, although it cannot be discounted that reserves have been passed on to entities such as management companies and IPAs. Consequently, some PHOs struggle to manage month-to-month fluctuations in cash flows (McMillan, 2012a).

2.5 New Zealand Primary Health Care Sector Summary

Table 2.1 summarises the key milestones in the New Zealand primary health care sector from 1938 to 2015.

Table 2.1 New Zealand Primary Health Care Sector 1938-2015

Date	**Action**	**Comment**
Pre-NZPHCS		
1938	Social Security Act passed	Introduced government primary care funding
1941	Fee-for-service subsidies	Agreed with Medical Association
1940s	GMS payments established	GPs, rather than service users, collected fee-for-service subsidies
1964	Social Security Fund disestablished	Primary care funding made from general taxation
	Practice nurse salary subsidies introduced	Formal recognition of nursing role in primary care
1990s	Health sector reforms	Widespread changes to sector funding purchaser-provider split budget-holding experiments capitation experiments increased scope for funded non-GP service provision Growth of IPAs
1991	Targeted subsidies replace universal payments	CSC, HUHC introduced Funding levels increased
1994	RHAs established	Regional purchasing of all government-funded care (except GMS)
1997	THA replaces RHAs	Re-centralisation of funding/purchasing
1998	HFA replaces THA	Re-centralisation of purchasing completed
	HFA sector review	
1999	RNZCGP sector review	
2000	NHC sector review	
2001	NZPHCS announced	
Under NZPHCS		
2002	Rollout begins	First Access PHO formed – July Capitation funding replaces fee-for-service for PHO enrolees; higher subsides for all Access enrolees
2003	Subsidies increased for 6-17 year olds in Interim PHOs	October
2004	Subsidies increased for enrolees 65 years and over in Interim PHOs	1 July
	Care Plus introduced	To replace HUHC funding

	Subsidies increased for 6-17 year olds in Interim PHOs	1 July
2005	PHO Performance Programme (PP) introduced	
	Subsidies increased for 18-24 year olds in Interim PHOs	1 July
2006	Very Low Cost Access (VLC) practice funding introduced	Replacing CSC status for income targeting
	Subsidies increased for 45-64 year olds in Interim PHOs	1 July
	Approved Fee Increase regulations introduced	Response to fees not falling as expected
2007	Subsidies increased for 25-44 year olds in Interim PHOs	1 July
2009	VLC status restricted to targeted providers	50% or more of enrolled population in Deprivation Quintile 5, or have Maori or Pacific ethnicity
	Minister expresses concerns about PHO reserves Ministerial Review Group appointed DHBs instructed to reduce PHO numbers and increase efficiency	June August December
2014	Integrated Performance and Incentive Programme (IPIF) announced	Replacing PP
2015	IPIF 2015 changes suspended	June 2015

2.6 NZPHCS: Performance Against Policy Expectations

A number of reviews of the performance of the NZPHCS against its espoused objectives have been undertaken. They include:

- the Evaluation of the Primary Health Care Strategy project undertaken between 2003 and 2010, led by the Health Services Research Centre, Victoria University of Wellington and CBG Health Research Limited of Auckland (summarised in Raymont & Cumming, 2013, and including amongst others

Cumming et al., 2005; Cumming & Gribben, 2007; Raymont, Cumming & Gribben, 2013);

- reports commissioned by The Treasury (including, but not limited to Mays & Blick, 2007);
- reviews commissioned by the Ministry of Health (including, but not limited to, CBG, 2004; Nelson et al., 2004; CBG, 2006; Jones, 2009; Smith, 2009 and Hefford et al.,2010); and
- reviews on various aspects of the strategy commissioned by other parties, such as DHBs (e.g. Carr & Tan, 2009), IPA and PHO umbrella groups (e.g. IPAC, 2007; Brown & Underwood, 2013) and the Minister of Health (e.g. PCWG, 2015).

These reviews have focused upon:

- the extent to which increased government funding led to the desired reductions in service user fees (which can be termed cost objectives);
- whether the redistribution of that funding achieved the desired increases in access to, and use of, care amongst targeted populations and hence the intended improvements in population health states (equity objectives); and
- the extent to which the desired changes in health care delivery have been achieved (provider and practitioner objectives).

Whilst all suggest some progress has been made in some dimensions, a general sense prevails that progress overall has fallen short of expectations. These perceptions are supported to some extent by data from the New Zealand Health Survey (*NZHS*) conducted in 2006/7 and repeated annually since 2011/2, and the Commonwealth Fund's International Survey of Primary Care Doctors, conducted in 2012 and 2015.

2.6.1 Progress Towards Cost and Fee Containment Objectives

Increased government funding initially led to fees falling generally for those aged between 18 and 64 (Raymont, Cumming & Gribben, 2013). However, since the initial rollout of additional funding in 2007, capitation payment rate increases have not kept pace with cost inflation (PCWG, 2015). This is reflected in Figure 2.4, where for the majority of years since 2006, the FFTAs fell below the Input-cost related adjustment rate. Thus, service user fees have continued to rise in real terms over time, as occurred pre-NZPHCS.

Even when government funding was initially increased, the fall in user fees was less than expected, especially for population groups not previously subsidised (King, 2004, 2005). Raymont & Cumming (2013), reporting on invoice and consultation records from 2001 to 2007 for a sample of 99 providers representing over 400,000 enrolled individuals (from Cumming & Gribben, 2007 and Raymont, Cumming & Gribben, 2013), observe that fees charged at Access providers were on average within expectations (zero fees for children; fees of between $7-$10 for those aged 6-17 and fees of $15-$20 for adults) for all categories except children under six years. In Interim providers, however, fee decreases were substantially less than the expected $10 for CSC-holders and $25 for non-CSC holders. Furthermore, initial fee decreases in both practice types were not sustained. Fee levels for the initially highly subsidised were observed to increase progressively, at the same time as the fees for the newly subsidised fell. The greatest fee reductions were observed for non-CSC holders attending Interim providers (Raymont & Cumming, 2013, p. 33). Whilst methodological difficulties associated with the data necessitate caution in interpreting the results (notably the reliance on invoice data limited the distinction between the services provided (e.g. doctor or nurse consultation) and potentially under-counted visits where no charge was made), the conclusion that fees had not fallen as expected is reflected in interview data in other parts of Raymont & Cumming's (2013) review. It is also echoed by participants in PCWG's (2015) 10 nationwide workshops, teleconference and online survey of general practitioners, which also noted the lack of effectiveness of AFIP regulation to constrain fee increases: "practices which had higher co-payments when regulation was introduced had seen larger absolute increases in co-payment" (p. 15).

Carr & Tan (2009) report on advertised fees charged by primary care providers in Capital and Coast DHB (CCDHB) between 2003 and 2007. They cluster fees in four groups: High, Medium, Low and Very Low – the latter corresponding with the VLC funding category introduced in 2006. Their data (Figures 7, 8 and 9, pp. 14-5) show that advertised fees reduced when each new tranche of funding was allocated to capitation groups, but thereafter began increasing. Although representing only one DHB, these data are consistent with invoiced fee trends observed in Raymont, Cumming & Gribben (2013), which covers the same period.

That fees did not fall initially as much as expected could be attributed to providers extracting higher subsidies as takings, or provider costs under the NZPHCS being higher than expected (Cumming & Mays, 2011). The first of these explanations is supported by Raymont & Cumming's (2009) survey of 277 GPs, 384 practice nurses and 276 general medical practices in 2006/7, where most GPs reported income increases in the previous two years when government funding increased substantially. The 2006 implementation of AFIP, as a means of ensuring higher subsidies were passed on in lower fees, indicates policymakers were concerned about this possibility. However, higher provider costs are also plausible. Raymont & Cumming (2013, p. 13) observe that "accountability and monitoring arrangements have been reported to have imposed a significant burden on providers and PHOs, arising from the separation of funding into different pools with their own accountability requirements". This concurs with the Ministerial Working Group's finding of higher-than-expected transaction costs. Subsequent PHO consolidation may have reduced these costs at DHB and PHO levels, but likely has had little effect on the additional transaction cost burden at care provider level. An excessive administrative workload under the NZPHCS is frequently reported as a problem by primary health care providers (Raymont & Cumming 2013, p. 45).

Furthermore, Matheson, et al. (2015) identify that the full extent to which costs have been constrained by the NZPHCS cannot be observed by examining only the primary health care sector. The Strategy was expected to lead in the long-term to reductions in hospital admissions from more preventative care and more appropriate primary care interventions. They examine rates of ambulatory sensitive hospitalisations - hospitalisations of people less than 75 years old resulting from diseases sensitive to prophylactic or therapeutic interventions that are deliverable in a primary care setting – between 2001/2 and 2013/14. They found consistent reductions in avoidable hospitalisations for children under 15 years, but not for adult populations. This suggests some progress has been made towards cost containment objectives over the whole health sector, albeit that fees paid by service users appear to be increasing over time.

2.6.2 Progress Towards Equity Objectives

Changing from fee-for-service to capitation payment of government funding was intended to increase individuals' access to care by incentivising providers to identify and enrol individuals not previously receiving care. Increased funding applied universally was expected to increase care utilisation overall, but especially by those with the greatest needs.

Equity Progress: Access

With around 95% of the population enrolled at a PHO in 2015, the NZPHCS has been attributed with significantly increasing access to primary care. This appears especially true for specifically-targeted Maori, Pacific and economically-disadvantaged populations. Analysing nationwide enrolment data, Hefford et al. (2005, p. 16) found that by 30 September 2003, when nearly half the NZ population had enrolled at PHOs, 27% and 44% of Maori and Pacific enrolees at Access PHOs had not previously been eligible for subsidised primary care. The proportion of formerly-unsubsidised Pacific people in the most deprived 20% of areas receiving newly-subsidised care was twice the national average. That government funding for Access PHOs at this time was substantially higher than for Interim PHOs was interpreted as a measure of responsive retargeting of government funding towards more needy populations.

However, paying higher subsidies on the basis of initially PHO (Access) and subsequently provider (VLC), and not individual, characteristics created new access inequities: individuals not exhibiting the needs-based characteristics commanded higher subsidies in Access PHOs and VLC providers, whilst those exhibiting them but enrolled at Interim PHOs and standard providers did not. In September 2003, 41% of Access enrolees did not exhibit the targeted characteristics (Hefford, et al. 2005, p. 17). Both Hefford et. al. and Cumming & Gribben (2007) note that the universal nature of the capitation payment system meant that the greatest proportion of additional government funding provided between 2002 and 2007 was used to subsidise individuals who under the targeted fee-for-service arrangements had received no subsidies. Raymont & Cumming (2013) report many providers believed that a significant proportion of their service users could afford to pay more for care. This is echoed by PCWG (2015).

Raymont & Cumming (2013) identify that enrolment data are not necessarily the best measure of access to care when it is required, as unenrolled individuals and those seeking to switch providers may face access restrictions if providers limit enrolments. In their 2009 survey of 99 random practices, they found 36.5% were selective in accepting new enrolees. Transient, and high-need individuals would likely be most disadvantaged by such selection activity. Furthermore, enrolment cannot guarantee access to care when needed if appointments are not available or care is eschewed because of cost or transportation barriers. NZHS (2015, p. 33) reports that in 2014 17% of adults aged 25-64 years were unable to get an appointment within 24 hours at their usual provider on at least one occasion. This rate did not differ across ethnicity or economic deprivation. It also had changed little since the 2006/7 survey. Thus, despite funding increases completed in 2007, it appears that some providers at least are engaging in timing-related care rationing. Furthermore, 14% of the adult population overall had not attended a primary care provider on at least one occasion in the past year because of cost barriers, rising to 18% in the most deprived areas and 20% for Maori and Pacific adults (p. 34). Notably, 9% of adults in the least deprived areas also cited cost as a reason for not seeking care. Lack of transport was a barrier for 3.4% of the population overall, rising to 7% in the most deprived areas. These figures had changed little since the 2011/12 survey (earlier data were not available).

Equity Progress: Utilisation

Overall, evidence of whether the NZPHCS has led to the desired utilisation increases by targeted populations is mixed, at least when measured by primary care consultations delivered by nurses and GPs. Primary care consultation numbers may not be an ideal measure of changing utilisation patterns over time, as the nature of the consultations may differ (e,g, be longer or shorter; cover different service provision), both between providers in one time period and between time periods. They also do not capture the effects of the need for care being avoided by effective preventative interventions, or the effects of avoiding the need for costly care in the secondary and tertiary sectors (Tan et al., 2012). However, both Raymont & Cumming (2013) and Smith (2009) observe that the nature of primary care consultations appears to have changed little under the NZPHCS, and it is the standard measure used in NZPHCS utilisation reporting. Hence, in the absence of any other data, primary care consultations provided prior to and over the life of the NZPHCS are presumed to be equivalent and therefore comparable as a measure of utilisation performance.

Raymont & Cumming (2013), based on Raymont, Cumming & Gribben (2013), observe from 2002/3 to 2006/7 that although the number of primary care (GP and nurse) consultations delivered initially increased for all population groups, this fell off over time, especially amongst the elderly, as capitation subsidy increases were rolled out to the whole population (p. 35). As Raymont & Cumming's data come from invoices, so may not capture all consultations delivered at no charge, they may understate actual utilisation. It is also unclear whether invoice data were matched against enrolment data, so is possible that the analysis also does not take account of enrolled individuals who did not seek consultations at all over the five years of their inquiry. NZHS (2008) indicates from self-reported data that in 2006/7 81.4% of adults attended a primary care provider at least once in the past year. In this case, the data may overstate actual utilisation. However, inferences drawn from the yearly trend data from both sources are less constrained. When broken down by service user and PHO type, Raymont & Cumming (2013) found that consultation rates had been sustained for CSC-holders in Interim practices, and older adults in Access practices (notably Maori aged over 45 years) between 2002/3 and 2006/7. However, "Access practices with on-going lower fees have not achieved consistently greater growth in consultation rates than Interim practices; and those without CSCs who have experienced the biggest reduction in fees have shown no consistent growth in utilisation" (p. 35).

Raymont, Cumming & Gribben (2007) utilisation rates (from Table ES1, p. 12), averaged to match capitation age groups in Appendix 1, with Access rates recorded as VLC and others as Standard, are summarised in Table 2.2 (column (2)). Compared to the expected number of consultations for each age group used by AFIP processes for assessing acceptable service user fee increases (DHBSS, 2015) (column (1)), they show generally fewer consultation than expected being delivered to all enrolees aged less than 25 years, and more to those aged 25+. Notably, more consultations on average were delivered to enrolees at standard providers than at VLC providers across all age groups.

Carr & Tan (2009) provide data from Capital and Coast District Health Board of the actual numbers of consultations delivered by primary care providers in 2004/5 and 2006/7. They are explicit about benchmarking their consultation numbers against enrolment data, so utilisation rates include the effects of individuals who did not seek care at all in the relevant periods. Their 2006/7 utilisation rates by posted fee levels (from

Figure 31, p. 34), averaged to match capitation age groups in Appendix 1, with VL recorded as VLC and the average of the L, M and H categories recorded as Standard, are summarised in Table 2.2 (column 3). The authors observe as evidence of improved access "the average number of visits per person per year has increased from 3.76 in 2004-05 to 3.83 in 2006-07 and this improvement is observed across the population age groups from 15 years and above" (p. 60). As Tan & Carr (2009) data apply to only one DHB, they may not be confidently extrapolated to the national population. Nonetheless, they show a similar pattern to Raymont, Cumming & Gribben (2013): fewer consultations than expected being delivered to younger enrolees (less than 25 years), more than expected to adult enrolees (25+ years) and utilisation at standard providers exceeding that at VLC providers over all age groups. Notably, their consultation rates are higher across almost all age groups than observed by Raymont, Cumming & Gribben (2013).

Furthermore, Carr & Tan (2009) observe similar changes over time as Raymont, Cumming & Gribben (2013). Figure 29 (p. 30) shows fewer consultations apparently delivered to children in 2006/7 than 2004/5, and more to adults. The same patterns apply when the data are broken down by ethnicity (Figure 30, p. 32) and fee clusters (Figure 31, p. 34), with two main exceptions. Consultations delivered to all individuals enrolled at VLC providers appeared to increase in all capitation categories, Maori aged over 45 attending low-cost providers (Figure 32, p. 34) and Pacific people aged over 45 at low, medium and high-cost providers (Figure 33, p. 35). The authors claim this as evidence of resources being better deployed to care for populations with higher needs. Their claim is also consistent with their Figures 10 to 20, showing a very much larger share of Full Time-Equivalent (FTE) GPs and nurses per 100,000, and increases in these proportions over time, in providers charging very low fees compared to providers charging higher fees (e.g. 110 FTE GPs/100,000 in VLC; around 60/100,000 in others in 2007 – Figure 14). However, Figure 30 shows that despite greater apparent increases in utilisation by Maori and Pacific service users, they still utilised fewer consultations in every age group than Other service users. Figure 31 shows higher utilisation in VLC providers for all adult age groups except over 65 years – but this could be a function of greater resource availability as well as responses to greater need in VLC providers. PCWG (2015) notes that it is provider – and not individual – characteristics that separate VLC funding from that of other providers.

Data from both Carr & Tan (2009) and Raymont, Cunning & Gribben (2013) suggest that the formulae used to set capitation payments are poorly adjusted for actual consultation utilisation. However, over time, consultation utilisation by disadvantaged population groups was growing, albeit that in 2007 it was still less than that of non-targeted groups. Arguably, this represented uneven, but on average positive, progress towards equity policy objectives, at least for adult enrolees, over the period where government funding was increasing in real terms.

New Zealand Health Survey (NZHS) data (samples of around 12,000 adults and 4,500 children) of self-reported primary care utilisation cover the period following completion of the roll-out of increased government funding. They suggest that adult consultation rates overall may have increased slightly between 2007 and 2014. The 2006/7 data report a median adult utilisation rate of two visits, rising to three for adults aged over 65 years (NZHS, 2008 p. 253). More detailed NZHS data from 2011 to 2014 suggest a stable adult utilisation rate of around an average of three GP consultations overall, rising to four for adults aged 65-74 and five for those aged over 75 (adult utilisation spreadsheet from NZHS, 2015). Adding nurse visits raises these to 3.7, 4.7 and 5.7 primary care visits. There was no significant difference in the reported utilisation rates in 2014/15 for Maori, Pacific and European adults, although Asian adults utilised on average one less consultation than the other ethnicities. This suggests ethnicity-based utilisation inequities observed pre-NZPHCS have been substantially addressed. However, if Maori and Pacific individuals have higher needs for care than other ethnic groups, it suggests resources are still not well allocated in regard to ethnic need differences. Adults in the most economically deprived quintiles used care more than those in the less economically deprived, suggesting in this dimension at least resource allocation reflected need.

Child GP utilisation rates, in contrast, showed a statistically significant decline from 3 in 2006/7 to around 2.7 in 2014/15. The decline appears consistent across both boys and girls and all age groups (child utilisation spreadsheet from NZHS, 2015). Nurse visits increase the total child primary care utilisation rates to around 3.2. Utilisation rates of Maori and most economically-deprived children were statistically significantly greater than Non-Maori and the least economically deprived respectively for GP consultations. No statistically significant differences exist across age, gender or economic deprivation for nurse consultations. On the one hand, this suggests resources in a given period were allocated according to needs-based ethnicity and socio-economic indicators. However, it indicates that over time the trend identified in the earlier reports of a reallocation of resources away from more highly-subsidised children towards less highly-subsidised adults has persisted under the mature NZPHCS arrangements.

The 2014/15 NZHS utilisation rates, averaged to be consistent with capitation age groups, are contained in Table 2.2 (column 4). As the data are based upon individual, and not provider characteristics, it is presumed that the same utilisation rates prevail at both VLC and standard providers. Whilst not directly comparable to Carr & Tan (2009) and Raymont Cumming & Gribben (2013) data, they appear to show significant mismatches continuing to prevail between expected and observed utilisation rates for children aged under 5 years. Observed utilisation exceeds funded rates for all age groups over 15 years, except adults aged 65 years and over. However, the variations between observed and actual utilisation for all groups except children under 5 years are closer than those observed in the other two studies. Whilst self-reported rates are less reliable than recorded utilisation, it cannot be discounted that between 2007 and 2014/15 average utilisation rates for enrolees in all categories, except children under 5, have converged towards the expected rates on which funding is distributed.

Table 2.2 Selected Annual Consultation Utilisation Rates

		(1)	(2)	(3)	(4)
Age Group	**Provider Type**	**AFIP Expected**	**Raymont & Cumming 2007**	**Carr & Tan 2006/7**	**NZHS 2014/5**
0 to 4	Std-A	8.47	3.90	4.80	5.62
0 to 4	Std-NA	8.47	3.90	4.80	5.62
0 to 4	VLC-A	8.47	2.39	4.40	5.62
0 to 4	VLC-NA	8.47	2.39	4.40	5.62
5 to 14	Std-A	2.74	2.02	2.03	2.70
5 to 14	Std-NA	2.74	2.02	2.03	2.70
5 to 14	VLC-A	2.74	1.18	2.12	2.70
5 to 14	VLC-NA	2.74	1.18	2.12	2.70
15 to 24	Std	2.44	2.19	2.17	2.90
15 to 24	VLC	2.44	1.17	2.48	2.90
25 to 44	Std	2.42	2.74	2.77	3.21
25 to 44	VLC	2.42	1.99	3.16	3.21
45 to 64	Std	3.55	4.77	5.80	3.92
45 to 64	VLC	3.55	3.76	4.60	3.92
65+	Std	6.89	8.57	8.40	6.71
65+	VLC	6.89	6.03	9.20	6.71

However, average utilisation rates conceal extremes. Neither Raymont, Cumming & Gribben (2013) nor Carr & Tan (2009) report the extent to which enrolled individuals for whom capitated funding was paid did not seek care in the relevant year. This data does not appear to be collected as part of routine NZPHCS performance measurement. The NZPHCS was expected to reduce cost-related non-utilisation. Non-utilisation could arise because care was not needed, was too expensive even at VLC providers, or for other access-related reasons. NZHS (2015) records that only 80% of adults in its 2014/5 survey reported seeing a GP in the previous 12 months – a statistically significant reduction at the 5% level from the 81.4% reported in 2006/7. Likewise, child attendances fell from 79.2% in 2006/7 to 76.3% in 2014/15 – again statistically significant at the 5% level. Whilst figures for 2006/7 are not available, NZHS (2015) identifies that in 2014, 14% of the adult population overall had not attended a primary care provider on at least one occasion in the past year because of cost barriers (NZHS, 2015 p. 102), rising to 19% in the most deprived areas (p. 103). Notably, 9% of adults in the least deprived areas also cited cost as a reason for not seeking care. Cost was an issue for 6.1% of child respondents, was more prevalent for older children not eligible for 'zero fees', for Maori and for respondents in more highly-deprived quintiles. However, cost was a barrier for 5.2% of respondents in the least economically deprived quintiles.

The NZHS data suggest that after 14 years, despite a more apparently equitable distribution of available consultations across the populations actually seeking care, significant and growing disparities exist under the NZPHCS amongst population sub-groups likely having higher needs for care. Particularly remarkable is the apparent decline in utilisation by children under 5, as the vast majority are enrolled at providers receiving additional payments in exchange for not levying fees, so in theory face no cost-based barriers to care. GP utilisation in this group fell from 4.6 in 2006/7 to 4.1 in 2014/15 (and no change in nurse visits), at the same time as the likelihood of seeing a GP in the past 12 months fell from 91.9% to 88.8% (again statistically significant at the 5% level).

2.6.3 Progress Towards Care Delivery Change Objectives

Evidence of progress towards the NZPHCS objectives to change primary care from GP-focused interventions addressing illness towards team-based care prioritising the promotion of wellness is, like evidence of fee reduction, cost containment and more equitable allocation of sector resources, equivocal.

Both Mays & Blick (2008) and Smith (2009) found few changes had occurred in primary care delivery, as GP-delivered standard consultations remained the dominant service form. Raymont & Cumming (2013) found "co-operation and co-ordination of activities between (general medical) practices and these other services to be both variable and tentative (p. 24). They also observe "few practices said that the adoption of capitation funding, providing the possibility of greater flexibility in meeting patient needs, had altered their mode of operation" (p. 29). Smith suggests this may be because PHOs lacked the necessary human capital to develop new care types and undertake the bargaining and contractual arrangements necessary to incentivise GPs to change their practice. Mays & Blick implicate the lack of specific expectations of GPs under the capitation payment arrangements. Croxson, et al. (2009), reported in Raymont & Cumming (2013), suggest that GPs felt that the NZPHCS threatened their status as independent professionals and business people, despite retaining significant ability to set service user fees: "in particular, the control of fees generated alarm; while planners see low fees as a metaphor for better access, for GPs it is metaphor for loss of independence" (p. 31). To some extent, therefore, the complicated mix of public and private funding may have been a barrier to change.

Nonetheless, Raymont & Cumming (2013) note that, by 2010 at least, some changes had been observed, albeit selectively across the sector. PHOs had initiated a wide range of programmes to enhance or supplement existing services, many of which were provided by PHO staff. Many had formed alliances with non-GP providers. The role of nurses in particular had been enhanced, especially in the delivery of new services such as Care Plus and Services to Increase Access. This was observed to be the continuation of a trend begun prior to the NZPHCS. The number of 'first contact' nurse consultations was also seen to increase between 2002/3 and 2004/5.

Whilst interviews with nurses reinforced their willingness to assume greater responsibilities, GP interviews suggested they were satisfied with the current allocation of duties between GPs and nurses, and that teamwork was already working well. These findings are echoed in Finlayson, et al. (2012) and Jones (2009). Brown & Underwood (2013) note the specific contributions of nurses in their detailed case analysis of five VLC providers.

Figure 2.6 contains Raymont & Cumming's assessment of the performance of the NZPHCS against its six key directions and five key priorities

Figure 2.6 Progress on the Key Directions/Priorities of the NZPHCS, 2010

Six key directions	
Work with local communities and enrolled populations	Now a mainstream activity
Identify and remove health inequalities	In process
Offer access to comprehensive services to improve, maintain and restore people's health	In place for general practice services; liaison with some other services
Co-ordinate care across service areas	In place for general services; liaison with some other services
Develop the primary health care workforce	In process
Continuously improve quality using good information	In process
Five key priorities	
Reducing the barriers, particularly financial barriers, for the groups with the greatest health need, both in terms of additional services to improve health, and to improve access to first-contact services	Significant progress especially with Access-funded practices
Supporting the development of Primary Health Organisations that work with enrolled populations	PHOs developed and working with variable intensity with enrolled populations
Encouraging developments that emphasize multi-disciplinary approaches to services and decision-making	GP and PHCN teamwork well developed; other disciplines included in some places
Supporting the development of services by Māori and Pacific providers	Many such services - some financially insecure
Facilitating a smooth transition to widespread enrolment of Primary Health organisations through a public information and education campaign to explain enrolment and promote its benefits for communities	Enrolment complete for most New Zealanders; public awareness of changes superficial

Source: Raymont & Cumming (2013, p. 5)

2.6.4 Future Sustainability

The Commonwealth Fund's international survey of primary care doctors in 2015 reported 57% of New Zealand respondents believed "on the whole the health care system works pretty well and only minor changes are needed to make it better". This represented an increase from 53% in 2012 and 49% in 2009. Furthermore, 52% thought the quality of care received by their patients had remained the same as three years ago; 32% thought it had improved and 16% that it had got worse (2012: 49%, 33% and 19% respectively). New Zealand primary care doctors are more positive about their health care system than those in most of the 11 countries in the survey (Commonwealth Fund, 2015; 2012).

Nonetheless, in 2015 significant concerns were expressed by General Practice New Zealand, the industry association representing GPs, about the future sustainability of the NZPHCS. A report to the Minister noted “a perception that the current general practice funding formula and co-payment rules are failing to ensure the sustainability of, and equity of access to, general practice” PCWG (2015, p. 7). Particular concerns were “that the funding for VLCA practices is creating distortion and equity issues”, notably because “a large number of high need patients are enrolled in non-VLCA practices, while many lower need patients are enrolled in VCLA practices”. The funding arrangements were deemed to be “a very imprecise targeting mechanism”. These concerns were exacerbated by “the increasing proportion of the general practice workforce choosing to become employees rather than being self-employed” (p. 8), and the growing number of part-time contracted and employed practitioners.

A general view was that a funding mechanism targeted at enrolled patient level, rather than at provider level, would be more equitable and allow for a more sustainable financial basis for primary providers, even though it might prove problematic for “community-owned practices which provide a wider-range of services than general practice” (p. 14). The report evaluated both the reintroduction of CSC and adding individual deprivation data to capitation funding as a means of increasing both equity and financial sustainability.

3. Research Methodology

Chapter 2 described how the NZPHCS changed the basis of government funding from fee-for-service funding of care delivered to capitation-based funding of enrolled populations. As each increase in government capitation funding at the population level was expected to translate directly into reduced fee-for-service payments by service users when care was delivered, funding services was treated interchangeably with funding populations. Government capitation funding was substituted for private fee-for-service payments in provider revenue streams. In Chapter 1, however, it was shown that population funding and provider revenues are not straightforwardly substitutable: funding populations concerns paying the expected costs of care for a defined population of individuals into a risk pool; providers are remunerated by the risk pool to supply care to the subset of enrolled individuals who develop needs for care and become service users. Risk pools manage the financial risks associated with converting population funding into services delivered.

The NZPHCS is silent on how, in the change in government funding from a provider payment on the Care Delivery side of Figure 1.2 to an insurance subsidy on the Risk Pooling side, changes in risk pooling activities in the New Zealand primary health care sector will occur. By seamlessly substituting government capitation funding for fee-for-service user payments any potential changes to risk pooling activities are apparently assumed away. The funding change is treated as if it is simply a change in the way providers are remunerated, at least in respect of the First Contact funding passed through by PHOs to providers. Yet fundamental changes in risk pooling, and hence financial risk management, have inevitably occurred. This leads to the first question to be addressed in this inquiry:

1. How have the changes to government funding introduced by the NZPHCS altered:

(a) the magnitude; and

(b) the allocation of responsibility for managing;

financial risk in the New Zealand primary health care sector?

When the NZPHCS was formulated, the change from fee-for-service to capitation funding (or alternatively, from funding services to funding populations) was expected to lead to desired changes in service user payments, improved access to and utilisation of health services on the basis of need, and fundamental changes in the methods and philosophy of care delivery. These expectations were derived from theory in the health economics and policy literatures, predicated upon activities within, and interactions between, the Risk Pooling and Care Delivery sides of Figure 1.2. These theories presume that population funding is an insurance arrangement based on the expected costs of care required by a population of enrolled individuals, and pertain to the Risk Pooling side of the system. It is separate and distinct from provider remuneration.

However, the New Zealand primary health care sector under the NZPHCS is not a population-funded system: only the government share is paid in respect of enrolled individuals on the Risk Pooling side; the private share continues to be paid in respect of services delivered on the Care Delivery side. Furthermore, government capitation payments are not based solely upon individuals' expected needs for primary health care: capitation payments on the Risk Pooling side contain sums intended to reduce the Care Delivery side fees paid by targeted service users – notably children and VLC service users – to a greater extent than those of non-targeted users. Government capitation funding thus addresses two distinctly different policy objectives: population health funding to reduce the private fee burden generally, and supplementary funding to redistribute the fee burden on the basis of non-health need-related characteristics. The formulae based on Sutton (2000) and the fee increase regulations in AFIP are predicated not upon the expected costs of delivering necessary care, but on the equalising of provider revenues before and after changes in government subsidy levels.

Consequently, the application of the NZPHCS funding changes has conflated "government funding" and "capitation funding" with "population funding", at the same time as conflating the expected costs of delivering necessary care with the expected revenues derived from delivering that care. As the New Zealand manifestations of "capitation" and "population funding" differ markedly from the theoretical assumptions upon which the NZPHCS policy objectives were originally predicated, and the resultant allocation and management of financial risk, it is possible that to some extent the disappointing performance of the Strategy against its objectives, observed in Chapter 2, is a consequence of the ways in which these non-standard arrangements affect the allocation and management of financial risk. This leads to this inquiry's second research question:

2. How have the magnitude and allocation of responsibility for managing financial risk in the New Zealand primary health care sector affected the likelihood of achieving policy objectives to:

(a) constrain cost and fee growth;

(b) allocate financial and health care resources equitably between:

    i. individuals and population sub-groups;

    ii. service users; and

    iii. providers; and

(c) incentivise collaborative and team-based care delivery?

The third research question follows from the first two:

3. What policy changes (if any) would increase the likelihood of achieving the desired objectives?

To answer these questions, it is first necessary to establish how, from a theoretical perspective, various means of funding risk pools on the Risk Pooling side, and paying providers on the Care Delivery side of Figure 1.2 influence the magnitude, allocation and management of financial risk, and thereby affect the ability to achieve the desired policy objectives. The New Zealand arrangements can then be compared to these theoretical expectations, to assess the extent to which their unusual form might be expected to lead to variations both consistent with, and militating against, achievement of the desired policy objectives. Based upon the theoretical comparisons, the New Zealand primary health care sector arrangements can be evaluated to identify the extent to which the unusual funding arrangements may account for the uneven and disappointing progress made towards the NZPHCS objectives over the life of the Strategy. Insights gained from this analysis can then be used to inform future policy development.

This thesis uses financial risk as the primary lens of inquiry, and an institutional economics (Industrial Organisation) transaction-based analytical approach for the theoretical investigation. This chapter proceeds by first justifying the selection of this theoretical approach. Next, the detail of the research process is explicated. Caveats, limitations and applicability of the research process are then discussed. Finally, the expected contribution is laid out.

3.1 A Financial Risk- and Transaction-Based Approach

Using financial risk as the primary lens of inquiry is novel, but is consistent with its fundamental role in health systems (Arrow, 1963; Newhouse, 1996; Van der Ven & Ellis, 2000). Government-funded primary health care policies typically focus on the flow of funds between various sector participants within budget-funding periods (Kutzin, 2011). However, the focus on average or aggregate funding flows alone fails to take account of the effects of financial volatility within and between periods on the decisions and actions of sector participants. Risk can be defined as "the effect of uncertainty on objectives" (ISO 31000, 2009). Uncertainty arising from funding volatility may influence policy effectiveness (Brainard, 1967), as decision-makers with different propensities to manage uncertainty may respond differently when offered identical expected financial returns with different degrees of volatility (Pratt, 1964; Mirrlees, 1974; Kahneman & Tversky, 1979). Thus, financial risks arising from the risk pooling arrangements on the left-hand side of Figure 1.2 can therefore influence decisions made on the right-hand, care delivery side, and vice-versa.

Primary health care systems are institutionally complex. The consequences of decisions and actions by any one participant flow via a range of links to influence the decisions and actions of all other participants. Primary health care activity can be simultaneously viewed at different levels of institutional aggregation using macro-meso-micro frames: micro, focusing on activities between individuals; meso, focusing on intra-organisational activity; and macro, focusing on high-level system-wide interactions (for examples, see Caldwell & Mays, 2012; Mays, 2013; Alderwick et al., 2015). PHOs were introduced as a macro-level policy instrument operating at the meso level, but the fiscal and contractual funding changes have materially altered at the micro level the way care providers are paid, and the financial obligations of the individuals to whom care is delivered. As all the levels are interconnected, micro-level changes will potentially influence activities in the meso and macro levels, at the same time as the macro-level changes will potentially influence activities in the meso and micro levels. A systemic analysis should therefore take into account both the breadth (across risk management and care delivery activities) and depth (macro/meso/micro levels of activity) of multiple intertwined and interdependent interactions.

Adopting transactions as the fundamental element of analysis allows both funding and financial risk to be traced as stocks and flows both between and within sector participants, and across the various layers of sector activity. Using the economics sub-disciplines of Industrial Organisation (IO) and Transaction Cost Economics (TCE), each interaction (termed a transaction) can be framed as a contractual agreement specifying the exchange of funds and obligations between participants. An economic contract is a legally enforceable promise, either oral or written, involving obligations on each party (Milgrom & Roberts, 1992, p. 597). The parties to the transactions may be individuals or aggregated entities (e.g. firms). Institutional entities (e.g. firms, marketplaces, government organisations) may be viewed as aggregations of co-ordinated transactions (Williamson, 1979; 1985; 1998), and the system in which they exist and interact can be described as a "nexus of contracts" (Coase, 1937). Using transactions as the fundamental unit of activity, stocks and flows of funding and financial risk can be examined both across the various activities within a primary health care system, and within and between the micro, meso and macro layers in which health care system interactions take place.

Thus, a transaction-based model of the allocation and management of financial risk can be developed for both a theoretical generic primary health care system and the arrangements prevailing under the NZPHCS.

3.2 The Research Process

Beginning with Figure 1.2, a simplified transaction-based model of a generic primary health care system will be created. The model comprises seven entities and seven exchanges (i.e. transactions). The entities are:

- risk pools;
- their underwriters;
- individuals in a population;
- sponsors subsidising individuals' participation in risk pools;
- service users needing primary health care;
- health care provider firms; and

- individual health care practitioners who deliver care.

The exchanges are:

- between an individual and a risk pool, enabling access to funding for care when needed (risk management);
- between the risk pool and a service user for benefits paid when that need is manifested (benefit payment);
- between sponsors and individuals for the subsidisation of risk management premiums paid to the risk pool (sponsorship);
- between a risk pool and its underwriters, ensuring that service users' calls on the pool's funds can be met (underwriting);
- between an individual and a care provider guaranteeing access to care when needed (access to care); between a service user and a care provider when care is delivered (care usage or utilisation); and
- between care providers and individual practitioners governing the organisation, allocation and delivery of care, and remuneration for providing it (employment).

Selected theories and observations from the body of IO, TCE, health economics and primary health public policy literatures outlined in Chapter 4 are used to map the expected theoretical effects of a domain of standard institutional and contractual arrangements affecting the magnitude and allocation of financial risk onto a range of cost and fee containment, equity and care delivery change objectives. The arrangements include:

- single and multiple risk pools;
- co-payments and balance-billing;
- capitation, fee-for-service and complex incentive contracting of care providers;
- organisation of care providers as firms and sole practitioners; and
- salary and other means of remunerating individual practitioners.

In the resulting mapping framework, cost containment is considered from the perspectives of both funders (sponsors and risk pools) and beneficiaries (individuals and service users). Equity is considered between individuals, between service users and between providers. For individuals and service users, it is considered in respect of access to, and utilisation of, both financial and care delivery resources, within and between different population groupings (e.g. capitation categories, enrolment bases). For care providers equity is considered in respect of the financial remuneration received for effort exerted in service delivery in the short run, and returns on capital investment (both physical and human) in the long run. Due to the complexity of interactions, it is extremely difficult to draw direct links between financial risk-bearing and either changes in sector care philosophy or the development of integrated care models. However, it may be possible to assess how changes in financial risk-bearing might influence provider incentives to constrain costs, work in teams across provider firm boundaries and prioritise population outcomes over service delivery elements.

The New Zealand instruments and arrangements, both before and after the introduction of the NZPHCS, are then examined using the model and policy objective mapping framework. The pre-NZPHCS arrangements establish a benchmark against which to assess the expected NZPHCS effects. The expected NZPHCS effects are measured as relative changes from the preceding arrangements. The pre-NZPHCS arrangements are not presumed to be any 'better' than those following, or to represent any 'desired state' to which policy-makers might aspire. They simply provide a counterfactual against which the expected effects of the NZPHCS changes can be benchmarked, given the difficulties in obtaining tangible proxies to measure progress towards or away from the policy objectives. The model and mapping framework thus establish the theoretically expected effects of the specific NZPHCS arrangements on the relevant policy objectives.

Finally, four alternative institutional arrangements that might be implemented in the current New Zealand context are evaluated, using the same model and mapping framework, to assess their potential expected effects on the policy objectives, this time relative to the NZPHCS status quo. These are:

- complex contracting of PHOs;
- moving to a fully government-funded primary health care system under the existing institutional arrangements;
- revising the formulae used currently to calculate capitation payments; and

- introducing a customised complex funding and contracting model that takes account of the specific characteristics of the New Zealand primary health care sector identified in the earlier analysis to have militated against the ability to achieve some of the NZPHCS policy objectives.

3.3 Caveats and Limitations

Any primary health care system is very complex. The model created for this inquiry, and the interactions considered within it, are stylised and highly simplified. This has been necessary to make the analysis tractable, and to ensure that the focus is on the financial risk-related effects of the specific NZPHCS funding and contracting changes. It is not intended to be a comprehensive model of the full array of New Zealand primary health care funding and contracting arrangements, or to capture the full range of activities undertaken by any specific primary care provider.

Simplicity and tractability are achieved by limiting the analysis to that part of the primary health sector concerned with First Contact (FC) services. The inquiry focuses primarily on the core activities of primary health care providers, individual practitioners within them, their enrolees and their service users. Its primary purpose is to inform specifically on the effects of the NZPHCS funding changes – and particularly the substitution of fee-for-service with capitation funding. Consideration of PHO activities is confined to their role in facilitating FC service provision. Whilst PHOs co-ordinate and supply a wide range of services under contract to their DHBs, and many of these are supplied under contract by the same providers receiving FC funds, FC services dominate sector activity. Although focusing solely on FC services ignores some other primary care sector activities (e.g. Accident Compensation Corporation-funded treatment of accidental injuries), the ignored activities are outside the scope of the NZPHCS funding changes so would not materially alter the conclusions drawn in relation to the three research questions posed in Chapter 1.

The analysis and evaluation are conducted using a range of theoretical and hypothetical stylised examples to illustrate the effects of various interactions in the New Zealand primary health care sector under the NZPHCS arrangements. This is consistent with the use of the model and analytical framework to theorise what the expected outcomes might be under specific assumptions. It also allows for the difficulties of identifying and measuring progress towards intangible policy objective variables. Where possible, secondary data and other analyses are used in order to explore whether or not the theoretical propositions are borne out in the operation of the New Zealand primary health care sector under the NZPHCS.

Ideally, the theoretical propositions developed in the analysis should be tested empirically. However, this was not possible due to the lack of reliable and comparable data collected at the aggregate (New Zealand, macro) level to measure and monitor activities occurring at individual care provider (micro) level. Specifically, no data is collected centrally on care utilisation by enrolled individuals, the fees actually paid by service users and care provider costs. The only fee data collected from care providers are the advertised (or 'posted') fees submitted annually to DHBs. Care providers may, and frequently do, charge fees that vary from those posted (Cumming & Gribben, 2007). Without actual utilisation, fee and provider cost data, it is not possible to develop or test hypotheses amenable to quantification and econometric analysis. It might have been possible to collect descriptive statistics using localised case studies. However, due to the complexity and variety of arrangements that have emerged under a policy that has encouraged locally-specific adaptations, the results of such analyses could be expected to reflect local-specific factors that are not generalisable. Both of these limitations support the decision to base the analysis on theoretical and stylised vignettes.

Whilst the simplifications and data limitations have compromised the ability to quantify the effects of the NZPHCS arrangements in the New Zealand primary health care sector, the stylised examples are illustrative of the effects that would be expected if data were available. Wherever possible, secondary evidence was sought to corroborate or refute the implications and conclusions drawn from theorised models and simulations. Whilst this results in the analysis being based primarily upon theoretical rather than empirical observations, it is the best that can be done under the circumstances. Notwithstanding, this approach provides a theoretical foundation upon which subsequent empirical research can proceed, should data become available.

3.4 Contribution

This inquiry is novel in its use of financial risk as a primary analytical lens to inform primary health care funding policy. It is also novel in its use of its system-wide approach linking risk management and care delivery activities. Development of the theoretical model and mapping framework constitute a substantial proportion of this thesis. Together, they stand as a separate and distinct contribution from their application to the NZPHCS to answer the three NZPHCS-specific research questions.

The application of the model and mapping framework to the NZPHCS therefore leads to the identification of a range of additional explanations for the variations, outlined in Chapter 2, between expected and observed performance of the policy against its objectives The new explanations add to, rather than invalidate, the explanations offered in other analyses.

Most other analyses of the NZPHCS have focused on only one objective or only one of the policy instruments. For example, Finlayson, et al. (2012) suggest that policy-makers' limited understanding of care provider business models militates against developing funding models that support multi-disciplinary team-based care. Hefford, et al. (2005) imply that service user fees are still not low enough to induce significant changes in utilisation amongst disadvantaged groups. Others, such as Smith (2009) and Mays & Blick (2008) take a broader critical approach by examining multiple changes and objectives in order to evaluate how the interactions between the different changes may have affected outcomes. Smith suggests that despite additional funding and the creation of PHOs to manage sophisticated contracting arrangements, these have not emerged because PHOs lack critical human capital necessary to undertake this activity. Mays & Blick (2008) suggest that the contracts between DHBs and PHOs, and between PHOs and care providers, lack mechanisms to hold the parties accountable for the delivery of specific outcomes. They propose that this can be ameliorated by introducing complex contracts such as those employed in England's National Health Service (NHS). It is also plausible that the high transaction costs associated with bespoke contracting were avoided by passing capitation funding on intact to care providers (Cumming & Mays, 2011).

The explanations derived in this analysis augment these other findings by examining explicitly how the NZPHCS instruments have interacted with the existing institutions and arrangements in the New Zealand primary health care sector in a manner not applied in other analyses. The institutional approach enables micro-level interactions to be directly linked via the transfer of financial risk to the achievement of macro-level policy objectives. Although Mays & Blick refer to inconsistencies in the allocation of financial risk amongst the many factors that they consider in their comprehensive review of the New Zealand arrangements, this is the first analysis to use financial risk as the primary lens of inquiry. It is the first to draw explicit attention to the theoretical differences between the NZPHCS funding arrangements and theoretical population funding and capitation contracting. This approach has made it possible to propose and evaluate a new alterative policy – the Mixed Funding Model – as a means of better achieving the desired policy objectives.

4 Definitions and Theoretical Foundations

This thesis brings together a number of theoretical elements from IO, TCE, Health Economics and Health Care Policy to develop a structural model and mapping framework to inform both public policy theory and practice. To achieve this it is necessary to first establish definitions and understandings of key theoretical concepts that transcend the boundaries of the disciplines in which they originate. This chapter lays out the key definitions and theoretical understandings about financial risk and its application to health care systems that will be used in the Chapter 5 to develop the simplified structural model of a primary health care system and the analytical mapping framework to identify the effects of various structural and contractual arrangements on the likelihood of achieving the selected policy objectives.

The chapter begins by defining risk as an economic concept arising from uncertainty. Different origins of uncertainty on the financial outcomes of sector participants at micro – that is, transactional – levels are shown to lead to different means of managing its effect on achieving both micro and macro-level objectives. Next, the economic implications in health care contexts that arise from random and controllable financial risk factors and their management are outlined. Specific emphasis is given in this subsection to the effects on the funding and delivery of primary health care. Finally, the ways in which the institutional arrangements of primary health care policies take account of the different risk types, and their effect upon the achievement of cost containment, equity objectives and desired behavioural changes are explored. Particular attention is paid to the ways in which the policies address the trade-offs between the management of *random risks* arising from insurance of individuals' uncertain future care utilisation and the controllable risks embedded in the institutional arrangements of a specific primary care sector.

No consistent approach appears to exist in primary care policy to address financial risk trade-offs between insurance and care delivery arrangements. A particular vagueness surrounds the mechanisms by which the macro-level policy expectations for population funding are translated through multiple transactions into micro-level interactions determining care provider remuneration and the allocation of resources across service users. The conceptual model and mapping framework developed in Chapter 5, and applied to the NZPHCS in Chapters 6 and 7, provides a means of systematically analysing these trade-offs.

4.1 An Institutional Economics View of Risk

This subsection begins by defining risk as a function of uncertainty. Two different types of risk – controllable and random – are identified, along with the different means of managing them – incentives and insurance. Distinctions between the statistical and economic consideration of risk are explained – with the former relating to outcomes for populations and the latter for individuals. The conversion of real risks into contingent financial liabilities is discussed, and the concepts of risk aversion, risk pooling and risk trading are defined. The subsection concludes with a discussion about how the act of trading itself creates risks that must also be managed.

4.1.1 Risk: Definition

Whilst many definitions of risk exist in many diverse academic and practitioner literatures (Bijl & Hamann, 2002), for this inquiry risk is defined as the "effect of uncertainty on objectives" (ISO 31000, 2009). Uncertainty arises from ambiguity or a lack of information, making risk a function of imperfect information (Knight, 1971).

Risk arises from two specific imperfect information states: information asymmetry, where information known only to one party can be used opportunistically at the expense of the uninformed party (Stigler, 1962; Ackerlof, 1970); and bounded rationality, where limits to human cognition and foresight constrain all parties' knowledge of future events (Simon, 1951). Even with perfect foresight, acquiring relevant information may be costly, it will be valued differently by different parties and the processes of communicating it are imperfect (Williamson, 1979). Furthermore, different individuals may respond to the same information in different, and sometimes unpredictable, ways (Kahneman & Tversky, 1979).

4.1.2 Uncertainty and Risk Management

The future is inherently uncertain, but decisions must be made in the present that will affect outcomes manifested in the future. Thus, risk influences all decisions and interactions, their outcomes and hence the ability to achieve individual, firm and policy objectives. When sources of uncertainty can be identified, risk management activities may ameliorate the consequences of its possible manifestation on the achievement of objectives (Doherty, 2000). As risk management is not costless, it leads to more efficient outcomes only if it costs less than the expected costs of not achieving the desired objective. Activities reducing uncertainty more, and at lower additional cost, are preferable to their more costly or less effective alternatives.

The two different information states lead to two different risk types, necessitating different management strategies: controllable risks, amenable to management using contracts and incentives; and random risks, typically managed with insurance (pooling) and hedging (Milgrom & Roberts, 1992, p. 240-1).

Contracts and Controllable Risk

When it is known that an information asymmetry exists and the informed party could utilise its private information to alter the likelihood of either itself or the other party achieving its objectives, then the risk is potentially *controllable* using *incentives*. Incentives are contractual mechanisms that can reward or cost the informed party for using its private information to benefit or harm the other party. An *economic contract* is a legally enforceable promise, either oral or written, involving obligations on each party (Milgrom & Roberts, 1992, p. 597). An *implicit contract* is a shared understanding that is not legally enforceable, but where the parties consider it to be binding on one another's behaviour (p. 599). Economic contracts are broader than formal legal contracts, and include informal agreements to form groups and transact within them (e.g. firms, families and other institutions) and the mutual understandings of how they will be governed (Ostrom, 2010). This inquiry uses the broad economic definition when referring to contracts.

Incentives grant parties exposed to controllable risk a means of managing some of the uncertainty arising from it. Incentive terms align the activities of the informed party with the objectives of the uninformed one by contractually assigning at least some of the costs or benefits associated with the risk to the party that controls its incidence (Hart & Holmstrom, 1987; Laffont & Martimort, 2002). That is, incentive terms share risks between the contracting parties. The effectiveness of incentive terms is contingent upon: how accurately the desired or undesired behaviours can be specified; the responsiveness of the incentivised party to the inducement; and the extent to which compliance can be observed or verified, thereby governing the extent to which the terms of the contract can be enforced (Holmstrom, 1979; Williamson, 1985; 1990).

Unpredictable or Random Risk

If no one can know an outcome with certainty, or consciously influence its achievement, then it is truly unpredictable. The risk posed to the achievement of objectives is *random*. However, its consequences are not necessarily unmanageable. The effects of random risks can sometimes be mitigated by agreements such as insurance and hedging. These arrangements enable exposed parties to manage their exposure by sharing the financial consequences if a particular outcome eventuates (Arrow, 1971; Spence & Zeckhauser, 1971). Insurance relies on statistical methodologies based upon each party's exposure to the risk being independent of others' to pool the risks and manage them jointly at lower cost than if the individual alone faced them. Bilateral hedging relies upon the financial effects of two contracting parties' exposure to a given risk applying in opposite directions. In the event that the risk crystallises, the financial effects cancel each other out.

4.1.3 Linking Statistical (Population) and Economic (Individual) Risk

Statistical risk differs from economic risk. Statistical methodologies can be used to provide information about the expected effects for an aggregate population. However, the economic effects of risk and risk management influence the outcomes of each member of that population separately. The aggregate outcome will be the sum of the outcomes of each individual member of the population, based on each individual's own decisions and actions taken in pursuit of their own objectives, given the existence of the risk. This necessarily differs from aggregating upwards the expected outcome for a hypothetical statistically average member of the population. The distinction can be illustrated using an epidemiology example.

Statistical risk in epidemiology describes the probability that a particular outcome will occur amongst a population following a particular exposure (Burt, 2001). At the population level, this probability is not a statement of *un*certainty, as statistical methodologies allow the statistician to know with a considerable degree of precision (that is, statistical confidence) how many individuals in an exposed population (although not which specific individuals) can be expected to develop the condition (Knight, 1971). Consequently, different sorts of uncertainty exist at different levels of aggregation.

At the population level, uncertainty attends the variation between the estimated (i.e. expected) number of individuals, determined using statistical methodologies, who will experience the outcome and the number that actually does. The population risk management task pertains to the anticipated but unpredictable variation between the actual outcome and the expected one – that is, the unavoidable consequences of statistical error (Field, 2013). The greater or lesser is the degree of precision with which the expected outcome can be estimated (i.e. statistical error), the lower or higher will be the anticipated variation. Typically, the greater the anticipated variation, the more challenging or more costly it becomes to manage the associated risk at the aggregate population level (Kunreuther & Pauly, 2004; Posner, 2006).

At the disaggregated level, one of two possible outcomes can occur for an exposed individual: developing the condition or not. All subsequent individual decisions are conditioned by the uncertainty of not knowing which of two discrete and mutually exclusive outcomes will eventuate. This is not the same risk management problem facing a hypothetical representative or statistical individual created using the population's statistical artefacts. The statistically average individual faces a quantifiable variation: the expected error of the statistical forecasting process. The actual individual faces the full extent of uncertainty until such time as the relevant information is revealed and its effects on the outcome are ascertained with certainty (Field, 2013). Knowing the time at which, and hence the information state in which, the individual makes decisions is paramount. Decisions made by an individual in the *ex ante* uncertain or uninformed state may differ from those made by the same individual in the *ex post* certain or informed state, or those expected to be made for a statistically representative member of a population (Danzon, 1997).

4.1.4 Financial Risk Management And Uncertainty

In accounting terms, the financial risk associated with an activity is defined as the possibility that there will be deviations from its expected cash flow (Buttimer, 2001). The activity may contain many different exchanges, so financial risk is viewed as an aggregate measure. Economic considerations of financial risk disaggregate activities to take account of the micro-level transactions individuals enter into as they respond to their perceptions of the likelihood of deviations occurring in the multiple activities that influence their personal future cash flows.

Risk pertains to uncertain outcomes that may be tangible and amenable to expression in financial terms (e.g. financial loss from a trading venture), or intangible (e.g. premature death). Whilst intangible outcomes elude quantification, the financial consequences arising from them may be used to render a risk tractable to both empirical analysis and exchange between entities (Knight, 1971; Williamson, 1987). For example, whilst the risk of a nominated individual falling ill and needing health care can be neither avoided nor traded, the obligation to make a payment of a given size (e.g. the cost of necessary care and/or income lost as a consequence of illness) can be treated as a *contingent liability* incurred in the event of the need arising (Glied, 2001). The obligation to make the contingent payment can now be traded.

Risk Aversion, Risk Premiums and Risk Neutrality

Individuals with limited ability to bear the costs of income volatility dislike having their incomes dependent upon random (i.e. uncertain) factors (Kahneman & Tversky, 1979). Risk-averse individuals prefer to have a smaller income, whose magnitude is certain, than a larger expected income subject to unpredictable and uncontrollable volatility (Milgrom & Roberts, 1992, p.. 187). The *risk premium* is the sum the individual would be prepared to pay to avoid bearing the consequences of an uncertain outcome (i.e. receive a certain income over its uncertain equivalent) (Milgrom & Roberts, 1992, p. 201). Individuals differ in their abilities to bear income volatility. For a given level of risk (i.e. income volatility), the more risk-averse the individual is, the higher will be the risk premium that individual is prepared to pay to obtain income certainty.

Firms owned by a large number of shareholders whose wealth is held in broadly diversified portfolios are presumed to be less financially risk-averse than individuals. The proportion of a firm’s income volatility borne by each shareholder is smaller the greater is their number. The more broadly any shareholder’s portfolio is spread across firms, the more likely it is that losses and gains across multiple investments will offset each other, leaving the shareholder ambivalent as to the income volatility of any one firm in the portfolio. The shareholder is said to be risk-neutral. The incomes of large firms whose activities are spread across many ventures are more diversified and hence less risk-averse than small, single project firms (Milgrom & Roberts, 1992, p. 187-8). Sovereign governments are generally held to be the most risk-neutral entities in a national economy, and hence become “insurers of last resort” because they can effectively diversify the financial consequences of any given risk across all taxpayers (Henderson, 1978; Wasley, 1993).

Risk Trading and Risk Pooling

A risk-averse individual facing a specific financial risk will be better off if another party is prepared to assume the uncertainty (i.e. financial liability if the event occurs) for any sum less than the individual’s risk premium. The counterparty will accept the obligation, and efficiency is increased, if the compensation paid exceeds the expected increase in total liability incurred by assuming it. Consequently, mutually beneficial trades require the parties to the transaction to be differently situated – for example, have different risk aversions, different wealth positions or exposure to risks in different directions (Arrow, 1996).

Risk pooling provides individuals facing similar random risks a low-cost means of risk management. The pool offers to make a defined payment to a member in the event of an agreed contingency occurring. Statistical methods can be used to calculate the expected financial liability incurred by adding an additional member to the pool. This insurance premium consists of the expected costs of paying a benefit to the member, plus the pool’s risk premium for managing the associated uncertainty. The individual will pay this sum to join the pool because, as a consequence of facilitating the offsetting of members’ risks, the pool’s risk premium is less than that of the individual member alone. It does not matter to the risk-neutral pool which individuals actually incur the liabilities, as the risk has been diversified across the entire pool membership. The pool conducts a financial transfer from all members in their uninformed state to those who, in their informed state, suffer the contingent loss (are unlucky) (Ferguson, 2008).

Pool management is not riskless. The inevitable variation between the statistically calculated expected and actual costs incurred is the pool’s cost of risk management. There is a real cost of the funds required to meet these, on average, expected but individually unanticipatable variations – for example, maintaining cash *risk reserves* to buffer against actual costs exceeding expected costs, or compensating the pool's owners (known as underwriters) or lenders for additional capital supplied to meet the obligations. The more precisely the expected costs can be predicted (that is, the more accurate are the statistical models used), the smaller is the cost of pool risk management (Pottier & Sommer, 1997).

Statistical methods can be used to develop actuarial models predicting the expected costs of claims on a pool based upon the characteristics of the population from which its members are drawn. By the law of large numbers, the more members there are in the pool, the greater will be the confidence with which the actuarial model can predict the actual costs. Consequently, the expected variation will be smaller, leading to smaller costs of managing a large pool risk (albeit with exponentially decreasing returns as the number increases) than a small pool risk (Milgrom & Roberts, 1992, pp. 210-214). In practice, the optimal pool size is determined by trading off the decreasing marginal benefit of increased pool size against the increasing transaction costs associated with adding more members (Danzon, 1997).

Management of Contractual Risk

Contracts explicate the terms under which individuals agree to transact with each other. Transactions are the fundamental elements of economic activity, and range from simple spot exchanges to complex, long-term mutually beneficial relationships (Carlton & Perloff, 2005, p. 1-5). Consequently, the contracts specifying the arrangements under which these transactions take place vary from simple to complex, often specifying terms contingent upon outcomes in other contracts. As a general principle, the aggregation of transactions and their governing contracts into institutions such as firms and markets is determined by the costs of undertaking the underlying transactions (net of the value of the exchange itself). Arrangements leading to lower total transaction costs are preferable to those with higher transaction costs (Coase, 1937; Williamson, 1985).

Most contracts govern transactions where obligations are performed in the future. To the extent that they can anticipate events potentially preventing the agreed outcome from occurring, the parties can specify contingent terms that will govern their subsequent interaction. This includes, for example, incentive terms and penalties in the event of opportunistic behaviour – that is, a controllable risk – occurring (Prendergast, 2002; Holmstrom 1989; Grossman & Hart, 1983).

However, bounded rationality prevents the parties from foreseeing and making provision for all possible contingencies (or the transaction costs of doing so would exceed the reduction in expected deviation from the intended objectives). Contracts are therefore inherently 'incomplete' – subject to unspecified contingencies occurring that prevent the fulfilment of the intended obligations. The further into the future the activities occur, the harder it is to anticipate possible contingencies. Contracts are also incomplete due to imperfect specification. If the objectives relate to intangible or unobservable activities, then a describable and observable proxy may be used in lieu. The more (or less) precisely the proxy represents the intangible activity, the lower (or higher) is the risk that the actual outcome will deviate from the intended outcome.

Contractual incompleteness thus engenders risks from transacting (*contractual risks*) which, when crystallised, create transaction costs. Ideally, contracts should be structured to minimise transaction costs. As a general rule, ignoring incentives, transaction costs arising from risk management will be least when the costs associated with random (i.e. uncontrollable) factors are borne by the less risk-averse party (albeit that the more risk-averse party will pay a premium for being relieved of the uncertainty). Risk pooling is an example of this principle, because the diversified pool is less risk-averse than its constituent members.

Incentives can be used to assign the costs of controllable risk factors to the party that can choose to invoke them. Incentive effectiveness depends upon its strength (the incremental return from the incentivised activity), the precision with which it can be described, and the incentivised party's risk tolerance and responsiveness (Milgrom & Roberts, 1992, p. 221). Incentives can lead to the creation of new uncertainties (i.e. contractual risks). The more sensitive the incentivised party's return is to effort exerted on the incentivised activity (i.e. the stronger is the incentive), the higher is the likelihood that this activity will be pursued to the exclusion of other desired activities. Monitoring that activity reduces the risk, but increases transaction costs. An individual facing multiple conflicting incentives is expected to pursue the combination of activities that leads to the highest return (Holmstrom & Milgrom, 1991), taking into account both short-term and long-term payoffs (Levitt & Syverson, 2005). In practice, careful trading-off of all of these different forms of risk management is required to maximise the likelihood of the desired outcome being achieved at least transaction cost (Williamson, 1979; 1985; 1990; Arrow, 1996).

4.1.5 Summary: Uncertainty and Risk

Risk arises as a consequence of uncertainty, and affects the ability to achieve desired objectives. Uncertainties arise as a consequence of limited foresight and different distributions of information that is available. In practice, all interactions invoke risks, as neither party can foresee the future outcome, including the opportunistic use of private information by the other party. Contractual terms can be used to minimise the effects of uncertainty on the achievement of objectives. When the uncertainty can be neither predicted nor avoided, the risk is said to be random, and its financial consequences are least when borne by the party with the greatest capacity to bear it. Where the effect of utilising private information on the achievement of another's outcome (opportunism) can be foreseen then the risk is said to be controllable. Incentives can be used to allocate responsibility for the costs of any deviation from the desired outcome arising from controllable opportunism to the party whose actions control its extent.

4.2 Risk and Risk Management in Health Economics

This subsection lays out the key economic theories of risk and risk management in health care systems that will be used in Chapter 5 to develop the simplified systemic model and analytical mapping framework used for this inquiry. Its purpose is to identify how the different risks and tools used to manage them, introduced in the preceding subsection, are integrated into the specific context of health care system interactions. It begins with an explication of the use of health care as a proxy for intangible health. Next, the origins and trade-offs between the different forms of random and controllable risks, and the characteristic means of managing them in health care systems in general, and primary health care systems in particular, are identified. Consistent with the framework established in Figure 1.2, the management of risks arising from the Risk Pooling side, as a consequence of the presence of insurance as a means of mitigating individuals' uncertainty about their need for and ability to pay for health care, are considered first. Next, the management of risks arising as a consequence of the organisation of activities and interactions originating on the Care Delivery side are explored.

4.2.1 Trade-Offs: Risk Pooling and Care Delivery

As 'health' is an intangible objective, economic analysis typically uses health care as a tangible proxy (Arrow, 1963; p. 941, where health care is termed "medical care"). For an individual, "illness is to a considerable extent an unpredictable phenomenon" (p. 945) invoking the need for costly care to manage the consequences of ill-health. Risk-averse individuals facing uncertainty about their future need to use costly health care (*utilisation uncertainty*) benefit from pooling the associated risks via health insurance. When the individual develops the qualifying need, a payment is made by the pool to offset the costs of using necessary health care (providing that the terms justifying payment can be described accurately and their legitimate occurrence identified and verified). The random variation between the expected and actual utilisation of the pool members constitutes the pool's *utilisation variation risk*.

However, care delivery is undertaken by highly skilled and knowledgeable practitioners in an environment that is generally unobservable to third parties. The comparatively uninformed individual and funding pool are exposed to a number of controllable risks arising from *information asymmetries*. These prevent health care systems from providing the requisite amount of appropriate care cost-effectively. This in turn affects the ability of achieving social planners' aggregate cost control and distributional objectives, and individuals' care access and utilisation objectives (Arrow, 1963; Dranove & Satterthwaite, 2000).

The different origins of financial risk in primary health care systems are reflected in Figure 1.2. The risk pooling side primarily addresses the management of utilisation risk, whereas management of controllable risks arising from opportunism predominates on the care delivery side. The multiple interactions occurring between the two sides contribute to the complexity of health care systems (Gaynor & Vogt, 2000; Van der Ven & Ellis, 2000). Cutler & Zeckhauser (2000) and Newhouse (1997) identify that part of this complexity derives from the need to trade off the controllable financial risks arising on the care delivery side as a consequence of risk pooling. This leads to a logical separation in the consideration of funding and care delivery, manifested in Figure 1.2 in the separation of Cutler & Zeckhauser's patient into an individual, whose membership of a risk pool is funded on the risk pooling side, and a service user, whose costs of care are addressed on the care delivery side.

4.2.2 The Risk Pooling Side

Risk pooling provides a more efficient means of ensuring insured individuals have access to funds to pay for health care when needed than if it did not occur. However, it creates additional uncertainties, leading to new contractual arrangements to mitigate them, which in turn lead to a number of artefacts characterising the risk pooling side of a health care system. First, risk pools and individuals must take account of uncertainties associated with defining the contingencies for which the pool will be liable. Second, the moral hazard of unnecessary utilisation arising from the presence of risk pools creates risks that may be addressed with contractual incentives. Third, pool size and the effects of deliberate use of private information to bias the risks to which pools are exposed – cream skimming – should be considered.

Tightly-Defined Benefit Entitlements

The vast array of possible health-impairing conditions that individuals could develop, and the potential forms of care to treat them, makes it difficult to fully specify all contingencies in the coverage contact between the pool and its members. Pool operators can manage the risks of paying for unanticipated new care needs, or more costly treatments, by using highly prescriptive schedules excluding payments for non-specified conditions or treatments, or by rationing a predetermined number and types of benefits paid across eligible service users. Consequently, some service users are denied funding for care that would improve their health states, or must wait to become eligible for rationed care. However, without such provisions, the costs and risks may be sufficiently large that pooling becomes financially unviable (Arrow, 1963; Pauly, 2000).

Restrictive benefit criteria prevail regardless of whether the pool is operated by the government or private shareholders, and whether premium contributions are paid explicitly by individuals or sponsors, or implicitly from budget-funded taxation revenues. Tax-funded, government-operated pools facing no competition are more likely to manage risks by rationing benefits than pools of other funding and ownership types, which are more likely to apply highly prescriptive benefit schedules. The other major distinction is that the per-individual costs of adding additional benefits to the schedule are transparent in pools levying explicit premium charges, whereas they are opaque for budget-funded pools (Gravelle, 1999).

The Moral Hazard of Unnecessary Utilisation

In economics, the term *moral hazard* is used to describe any form of opportunism where a party takes advantage of the terms of a contract to knowingly engage in activities that are both unobservable and costly to the other party (Milgrom & Roberts, 1992 p. 601). Risk pools pay contingent benefits that reduce fees paid by service users when care is sought. Consequently, service users not paying the full cost of care may use more, or more costly, care than is strictly necessary – a moral hazard arising from health insurance, (Pauly, 1968; Zeckhauser, 1970) which in this thesis is termed *unnecessary utilisation*. Unnecessary utilisation increases pool liabilities, so to remain financially sustainable the pool must either pass on the additional costs as higher premiums or taxpayer liabilities on the risk management side, or reduce benefits paid on the health care delivery side of Figure 1.2.

Unnecessary utilisation is more likely when the service user and service provider, rather than the pool manager, choose the type and quantity of care provided. Service users may choose costly treatments when less costly but equally effective ones are available, and service providers may take advantage of their superior information over service users and funders to over-supply care (Arrow, 1963). It is extremely difficult, or very costly, for the pool manager to reduce the incidence of unnecessary utilisation by observing and/or verifying the merit of service provider and user care choices. Nonetheless, unnecessary utilisation constitutes a controllable risk potentially amenable to management using incentives in risk pool agreements with both service users and providers.

Managing Service Users' Unnecessary Utilisation: Deductibles and Co-Payments

Theoretically, service user-controlled unnecessary utilisation could be limited by requiring service users to pay a share of care costs. This could be a fixed fee each time a claim is made (an *excess* or *deductible*) or a defined share of the provider's fee (a *co-payment*). However, as pool operators cannot easily distinguish unnecessary from efficiently utilised care, the additional charges will be borne by both legitimate and over-utilising service users. Rather than fully diversifying the individual's utilisation risk, the risk pool effectively re-concentrates a portion of it by passing it back to the service user to bear when imposing a deductible or co-payment. At the margin, some highly price-sensitive service users who would benefit from pool-subsidised care will not seek it (Pauly, 1968, Zeckhauser, 1970; Cutler & Zeckhauser, 2000). Furthermore, as the penalties invoked are greatest for those service users needing more or more costly care, deductibles and co-payments operate as progressive 'consumption taxes' on health care. Those with the highest likelihood of needing care, or are the most risk-averse because they are least able to afford the fee, face the greatest disbenefit from having to pay any fee. Hence, any form of service user payment is antithetic to the allocation of both financial resources and health care either in proportion to need or independent of ability to pay (Culyer, 2001). Deductibles and co-payments potentially constrain the pool's costs of both necessary and unnecessary care, but militate against objectives for care to be independent of both service users' need for it and ability to pay.

In practice, accumulated evidence from multiple studies generally supports the contention that subsidies increase the quantity of health care delivered (Aron-Dine, Einav & Finkelstein, 2013). Evidence of the effect of deductibles and co-payments on service user-controlled unnecessary utilisation, though, is mixed. Danzon (1997) finds little effect, and attributes this to the share of costs being too small to be effective. However, Gerdtham, et al. (1998) find that providing service users with information about the total cost of subsidised care supplied reduces unnecessary utilisation. User fees have been associated with discouraging the use of necessary lower-cost primary care amongst highly price-sensitive service users (Newhouse, 1996; Pauly, 2000 based on the RAND experiments). In the New Zealand context, service user payments have been attributed with discouraging price-sensitive user utilisation (Barnett & Barnett, 2004; Malcolm et al., 1999), albeit predominantly on the basis of service user self-reporting, as no econometric analyses appear to have been undertaken.

Managing Provider-Controlled Unnecessary Utilisation: Supply-Side Risk-Sharing

Providers' considerable information advantage over both service users and pool managers creates substantial opportunities for undetected provider-controlled unnecessary utilisation when they are remunerated under fee-for-service. As providers are fully remunerated for each service provided, they face incentives to deliver more instances of care, even when these may not be necessary. Risk pools may manage this risk with contractual arrangements requiring service providers to bear some of the costs of ordering or supplying unnecessary or over-costly care (Dranove, 1988). These arrangements are known as *supply-side risk-sharing* (Ellis & McGuire, 1986, 1988, 1993; Gaynor & Gertler, 1995; Newhouse, 1996; McGuire, 2000; Cutler & McClellan, 2001). The most commonly used mechanisms are utilisation review, price-and-volume contracts and full and partial capitation (Danzon, 1997, Robinson, 2001).

Utilisation Review and Price-and-Volume Contracts

Utilisation review is a sophisticated form of monitoring whereby pool managers audit subsidised care supplied against a set of approved methods. Non-compliant care is not subsidised, and clawbacks of payments already made are invoked. Utilisation review is effective in constraining pool costs without reducing care quality – a common problem with other supply-side risk-sharing mechanism. However, it is criticised for imposing high transaction costs, constraining practitioners' clinical autonomy and reducing service user choice (Saunier, 2011; Schlesinger, Gray & Perreira, 1996). As service providers must supply approved care to some service users who would have derived greater benefit from a non-approved method, these service users bear the cost in compromised health outcomes. Thus, utilisation review contracts transfer some residual financial risk from the pool, via incentivised providers, to specific service users. Service users bear the effects of the difference in outcome from the specified care not being the type best suited to their needs.

Price-and-volume contracts bind care providers to supply a specified number of services for a fixed price. Providers have certainty about remuneration and are insulated from variation in the number of services to be provided. Those providers choosing to supply care using more costly methods – a controllable risk – make lower profits. However, providers bear the cost consequences of variation in the intensity of care required for different service users – a component of random individual utilisation variation risk which they are not able to control. If the intensity of care required for each service user is independent of others, then the variations should offset each other, with the risk reducing the larger is the volume of services agreed for supply. However, the contractual risk arising for pools and service users is that providers may supply lower-quality care than expected (stinting/skimping) in order to make higher profits (White, 1999; Robinson, 2004). In this case, service users bear the costs of the risk in compromised health states relative to when skimping/stinting does not occur. Stinting/skimping can be mitigated to some extent if price-and-volume contracts are used in conjunction with utilisation review.

Capitation

Utilisation review and price-and-volume contracts are costly to design, monitor and enforce. Hence, they are better suited for the procurement of a small range of higher-cost specialist secondary and tertiary care episodes than primary care, where service users may present with any one of a vast array of possible needs, and where the costs of supplying each service are comparatively small. Capitation contracts, where care providers are paid a fixed budget to meet all relevant care needs for a given individual within a defined period, avoid the specificity of price-and-volume and utilisation review contracts. Capitation contracts are the principal supply-side cost-sharing mechanism used to constrain primary health care costs (Ma & McGuire, 1997; Gaynor, Haas-Wilson & Vogt, 2000).

Capitation is common in United States Managed Care (MC) (Rivers & Tsai, 2001; Anderson & Weller, 1999), and is utilised in the English NHS for both the remuneration of general practices and the budgets for commissioning other services (such as laboratory tests, pharmaceuticals and tertiary care) controlled by general practices (Carr-Hill, Rice & Smith, 1998).

Under full capitation agreements, the provider’s revenues for a given individual in a specific period are fixed, so are disconnected from the costs actually incurred to provide the care required by that individual. The provider bears the financial risks of both the quantity and intensity of care delivered varying from the expected amount paid under the remuneration agreement. The provider has, in effect, become the individual's insurer, managing random utilisation variation risk, over which little influence can be exerted, in addition to the controllable risks which supply-side risk-sharing is intended to mitigate (Newhouse, 1998).

The formulae using individual characteristics to predict the expected costs of necessary care amongst a pool population are usually termed *risk adjustment formulae*. The larger is the amount of the variation between expected and actual costs that a risk adjustment formula can predict, the more accurate it is and the lower is the expected cost of managing utilisation variation risk for a pool of any given size. Typically, less than 30% of the variation between expected and actual costs of health care in a given period is predictable using multivariate models most commonly used to set capitation payments (Van Vliet, 1992; Cutler & Zeckhauser, 2000). These models are usually based upon observable individual characteristics such as age, gender, ethnicity, socio-economic characteristics and past utilisation of care. The best predictor, accounting for around 20% of the variation, is past utilisation. Age, gender and socioeconomic status are comparatively weak predictors (Robinson, 2004). As the commonly-used risk-adjustment formula characteristics typically explain only a small amount of the expected variation in utilisation costs, the costs of managing the associated financial risks are comparatively large. Unless they have assumed responsibility for a very large number of individuals, providers are not as well placed as large specialist insurance/risk management pools to manage random utilisation variation risks (Rice et al., 2000).

Capitation contracting necessarily invokes trading off the reduced efficiencies from smaller risk pools against the increased efficiencies arising from providers reducing the supply of unnecessary care and developing different, more cost-effective means of caring for service users (Newhouse, 1996). The more limited are the risk adjustment formulae, and the smaller are the effective risk pools, the greater is the additional risk premium arising from replacing one central risk pool with multiple care provider-based pools under capitation contracting. Furthermore, if the small risk pools are managed by small, undiversified risk-averse providers rather than large, diversified risk-neutral insurers, an additional risk premium will be required to induce providers to assume responsibility for risk pool management. If the capitation payments do not compensate providers for their higher costs of managing these random risks, then inevitably some providers will face cost variations that they are unable to manage by simply reducing supply of unnecessary care. This is a particular issue for providers not inducing unnecessary utilisation in the first place. To remain financially viable, these providers can reduce their costs only by lowering the quantity and/or quality of care supplied below the expected level. Their service users are therefore disadvantaged relative to those of providers that, by dint of random effects, face smaller and favourable variations. Alternatively, the unlucky providers may reduce their liabilities by refusing to assume responsibility for the care of individuals with known high needs.

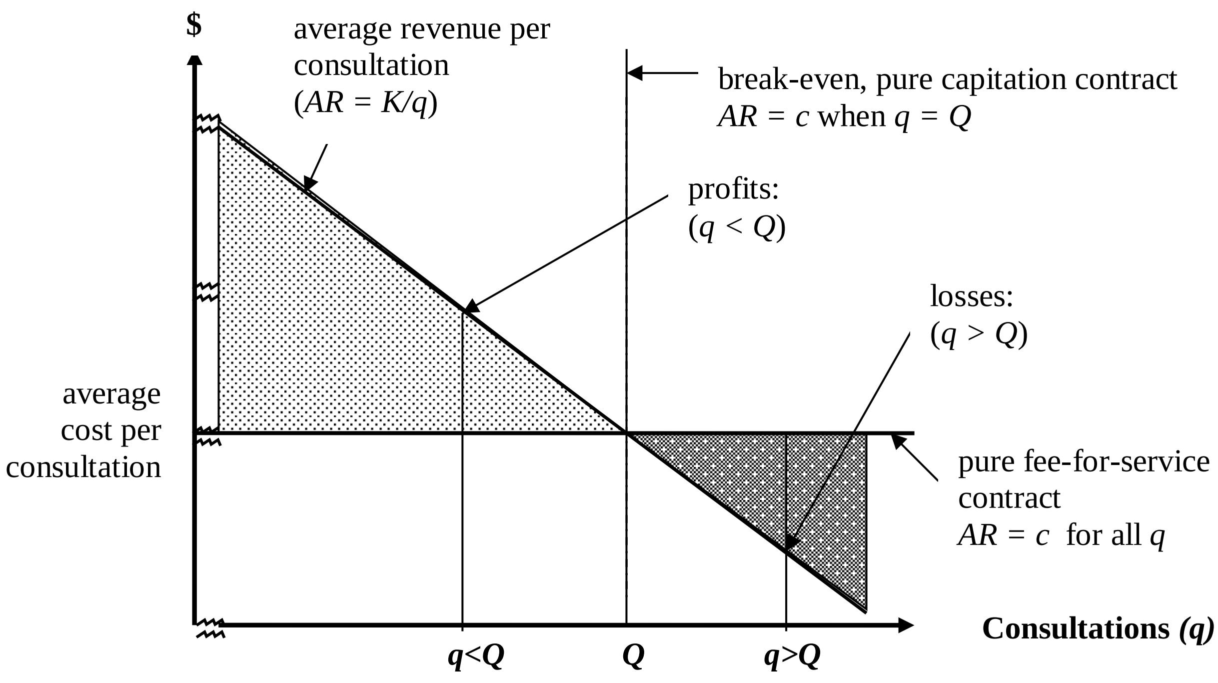
However, providers not facing financial stresses can also choose to reduce care quality and/or quantity opportunistically (*skimping/stinting*), or refuse to enrol high-needs individuals in order to increase profitability (*cream-skimming*) (Robinson, 2001; Ma & McGuire, 1997; Newhouse, 1989). Service users bear these risks, again in proportion to the amount of care required. Those needing more care incur larger risk-related costs. Independent regulation may endeavour to constrain skimping and cream-skimming, but the wide variation in primary care needs and care types makes it very difficult to distinguish cost constraint, exercised to maintain financial viability, from opportunism to increase profits (Scott, 2000). Hence, transaction costs are non-trivial and the regulation process itself leads to further risks from imperfect information (Hagen, 1999; Pauly & Herring, 2007).

Full versus Partial Capitation: the Theory

Full capitation agreements pay providers a fixed sum to assume responsibility for care delivered to a defined group of individuals in a given time period. Under these arrangements, providers bear all of the financial consequences of the actual amount or intensity of care required varying from that anticipated in the payment formula (random utilisation variation risk) as well as the consequences of provider-controlled unnecessary utilisation (controllable risk). Whilst they can manage the extent of their costs by reducing unnecessary utilisation, if the random effects reduce their profitability, they will likely respond by lowering care quality, limiting supply or refusing to enrol high-risk or costly individuals. Thus, fully capitated systems are theoretically linked with less and lower-quality care, and more restricted access than fee-for-service funded systems. These effects can be mitigated by constructing a partial capitated contract that blends prospective capitation payments for a given group of individuals with retrospective fee-for-service payments based on services that are actually delivered. Such arrangements seek to balance the random and controllable risks faced by the provider given the expected utilisation of its enrolled individuals, the provider's risk-aversion and responsiveness to financial incentives (Ma & Riordan, 2002; Pauly, McGuire & Barros, 2012).

Figure 4.1 illustrates a provider receiving fixed capitation income *K* to supply consultations costing *c* each (average, including opportunity cost of practitioners' capital). If the provider was remunerated on pure fee-for-service at $AR=c$, then it would break even regardless of how many consultations were required. The provider bears no utilisation variation risk. Under capitation, the expected number of consultations supplied is *Q* such that $K/Q=c$. If it delivers exactly *Q* consultations, then the provider breaks even. If actual utilisation exceeds that expected ($q>Q$), the average revenue per consultation ($AR=K/q$) is less than *c*, and the provider makes a loss on each consultation delivered. If actual utilisation is less than expected, ($q<Q$) the average revenue per service exceeds *c* and it makes a profit on each.

Figure 4.1 Pure Capitation



When a large pool is divided into smaller pools, inevitably some will make losses and some profits. The profits made by 'lucky' providers where $q<Q$ are not available to compensate the losses of the other providers, as occurs with a single pool. They can be extracted by the owners. These profits are real costs of utilisation variation risk management arising from pool separation. If loss-making 'unlucky' providers expect the same higher–than-average utilisation in the future (utilisation correlation) then to remain solvent they can reduce costs by lowering service quality (lower c) or restrict enrolments to lower the consultations expected to be supplied to Q. If this occurs, their service users will experience lower care quality and/or reduced access relative to the service users of profitable providers. This difference becomes the service users' consequence of provider responses to uncontrollable random risks. However, this presumes providers' objectives are to maximise profits. If 'unlucky' providers ascribing to motivations other than profit maximisation (e.g. if compliance with codes of professional ethics or personal beliefs prevail over commercial profit maximisation – Scott, 2000) opt to maintain consultation numbers and service quality, then the difference will be manifested as highly variable between-provider remuneration for the same level of effort.

Notwithstanding, profitable profit-maximising providers may also reduce costs and restrict enrolments to make even higher profits. Lowering care quality or effort below that of the 'average' provider manifests as the controllable risk of skimping/stinting. A 'lucky' profitable provider delivering more consultations than its current q (e.g., to patients unable to get consultations at unprofitable providers), even though it has spare capacity, erodes its profits (q moves closer to Q). Profitable providers may limit the number of consultations delivered to the most profitable $q<Q$ by refusing to enrol new individuals (cream-skimming), unless it can be demonstrated that those enrolees' expected utilisation will be no greater than the current small pool average. The presence of both opportunistic skimping/stinting lucky providers and unlucky providers not ascribing to profit maximisation motives leads to even wider between-provider variations in the remuneration received for the same level of effort.

Thus, assuming at least some providers ascribe to profit-maximisation motivations, fewer and/or lower quality consultations are expected to be supplied under capitation than would be expected under fee-for-service, assuming an expected number of consultations Q at cost c, due to opportunism and responses to random risk. If some, but not all, providers act opportunistically there will be a wide variation of both care quality and the ability to enrol across providers under capitation that is not present under fee-for-service. Pure capitation unequivocally results in these risks being shared with service users, leading to inequities depending upon the provider at which they are enrolled. As providers with needier-than-average enrolees experience higher-than-average utilisations, the costs are borne disproportionately by those sub-populations that have higher actual needs (i.e. where the variation between expected and actual utilisation is greater). If the risks are not passed on to service users, then the providers serving populations with higher-than-average needs receive lower-than-average remuneration for the same level of effort exerted in care delivery.

Figure 4.2 Blended Capitation and Fee-for-Service

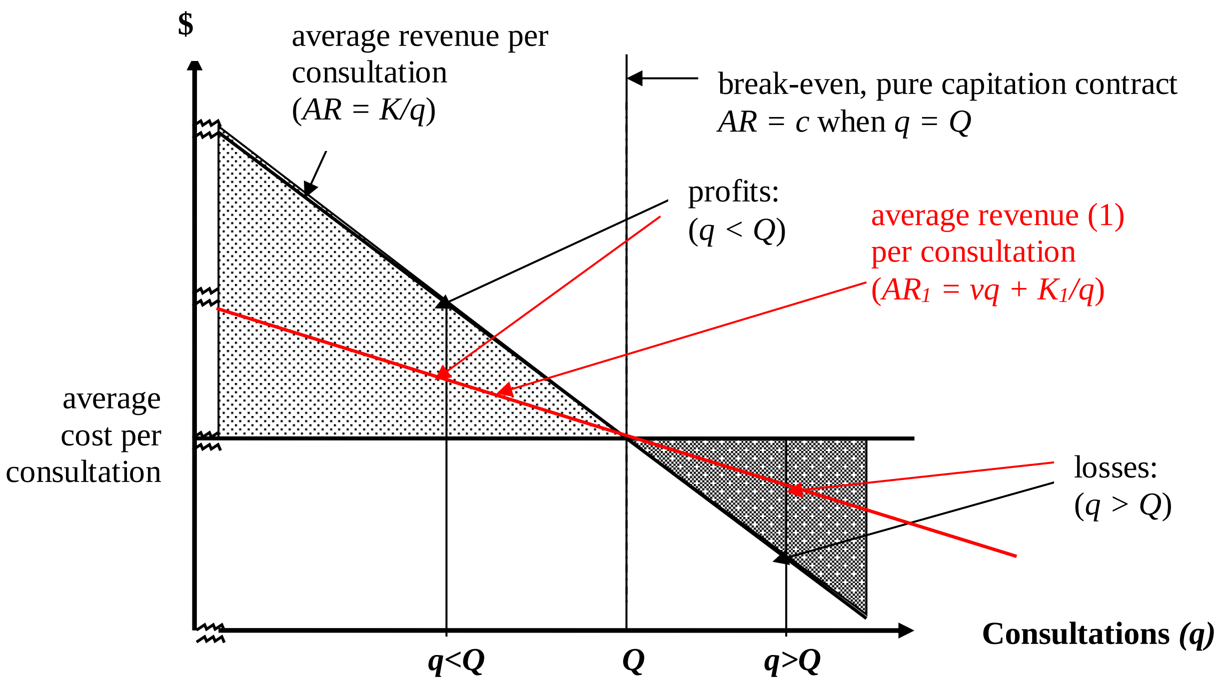


Figure 4.2 illustrates how a partial capitation contract paying a smaller fixed component K_1 and a variable fee v per consultation lowers the magnitude of financial risk faced by providers, and reduces the variation between enrolees. The following discussion presumes all providers are pursuing the objective of profit maximisation. However, as with the case of full capitation, the presence of providers pursuing objectives other than profit maximisation does not alter the magnitude of the risks

arising – it simply leads to a different distribution of the risks between providers and service users.

Average revenue per consultation is now $AR_1=vq+K_1/q$ and $AR=AR_1=c$ at $q=Q$ (red lines and arrows). The profit per consultation at $q<Q$ and loss per consultation at $q>Q$ are both smaller, meaning the cost of utilisation risk management is smaller. The extent to which quality must be reduced by loss-making providers to break even is smaller, as are the profits extracted by profitable providers. Between-provider variations are thus smaller, reducing the extent of between-provider inequalities borne by service users. The larger is v (and the smaller is K_1), the weaker is the capitation incentive and smaller is the random risk shared. At the extreme, $K_1=0$ and v becomes a pure fee-for-service subsidy.

Partial Capitation: in Practice

In practice, it is extremely difficult to construct contracts that precisely reflect all the different risk-related factors. Given the limited predictive power of capitation risk adjustment formulae, a substantial share of care provider income should be proportional to actual costs incurred if random utilisation variation risk costs and the risks of cream-skimming and skimping are to be low. That is, a substantial amount of responsibility for utilisation variation risk should be retained by the pool, so fixed remuneration should be low. However, enough must be shared with the provider to encourage constraint of those costs which are within their control. On this basis, Goodson, et al. (2001) suggest that efficient primary care provider payments should have between 20% and 40% of provider revenue fixed based on registrant characteristics and 60% to 80% based upon encounter-based care – that is, fee-for-service. This is consistent with the observations that around 70% of the variation between expected and actual costs of utilisation cannot be predicted using common registrant-based risk adjustment characteristics.

Strong capitation incentives (i.e. a large share of revenues is fixed) may be feasible if arrangements are in place to limit the extent to which any one provider is exposed to unanticipated, uncontrollable and potentially crippling financial losses from higher-than-expected utilisation. A *stop-loss* is one such arrangement.

With a stop-loss the provider is remunerated differently in the event that either total care utilised, or that of any specific enrolled individual, exceeds a predetermined level of variation from an agreed norm. For example, fee-for-service payments could apply for additional consultations supplied once a threshold number had been delivered based on either the aggregate for the provider, or individually for those supplied to a very-high-need individual (Rosenbaum, 2003). The aggregate arrangement would protect capitated providers from the financial consequences of a pandemic, whereas the individual one protects against having an unusually large number of high-cost individuals ‘on the books’. Alternatively, responsibility for the high-cost enrolees could be ‘carved out’. *Carve-outs* typically apply to care provided for specific conditions (e.g. mental health – Frank, McGuire & Newhouse, 1995). Where a specific individual is known in advance to have atypical needs, all care for that individual could be supplied under a separate agreement. However, these alternative arrangements bring with them their own contractual risks, as the funder’s limited observability of care delivery facilitates opportunism by both care providers and service users.

Empirical Evidence

Empirical evidence suggests that in the United States MC context, significant desired changes in practitioner behaviour (i.e. reduced opportunism and more cost-conscious activities) have been achieved (e.g. Cutler, McClellan & Newhouse, 2000; Glied, 1999), using capitation contracts with comparatively weak financial incentives (i.e. a small prospective fixed capitation payment and a larger retrospective fee-for-service payment) (Ma & McGuire, 2002; Robinson, 2004; Casalino, 2001). Capitation is almost always linked with reduced utilisation (Trauner & Chestnut, 1996). This is unsurprising as reducing unnecessary utilisation was the principal reason for introducing incentive contracts in the first place. Indeed, it confirms the presumption that at least some providers are motivated by making profits so will respond to financial incentives. Studies linking capitation with provider productivity find little correlation (Gartland & Carroll, 2004; Conrad, Sales & Liang, 2002), although hospital productivity appears to increase in proportion to the capitation share of income (Chu, Liu & Romeis, 2002). However, empirical investigations mostly consider secondary and tertiary service provision, as do analyses of responses to English gate-keeping contracts (e.g. Croxson, Propper & Perkins, 1998; Gaynor, Moreno-Serra & Propper, 2013).

Few empirical analyses of capitation in primary care appear to have been undertaken. Most relate to the United States (US), where providers derive income from multiple sources. None could be found addressing the role of capitation in a mixed public-private funding arrangement. In part, this is a consequence of primary care's complexity and comparative unobservability, particularly in regard to quality. Notwithstanding, some insights into the effects on care delivery have been obtained.

Gosden et al.'s (2011) Cochrane Review of the effects of salary, fee-for-service, capitation and mixed payment systems on provider behaviour found only four studies covering 640 physicians and 6400 patients meeting their criteria of randomised trials, controlled before-and-after studies and time series analyses of the various payment instruments affecting the cost and quantity, type and pattern, and equity of care delivered. Salary is analogous to full capitation, in that providers are paid a fixed fee. However, it typically relates to a number of hours worked rather than meeting all care needs for a defined population. Hence it is more applicable to practitioner remuneration contracts within a given provider rather than between a risk pool and a provider firm. Nonetheless, the comparison with fee-for-service offers insights. They found fee-for-service resulted in more primary care consultations, visits to specialists and diagnostic and curative services but fewer hospital referrals and repeat prescriptions compared with capitation. Compliance with a recommended number of visits was higher under fee-for-service compared with capitation payment. Fee-for-service also resulted in greater continuity of care and higher compliance with a recommended number of visits, but patients were less satisfied with access to their practitioner compared with salaried payment. They noted the wide range of contexts for their studies, and recommended more research, particularly into the effects of salary remuneration.

Calnan, Groenewegen & Hutten (1992) applied a theoretical model of the relationship between provider remuneration method and the amount of time spent in patient and non-patient work to data collected from two surveys – one in the Netherlands and one in England and Wales. The Dutch data came from 168 physicians recording their activities over three months in 1987/8. The England and Wales data came from a national survey of 2104 practitioners in 1984. They found that Dutch general practitioners, receiving around 37% of their income from fee-for-service (63% capitated), spent more time in patient-related activities than those in

England and Wales, who received 18% of their income from fee-for-service (45% capitation, 38% from other fixed payments). This suggests that providers facing stronger financial incentives spend less time on patient care-related activities.

Krasnik et al. (1990) conducted a controlled trial of 100 Copenhagen GPs whose remuneration arrangement changed in 1987 from capitation to fee-for-service. Total contact rates per 1000 patients rose significantly amongst the GPs when their remuneration method changed, and their referrals to secondary care fell. The greatest changes were observed for the services attracting the greatest additional remuneration. Over time, the contact rates fell back slightly, but were still above the pre-change levels. Telephone consultations increased initially, but not thereafter.

Melichar’s (2009) regression analysis based upon 11,137 consultations provided by 794 United States physicians found that they spent less time with capitated patients than fee-for-service ones. However, she was unable to control for other quality differences. Van Dijk (2012) analysed data from 90 general practices participating in a provider information network before and after significant changes in subsidy funding in the Dutch social insurance arrangements in January 2006. She found that when capitation payments for publicly insured patients and fee-for-service payments for privately insured ones were replaced with a common blended payment for all individuals in the Netherlands, physicians responded by increasing the quantity of care delivered to the former publicly insured patients. This is consistent with Calnan, et al. (1992) and Melichar (2009). Van Dijk’s study is important in that it is able to distinguish between consumer-initiated and supplier-initiated effects. Contrary to her expectations, she found that abolishing cost-sharing for former privately insured individuals did not result in greater increases in consumer-initiated utilisation than observed in former publicly insured individuals who had never faced cost-sharing, except for individuals aged over 65 years. However, this finding is consistent with Danzon’s hypothesis that the small size of patient payments likely limits their effect on utilisation levels.

Using cross-sectional data from annual surveys of members of a United States provider organisation, Gartland & Carroll (2004) compared the cost profiles of providers receiving various levels of remuneration from capitation. They found providers deriving more than 11 percent of their net medical revenue from capitation had significantly higher overhead costs per full-time-equivalent physician than those with lower shares from capitation. A possible explanation for this finding (albeit not identified by the authors) could be higher costs of managing the uncontrollable components of utilisation variation risk for more highly-capitated providers.

Together these empirical findings are consistent with the proposition that primary care providers respond predictably to financial incentives. They exert greater effort/deliver more services when the fee-for-service component of remuneration is higher, and (alternatively), skimping and stinting may be more significant when a larger proportion of the practitioner's remuneration is fixed. Furthermore, the costs are higher and the behaviours more likely the stronger are the incentives under capitation funding.

In the New Zealand context, considerable changes in practitioner behaviour with regard to pharmaceutical and laboratory spending under full capitation (i.e. commissioning) were observed in trials undertaken in the 1990s (Malcolm et al., 1999; Cumming, 2000). However, the random risks were low as the pools were aggregated at the level of IPAs (tens of thousands of individuals) and the potential savings were large (Gauld, 2008). No systematic empirical evaluations have been undertaken of the effect of capitation incentives on practitioner behaviour since the introduction of the NZPHCS.

Adverse Selection and Cream-Skimming

A single pool insuring all members of a population has the lowest possible costs of pool risk management, but is likely productively inefficient as it faces no competition. Competing pools address productive inefficiencies, but create the potential for *adverse selection* to occur (Zweifel & Manning, 2000; Zweifel & Breuer, 2006).

When a large population is randomly assigned to smaller pools, inevitably some pools face higher expected costs than others, as average utilisation faced by each pool varies from the former single population average. To the extent that the differences are predictable using member characteristics, premiums paid can reflect these expectations (risk-rating – Newhouse, 1996; Pauly, 2000). Better prediction models can reduce expected variations, but inevitably some pools will face higher costs of pool risk than others. Assuming service users' care needs are uncorrelated, losses in one period will be compensated by surpluses in another. However, if needs are not truly independent, then some pools will become habitually systematically high-cost and others habitually low-cost (Ellis & McGuire, 2007).

If factors known to sector participants influence pool costs, but are not included in expected cost calculations, then the relevant information can be used opportunistically to create pools with systematic biases in the variations between expected and actual pool costs. The biases are a form of termed *adverse selection* (Milgrom & Roberts, 1992 p. 595). For example, an individual with high expected costs masquerading as low-cost to obtain lower-premium insurance cover biases pool costs above expectations (Zeckhauser, 1970). Alternatively, pools may skew their costs below the expected levels upon which premiums are based by refusing to insure individuals known to bring higher than expected utilisation, and hence costs, than the premium paid allows for. The latter is a form of cream-skimming.

Cream-skimming is especially likely to occur when premiums are equalised across all individuals regardless of differences in expected costs (community-rating), or when important observable characteristics (such as past use) are omitted from the compensation formulae (Newhouse, 1996). Pools may also refuse to insure individuals whose past history is unknown or unverifiable, charge a higher premium to compensate for the (apparently) greater uncertainty relative to an individual whose history is known, or impose stand-down periods during which claims are not honoured (Frank, Glazer & McGuire, 2000). Risk-rating of individual premiums reduces incentives to cream-skim, but violates equity objectives if premiums are paid by the insured individual, because payments are no longer independent of expected care needs. Empirical evidence from the United States health insurance market supports the contention that when risk-rating is prohibited, the incidence of cream-skimming increases (Bundorf, Levin & Mahoney, 2012). Evidence also exists from other countries that cream-skimming occurs in competitive insurance markets, even when regulatory provisions require insurers to accept all applications for cover, and risk-rating is allowed (van Barneveld et al., 2001 – the Netherlands; Resende & Zeidan, 2010 – Brazil; Buchmeuller, 2008 – Australia).

Cream-skimming is a particular concern under primary care capitation contracting. Due to repeat transacting amongst their enrolled populations, providers typically have better information about given individuals' likely future care costs than is available to pools determining provider remuneration formulae. Providers have both the ability and incentive to refuse to care for individuals with known high expected costs (Levaggi & Rochaix, 2003), leaving some individuals unable to find a primary care provider. Cost shifting, by referring more costly cases to secondary providers, can also occur (Cumming, 1999). Competition – defined as rivalry between providers to attract service users – may mitigate the risk of individuals being unable to find a provider, but its effect is limited due to consumers' preferences for specific providers (Levaggi & Rochaix, 2007). Furthermore, competition increases the tendency for cream-skimming to result in a large number of small pools with predominantly low-cost members and a small number of large pools with predominantly high-cost members. This occurs as only pools facing higher-than-average risks find it advantageous to reduce risk by signing on a member with an unknown risk profile. If an individual brings average utilisation variation risk and funding, then the aggregate pool risk of a pool with higher-than-average risk is reduced by signing on such an individual. A profit-maximising (or risk-minimising) pool with lower-than-average risk has no such incentive, as the new enrolee with average risk increases the aggregate average pool risk.

Partial capitation, with the capitated component being risk-rated using the best available information, and explicit *ex post* payments rewarding providers delivering more care when facing higher-than-average demand, mitigates cream-skimming across all forms of health care (Newhouse, 1998). It is also associated with lower levels of stinting and cost-shifting relative to full capitation (Frakt & Mayes, 2012). Wranik (2012) finds that fee-for-service payment of primary care providers leads to more efficient outcomes when combined with some service user cost-sharing. This is probably because repeat transacting reduces the incentives for primary care providers to overcharge, relative to providers of other forms of care, where no future relationship is anticipated (as there is low likelihood of losing that individual's future custom by overcharging).

4.2.3 Care Delivery Side

For the most part, care delivery side considerations pertain to contractual risks from information asymmetries between a knowledgeable practitioner-agent and comparatively uninformed principals. The principals can be service users (Arrow, 1963; McGuire, 2000), their insurers and funders (Pauly, 2000; Glied, 1999) or their partners and employers (Newhouse, 1973; Gaynor & Haas-Wilson, 1999). A range of different means of addressing each of these asymmetries has emerged. These include the use of pre-negotiated access agreements for a standardised consultation to address uncertainties regarding both individuals' future needs and the nature of care actually delivered, a distinction between first contact and secondary care to address needs identified, and the use of provider ownership to overcome information asymmetries associated with the extent of provider effort given the unobservability of most primary care delivery. A further important distinction pertains to the extent to which repeat transacting between the same pairing of provider and service user can lead to the systematising of financial risks in primary care that are more easily diversified away in other health care delivery forms.

Distinguishing Provisioning from Commissioning

As primary care providers could exploit ill individuals poorly equipped to negotiate agreements when care is needed, both parties commonly agree the terms of future exchanges in advance (Rochaix, 1989). An individual identifies a provider whose care will be acceptable and, if the provider is agreeable, the individual is placed on a list (also called a book or panel) of individuals to whom care will be provided when needed (Scott, 2000). The individual's uncertainty about access to care when needed is resolved. The provider agrees to supply a defined amount of a practitioner's time (a consultation) at an unknown time in the future. Typically the fee for the standard consultation is known in advance – for example, being published in a schedule. That fee – or another negotiated at the time – is paid when the uncertainty crystallises, a new need for care is manifested and a consultation is supplied. That consultation constitutes the 'first contact' at which a care plan is developed to address that need.

This arrangement articulates the expectations of each party in the face of the initial uncertainty about the exact nature of the service user's needs and the care types required. It anticipates a separate negotiation for subsequent care provision, informed by both the first contact assessment and the provider's superior information to guide the selection of the relevant care. The provider may supply that care directly (the 'provider' role – Scott, 2000, albeit that subsequent care supplied is 'secondary' to the first contact), or assist the service user to negotiate its procurement from other providers (the ‘agent/gatekeeper’ role – McGuire, 2000). To constrain total costs, providers may be charged with managing the budgets from which subsequent care is purchased from other providers, in addition to the budgets for care supplied by themselves (commissioning - Carr-Hill et al., 1998). Commissioning responsibilities are usually additional to care provision, and typically managed by federations of providers rather than by individual firms (Addicott & Ham, 2014). The subsequent discussion focuses on controllable risks arising from the providers’ information asymmetries utilised in their own service provision. It does not address the management of financial risks associated with commissioning secondary and tertiary care, such as that undertaken by England’s clinical commissioning groups (NHS, 2015).

Repeat Transacting

Primary health care delivery differs from other health care service types due to repeated transacting. Repeat transacting between a practitioner and service users lowers transaction costs, facilitates the use of welfare-enhancing price discrimination when the practitioner owns the provider firm, enables trust to be built that improves treatment choice and compliance, and where service users have a choice of providers, provides some competitive constraints upon providers financially exploiting service users (Scott, 2000; Hjortdahl & Laerum, 1992; Deitrich & Marton, 1982).

However, the personal nature of the services delivered, differentiation catering to specific service user preferences and the information advantages of repeat transacting lead to monopolistically competitive markets. Specific providers and practitioners operating within them may hold some market power over their service users (Dranove & Satterthwaite, 2000). Considerable debate exists about the extent to which primary care providers might exert this dominant position for financial gain, and the relative merits of using non-financial rather than financial incentives to constrain or motivate specific care provider behaviours (Scott & Connolly, 2011; Rosen, 1989). Nonetheless, empirical evidence suggests that practitioners do respond to financial incentives, so the exertion of some market power cannot be discounted (Gaynor & Vogt, 2000).

Repeat transacting between a primary care provider and the same pool or list of individuals over time means that consultations delivered to service users cannot be considered statistically independent events. If they were independent, then the variance between expected and observed utilisation in one period would have no bearing upon the variation expected in a subsequent period. Over time, random variations in utilisation and the costs of associated care delivery (both high and low) would cancel each other out, leaving a long-run expected variation of zero. This is likely the case for secondary and tertiary (especially surgical) care providers, who typically deliver care to different individuals in different periods. The higher- (or lower-) than-expected utilisation by a specific individual in one period will not influence the expected demands facing the specialist provider in a subsequent period, as the provider will tend different individuals.

Variations between expected and actual utilisation faced by primary care providers, however, are not statistically independent between time periods. An individual exhibiting higher-than-expected utilisation in one period will likely also have higher-than-expected needs in a subsequent period, and will seek care from the same provider. The utilisation rate for the provider caring for that individual becomes systematically biased upwards compared to the population average over time. Correspondingly, low-need individuals bias their provider's utilisation rate downward. When individuals in a population are randomly allocated to providers the resulting pools will not be perfectly balanced between high-need and low-need individuals. Some providers will habitually exhibit higher-than-average utilisation and others lower-than-average utilisation (Field, 2013). If the characteristics leading to higher-than-expected utilisation are not captured in the risk adjustment formulae, then higher-than-expected utilisation leads to lower profitability for the provider relative to one facing average expected utilisation levels.

Furthermore, as primary care providers are the first point of care for communities, they are also exposed to correlated utilisation within those communities – for example, in the event of a contagious epidemic or some other common exposure. It is impossible for these unexpected demands to be included in risk adjustment formulae. Thus, utilisation correlations expose primary care providers to additional financial risks not faced by secondary and tertiary health care providers. Correlation provides further justification for the use of weak incentives in supply-side risk-sharing arrangements, to minimise the effects of factors over which providers are unable to exert control adversely affecting their profitability.

The Consultation as Contract Proxy

The consultation between a single service user and a single practitioner has become the standard transaction in primary care. Consultations are typically delivered privately to an uninformed service user, so the efficacy of care provided and level of effort exerted (a measure of quality) are mostly unverifiable (Zeckhauser, 1974). Teamwork, where two or more practitioners work simultaneously to deliver care to a single individual, is rare (Dobson, Pinker & Van Horn, 2009). This further limits observability. As the physical capital required to deliver services is very small, the most significant cost driver in primary care is the opportunity cost of practitioner time. Rental of premises, the next most significant component, forms a very much smaller proportion of costs (Rice, 1997; IPAC, 2006). As endeavours to identify health outcomes amenable to contracting have been largely unsatisfactory (Rohrer, 2004), units of practitioner time (consultations) continue to offer the most effective measurable and observable proxy to use in health care contracts when it is unknown in advance exactly what care will be required. This applies to both contracts between risk pools and providers, and within firms for employment contracts and other internal management control processes (Howell & Cordery, 2013).

Noncontractibility, Contracting and Ownership Incentives

Human capital is the most significant asset invested in primary care delivery. The costs of acquiring it are large, sunk (unable to be recovered if trading ceases) and must be expended before any revenue can be acquired from applying it. Net of the return on these capital costs, the marginal costs of service delivery are comparatively low (Howell & Cordery, 2013). Over time, human capital can become more valuable to its practitioner-owner as experience grows and reputation is built. The experience and information related to repeated-use practitioner-service user pairings, and the ability to differentiate care based upon practitioner-specific characteristics reside with the practitioner and not the firm. Consistent with investment theory, the practitioner must be able to generate a return sufficient to recover the investment in this capital to justify developing it (Pindyck, 1991). The more uncertain are the future returns, the less likely it is that investment will occur.

These economic characteristics create challenges for primary health care contracts. On the one hand, they enable practitioner-owners to vary the prices charged to service users for strategic and/or altruistic purposes (price discrimination – Carlton & Perloff, 2005; p. 290-314). On the other hand, as care delivery is effectively unobservable, it becomes problematic for third parties (e.g. employers, funders) to structure remuneration contracts that induce practitioners to exert the appropriate level of effort. This relates to both the quality of care delivered and the effort exerted in building long-term relationships with service users if they are contractually bound to the firm and not the specific provider. If it is too difficult or costly to specify and enforce expectations contractually (i.e. it is non-contractible' – Grossman & Hart, 1986; Hart & Moore, 2007), then it may be more efficient for primary care practitioners to be self-employed, managing their own patient lists (Scott, 2000; Hansmann, 1996; Gaynor & Pauly, 1990). In these circumstances, practitioners appropriate the full benefits from their own efforts (or penalties from lack of effort), without fear that others (e.g. partners, employers) will free-ride and dilute them (Newhouse, 1973).

Empirical evidence generally confirms the apparent economic advantages of practitioner ownership and small primary health care firms. Most analysis comes from the United States. However, the wide variety of contexts in which these observations have been made, and in particular the different funding methods employed, limit their generalisability. Whilst definitive evidence is not available, general tendencies have been observed.

Salaried employees are generally observed to exert less effort in patient-centred activities than practitioner-owners (Robinson, 2001). Zuvekas & Hill (2004) observe similar effects between US physicians remunerated by a managed care insurer in groups, as opposed to working on their own account. However, they cannot identify the use of other financial incentives in practitioner remuneration by groups. The possibility of employees shirking has been attributed with discouraging practitioners from forming equity-sharing partnerships unless facing significant levels of random risk (Robinson, 1998). Large firms are often non-owned (i.e. non-profit), with corporate (investor) ownership most often arising from vertical integration of primary care providers into large comprehensive insurer-provider entities (Burns & Pauly, 2002; Robinson & Casalino, 1996). Voluntary partnership formation appears to occur largely in response to the financial risks associated with capitation contracting (Gaynor & Haas-Wilson, 1999; HaasWilson & Gaynor, 1998). This has likely come at some cost to sector efficiency as a consequence of reduced ownership incentives and increased transaction costs (Scott & Connolly, 2011). The more practitioners in a partnership, the more efficient it is to convert from partnership to shareholder-owned firms, as practitioners can exit without the legal and transaction cost impediments of re-forming the partnership. However, partnerships and shareholder-owned firms face the difficult problem of designing practitioner employment and remuneration agreements that incentivise the desired levels of effort for services that, by dint of the intangibility of human capital and limited observability, are inherently non-contractible.

Although delivering integrated care relies upon many practitioners with different skills, it is not evident that all relevant care must be provided by a single large integrated firm (Davies et al., 2008). Although contractual obligations may require care by different practitioners supplied to a specific service user to be integrated, each episode of care is typically supplied within the context of a consultation with a suitable health care practitioner. That practitioner must be subject to a contract – either employment or some other agreement. Economies of scale are often achieved through federations of small owner-operators (e.g. IPAs) forming to purchase shared inputs on behalf of their members (e.g. education, contract negotiation) and to coordinate delivery of integrated care, rather than resorting to provider mergers (Malcolm & Mays, 1999; Howell & Cordery, 2013). Such arrangements maximise the benefits of coordination and sharing whilst still enabling the benefits offered from practitioner self-employment. Alignment of interests is strengthened if the IPA is also a cooperative to which all contracted providers are also homogeneous supplier-members (Hansmann, 1996).

Electronic technologies have lowered the cost of collecting information and enabled the use of non-financial measures in practitioner compensation. These technologies are much more likely to be utilised in large providers where the remunerated practitioner has no ownership stake than in practitioner-owned firms (Evans et al., 2010). This suggests that such systems are necessary, but imperfect, substitutes for ownership incentives. It is also consistent with Dobson, et al.'s (2009) contention that the need to externalise and transfer information between individuals in large providers reduces efficiency relative to smaller providers, where the relevant information is internalised.

Balance-Billing

Whilst primary care providers have some market power, to some extent it is countered by the collective purchasing power of insurers and funders. Nonetheless, it is very difficult to determine the 'correct' price for a third-party purchaser to pay for a particular service. Whilst it is theoretically feasible to construct contracts taking account of all relevant individual and provider risk-related characteristics (notably underlying differences in the costs of care provision – termed *random cost variation risk*), the transaction costs of individually-bespoke contracts are prohibitive. At best, the purchasing contracts that emerge embody pragmatic trade-offs between the scale economies of standardised contracts and the individual benefits of customised ones. Inevitably, under standardised contracts, and assuming a fair return on owner capital and employee time, some firms will be financially viable – that is, exhibit economic profit greater than or equal to zero – and others will not. An important question for funders is whether they will permit providers to 'balance-bill' service users to raise additional revenues to those from the funder/insurer contracts (Hall & Schneider, 2008; Glazer & McGuire, 1993).

On the one hand, balance-billing allows providers facing a shortfall between costs and third-party revenues to mitigate random cost variation risk and controllable *underpayment risk* that can emerge – for example, if funders deliberately under-pay or fail to increase remuneration in line with increasing costs. On the other hand, a new controllable risk is created that providers may use balance-billing opportunistically to increase their profits. Price regulation can be introduced to minimise opportunism, but active price discrimination and the difficulty of determining whether prices vary due to underlying real cost and financial risk differences or opportunism render regulation imperfect. Indeed, new risks associated with regulatory error are introduced. Regardless of their source, the costs of all of these risks are shared only amongst service users of that provider, rather than being shared across the wider population (Howell, 2007).

Theoretically, there will always be a fee policy with balance-billing that is more efficient than any fee policy without balance-billing, as a consequence of the provider's ability to engage in price discrimination. However, as the conditions under which it arises are case-specific, not industry-wide, it is practically unobtainable (Glazer & McGuire, 1993). Balance-billing is frequently prohibited, on the grounds of administrative simplicity and (apparent) fairness at an aggregate level, despite the fact that it can lead to higher levels of quality variation and less efficient care at the individual and provider level (Panattoni et al., 2011). These are in effect manifestations of *regulatory risk* arising from the prohibition.

4.2.4 Risk in Health Economics: Summary

The health economics literature focuses principally upon insurance and correcting for distortions created by its presence. It is also biased towards hospital rather than primary care (Scott (2000) and Dranove & Satterthwaite (2000) are two notable, but dated exceptions). The predominant concerns are the use of incentives to control provider opportunism, largely because of insurance, but partly because of the information asymmetries arising from knowledgeable provider-agents and unobservable care delivery. The focus on 'controllable' risk means little attention is given to either the cost or the equity consequences of random risk being shifted from risk pools to providers and ultimately service users. Whilst capitation contracting is common in primary care, most analyses consider primary care providers as fund-holders, rather than examining the effects of risk-sharing on their care delivery choices (e.g. Enthoven, 2000; Carr-Hill et al., 1998; Martin, Rice & Smith, 1997). Discussion is limited on the capacity of primary care providers to manage risks shared with them, or the consequences of random risks contracted by individuals to insurers being re-concentrated and passed back, in part, via service providers to service users. One notable exception is Gravelle (1999), who considers (amongst other factors) how taxpayer funding rather than the levying of individual insurance premiums might lead to different optimal cost and quantity decisions by risk pool managers and care providers.

4.3 Financial Risk Management and Primary Health Care Policy

The preceding two subsections of this chapter have laid out the transaction-level economic theories of risk and risk management in primary health care sectors that will be used subsequently in this thesis. They pertain to interactions occurring at the micro- and meso-levels of the system. This subsection examines the extent to which the macro-level theoretical foundations of primary health care funding policy take account of, and have been influenced by, the economic considerations of the magnitude and allocation of financial risk discussed in the preceding two subsections.

First, the place of the Alma-Ata Declaration in establishing population objectives and changes in care delivery in international primary health policy is discussed. The foundations for their pursuit in addition to constraining cost and achieving other financial and health care equity objectives are identified. Next, the ways in which primary health care policies have been observed to address the tensions and trade-offs between defining and funding populations via risk pools on the one hand, and remunerating providers for care delivered to individual service users on the other, are explored. Differences in attention given to risk pooling are observed between countries whose health care policies were predicated upon Bismarck-style, as opposed to Beveridge-style arrangements. Over time, the sharp distinctions between the ways in which providers are remunerated in the multi-pool Bismarck and the single-pool Beveridge arrangements have reduced. However, differences in the approach to the consideration of financial risk in the design of both risk pools and provider remuneration arrangements prevail in the Bismarck-origin United States, with multiple pools and multiple contracts, and the Beveridge-origin England, with a single pool and a very restricted range of contracts. For comparison, the arrangements in Beveridge-origin Canada, where centralised funding prevails, but a plurality of provider remuneration arrangements have been deployed, are explored.

4.3.1 Alma-Ata Objectives

Since 1978 the Alma-Ata Declaration objectives have guided primary health policies internationally (WHO, 2008). Overall affordability, allocation of resources based upon health needs, and the independence of individuals' access to care and ability to pay are fundamental financial objectives of policies. Yet the policies are charged simultaneously with changing the sector focus from interventions in the event of an individual's illness towards the promotion of healthy populations, and reducing health inequalities between different populations (WHO, 2010; WHO, 2008; Starfield, 2003). The focus on populations clearly differentiates post-Alma-Ata policies from their predecessors, along with an espoused concern that polices be 'outcomes-focused' (e.g. Addicott & Ham, 2014).

However, "health" defies precise definition (Arrow, 1963), making health outcomes-focused policies problematical. There is no widely accepted definition of "population health" or how the relevant population might be defined. There is also little agreement about how the relationships between various social, economic, biological and environmental factors influence its achievement (Friedman & Starfield, 2003). Agreement on what might constitute a 'population approach' to either health policy or care delivery has proved elusive (Neuwelt et al., 2009). Consequently, policy-makers face significant difficulties specifying either expectations or contractual obligations.

In lieu of any better alternative, 'health care' is generally proxied for 'health' in policy as well as economics discourse. By focusing on care types, quantities, and providers, primary care services have been made amenable to specification, funding, performance and measurement, at least in pursuit of financial policy objectives (Martin, 2007). For example, Addicott & Ham (2014, p. 32) cite health care elements "patient experience, access to continuity of care, the quality of clinical care, service utilisation and financial performance" alongside indefinable population health as outcome dimensions for primary health care contracts. Consequently, most policies focus on the funding and provision of health care, albeit generally as separate, but interrelated, activities (Siverbo, 2004; Kutzin, 2001; Preker & Langenbrunner, 2005). Provision policies fit neatly within the ambit of the care delivery side of Figure 1.2. However, the funding of care provision can become blurred with the funding of risk pools as a consequence of this proxying.

The imperative of securing control of total expenditure on health care therefore ultimately drives the institutional choices made in most primary health policies (Rice & Smith, 1999; Addicott & Ham, 2014). Arrangements delivering more health care for a given expenditure are preferred over those delivering less (Wranik, 2012).

Notwithstanding, the choice of institutional arrangements is conditioned by the Alma-Ata imperatives that funding should be directed to change the types of care provided and the philosophy governing its delivery (Mullan, 1998). At the same time funding models should be achieving "an equity focus predicated upon the distribution of health characteristics in the population, and not simply average levels" (Starfield, 2011, p. 653). How this is to be achieved by policies addressing the funding and distribution of health care, in the absence of explicitly defined relationships between health care inputs, outputs and outcomes or even agreement on important definitions, is unclear. Once again, in the absence of any better approximation, the equitable allocation of health care according to some perception of need has become the prevailing objective (Culyer, 2001). Health care is deemed to be allocated horizontally equitably when those of equal need receive equal care, and vertically equitably when those with greater need receive more care, in proportion with that greater need.

In regard to the financing of that care, however, the Alma-Ata objectives strive to disconnect the need for care from ability to pay for it. Systems fully funding care delivery separate service users from the need to pay, thereby allocating care delivery both vertically and horizontally independent of ability to pay. But the risk pool itself still has to be funded, raising the question of how that funding relates to the needs for care of the insured individuals (Figure 1.2). Risk-rated payments by individuals based upon their expected or actual use of care are contrary to vertical equity. Equalised community-rated contributions, where each individual pays the same fee, independent of expected or actual care utilisation, disconnect care delivery from care funding, so appear more equitable. Although low-cost to administer, community-rating presumes all individuals are equally risk-averse. As members of the insured population are undoubtedly heterogeneous in risk-bearing ability, this leads to a vertically inequitable allocation of the cost burden. An alternative is to base premium collection upon some proxy for risk aversion, such as income (Van der Ven & Ellis, 2000; Cutler & Zeckhauser, 2000). Hence, taxation-funded systems, which fund risk management from either general taxation or explicit payroll taxes based upon a percentage of income, are generally perceived to be more consistent with principles of societal solidarity than other funding arrangements (Kutzin, 2011; Preker & Carrin, 2004). Nonetheless, they are not perfectly equitable as, even if on average risk aversion is inversely proportional to income, variations in risk-bearing ability certainly exist between individuals receiving the same income.

4.3.2 Population Objectives for Primary Health Care Services

Most primary health care policies define primary care as “largely clinical, having to do with the behaviour of health services professionals and their interactions with people and, increasingly, the subpopulations for whom they provide services" (Starfield, 2011, p. 653). Alternatively, it is the level of a health sector providing entry into the system for all new needs and problems, where care is delivered for all but very uncommon or unusual conditions and where care provided by others is co-ordinated (Starfield, 1998). It focuses on the relationship between primary care providers and service users – that is, the right-hand side of Figure 1.2. This presumes a service user's need for care, which includes identification of a need for preventative care such as education or vaccination, has become manifest. Providing the need falls within the agreed terms, funding from a risk pool is available for care provision. The financial risks to be managed are presumed to pertain to the service delivery exchange alone – that is, they are primarily the controllable risks arising from the various information asymmetries associated with primary care delivery, and the corrections for the externalities created by the presence of insurance subsidies.

However, the introduction of populations into the ambit of primary care necessarily extends the policy scope to include the left-hand side of Figure 1.2. If primary care is to be responsive to the needs of populations, and funding is supplied to providers to meet those needs before actual demands are made manifest, then the care delivery side of a primary health care system is an interested party in the operation of the risk pooling arrangements. Primary care providers are responsible, at least in part, for converting funds supplied to relieve members of a population from the uncertainty of being able to pay for care if, and when, needed into the funding of care supplied to the subset of that population that actually needs it. That is, they are insurers.

Yet there is no consistent view on how and where in population-funded systems the management of the risk pooling or insurance function should be undertaken. Neither is there a consistent view on what the choice of location of risk pooling responsibility might mean for primary care providers, or its effects on the outcomes for service users and population groups and subgroups. That is, the nexus between funding provided *ex ante*, based upon population expectations, and the delivery of care to individual members of that population needing care *ex post*, remains opaque.

Neuwelt, et al. (2009) observe that population-based policies make the population as a whole "the client of care" for primary care providers, whereas their services are supplied to a subset of individuals and families. The authors do not identify providers as assuming a risk pooling role for the subset of the population for whom they are responsible. Rice & Smith (1999, p. 2) identify that a capitation payment “shifts increasing levels of risk from a funder to a plan”, but do not address what this might mean for individual service providers funded by capitation contracts.This is because their focus is on capitation payments to commissioning funds purchasing non-primary services, albeit managed by consortia of primary care providers, and not capitated remuneration of those primary care providers in respect of the care they themselves deliver.

Others, such as Van Dijk (2012) and Willcox, Lewis & Burgers (2011), review primary care delivery remuneration arrangements assuming that the purchaser is an insurance fund, and that the purpose of the contract is simply the application of incentives to alter practitioner behaviour.Whilst identifying that stinting and cream-skimming are risks to be managed, these papers do not identify their origin in the insurance function. Nor do they recognise that the proxies that capture them – such as reduced care quality, refusing enrolment – arise from both opportunism and legitimate decisions to preserve provider financial viability in the face of managing insurance liability in addition to care delivery. The risks are managed as if they were solely controllable risks arising from care delivery arrangements. Cumming (2000), in reviewing the financial risks of devolved purchasing in the New Zealand context for The Treasury, does identify cream-skimming as a bundle of both opportunistic actions by providers and random effects from allocating individuals to pools. However, the focus of this paper is on the risks faced by the purchaser-pools. The question of the management of random and controllable risk as separate features of the contracts with providers is not addressed.

Papers adopting a care delivery focus also seldom address the effects of time in assessing the efficacy of contractual incentives to manage risks. For example, increases in desired controllable activities such as preventative care (e.g. vaccinations and education) are cited as an expected response from financial risk sharing with care providers in their remuneration for the current period. However, these activities increase present workload and costs, but the benefits (i.e. savings) often will not accrue until many years into the future. Furthermore, the savings attend primarily to the individual to whom they are delivered who is mobile between providers. It cannot be guaranteed that the provider who incurred the additional present costs will be rewarded with lower future costs of caring for that specific individual. Whilst the savings accrue to the funder at the macro level, the consequences play out differently for the different providers at the micro level. Arguably, as preventative interventions are amongst the easiest to specify, monitor and enforce, they are amongst the most suitable candidates for separate fee-for-service contracts explicitly rewarding their delivery (Holmstrom & Milgrom, 1991; Hart & Moore, 2008). Separate contracts of this sort are therefore more likely to achieve desired changes in practitioner behaviour than bundling and paying for preventative care with all other forms of primary care delivery in a generic financial risk-sharing contract.

Also apparently absent from the primary care policy discourse is acknowledgement that an inevitable variation exists between the expected needs of the relevant population in any given period and actual needs exhibited by a subset of its members. That the extent of the variation is, for the most part, outside the immediate control of care providers is not widely identified. Specifically, neither Starfield, in her large body of work, nor population-based primary health care policies drawing on it (such as the NZPHCS), identify the statistical inevitability that subdividing a large population into smaller care provider sub-populations creates new variations between the new sub-populations that were not present or observable in the aggregate large population. If this matter was given due consideration, policies predicated upon population approaches would take account of how instruments adopted to address inequities (or increase equity) in one definition of 'population' affect distributions of funding and care across the new definitions of 'population' that they create. For capitation payment, the distributional consequences arising between providers, and between the individuals and service users of different providers, are real and likely material. Yet, they appear to command little consideration compared to the attention given to the effect of the payment method on cost containment.

Thus, despite Starfield's (2011) aspirations, individual service users and the populations from which they are drawn appear to be treated interchangeably at both aggregate and provider level, for both funding and other policy objectives. This is observed in advice to policy-makers from the WHO (Preker & Carrin, 2004; Langenbrunner, Cashin & O'Dougherty, 2009) as well as in specific policies such as the NZPHCS. Significant implications arise for the efficiency of risk pooling arrangements and the management of utilisation variation risk in population-focused health care policies.

4.3.3 Between-Country Institutional Differences

To the extent that risk pooling is addressed explicitly in health care policies, a divergence is observed between countries whose historic funding policies were predicated upon explicit insurance arrangements (the so-called 'Bismarck many-payer' countries such as the United States, the Netherlands and Japan) and those based on taxpayer funding where the insurance arrangements are largely implicit (the so-called 'Beveridge single-payer' countries such as England, Canada and New Zealand) (Or et al., 2010). Although these distinctions describe the funding arrangements for all health services, they are also applicable to the primary care funding subset.

The funding and care delivery policies of the Bismarck countries derived from contributory health insurance as a right associated with labour status, with explicitly defined benefit packages, independent management of competing risk pools and privately-contracted providers. Beveridge policies were predicated upon taxpayer funding, universal access to care as a constitutional or legal right, implicit benefit packages, government management of risk pools, government-owned or publicly contracted providers, and explicit gatekeeping expectations on primary providers (Kutzin, 2011). Notwithstanding, most Beveridge systems (including Beveridge's original proposal, and the even-earlier New Zealand Social Security Fund arrangements discussed in Chapter 2) were originally constituted as Bismarck-style 'social security/insurance systems' – the substantive difference being a single, government-managed, insurance pool rather than several competing funds and individual, albeit taxpayer-subsidised, contributions (Musgrove, 2000). Over time, however, the concept of insurance has become more implicit, with general taxation replacing dedicated tax contributions, in most Beveridge countries.

Figure 4.3 Questions for Capitation Risk Management - Bismarck Countries

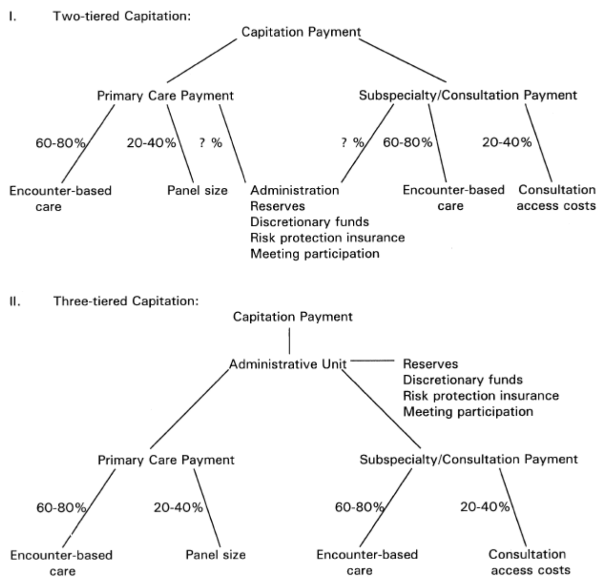


Table 1. Assessing Capitation Arrangements: Critical Questions for Physicians to Consider

What is the size of the risk group?
What services are capitated?
What services are "carved out?"
Are payments risk-adjusted?
  If so, what risk adjustment methodologies are used?
  Do they reflect workload and actual costs of care?
What protections against undue risk such as "stop loss" clauses or reinsurance are in place?
  At what level of hospital-based care do these begin?
  At what level of ambulatory-based care do these begin?
Is information about patient resource utilization readily available and accurate?
  Will the practice be able to know how much is expended for patient care?
What happens if there is revenue beyond expenses?
  Will these resources be available to expand or improve patient care?

Source: Goodson, et al., (2001), p. 253

An extensive literature on the Bismarck countries addresses the effects of financial risk-sharing on the financial viability of individual care providers (e.g. Casalino et al., 2004; Robinson, 2001; Van de Ven, 2011; Schut & van de Ven, 2011). Figure 4.3 summarises the range of risk management concerns (e.g. risk reserves, reinsurance, incentive strength) typically identified as material to the construction of capitation remuneration agreements at various levels of provider aggregation (left panel), and issues care providers should be aware of when accepting capitation payments (right panel). As competition between both risk pools and care providers is a defining feature of Bismarck countries, and government is neither the sole funder nor a predominant insurer, the primacy of effective insurance arrangements for a fully functioning primary care sector is a given. It is also generally accepted in Bismarck countries that there will inevitably be differences in both services available to, and outcomes for, individuals and service users of different insurance pools.

Figure 4.4 Questions for Incentive Contractors – Beveridge Countries

Table 1 Incentive effects of PRM on health service delivery goals

Goal	Theorized effects
Quantity	At the physician level, the incentive to provide higher quantities of care increases with variability of PRM. This could mean higher numbers of patients seen, or greater amounts of services offered per patient
Patient acceptance	The incentive to accept all patients increases with variability of PRM. Sicker patients require more care. Any additional costs to the physician are remunerated in a variable system, but not in a fixed system
Prevention and health promotion	The incentive to provide preventive care decreases with variability. Fixed systems do not remunerate the physician for additional care, therefore there is incentive to reduce amount of care required
Quality of care	Incentive to invest in appropriateness decreases with variability of PRM. Incentive to invest in patient satisfaction increases with variability of PRM
Provider collaboration, care continuity	Incentive to collaborate decreases with variability of PRM. Care continuity is a positive function of collaboration, and also depends on organizational structures
Provider satisfaction	Depend on utility function, including preferences for professional autonomy, income stability, collaboration and collegiality, and risk aversion
Efficient resource use	Efficiency increases with variability of PRM due to higher patient acceptance. Efficiency declines with variability due to increased administrative costs, decreased preventive care, less appropriate care, and decreased collaboration
Patient health outcomes	Patient health outcomes are positively affected by the achievement of the first five goals of health care service delivery. Increased health outcomes with same resource use lead to greater efficiency

Source: Wranik & Durier-Copp (2010) p. 39.
'PRM' = 'Physician Remuneration Methods'
'Variability' measures the extent to which provider income varies proportional to effort exerted (e.g. high fee-for-service => high variability)

In the Beveridge countries, however, policy focuses predominantly on the risks to funders arising from alternative remuneration mechanisms, and observed responses by providers (e.g. Cumming, 2000; Gosden et al., 2011; Wranik, 2012). Insurance and risk pooling arrangements are seldom explicitly addressed. It is almost as if utilisation variation risk has been assumed away, possibly as a consequence of the long history of government monopoly of the insurance function and its implicit incorporation into administrative processes, leaving only matters of care delivery to be settled. Beveridge countries are frequently claimed to foster greater levels of universality, social cohesion and solidarity, and therefore held to be more consistent with population-focused policies (Kutzin, 2011). Figure 4.4, summarising incentive effects, confirms a focus on the management of controllable risks. The role of random risk in achieving incentive contract objectives is not addressed – the sole concern of capitation incentive strength is to vary the level of effort towards the achievement of the desired outcomes.

Generalisations can be misleading, and over time underlying institutional arrangements have evolved, potentially rendering the historic distinctions less helpful (Kutzin, 2011; Wranik, 2012). Reforms of Beveridge-origin systems have introduced elements of Bismarck-style competition and service user choice of providers via competitive tendering, managed competition and the explicit separation of purchasing and provision, even within entities that continue to be publicly-owned (Ashton, 1998; Enthoven, 2000; Mason et al., 2009) (Bev-mark – Kutzin, 2011). Meanwhile, Bismarck-origin systems have sought to constrain service user choice and costs via Beveridge-style 'gatekeeping' (e.g. via 'managed care' and 'medical home'-type arrangements) (Or et al., 2010; Bevan & van de Ven, 2010) (Bis-ridge). Whilst the universal nature of most Beveridge systems might once have been a distinguishing factor, it is now less significant as both systems have moved towards full population coverage, at least for some components of health care spending (Wranik, 2012). Yet despite coalescence in policy instruments, Bismarck-style consideration of insurance and utilisation variation risk management does not yet appear to feature in the policy lexicon of Beveridge countries.

Nonetheless, each now shares a common focus on population health, and a common interest in the contracts by which primary care providers are remunerated. To the extent that is has been possible to assess the performance of different institutional funding arrangements, the factors that have been shown to be consistently associated with, but not necessarily causative of, the financial policy objectives relate to co-payments and the methods of paying providers (i.e. the interface between the insurance and care delivery sides of Figure 1.2), rather than institutional origin or the identity of funders and pool operators (Wranik, 2012). Notably, these are transactional (contractual) rather than structural (institutional) artefacts. Systems using cost-sharing tend to be more efficient because the positive effect of reducing unnecessary demand appears to outweigh the negative effects of under-use of necessary care. Whilst many theories exist regarding the relative merits of fee-for-service, capitation and mixed payment methods (Wranik & Durier-Copp, 2010), empirical evidence does not support the contention that fee-for-service is linked to higher spending for primary services at least (Gerdtham et al., 1998). Fee-for-service payment also appears to lead to improved provider efficiency, although not necessarily for overall system efficiency (Wranik, 2012).

4.3.4 Provider Remuneration Instruments: Bridging the Sides

Provider remuneration agreements are pivotal in primary care systems, as they 'bridge the sides' of Figure 1.2. Importantly, they are outputs from risk pooling operations, so must not be confused with population funding inputs into them. If population-based primary health care policies are to embrace both risk pooling and care delivery, then their provider remuneration arrangements must address financial risk management issues (Figure 4.3) as well as delivering all financial and non-financial goals of service delivery (Figure 4.4): quantity of care delivered; patient acceptance (a measure of cream-skimming potential); prevention and health promotion; quality of care; provider collaboration and care continuity; provider satisfaction; efficient resource use; and patient health outcomes. One remuneration method cannot achieve all of these goals (Wranik & Durier-Copp, 2010).

Incentives and Service Delivery Goals

In the policy literature (separate to, but drawing on, the economic literature above) care provider remuneration historically has typically been considered on a continuum between full fee-for-service and full capitation. Typical options for remunerating individual practitioners are fee-for-service, salary, or some blend of fixed (salary) and variable (per-output) payment, with the fixed component based upon a patient list or other cost-related factors (Robinson, 2001; 2004). Increasingly, however, complex 'blended' provider contracts are becoming more common. These complex contracts include payments made conditional upon the achievement of specific targets for elements such as service quality and patient satisfaction. These payment elements are sometimes termed 'pay-for-performance' (Van Herck et al., 2010; Kirschner et al., 2012). Pay for performance explicitly shares controllable risks between the pool and the provider. The provider controls the effort exerted in meeting the pay-for-performance targets. The risk pool bears the financial risks of more or fewer providers than anticipated meeting the targets warranting higher levels of remuneration.

Provider revenues can thus be separated conceptually into the proportion from capitation and fee-for-service (the component subject to individual utilisation variation risk) and the pay for performance proportion which can be thought of as strictly provider effort-related, and hence not contingent upon expected or actual care utilisation characteristics.

The choice of remuneration method determines the financial incentives facing the provider. The higher the proportion of income that is fixed, the stronger are the financial incentives and the greater is the utilisation variation risk shared with care providers (Goodson et al., 2001). In classic partial capitation contracts, stronger financial incentives lead to stronger incentives to reduce service quality and quantity for providers required to deliver more services than expected, at the same time as the incentives to stint and cream-skim are greater for those providers delivering fewer services than expected. Splitting a large population into smaller subpopulations increases the anticipated costs of utilisation variation risk because surpluses accruing to providers delivering fewer services than expected cannot be transferred to offset the losses accruing to providers delivering more services than expected. Once again, the higher is the fixed component of remuneration, the higher is the aggregate cost of financial risk; and the smaller are the risk pools, the greater will be the expected difference between the most profitable and the least profitable provider.

But the greater is the proportion of revenue derived from pay-for-performance elements the greater is the muting effect on the strength of the financial incentives from the partial capitation component subject to utilisation variation risks. Pay for performance can be designed to militate against the controllable risks of stinting and skimping that attend partial capitation remuneration. Their effect is two-fold: they specifically incentivise desired care delivery activities at the same time as they reduce the extent to which providers are exposed to random risks that can induce undesirable activities in the first place.

Provider Remuneration and Population-Based Policies in Practice

Capitation payment is often justified by governments devolving purchasing responsibilities to local entities because of its low operational costs, once the cost of determining the payment formulae has been met (Malcolm et al., 1999). It also has appeal for government funders charged with distributing financial resources across a population based on expected care needs (Rice & Smith, 1999). Capitation was frequently conflated with population funding and needs-based funding in the papers supporting NHC (2000). Whilst this is understandable if available resources are allocated at the macro level based upon population characteristics, it is erroneous when capitation contracting instruments are used at the micro level to remunerate providers. Yet the conflation flaw is seldom identified. Even when it is identified (e.g. Rice & Smith, 1999), the predictive accuracy of the risk adjustment formulae used to calculate the capitation payments, and the strength of the incentives, seldom feature as considerations when setting contract terms. Goodson et al., (2001) is a rare exception. This is surprising, given the extent to which effort has been exerted in refining formulae to include many different individual characteristics (e.g. Carr-Hill, 1999; Van de Ven, 2011).

In most government-funded systems no explanation is given of why the observed division between the proportion of the provider's remuneration subject to utilisation variation risk and the proportion subject to other incentives, was settled upon. Within the capitation component, explanations of why a particular incentive strength was chosen are also uncommon. The size of the pool into which a capitation payment is made appears only to be a consideration when the explicit purpose of the pool is to purchase further care directly (e.g. United States MC – Glied, 2001; English Primary Care Trusts (now Clinical Commissioning Groups – Martin et al., 1997).

Consequently, there is a wide variety in the extent to which primary care providers are exposed to utilisation variation risk in the provider remuneration arrangements in different countries, as illustrated in the following sample of the United States, England and Canada. Whilst generalisations are difficult, the observations are consistent with the proposition that there is greater awareness of the extent to which it is feasible to share this risk with small care providers in Bismarck jurisdictions where there is a history of explicit insurance in primary health care funding.

United States

In the United States context, where competitive insurance pools fund care, the awareness of financial risks facing primary care providers due to different funding mechanisms is high (Majeed, Bindman & Weiner, 2001). The competitive nature of the insurance markets and the primacy given to individuals' choice of provider, and to a certain extent their insurer, mean that providers are rarely in the position of receiving all of their income from either a single funder, or via a single funding arrangement (e.g. capitation). Even in the peak of MC in the late 1990s, Frakt & Mayes (2012) report that only one third of providers had capitation contracts, which accounted for, on average, only 21% of their revenues. This suggests a high level of financial risk diversification across care providers. However, averages do disguise high extremes. Furthermore, some MC insurers (e.g. Kaiser Permanente) have vertically integrated care delivery and risk pooling by owning provider firms and hiring practitioners as employees (Ham & Curry, 2011).

The desirable share of fixed revenue to incentivise effective cost containment without invoking over-much cream-skimming and skimping, or compromising provider financial viability, is generally held to be between 20% and 40%. It should be noted that some funders may pay capitated amounts to meet the full expected costs of care for an insured individual, but that a provider list may be comprised of both fully capitated and fully fee-for-service individuals). Providers are encouraged to be aware of the nexus between risk adjustment formulae and the actual costs of supplying care, local utilisation rates for specific services, stop-loss provisions applying to their service users (and which services can be 'carved out' of their capitation obligations with particular insurers) (Goodson et al., 2001).

Substantial changes in practitioner behaviour have been observed with only very weak capitation incentives (Ma & McGuire, 2002).

England

In England all NHS primary care providers are funded from taxation via either a national contract (GMS – 60% of providers) or local agreement (PMS – 40%) for their enrolled populations (*British Medical Association*, n.d.). These are complex blended payment contracts, mixing elements of both random and controllable risk. It is not clear how trade-offs between the different risk factors influenced their derivation, as the formulae for calculating them mix both demand and supply-side factors. However, they are explicitly separated from the funding supplied to Clinical Commissioning Groups, which are organised as federations of primary care providers charged with commissioning non-primary care for their enrolled populations. The separation is to manage the potential conflicts arising if primary care providers were to control the setting of their own remuneration (*NHS*, n.d.).

Whilst around 80% of GMS income is fixed, less than 60% is contingent upon capitation-related factors determined using a Global Sum formula covering the delivery of a legislated group of services. PMS payments are negotiated locally, but cover the same legislated services, plus others that can be mutually negotiated. There are no carve-outs for specific conditions, as occurs in the United States.Variable payments are made for performance of effort-related activities incentivised under the Quality and Outcomes Framework (QOF) (up to 15%). Other non-capitated income is derived from practitioner seniority payments, superannuation and reimbursements for premises, locum and leave costs (up to 15%). These contracts enable a significant number of cost differences between providers to be taken into account when determining remuneration without making them dependent upon any utilisation-related characteristics. That is, fixed provider income is not synonymous with capitation income. The composition of the enrolled list can change substantially without altering the level of income derived from these other sources, leaving the provider less exposed to risks arising from factors outside of its control.

A simple example illustrates. Two providers, A and B, receive all of their income from fixed payments. They are identical in all respects (patient lists, practitioner characteristics etc). However, A receives all income from capitation payments, whilst B receives 60% from capitation and 40% based upon seniority, premises and leave costs. Both are subject to the same exogenous shock (e.g. a significant employer leaves town), reducing their enrolled lists by 10%. Provider A's income falls by 10%. However, B's income falls by only 6% - the lower share of its income subject to enrolled individuals (i.e. capitation) shields it to a greater extent from random income shocks than A. The financial risk carried by the fully capitated provider is thus higher than that faced by the provider with a 'blended' contract.

Historically, English primary care contracts have always mixed capitation and other remuneration. The current global sum takes as its starting point the expected remuneration for a standard provider workload. A variety of individual (age, gender, socio-economic status) and provider (rurality, list turnover, irreducible smallness, market forces – i.e. local cost factors for labour and premises) characteristics determine a weighting for each provider, from which its global sum income is derived as a variation from the standard workload (Carr-Hill, 1999; BMA, 2007). The corresponding funding allocations therefore address issues of both population (funding by expected enrolee need) and provider (funding according to relative costs) equity. The expected standardised income is reviewed annually. The relative weights given to the component factors were last reviewed in 2007. The Global Sum is thus an extremely sophisticated risk adjustment formula, and is applied within the context of a complex remuneration agreement that implicitly takes account of both random and controllable risk factors (although these are not discussed in these terms in the descriptive documentation).

Notwithstanding, the proportion of income deriving from capitation (i.e. Global Sum) in GMS remuneration is still much larger (at up to 60%) than observed in the US (21%), and fixed income in total is very high (80%). The introduction of the QOF payments in 2004 was the most recent substantive change in payment method. This suggests that in the recent past, at least, the use of incentives to influence controllable risk factors has dominated over attention to the management of utilisation variation risk-related factors. By reducing the share of income that is fixed, QOF payments will have increased income variability between providers. However, as the variable payments relate to components of care quality, and not encounter-based care (as in the US), it is not clear what the effects would be on either stinting or cream-skimming. Arguably, QOF incentives might be expected to crowd out equally valuable effort devoted to other non-incentivised activities, as provider revenues contain no fee-for-service components that might, at the margin, militate against skimping, stinting and cream-skimming.

On average, English general practitioner incomes are high compared to other professions, and have risen substantially following the introduction of the new contract in 2004. This has been attributed to both an explicit decision to raise the base level of remuneration to attract and maintain practitioners, and provider responses to QOF incentives substantially exceeding expectations (National Audit Office, 2008). The new GMS contract arrangements also introduced a minimum provider income guarantee, protecting provider incomes from falling below the level received pre-2004 (in real terms) (BMA, 2007). Hence, while the contract itself may have strong incentives, individual providers have a form of ‘stop-loss’ mitigating the consequences of costs exceeding revenues based upon expected workloads. This arrangement has provided a means of managing the cost of utilisation variation risk (at higher-than-expected utilisation at least), even though it is not explicitly recognised as such in the policy. Rather, it has been positioned as a means of maintaining individual provider income equity in the transition between contracts (BMA, 2007).

Canada

Canada is notable for the degree to which it has allowed experimentation with government-funded primary care provider payment mechanisms (Golden, Hannam & Hyatt, 2012). Although over 80% of primary care practitioners are paid by fee-for-service, so face no insurance responsibility, the use of alternative payment methods is growing. These include full salary, sessional payments and blended fixed and fee-for-service payments. The fixed payments may be risk-adjusted capitation payments, supplemented by fee-for-service payments, or fixed salaries, with bonuses paid for each registered patient. Alberta is the only province to offer full capitation as an option, but it is used by less than 1% of providers. The percentage of fixed income (incentive strength) varies widely. One arrangement provides capitation payment for a defined basket of services, but fee-for-service for provision outside this range (Wranik & Durier-Copp, 2010).

It is not clear that any of the Canadian alternative payment mechanisms were constructed with consideration of the implications of trading off the costs of managing random and controllable risk factors. As providers can select their payment method, salaries are preferred by risk-averse providers in areas where demand is either low or variable. Thus, policies grant choices that enable providers to manage their financial risks rather than using payment methods as a tool to constrain total spending or prioritise elements of care quality, as occurs in the United States and English motivation. Indeed, in one instance, the funder used a blended agreement paying salaried providers a percentage of the fees they would have received if paid by fee-for-service to induce them to report their activities for managerial purposes. The incentive was necessary as the providers frequently failed to comply with the reporting requirements, even though contractually required to do so (*ibid*, p. 52). Changes in practitioner remuneration are perceived to have had no apparent effect on behavioural change objectives, such as increased emphasis on preventative care delivery (Dahrogue et al., 2012).

4.4 Integration of Risk, Economics and Policy Literatures

Risk and health economics theories indicate that a complex nexus exists between the different forms of financial risk and their effects upon the achievement of policy objectives. Primary health care policies predicated upon the pursuit of population-based objectives necessarily invoke tensions between the objectives for a population and the distribution of the resources (both financial and health care) at the level of the individuals who make up that population. These tensions have always existed in the insurance/demand risk management side of health care systems but, increasingly, accountability for managing these tensions is passing from the risk pooling side to the care delivery side. The use of alternative remuneration arrangements for care providers, such as partial capitation and blended complex contracts, necessarily require care providers to assume responsibilities for managing utilisation variation risk for their constituent populations which was historically managed by funders and insurers.

Little consideration appears to have been given in primary health care policy to the ways in which alternative payment mechanisms – notably capitation – require providers to manage both random financial risks as well as the controllable risks of stinting and cream-skimming. Rather, the use of alternative payment mechanisms is predominantly seen as a way of incentivising providers to change their care delivery philosophy and methods. The ability to achieve the cost containment and distributional objectives of health care policies will be determined, in part, by the extent to which the different forms of financial risk interact to affect practitioner incomes and hence influence their behaviour. In the absence of such consideration, there is no principled approach to the design of the institutions and transactions in primary heath care policies that takes account of the ways these risks interact. Different approaches in different countries provide different insights, but not in a manner that comprehensively brings together the interactions on the risk pooling and care delivery sides of the system.

To address this gap, it is necessary to take an analytical approach, considering the transactions occurring between different participants (as per Preker & Langenbruner, 2005), rather than a structural approach predicated upon individuals, firms and institutions (as per Kutzin 2001). The transactional approach recognises that different entities may be required to undertake different activities (e.g. individual/service user; care provider/insurer). Transactions can be aggregated into institutions and upward into policy instruments, for example, via Preker & Langenbruner's (2005) institutional characteristics (transactions), organisational characteristics (providers and incentive regimes) and core policy characteristics ('policy levers') or Mays' (2013) micro (low-level) macro (system-level) and meso (between the two) interactions.

At a conceptual level, a simple transactional framework can be developed from Figure 1.2 which is based upon the standard transactions anticipated in a simple primary health care system incorporating both insurance and care delivery activities. Using the economic theories in this review, the effects of the different sorts of risk on total costs and resource distribution under a range of standard assumptions can be identified. The particular arrangements of a given primary health care policy can be assessed against these standardised transactions to make an assessment of the extent to which these arrangements will advance or militate against the objectives. This approach will enable a principled and systematic approach to be taken to considering the trade-offs between the different forms of financial risk on the achievement of objectives than has been possible using frameworks such as in Figure 4.4. Thereby, the analysis of existing and proposed policies and health care systems can be informed.

5. *The Model and Mapping Framework*

In this chapter a simplified transaction-based model of a primary health care system, building on the augmented medical care triad in Figure 1.2, is constructed. The model traces funding and both random and controllable financial risk through standard transactions on each side of a primary health care system, and between the two sides. These standard transactions can then be used to describe various characteristics of a primary health care system that influence the location, magnitude and management of both random and controllable financial risk. The theoretically expected effects of these characteristics, under different arrangements and transactions, can then be mapped to a range of measures used to assess the achievement of specific policy objectives.

The chapter proceeds as follows. First, a brief description is provided of the processes used to build the model and mapping framework. Next, the model and mapping framework are developed for simplified standard transactions on each of the risk pooling and care delivery sides of a primary health care system. Finally, the transactions bringing the sides together are incorporated into both the model and the mapping framework.

5.1 Description of the Model and Framework Construction Process

The conceptual model is a highly simplified representation of a primary health care system. It first builds up the fundamental transactions on each of the risk pooling and care delivery sides, assuming a simple risk pooling function paying fee-for-service benefits, and operator-owned primary care providers. The effects of random and controllable risk under these arrangements, the trade-offs between them and the implications of different allocations of responsibility for managing them on the achievement of generic cost and equity objectives are examined. The model and mapping framework are then extended to 'bring the sides together' using a range of provider remuneration agreements.

Particular attention is given to the allocation of random utilisation variation risk and the use of incentives to manage controllable risks arising under variations of capitation and complex contracting. However, the model also considers the effects of financial risks arising from other sources. These include exogenous cost increases (random *cost increase risk*) and unavoidable, and hence unmanageable, differences in the underlying costs facing different providers (random *cost variation risk*). It also addresses how sector participants may take advantage of the uncertainties inherent in specific contractual agreements to act strategically.

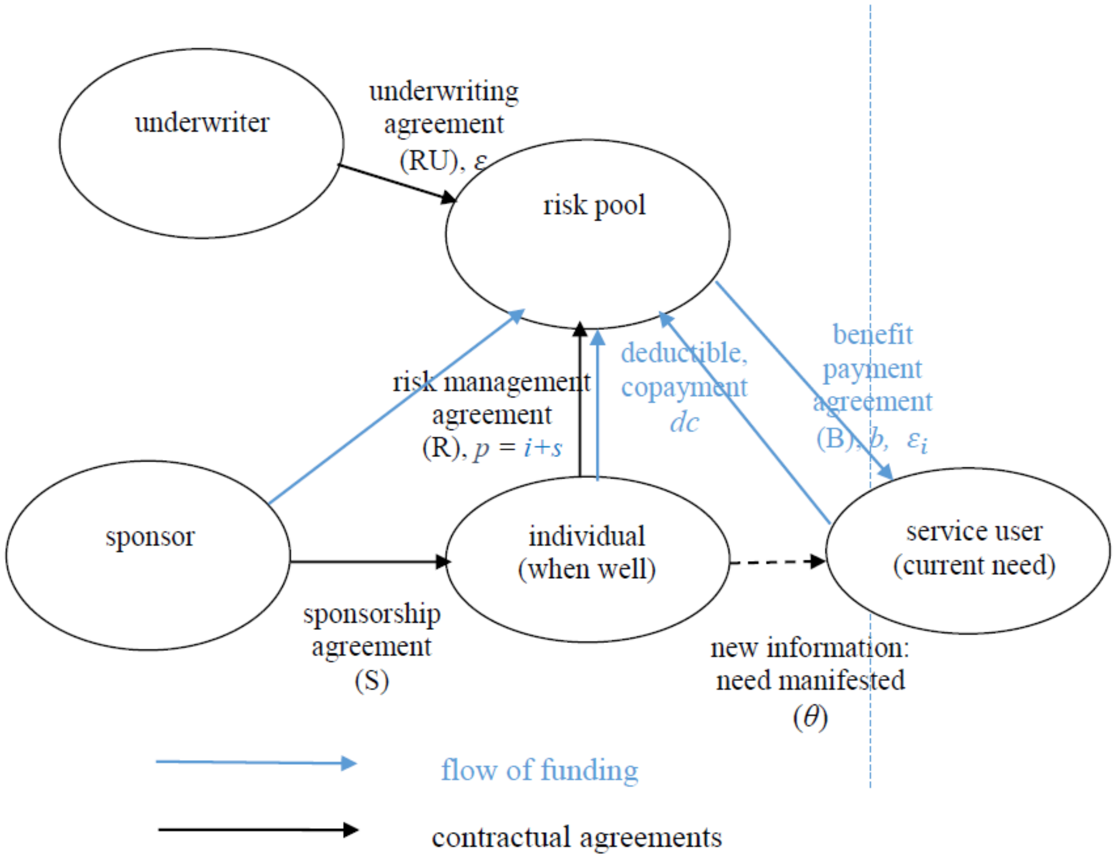
The conceptual model is based upon the assumption that the underlying transactions between participants occur because they are mutually beneficial, but that the choices made by participants are conditioned by the information available to them. No preconceived assumptions of how the transactions might optimally be organised into entities are made, except for those indicated by the management of financial risk in the underlying transactions themselves. Rather, the model and mapping framework are constructed as descriptive and analytic tools facilitating the comparative assessment of the effects of different arrangements on policy objectives.

The financial risk focus of the model and mapping framework builds upon analyses focused on structural elements and the allocation of funding at a macro level, as described by Langenbrunner, et al. (2009) and Preker and Carrin (2004). Using transactions as the fundamental level of interaction enables the exploration of activities embedded in contracts between participants at the micro and meso levels of the system, in accordance with Mays' (2013) proposed analytical taxonomy. As will be illustrated in Chapters 6 and 7, analysis using the model and mapping framework does not conflict with analysis based upon structural views, funding flows or interactions aggregated into contracts. Rather, it complements and enhances such analyses by introducing a further dimension into consideration.

5.2 Model and Mapping: Risk Pooling Side

In Chapter 4 it was established that a risk-averse individual, when well, reduces income uncertainty in the event of needing primary health care by contracting a risk pool to assume management of the financial consequences of individual utilisation uncertainty – the risk management agreement (R) in Figure 5.1. The risk pool converts an insurance pool premium ($p.$) paid to it for a population of individuals into contingent benefits (b), specified under the benefit agreement (B), paid when it is revealed (θ) that an enrolled individual needs primary health care (i.e. becomes a service user). The pool premium may be paid by the individual personally ($p{=}i$), a sponsor (e.g. government, employer) (p=s) or a combination of the two (p=i+s) (as per Van der Ven & Ellis, 2000). Even if the benefit payment is made directly to a provider on the service user's behalf, it is conditional upon the service user's demonstrated need for care. In publicly-funded systems, with only one government-managed risk pool, there may be no explicit premium payment calculated or paid. Nonetheless, an implicit premium per eligible individual underpins the budget required to pay benefits for the subset of service users. As the number of eligible individuals changes, so too will the budget required to pay expected costs of benefits claimed.

Figure 5.1 Risk Pooling Side



Under an underwriting agreement (RU), the risk pool's owners assume responsibility for financial variations between premiums paid for n individual members ($\sum_{g=1}^{n} p_g$: the expected costs of providing benefits) and the costs of benefits actually paid when actual needs are made manifest (m instances of need demonstrated: $\sum_{j=1}^{m} b_j$). This variation is utilisation variation risk. If the insurance arrangement is more efficient than individuals self-insuring, then the pool's cost of managing utilisation variation risk in a given period (ε=$\sum_{g=1}^{n} p_g - \sum_{j=1}^{m} b_j$) will be lower than the sum of the costs (above the fee paid for care) of the individuals managing the risk themselves. In the long run, expected magnitude of ε is influenced by the accuracy of the risk adjustment formulae used to determine premium payments and pool size. The greater is the amount of the deviation between observed and forecast demand that can be explained by the risk adjustment formula, the lower is the expected ε on average. The larger is the pool membership, the lower is ε on average.

Risk pooling arrangements invariably result in service users utilising more care than if they self-insured. The number of claims (m) rises. Whilst some of this care will address legitimate needs, some will be unnecessary. Service user-initiated unnecessary utilisation has typically been considered a controllable risk managed by requiring service users to make deductible and/or co-payments (dc) (unnecessary utilisation controlled by care providers is discussed subsequently as a care delivery side consideration). Although the effect of deductibles and co-payments on the number of claims made is ambiguous, they reduce the costs to the pool of managing utilisation variation risk (ε = $\sum_{g=1}^{n} p_g$+$\sum_{j=1}^{m}(dc_j - b_j)$). They achieve this by passing back onto each service user, via the benefit payment agreement (B), a proportion of the costs of utilisation variation risk (ε_i) originally borne by the pool under the risk management agreement (R) entered into with the service user when in the uninformed state of an individual.

5.2.1 Descriptive Characteristics: Risk Pooling Side

The descriptive characteristics in Table 5.1 can be used to identify the implications for financial risk management of a given set of institutional structures fulfilling the risk pooling side functions of Figure 1.2.

The magnitude of the costs of managing random utilisation variation risk (ε) is contingent upon the number, size, ownership characteristics and underwriting/reinsurance arrangements of the risk pools, and the sophistication of the risk adjustment formulae used. It is also contingent upon the extent to which the pools provide coverage across a given population (individual coverage). Premium sponsorship arrangements indicate both the identity of any sponsor and how premium charges (including the risk management premium) are allocated. Although deductible/co-payment arrangements reduce the magnitude of random utilisation variation risk management cost, they are considered as a separate 'controllable' risk management artefact.

Table 5.1 Descriptive Characteristics: Risk Pooling Side

Characteristics
Random risk management
Risk Pool(s)
Number
Size
Ownership
Underwriting/Reinsurance arrangements
Risk adjustment sophistication
Individual Coverage
Premium Sponsorship
Controllable risk management
Deductible/Co-payment

5.2.2 Mapping Descriptions to Objective Achievement: Risk Pooling Side

The descriptive characteristics of Table 5.1 can now be used to identify the pathways by which financial risks originating on the insurance side of the system, and arrangements adopted to manage their consequences, influence specific cost and equity policy objectives outlined in Table 5.2.

An efficient set of arrangements is expected to have low total costs (net of the efficient costs of care delivery), which are comprised of transaction and risk management costs (across both random and controllable risk factors). From the Alma-Ata objectives, an equitable set of risk management arrangements would be one where individuals' premium payments were both independent of their expected needs for care and commensurate with their ability to pay. An equitable benefit payment system would allocate benefits in proportion to service users' actual (as opposed to expected) needs for care. These effects of the characteristics in Table 5.1 map to the objectives in Table 5.2, as described in the following text and summarised in Table 5.3.

Table 5.2 Policy Objectives: Risk Pooling Side

Objectives
Total Costs
Transaction costs
Risk Management costs
Random risks
Utilisation variation risk (ε)
Other random risks
Controllable risks
Cream-skimming
Unnecessary utilisation – user controlled
Other strategic actions
Equity
Individual: premium payments independent of income, need
Service User: benefits proportional to need

From Chapter 4, a large single government-owned pool covering the entire population is expected to have low costs of utilisation variation risk management (ε), moderate transaction costs (trading off inefficiencies of monopoly against standardisation of processes) and low likelihood of adverse selection. As the number of pools increases, the pool size decreases and ε increases. Pool ownership determines the risk premium required for bearing the risk. The more risk-averse is the pool owner, the higher will be the pool's risk premium, adding further to the magnitude of ε. However, reinsurance arrangements for risk-averse pool owners, if present, militate against this further increase. Competitive pressure from multiple pools is expected to lower the transaction costs of pool operation, but at the expense of savings from standardised processes (higher transaction costs). If there is more than one pool, the potential for cream-skimming (by both enrolees and pools) is expected to increase. But more sophisticated risk management formulae may reduce the incentives for pools to cream-skim if more efficient risk-rated premiums are to be levied. However, increasing risk adjustment formula sophistication increases pool operation (transaction) costs. To the extent that they may control some unnecessary utilisation, deductible and co-payment arrangements contribute towards the containment of total system costs.

Table 5.3 Risk Pooling Side: Mapping Characteristics to Objectives

Characteristic	Objective	Effect
Random risk management		
Risk Pool(s)		
Number	Transaction costs	Increase from admin Decrease from competition
	Utilisation variation risk (ε)	Increases with more pools
	Cream skimming	Increases with more pools
	Individual equity	Reduces as pools increase
	Service user equity	Reduces as pools increase
Size (members)	Utilisation variation risk (ε)	Decreases with pool size
	Individual equity	Reduces as pool size decreases
	Service user equity	Reduces as pool size decreases
Ownership	Utilisation variation risk (ε)	Increases with owners' risk aversion
Underwriting & reinsurance	Utilisation variation risk (ε)	Decreases with better arrangements
Risk adjustment	Utilisation variation risk (ε)	Decreases with improved accuracy
	Transaction costs	Increased costs of improved formulae
	Cream skimming	Decreases with improved formulae
Individual coverage	Individual equity	Reduces if not universal
		Increases if premiums community-rated
		Decreases if premiums risk-rated
	Utilisation variation risk (ε)	Decreases if premiums risk-rated Increases if premiums community-rated
Premium Sponsorship	Unnecessary utilisation - user	Increases with higher sponsorship
	Individual equity	Increases with higher sponsorship
Controllable risk management		
Deductible/Co-payment	Unnecessary utilisation - user	Decreases with increased service user payments
	Service user equity	Decreases with increased service user payments

The nature and extent of individual coverage and premium sponsorship arrangements, in combination with the other arrangements on the risk pooling side, influence the equity of access to insurance by individuals. Individual equity is impaired if some individuals are denied coverage (i.e. sponsorship and risk management (R) arrangements are not universal), regardless of whether the denial is due to inability to pay or ineligibility for subsidies. If the entire population is covered in a single pool by identical community-rated premium terms then, in principle, the insurance arrangements are consistent with Alma-Ata equity objectives. Access to risk management is independent of both ability to pay and expected need. Risk-rated premiums based on each individual's expected need for care, however, violate this objective if the individual pays a part or all of the premium, even though their greater risk-adjustment sophistication lowers risk management costs.

Fully sponsored and comprehensive tax-funded systems decouple access to insurance from the ability to pay, thereby enabling premiums to be set more efficiently without compromising individual access. In the case of tax-funded systems, the actual cost burden is distributed across all taxpayers according to income and other tax liabilities. Although tax-funded systems may be seen as 'fairer' and consistent with principles of community solidarity (Kutzin, 2011), the basis for taxation is not necessarily well-correlated with an individual's risk aversion. Some high-income individuals may be more risk-averse than some lower-income individuals, and it is well-recognised that the regressive nature of consumption taxes disproportionately penalise low-income individuals. Thus, fully tax-funded systems don't always equitably allocate the funding burden amongst taxpayer-individuals either.

If all service users are provided equal benefits when demonstrating equal need, and the value of benefits paid increases with increasing need, then access to funding to pay for care is horizontally and vertically equitable. If all care of equal quality is equally priced, then access to care too is horizontally and vertically equitable. However, increasing the number of pools increases both adverse selection (ε) and cream-skimming risk, thereby reducing both service user (benefit) equity and equity in access to risk management (agreement R). Even if identical premiums are charged, different pools will necessarily face different claim costs due to both random and unidentifiable, but material, factors biasing utilisation patterns. Variations in their actual costs will flow through to different abilities to pay benefits, and different treatment of otherwise-identical service users. The more pools there are, the greater will be the expected variation in their actual costs, and the greater the differences in benefits and the greater the inequities between service user-members of the different pools. Different benefits paid by different pools alter the desirability of the pool for individuals seeking risk management, leading to differences in the pools' enrolment profiles, further reinforcing the different costs and, hence, benefit payments. Co-payments and deductibles also reduce service user equity, both absolutely and relatively. Notably, they are paid to the pool to offset premium costs, so can be considered to be a form of *ex post* premium – paid with 100% certainty after the information about need for care has been perfectly revealed. Co-payments, in particular, can therefore be viewed as a form of perfectly risk-rated premium as they are paid in direct proportion to the costs of (need for) care. Individuals not needing care are not faced with this penalty. Hence, they militate directly against both horizontal and vertical equity between service users needing care and individuals seeking insurance.

5.3 The Care Delivery Side

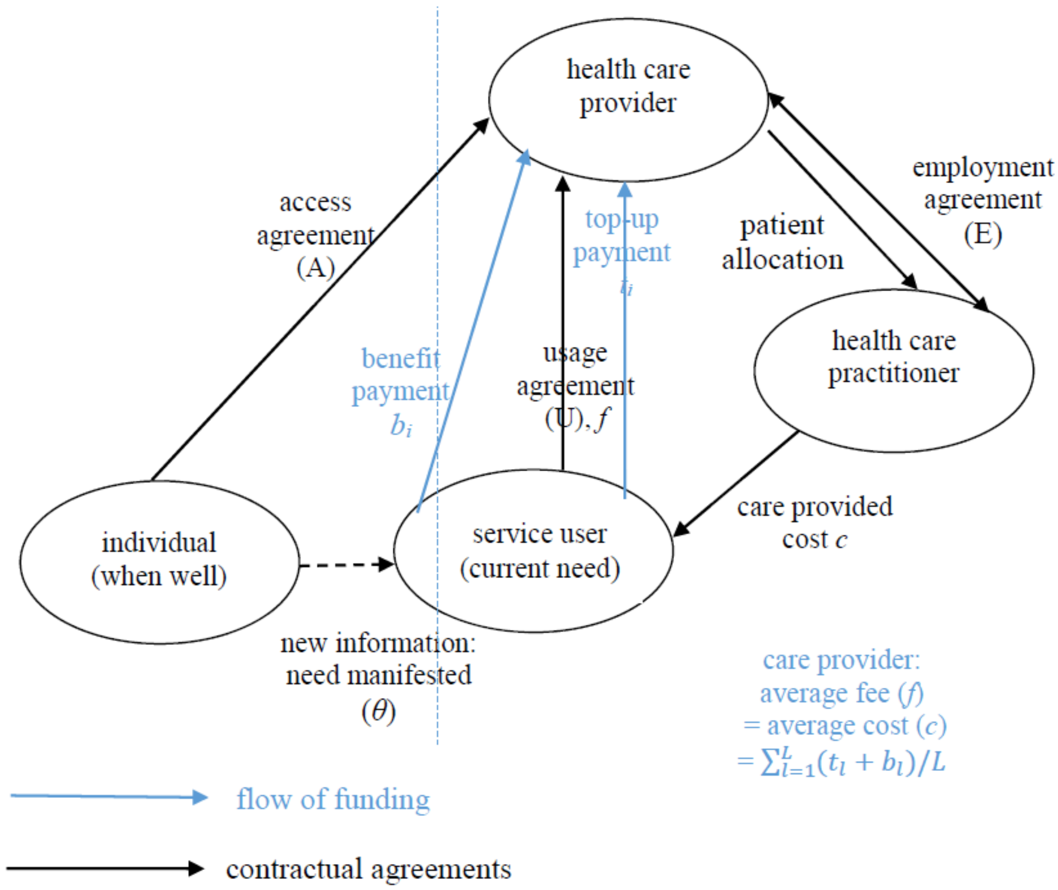
The discussion in this subsection assumes fee-for-service remuneration of providers. The implications of blending care delivery and insurance using alternative payment instruments are discussed in subsection 5.4 Bridging the Sides.

Figure 5.2 depicts the arrangements on the care delivery side of a primary care system. These focus on two fundamental transactions: an Access Agreement (A) between an individual and a provider concerning the obligation to supply and pay for care in the future when it is required; and a Usage Agreement (U) between the individual as a service user when the need for care θ is made manifest, and the care provider when care (average cost c, covering expended costs, practitioner time and a return on invested capital), is delivered. A fee (f_l) for this care is levied for each consultation provided.

In principle, the service user pays the fee, which may be subsidised with a benefit payment (b_l) from an insurer. Any shortfall ($t_l = f_l - b_l$) is paid by the service user as a 'top-up' (or balance-billing) payment, separate to any deductible and/or co-payment levied by and paid to the risk pool, which are depicted in Figure 5.1 and discussed in the risk pooling arrangements above. The total out-of-pocket payment for the service user when the sides are bridged – as discussed in subsection 5.4 – is $op_l=dc_l+t_l$. Care providers may use their private information to engage in price discrimination so that the fee charged (f_i), and hence the top-up fee (t_i), may vary between service users. But in order to cover costs the average fee charged for L

consultations delivered ($f = \sum_{l=1}^{L} f_l / L$) – the Average Revenue of Figure 4.2 – should equal the average cost ($c = \sum_{l=1}^{L} c_l / L$)), so that $f = c = \sum_{l=1}^{L} (t_l + b_l)/L$.

Figure 5.2 Primary Health Care Delivery Side



Access and usage agreements are between an individual and a provider, which may be a self-employed sole practitioner, partnership, non-profit or corporate entity. If the provider is not a sole practitioner there will be an agreement (E) detailing the relationship between the specific practitioner supplying care and the entity contracting with individuals and service users for its provision. This arrangement may be an arm's-length spot or longer-term relational contract for specific services, an employment contract or a partnership agreement.

5.3.1 Descriptive Characteristics: Care Delivery Side

Table 5.4 summarises the descriptive artefacts of the institutional arrangements in Figure 5.2 and their implications for risk management.

Table 5.4 Descriptive Characteristics: Health Care Delivery Side

Characteristics
Care provider characteristics
Number of providers
Practitioners per provider (number and type)
List size
Ownership
Provider engagement characteristics
Description
Incentives for:
Investment
Effort
Innovation
Subsidy share of fee
Balance-billing

If providers are remunerated on a fee-for-service basis, responsibility for managing utilisation variation risk is not a consideration. Although providers do not know how many consultations their enrolled individuals will require in a given period, average profitability per consultation will not vary with the number of consultations provided. Profit is defined here as economic profit and not accounting profit, as salaries, wages and a fair return on owners' invested capital have been included in the costs per consultation. So long as average profitability per consultation is non-negative, provider profitability in total can be expected to increase the more consultations are delivered, up to the point where average cost increases (e.g. due to the higher opportunity cost of practitioner time for working additional hours).

Consequently, the descriptive characteristics of the care delivery side focus primarily upon financial risks arising from the access, usage and employment agreements. The number of providers, practitioners per provider, list size and ownership characteristics describe the structure of the care delivery side of the sector and the likely competitive effects influencing provider, practitioner, individual and service user choices. The arrangements under which practitioners are engaged and remunerated will influence the incentives they face to invest and work in the sector.

These arrangements will lead inevitably to contractual risks, which will influence total costs and cost per consultation. However, the number of consultations delivered will be influenced by any insurance benefit payment (b_l) – captured in the 'subsidy share of fee' in Table 5.4.

If 'balance-billing' is permitted and the subsidy does not cover the full fee charged, then the service user must pay the difference (t_i). The top-up t_i addresses a residual risk faced by the service user that the benefit paid (b_i) is insufficient to cover the fee charged (f). In this case, it has a similar effect to a co-payment or deductible (dc_i in Figure 5.1), in that it imposes a perfectly risk-rated penalty on service users, which they (as individuals) self-insure (or if they wish to diversify the risk, purchase supplementary insurance).

The 'subsidy share of fee' in Table 5.4 captures the cost share expected to be met by service users (t/f). It is influenced principally by three risk factors: the controllable risk, when the insurer chooses not to fully fund primary care, and the allocation of responsibility for managing the effects of two random risks outside the control of sector participants – inevitable variations in the underlying costs of different service providers (cost variation risk); and exogenous increase in underlying costs affecting all service providers (cost increase risk).

5.3.1.1 Cost Variation Risk

If balance-billing is not permitted, then cost variation risk is borne in the first instance by providers. Those with higher costs will make lower profits or incur greater losses for delivering identical quality care than those with lower costs. The typical response for very high-cost providers in these circumstances is to reduce care quality. Thus, otherwise-identical individuals and service users at different providers will receive different care qualities, militating against the equitable allocation of resources.

If balance-billing is permitted, then cost variation risk can be passed on to service users in fees. The ability to balance-bill to manage cost variation risk when insurance benefits do not cover the costs of care delivery appears to be the defining factor leading to the historic right for New Zealand care providers to set their own fees (Chapter 2). Service users with identical needs for care can expect to face different top-up fees for the same care supplied by different providers, as it is most unlikely that all providers in a single system will face identical underlying costs. Balance-billing combined with cost variation risk consequently militates against service user and individual equity.

An important distinction exists, however, depending upon whether benefits are paid to the service user, or to the provider as agent for the service user. Cost variation results in both low-cost and high-cost providers. Whilst high-cost providers face threats to ongoing financial viability, and must charge either higher fees or reduce care quality, low-cost providers could charge lower fees and remain financially viable. If benefits are paid direct to service users, and these providers do in fact charge lower fees, service users benefit from the upside as well as the downside of cost variation risk. However, if benefits are paid direct to providers, then those providers for whom the benefit paid exceeds costs (or who could charge lower fees, but still choose to charge average ones) can appropriate the difference as higher profit. The profits could be used to offset the fees of other service users (price discrimination) or extracted as takings. In effect, a form of strategic opportunism can occur, as some of the insurance benefit otherwise due to a specific service user may be appropriated by the provider. It is a potentially controllable risk factor facilitated by the benefit payment agency combined with balance-billing.

5.3.1.2 Cost Increase Risk

A further random risk arises over time due to system-side changes in the underlying costs of care delivery affecting all providers which, again, are outside providers' control. As costs generally increase, this risk can be termed cost increase risk.

If the risk pool benefit payments increase in line with these increases over time, then the random cost increase risks are shared (i.e. diversified) across the wider pool of insured individuals and their sponsors via premium payments (Figure 5.1). However, if balance-billing is permitted then the risk pool can pass on responsibility for bearing cost increase risk onto providers, and ultimately service users, by failing to adjust the benefits paid to the extent that costs increase. The costs of bearing a random risk factor are re-concentrated back onto the subset of the population that becomes service users, exacerbating inequalities arising from requiring service users to make payments for care.

The historic passing-on of cost increase risk by the government insurer to providers (Chapter 2) contributed to the substantial increases in service user charges and consequent impediments to care utilisation observed under the pre-NZPHCS arrangements.The NZPHCS undertaking to increase funding annually in line with increases in sector costs specifically addresses this risk.

5.3.2 Relating Descriptions to Objective Achievement: Delivery Side

The characteristics of Table 5.4 can now be mapped onto the objectives in Table 5.5, as summarised in Table 5.6.

At the aggregate level, the number of providers and the way practitioners of various types are organised into them influences total costs in a variety of ways. Some of these effects derive from the costs of managing financial risk, and others arise from other sector artefacts identified in the literature review.

Table 5.5 Objectives: Health Care Delivery Side

Objectives
Cost Containment
Total costs
Care delivery costs
Transaction costs
Risk management costs
Random risks
Other random risks
Controllable risks
Unnecessary utilisation – provider-controlled
Other strategic actions
Consultation numbers
Equity
Individual: choice of provider independent of ability to pay
Service User: care independent of ability to pay
Providers: equal returns for equal effort

Table 5.6 Care Delivery Side: Mapping Characteristics to Objectives

Characteristic	**Objective**	**Effect**
Provider characteristics		
Number of providers	Care delivery costs	Increased competition lowers costs
	Transaction costs	Increase with price discrimination
	Service user equity	Monopolistic competition enables price discrimination to increase equity
	Other strategic actions	Market power increased by differentiating
Practitioners per provider	Transaction costs	Increase with provider numbers
	Care delivery costs	Average cost per service increases as practitioner number increases
List size	Transaction costs	Decrease as list size increases
	Provider equity	Large firms less likely to be practitioner-owned so less efficient
Ownership	Care delivery costs	Lower with practitioner-owners
Provider Engagement characteristics		
Description	Provider equity	Firms with salaried staff less productive
Incentives for: Investment, Effort, Innovation	Provider equity	Practitioner ownership increases all incentives
Subsidy share of fee	Consultation no.	Increases with subsidy share increase
	Unnecessary utilisation: provider	Increases with subsidy share increase
	Other random risks	Cost increase, cost variation risks higher when subsidy share of fee smaller Universal benefits exacerbate cost variation risk effects
	Service user equity	Increases with subsidy share increase
	Individual equity	Increases with subsidy share increase
Balance billing	Other random risks	Borne by risk-averse providers
	Other strategic actions	Providers can pass on cost increase, cost variation risk to service users
	Individual equity	Decreases with balance billing
	Service user equity	Decreases with balance billing
	Provider equity	Increases with balance-billing

As a general principle, the larger is the number of firms, the greater will be competition between them, and the lower will be the expected costs of care delivery as competitive pressure leads to greater cost constraint. However, as primary health care exhibits characteristics of monopolistic competition, it confers some market power on firms that can differentiate themselves sufficiently, so may encourage both investment in service innovation (with concomitant increases in underlying costs, as such differentiation is rarely costless) and greater use of price discrimination. Price discrimination incurs higher transaction costs, but enhances service user equity as providers can use information about individuals' ability to pay to customise both care and service user fees. To the extent that providers have some market power, they may choose to use it strategically, for example, by colluding to reduce competitive intensity.

The organisation of practitioners into provider firms also directly influences underlying costs. Large firms with multiple practitioners are expected to have higher transaction costs and lower outputs on average for the same level of resourcing than sole practitioners due to difficulties in contracting for effort (Chapter 4). This leads to lower incentives for investment and innovation, and higher average costs per consultation delivered, although this may be mitigated to some extent if practitioners are also owners. Salaried employment lowers efficiency, as the likelihood of shirking increases. While contractual terms (e.g. profit sharing) may militate against this tendency by endeavouring to replicate the incentive effects of ownership, they too are imperfect. Large firms and a predominance of salary remuneration reduce the incentives for investment in practice-specific capital, and thereby lower the incidence of practitioner ownership. The larger is the firm the more likely it is to be staffed by salaried practitioners and be either investor-owned (i.e. not by practitioners) or non-profit, and be less productive (have a higher average cost per consultation, all else held equal).

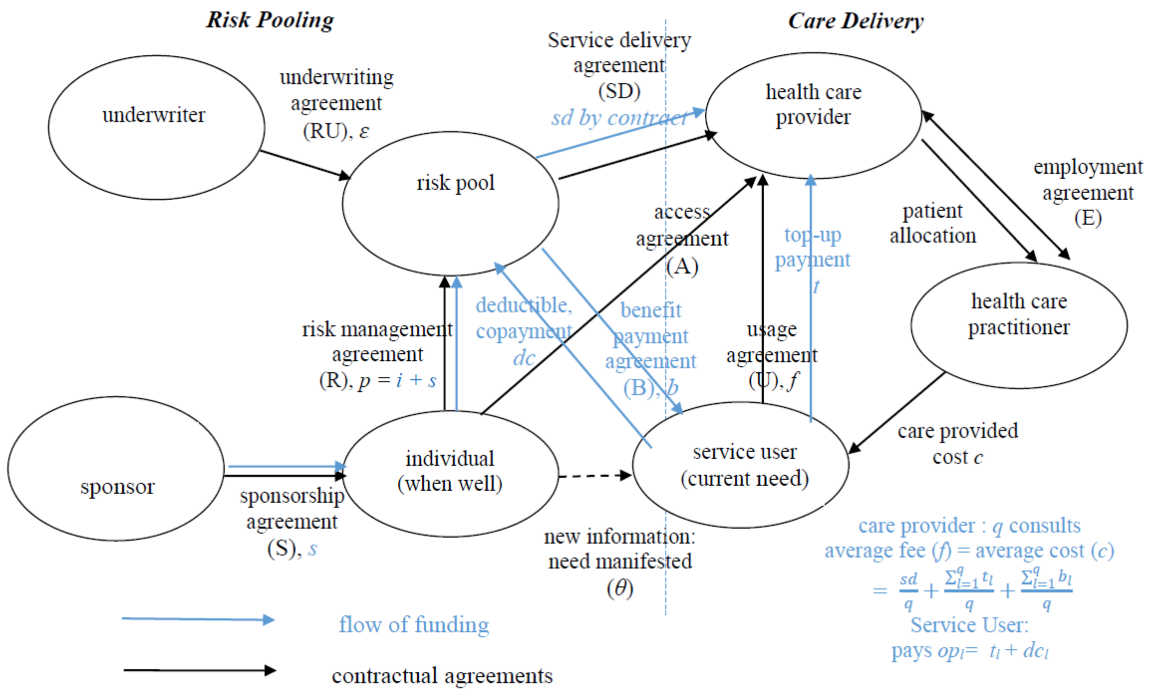
Likewise, fee-for-service remuneration is also expected to lower efficiency, particularly in the presence of insurance subsidies (i.e. the 'subsidy share of fee' is greater than zero), because it encourages supplier-controlled unnecessary utilisation. The higher is the subsidy share, the greater is the risk. This is manifested in increased costs in total, from higher numbers of consultations delivered, than under alternate arrangements such as salary remuneration.

The subsidy share of the fee and balance-billing directly affect individual and service user equity. The higher is the service user's share of the fee, the, higher is the proportion of utilisation variation risk shifted back onto those needing care, effectively gradually 'undoing' the insurance arrangements. The effect is increased vertical inequity between service users. The higher service user fees are paid in proportion to the instances of care consumed, so effectively become perfectly risk-rated payments. Those consuming no care make no payments. Those needing care pay each time care is consumed. The more payments made due to greater need, the greater becomes the inequity. The higher is the service user's share of the fee, the greater is the inequity. Where balance-billing is permitted, the greater is the variation in costs and hence fees between providers, the greater is the inequity between service users of equal need enrolled at different providers, as they pay different prices for the same care. Provider-exercised price discrimination may mitigate the extent of the inequities between service users, but is typically unobservable. If balance-billing is not permitted, the underlying cost differences are borne disproportionately by service users, and the extent will vary between providers. To the extent that these variations are known in advance, they will affect the choice of the provider where an individual seeks to enrol. If the underlying cost differences are correlated (e.g. all providers in a given locality have higher costs than all in another), then a universal benefit leads to inequitable allocation of risks between practices and their enrolees and service users. Equity amongst all three categories of participant – individuals, service users and practices – is affected.

5.4 Bridging the Sides

Figure 5.3 illustrates the structurally straightforward, but contractually complex, effect of bringing the two sides together. Contractual complexity arises because the risk pool enters into contracts directly with service providers (SD) where, either explicitly or implicitly, responsibility for managing utilisation variation risk is shared. Service delivery agreements result in the payment of a sum (*sd*) from the pool to the care provider, independent of any demonstrated need for care by a service user. It may be a capitation payment (e.g. US Managed Care) or some other complex blended agreement (e.g. English GMS payments). The service delivery sum may be paid in addition to a fee-for-service payment (*b*) for specific care delivered to an identified service user, which continues to operate as discussed above (e.g. nurse salary subsidies in the pre-NZPHCS arrangements were separate to fee-for-service consultation subsidies). In principle, a service delivery payment does not exclude the ability for providers to balance-bill (*t*), or for deductibles and co-payments (*dc*) to be levied by the risk pool.

Figure 5.3 Two-Sided Health Care System



Two other important features are highlighted in Figure 5.3.

First, service users' 'out of pocket' payments (op_l) for a given instance of care delivery (l) are the sum of deductible/co-payments to the risk pool (dc_l) and top-up payments (t_l) to the care deliverer ($op_l = t_l + dc_l$). This recognises the two separate risk-related roles played by service user payments:

- one towards the risk pool, and by extension all enrolled individuals, mitigating the risk of over-consumption, which derives from utilisation variation risk; and
- the other towards the service provider, mitigating the risk that the sum of benefit and other service delivery payments from the pool are insufficient to cover the service provider's long-run average cost of care (c) per average consultation supplied, which derives from cost variation risk and cost increase risk.

Assuming q consultations are delivered, then the average fee charged by the provider (f) will be given by $= \frac{\sum_{l=1}^{q} f_l}{q} = \frac{\sum_{l=1}^{q} c_l}{q} = \frac{sd}{q} + \frac{\sum_{l=1}^{q} t_l}{q} + \frac{\sum_{l=1}^{q} b_l}{q}$. The specification of the fee as an average recognises the provider's ability to engage in price discrimination.

Second, the agreement between an individual and service provider regarding access to care when needed, and the agreement between the individual and risk pool regarding access to funding to pay for that care, serve separate purposes. Although under full capitation contracting, where the service provider becomes the de facto insurer, these two agreements may be 'bundled' together into a single contract between an individual and a provider, the two separate and distinct transactions remain.

5.4.1 Descriptive Characteristics: Service Delivery Agreement

The substantive risk management implications of Figure 5.3 attend to the service delivery agreement (*SD*) terms, which explicitly share financial risk between the risk pool and service providers (supply-side risk sharing), in an endeavour to align provider activities to risk pool (or policy) objectives.

Table 5.7 Descriptive Characteristics: Service Delivery Agreement

Characteristics
Bridging the Sides
Provider remuneration/service delivery arrangements
Capitation:
Fixed share
Variable share
Other fixed
Other variable

The principal effects of a range of supply-side risk-sharing agreements were canvassed in Chapter 4. All consist of a combination of fixed and variable payments. Fixed payments are predicated upon an agreement to provide a defined set of services, and may be specified per enrolee (capitation) or for an explicit quantity of care (price-and-volume). Variable payments may be conditioned on service delivery instances (fee-for-service), or some other observable or variable characteristics (e.g. service quality). The intention of most payment arrangements is to transfer a share of responsibility for managing individual utilisation variation risk (ε) from the pool to the provider. These characteristics are summarised in Table 5.7. Capitation agreements are separated out as they are the most commonly utilised risk-sharing agreements in primary care.

5.4.2 Relating Descriptions to Objective Achievement: Bridging the Sides

Table 5.8 aggregates Tables 5.2 and 5.5 and adds the additional objectives of providing population-focused, and integrated, care to provide an extended set of objectives which will be affected by the service delivery characteristics of Table 5.7.

Table 5.8 Objectives: Bridging the Sides

Objectives
Cost Containment
Total costs
Service delivery costs
Transaction costs
Risk management costs
Random risks
Utilisation variation risk (ε)
Other random risks
Controllable risks
Cream-skimming
Unnecessary utilisation – user-controlled
Unnecessary utilisation – provider-controlled
Other strategic actions (e.g. stinting)
Consultation numbers
Equity
Individual: premium payments independent of income, need
Individual: choice of provider independent of ability to pay
Service User: benefits proportional to need
Service User: care independent of ability to pay
Practitioners: equal returns for equal effort
Other Objectives
Population-focused care
Integrated care

The text of this subsection details how the characteristics map to those objectives. At the conclusion, Table 5.9 summarises the effects described in the same manner as Tables 5.3 and 5.6.

Full Capitation

Capitation contracting was originally proposed as a means of constraining supplier-controlled unnecessary demand observed under fee-for-service payments by sharing the costs of over-supply with providers. Subsequently, it has been used to incentivise the development of cheaper means of delivering care (e.g. nurse consultations). Although the economic case is weak, it has also been suggested as a means of incentivising the delivery of preventative care (Chapter 4). The expectation is that both the number of standard consultations delivered, and the average cost of producing each, will reduce relative to a fee-for-service counterfactual. Both pool operators' and providers' transaction costs are also expected to reduce, as a single fixed payment per enrolee per period replaces multiple transactions for individual consultations. However, providers' operational costs will likely increase, as they must now manage both risk management and care delivery activities.

Full capitation (capitation share 100% fixed) means full responsibility for insuring enrolled individuals' utilisation variation risk shifts to providers. Individuals' access to both risk pooling and care is bundled into a single access agreement with the provider. Provider characteristics now become the risk pool characteristics. A large number of providers, each with only a small number of enrolees, leads to very high costs of random utilisation variation risk (ε), unless specific arrangements exist to enable providers to re-diversify it (e.g. risk reinsurance). More accurate risk adjustment formulae may marginally reduce the magnitude of this risk, but nonetheless it remains substantial. If the risk pools are owned by risk-averse practitioners then the risk premium required to induce largely undiversified providers to accept responsibility for managing it will be very much larger than for a large, diversified risk pool. Non-profit firms are the most risk-averse, as they have neither owners nor other guarantors to underwrite risks. The only feasible means of managing financial risk is to have a dedicated risk reserve at least as large as the expected variation between expected and actual costs. If multiple providers are commonly owned, then, in aggregate, financial losses from some firms can be offset by surpluses from others. However, if the providers are owned by separate shareholders then the share of the risk premium not required to cover costs may be extracted as profits, and financial losses carried by the owners of each provider for each period of operation.

Each provider will respond individually to the financial incentives of the capitation contract. A reduction in output, and/or quality, to address predictable historic oversupply consequences of fee-for-service remuneration is expected. The opportunities for cream-skimming increase relative to fee-for-service, as providers with the best information about individuals' needs for care now control access to both risk pooling and care. Those individuals with greatest actual needs will find it hardest to find a provider with which to enrol. Even if no opportunism occurs, an inevitable decrease in equity will emerge between service users of equal need attending different providers as care quality varies with the magnitude of random financial risk faced by each provider. As each provider's utilisation levels are almost certainly correlated, both between enrolled individuals and over time, it is likely that a separation will emerge between perennially lucky providers required to deliver fewer than the expected number of consultations each period, and unlucky ones delivering more. Whilst opportunistic reduction in care quality by lucky providers may reduce between-provider care quality variation, average quality would be expected to decrease, and greater inequities will likely emerge and persist between practitioner-owners, whose average returns for effort exerted will diverge to an even greater extent than if they had not acted opportunistically.

Very high levels of random risk shared under full capitation are expected to provide very strong incentives for providers to merge to diversify financial risk, leading to an expectation that, over time, providers may increase in size, with consequent reduction in between-provider variability. However, this invokes the problem of non-contractibility of practitioner-employee effort. As provider size increases, average practitioner effort exerted would be expected to reduce, leading to reduction in consultation numbers and care quality, and/or increased costs per consultation delivered. This effect increases the higher is the proportion of staff remunerated under full salary. Incentives to invest in provider-specific human capital would also likely reduce.

Merger activity, however, is unlikely to be even. The owners of providers expecting persistent profits face few incentives to merge as it means potentially higher costs, lower profitability and having to share profits with less profitable providers. All else held equal, under full capitation only providers facing long-run expected losses would seek to merge. The merger of these serially unprofitable providers into larger firms will reduce the volatility of losses, and reduce inequities faced by both the enrolled individuals and service users of the merged firms, both relative to each other, and to the profitable providers. However, they will still, on average, expect to be unprofitable at the same given levels of capitation payment. As they are financially unviable for any investor-owner, they will most likely evolve to non-profit ownership in order to take advantage of income streams not available to owner-operated firms (e.g. tax concessions, donations). Without owners, they lack many incentives for investment and effort, so can be expected to have higher costs on average than their profitable, privately-owned counterparts (although this may be mitigated to some extent by selection into these practices by altruistic practitioners). This suggests a bifurcated sector may evolve under capitation, with large, high-cost non-profit firms, biased towards an enrolment base of individuals with higher needs than expected based upon risk adjustment formulae, and small, lower-cost, and serially profitable privately-owned firms biased towards an enrolment base of individuals with lower-than-expected needs. The tendency may be exacerbated by cream-skimming and other opportunistic activities. The inequities expected as a consequence of making care practices effective insurers are further reinforced and embedded under this scenario.

Partial Capitation

Partial capitation softens the extremes of full capitation by reducing the fixed share of income in the remuneration agreement, and hence the share of responsibility for utilisation variation risk passed to providers. However, the exact amount of other financial risks passed on, and the effects upon the achievement of the objectives in Table 5.8, will vary with the other terms of the agreement described in Table 5.7.

Capitation and Fee-For-Service

The simplest partial capitation arrangement is a fixed payment for an enrolled population, with a variable payment per service delivered. The variable payment can differentiate between service types (e.g. nurse and doctor consultations), but the principles remain the same. A share of provider income in a given period is fixed ($K = \sum_{g=1}^{n} k_g$, where k_g is the capitation fee paid for $g=1,\ldots n$ enrolled individuals) and the remainder is variable in proportion to the number of services delivered (v for each of q services delivered: $V = vq$). For the financial incentives to bind the provider, the contracting risk pool must determine both K and v, and balance-billing is not permitted. Provider revenue in the period is $R = K + vq$. An example is the Dutch system which has existed since 2008, where insurance funds pay service providers regulated capitation payments prospectively, and specific fees are paid retrospectively for each particular service type delivered (Van Dijk, 2012).

As the fixed component of remuneration is paid prospectively, it is in effect an insurance premium paid to the provider to manage a share of enrolled individuals' utilisation variation risk. The higher is the share of remuneration that is fixed, the greater is the financial risk passed to the provider to manage. At 100% fixed, the provider is the insurer. A fee-for-service payment is made *ex post* when the actual need for care required by service users is made manifest. The contracting funder underwrites the share of risk associated with the variable component of the remuneration arising from the number of services actually provided (utilisation) (q) varying from the expected number (Q). Partial capitation payment 'bundles' utilisation variation risk in with the capitation incentive determined by the share of revenue derived from the fixed component K and the expected variable component vQ.

Conceptually, at the expected level of output (Q), the fixed component of revenue could be analogised to a NACS (K/Q) paid under fee-for-service remuneration, which is added to the actual fee-for-service component v to derive per-consultation revenue. However, the actual revenue per consultation received by the provider is $K/q + v$. If $Q>q$, the NACS is less per consultation than expected. The average revenue per consultation decreases the greater is q. Equating prospective capitation revenues with retrospective fee-for-service revenues is flawed because the fixed capitation payment embodies a transfer of utilisation variation risk, but the retrospective component does not. Capitation and fee-for-service revenues therefore cannot be seamlessly substituted for each other without also taking the change in the amount of utilisation variation risk transferred, and the premium associated with it, into account.

The smaller is K as a percentage of expected revenue R based on Q consultations, the weaker are the capitation incentives and the greater are the incentives for effort faced by the provider. The weaker are the capitation incentives, the less likely it is that quality and/or consultation numbers will be reduced as desired, but the lower are incentives for cream-skimming and other opportunistic behaviour, and the more equitable are the effects for service users, enrolees and practices, relative to full capitation. However, the smaller is K, the greater are the incentives for both supplier-controlled and service-user-controlled unnecessary demand. The cost of providing an 'average' consultation will decrease, but the number supplied will also increase, with equivocal effects on total costs, relative to a pure fee-for-service counterfactual. In theory there will be an optimal point where the trading off of these effects leads to the lowest average cost per consultation. However, it will vary between providers as their costs and the risk profiles of enrolees vary. A single mixed capitation formula applied to all providers will inevitably lead to between-provider variations in the levels of utilisation variation and cost variation risk borne, even if enrolee lists are identical.

The incentives to find new and cheaper means of care delivery are also reduced as the share of K in practice income reduces. The negative effects of random risk-bearing decrease, but so too do the positive effects sought from the controllable risks shared via the contractual incentives. Thus, weaker capitation incentives are less likely to be associated with changes in care delivery methods (e.g. switching costly doctor-supplied consultations with cheaper nurse-supplied ones), even though they will likely lead to more equitable allocation of both funding and care delivered.

If partial capitation remuneration is to have the desired effect upon provider behaviour, then the contracting funder must set both the fixed and variable components. However, it is not essential that the risk pool pays v itself. The service user could pay v to the provider. If it is set by the risk pool, but paid by the service user, v is technically a co-payment intended to reduce service user-controlled unnecessary utilisation and to reduce the financial obligations on the risk pool's funders. In this case, all service users will pay the same fee regardless of the identity of the provider delivering the care.

If the provider sets the variable component v then it could be considered a balance-billing payment, as all costs not met from the fixed capitation component of revenue (including the costs of financial risk management shared by the risk pool in the first place) can be bundled into the variable component. But in this case the purpose of using financial incentives in provider remuneration is defeated, as the provider can simply bundle up the risk costs and pass them either back to the risk pool, if it pays v, or on to service users if they pay it. Such an arrangement increases risk management costs, negates the effectiveness of financial incentives to alter behaviour, and allows all costs of financial risk to be monetised, bundled together and shifted onto service users in proportion to the number of services consumed. As risk management costs are expected to vary between providers, this arrangement necessarily results in greater financial inequities between service users depending upon the practice they receive services from, than the case where the risk pool sets *v*.

Complex Blended Payments

Contracts with complex blended payment mechanisms address the difficulties of achieving a balance between random and controllable risk sharing in partial capitation agreements with only one fixed and one variable remuneration instrument to calibrate financial incentives. Complex blended payments can blunt some of the extremes of capitation agreements by making separate payments for specific incentives intended to change behaviours. However, to be fully effective the risk pool must control all aspects of the providers' remuneration for the services to which they relate.

Full capitation contracts sever the relationship between provider revenues and costs by fixing revenues. However, such payment arrangements render providers vulnerable to a range of financial risks that cannot reasonably be controlled. Partial fee-for-service payments mitigate the effects of random cost and utilisation variations, but render the risk pool vulnerable to controllable unnecessary utilisation, as revenues increase with services supplied. For the most part, the costs of delivering primary care services are variable as they are predominantly based upon human capital remuneration. Hence, higher variable payments reward higher levels of discretionary effort. Where those activities are desired (e.g. preventative care, vaccinations, nurse-led services), paying a greater proportion of the costs of delivering them as variable payments will induce providers to devote a greater proportion of their effort to them than to less-desired activities where the variable proportion is less (e.g. classical GP-led consultations in the NZPHCS context).

However, not all the costs of supplying services increase with the number of consultations delivered. Some providers will face higher fixed costs than others, so have less flexibility to respond to financial incentives in a capitation contract of given strength than providers facing lower fixed costs. The same contract will thus induce different responses from the different providers. The provider's cost structure thus poses a further differentiating financial risk factor. The high fixed-cost provider faces higher risk than the one with low fixed costs. One way to equalise the effective risks faced (and hence equalise the extent of these variations passed on to service users in either costs or service quality differences) is to separately remunerate observable and verifiable fixed costs that are expected to vary substantially between practices. These could include, for example, premise rental, practitioner superannuation and leave costs, as occurs in England's GMS. Although the remuneration for these costs is 'fixed', it differs from the 'fixed' component of capitation payments as it is determined independently of the number of individuals enrolled at the practice, their characteristics, and expected needs for health care. It is therefore independent of utilisation variation risk. Although increasing transaction costs, such payments reduce the effects of between-provider variation in other financial risks (particularly cost variation), so address some of the inequities arising between them. This reduces the likelihood that these costs will be passed on to service users

Utilisation-independent payments can also be used to reward specific desired activities or avoid undesirable ones. For example, the English GMS regime includes seniority payments recognising the higher costs of employing more experienced practitioners. This militates against the incentives that might otherwise lead to a preference for lower-skilled staff, reduced incentives to exert effort to build practice-specific capital and an inability to retain more experienced practitioners in the profession. Whilst seniority payments are fixed, this does not preclude the use of variable payments that are also independent of the number of services supplied. For example, the variable remuneration components of the English QOF payments fall into this category, rewarding effort exerted in the pursuit of specific quality targets that do not depend on effort spent responding to enrolees' variable needs for care.

Complex blended payments reconnect provider revenues with costs in a way that minimises the large amounts of random risk shared in blunt capitation payments with high fixed and low variable payments. They increase the proportion of remuneration provided for effort exerted in desirable activities, so are predicated upon sharing controllable risk.

Table 5.9 Bridging the Sides: Mapping Characteristics to Objectives

Characteristic	**Objective**	**Effect**
Provider remuneration		
& SD arrangements		
Capitation	Transaction costs	Lower for risk pool: fewer payments Higher for providers: risk pooling plus care delivery responsibilities
	Consultation no's	Reduced
	Care delivery cost	Reduced if lower-cost staff used
	Unnecessary utilisation - provider	Risk reduced
	Utilisation variation risk (ε)	Increases with no. of providers Decreases with higher list size Decreases with increased risk adjustment sophistication Decreases with reinsurance
	Population-focused care	Increased incentives
Fixed:variable share	Consultation no's	Increase with lower fixed share
	Utilisation variation risk (ε)	Increases with higher fixed share
	Other random risks	Increase with higher fixed share
	Cream-skimming	Increases with higher fixed share Exacerbated by more providers
	Other strategic actions	Increases with higher fixed share Exacerbated by more providers
	Service user equity: benefits prop to need	Decreases with higher fixed share
	Provider equity	Decreases with higher fixed share
Other: Fixed	Utilisation variation risk (ε)	Reduced if capitation share falls
	Provider equity	Increases if capitation share falls
Other: Variable	Cream-skimming	Reduced if activities well targeted
	Other strategic actions	Depends on agreement terms
	Service user equity: benefits prop to need	Increases if activities well targeted
	Provider equity	Increases if activities well targeted
	Population focused care	Increases if activities well targeted

5.5 Model and Mapping Framework: Summary

Table 5.10 brings together all of the descriptive characteristics of the simplified two-sided primary health care system depicted in Figure 5.3. Together, these characteristics can be used in the mapping process outlined above to describe both the allocation of responsibility for various forms of random and controllable financial risk, and to map the theoretically expected effects onto the policy objectives summarised in Table 5.11.

Table 5.10 Descriptive Characteristics: Simplified Primary Care System

Risk Pooling Characteristics
Risk Pool(s)
Number
Size
Ownership
Underwriting/Reinsurance arrangements
Risk adjustment sophistication
Individual Coverage
Premium Sponsorship
Deductible/Co-payment
Bridging the Sides
Provider Remuneration/Service Delivery arrangements
Capitation:
Fixed share
Variable share
Other fixed
Other variable
Care Delivery Characteristics
Service provider characteristics
Number of practices
Practitioners per practice (number and type)
List size
Ownership
Practitioner Engagement characteristics
Description
Incentives for
Investment
Effort
Innovation
Subsidy share of fee

Table 5.11 Objectives: Simplified Primary Care System

Objectives
Cost Containment
Total costs
Service delivery costs
Transaction costs
Risk Management costs
Random risks
Utilisation variation risk (ε)
Other random risks
Controllable risks
Cream-skimming
Unnecessary utilisation – user-controlled
Unnecessary utilisation – provider-controlled
Other strategic actions (e.g. stinting)
Consultation numbers
Equity
Individual: premium payments independent of income, need
Individual: choice of provider independent of ability to pay
Service User: benefits proportional to need
Service User: care independent of ability to pay
Practitioners: equal returns for equal effort
Other Objectives
Population-focused care
Integrated care

6. Assessing the NZPHCS

This chapter applies the model and analytical framework developed in Chapter 5 to evaluate the effects of the allocation and management of financial risk under the NZPHCS arrangements, relative to the arrangements that preceded it.

The pre-NZPHCS arrangements are evaluated first to establish a counterfactual against which the NZPHCS changes can be compared. This approach does not presume any inherent superiority in the pre-NZPHCS arrangements. Rather, it recognises the difficulty of obtaining quantifiable metrics to assess in absolute terms the various costs and equity outcomes of the New Zealand primary health care sector performance. The simplified model is used first to identify and describe the institutional characteristics of the pre-NZPHCS arrangements. The expected effects of the arrangements on total system costs, and the equity consequences of the allocation of cost and risks across sector participants are then mapped using the framework developed in Chapter 5. Specific attention is given to the arrangements for pooling utilisation variation risk and the management of its consequences.

Next, the changes to the New Zealand primary health care system brought about by the NZPHCS are examined. First, the consequences of PHO creation and the replacement of fee-for-service government subsidies for consultations with FC capitation payments are evaluated. The major changes to the pre-NZPHCS system are described, and their theoretically-expected effects on the policy objectives are mapped, using the framework developed in Chapter 5. In keeping with the development of the mapping framework, the expected effects are systematically examined, first in relation to the cost containment and fee reduction objectives (including the costs of the various risk management arrangements), and then to the equity and other objectives. Due to data and scope limitations, the effects on objectives are developed and proposed as theoretical expectations. Where possible, evidence is sought from secondary empirical data and reporting to confirm or refute the likelihood of the expected effects having occurred under the NZPHCS, and to assess their possible magnitude.

The same analytical process is then repeated to identify and assess the expected effects of three changes introduced since the original NZPHCS implementation: the Approved Fee Increase Process (AFIP); the Ministerial directive to consolidate PHOs; and the replacement of High-Use Health Card payments for frequent service users (HUHC) with the Care Plus programme. The first two initiatives were introduced specifically to address higher-than-expected costs arising from the NZPHCS arrangements, so an evaluation of their effects on the allocation and management of financial risk and achievement of the policy objectives is warranted. The third initiative – Care Plus – is evaluated separately because, although it is funded using a capitation payment instrument, it differs fundamentally from FC payments in the treatment of utilisation variation risk. Insights arising from this different approach to allocating and managing financial risk can inform future policy development.

The chapter concludes with a summary of the combined effects of all of these NZPHCS initiatives on the achievement of the policy's cost and equity objectives.

6.1 Pre-NZPHCS Arrangements

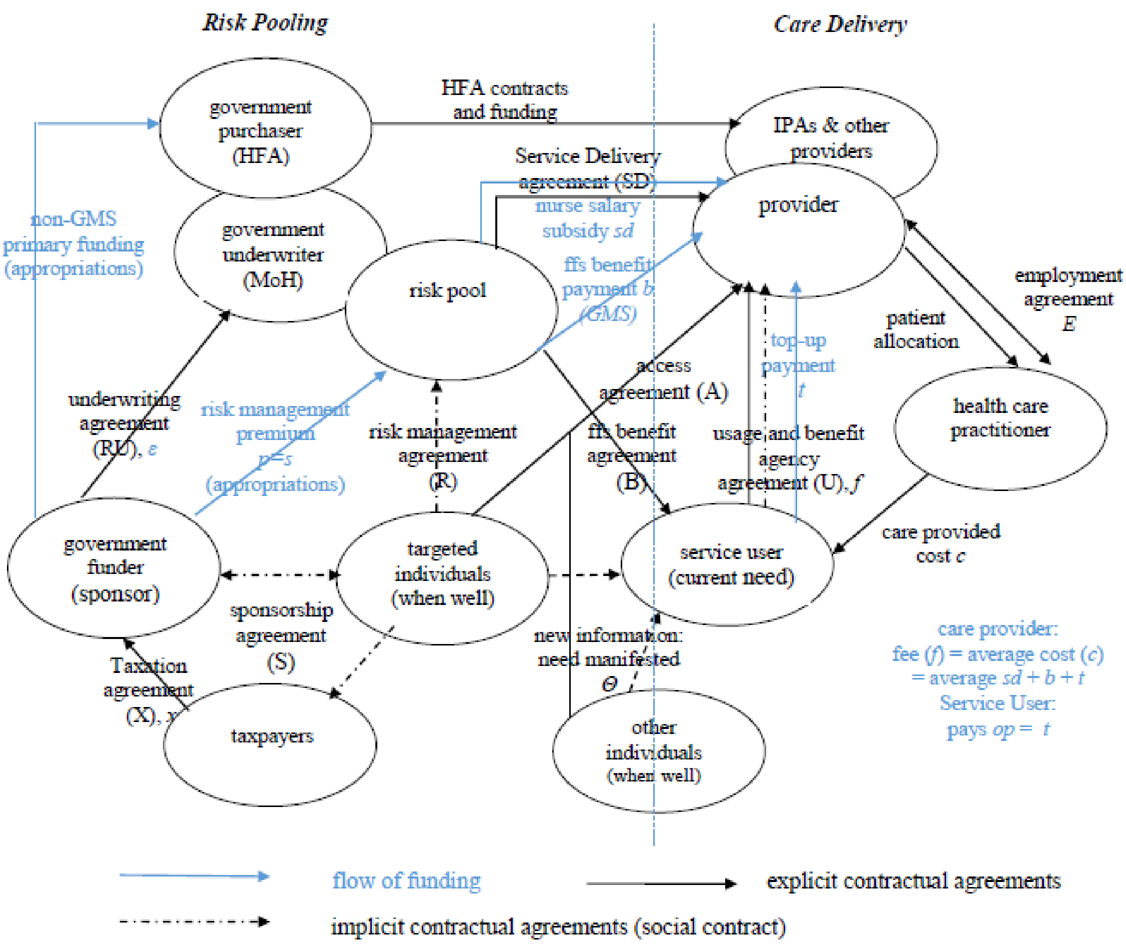
Figure 6.1, based on Figure 5.3, shows a simplified depiction of the pre-NZPHCS arrangements described in Chapter 2.

6.1.1 Pre-NZPHCS: Characteristics

The fundamental characteristics of the pre-NZPHCS arrangements were fee-for-service government payments for a targeted subset of service users identified by age, income and past use. These payments subsidised the fees charged for eligible primary care consultations delivered by small, predominantly GP-owned providers.

The Risk Pooling Side of Figure 6.1 shows an implicit risk management agreement (R) between targeted individuals and the government-underwritten risk pool. Under the original Social Security arrangements the agreement was explicit and applied to the whole population. It became implicit and separated from the premium payment arrangements when the Social Security Fund risk pool was subsumed into the Ministry of Health in the 1960s. The agreement to pay Social Security taxes was replaced with an implicit social contract between the Government and taxpayers. The insurance premium (p) took the form of an implicit subsidy from taxpayers to the risk pool ($p=s$). In effect, the government-sponsored (S) notional premiums for individuals were paid into a notional pool from which actual benefits were paid when claims were made on it. The notional premium payments were proxied by budget appropriations from taxation (X, x) based upon the expected cost of fee-for-service and other subsidies ($x>s=p$). Following the replacement of a universal risk pooling arrangement with a targeted arrangement in 1991, cover was limited to targeted individuals. Non-targeted individuals fully self-insured their uncertain future need for primary health care services.

Figure 6.1 New Zealand Primary Health Care Arrangements pre-NZPHCS



The government-owned and funded risk pool paid a legislated GMS fee-for-service benefit (b) each time a targeted individual's need for a GP consultation became manifest. The benefit offset the fee charged to the service user by the provider (f). No deductibles or co-payments were levied by, or paid to, the risk pool. As providers set the fee, service user payments (t) were balance-billing payments. Non-targeted individuals paid the full fee $t = f$. Targeted service users paid $t = f - b$.

The partial subsidy of practice nurses' salaries constituted a service delivery agreement (SD). Nurse salary subsidies reduced the fees charged to all service users, regardless of whether or not they were eligible for fee-for-service benefits. Although fee-for-service subsidies (*b*) were paid directly to providers in order to reduce transaction costs, they did not constitute a service delivery agreement between the risk pool and the provider. The benefit payment agreement (B) fulfilled the risk pool's obligations under the risk management social contract with eligible individuals. It was triggered by an eligible individual developing a need for care – that is, becoming a service user – and seeking it from any GMS-eligible provider, required by legislation to be a registered GP. Providers collected subsidies as agents of service users under an implicit agency agreement bundled in with the usage agreement (U).

By contrast, in Australia an explicit risk pool – Medicare – pays universal fee-for-service primary care subsidies. Enrolled individuals must explicitly authorise their provider to collect payments direct from the pool when, as service users, they receive care. This arrangement is known as 'bulk-billing'. Eligible service users who have not signed such an authorisation must pay the provider's bill in full and then seek reimbursement themselves from Medicare (Medicare, 2014). Although the New Zealand arrangements reduced transaction costs, they created the impression that providers, rather than service users, were subsidised. However, as Figure 6.1 shows, the fundamental transactions underpinning the fee-for-service payments were, as in Australia, between the Government risk pool and service users. The only difference was that in New Zealand the agency agreement was implicit. Any provider delivering care could collect the benefit, whereas in Australia only a provider holding the service user's explicit agency authorisation may claim the payment.

Non-GMS payments for additional services not included in the legislated GMS first contact bundle are shown in Figure 6.1 as separate transactions between the government purchaser (the HFA) and IPAs and other providers. These services may have been provided by GMS-eligible providers under separate agreements.

The descriptive characteristics of the pre-NZPHCS arrangements are summarised in Table 6.1. One government-operated, -funded and -underwritten risk pool insured around 2 million targeted individuals. Fee-for-service subsidies for eligible consultations were paid based upon service user age, income and historic care utilisation characteristics (Malcolm et al., 1999). Over 1,000 small practitioner-owned providers, rarely with more than five full-time equivalent providers and more than 7,000 individuals on their lists (RNZCGP, 1999), supplied those consultations. Subsidies for targeted service users covered between around 40% and 100% of the average GP fee (Malcolm et al., 1999; Austin, 2001).

Table 6.1 Descriptive Characteristics: Pre-NZPHCS

Risk Pooling Characteristics	***Pre-NZPHCS***
Risk Pool(s)	
Number	one
Size	2 million
Ownership	government
Underwriting/Reinsurance arrangements	taxation
Risk adjustment sophistication	internalised
Individual Coverage	targeted (age, income, historic utilisation)
Premium Sponsorship (targeted individuals only)	government
Deductible/Co-payment	none
Bridging the Sides	
Benefit Payment	fee-for-service
Balance-billing share of fee	untargeted: 100% targeted: 0% (children under 6) to approx. 60% (CSC adult)
Provider Remuneration	
Capitation	
Fixed share	0%
Variable share	100%
Other fixed	
Other variable	
Care Delivery Characteristics	
Service provider characteristics	
Number of practices	over 1,000
Practitioners per practice (number and type)	3-5 GPs
List size	3,000-7,000
Ownership	predominantly practitioners

6.1.2 Pre-NZPHCS: Mapping Characteristics to Objectives

In this subsection the characteristics of the pre-NZPHCS New Zealand primary health care system (Table 6.1) are mapped to various cost, equity and other policy objective measures using the relationships identified in Chapter 5. Assessment will explicate the costs associated with managing both random and controllable risk factors that arose from risk pooling, as well as fiscal, cost variation and cost increase risks, tabulated in Table 6.2.

The mapping provides a benchmark for the expected magnitude of transaction costs, the expected cost (net of risk management overheads) of delivering a standard primary health care consultation and the number of consultations expected to be delivered under these institutional arrangements. Next, benchmark estimates are provided of the extent to which the arrangements fostered equitable distribution of financial and care resources between individuals and service users, and rewarded providers equally for equivalent levels of investment and effort exerted in care delivery. This follows the order of objectives in Table 5.11. Following the methodology used by Cumming (2003), the measures assigned reflect the author's assessment of the magnitude of each element, informed by the theoretical and empirical discussions in Chapters 2 and 4, and the analysis in this chapter. A three-point ranking scale is adopted: low, medium and high. Where some doubt may exist about the appropriate rank to assign a measure, it is assigned to the relevant intermediate rank: low to medium, or medium to high. 'Unclear' is used where there is insufficient evidence to confidently assign a rank.

6.1.2.1 Pre-NZPHCS: Costs

The effects on cost objectives arising from risk management are considered separately from effects from other origins.

Pre-NZPHCS: Risk Management Costs

Under the pre-NZPHCS arrangements responsibility for managing utilisation variation risk was shared between individuals and the government pool. Non-targeted individuals self-insured so faced the full, undiversified financial consequences of uncertainty in their need for primary care. Thus their risk management costs (ε) were high. Targeted individuals shared utilisation variation risk with the single, large government risk pool (around 2 million members). By contrast, the costs of managing the risk via this single, large pool were low.

The government was responsible for premium costs and year-to-year variations between budgeted and actual claims on the pool. Premium costs varied as a consequence of both population changes and changes in the number of individuals qualifying for CSC and HUHC status. Together, pool underwriting risk (which was low) and membership uncertainty (which was moderate) led to medium-to-low levels of *fiscal risk* for the government.

As the fee-for-service subsidies were reviewed only infrequently, and did not vary with differences in the fees charged by different providers, service users bore both cost increase and cost variation risk. Providers could pass these risk costs on in either fees or service quality reductions. In the absence of any metric to measure the exact costs of these risks they are assumed to be of medium magnitude. The subsidy share of fees varied from 100% for children under six years to 0% for untargeted individuals.

The pre-NZPHCS arrangements had no mandatory enrolment requirements, so service users were free to seek care from any provider. Fee-for-service subsidies for eligible consultations were paid regardless of whichever provider supplied it. Regardless of their targeting status, neither individuals nor service users faced systematic barriers to seeking care from their preferred providers. As providers could normally expect to be fully compensated for all consultations provided, the likelihood of cream-skimming occurring was probably low. Nonetheless, service users known to be unable to pay fees could likely have been subject to some cream-skimming. The most affected would have been non-targeted service users, as targeted service users would have generated at least some income from subsidies. As non-targeted service users paid the full fee personally, service user-controlled unnecessary utilisation was likely small and the potential for provider-controlled unnecessary utilisation would have been significantly constrained. However, the likelihood of both forms of unnecessary utilisation opportunism would likely have been high for targeted highly-subsidised service users. The effects on total consultation numbers is therefore unclear.

Pre-NZPHCS: Other Costs

Overall, it is presumed that the costs of delivering care and the transaction costs of operating the system were both average, leading to a ranking of medium in Table 6.2. As fees for FC services charged to service users contained no specific components to compensate providers for bearing utilisation variation risks, they were effectively comparable between providers. Between-provider differences could be attributed to underlying cost differences and the extent to which the monopolistically competitive nature of markets enabled systematically higher fees to be charged in some locations. Although providers had to manage payment systems, the transaction costs of managing benefit payments were constrained by providers collecting them on behalf of service users. Medium ranking is assigned to transaction costs in Table 6.2.

6.1.2.2 Pre-NZPHCS: Equity and Other Objectives

Equity effects are considered separately for Individuals, Service Users and Providers, and distinct from other objectives that the arrangements have influenced.

Pre-NZPHCS: Individual Equity

As there was no enrolment requirement, and returns to cream-skimming were likely low, individuals' choice of provider was apparently unconstrained by their benefit targeting status. As subsidies for targeted individuals were paid from general taxation, then broadly speaking, access to risk pooling, and hence care payment subsidies, was disconnected from targeted individuals' ability to pay. Thus, between-individual equity in the choice of provider being independent of the ability to pay is ranked high.

However, only half the population was eligible for subsidised risk pooling. Consequently, substantial financial inequities in access to subsidised insurance existed between targeted and non-targeted individuals. Non-targeted individuals self-insured, so faced perfectly risk-rated care costs, unless they purchased supplementary insurance in the private sector. In particular, individuals only just above the income thresholds for CSC status were significantly disadvantaged relative to both targeted and high-income untargeted individuals. They had comparatively low ability to pay for care, but received no subsidies and had to pay the full costs of care if it was required. Overall, therefore, between-individual equity in the dimension of premium payments being independent of income and need is ranked medium.

Pre-NZPHCS: Service User Equity

Targeting of benefit payments also led to inequities between service users.

The payment of targeted benefits could be described as a moderately equitable distribution of government funding across targeted service users. All equally ill targeted service users were eligible for the same level of benefits, and the number of benefits paid increased with the number of consultations required. However, those attending providers with higher costs would expect to pay higher fees, and the private share of costs was perfectly inequitably distributed in that service users paid more, the more care that was required. Untargeted service users paid the full costs of care, so in effect faced perfectly risk-rated penalties, up to the point that eligibility for HUHC payments triggered a stop-loss. For targeted individuals, the greater the share of the fee the government subsidy covered, the less the fee paid had the effect of imposing a risk-rated penalty.

Thus, children under six years facing no fees were treated differently to both CSC-holding adults and untargeted adults who paid increasingly larger shares of costs. Furthermore, those attending high-fee providers paid more than those attending low-fee providers. The difference was most pronounced for after-hours care, where fees could be many multiples of the fee paid during regular business hours. The wide variations in fees paid thus led to a substantially inequitable system overall, but with different distributions within and between different targeting classes. In Table 6.2, between-service user equity is ranked medium for targeted and low for non-targeted service users, in both dimensions: benefits being proportional to need and care being independent of ability to pay.

That some targeted service users did not claim benefit payments for which they were eligible did not of itself give rise to a systemic inequity. Rather, it resulted from imperfect and unequally distributed information associated with the implicit agency agreement under which providers collected benefits on behalf of service users.

Pre-NZPHCS: Provider Equity

As providers could expect to receive a full fee for each consultation delivered, their profitability was proportional to their effort. Those providers prepared to deliver more consultations were rewarded for the additional effort exerted. As profits were unaffected by utilisation variation risk, stinting risk was low, as were incentives to engage in strategic behaviours in building a client list. Consequently, incentives for practitioner-owners to invest in provider-specific capital are ranked medium-to-high.

Pre-NZPHCS: Other Objectives

As pre-NZPHCS provider revenues depended entirely on delivering consultations, there were few financial incentives for population-focused care. Hence it is ranked low in Table 6.2. The consultation focus also provided low incentives at a provider level for delivering co-ordinated care. However, the contribution of IPAs in organising provider interests increases the ranking in this second objective to medium-to-low.

6.1.3 Pre-NZPHCS: Summary

The effects of the pre-NZPHCS arrangements on the metrics used to assess the achievement of policy objectives are summarised in Table 6.2.

Table 6.2 Effect on Objectives: Pre-NZPHCS

Cost Containment	***Pre- NZPHCS***
Total costs	
Service delivery costs	medium
Transaction costs	medium
Risk management costs	
Random risks	
Utilisation variation risk (ε)	low in relation to targeted individuals (pooled) high for self-insured
Other random risks	cost increase risk medium, borne by service users cost variation risk medium, borne by service users fiscal risk medium – government bears population increase and pool underwriting costs
Controllable risks	
Cream-skimming	low
Unnecessary utilisation – user- controlled	low for unsubsidised (untargeted) service users high for subsidised (targeted) service users
Unnecessary utilisation - provider-controlled	low for unsubsidised (untargeted) service users high for subsidised (targeted) service users
Other strategic actions	
Consultation numbers	unclear
Equity	
Individual: premium payments independent of income, need	medium: tax funding for subsidies, but only half eligible
Individual: choice of provider independent of ability to pay	high
Service User: benefits proportional to need	medium for targeted (still pay fee) low for non-targeted (until HUHC 'stop-loss' threshold met)
Service User: care independent of ability to pay	medium for targeted (still pay fee) low for non-targeted (until HUHC threshold met)
Providers: equal returns for equal effort	medium to high: full fee receivable for each service delivered; profitability unaffected by utilisation variation risk
Other Objectives	
Population-focused care	low due to service-based funding
Coordinated care	medium to low – strong role for IPAs, but focus on GP care

6.2 The NZPHCS Arrangements: FC Funding

This subsection considers the effects of the introduction of PHOs, and replacement of government fee-for-service subsidies with capitated FC subsidies under the NZPHCS. It focuses on the consequences of ‘passing on’ capitated FC payments by PHOs to providers via ‘back-to-back’ agreements. It does not consider the effects of any other agreements between funders and either PHOs or providers for the delivery of care other than that expected to be subsidised by FC payments. Neither does it consider, except for the purpose of comparison, capitated payments for Health Promotion, Services to Increase Access or Management Services. It therefore deals specifically with the fundamental changes to the funding of risk pools underwriting individuals’ uncertainty regarding need for FC care, and the remuneration of providers delivering it.

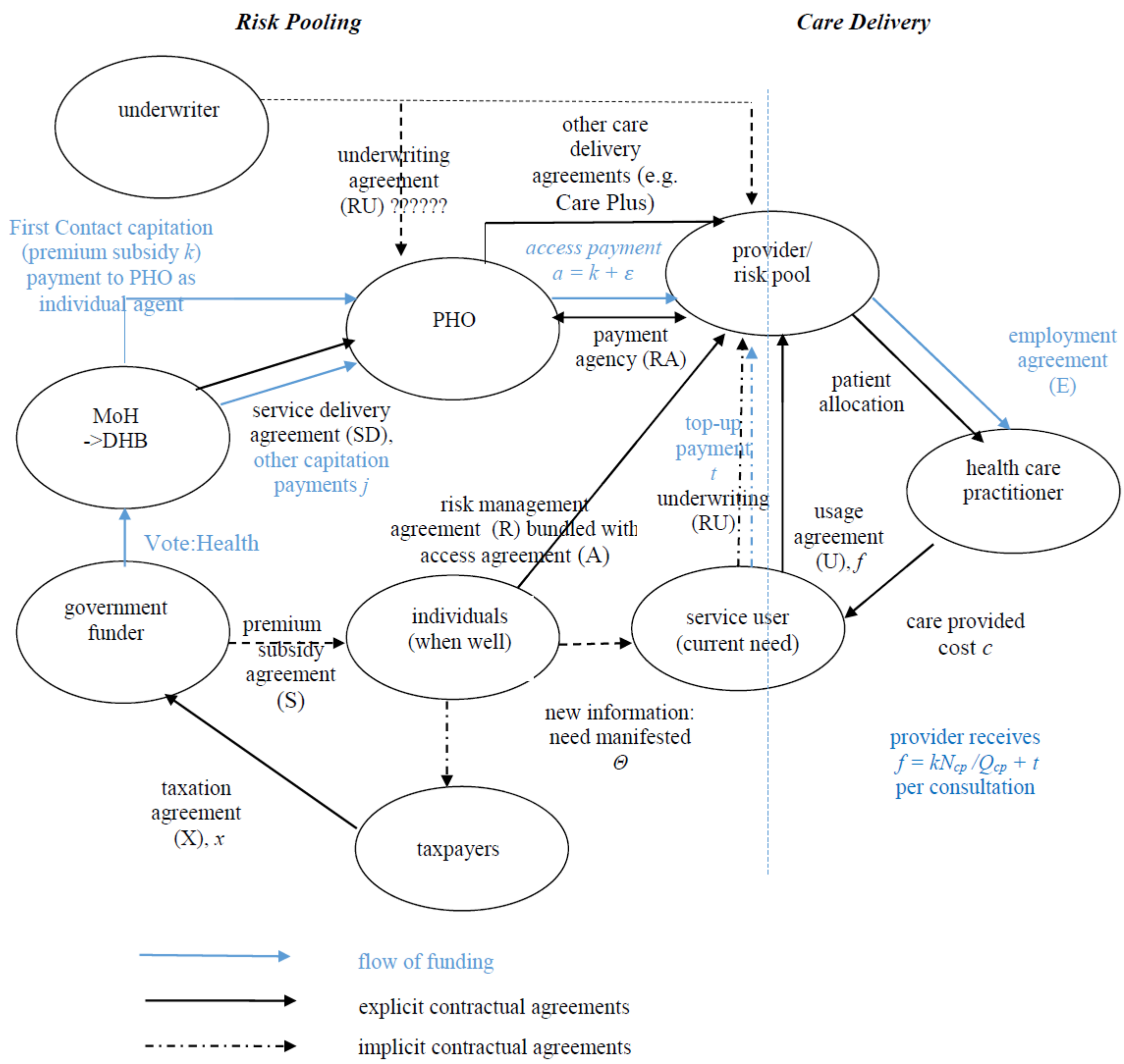
6.2.1 NZPHCS: FC Characteristics

Figure 6.2 depicts the New Zealand primary health care sector under the NZPHCS arrangements. Compared to Figure 6.1:

- universal access to government-subsidised pooling of utilisation uncertainty for all individuals within the population replaced age and CSC-based targeting;
- government FC capitation payments became explicit premium subsidies (s) paid in the first instance to PHOs, so were no longer benefit payments (b) from a government-owned-and-operated risk pool to reduce service users’ care costs; and
- multiple provider-owned and -managed risk pools replaced the single government-owned and -operated risk pool.

In this subsection the model will be used to identify how these changes have altered the descriptive characteristics of the pre-NZPHCS New Zealand primary health care sector. An explanation based upon the magnitude and allocation of financial risk management is offered as an additional explanation to those identified in Chapter 2 as to why providers, and not PHOs as originally anticipated by King (2001), became the risk pools.

Figure 6.2 NZPHCS Arrangements: First Contact (incl VLC,0FU6 & RR)



NZPHCS FC: Applying the Model

The fundamental structural implication of the NZPHCS on the risk pooling side of the New Zealand primary health care sector was that the Government ceased to be the insurer of individuals' utilisation uncertainty. The terms of the social contract between the Government and its citizens, dating from 1941, were fundamentally rewritten. The Government continued to sponsor individuals' risk pool membership, but it ceased to operate the risk pool. Hence, it was no longer a party to the agreements under which providers collected benefits on behalf of subsidised service users.

Individuals' eligibility for government capitation payments became tied to their enrolment with a primary provider affiliated exclusively with a single PHO.

Their risk management agreements (R) became explicit, and were bundled with agreements with providers to supply care when required (A). The implicit agency whereby providers formerly collected benefits paid for service users was replaced by the bundled risk management and access agreements, and novated to PHOs. PHOs thus became agents of the enrolling providers (RA). PHOs collected the FC capitation payments (premium subsidies *k*) from the government funders (DHBs) and passed them on unchanged to providers. Providers thus became the effective risk pools managing individuals' utilisation variation risk. This is represented in Figure 6.2 by their position straddling the boundary between the risk pooling and care delivery sides of the system.

The fundamental structural implication is the lack of distinction between the agreement funding providers to operate the risk pool for insured individuals (the funding associated with R in Figure 5.3) and the service delivery agreement under which they would normally be remunerated to provide care to service users (SD in Figure 5.3). The risk adjustment formulae normally used to calculate risk pool premium liabilities also had to serve as the incentive contract remunerating providers delivering FC care. However, unlike standard incentive contracts (e.g. England's complex GMS agreements or Australia's fee-for-service Bulk Billing arrangement), the NZPHCS service delivery agreement was not intended to fully compensate the providers for the costs of care supplied. Providers still had to charge top-up fees (*t*) to service users to break even.

The NZPHCS fundamentally changed the function of the provider-levied top-up fee: *t* in Figure 6.2 is not seamlessly interchangeable with *t* in Figure 6.1. As NZPHCS providers were both risk pool operators and providers in a system where sponsor subsidies did not cover the full expected costs of care, *t* in Figure 6.2 was the only means of collecting the non-government share of sector costs. It had to perform the role of both a balance-billing fee and a premium top-up (*bb* and *i* so that $p=s+i$ respectively in Figure 5.3). Specifically, *t* in Figure 6.2 included a component addressing utilisation variation risk management that it did not include in Figure 6.1. By bundling risk pooling and care delivery, the NZPHCS bundled the balance of the premium subsidy normally levied on enrolled individuals (*i*) in a part-funded risk pooling arrangement with the balance-billing fee normally levied on service users (*bb*) in the event that a fee-for-service benefit payment failed to meet the full costs of care delivered. However, service users were not seamlessly interchangeable with enrolled individuals. The fee paid by service users became contingent upon the costs of each pool managing its own unique utilisation variation risks arising from the difference between the expected utilisation of enrolled Individuals – from which FC premium subsidies were determined – and actual utilisation by service users. The fee *t* in Figure 6.1 paid by service users was independent of either the subsidies paid for, or the utilisation levels of, other individuals receiving care from any given provider. In Figure 6.2 *t* was highly contingent upon: the extent to which the premium liabilities of different individuals were subsidised differently by the government sponsor; the allocation of individuals to pools; and the difference between the expected and actual utilisation levels of the members of each pool.

The shifting of responsibility for risk pool management from the government to providers under the NZPHCS changed the role of government funding from benefit payments to premium subsidies (*b* and *s* respectively in Figure 5.3). A risk pool would normally set premium payments based solely upon the expected utilisation, and hence costs of care, incurred by its members. Government sponsors could choose to subsidise the risk management liabilities of some individuals to a greater extent than others, even though they may have the same expected need for care, if they wished to achieve specific between-individual wealth redistribution objectives. But this is a separate and distinct decision from one made by a government-funded and -operated risk pool which opts to pay higher benefits for the same care supplied to different service users in order to reduce the fee liabilities of some users to a greater extent than others. Wealth redistributions between individuals are not equivalent to wealth redistributions between service users.

Yet under the NZPHCS arrangements, government FC capitation payments varied between individuals with identical expected needs for care in order to reduce the fees paid by some of them when care was utilised. Although required to perform the role of risk premiums, the FC payments were not set using an actuarially based risk adjustment process predicated upon the expected costs of delivering care to an enrolled population. Instead, they were set using a formula developed in Sutton (2000). The formula converted a given amount of government funding into notional averaged fee-for-service consultation subsidies (NACS). These were based upon the average expected utilisation for each capitation category determined using individual age and gender characteristics. If targeted service users were to pay lower fees than other service users, then FC capitation payments for individuals exhibiting the targeted characteristics were adjusted upwards by the desired reduction in fees multiplied by the expected number of consultations they were expected to require.

The resulting FC payments were simply a pragmatic means of allocating a given amount of government funding across a population in a manner loosely reflecting the government's desire to address two separate goals: part-funding the health care of all individuals in a given population; and providing disproportionate fee reductions for targeted service users. They were not based upon the expected costs of delivering care for a given population. Rather, they were predicated upon leaving the average expected provider revenues for delivering an average number of consultations unchanged from what they would have been if the same funds had been paid as fee-for-service subsidies. When government subsidies were increased for different capitation categories as the higher levels of government funding were rolled out, it was presumed that there would be a direct dollar-for-dollar substitution of government funding increases for service user fee decreases, as would have been the case previously.

Yet, neither did FC payments constitute risk-adjusted service delivery agreements, as expected under classic supply-side risk-sharing. Conflating risk management and care delivery led to FC payments becoming the fixed revenue component of a partial capitation agreement. The fees charged to service users became the variable component. Providers enrolling a larger proportion of targeted individuals, attracting FC capitation payments inflated to reduce fee payments, had a larger share of their income fixed – and a smaller share variable – than those enrolling a smaller share. The financial incentive strengths faced by providers in their service delivery agreements varied not as a consequence of their different abilities to manage financial risks, but as a consequence of the government's redistribution preferences and the distribution of individuals exhibiting the targeted characteristics across the various risk pools. The effect was most marked in the distinction between VLC providers, who on average were expected to receive around 80% of their revenue for FC services from capitation, and standard providers, receiving around 60% in this manner.

NZPHCS FC: Summary of Characteristics

Table 6.3 summarises the characteristics of the NZPHCS arrangements, compared to those of the preceding system.

Table 6.3 Descriptive Characteristics: NZPHCS FC

	NZPHCS	***Pre-NZPHCS***
Risk Pooling Characteristics		
Random risk management		
Risk Pool(s)		
Number	1030 (approx.)	one
Size	3000-7000 (approx.)	2 million
Ownership	providers	government
Underwriting/reinsurance arrangements	provider owners, service users	taxpayers
Risk adjustment sophistication	age/gender poorly adjusted confuses costs and revenues	internalised
Individual Coverage	comprehensive	targeted
Premium Sponsorship	government	government
Subsidy share of costs		
Controllable risk management		
Deductible/Co-payment	none	none
Bridging the Sides		
Benefit payment	N/A	fee-for-service
Balance-billing share of fee	untargeted: 40%-50% (adult) 30% (13-14 years) targeted: 0% (< 13 years) 10% (13-14 years) 20%-30%(VLC adult)	untargeted: 100% targeted: 0% (< 6 yrs) to 60%(CSC adult)
Provider remuneration characteristics: FC		
Capitation terms:		
Fixed share	60%-80%	0%
Variable share	40%-20%	100%

One large government-funded and -operated risk pool covering a targeted population of around 2 million individuals was replaced with over 1,000 provider-based risk pools. Whilst the size varied, on average these pools were very small, with around three to five full-time-equivalent GPs and between 3000 to 7000 enrolees (MoH (2014) indicated an average of 4175 in April 2014). In the first instance they were underwritten by their owners, who for the most part were GPs. Government-sponsored premium subsidies were determined using a formula based on age, gender and provider characteristics that varied substantially from the principles of risk adjustment normally associated with insurance-based risk pooling. The variation occurred because the government required that targeted service users would continue to pay lower fees than non-targeted ones, even though government funding was now paid as premium sponsorships to the risk pools and not benefits to service users. As with the preceding arrangements, there was no co-payment.

Provider remuneration for delivering FC care took the form of partial capitation. Whereas in the preceding arrangements, providers received 100% of FC remuneration as a variable fee for each service delivered, under the NZPHCS the fixed share of provider remuneration varied on average between 60% (Standard) and 80% (VLC). Providers set the variable share, which on average varied between 40% (Standard) and 20% (VLC). The actual subsidised share of fees continued to vary widely across providers and service users, due to the ability for providers to engage in price discrimination.

NZPHCS FC: Why Providers, not PHOs, Would be Expected to Operate Risk Pools

The NZPHCS originally proposed that PHOs would receive government funding and enter into a wide variety of contracts with providers to coordinate the care supplied to enrolled individuals, in the manner of MCO risk pools (Figure 2.3; King, 2001). In practice (Figure 6.2), providers became pool managers. In Chapter 2 it was proposed that PHOs may have passed on capitation funding intact to care providers to avoid the high transaction costs of bespoke contracting (or lacked the human capital required for this task), and the government and DHBs arguably required the passing-through of increased government funding to achieve desired reductions on service user fees. However, two features of the NZPHCS mean that the action was also rational from a financial risk management perspective. These features are: the establishment of PHOs as new, non-profit entities; and the grandfathering of the historic arrangement allowing providers to balance-bill service users.

As non-profit firms, PHOs had no shareholders to underwrite financial risks. As new firms, they had no established risk reserves to manage the financial consequences of year-to-year variations in utilisation of FC services. As they were constructed as co-ordinators and not providers of care, PHOs were not anticipated to charge either individuals or service users. The NZPHCS also made no explicit provisions to facilitate the reinsurance of financial risks faced by PHOs. With no explicit means of managing financial risk, PHOs were therefore extremely risk-averse. They could be expected to pass responsibility for risk pooling and the funding associated with it on to less risk-averse parties, if they existed, in preference to entering into a range of different service delivery agreements with a range of different providers themselves.

As providers retained the historic ability to pass on the costs of managing financial risks of any sort in balance-billing fees levied on service users, they were less risk-averse than PHOs. It is therefore unsurprising that under the NZPHCS, FC funding, and the risk pooling responsibility associated with it, was passed on intact by PHOs to providers. Providers were very small, financially undiversified and risk-averse, so the premium they would expect in exchange for assuming responsibility for managing the financial risks was large. Nonetheless, it was smaller than would be required by even more risk-averse PHOs with even fewer risk management options.

Hence, even if PHOs did have access to contracting and risk management expertise and funding to meet higher transaction costs, there would still have been a compelling theoretical reason for those sector participants with better capacity to manage financial risks associated with FC funding than extremely risk-averse PHOs to bear them.

Available secondary evidence tends to suggest that, whether by intent or accident, PHOs are not undertaking any substantive risk pooling or contracting activities for FC care. Appendix 2 confirms that in 2013 most PHOs passed FC funding intact to providers. They also passed on capitation payments for PHO management, Services to Improve Access, Health Promotion and Care Plus (discussed subsequently) to IPA-owned and –operated entities such as ProCare, Pinnacle, SouthLink and Compass. Thorlby et al., (2012, p 27) identify that IPAs have exhibited “a persistent interest in using their organisational capacity as the basis for developing new services” under the NZPHCS arrangements and “have been encouraged to enter joint bids to deliver integrated care with other providers, under umbrella contracts known as ‘alliance contracts’” (p. 23). However, these services have been developed in IPAs’ capacity as provider organisations, not as risk pool managers. These new services largely addressed the devolution of responsibility for delivering new and additional care in a community setting, rather than revisiting the arrangements for delivering FC care.

Although IPAs too have limited means of managing financial risk, they have access to revenue streams not available to PHOs across which to diversify the (smaller) financial risks associated with these non-FC activities. IPAs can charge membership fees to affiliated providers – something that PHOs appear not to do. Some IPAs have accumulated large financial reserves that are beyond the contractual influence or scrutiny of DHBs (e.g. Pinnacle: $6 million (Pinnacle, 2013); South Link: $8.45 million (South Link, 2013), at 31 June 2013). Others have contract income streams other than primary health care service funding (e.g. South Link part-owns BPAC which provides IT services to Pharmac and numerous PHOs (South Link, 2013); Pegasus part-owns a property investment company (Pegasus, 2013)).

It is therefore unsurprising that the limited examples of novel approaches to contracting that have emerged are largely under the aegis of IPAs. But IPAs are acting as agents of their provider-members, rather than as insurer-MCOs in this capacity. MCOs would be expected to devise new ways of contracting a wide array of care types from a broad range of providers other than IPA-affiliated GPs. The IPAs’ role as provider-agents conflicts with the objectives of MCOs.

6.2.2 NZPHCS FC: Effects on Objectives

In keeping with the development of the mapping framework, the expected effects are systematically examined, first in relation to the cost containment and fee reduction objectives, including the costs of the various risk management arrangements, and then to the equity and other objectives.

6.2.2.1 NZPHCS FC: Cost Objectives

Inevitably, replacing one very large government-owned risk pool with over a thousand very small risk pools owned and underwritten, in the first instance, by very risk-averse providers would be expected to lead to very much larger costs of managing utilisation variation risk than previously. To the extent that risk management costs can be passed on by providers in service user fees, then they would be expected to become observable in higher fees than if the same level of funding was applied as fee-for-service subsidies, as under the preceding arrangements. Consequently, the costs of providing an equivalent amount of care would be expected to be very much larger under the NZPHCS than previously.

As the formulae used to set FC capitation payments were based on maintaining average provider revenues, and not meeting a specific share of costs, they did not constitute risk adjustment formulae. Hence they were unlikely to be very good predictors of expected costs, and would allocate the burden of financial risk unevenly across providers. This is illustrated by the different levels of financial risk faced by VLC providers receiving larger shares of income from FC payments than standard providers. It is also manifested in the different incentives providers faced in supplying care to service users paying different fees, which were further distorted by the use of expected utilisation rates that varied markedly from those observed. As providers faced very different levels of financial risk for supplying the same level of care to otherwise-equally needy service users, the potential for them to engage in new strategic opportunistic behaviour, and notably cream-skimming, that was not observed in the preceding arrangements, would be expected to be significant.

The NZPHCS increase in the share of government funding was expected to lead to an increase in both necessary and unnecessary utilisation of care by newly subsidised individuals, and hence an increase in the total costs of care supplied. The introduction of financial incentives was expected to reduce incentives for providers to supply unnecessary care, thereby reducing total costs. The overall effect on total costs is unclear. However, the much stronger financial incentives faced by VLC than standard providers suggests that the effects would be unevenly distributed across provider types.

This subsection will examine each of these characteristics in turn, explaining their expected effects on the total costs of the NZPHCS FC arrangements compared to those that preceded them.

NZPHCS FC Costs: Small Pools Lead to High Risk Management Costs

As providers retained the right to balance-bill service users, then the costs of managing utilisation variation risk would be expected to be passed on to service users, along with cost increase and cost variation risks already passed on under the pre-NZPHCS arrangements. Assuming that at least some providers were motivated by profit maximisation, these costs would be expected to be manifested as either or both of higher fees or lower service quality. Average service user fees would therefore be expected to be higher and/or average service quality lower under the NZPHCS FC arrangements for the same level of government funding provided as fee-for-service subsidies.

Theoretical Expectations

The expected effect can be illustrated algebraically. Under the pre-NZPHCS fee-for-service payment arrangements service user fees simply recovered the difference between the average cost of care provided (including all costs of practitioner time and a fair return on invested capital) (c) and the fee-for-service subsidy paid ($t=f-b=c-b$). Whilst conceptually a provider's NZPHCS FC capitation revenue (K) could be converted into notional averaged consultation subsidies ($NACS$) by dividing the capitation payment by the expected number of consultations to be delivered (Q) ($NACS=K/Q$), this reflects only the *expected* subsidy. The *effective* subsidy is dependent upon the number of consultations actually delivered in a given period by the enrolling provider when actual needs for care for all enrolled individuals were revealed (q). Let t_e be the expected 'break even' fee for delivering the expected Q consultations at cost c. Thus:

$$cQ=K+Qt_e \qquad or \qquad (1)$$

$$t_e=c-K/Q= c-NACS. \qquad (2)$$

As $q \neq Q$, the actual fee required to break even (t_a) necessarily differs from t_e by the non-zero error term ε:

$$\varepsilon = K/Q - K/q \ as \qquad (3)$$

$$t_a= c-K/q => t_a-t_e=(c-K/q) - (c-K/Q) => t_a=t_e+(K/Q-K/q) = t_e+ \varepsilon. \qquad (4)$$

The error term ε measures the risk assumed by the provider as a consequence of the change from fee-for-service to FC capitation payment. It is a real cost arising from actual utilisation faced by the provider varying from the expected utilisation under which it was remunerated. If providers did not know in advance how their actual utilisation would vary from the expected levels when FC capitation was implemented, then it would have been prudent to add a premium to fees to create a buffer against the possibility that actual utilisation would be higher than expected. Even if they did not add a premium initially, the ability to set fees ensured providers could retrospectively increase fees to recover past losses from future income streams. Thus, in the long run (where average costs equal marginal costs) the average fee charged would be expected to rise relative to the fee-for-service counterfactual simply because of the introduction of new financial uncertainties for providers.

A simple example (Table 6.4) illustrates. Assume two providers, A and B, have lists of enrolled individuals with identical funding characteristics. The average cost of delivering a standard consultation (including a fair return on the capital invested by owners) for each is $50. Both charge a fee of $25 per consultation, and receive capitation income of $250,000 based on the assumption that each will deliver 10,000 consultations. If each delivers exactly 10,000 consultations, they will break even. However, A delivers 5% fewer (9,500) and B 5% more than the expected number (10,500). Provider A makes a windfall profit of $12,500 that can be extracted by the owners as there is no NZPHCS requirement that providers maintain risk reserves. Meanwhile, B makes a loss of $12,500. Provider A makes a profit even though delivering 1000 fewer consultations than the loss-making B.

The one-period cost of financial risk due to random utilisation variation is $25,000 (the sum of the two risk costs ε). There would have been no random utilisation variation risk cost at either the provider or central pool level under fee-for-service remuneration. Each provider would receive exactly $50 for each consultation delivered – $25 from service user fees and $25 from a fee-for-service subsidy – regardless of the number of consultations delivered. The $12,500 saved by the central pool from subsidising 500 fewer consultations than expected at Provider A would exactly offset the $12,500 paid for 500 additional consultations subsidised at Provider

B. This outcome will occur even if providers do not act opportunistically – it is simply the higher cost of random risk management arising from pool fragmentation.

Table 6.4 Risk Premium Example

	Average	Provider A	Provider B		Provider B*	Provider A*
			Loss	B/Even		
Consultations						
Expected	10,000	10,000	10,000	10,500	10,000	9,500
Actual	10,000	9,500	10,500	10,500	10,000	9,500
User fee	$25.00	$25.00	$25.00	$26.19	$26.19	$26.19
Revenues						
Capitation	$250,000	$250,000	$250,000	$250,000	$250,000	$250,000
Fee	$250,000	$237,500	$262,500	$275,000	$261,905	$248,810
Total	$500,000	$487,500	$512,500	$525,000	$511,905	$498,810
Per consult	$50.00	$51.21	$48.81	$50.00	$51.19	$52.21
Costs	$500,000	$475,000	$525,000	$525,000	$500,000	$475,000
Profit/Loss	$0	$12,500	-$12,500	$0	$11,905	$23,810
Per consult	$0	$1.32	-$1.19	$0.00	$1.19	$2.51

However, the long-run outcome depends upon whether each provider expects to deliver 10,000 consultations in the next period (i.e. the 5% variation was truly random) or whether the utilisation variations are correlated over time (i.e. A's individuals are healthier than the population average used to set capitation income and B's less healthy than average). It also depends upon whether the providers know if their lists vary from the population average, and how they choose to respond to their private information.

Suppose A expects to deliver 9,500 consultations each period. Provider A faces no incentive to reduce its fee, even though it would still break even at a fee of $23.68. Its fee could remain at $25 – the same fee as if the variation was truly random – and its service users pay $1.32 (12,500/9500) more per consultation than is necessary to cover costs. Under these assumptions A is perpetually more profitable than an average provider when charging the same $25 fee. Provider A does not have to engage in any explicit screening or selection activities to make these profits – it is simply the additional correlation effect conferred by trading repeatedly with the same set of individuals whose actual expected needs for care differ from the expected level upon which capitation payments are based. Provider A is thus rewarded for acting opportunistically and not reducing fees when it could have. If all providers like A engage in such opportunism (a form of 'cream-skimming'), the average expected fee will become the minimum fee charged. Even if only some A-type providers act in this manner, the average expected fee will be higher than just the average fee pre-NZPHCS plus the cost ε of managing a one-period utilisation variation risk.

On the other hand, if B expects to deliver 10,500 consultations each period – that is, it faces serially correlated high demand – then it is financially sustainable in the long run only if it increases fees by \$1.19 per consultation (12,500/10500). Its service users now pay more per consultation than those of Provider A, even though B is less profitable. But another provider, B*, also delivering 10,500 consultations in the first period but expecting to deliver the average of 10,000 next time (i.e., it is randomly unlucky), will also be able to increase its fees by \$1.19 if it is externally indistinguishable from B. Indeed, if provider A could masquerade as provider B (e.g., it was not required to reveal its actual utilisation over time), then it too may be able to raise its fees to match B and B* (A* in Table 6.3), leading to even higher profits extracted and hence higher costs of financial risk management.

In this manner, if providers can adjust their fees each period based upon the actual number of consultations delivered, regardless of expected numbers, then no provider will make a loss. Furthermore, the average fee charged would be expected to increase over time, even if underlying costs remained unchanged, simply by providers re-setting their fees to reflect actual utilisation observed in their most unlucky period, whenever that occurs. The most serially unlucky provider would be expected to just break even, even though delivering the most consultations, whilst the most serially lucky would be expected to make the highest profits per consultation even though delivering the fewest services.

If primary health care markets were perfectly competitive, the ability for providers to unilaterally increase their fees should be constrained by individuals switching to other providers. However, primary health care is at best monopolistically competitive, so fees can be increased to some extent without the fear of losing enrolees. Furthermore, the NZPHCS arrangements create, via PHOs and IPAs, a forum for sharing information between providers that could facilitate collusion in setting posted prices – the price information likely used by individuals when selecting or considering switching providers (if indeed they can, given the ability for providers to refuse enrolments).

Fee and utilisation information collected by PHOs or their IPA agents from each provider is aggregated before being passed to DHBs for public reporting. Consequently, the identity of perennially unlucky providers (such as B*), and the fees they must charge to break even, are likely common knowledge amongst provider-members. As B* is unlucky precisely because it has higher-than-average-need individuals on its list other providers do not want its enrolees to switch to them. Without enrolee-specific information to screen out individuals with higher expected needs than their own current list average, providers' own profitability will be threatened. Lucky providers thus have an incentive to match or even exceed the *posted fees* of their geographically proximate unlucky rival(s) to discourage price-based enrolee switching. That is, unconstrained, lucky providers might be expected to behave in the manner of A*, and fees charged in a given locality could converge to those required for the most unlucky provider to break even.

If the premium costs are not added to fees, then unlucky providers can remain solvent only by reducing care quality. But equally, to the extent that care quality reductions are discernable, lucky providers may also be able to lower their care quality to that of the unlucky providers, so rather than the risk costs being manifested in higher fees, they play out in lower quality. This may be desirable if there was evidence that previous care quality was too high, as has been observed in the presence of universal fee-for-service subsidies in some circumstances. But it is not clear that this was the case in the pre-NZPHCS arrangements, given that over half the population was not eligible for subsidies, so providers faced financial constraints on over-delivering quality.

Thus, relative to the pre-NZPHCS funding arrangements, the costs of random risk management are expected to have risen substantially from the fragmenting of one large risk pool managed by a risk-neutral government into over 1,000 smaller risk pools managed by risk-averse providers. The combination of capitation funding and the co-ordination of provider activities via PHOs has increased the opportunities for providers to act strategically and opportunistically in their fee-setting to both extract random surpluses from actual care delivered differing from that for which they are funded, and the effects of correlated utilisation associated with their lists of enrolled individuals of which they are aware, but are not reflected in capitation funding formulae. Whilst in the short run it is feasible that providers not motivated by profit maximisation might absorb these risk costs and not pass them on to service users in fees or reduced service quality, in the long run this will be sustainable only if they are prepared to accept much lower returns for the same level of effort than the average provider.

Empirical Evidence from Secondary Sources

It is extremely difficult to measure the exact magnitude of the risk premium added to user fees in practice, due to:

- the absence of comprehensive utilisation information;
- the wide range of unreported costs facing providers;
- the considerable commercial freedom providers enjoy in determining the fees actually charged to service users (as opposed to posted fees declared) in the face of the multiple strategic incentives they face in managing their firms; and
- the effects of the interaction of various political and commercial factors on the supply and demand for consultations.

Nonetheless, whilst fees have fallen under the NZPHCS, they have not fallen as much as was anticipated (King, 2004; 2005). This is consistent with the theoretical proposition that the costs of financial risk-bearing under the NZPHCS were higher than if the same government funding was paid as higher fee-for-service subsidies, and that at least some of the higher risk costs were monetised in fees charged to service users.

Cumming & Gribben (2007) (henceforth CG), whose study of user fees between 2001 and 2005 is discussed in Chapter 2, identify that in this period "for doctor visits, average fees fell by $12.23 or 33% for those without CSCs and by $3.34 or 13% for those with CSCs. The government was seeking falls in schedule fees of around $26 for those without CSCs and of $11 for those with CSCs (including adjustments for inflation)" (p. xxi). Thus, the average fee charged to non-CSC holders fell by only 47% of the expected amount, and for CSC-holders by only 30% of the expected amount.

It is plausible that some of the failure for fees to fall as much as expected may be explained by factors such as: providers using higher funding to allow their originally lower-than–acceptable income levels to ‘catch up’ with their expectations; costs increasing by more than income levels; the workload associated with a standard consultation increasing; and the mix of consultation types changing (Cumming, Mays & Gribben, 2008). However, the ‘missing reduction’ is almost certainly in part accounted for by the risk premiums attributable to the higher costs of financial risk management being passed through in service user fees, in order to allow providers to remain financially viable. That the percentatge reduction in fees was less for previously-subsidised CSC-holders than previously unsubsidised non-holders is consistent with the proposition that the financial risk CSC-holders imposed on providers was higher due to the higher FC payments and lower service user fees they brought. That is, providers were passing on both the fee reductions, and the different financial risks associated with them, as they had been accustomed to doing since 1941. The smallest fee reductions constituted a higher proportion of the expected fee, and hence were experienced by those service users whose capitation funding imposed the highest financial risk (CSC-holders).

Raymont, Cumming & Gribben (2013) (henceforth RCG) extend CG’s analysis to include data for 2006 and 2007, which largely confirms the patterns observed up to 2005. As each new group became eligible for increased capitation subsidies, the fees charged fell, with the absolute reductions being greatest for individuals who had not previously held a CSC. By 2007 fees had converged for all adult capitation classes to around $24 in Interim providers and about $14 in Access providers. But the average fee paid by adults 65+ in Interim providers rose from $20.52 in 2004/5 to $24.06 in 2007 – a rise of 17% as new capitation categories were added (i.e. as the magnitude of financial risk shared with them increased). (Access provider fees for this group rose from $13.67 to $14.03 – 3% – in the same period.) (p36). The difference in average fee increases between Access and Interim providers may be a function of: the more restricted ability of Access providers to increase their fees due to the lower ability of their enrolees to pay; greater use of quality reduction to manage cost increases; or the more effective use of AFIP (discussed subsequently) to constrain increases in this provider group. It may also be because Interim providers were more likely to act opportunistically and extract profits than their Access counterparts (albeit enabled by imperfect AFIP). However, it cannot be discounted that the large increase in fees charged to the already highly-subsidised 65+ group in

Interim providers in part reflects the relatively greater increases in financial risk assumed by these providers as each new capitation group was added. This effect will be explained in more detail in Chapter 7.

Unequal Financial Incentives: Standard and VLC Providers

VLC providers received higher FC capitation payments than standard providers in exchange for agreeing to charge lower fees. Table 6.5 illustrates how this arrangement would be expected to lead to higher costs of utilisation variation risk for VLC providers, and hence greater fee volatility and/or service quality variations for service users targeted for higher levels of government financial assistance.

Table 6.5 Financial Risk Differences: Standard and VLC Providers

Provider		Lucky (L)		Average (A)		Unlucky (U)	
		S	V	S	V	S	V
Consultations		9000	9000	10,000	10,000	11000	11,000
Capitation share	Expected	60%	80%	60%	80%	60%	80%
	Actual	63%	82%	60%	80%	58%	78%
Fee		$20	$10	$20	$10	$20	$10
Revenue	Capitation	$300,000	$400,000	$300,000	$400,000	$300,000	$400,000
	Fee	$180,000	$90,000	$200,000	$100,000	$220,000	$110,000
	Total	$480,000	$490,000	$500,000	$500,000	$520,000	$510,000
Costs	$50	$450,000	$450,000	$500,000	$500,000	$550,000	$550,000
Profit/Loss	Total	$30,000	$40,000	$0	$0	-$30,000	-$40,000
	Per consult	$3.33	$4.44	$0.00	$0.00	-$2.73	-$3.64
	% fee	16.7%	44.4%	0.0%	0.0%	13.6%	36.4%

Providers S and V both expect to deliver 10,000 consultations a year, costing $50 each. Provider S is a standard provider, expecting to receive 60% of its income from FC payments and 40% from fees. Its expected break-even service user fee is $20 per consultation. Provider V is a VLC provider receiving 80% of income from FC payments and has an average break-even service user fee of $10. A 10% variation in the actual number of consultations delivered has a much greater effect upon the profitability of provider V than provider S due to the higher capitation incentive it faces. Provider V is more profitable than provider S if 10% fewer consultations are delivered (lucky), but incurs a bigger loss if 10% more consultations must be delivered (unlucky). If provider V expects to deliver 10% more consultations over the long term, then it must increase its fees by both a larger sum ($3.64 vs $2.73) and percentage (36.4% vs 13.6%) than provider S if it is to remain financially viable.

Although provider V's service users pay a lower fee, they bear a higher level of utilisation variation risk than service users of provider S if, as expected, the costs are passed on in service user fees. That is, the greatest fee volatility is expected to be faced by the enrolees of VLC providers, to whom the government intended to provide the greatest fee relief. If the greater volatility is not passed on in fees, because service users cannot afford fee increases, then its effects will be expected to be manifested in lower service quality as unlucky providers reduce costs to maintain financial viability (e.g. shorter consultations). Correspondingly, VLC providers will be expected to exhibit greater extremes of profit variability than their standard counterparts. The most profitable and the most financially vulnerable providers would be expected to be VLC.

Poor Risk Adjustment Creates Enrolment Cream-Skimming Opportunity

The potential for costly cream-skimming arising from having multiple risk pools was shown above as expected to be both substantial and much greater under the NZPHCS than under the preceding arrangements. Furthermore, provider risk pool operators were shown to have had access to information about individuals' likely utilisation of health care that was not available to the government funder. As PHO members, they would have had the opportunity to share information about each other's fee charging behaviour and hence be in a position to anticipate the risk exposure of their colleagues. Hence, they were in an excellent position to use their information to limit exposure to costly high users, but appropriate the profits from enrolling a disproportionately large share of low users. This does not mean to suggest that all or any of them acted in this manner. However, it stands to illustrate how the design of the NZPHCS policy instruments created the circumstances in which it was possible for cream-skimming to occur, that were not available under the pre-NZPHCS arrangements.

Theoretical Investigation

Tables 6.6 and 6.7 reveal that, in addition to the opportunities identified above, the expected utilisation levels used to calculate FC capitation payments were not good estimates of the actual utilisation rates observed in practice. On the one hand, the weakness of the risk adjustment formulae would have added to the costs for providers of managing random utilisation variation risk compared to a more accurate formula. On the other hand, for providers aware of the mismatches between the expected and actual utilisation for which they were remunerated, further systemic opportunities to engage in cream-skimming were created.

Table 6.6 Average Revenue Per Consultation: Expected Utilisation Rates

		(1)	(2)	(3)	(4)	(5)
Age	**Provider Type**	**FC + 0FU6**	**Expected Utilisation**	**NACS**	**Fee (ex GST)**	**Revenue/ Consult**
0 to 5	**Std-A**	$480.78	8.47	$56.76	0	$56.76
0 to 5	**Std-NA**	$473.22	8.47	$55.87	0	$55.87
6 to 17	**Std-A**	$122.64	2.74	$44.76	$19.74	$64.50
6 to 17	**Std-NA**	$98.40	2.74	$35.91	$19.74	$55.65
18 to 24	**Std**	$88.94	2.44	$36.45	$27.77	$64.22
25 to 44	**Std**	$83.00	2.42	$34.30	$27.77	$62.06
45 to 64	**Std**	$120.62	3.55	$33.98	$27.77	$61.74
65+	**Std**	$221.60	6.89	$32.16	$27.77	$59.93
Average	**Std**					$60.09
0 to 5	**VLC-A**	$506.64	8.47	$59.82	0	$59.82
0 to 5	**VLC-NA**	$499.08	8.47	$58.92	0	$58.92
6 to 17	**VLC-A**	$150.77	2.74	$55.02	$6.71	$61.74
6 to 17	**VLC-NA**	$126.52	2.74	$46.18	$6.71	$52.89
18 to 24	**VLC**	$111.37	2.44	$45.64	$13.09	$58.73
25 to 44	**VLC**	$103.93	2.42	$42.94	$13.09	$56.03
45 to 64	**VLC**	$151.03	3.55	$42.54	$13.09	$55.63
65+	**VLC**	$277.48	6.89	$40.27	$13.09	$53.36
Average	**VLC**					$57.14

Table 6.6 depicts the expected revenues per consultation for each capitation category received by a hypothetical statistically average provider charging exactly the average posted revenues cited by the MoH in February 2014 for providing care to a statistically average list of enrolled individuals drawn from the total population utilising exactly the average expected number of consultations. If FC capitation formulae were well adjusted to reflect the risks and costs faced by providers, the average revenue per consultation would be the same across all capitation categories for a given provider delivering the average number of consultations. There would be

no systematic reason for a provider to favour one capitation category over another, or for average revenues received for an equivalent consultation to be different for different provider types.

Table 6.6 is constructed thus:

Column (1): First Contact Capitation payment (FC). The annual FC capitation payment for each capitation class for the 2013/4 year (Appendix 1), averaged between genders (as expected utilisation rates are not recorded by gender in the DHBSS (2015) data in column 3). For the 0-5 and 6-17 categories, the fee paid for accepting the zero fees for under sixes (0FU6) is added for standard providers (this is already factored into VLC payments), as over 98% of children under 6 are registered in providers accepting this obligation. The capitation fees in Appendix 1 are all GST-exclusive.

Column (2): Expected Utilisation. The expected number of consultations for each capitation category from DHBSS (2015), summarised in Table 2.2. There is no distinction in these between VLC and standard providers.

Column (3): Notional Averaged Consultation Subsidy (NACS) – capitation fee divided by expected number of consultations.

Column (4): Average GST-exclusive posted fees from MoH (2014). Including 15% Goods and Services Tax (GST) these are: $31.93 for adults aged over 18 years at standard (std) providers; $15.05 at VLC providers; for children aged 6-17 years, $22.70 and $7.72 respectively. These prices include 15% Goods and Services Tax (GST). Excluding GST, these are $27.77, $13.09, $19.74 and $6.71.

Column (5): Average Revenue per Consultation – the sum of columns 3 and 4.

The arithmetic 'average revenue' for a consultation under these assumptions is $58.62. For VLC providers, the average revenue per consultation is $57.14 and for standard providers $60.09. The standard provider revenues are slightly more widely spread than those for VLC providers (standard deviation $3.39 versus $2.96).

Table 6.6 indicates that for a statistically average provider charging average posted fees, there is no apparent significant difference in the average revenue received for delivering a standard consultation to service users in different capitation categories. This suggests that, on average, the risk adjustment formula is well-balanced, and has not created significant new cream-skimming opportunities. An average provider charging average posted fees appears to face only small revenue advantages from enrolling a disproportionately large or small number of individuals of a given capitation group. Neither would any be comparatively disadvantaged if, by dint of luck, they ended up with a higher or lower proportion than the national average of any one group on their list.

However, observed utilisation rates vary substantially from the expected rates upon which capitation funding rates are predicated. Table 2.2 reports observed utilisations in 2007 by RC and Carr & Tan (2009) indicating over-funding for individuals aged 25 and under across all fee classes, and under-funding occurs for those aged over 25. NZHS (2015) apparently confirms the persistence of over-funding for individuals aged under 25 past 2007. However, the mismatch for adult categories may have disappeared. Despite the limitations discussed in Chapter 2, these data suggest poor risk adjustment in setting FC capitation payments. The mismatches indicate providers are exposed to higher levels of utilisation variation risk than if the formulae were better adjusted to reflect actual utilisation. They also suggest that new opportunities have been created for providers to cream-skim by enrolling as many younger individuals as possible, as they would bring substantially higher revenues than the effort their care was expected to require. However, they might avoid enrolling adults in those categories or where observed utilisation is known to exceed expected utilisation (for example, for all adult categories 25-64 years across all three data sets in Table 2.2). Furthermore, as the observed utilisation rate of all child categories appears to have been falling over time (as discussed in Chapter 2), the relative incentives for cream-skimming in relation to child enrolments appear stronger.

Table 6.7 builds on Table 6.6 to calculate the average expected revenues per consultation using the observed consultation rates for each case in Table 2.2. As a further sensitivity analysis, the expected revenues are calculated for the 'worst case' – the highest observed utilisation rate for each capitation category across all three cases. Whilst the magnitude and spread of the average revenues varies, the same pattern emerges: the average expected revenue per observed consultation delivered to the child capitation categories (0 to 4 and 4 to 14 years) exceeds that for the adult capitation categories (15 years and over).

For the Raymont & Cumming observed utilisations, child revenues are on average twice those of adult revenues ($132.75 vs $64.90). The maximum expected average child revenue ($211.98) is nearly four times the minimum adult ($53.06). However, as noted in Chapter 2, these are likely an under-estimate of the actual number of consultations actually delivered, so will overestimate the effective NACS. Also, their observations of lower utilisation by Access enrolees result in average revenues per consultation at VLC providers exceeding those at standard providers in all age categories.

Table 6.7 Average Revenue Per Consultation: Observed Utilisation

Utilisation data panels					Raynont & Cumming			Carr & Tan			NZHS			Max		
Age	Practice Type	FC+0FU6	posted fee	AR/C Table 6.6	Observed Utilisation	NACS	Av revenue/ consultation	Observed Utilisation	NACS	Av revenue/ consultation	Observed Utilisation	NACS	Av revenue/ consultation	Observed Utilisation	NACS	Av revenue/ consultation
0 to 4	Std-A	480.777	0	56.76	3.90	123.28	123.28	4.80	100.16	100.16	5.62	85.51	85.51	5.62	85.51	85.51
0 to 4	Std-NA	473.219	0	55.87	3.90	121.34	121.34	4.80	98.59	98.59	5.62	84.17	84.17	5.62	84.17	84.17
0 to 4	VLC-A	506.637	0	59.82	2.39	211.98	211.98	4.40	115.14	115.14	5.62	90.11	90.11	5.62	90.11	90.11
0 to 4	VLC-NA	499.078	0	58.92	2.39	208.82	208.82	4.40	113.43	113.43	5.62	88.77	88.77	5.62	88.77	88.77
5 to 14	Std-A	122.642	19.74	64.50	2.02	60.74	80.48	2.03	60.41	80.15	2.70	45.45	65.19	2.70	45.45	65.19
5 to 14	Std-NA	98.398	19.74	55.65	2.02	48.74	68.48	2.03	48.47	68.21	2.70	36.47	56.21	2.70	36.47	56.21
5 to 14	VLC-A	150.765	6.71	61.74	1.18	127.34	134.05	2.12	71.12	77.83	2.70	55.88	62.59	2.70	55.88	62.59
5 to 14	VLC-NA	126.522	6.71	52.89	1.18	106.86	113.57	2.12	59.68	66.39	2.70	46.89	53.60	2.70	46.89	53.60
15 to 24	Std	88.939	27.77	64.22	2.19	40.65	68.42	2.17	40.99	68.76	2.90	30.69	58.46	2.90	30.69	58.46
15 to 24	VLC	111.368	13.09	58.73	1.17	95.27	108.36	2.48	44.91	58.00	2.90	38.43	51.52	2.90	38.43	51.52
25 to 44	Std	82.996	27.77	62.06	2.74	30.29	58.06	2.77	30.02	57.79	3.21	25.84	53.61	3.21	25.84	53.61
25 to 44	VLC	103.926	13.09	56.03	1.99	52.22	65.31	3.16	32.89	45.98	3.21	32.36	45.45	3.21	32.36	45.45
45 to 64	Std	120.616	27.77	61.74	4.77	25.29	53.06	4.60	26.22	53.99	3.92	30.73	58.50	4.77	25.29	53.06
45 to 64	VLC	151.032	13.09	55.63	3.76	40.17	53.26	5.80	26.04	39.13	3.92	38.48	51.57	5.80	26.04	39.13
65+	Std	221.600	27.77	59.93	8.57	25.86	53.63	8.40	26.38	54.15	6.71	33.05	60.82	8.57	25.86	53.63
65+	VLC	277.481	13.09	53.36	6.03	46.02	59.11	9.20	30.16	43.25	6.71	41.38	54.47	9.20	30.16	43.25

Carr & Tan's observations are likely more reliable than Raymont & Cumming's for observed 2007 utilisation, but pertain to only one DHB so may not be nationally representative. They show expected child average revenues per consultation exceeding those of adults by 70% ($89.99 vs $52.36). The maximum child revenue ($115.14) is nearly three times the adult minimum ($39.13). Their observations show higher utilisation at VLC providers than standard across most age groups. Despite receiving higher capitation funding, the average VLC provider charging the average posted fee would expect to receive average revenues per consultation at least $10 lower than the average standard provider for all adult capitation categories if these utilisation rates are accurate. Whilst the same pattern prevails for children aged 5–14 years, the difference is much smaller. The reverse applies for children four years and under, who are eligible for 0FU6 funding. In this case, VLC expected revenues exceed standard ones by around $5 to $15, depending upon whether the provider is eligible for the residual additional Access funding.

NZHS observed utilisations in 2015 are based on individual data, so do not distinguish between utilisation at VLC and standard providers. This makes it harder to draw inferences, as the utilisation rates are averaged between VLC and standard providers. If the same patterns of VLC utilisation exceeding standard observed by Carr & Tan prevails, then standard provider revenues will be under-stated, as the NACS will be lower due to over-stated utilisation. Conversely, VLC revenues will be over-stated due to a lower-than-actual utilisation rate leading to a higher NACS. However, within each provider category, the same pattern prevails in Table 6.7 as observed for Carr & Tan's data. Average expected child revenues per consultation are around 35% higher than average expected adult revenues. However, this average masks a large variation in the expected revenues for children under five – the major beneficiaries of 0FU6 funding – and other children. Whereas the average expected revenues for children aged 5–15 exceed the average expected adult revenue by around $4, the expected revenues per consultation for children under 5 exceed those for adults by over $30.

The right-most panel of Table 6.7 analyses the 'worst case' utilisation rates for each capitation category. For all age groups under 45 years, these are the NZHS rates. For the remaining categories, these are Carr & Tan observations for VLC providers and Raymont & Cumming observations for standard providers. The general observations prevail.

Regardless of the observation base chosen, Table 6.7 appears to confirm a systematic bias in the NZPHCS capitation formulae, arising from the almost certain overestimation of expected utilisation by children and a possible underestimation of adult utilisation. Notably, the bias is greatest for the capitation categories where the prospective capitation payments are highest because of the policy objective to eliminate fees – children under 5 years. However, it extends to the other higher-subsidised targeted age group – children aged 5–14 years. This creates a significant systematic incentive for even the statistically average provider to cream-skim by enrolling children to capitalise on higher expected average revenues per consultation, at the expense of adults. In also systematically disincentivises enrolment of adults, who bring lower expected average revenues per consultation. The very high acceptance of 0FU6 obligations (98.2% of children under six are enrolled at a provider accepting this obligation out of a population where 95% in total is enrolled – MoH (2014b)) is consistent with at least some providers responding to these incentives.

On the basis of Table 6.7, a provider who has not engaged in cream-skimming, who has enrolled a higher-than-average number of adults and who charges the average fees for consultations, will expect to earn less per consultation on average than one with a statistically average list. If this provider wishes to make the same return for effort exerted in supplying consultations as the average provider, then it must either raise its fees or reduce quality by more than those charged by an average provider to break even. Conversely, one with a higher-than-average proportion of enrolees under 25 years will make windfall profits if it continues to charge the average fee. This illustrates how the weak risk adjustment formula increases the costs of both random and controllable risk under the NZPHCS.

Empirical Evidence from Secondary Sources

It is extremely difficult in practice to distinguish explicit cream-skimming from legitimate commercial behaviour. Nonetheless, the extent to which providers ‘close the books’ to new enrolments may be one indicator (albeit difficult to distinguish from staff shortages in particular locations). MoH claims that nearly 95%

of the population is enrolled at a PHO appear to belie claims that book closing is resulting in individuals being unable to register and access care. However, it is not clear how enrolled individuals are allocated across providers, where the incentives to cream-skim actually apply.

Campbell (2013) offers anecdotal evidence of extensive book-closing, especially in non-metropolitan and low-income-decile areas (Campbell, 2013). Raymont & Cumming (2013) report 36.5% of providers in a 2009 survey engaging in at least some selection of enrolees. Given the analysis of Table 6.7, it is not inconceivable that some providers are engaging in cream-skimming to either secure profits or minimise losses arising. If enrolment-based cream-skimming is not widespread, then providers with higher-than-average numbers of adults enrolled charging higher-than-average fees would be consistent with observations of fees not falling as much as expected as higher subsidies were rolled out to adult enrolees. However, this would be observed on average only if those enrolling higher-than-average numbers of children did not lower their fees for adults by a greater proportion than the statistically-average provider – that is, engaged in the sort of opportunistic behaviour observed in the discussion of Table 6.4.

Poor Risk Adjustment Creates Utilisation Cream-Skimming Opportunity

Tables 6.4 and 6.7 illustrate the potential created by weak risk adjustment and random allocations of individuals to risk pools for funding distortions for enrolment-based cream-skimming. However, capitation payment arrangements incentivising providers to reduce the supply of unnecessary consultations (relative to the preceding arrangements) can also create incentives for providers to strategically reduce the supply of consultations to minimise losses and lock in windfall profits.

Theoretical Investigation

The stronger are the financial incentives facing providers, the greater is the pressure to reduce consultation supply for both legitimate and opportunistic reasons. Under the NZPHCS, more highly-capitated providers – notably VLC – face stronger financial incentives than less highly-capitated ones – notably standard – so would be expected, on average, to reduce supply more than less highly capitated ones.

Providers faced with the financial imperative of having to reduce supply to maintain financial viability must choose to allocate the reduced supply amongst those seeking care. Ideally, if the consultation brings the provider the same revenue regardless of the identity of the individual to whom it is delivered, it will be provided to the service user with the highest need. However, Table 6.7 shows that the average revenues per consultation received by even the statistically average provider are not the same: consultations delivered to children bring higher average revenues than consultations delivered to adults. This might suggest that a provider acting opportunistically to maximise profits might not just prefer to enrol children rather than adults, but also prefer to deliver scarce consultations to children in preference to delivering them to adults.

Whilst it is theoretically correct to state the NZPHCS has created separate cream-skimming opportunities, one in respect of enrolment of individuals and one in respect of the utilisation of care by service users, it is not correct to presume that the utilisation opportunity works towards a preference for delivering care to children. The relevant question for a provider allocating scarce consultations at the margin is not the average revenue received per consultation, but the marginal revenue derived for the exertion of the relevant effort. In this respect, the NZPHCS funding arrangements have created a systematic bias that for profit-maximising purposes favours the allocation of consultations by a single provider to those bringing the highest marginal revenues. For both standard and VLC providers, this is adults.

Thus, even if the capitation formulae had been well-adjusted to reflect the utilisation of consultations at the outset of the capitation funding system, as the funding arrangements are structured to ensure that all providers will receive higher marginal revenues for consultations delivered to adults than children, they incentivise profit-maximising (or loss-minimising) providers to systematically favour the delivery of consultations to adults over their delivery to children. The observations in Tables 2.2 and 6.7 of the under-utilisation of consultations (relative to expected rates) by individuals paying low (or no) fees and potential over-utilisation (relative to expected rates) for those paying the highest fees may in part be a consequence of the NZPHCS fee structure requiring targeted service users to pay lower fees than non-targeted ones. This does not discount the effects that are also likely to have been present from the beginning as a consequence of using a poorly risk-adjusted capitation formula. However, it does provide a cogent explanation as to why, as discussed in Chapter 2, all of Raymont, Cumming & Gribben (2013), Carr & Tan

(2009) and NZHS (2015) observe systematic reductions in child utilisation rates over the periods they study.

Whether a response by providers to these incentives can be described as opportunistic ‘cream-skimming’ when they are a design feature of the Strategy is debatable. However, providing the strongest financial incentives to providers to reduce supply to service users targeted to receive the greatest levels of fee relief – children and service users at VLC providers – is certainly contrary to the objectives of the policy.

Empirical Evidence from Secondary Sources

Once again, it is very difficult to attribute any particular observation to cream-skimming or other strategic actions, due to the lack of good data, and the interaction of multiple, and often conflicting, incentives in the strategy. However, Raymont, Cumming & Gribben (2013) provides the most detailed data to assess the effects of the NZPHCS financial incentives on the quantity and allocation of consultations.

They observe the average number of consultations delivered by capitation category by PHO/Provider type (Access and Interim) for all years from 2002/3 to 2007 in their sample of providers. They show that the average number of consultations delivered per capitation group at Access providers receiving higher capitation revenues than their Interim counterparts fell for all capitation categories except CSC adults aged 45-64 and 65+. This suggests a general reduction in supply of consultations, consistent with the objectives of capitation funding, and a reallocation of resources proportionate to fee revenues. By contrast, at less highly capitated Interim providers the number of consultations fell for all capitation categories without a CSC, but rose for all CSC-holding categories. This does not appear consistent with cream-skimming by allocating resources disproportionately to higher-paying individuals at providers charging higher fees overall. However, it is still consistent with the higher-capitated VLC providers facing higher levels of financial risk responding to greater incentives to engage in cream-skimming than their lower-capitated comparators.

However, the authors note that over time it was no longer necessary to record an individual’s CSC status for capitation funding purposes, leading to a higher number of observations being eliminated from their consideration. Thus, it is difficult to draw any firm conclusions about the ways in which available consultations were allocated between capitation groups from this data. However, the average reduction in the average number of consultations delivered to non-CSC holders at Access providers fell (-17.3%) by more than twice that observed at Interim providers (-8.5%). The reduction is greater at Access providers for all capitation categories except children under 6 years. The disparity may in part be due to greater staff shortages at Access providers leading to a smaller number of available consultations being spread more thinly over the registered list. But neither is it inconsistent with the contention that the stronger financial incentives faced by Access providers resulted in a greater strategic reduction in the supply of consultations.

Universal Subsidies and Increased Unnecessary Utilisation

Relative to the preceding arrangements, by reducing the payments made by service users, the NZPHCS would have been expected to increase the potential for unnecessary utilisation to occur. This is reflected in the increase in the expected number of consultations from those in Sutton (2000) for each capitation category as increased government subsidies were rolled out (Chapter 2).

Theoretical Investigation

Prior to the NZPHCS over half the population was ineligible for government-funded consultation subsidies. This likely had a significant effect upon constraining their propensity for unnecessary utilisation. Nonetheless, as discussed in Chapter 4, based upon the RAND experiments, some unnecessary utilisation would be expected amongst subsidised individuals, despite the presence of a service user fee providing a potentially-weak dampening effect. As the NZPHCS was intended to reduce the fees paid by all service users, an increase in both legitimate and unnecessary utilisation would be expected as fees decreased. The effect would be expected to be greater for those individuals not previously subsidised and therefore experiencing the greatest reduction in service user fees as increased funding was rolled out (i.e. non-CSC holders).

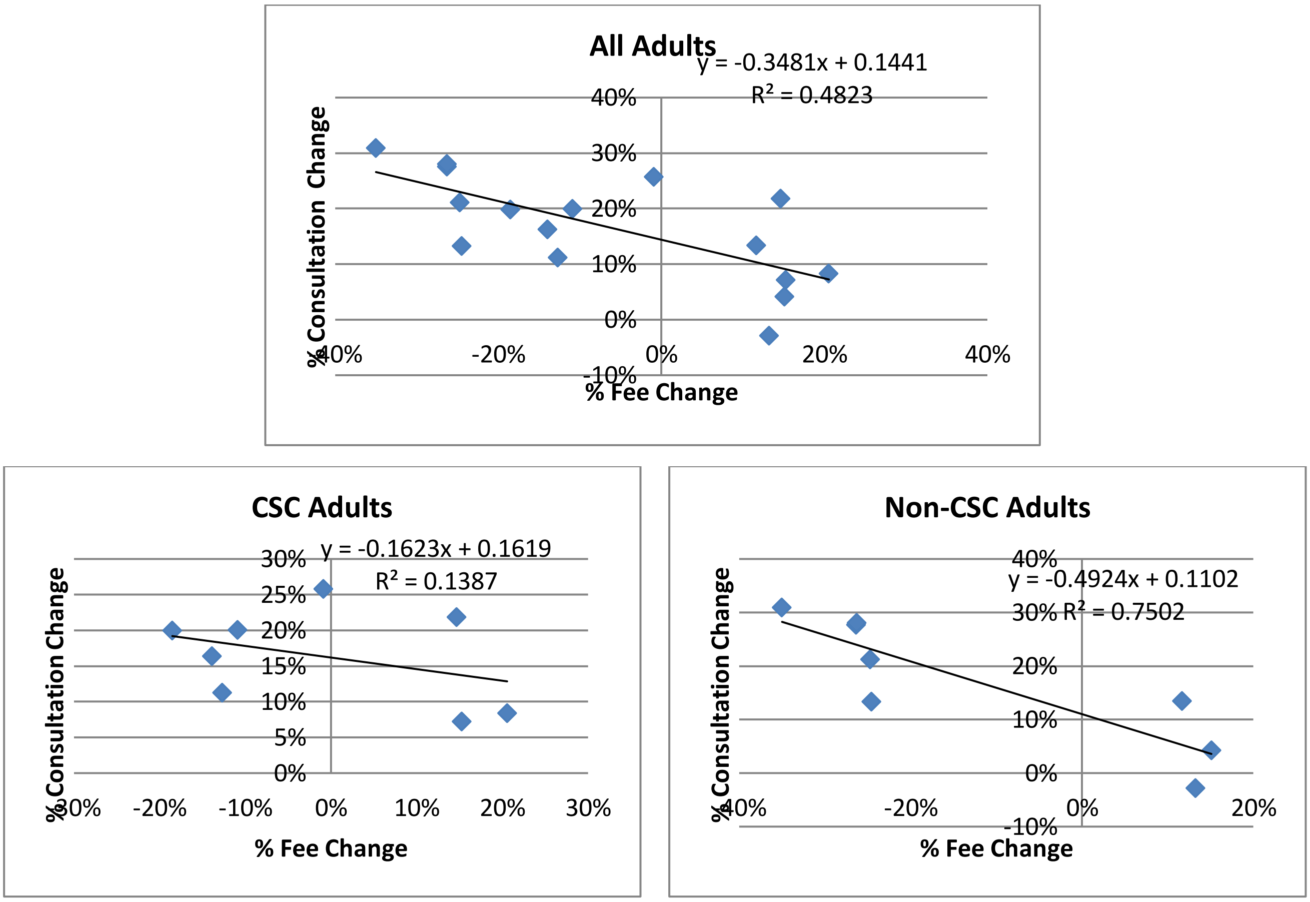
Empirical Evidence from Secondary Sources

Cumming & Gribben's (2007) empirical evaluation of changes in fees and consultation rates between 2001 and 2005 confirms that both fee decreases and consultation increases occurred as government funding increases were rolled out to different capitation groups. Although undertaken only part-way through the rollout, and subject to the limitations discussed in Chapter 2, it provides the only known analysis of identifiable individuals' utilisation over time (as opposed to population averages, or time series samples where the panellists changed. Their analysis also distinguishes between all consultations provided by both GPs and nurses, and includes data on individuals' CSC-holding status, so traces utilisation across both the previous and NZPHCS regimes.

Figure 6.3 uses data from Cumming & Gribben (2007) tables II (p. xx) and IV (p. xxv), summarised in Appendix 3, which capture both nurse and GP consultations for both Access and Interim providers. These data confirm that for all adult capitation groups a clear correlation exists between reducing average fees and increasing average consultation use between 2001/2 and 2004/5. The lower panels confirm that both the proportionate effect (magnitude of the coefficient of x in the regressions), and the extent to which changes in fees paid explain changes in consultation rates (R^2) is greater for non-CSC holding adults than CSC holders. That is, the utilisation rate of adults who had not previously been subsidised was observed to have increased more following the roll-out of higher capitation subsidies than those who had been previously subsidised. Some of the increased utilisation may be attributable to more effective use of staff resources (e.g. nurse triage followed by a GP consultation could be counted as two consultations). But it cannot be discounted that at least some of the increase in utilisation observed amongst previously unsubsidised individuals could be attributable to over-consumption (albeit that some of the response is likely due to increased utilisation by service users with legitimate needs who previously did not seek care).

Furthermore, as the income-related characteristics used for targeting fee reductions are one of the better predictors of expected need for care, then Figure 6.3 confirms that the additional NZPHCS government funding was disproportionately directed towards those with lower expected needs and greater ability to pay. The removal of CSC status from FC capitation payment characteristics would have further reduced the sophistication of the already poor risk adjustment formulae.

Figure 6.3 Effect of Fee Changes on Consultation Rates, 2001/2 – 2004/5



Data from Cumming & Gribben (2007); own graphs and calculations

NZPHCS FC Costs: Summary

Table 6.8 summarises the theoretically expected effects on costs, relative to the pre-NZPHCS arrangements, of replacing fee-for-service government subsidies paid to GP-providers with FC capitation subsidies paid to PHOs. As with the construction of Table 6.2, the measures assigned for each objective reflect the author's assessment of the magnitude of each element. Whilst the magnitude assessments are subjective, they are supported by the theoretical and empirical evidence contained in Chapters 2 and 4, and the preceding discussions in this subsection. Regardless of the magnitude assigned, the direction of the movement towards or away from the objectives relative to the pre-NZPHCS arrangements follows the directions as indicated in Chapter 5.

As the observed effects can facilitate progress towards or away from the desired objectives, colour coding is used: green to indicate progress towards and red away from the objective. Arrows are used to reflect increases and decreases in the identified metric. An upward arrow reflects a negative effect (higher costs) and a downward arrow a positive effect (lower costs). The number of arrows provides an assessment of the magnitude of the effect relative to the effects on others in the table.

Whilst the cost policy objective is cost containment, the table records the expected effects on total costs.

Transaction costs would be expected to increase as the administration burden on newly-created PHOs increased. Similarly, the administration costs for each provider would be expected to increase. This is reflected in two components in Table 6.8: the additional costs expected from fragmenting one risk pool into over a thousand; and the more complex fee-setting processes required from the changes to capitation contracting. Each of these effects is assigned a single upward red arrow, consistent with the observations from interviews with PHOs and providers reported in Raymont & Cumming (2013). The expected lower transaction costs for the MoH from replacing fee-for-service payments with capitation is captured with a single downward green arrow.

Substantial increases in the costs of random risk management would be expected under the NZPHCS FC arrangements. The fragmentation of one large pool into over a thousand very small pools, and the transfer of responsibility for it from a risk-neutral government to risk-averse providers would have substantially increased the expected costs of managing utilisation variation risk, so this effect is assigned four upward red arrows. The costs of managing utilisation variation risk were expected to increase further due to the very weak associations between expected and actual utilisation in the risk adjustment formula used to set capitation payments. This is captured with two upward red arrows. The additional increase in utilisation variation risk management costs associated with the incorporation of targeted fee reduction subsidies into risk management payments is accorded a further red arrow. As under the NZPHCS the government no longer carries responsibility for any variation in its costs due to varying utilisation, its short-term fiscal risk is expected to have decreased – one downward green arrow. However, as the funding increases have not kept pace with cost increases, in the longer term the government can expect to be placed under pressure to increase funding. This leads to the assignment of one upward red arrow. As the sole remaining means of managing any random cost variations from any origin other than utilisation risk is the service user fee, managed by risk-averse providers and passed on to even more risk-averse service users, the costs of managing these risks would be expected to increase. Hence this effect is assigned one upward red arrow.

The costs of controllable risks would also have been expected to increase under the NZPHCS relative to the preceding arrangements. As it is difficult to assess whether providers and service users have actually responded to the planned and unexpected incentives that have emerged under the NZPHCS arrangements, this assessment focuses on capturing the change in the direction and intensity of the incentives provided relative to the preceding arrangements. Whilst sector participants may not have responded to these incentives, the fact that the policy has led to their creation, and hence potential exploitation, is important for informing future policy development and institutional changes.

The theoretical discussion in Chapter 4 indicates that the replacement of one single risk pool by over a thousand would be expected to increase cream-skimming opportunities, in respect of both enrolment and utilisation. Pool management by providers with the best possible knowledge of individual characteristics not well captured in the very weak risk adjustment formula creates additional potential for cream-skimming to occur. Furthermore, bundling of targeted fee-reduction subsidies with population funding has created differences between provider types that have likely further exacerbated the opportunities for cream-skimming, relative to the preceding arrangements. Based upon the the discussion of Tables 6.6 and 6.7, each of these effects is assigned a single upward red arrow in Table 6.8. The potential for strategic fee setting to occur, as identified in the discussion of Table 6.4, is separately reflected as a relative increase in the expected costs of other strategic actions with a further single upward red arrow.

Based upon the discussions in Chapters 2 and 4 and Figure 6.3, it was expected that the increased government funding would lead to higher levels of user-controlled unnecessary utilisation, both for newly subsidised individuals, and for the already-subsidised as their subsidy levels increased. Even though these utilisation increases were anticipated, they would have led to an increase in the costs of controllable risks relative to the preceding arrangements, so each is assigned a single upward red arrow. In contrast, the expected reductions in the costs of managing provider-controlled unnecessary utilisation by the use of capitation provider payments to incentivise providers to constrain consultation numbers, and to ration available care cost-effectively, are each captured with single downward green arrows. The expected effects of the stronger incentives provided to VLC providers to engage in these activities are noted.

Table 6.8 NZPHCS FC: Effects on Cost Objectives

Effect on Costs	***Change under NZPHCS***
Total costs	
Transaction costs	↑ multiple pools ↑PHO administration costs ↑complex fee calculations ↓capitation payments replacing fee-for-service
Risk Management costs	
Random risks	
Utilisation variation risk (ε)	↑↑↑↑ small pools, risk-averse providers ↑↑ very weak risk adjustment formula ↑ high variability between providers
Other random risks	↑all systemic financial risks passed on to service users as fee is only alternate point of fee collection ↓fixed government FC payments reduce short-term fiscal risk ↑ funding increases less than real costs increases long-term fiscal risk
Controllable risks	
Cream-skimming	↑ multiple pools ↑ pools managed by most informed parties ↑poor risk adjustment formulae create new opportunities ↑ higher incentives overall; greater for VLC
Unnecessary utilisation - user-controlled	↑ newly-subsidised users ↑ higher subsidies for already-subsidised
Unnecessary utilisation - provider-controlled	↓ limiting consultations overall to constrain losses ↓ rationing care supplied to VLC adults
Other strategic actions	↑strategic fee-setting
Consultation numbers	Unclear
Average cost per standard consultation	↑↑↑↑

Key: ↑ increase in variable, contrary to policy objective more arrows -> greater effect
↑ increase in variable, consistent with policy objective
↓ decrease in variable, contrary to policy objective
↓ decrease in variable, consistent with policy objective

The overall expected effect on the number of services delivered is unclear due to the complex interaction of the many different incentives that have emerged. Hence no arrows are assigned. As the expected transaction costs and costs of financial risk management are likely higher under the NZPHCS than under the preceding arrangements, and for the most part are borne by providers (albeit passed on to service users in fees), the expected cost of delivering a standard consultation would, *ceteris paribus*, be expected also to be higher under the NZPHCS. As a significant component of these costs relate to the management of random utilisation variation risk, which is assessed to have risen substantially compared to the preceding arrangements, the same expected effect – four upward red arrows – is assigned.

6.2.2.2 NZPHCS FC: Equity Objectives

The NZPHCS FC arrangements were intended to reduce fees paid by all service users, increase access to, and utilisation of, care by previously under-served groups and thereby reduce health inequalities between groups within the New Zealand population. Whilst increased government funding reduced fees paid, conflating funding to reduce targeted service users' fees with premium sponsorship of individuals' membership of risk pools resulted in pool premiums that deviated from cost-related risk-adjusted payments. In some cases the conflation has resulted in different effective NACS being paid for adult and child service users at the same provider for otherwise-identical care. In other cases, when the payments have been based upon provider type, and not individual expected needs for financial assistance, they have led to very different FC payments being made for individuals with identical expected needs for care. Consequently, providers face uneven capitation incentives. Importantly, VLC providers face more financial risk than their standard counterparts, even though they have no greater means available to manage them. As the effects of these risks are passed on to service users, the resulting set of financial incentives for providers allocates the expected high costs of financial risk associated with FC payments in a manner militating directly against the NZPHCS objectives.

Consequently, those whom the government intended to assist most – low-income individuals attending VLC providers, and service users needing most care – have very likely faced the highest financial risk-related penalties arising from the arrangements. Their fees may be lower, but it is expected they have faced very much higher levels of either fee volatility or care quality variation than they would have under the preceding arrangements. The effects are also expected to have played out in inequalities in the incentives faced by providers and practitioners to invest in care delivery effort, provider-specific capital – including developing new and different services – and practitioner human capital. As VLC providers have faced very much higher financial incentives, and had fewer ways of managing these higher risk levels, a bifurcation in expected profitability of the two provider types has likely emerged. Combined with unequal allocation of the correlated effects of luck in the patterns of individual enrolment, this would be expected over time to lead to a bifurcation between a large number of small, profitable practitioner-owned providers and a smaller number of large, barely profitable providers much more likely to be in non-profit ownership. This subsection discusses these effects.

NZPHCS FC Equity Objectives: Individuals and Service Users

By conflating subsidies based upon individuals' expected health needs with subsidies to reduce service user fees, NZPHCS FC payments bundled population health funding intentions with wealth redistribution objectives. The pre-NZPHCS arrangements were initially predicated upon reducing the financial burden for targeted service users: low-income CSC holders and frequently ill holders of HUHC cards. As discussed in Chapter 2, the original NZPHCS arrangements, predicated upon Access and Interim providers and the use of individual CSC-holding status in FC capitation formulae, proved contrary to the espoused objectives of allocating increased government funding in proportion to either expected needs for health care or greater financial need, because the bulk of the additional funding was applied to previously non-targeted, and therefore apparently lower-need individuals. However, the retention of CSC status as a risk-rated payment for individuals enrolled at Interim providers maintained some relativity with the pre-NZPHCS arrangements. When the original Access and Interim funding arrangements were replaced, CSC-holding status was removed from FC capitation formulae and income-related subsidies were paid for all individuals enrolled at VLC providers, regardless of their actual financial needs. Overall, therefore, between-individual inequity in access to and allocation of both government funding and care increased with the introduction of the NZPHCS, and was exacerbated by the subsequent arrangements. Only those who enrolled at VLC providers were eligible for lower fees. Likewise, individuals who did not qualify for income-related subsidies previously could access them if they enrolled at VLC providers.

Service user inequity would also have likely increased relative to the preceding arrangements as the higher costs of risk management (as distinct from the costs of supplying care) were collected only from that subset of the population that actually needed care. The more care that was required, the higher would be the contribution made towards the costs of risk management that would otherwise be shared across all individuals in a risk pool. In effect, the risk-neutral government passed the costs of utilisation risk management that it previously bore onto risk-averse providers who passed it on to even more risk-averse service users in proportion to the amount of care that they needed. The costs of this premium were effectively risk-rated. Those needing more care paid a higher share of risk management costs than those needing less.

Under the NZPHCS, the benefits of social insurance enabling individuals to diversify their cost uncertainty across very large populations were effectively dismantled. The populations for the management of financial risk became the patient lists of each separate provider. Furthermore, as the costs of risk management depended upon the correlated demands for care of the individuals enrolled at each provider, the service users of habitually unlucky providers would be expected to pay higher fees – or receive lower-quality care – on average than the service users of habitually lucky providers. But unlucky providers were unlucky precisely because their enrolled individuals needed more care than average for which they were funded. So on average, the sicker-than-average service users of unlucky providers would be expected to have paid both higher fees and a higher risk premium, or faced larger care quality reductions, more often than the healthier-than-average service users of lucky providers than under the preceding arrangements. This is directly contrary to the Alma-Ata objectives that care should be supplied in proportion to need. Care supplied to those most in need would, on average, be expected to be lower quality and/or more expensive than care supplied to those less in need of it.

Moreover, by disproportionately biasing the enrolment of low-income individuals towards VLC provider risk pools, the NZPHCS re-concentrated the risk-sharing of targeted financially vulnerable low-income individuals back onto small groups of similarly situated individuals, in direct contravention of both insurance and taxation principles predicated upon diversifying them widely. Although paying lower fees, VLC service users have likely faced even greater volatility in fees and/or care quality than standard service users as the higher risk premiums (ε) were passed on. If, on average, VLC individuals were more financially risk-averse than standard enrolled individuals – that is, income status is a good proxy for risk aversion – then the greater financial volatility expected at VLC providers has likely resulted in those service users most unable to face it in the first place bearing it most.

The greater expected variations in profitability between VLC and standard providers would also be expected to lead to stronger incentives for enrolment-based cream-skimming by VLC providers. If providers have responded to these incentives, those individuals most in need of care, because they were sicker than average, and most in need of financial assistance, would have likely found it hardest to enrol at any provider. But they would have likely found it hardest to enrol at VLC providers. Even if only some providers have responded to these incentives, increased inequities would be expected. However, their effects would be harder to systematically identify because the allocation of financial risks between service users would further depend upon whether their provider – either VLC or standard – chose to respond (or not) to these incentives.

NZPHCS FC Equity Objectives: Providers and Practitioners

The NZPHCS arrangements have also militated against provider equity, relative to the preceding arrangements. The same degree of luck is expected to have rendered VLC providers higher profits or losses for the same effort exerted by their standard equally lucky counterparts. However, the marginal revenue earned by a VLC provider for delivering an additional consultation was, on average, only 20% of the cost, whereas the marginal revenue received by a standard provider was 40% of cost. The returns to effort delivering consultations for standard providers were on average twice those received by VLC providers. VLC providers therefore faced much stronger incentives than standard providers to restrict the number of consultations provided in order to maintain financial viability.

The bifurcation in incentives also likely played out in wider differences in provider profitability. If unlucky VLC providers were less able to increase their fees, even though they faced greater risks and greater losses than standard providers, then it is more likely that they would have responded by keeping fees low but lowering service quality. Furthermore, lucky VLC providers would be constrained in their ability to opportunistically increase their fees in the manner of their standard counterparts. By way of illustration, although VLC providers agree to charge fees of no more than $17.50 for adults and $11.50 for children over five (MoH, 2015a), the averages at February 2014 were $15.05 and $7.72 respectively (including GST) (MoH, 2014b). This suggests that greater constraints led to lower fees, but would also lead to systematically lower profitability for VLC providers. The effect can be explored by extending the analysis of Table 6.7.

NZPHCS FC Equity Objectives: Provider Profitability Variations

Table 6.9 shows the expected profitability (surplus) for a statistically average provider of each type (VLC and standard) charging the average posted fee in 2014 for care supplied to a list of enrolled individuals perfectly representing the national population distribution.

Table 6.9 Expected Surplus By Provider Type at Average Fees

		Expected Utilisation				Observed Utilisation (Carr & Tan)			
Age	Popn %	Expected Consults	Revenue/ consult	Surplus at $ 50.00	Popn-Weighted surplus	Weighted consults	Revenue/ Consult	Surplus at $ 50.00	Popn-Weighted surplus
		Standard Practices							
0–4	8.2%	8.47	55.87	5.87	4.08	4.80	122.28	72.28	28.50
05–14	15.8%	2.74	55.65	5.65	2.45	2.03	86.83	36.83	11.83
15–24	10.2%	2.44	64.22	14.22	3.54	2.17	67.27	17.27	3.82
25–44	25.8%	2.42	62.06	12.06	7.53	2.77	53.71	3.71	2.65
45–64	25.8%	3.55	61.74	11.74	10.74	4.60	50.19	0.19	0.23
65+	14.2%	6.89	59.93	9.93	9.72	8.40	55.06	5.06	6.04
Surplus/100 enrolees					38.06				53.06
		Very Low Cost Practices							
0–4	8.2%	8.47	58.92	8.92	6.21	4.40	128.96	78.96	28.53
05–14	15.8%	2.74	52.89	2.89	1.25	2.12	75.92	25.92	8.69
15–24	10.2%	2.44	58.73	8.73	2.17	2.48	61.30	11.30	2.86
25–44	25.8%	2.42	56.03	6.03	3.76	3.16	45.57	-4.43	-3.61
45–64	25.8%	3.55	55.63	5.63	5.15	5.80	41.16	-8.84	-13.21
65+	14.2%	6.89	53.36	3.36	3.29	9.20	47.26	-2.74	-3.58
Surplus/100 enrolees					21.84				19.69

As with Table 6.7, the analysis is shown for individuals utilising either the expected capitated or an observed number of consultations. The observed utilisation rates are from Carr & Tan (2009). The analysis must compare VLC and standard providers. As the NZHS data do not make this distinction, they are not suitable. Whilst the Carr & Tan data may not reflect national utilisation, they are preferred to

Raymont & Cumming (2013) data because they are known to take account of non-utilisation by enrolled individuals. They also depict the expected pattern of higher-need lower-income individuals at VLC providers utilising more care than individuals at standard providers. A cost of $50 per consultation is assumed. As with other costs, this is presumed to be the average cost, including a fair return on provider time and practitioner capital invested, and excludes GST. The magnitude of this cost is immaterial – the margin between standard and VLC providers remains for any hypothetical common cost subtracted from all relevant per-consultation revenues.

Theoretical Investigation

The population-weighted surplus shown in Table 6.9 shows the expected surplus earned by each capitation category for every 100 individuals from the general population enrolled at the statistically average provider. At expected utilisation levels, the average expected surplus assuming a per-consultation cost of $50 is $38.06 per 100 enrolees for a standard provider, and $21.84 for a VLC provider.

The surplus reflects both the risk premium to buffer against high levels of random utilisation variation risk and returns from controllable risks such as cream-skimming. Using observed utilisation levels, the average expected surpluses are $53.06 and $19.69 per 100 enrolees respectively. The different expected surpluses, regardless of whether expected or observed utilisation rates are used, are consistent with a profitability wedge emerging at reported average fees charged by each provider type. Table 6.9 also illustrates the effect of cross-subsidisation at observed utilisation rates of consultations delivered to adults from revenues derived from children (notably those under six years of age) in VLC providers. Whereas the expected surpluses from all capitation categories for the standard provider are positive, for the VLC provider all expected child surpluses are positive, but all expected adult surpluses are negative.

Table 6.9 is consistent with the proposition that within both provider types, at average utilisations, enrolment profiles and costs, at least some providers are monetising at least some of the costs of financial risk (ε) in fees. If providers weren't acting in this way, then the expected profits would on average be zero for both. However, the effect is uneven. Standard providers appear to have utilised their greater ability to pass on risk costs to service users. Hence they show higher expected surpluses than VLC providers. This suggests that the even-higher financial risks faced by VLC providers arising from the stronger capitation incentives are more likely to be passed on in care quality variations. Nonetheless, some of the higher risks faced by VLC providers appear to have been monetised in fees. These findings are consistent with Cumming & Gribben's (2007) observation that fees fell by much less as a percentage than expected at higher-subsidised Access providers than lower-subsidised Interim providers equivalent to VLC and standard respectively.

However, monetising of financial risks is not the only possible explanation for the wedge between standard and VLC providers' expected profitability in Table 6.9. Two other explanations could account for the variations, but both are consistent with higher levels of financial risk arising from controllable provider opportunism, which disproportionately disadvantages high-need and VLC service users.

First, it is possible that, if aggressive cream-skimming has occurred, the enrolled populations are not perfectly representative of the total population. This is plausible because higher-risk VLC providers have faced much stronger incentives to aggressively cream-skim than lower-risk standard providers. If such cream-skimming has occurred, then VLC providers would have a higher-than-average proportion of children (especially children under six) and a lower proportion of adults (especially 65+ years) enrolled than is assumed in Table 6.9. In this case, expected surpluses would be lower at standard providers and higher at VLC providers than if the populations were randomly distributed. Table 6.9 would overstate expected profits at standard providers and understate those at VLC providers. If such cream-skimming has occurred, then the profitability wedge would not be as great as suggested by Table 6.9. However, the effects would be played out in even higher rates of price-sensitive low-income adults either not enrolling, or enrolling at standard providers where the much higher fees result in them refraining from seeking care when it is required. That is, the more equal are the observed financial returns between VLC and standard providers, the higher would be the expected inequities between enrolees and service users attributable to cream-skimming.

Second, it is possible that the owners of VLC providers have personally absorbed a significant amount of the very great quantities of financial risk passed on to them, whereas the owners of standard providers, subject to much smaller amounts of financial risk, have passed almost all of it on in fees. If this was the case, then a much larger proportion of VLC providers would have experienced financial difficulties than standard providers. It is also possible that salaried staff at VLC providers bore some of the costs of financial risk by working harder for the same levels of remuneration received by staff at standard providers. If this was the case, then it is likely that VLC providers would be harder to sell and/or staff. Although it is difficult to obtain financial information for privately-owned firms, MoH-commissioned research appears to confirm that this explanation is plausible.

Empirical Evidence from Secondary Sources

Brown & Underwood (2013) undertook case studies of five VLC providers. Four out of five were financially precarious, with deficits for the most recent completed financial year and projected for the current financial years. The fifth had shown a deficit in the most recent complete financial year, but was projected to make a small surplus in the current year. All were operating on the edge of financial viability, with staff working longer than their paid hours to meet demand. This is consistent with practitioners – both owners and salaried staff – personally bearing a significant proportion of the financial risk. In the long run, this would make it harder for VLC providers to recruit and retain staff than standard providers. The ability to give attention to service innovation would be less if practitioners were required to prioritise care delivery over other activities.

The second explanation therefore appears consistent with the assertion that real inequalities have likely emerged between providers and individual practitioners that could have longer-term effects on sector structure. If VLC providers are systematically less profitable than standard providers, then it will become very difficult for their current owners to extract either the initial physical capital invested when the firm was purchased, or a fair return on the intangible provider-specific capital invested over time, should they wish to sell the business. If practitioner-owners of a VLC provider must work harder for lower returns than practitioner-owners of a standard provider, then VLC providers would be expected to be harder to staff and sell, and to command lower prices than standard providers. The incentives for existing practitioner-owners to continue investing in provider-specific capital would also be likely reduced. They might constrain costs by hiring younger, inexperienced staff, but staff will also expect to face the same reduced incentives to invest in provider-specific capital. Salaried staff are also less likely to work longer hours for lower effective compensation than owners who may be able to recoup returns to this effort ultimately as capital gain (RNZCGP, 2015). VLC care quality would be expected to fall relative to standard providers, so the costs of risk become manifested to enrolees and service users of VLC providers in non-monetary ways. Ultimately, VLC providers may become ‘un-ownable’, with no option but to pass from private to non-profit ownership.

It is recognised that some practitioners may be motivated by objectives other than financial returns, and that this could be reflected in their being prepared to accept lower remuneration for the same level of effort, or being prepared to pay a positive sum for a loss-making provider firm. However, the GP workforce surveys show a marked decline in practitioner ownership and a commensurate increase in the salaried workforce (RNZCGP, 2015). The increase in salaried workforce has likely led to increased standardisation in the terms of practitioner financial remuneration (e.g., by relying upon union-brokered terms and conditions), so is consistent with a reduction in the extent to which differences in practitioner motivations will be expected to be observed in financial variations. Whilst practitioner-owners may still be subject to wide variations in their returns as owners, their diminishing number suggests fewer are prepared to carry open-ended exposure to the need to trade off personal financial risk and job satisfaction. Whilst some self-selection may still play out amongst salaried staff, a cap is placed upon the extent to which the risks are borne financially.

NZPHCS FC Equity Objectives: Provider Ownership Variations

Non-profit ownership might enable VLC providers to manage high costs of financial risk if repeated deficits can be compensated from charitable donations and philanthropic funds. Although relieving practitioner-owners of the financial costs of risk-bearing, the residual financial risks for non-profit firms would translate into real uncertainties for practitioners, enrolled Individuals and service users. This is because the provider would remain in existence only so long as there were charitable and philanthropic funds available to meet the deficits.

Evidence of persistently loss-making providers disproportionately failing financially and/or converting to non-profit ownership was obtained by analysing and comparing the financial accounts of subsidiaries of IPAs Pinnacle and South Link, and Central PHO. All of these entities have acquired serially loss-making providers. Although all are non-profit entities enrolled on the Charities Register, the IPAs had accumulated substantial financial reserves from budget-holding contracts in the 1990s. These have enabled them to buy providers. This contrasts with Central PHO, which apparently lacks financial reserves.

Between 2006 and 2010 Pinnacle's subsidiary Primary Health Care Limited acquired eight providers in Hamilton, Tokoroa, Stratford and Waihi (Midlands, 2015). Annual reports from 2008–2012 show deficits averaging $183,000 ($307,908 in the 2011/12 financial year). The deficits have been met by repeated injection of shareholder capital by parent Pinnacle Incorporated, and the provision of a loan facility at 0% interest which had an outstanding balance of $809,452 at the end of the 2011/12 financial year. The need to repeatedly recapitalise Primary Health Care Limited is rapidly draining Pinnacle Incorporated's reserves (Pinnacle, 2013). The financial situation is not sustainable.

South Link Health Services, a property company ultimately owned by South Link Health Incorporated, has a strategy of acquiring both profitable and unprofitable providers. Acquiring profitable providers offers an exit strategy for practitioners wishing to leave partnerships without disrupting the remaining partners. It also appeals to retiring owners of small rural practices that, although profitable, are not attractive to younger practitioners. Like Pinnacle Incorporated, South Link has also acquired a portfolio of serially loss-making providers. By July 2013 it had acquired interests in 17 providers, mostly in its IPA catchment of the South Island, but also one in each of Wellington and Auckland. Annual reports show trading losses from 2010–2012 averaged $101,289, necessitating a capital injection from its parent to maintain solvency. South Link Health Services' accounts maintain a distinction between the providers in which it owns a part-share and those wholly owned. In 2011/12, six part-owned providers generated a surplus of $227,580, and four wholly owned providers a deficit of $329,865 (South Link Health Services, 2012).

Whilst the portfolio approach has allowed South Link some degree of financial diversification as a means of managing investor financial risk, this is unlikely to be financially sustainable in the long run. To have a perfectly balanced investment portfolio South Link must purchase equal shares of profitable providers, which are likely to be financially desirable to owner-operators in a competitive market, and unprofitable ones for which it is most unlikely there will be competition. Its capital constraints put it at a disadvantage in purchasing the former, so to balance the portfolio, it would have to refrain from acquiring the latter, which puts it at odds with its charitable purpose. South Link's portfolio is not balanced as it comprises a disproportionately large share of loss-making providers.

Refraining from purchasing loss-making providers would also put South Link at odds with the interests of its provider-owning members. When a loss-making provider fails financially its enrolled individuals have geographically limited choice of alternative providers. If the failing provider was serially unlucky due to an above-average proportion of high-need individuals on its list, adjacent profitable providers will be reluctant to enrol these individuals lest it dilutes their current financial positions. They could manage the risk by closing the books to new enrolees. However, given the large reserves held by the IPA, provider-members may prefer to share the financial uncertainty of adjacent provider failure across all members of the IPA by having the IPA purchase the failing provider and keep it operating rather than bear the cost personally of it closing and affecting their own firm profitability.

That is, IPA purchase offers members a form of insurance. Members control its decision-making, so can engineer this outcome. Whilst as IPA beneficiaries members forfeit a share of the benefits from accumulated reserves, this may well be a premium that, as risk-averse provider-owners, they are prepared to pay. It also likely meets the post-2009 expectation that PHO and IPA reserves be applied directly to care delivery (Thorlby et al., 2012), even though if used in this manner it would also confer a financial benefit on IPA provider-members.

In contrast to Pinnacle and South Link IPAs, Central PHO and its affiliated entities had no substantial cash reserves in 2013. Since establishment, the PHO acquired two providers. One was in liquidation on 20 May 2013, while the other appeared to be only marginally financially viable (Central PHO, 2013). Central PHO had little option but to bankrupt the financially failing provider, as it has no reserves from which to subsidise it. This would have exposed adjacent providers to financial risks when individuals enrolled at the failed providers sought to enrol elsewhere. In August 2014 only six of the 42 providers in the PHO were accepting new enrolments (Central PHO, 2014). This artefact could indicate either or both of staff shortages or strategic book-closing by adjacent providers in order to maintain their financial viability.

NZPHCS FC: Equity Objectives Summary

Table 6.10 summarises the effects on equity of the NZPHCS FC payment arrangements between individuals, service users, providers and practitioners. As with Table 6.8, red arrows indicate effects contrary to the policy objectives and green arrows effects consistent with them. An upward arrow indicates increased equity and hence progress towards the desired objective; a downward arrow progress away from it. The number of arrows offers an assessment of the magnitude of the effect relative to others in the table. The assessments are subjective due to the inability to obtain reliable empirical measurements. Nonetheless, they indicate the expected movement towards or away from the policy objective relative to the pre-NZPHCS arrangements, based upon the derivation of the effects in Chapter 5.

Although the fees paid by service users are lower in absolute terms than under the preceding arrangements – represented by one upward green arrow in Service User: care independent of ability to pay - in almost all other dimensions the arrangements would have been expected to lead to even greater inequities between all sector participants. As providers have become the risk pools, the outcomes experienced by all individuals, service users and practitioners is highly contingent upon the provider with which they are affiliated. Wide variations in the allocation of both random and controllable risk have led to wide variations in these outcomes, which were not present under the preceding arrangements when the government operated the risk pool.

Specifically, individual enrolees can expect to face high variability between expected fees and care supplied by different providers, independent of their actual need for care, that they would not expect under the preceding arrangements. This is represented by one downward red arrow for each implicated factor: the conflation in government payments between health need and income status, the weak risk adjustment formulae and the resulting reliance on the health states of other enrolees at the same provider. The independence of their choice of provider relative to their ability to pay has also been reduced relative to the preceding arrangements if, as expected, at least some providers have responded to the new incentives to cream-skim. This is captured with a downward red arrow associated with book-closing incentives.

Table 6.10 NZPHCS FC: Effects on Equity Objectives

Equity	***Change under NZPHCS***
Individual: premium payments independent of income, need	↓ government payments confuse health need and income status ↓weak risk adjustment ↓highly dependent on health states of other enrolees and practitioner opportunism lucky vs unlucky
Individual: choice of provider independent of ability to pay	↓enrolment choices limited by disproportionate incentives for VLC book-closing
Service User: benefits proportional to need	↓ government payment based upon expected not actual need ↓ fee paid depends on provider enrolment profile and utilisation rates ↓ high variability overall ↓greatest disadvantage for enrolees at serially unlucky and VLC providers
Service User: care independent of ability to pay	↑ lower fees ↓ high variability overall ↓ volatility inversely proportional to fee paid ↓ quality reductions in lieu of fee increases at VLC
Providers: equal returns for equal effort	↓↓ high profit variability between VLC and standard between lucky and unlucky ↓uneven workloads between VLC and standard between lucky and unlucky ↓fewer incentives for provider ownership ↓fewer incentives for other investments

Key: ↑ increase in variable, contrary to policy objective more arrows -> greater effect
↑ increase in variable, consistent with policy objective
↓ decrease in variable, contrary to policy objective
↓ decrease in variable, consistent with policy objective

The high levels of financial risk overall are expected to have played out significantly in higher inequalities between service users, in both the extent to which the care they expect to receive is proportional to their needs and the fee paid being independent of ability to pay. The shift from fee-for-service to capitation payments has introduced a distinction between expected and actual need for care that will play out differently for service users depending upon the extent of 'luck' in enrolment base at their providers and the extent to which these providers engage in opportunistic care quality reduction - each reflected in one downward red arrow. The high levels of financial risk shared with providers leads to high expected variability overall, leading to a further downward red arrow. The distinction between standard and VLC providers has exacerbated the effects of each of the other inequities introduced under the NZPHCS arrangements: another downward red arrow. If care providers opt to respond to the new NZPHCS financial incentives with different approaches to fee-setting, then the effects will be expected to play out in higher inequalities between service users based on their ability to pay; and the additional uncertainty that arises for service users simply because the provider can choose whether the risks are passed on in care quality or fee variability. The greatest effects have been manifested upon those attending serially unlucky and VLC providers, but have to some extent been affected by the ability of providers to pass risk costs on in higher fees and lower service quality than would have been the case under the preceding arrangements.

The NZPHCS changes have led to substantial expected variations between the returns providers expect to get for effort exerted that were not present under the preceding arrangements. The higher expected profit variability is captured with two downward red arrows: one reflecting the higher expected variability between lucky and unlucky providers due to the payment change, and one reflecting the additional variability in risk faced by standard and VLC providers. The expected variability in workloads between the different provider types is captured with a further downward red arrow, as are the expected reductions in incentives for provider ownership and other investments in personal and sector capital.

6.3 The NZPHCS Arrangements: Subsequent Amendments

This subsection examines three subsequent amendments to the original NZPHCS FC arrangements: the Approved Fee Increase Processes (AFIP); Ministerially-mandated PHO consolidation and reserve reductions; and the introduction of Care Plus to replace HUHC payments for high users. As with the analysis of the introduction of PHOs and FC capitation payments, these initiatives are evaluated first for their effects upon the system characteristics, and then for their expected effects on the achievement of cost and equity objectives. The expected effect on objectives, however, is evaluated relative to the NZPHCS FC arrangements and not the pre-NZPHCS arrangements.

6.3.1 NZPHCS: AFIP

The quasi-regulatory AFIP was introduced in 2006. Its introduction was attributed to service user fees not falling as much as had been originally anticipated (King, 2004; 2005) and concerns that some providers were failing to pass through increases in government funding in reduced service user fees (Davies et al., 2006; Gauld, 2009; Cumming & Mays, 2012). The intention was to limit provider fee increases to recovering only those underlying increases in sector costs that were not met by increases in government funding. Proposed fee increases were assessed using a process developed for DHBs and revised annually by consulting group LECG (subsequently Sapere) (Davies et al., 2006; Sapere, 2011). Proposed increases exceeding 'acceptable limits' were referred for consideration by panels overseen by DHBSS. If the increases were deemed reasonable, they were approved; otherwise the providers were required to propose new increases that were acceptable. The fee increase, and not the fee level itself, was the subject of the review. This ensured that providers continued to recover cost variation risk – which had never been met by government funding previously – in service user fees.

The starting point for assessment of the acceptable fee increase was the fee charged by the provider in the last year. Provider revenues in the subsequent year were estimated using the proposed fee increase applied to either the expected capitated number of consultations (Option A) or the actual number of consultations delivered in the past year (Option B). These were added to the capitation revenues that would apply for the next year (Future Funding Track adjustments, Figure 2.4), converted into NACS using the chosen option. The expected revenues were compared to the revenues received in the past period, calculated in the same manner. If the proposed revenue increase exceeded the increase in revenues expected using a cost increase index (Input-cost related adjustment rate, Figure 2.4), then the proposed fee increase was submitted for detailed review. Otherwise, the provider could proceed with the proposed increase.

6.3.1.1 NZPHCS AFIP: Characteristics

AFIP had no effect on the fundamental characteristics of the FC funding arrangements. Its primary effect was to regulate fee increases to endeavour to maintain the proportion of government funding in provider revenues achieved at the end of the rollout of higher funding in 2007. It was predicated upon the assumption that fee increases above exogenous cost increases were due to provider opportunism. Consequently, it did not, except in the case of exceptions referred for review, consider whether providers' utilisation levels and, hence underlying cost variations, might vary systematically from either those expected, or those used to calculate the acceptable fees in past years.

6.3.1.2 NZPHCS AFIP: Effect on Objectives

AFIP would have been expected to have significant effects upon the ability to achieve cost and equity objectives. Allowable increases were predicated upon converting capitation subsidies into NACS, as would have occurred under the preceding fee-for-service subsidy arrangements. Hence they did not treat providers as risk pool operators exposed to the vicissitudes of utilisation variation risk. Consequently, the arrangements did not take account of new controllable risk opportunities that they created. Whilst to some extent AFIP constrained the extent to which fees increased, it likely exacerbated the consequences arising from high and unequal allocation of utilisation variation risk across providers that characterised the original NZPHCS arrangements.

NZPHCS AFIP: Effect on Cost Objectives

The risk premium example in Table 6.4 poses the 'null case' expected when neither government capitation payments nor underlying costs increased. In this case, neither provider A nor provider B would be able to alter their fees without approval.

By giving providers a choice of the way in which the acceptable fee increase is calculated, AFIP has apparently legitimised the potential created by the NZPHCS for strategic opportunism by providers facing different levels of actual service utilisation. However, it also potentially penalises unlucky providers by preventing them from raising fees to recover legitimate losses arising from providing higher numbers of consultations. To remain profitable these providers would have to reduce costs by reducing care quality. Hence AFIP has likely exacerbated the potential for wide differences to emerge in both service user fees and care quality supplied to individuals with identical needs.

AFIP Creates New Strategic Pricing Opportunities

Given the returns due to luck, in Table 6.4 lucky provider A could choose Option A, based upon an expected 10,000 consultations, for setting its fees next period to maximise its financial position. Selecting Option B would lead to its fees decreasing. Nonetheless, A is prevented from adopting the A* pricing strategy, so the extent of the profiteering is constrained to some extent. However, B's expected revenues would have to rise above the historic level of $512,500 to $525,000 (fees rise from $25.00 to $26.19) in order for it to break even. As costs have not risen, no increase in B's fee is, in the first instance, acceptable under AFIP, regardless of the option chosen. Provider B can apply to have its proposed fee increase reviewed, but this would add transaction costs that A does not have to bear, even as A is allowed to maintain prices at a level incorporating profits from luck. The 'quasi-regulatory' process thus adds an additional expected cost for unlucky providers. This is a penalty due to 'regulatory risk' in addition to the financial penalty of being a 'serially unlucky' provider. A lucky provider does not incur the costs of a review, and indeed could raise fees to the average expected level regardless of actual or expected future costs.

Each referred case is assessed against a range of criteria including changes in utilisation rates and mix of services, inflation and general cost increases, and the sustainability of the provider (Davies et al*.,* 2006). It is not clear how the distinction between random and correlated utilisation patterns is considered when evaluating proposed fee increases outside of the screening guidelines (i.e., how would Provider B be distinguished from Provider B*?), given that historic utilisation rates for that provider and all other providers are not collected. The example suggests that the screening process would be expected to yield a disproportionately large number of providers facing higher-than-average utilisation as candidates for review, whilst failing to expose those low-utilisation providers acting opportunistically by selecting the most advantageous assessment option. Only those providers whose proposed fee increases fell outside the approval guidelines and who knew that they were serially unlucky, and therefore financially unviable without the proposed increases, would find it advantageous to seek a review. A provider knowingly acting opportunistically in its fee-setting is unlikely to seek a review, as opportunism would be revealed. The best strategy for such a firm to maximise profits would be to adopt a fee increase just inside the threshold so that returns to opportunism were maximised, but detection avoided. Thus, it would be expected that the majority of claims going to review would be approved. However, as none of the opportunistic increases are likely to be subject to review, none will be prevented by the AFIP.

In the 2006/7 year, the first in which the approval process applied, fee increases for 90 providers – slightly under 10% of the provider population – were referred for detailed consideration. By late 2007, of 67 completed reviews, 53 (84%) had resulted in the requested increases being approved (Mays & Blick, 2008). This fell to 19 reviews in each of 2011 and 2012, of which 70% were finally approved (Topham-Kindley, 2013). Not all providers have been satisfied with the outcomes of AFIP reviews (Foley, 2007; Douglas, 2007; Reid, 2007).

When taking account of both cost increases, and increases in government capitation payments, the effects of the mismatch in risks and fees arising from the bundling of government fee relief subsidies into FC capitation payments are exacerbated by AFIP.

Table 6.11 AFIP with Cost and Capitation Increases

Case (i) Cost Increase (5%) exceeds Capitation Increase (3%)

Provider		Lucky (L)		Average (A)		Unlucky (U)	
		S	V	S	V	S	V
Acceptable Revenue	5%						
Option A		$525,000	$525,000	$525,000	$525,000	$525,000	$525,000
Option B		$504,000	$514,500	$525,000	$525,000	$546,000	$535,500
Capitation	3%	$309,000	$412,000	$309,000	$412,000	$309,000	$412,000
share – expected		60%	80%	60%	80%	60%	80%
share – actual		61%	80%	59%	78%	57%	77%
Fee Recovery (Op A)							
Total		$216,000	$113,000	$216,000	$113,000	$216,000	$113,000
Per Consultation		$21.60	$11.30	$21.60	$11.30	$21.60	$11.30
% increase		8.0%	13.0%	8.0%	13.0%	8.0%	13.0%
Fee Recovery (Op B)							
Total		$195,000	$102,500	$216,000	$113,000	$237,000	$123,500
Per consultation		$21.67	$11.39	$21.60	$11.30	$21.55	$11.23
% increase		8.3%	13.9%	8.0%	13.0%	7.7%	12.3%

Case (ii) Capitation Increase (8%) exceeds Cost Increase (5%)

Provider		Lucky (L)		Average (A)		Unlucky (U)	
		S	V	S	V	S	V
Acceptable Revenue	5%						
Option A		$525,000	$525,000	$525,000	$525,000	$525,000	$525,000
Option B		$504,000	$514,500	$525,000	$525,000	$546,000	$535,500
Capitation	8%	$324,000	$432,000	$324,000	$432,000	$324,000	$432,000
share –expected		60.0%	80.0%	60.0%	80.0%	60.0%	80.0%
share –actual		64.3%	84.0%	61.7%	82.3%	59.3%	80.7%
Fee Recovery (Op A)							
Total		$201,000	$93,000	$201,000	$93,000	$201,000	$93,000
Per Consultation		$20.10	$9.30	$20.10	$9.30	$20.10	$9.30
% increase		0.5%	-7.0%	0.5%	-7.0%	0.5%	-7.0%
Fee Recovery (Op B)							
Total		$180,000	$82,500	$201,000	$93,000	$222,000	$103,500
Per consultation		$20.00	$9.17	$20.10	$9.30	$20.18	$9.41
% increase		0.0%	-8.3%	0.5%	-7.0%	0.9%	-5.9%

Table 6.11 extends Tables 6.4 and 6.5 to show what could be expected under AFIP when providers facing different capitation incentives experience both cost increases and increases in government funding. Case (i) shows a cost increase (5%) that falls below the increase in government funding (3%); Case (ii) shows where the government funding increase (8%) exceeds the cost increase. The distinctions are material because AFIP is based upon equalising revenues comprised of both prospective FC payment increase and retrospective fee increase elements. The more highly capitated the provider is, the greater is the financial risk borne, and the greater is the effect of any variation between the share of the revenue increase attributable to FC payment increases and the share attributable to fee increases.

When cost increases exceed FC payment increases - a 'controllable' 'fiscal' risk factor arising because, despite undertakings, the government payments have not kept pace with cost increases – providers are able to pass on the additional costs by increasing fees charged to service users – Case (i). As fee income increases to a greater extent than FC income, the effect is to reduce the strength of the capitation incentives facing the provider in the 'Average' case where it delivers exactly the expected number of consultations. However, the more highly capitated the provider, the greater is the percentage increase in the fee (S rises by 8%, V by 13%). This effect captures the downside of the higher level of financial risk borne by more highly capitated providers when a funding 'shock' (positively manifested fiscal risk) occurs. Thus, when the government fee increase fails to keep pace with cost increases, the financial or quality reduction effects will be disproportionately borne by those that the government wished to pay lower fees. If health need is indeed correlated to financial need, then those most in health need are most harmed by AFIP when government funding fails to keep pace with cost increases.

The opposite occurs when the FC increase exceeds the cost increase, as the share of income derived from fees goes down – Case (ii). In this case there is a trade-off between the proportionate effect of the government's generosity (negatively manifested fiscal risk) leading to increases in FC capitation revenue, and the magnitude of the cost increases. For highly capitated providers, in most cases, the magnitude of the FC capitation increase in absolute terms will exceed the allowable increase in revenues, leading to the acceptable fee falling. This is what occurs for provider V in the 'Average' column of Case (ii). However, for a lower-capitated provider the magnitude of the increase in FC capitation revenues may not exceed the allowable increase in revenues indicated by the cost increase. If this occurs (provider S in "Average' Case (ii)), the acceptable fee may actually increase, even though, all else held equal, it might be expected that an increase in capitation revenues in excess of cost increases would lead to a reduction in fees across the board. This phenomenon arises because the upside effect of the government's generosity has a greater effect on relieving the fees paid at more highly capitated providers than at lower-capitated providers. This effect may in part account for Cumming & Gribben's (2007) observation that, in the early stages of the rollout of higher funding, fees fell more (in proportionate terms) at the initially more highly capitated Access providers than at the less highly capitated Interim providers. That Interim fees did not fall as much as Access fees need not have been due solely to provider opportunism. It could also have been an artefact of the unequal allocation of financial risk across providers due to conflation of fee reduction funding with capitation funding.

Table 6.11 also illustrates the compounding effects of different capitation incentives, utilisation variations and the cream-skimming potential of AFIP. Using the same 10% variations between expected and actual consultations delivered as Table 6.5, Table 6.11 shows that in case (i), where cost increases exceed capitation increases, lucky providers delivering fewer consultations than expected will be able to increase their fees by a larger amount if they select Option B. Unlucky providers delivering more than the expected number of consultations will be able to raise their fees more by selecting Option A. Ironically, the lucky provider fee using Option B may rise more (to $21.67 for S and $11.39 for V) than that of the unlucky provider selecting Option A (to $21.60 and $11.30 respectively). The reverse applies in Case (ii) where capitation increases exceed cost increases. If the selection of the option is opportunistic rather than reflecting real expectations of future demand, then once again Table 6.11 shows that, consistent with the higher costs of financial risk, the effect is greater, in both absolute and proportionate terms, for service users at the more highly capitated providers. Fiscal risk thus exacerbates the inequities arising from uneven capitation incentives, with the greatest volatility again being expected to be borne by enrolees at VLC providers.

For five out of eight years since the introduction of AFIP, government funding increases have fallen below cost increases (Figure 2.4). If providers followed the strategies suggested for the five years where costs exceeded subsidy increases (case (i)), but left fees at the historic level in the three years where they do not, then a bifurcation would have emerged between the fees charged by lucky and unlucky providers. The fees charged by perennially lucky providers could have steadily increased (using Option B), leading to even higher revenues for the same level of effort exerted. But unless taken to detailed review, the fees charged by unlucky providers would have remained at the same level as average providers (using Option A). Unlucky providers could have remained financially viable only by reducing costs to the level of these new, lower revenues. If both standard and VLC providers behaved in this manner, then (assuming luck was distributed equally across the two provider types) each group would have its own distribution of high-fee lucky profitable providers and low-fee average and barely profitable unlucky providers charging only the standard expected fee.

However, not all providers were able to raise their fees, even if the increase was acceptable. The most disadvantaged were VLC providers, whose enrolled populations disproportionately represented individuals from low income groups. The AFIP processes thus strengthen the proposition that a fee and quality bifurcation between VLC and standard providers discussed above, and illustrated in Table 6.9, would develop as an artefact of strategic pricing responses to high and variable levels of utilisation variation risk borne by providers.

AFIP Militates Against Efficiency-Raising Risk Pool Mergers

One means of managing high levels of utilisation variation risk would be for providers to merge, thereby increasing the number of enrolees and reducing the magnitude of the risk premium (ε). However, AFIP has reduced the incentives for providers to merge and reduce the system-wide costs of managing utilisation variation risk. This is illustrated by revisiting the example of South Link discussed above.

South Link has acquired a large portfolio of providers. Instead of merging them all into a single risk pool, it has continued to operate each firm as a separate commercial entity. Each entity retained its own separate risk pool. For example, in 2013 South Link owned two separate provider firms operating from the same premises in Invercargill, advertising different fees for consultations delivered to service users. These firms could have been merged, but were not. It is possible that other practitioners appearing to operate as provider firms may still be maintaining separate commercial entities and enrolment lists. This arrangement allows them to benefit from scale economies from sharing overheads, but eschews the major benefits of lower risk management costs from list pooling.

A reason why mergers may not have occurred at the provider level is that if provider lists exhibit different levels of luck and the consequences can be passed on in fees to service users, then higher fee increases both in isolation and in aggregate will be acceptable if each list remains separate. Typically, a provider serving a large pool at multiple locations would be indifferent to the location at which an individual received care. Surpluses accrued at one location (e.g. from having more children under six enrolled than average) could offset losses at another (e.g. where more adults than average are enrolled). However, where fees charged can vary by location if the costs and risks of delivering care at those locations differ, then incentives militate against list merging. The surpluses from the lucky provider could be retained in full, at the same time as larger acceptable fee increases could be applied in the unlucky provider. That is, AFIP would allow the fees of both providers to be set to maximum strategic advantage individually, as per Tables 6.4, 6.5 and 6.11, even though both providers had a single common owner.

Thus, AFIP has militated against incentives that would normally lead to larger risk pools emerging in systems where there is no ability to balance bill service users. At the same time, AFIP has increased the risks, and hence costs, of strategic opportunism arising as a consequence of failing to take account of the effects of utilisation variation risk.

NZPHCS AFIP: Effect on Cost Objectives

The effects of AFIP on the cost objectives, relative to the original NZPHCS arrangements, are summarised in Table 6.12. The increase in transaction costs is assigned a single upward red arrow. To the extent that AFIP has constrained the ability for extremely opportunistic fee increases (e.g., A* in Table 6.4), a single downward green arrow is assigned. The new disincentives to merge introduce higher costs of random risk, whilst the AFIP process itself has led to new opportunities for providers to act strategically in their price-setting, thereby increasing the potential costs of controllable risks, relative to the original NZPHCS arrangements. Each of these effects is assigned a single upward red arrow.

Table 6.12 NZPHCS AFIP: Effects of Cost Objectives

Cost Containment	***NZPHCS with AFIP***
Total costs	
Transaction costs	↑ AFIP add costs
Risk Management costs	
Random risks	
	↑ AFIP disincentivises merging to reduce ε
Controllable risks	
Cream-skimming	↓AFIP constrains extreme opportunistic fee increases
Other strategic actions	↑new regulatory risks with AFIP options

Key: ↑ increase in variable, contrary to policy objective more arrows -> greater effect
↑ increase in variable, consistent with policy objective
↓ decrease in variable, contrary to policy objective
↓ decrease in variable, consistent with policy objective

NZPHCS AFIP: Effect on Equity Objectives

Table 6.11 highlights how trade-offs between government decisions about the extent to which it wishes increased FC payments to reflect cost increases interact with the levels of risk faced by different provider types to ultimately lead to resource allocations militating against policy objectives. Specifically, Table 6.11 Case (ii) shows why, in the initial stages of the NZPHCS, when government subsidy increases were significantly in excess of cost increases, fees could fall for the groups receiving newly increased capitation subsidies, but increase for others. This occurred simply because of the trading off of the effects of the subsidy changes on the shares of provider fees received from capitation as opposed to fee income. Case (i) illustrates how, because of the unequal allocation of utilisation variation risk between providers, the effects of any other risk factor increasing costs that are not covered by FC subsidies will always have a greater effect on the fee paid (or care quality received by) individuals and service users at the more highly-capitated VLC providers.

Table 6.13 catalogues the concatenating effects of AFIP on the inequities inherent in the NZPHCS FC arrangements. Whilst AFIP has potentially constrained inequities between service users arising from extreme fee increases (single upward green arrow), the potential for systematic increases in fees over time is captured in inequities between providers,and hence individuals (with a red downward arrow), reflected the higher expected differences in posted fees. Increased expected systematic inequities in the allocation of care in proportion to service user need and ability to pay are each captured with single downward red arrow. Likewise, the expected increase in the wedge between the returns for equal effort between lucky and unlucky, and VLC and standard providers are also assigned a single downward red arrow.

Table 6.13 NZPHCS AFIP: Effects on Equity Objectives

Equity	***NZPHCS with AFIP***
Individual: choice of provider independent of ability to pay	↓fees increase over time unequally due to AFIP
Service User: benefits proportional to need	↓fee and care quality differences increasing over time due to AFIP
Service User: care independent of ability to pay	↑AFIP constrains fee increases ↓AFIP exacerbates the wedge between high need and low need users users at lucky and unlucky providers between users at VLC and standard
Providers: equal returns for equal effort	↓AFIP exacerbates profit variability between VLC and standard between lucky and unlucky

Key: ↑ increase in variable, contrary to policy objective
↑ increase in variable, consistent with policy objective
↓ decrease in variable, contrary to policy objective
↓ decrease in variable, consistent with policy objective

more arrows -> greater effect

6.3.2 NZPHCS: PHO Mergers and Reserve Minimisation

The Ministerial instruction in December 2009 that DHBs reduce the number of PHOs led to multiple PHO mergers. By 2011 only 31 of the original 82 remained, and the number has remained stable ever since. The June 2009 announcement that PHO reserves should decrease led to significant reductions in funds held, if indeed reserves existed in the first place. In the 2013 annual reports (Appendix 2) none of the 29 PHOs analysed held any reserves related to FC funding.

6.3.2.1 NZPHCS PHO Mergers: Effect on Characteristics

As providers and not PHOs manage risk pools, PHO mergers had no effect on the allocation of utilisation variation risk or other cost-related risks across sector participants. Levels of utilisation variation risk would be expected to reduce only if mergers of the provider risk pools occurred. Ironically, formalising the expectation that PHOs are *not* to hold reserves militated directly against any incentive that might have existed for PHOs to assume responsibility for risk pool management.

6.3.2.2 NZPHCS PHO Mergers: Effect on Objectives

The expected effects are summarised in Table 6.14. The Ministerial expectations would have been expected to have minimal effect on the anticipated high cost and inequitable arrangements emerging under the FC capitation. To the extent that there were any effects on total costs, they would be expected to be observed only in respect of a small reduction in transaction costs from having fewer PHOs and greater benefits from standardised processes. However, many of these benefits had already been achieved as a consequence of PHOs subcontracting their management to a handful of IPA-owned firms. Nonetheless, a half-size downward green arrow is assigned to the expected effect on transaction costs. The implicit negative effect that the restriction on PHO reserves might have had on the incentives for PHOs to assume responsibility for the merging and management of more-efficient larger risk pools is captured with a single upward red arrow.

Likewise, it is difficult to identify the extent to which the mergers and reserve restrictions would have affected the equity objectives, except from dampening any incentives for developing FC-funded services under the auspices of PHOs. Rather, it has made it more likely that these will be developed under the auspices of IPAs.

Table 6.14 NZPHCS PHO Mergers: Effects on Cost and Equity Objectives

Cost Containment	***NZPHCS with PHO Mergers***
Total costs	
Transaction costs	↓ PHO Mergers reduce costs
Risk Management costs	
Random risks	↑ reserve restrictions disincentivise merging to reduce ε
Equity	***NZPHCS with PHO Mergers***
Providers: equal returns for equal effort	~ service development occurs under provider-controlled IPAs

Key: ↑ increase in variable, contrary to policy objective   more arrows -> greater effect
↑ increase in variable, consistent with policy objective
↓ decrease in variable, contrary to policy objective
↓ decrease in variable, consistent with policy objective
¬ equivocal effect on variable

6.3.3 NZPHCS: Care Plus

This chapter has so far concentrated on the implications of bundling government funded risk premiums with capitation payment of providers under the NZPHCS. The focus has been on FC services, as these constituted the major source of both government and private revenues received by providers. Government FC capitation payments were referred to as 'Capitation Funding' as they were paid 'per head'. However, they were not the only capitated care delivery payments made by the government under the NZPHCS.

A significant additional class of capitated payments, known as Care Plus, were introduced to replace HUHC payments for frequent users. Care Plus payments differed substantially from FC and other capitated payments to PHOs as they were not paid universally for all enrolled individuals, or by provider type. They were paid for only a subset of enrolled individuals with diagnosed complex clinical needs assessed to benefit from an additional two hours of care over the coming six months. Care Plus was paid in addition to the FC payments for those individuals. At quarter 1 2013, fewer than 0.6% of enrolees qualified for HUHC payments compared to around 6% for Care Plus, suggesting the intended substitution was nearly complete. However, Appendix 1 shows that HUHC payments still exist, and exceed non-HUHC payments by more than the Care Plus fee for all capitation classes in all provider types except age groups 0-4 and 65+.

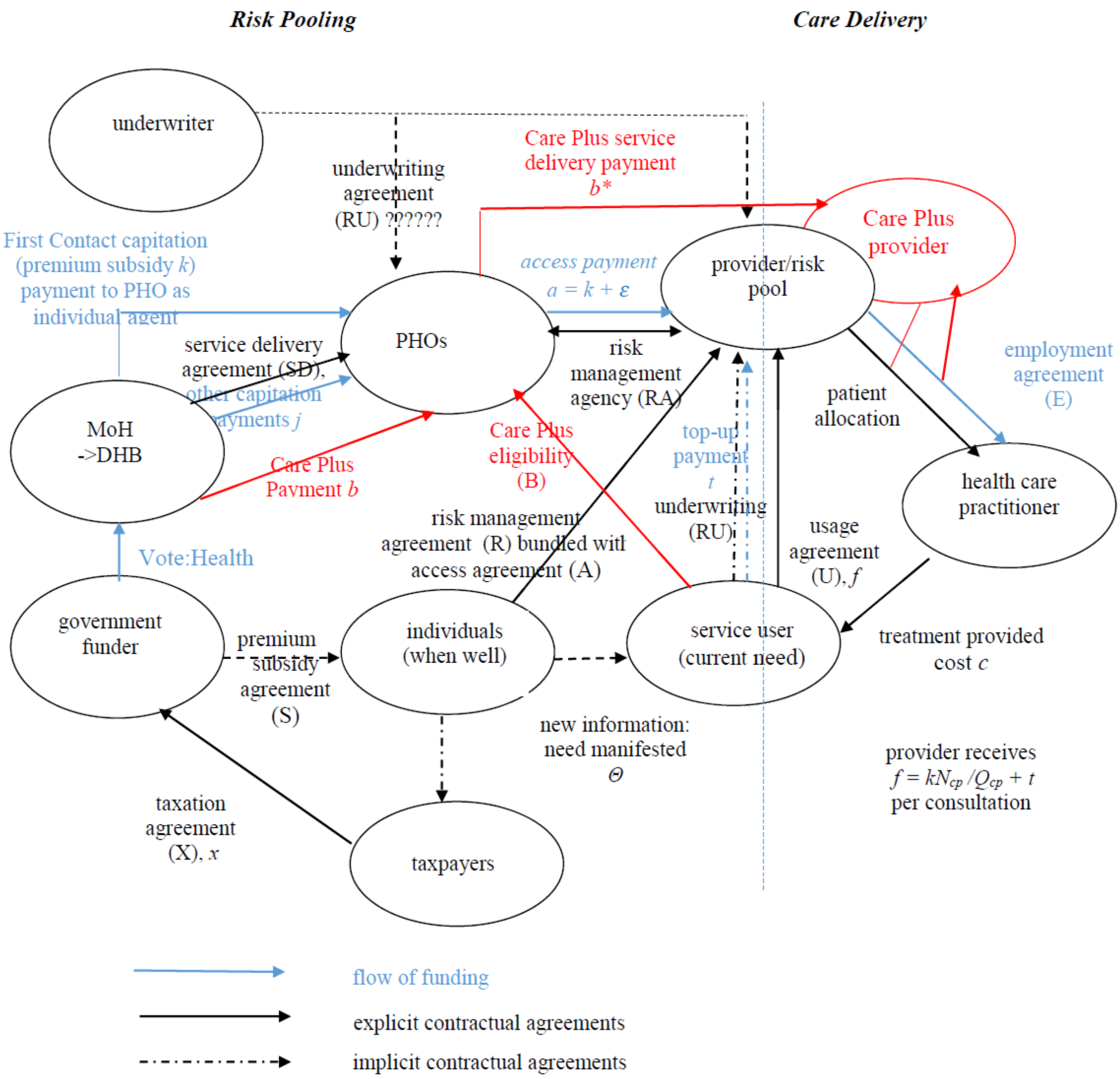
PHOs were expected to develop and supply Care Plus services in a co-ordinated, and cost-effective manner. They could be provided by PHOs themselves, or contracted from other providers. It is unclear whether balance-billing was permitted for Care Plus services. Providers have not been required to advertise or report Care Plus consultation fees, and they have not formed part of AFIP processes. CBG (2006) reported fees charged for Care Plus in 2006 of between $0 and $42. As at least four additional hours' care per annum must be supplied to Care Plus enrolees, the current funding rate makes it financially unviable for GPs to deliver the care in standard consultations without balance-billing. If fees are not charged, then the incentives to use lower-cost nurses and other health workers to supply Care Plus care are strong.

6.3.3.1 NZPHCS Care Plus: Characteristics

Care Plus is considered separately here as it has very different characteristics from the pre-NZPHCS HUHC payment it has replaced. Prior to the NZPHCS additional HUHC fee-for-service subsidies were paid for consultations delivered to any individuals (not just CSC-holders) who had utilised at least 12 consultations in the preceding 12 months. The payment was in effect a ‘stop-loss’, reducing the fees paid by very high users. The government-underwritten risk pool bore HUHC users’ utilisation variation risk. HUHC subsidies were paid for both previously diagnosed conditions and new needs. They were not contingent upon having any specific condition, or any particular future expectations of need for care. Service users received the higher subsidy even if fewer than 12 consultations were sought in the subsequent year. However, even if an individual developed a condition known to require more than 12 consultations in the subsequent 12 months, HUHC status and subsidies did not apply until the 13th consultation was delivered.

Under the NZPHCS, HUHC holders initially attracted higher FC capitation payments, in the same manner as CSC holders. As with VLC payments, providers were compensated for revenues foregone when charging HUHC holders lower fees. In Figure 6.2 capitation payments (k) were higher for targeted HUHC individuals, to increase the NACS, thereby allowing the balance-billing payment t to be reduced. But if past use was a reliable predictor of future needs for FC care, HUHC payments also constituted a risk adjustment recognising the higher expected costs of supplying more care to HUHC individuals than to other individuals in the same capitation class, That is, q was greater than the standard Q for these individuals, thereby justifying a higher NACS. Capitated HUHC payments augmented regular FC funding to cover both truly first contact care for newly developed, and hence, unpredicted conditions and secondary encounters where ongoing care was provided for previously diagnosed conditions. Providers were required to manage the utilisation risk associated with HUHC individuals developing new or previously unknown needs in addition to the more certain utilisation of care supplied for already-known conditions.

Figure 6.4 NZPHCS Arrangements: First Contact and Care Plus



Care Plus payments, by contrast, pertained to the delivery of specific types of secondary care to service users meeting specific diagnosis criteria. Once a diagnosis had been made and the need for Care Plus secondary care identified, then utilisation uncertainty with regard to Care Plus for that service user had been resolved. A defined amount of care of a particular type would, with certainty, be required. Care Plus was a benefit agreement (B) (Figure 6.4) and the associated payments were strictly benefits (*b*) paid to PHOs for a subset of eligible service users, not premium payments (*k*) made for enrolled individuals. They imposed very different financial risks to FC payments, because they carried negligible variation between expected and actual utilisation. Providers could ‘cap’ Care Plus service delivery once the additional care hours had been supplied or supply care in standardised bundles that met the contractual obligations within the funding provided. As Care Plus payments carried much less financial risk than FC payments, risk-averse PHOs or their IPA affiliates were much better positioned to manage Care Plus contracts than contracts for FC services.

PHOs (or their agents) have been observed to treat Care Plus and HUHC funding very differently to FC funding, and wide differences emerged between PHOs. CBG (2006) found many PHOs retained substantial shares of both Care Plus and HUHC funding to fund delivery of new types of care. Some elements of Care Plus care were delivered by FC providers, but they were remunerated differently (b^*) to the government capitation schedule (b). Often, PHOs utilised capitation contracts with both a fixed and variable portion, but using much weaker capitation incentives than associated with FC remuneration. Annual reports in 2013 indicated most PHOs or their affiliated IPA entities were actively co-ordinating Care Plus delivery to enrolees of multiple providers, and that nurses were playing a significant role in both its development and delivery.

6.3.3.2 NZPHCS Care Plus: Effect on Objectives

Whilst Smith (2009) and Mays & Blick (2008) observed little change in care delivery at GP-led Providers, CBG (2006) suggested that changes to implement Care Plus appeared to fulfil, in part, the NZPHCS objectives of increased care coordination and team-based care delivery. Arguably, Care Plus may have engendered the desired care delivery changes precisely because it did *not* require risk-averse PHOs or providers to bear large amounts of financial risk.

Indeed, Care Plus potentially exemplified a care delivery agreement where the magnitude of the financial risks shared were commensurate with the ability of the contracted entity to bear them. Arguably, Care Plus could be described as a 'price-and-volume' agreement between the government and PHOs for the delivery of a fixed number of defined care packages to specific service users in exchange for a fixed fee. It was clearly not 'population funding' in the manner of FC payments, as it was targeted at specific service users with diagnosed needs, not individuals with uncertain future needs. Although it could be transformed, at least in part, into a partial capitation contract between a PHO or IPA and providers for the delivery of some components of the service bundle, these agreements were separate and distinct from the partial capitation contracts under which providers were remunerated for FC care. Indeed, PHOs or IPAs accepting Care Plus funding were doing so not as risk managers, but as providers.

Thus, it is not clear that all individuals who were eligible for HUHC subsidies under the pre-NZPHCS arrangements have received either equivalent funding or access to appropriate care under Care Plus. In an analysis commissioned by the MoH, CBG (2006) observed that Care Plus has been costly to develop, and that Care Plus services lacked flexibility and were not suitable for individuals with very complex needs requiring GP input for every instance of care. Furthermore, Care Plus individuals could develop new needs not well addressed by the targeted Care Plus services, necessitating high levels of both FC and Care Plus care in a given time period.

If Care Plus funding was retained by the PHO or IPA, FC providers would not have been compensated for the higher expected care utilisation of these high-need individuals. Consequently, when Care Plus replaced HUHC both providers and high-need individuals effectively forfeited access to the stop-loss features of pre-NZPHCS HUHC payments, so would have been expected to assume higher levels of financial risk than if the preceding arrangements had prevailed.

From a theoretical risk management perspective, the use of an individual's HUHC status as an indicator of higher underlying, but otherwise undiagnosed, need was removed from the risk adjustment formulae for calculating FC payments when replaced by Care Plus. This was potentially significant for the magnitude and distribution of risk management costs, as past use of care is one of the best indicators of likely future need. If providers were not compensated for these higher expected costs, then their real risk faced would have increased. The incentives to act strategically to manage this higher risk – notably cream-skimming by denying enrolment to known high-need individuals - would also have increased. If enrolment could not be denied, then the higher costs of care required for HUHC individuals would be shared only with the service users of the providers at which they were enrolled. Hence, replacing HUHC with Care Plus would have increased risk management costs and decreased equity both between providers and between service users of different providers, depending upon the luck with which HUHC individuals were allocated amongst providers, and providers' propensity to engage in cream-skimming.

Table 6.15 NZPHCS Care Plus replaces HUHC: Effects on Objectives

Cost Containment	**Care Plus**
Total costs	
Transaction costs	↑↑ Care Plus care and contract development
Risk Management costs	
Random risks	
Utilisation variation risk (ε)	↑Care Plus replacing HUHC reduces risk adjustment sensitivity
Controllable risks	
Cream-skimming	↑Care Plus replacing HUHC increases likelihood
Equity	***Care Plus***
Service User: benefits proportional to need	↓exacerbated by Care Plus replacing HUHC
Service User: care independent of ability to pay	↓exacerbated by Care Plus replacing HUHC
Practitioners: equal returns for equal effort	↓ exacerbated by Care Plus replacing HUHC
Other Objectives	
Co-ordinated care	↑ Care Plus services at PHO/IPA level

Key: ↑ increase in variable, contrary to policy objective   more arrows -> greater effect
↑ increase in variable, consistent with policy objective
↓ decrease in variable, contrary to policy objective
↓ decrease in variable, consistent with policy objective

The effects of Care Plus on cost and equity objectives are summarised in Table 6.15. The high transaction costs are accorded two upward red arrows. The increased random utilisation variation risk costs from removing use frequency from provider capitation payments and the potentially increased controllable risks arising from higher incentives for cream-skimming are both accorded one upward red arrow. The increased inequities arising for service users (both higher expected cost differences and care quality differences) and practitioners resulting from providers facing higher expected levels of financial risk are all captured with one downward red arrow. However, the positive effects of Care Plus encouraging PHOs to coordinate care supplied to selected service users is reflected in one upward green arrow.

6.4 NZPHCS: Summary

Table 6.16 summarises the descriptive characteristics of the New Zealand primary health care system under the original NZPHCS FC arrangements, and subsequent changes implementing AFIP, PHO mergers and Care Plus.

Table 6.17 summarises the effects on the likelihood of achieving cost and equity objectives of the same arrangements, again relative to the preceding arrangements.

Together, Tables 6.16 and 6.17 allow the first two research questions posed in Chapter 1 to be answered. The changes to government funding introduced by the NZPHCS have substantially increased the expected magnitude of both random and controllable financial risk in the New Zealand primary health care sector, relative to the preceding arrangements. Primary responsibility for managing random utilisation variation risk has shifted from a single very large government-managed pool to over a thousand inefficiently small provider-based risk pools. In effect, the arrangements have undermined most of the benefits gained from pooling risks in health care systems in the first place. The expected costs of managing random risk, in particular, have grown markedly. At the same time, the intended benefits from sharing controllable financial risks with providers have been negligible because providers' ability to balance-bill has rendered the use of financial incentives to change provider behaviour impotent.

The expected costs of managing the very much larger random and controllable financial risks of the NZPHCS have been shared very unevenly across all of enrolled individuals, service users and providers. Small pools, repeated transacting and correlated demand have most likely led to the creation of serially profitable lucky and serially unprofitable unlucky providers. Unlucky providers can pass on higher risk management costs to service users in higher fees and/or lower care quality. This has most likely occurred to some extent. Although cited as a population-funded arrangement, the NZPHCS has resulted in the relevant populations amongst which individuals share their utilisation uncertainty being the very restricted group of individuals enrolled at the same provider. Segmentation between VLC and standard providers on the basis of enrolee income status has militated against the usual insurance and taxation system objectives to diversify health state and financial risks widely. The most disadvantaged by these arrangements are expected to be the service users of VLC providers to whom the government wished to provide the greatest assistance.

In Table 6.18, the magnitude of the aggregate effects in each dimension are summarised on a four-point scale: small, moderate, large and very large expected effects; and reflect the author's assessment, based upon the number and expected intensity of the disaggregated effects laid out in Table 6.17. The direction of the effects, however, is not a matter of judgement and follows the direction of the theoretical mapping established in Chapter 5. Once again, red indicates movement away from the desired objective and green towards it; plus signs an increases in the observed metric and minus signs decreases.

Table 6.16 Descriptive Characteristics: NZPHCS vs Pre-NZPHCS

	NZPHCS	***Pre-NZPHCS***
Risk Pooling Side		
Random risk management		
Risk Pool(s) = Providers		
Number	1030 (approx.)	one
Members	3000-7000 (approx.)	2 million
Ownership	providers	government
Underwriting/Reinsurance arrangements	provider owners, service users	taxpayers
Risk adjustment sophistication	age/gender poorly adjusted confuses costs and revenues weakened by removal of HUHC, CSC-holding Individual data	internalised
Individual Coverage	comprehensive	targeted
Premium Sponsorship	government	government
Controllable risk management		
Deductible/Co-payment	none	none
Bridging the Sides		
Balance-billing share of fee	untargeted: 40%-50% (adult) 30% (13-14 years) targeted: 0% (<13 years) 10% (13-14 years) 20-30% (VLC adult)	untargeted: 100% targeted: 0% (< 6 years) to 60% (CSC adult)
Provider Remuneration arrangements: FC		

Capitation terms:		
Fixed share	60%-80%	0%
Variable share	40%-20%	100%
Provider Remuneration arrangements: Care Plus		
Price-and-volume for PHOs	limited exposure	HUHC
Capitation for Providers:		
Fixed share	low	0%
Variable share	high	100%
Care Delivery Characteristics		
Provider characteristics		
Number of providers	1029	over 1000
Practitioners per provider (number and type)	3-5 GPs	3-5 GPs
List size	3000-7000	
Ownership	practitioners increasing non-profit	practitioners

Table 6.17 Detailed Effect on Objectives: Change under NZPHCS

	Change under NZPHCS
Cost Containment	
Total costs	
Service delivery costs	↑ lower expected productivity of salaried staff
Transaction costs	↑ multiple pools ↑PHO administration costs ↑ complex fee calculations ↑ AFIP processes ↓ PHO Mergers reduce transaction costs ↑↑ Care Plus care and contracting development
Risk management costs	
Random risks	
Utilisation variation risk (ε)	↑↑↑↑ small pools, risk-averse providers ↑↑ very weak risk adjustment formula ↑ high variability between providers ↑ weak risk adjustment exacerbated by AFIP ↑ weak risk adjustment exacerbated by Care Plus replacing HUHC ↑ AFIP, reserve restrictions disincentivise merging to reduce ε
Other random risks	↑all systemic financial risks passed on to service users as fee is only alternate point of fee collection ↑ ‘fiscal risk’ – funding increases less than costs ↑new regulatory risks with AFIP
Controllable risks	
Cream-skimming	↑ multiple pools

	↑ pools managed by most informed parties ↑poor risk adjustment formulae create new opportunities ↑ higher incentives overall; greater for VLC ↑ exacerbated by arbitrage options available under AFIP ↑ Care Plus replacing HUHC increases likelihood
Unnecessary utilisation – user-controlled	↑ newly-subsidised users ↑ higher subsidies for already-subsidised
Unnecessary utilisation: supplier-controlled	↓ limiting consultations overall to constrain losses ↓ rationing care supplied to VLC adults
Other strategic actions	↑strategic fee-setting ↑ high variability between providers new regulatory risks with 'Acceptable Fee Increase' process options ↑ disincentives to merge
Consultation numbers	Unclear
Average cost per standard consultation	↑↑↑↑↑
Equity	
Individual: premium payments independent of income, need	↓ government payments confuse health need and income status ↓weak risk adjustment ↓highly dependent on health states of other enrolees and Provider opportunism: lucky vs unlucky VLC vs Standard
Individual: choice of provider independent of ability to pay	↓enrolment choices limited by disproportionate incentives for VLC book-closing ↓fees increase over time unequally due to AFIP
Service User: benefits proportional to need	↓ government payment based upon expected, not actual, need ↓ fee paid depends on provider enrolment profile and utilisation rates ↓ high variability overall ↓greatest disadvantage for enrolees at serially unlucky and VLC providers ↓increasing over time due to AFIP ↓exacerbated by Care Plus replacing HUHC
Service User: care independent of ability to pay	↓ high variability overall ↓ volatility inversely proportional to fee paid ↓ quality reductions in lieu of fee increases at VLC ↑AFIP constrains fee increases ↓AFIP exacerbates the wedge between high need and low need users

	users at lucky and unlucky providers between users at VLC and standard ↓exacerbated by Care Plus replacing HUHC
Practitioners: equal returns for equal effort	↓↓ high profit variability between VLC and standard between lucky and unlucky ↓fewer incentives for provider ownership ↓AFIP exacerbates profit variability between lucky and unlucky providers VLC and Standard ~service development occurs under Provider-controlled IPAs

Key: ↑ increase in variable, contrary to policy objective
↑ increase in variable, consistent with policy objective
↓ decrease in variable, contrary to policy objective
↓ decrease in variable, consistent with policy objective

more arrows -> greater effect

Table 6.18 Summary: Effect of NZPHCS Relative to Pre-NZPHCS

	Pre-NZPHCS		NZPHCS
	Description	**Normalised Score**	**Relative Score**
Total Costs			
Transaction Costs	moderate	0	small increase
Government Costs			
Level	moderate	0	moderate increase
Predictability	low	0	very large increase
Private Sector Costs			
Level	moderate	0	small decrease (short run) large increase (long run)
Predictability	moderate	0	large decrease
Equity			
Enrolled Individuals			
Access	high	0	moderate decrease
Care Quality	moderate	0	moderate decrease
Service Users			
Financial	moderate	0	large decrease
Care Quality	moderate	0	large decrease
Providers			
Horizontal	high	0	moderate decrease
Vertical	high	0	moderate decrease
Provider Incentives to			
Constrain Costs	low	0	large increase
Improve Health Outcomes	low	0	~
Collaborate/Work in teams	low	0	small increase

Key: red: away from objective
green: towards objective

The NZPHCS fiscal, structural and contractual changes were introduced into a primary health care sector with long-standing institutions and relationships. These long-standing institutions and relationships strongly influenced the design of key elements of the NZPHCS. Most notable were:

- the retention of the ability of providers to balance-bill service users in order to recover the system costs not met by government funding;
- the conflating of government funding to meet the health care needs of a population with funding to relieve targeted service users of a greater share of the fee burden than non-targeted service users in order to preserve distributional differences established under the preceding arrangements; and
- the presumption that government funding could continue to be treated as seamlessly interchangeable with private funding under the NZPHCS as it had been under the preceding arrangements, even though the method of allocating government funding had changed, but private funding continued to be raised in the same manner.

Conflating government funding of a risk pool with subsidies for care provision led to the government abrogating its role as social insurer. By treating FC capitation payments as contractually equivalent to fee-for-service subsidies, and allowing – and indeed requiring – them to be passed through to providers in back-to-back contracts, the NZPHCS appeared to presume that the Government was still acting as a pool manager and engaging in capitation contracting with providers. Government and service user revenues were considered to be seamlessly interchangeable at the provider level as they were in the pre-NZPHCS arrangements, even though the change to capitation payment fundamentally altered responsibility for risk pool management. Consequently, important distinctions between population funding of primary health care, and fee reductions for targeted service users became blurred. At the micro level this has played out in radical changes to providers' financial risk management responsibilities and the role played by the fees they charge service users.

It is difficult to separate the effects out empirically from other interactions occurring in the sector. The theoretical analysis in this chapter shows that it could not have been anticipated that either the expected reductions in service user fees, or the reallocation of resources in proportion to either the health or financial needs of either individuals or populations, could have been achieved under the arrangements that were implemented. Neither could the amendments implemented subsequently have substantially altered either the higher-than-expected costs or allocative inequities, as they too were predicated upon the same mistaken beliefs. However, analysis of Care Plus, using a financial risk lens, has shown that when the difference between risk management and care provision is clearly understood, and when the financial risks shared are commensurate with the abilities of the parties concerned to manage them, then it is possible to foster innovation in the way care is coordinated and delivered.

These insights can now be used to contemplate the effects of further changes to the NZPHCS instruments on the potential for making progress towards the achievement of a more cost-effective and equitable set of arrangements.

7. Looking Forward

Chapter 6 applied the simplified model and mapping framework developed in Chapter 5 to evaluate the theoretical effects of the NZPHCS funding changes. The NZPHCS, and subsequent changes to it, are expected to militate against achieving policy objectives to constrain costs and to distribute resources more equitably according to the health and financial needs of the population that the policy serves. This chapter uses the same approach to assess the effects on those objectives of four possible changes to the NZPHCS arrangements.

First, three changes already proposed for, or partially implemented in, the New Zealand primary health care system are evaluated. These are:

i. replacing the current PHO capitation payment formulae with a complex contract targeting multiple objectives (Mays & Blick, 2008), which has in part begun to be implemented in the PHO Performance Programme and Integrated Performance Improvement Programme;
ii. moving progressively to a fully government-funded system – the original NHC recommendation – which has in part been implemented with the extension of zero fees to children under 13 years in July 2015; and
iii. adjusting the FC capitation-setting formulae to better reflect actual observed utilisation levels (PCWG, 2015).

Proposals i and iii constitute predominantly contractual changes, directly addressing apparent shortcomings in both FC and PHO capitation arrangements. Proposal ii is essentially a change to government funding levels, implemented within the existing NZPHCS structural and contractual arrangements. All three could be implemented without altering the existing sector structures and relationships.

Next, a fourth change – termed the Mixed Funding Model (MFM) – is evaluated. This proposal draws its inspiration from the analysis in Chapter 6. It proposes in the short run to separate government funding into two separate components:

- one predicated upon population-based funding principles, as might be expected when a premium sponsor fully funds all individuals according to their expected health needs; and

- one predicated upon a supplementary insurance arrangement to reduce the fees paid by targeted service users, in order to achieve a secondary distributional objective in a system where private payments are necessary.

The MFM would require fundamental changes to both the structural and contractual arrangements of the New Zealand primary health care sector, so would be more difficult to implement than any of the first three changes. It also requires the government to make explicit decisions about the different roles it might play in the sector now and in the future as funder, pool manager and a party to developing the contracts between risk pools and providers when it is not the pool manager.

By reallocating the responsibility for managing different elements of both random and controllable financial risks, the MFM redresses some of the more egregious inequities in the allocation of financial risk that have likely arisen under the NZPHCS. It does not immediately address the impotence of financial risk-sharing contracts in an environment where providers determine service user fees. However, it sets up a platform where, over time, iterative development of a complex provider contract, taking better account of the costs of managing random financial risks currently recovered by providers in the service user fee, is possible. In the medium-to-long term, these arrangements would be better aligned with the achievement of the desired cost and equity objectives than any of the three simpler changes undertaken under the current NZPHCS arrangements. Notwithstanding, the ability to progress towards this outcome hinges upon the gradual assumption of service user fee-setting by a risk pool that is not also a provider.

As in Chapter 6, the characteristics of each proposed change are described, followed by an assessment of their expected effects on the achievement of the cost and equity objectives. The effects are mapped using the high-level summary characteristics of Table 6.18, and assessed relative to the NZPHCS counterfactual.

7.1 Complex Contracting

The comprehensive system-wide reviews of the NZPHCS by Smith (2009) and Mays & Blick (2008) found that GP-provided consultations persisted in New Zealand primary health care delivery, despite the intention to change the focus and philosophy. Mays & Blick (2008) suggested that the weak specification of expectations on providers in their contracts with PHOs, and in PHO contracts with

DHBs, might be a contributing factor, and that this could be addressed in part by introducing a component of funding into the NZPHCS that was conditional upon the achievement of specific service targets.

The PHO Performance Management Programme, subsequently renamed the PHO Performance Programme (PP), introduced in 2005 provided additional financial incentives to PHOs to induce providers to exert more effort on a range of tightly specified activities. Under the PP, PHOs received additional payments of up to $6 including GST ($5.22 excluding GST) per enrolee per annum for meeting a range of administrative and clinical objectives, including the reporting of enrolment statistics, and enrolee participation in childhood and influenza immunisation, breast screening, cervical cancer screening, ischaemic cardiovascular disease detection, cardiovascular risk detection, diabetes detection and follow-up and smoking cessation initiatives (BPAC, 2011).

From 1 July 2014, the programme transitioned to the Integrated Performance and Incentive Framework (IPIF) (MoH, 2015b). The measures and payment weightings given to various PP activities were revised for the 2014-15 year, and high-needs targets were removed from consideration. The objective was, over time, to redesign the incentives to better integrate primary care activities with wider DHB and national objectives and provide a more easily measured set of targets (BPAC, 2014). Whilst the initial focus of the incentive framework was on “the performance relationships between primary care and district health boards”, it could “be expanded to include the broader health system as it matures over time” (MoH, 2015b). In June 2015 the Minister announced that redesigned IPIF incentives due to be implemented on 1 July 2015 would be suspended. The reasons given were that he was satisfied with the more limited targets of the PHO performance programme, and to constrain the burden of reporting that IPIF would impose on the sector (Coleman, 2015; BPAC, 2015).

PP and IPIF appear to satisfy Mays & Blick’s (2008) recommendation, at least in regard to government payments to PHOs. The arrangements were similar in both construction and intent to the QOF payments in the English GMS agreement. Their primary objective was to encourage PHOs to prioritise particular elements of care that aligned with national priorities, over and above their obligations to meet all other primary care needs of their enrolled individuals. To this end, they provided, along with Care Plus, the only substantive macro-level contractual changes to the NZPHCS since its inception. However, their effect on individual care providers is likely constrained by the extent to which individual PHOs can or do choose to reflect them in contracts with individual providers. The following analysis finds that potential barriers exist within the New Zealand primary health care sector that, without other changes, pose limitations and barriers to more extensive use of complex contracts within the NZPHS in order to better meet the desired policy objectives.

7.1.1 Complex Contracting: Characteristics

In the context of Figure 6.2, PP and IPIF constituted Service Delivery agreements between the MoH/DHBs and PHOs. As the PP transitioned to the IPIF the desired targets would have become more precisely specified. Although funded with capitation payments, they were separate from the FC payments conferring responsibility for utilisation variation risk onto providers.

PP and IPIF had no effect on the sophistication of the risk adjustment formulae under which FC payments were set, or the ability for providers to set service user fees. Hence they had no effect upon the fundamental NZPHCS risk pooling arrangements. Rather, they were more comparable with Services to Improve Access, Health Promotion and Management payments, albeit conditional on certain targets being met and not the number of enrolled individuals. They provided incentives for PHOs to increase their monitoring of provider activities, but concomitantly increased provider reporting obligations and, hence, operational costs. It is unclear to what extent, if any, PHOs shared PP and IPIF obligations and revenues with providers under their agreements for FC services. If, as appears the case for most PHOs in Appendix 2, the payments were passed on to IPA management companies, they would likely have been shared under separate agreements for the delivery of specific additional services, as observed with Care Plus.

Although they resemble the English QOF payments, PP and IPIF differed substantially from English arrangements because they were not part of an encompassing service delivery agreement between a government-managed and underwritten risk pool and providers. PP and IPIF were service delivery agreements between the government funder and a third party (PHOs) with discretion to enter into subsequent contracts with combined provider/risk pools. Exploring the differences in characteristics between the English QOF and the New Zealand PP and IPIF reveals significant impediments to implementing a truly complex contract, such as England's GMS, in the New Zealand primary health care sector.

The English QOF forms part of a sophisticated complex GMS Service Delivery contract between a single government-funded and operated risk pool and individual providers. GMS addresses a wide variety of provider costs and risks, and is the sole source of revenue for providers agreeing to its terms. The English Global Sum payments, comprising around 60% of GMS revenues, resemble NZPHCS FC payments in that they vary with the characteristics of a provider's enrolled list. The QOF pays for the performance of a wide range of specific quality outcome metrics. In addition to Global Sum and QOF, the GMS agreement includes a wide range of other payments directly compensating providers for a variety of cost outlays, such as premises rentals, leave payments, superannuation contributions, seniority payments and computer equipment costs. GMS contract complexity comes from having multiple revenue streams reflecting many different transactions, the various and variable costs of delivering the desired outputs and outcomes, and the many different ways in which the risks and rewards associated with each activity are shared directly between the government risk pool and providers. Residual financial risks not borne by the government are borne by the providers, and vice-versa.

The NZPHCS provider remuneration arrangements, however, are not based on sophisticated cost and risk-sharing agreements between the government and providers. At best, they share risks between providers and PHOs. Neither are they the sole source of provider revenues: most NZPHCS risk sharing arises from the agreements between providers and service users. Aside from FC funding, additional government funding has been paid to PHOs and not providers. Increasing the complexity of the contracts between the government and PHOs will affect provider revenues and incentives only to the extent that PHOs elect to share both revenues and incentives with them. Yet aside from Care Plus, there is little evidence of sophisticated contracting emerging between PHOs and Providers.

A cogent reason why complex contracts have not emerged under the NZPHCS is because PHOs do not control provider revenues. As they control none of the private sector share of funding, PHOs are never ultimately responsible for the balancing of total system revenues with total costs in the manner that the English government does, in its capacity as a residual risk bearer in the GMS arrangement. Neither are PHOs residual risk bearers in the way that providers are in both the NZPHCS and GMS arrangements, as they are not directly responsible for the majority of the costs incurred in delivering primary care. PHOs are unable to develop complex contracts balancing many different incentives and revenue sources in the manner that the English Government is able to achieve with GMS agreements because PHOs control neither system revenues nor costs.

So long as providers are able to balance-bill service users to recover any costs not met by government payments, however these might be repackaged in agreements with PHOs, there is little point in PHOs using sophisticated financial risk sharing with providers to achieve anything other than very marginal changes to very limited aspects of provider behaviour. Providers can effectively undo the financial incentives by passing on the cost consequences in fees. It is only for new and additional services, where PHOs can take total control of both costs and revenues (e.g., Care Plus) that such contracts become feasible. To take full advantage of complex incentive contracting and financial risk sharing with providers for the entire suite of primary care service delivery, PHOs would have to assume control of both the private share of sector funding and risk pool management. The unwillingness of New Zealand providers to cede balance-billing rights has been one of the strongest defining features of the New Zealand primary health care sector since government funding began. Thus, it is most unlikely that it will be possible for either of these two prerequisites to complex contracting to be achieved in the New Zealand context, at least in the short to medium term.

Consequently, if incentivised components PP and IPIF were shared between PHOs and providers, it would have been via separate agreements for delivering supplementary services rather than as components of carefully balanced over-arching complex contracts between a risk pool and providers, as are QOF elements within the GMS. That does not mean that some novel contacting elements have not been introduced. For example, Pegasus pays providers $160 per meeting to attend sessions focused on communication and care integration (Timmins & Ham, 2013). But to the extent that any other components are to be introduced into provider contracts, it would appear that they too will be introduced as new initiatives, with separate remuneration streams, rather than by way of restructuring the funding and financial risk allocations associated with the existing FC arrangements.

7.1.2 Complex Contracting: Effect on Objectives

Table 7.1 summarises the expected effects of the PHO IPIF contract on cost, equity and provider incentive objectives relative to the existing NZPHCS arrangements. As with Table 6.18, a four-point scale is used: small, moderate, large and very large effects, with green indicating movement towards and red away from the desired objectives.

As PP, IPIF and other localised incentive contracting arrangements were government-funded initiatives, then they would have led to a small increase in the quantum of government funding. As the government assumed responsibility for variations in PHO responses to the incentives provided, the predictability of its funding would have decreased slightly. If PHOs and their provider affiliates did not respond to the incentives then they forfeited potential revenues, but faced no other financial penalties unless these were specifically included in the agreements. So long as the rewards from these additional contracts were small (as is the case with PP and IPIF), then even if some elements of them were passed through to providers, the amounts would have been very small compared to FC revenues and service user fees. Hence, they are unlikely to have had any material effect upon either the level or the variability of service user fees. However, as identified in the Minister's announcement of the suspension of the 2015 IPIF changes, and the evidence from CBG's (2006) Care Plus evaluation, the transaction costs associated with new and complex contracting initiatives, if they eventuate, would be non-trivial. If these costs are not to be met in part by private payments, then inevitably they will have to be funded by increasing the government payments for PHO management costs at least. They will have negligible effect on the very high risk management costs of the original NZPHCS arrangements.

Table 7.1 Effect of IPIF Contracting on NZPHCS Objectives

	NZPHCS	PHO IPIF Contract
Total Costs		
Transaction Costs	0	moderate increase
Government Costs		
Level	0	small increase
Predictability	0	small decrease
Private Sector Costs		
Level	0	no change
Predictability	0	no change
Equity		
Enrolled Individuals		
Access	0	no change
Care Quality	0	small increase
Service Users		
Financial	0	no change
Care Quality	0	small increase
Providers		
Horizontal	0	small decrease
Vertical	0	no change
Provider Incentives to		
Constrain Costs	0	no change
Improve Health Outcomes	0	small increase
Collaborate/Work in teams	0	small increase

Key: red: away from objective
green: towards objective

The benefits, from PP and IPIF at least, were expected to be manifested in a better alignment of care delivered with desired health care policy priorities. Their effect on the NZPHCS equity objectives in Table 7.1 would likely have played out in greater standardisation in the delivery of specific care elements (e.g., smoking cessation, cardiovascular risk detection) across providers within a given PHO as a consequence of concerted PHO attention and resources given to meeting the desired performance targets. If all PHOs faced the same contractual terms in their agreements with their DHBs for these services, then some national standardisation would be expected. At best, this would reduce slightly the very wide variations in care quality expected by enrolled individuals and delivered to service users. If all providers were remunerated identically in their contracts with PHOs for the same additional levels of effort exerted to deliver the PP and IPIF elements, then no change would be expected in between-provider equity, either horizontally or vertically. However, as different PHOs approach PP, IPIF and other agreements differently, there will inevitably be differences between PHOs that will exacerbate differences already present in provider returns.

At best, therefore, PP and IPIF might have had some effect upon incentives for providers to improve health outcomes and collaborate or work in teams, but these will be separate to any incentives that may or may not arise in the standard NZPHCS arrangements.

7.2 Towards Full Government Funding by Extending Zero Fees

The NZPHCS arrangements could be used to move iteratively towards a fully government-funded arrangement by progressively extending zero fees to all capitation categories. Such a policy has been presaged by increasing the capitation payments for all children under 13 years from 1 July 2015 if their providers agreed not to charge fees. If no fees are charged then all individuals will pay the same fee (zero). This appears to remove financial inequities between enrolled individuals and service users. However, it does not alter fundamental financial risk management arrangements for FC funding. Rather, it exacerbates the effects of the perverse risk management arrangements in the NZPHCS, because it increases the amount of random risk borne by risk-averse providers and removes the sole financial means available to them to manage it.

7.2.1 Extending Zero Fees: Characteristics

Specifically, extending zero fees under the current NZPHCS arrangements will progressively remove the ability for providers to charge service users top-up payments (t). Providers' ability to recover the costs of managing risks outside their control will be gradually removed as fixed FC capitation payments replace variable fee-for-service revenues. As the share of provider revenue that is fixed increases, the magnitude of financial risk faced will increase each time zero fees is extended to a new capitation group. This same effect was observed in the early stages of the NZPHCS as higher subsidies were rolled out to additional age groups. Ultimately, providers will receive 100% of revenue as a fixed payment. They will bear responsibility for managing all financial risks whether they arise from random or controllable factors. Without the ability to balance-bill, providers will have only nonfinancial means available to manage even higher levels of financial risk than borne previously.

The iterative extension of zero fees to different capitation groups over time highlights the flawed NZPHCS assumption that government funding paid by capitation is seamlessly interchangeable with fee revenues paid by service users. Based upon Chapter 6 analysis, as the proportion of service users exempt from paying fees increases, the ever-increasing financial risk premium will be shifted onto the ever-smaller number of service users still required to pay fees. Total costs of risk management will rise markedly, and inequities between providers and service users will be expected to increase, depending upon the actual cost and utilisation variations exhibited by different providers in different periods. Table 7.2 illustrates.

Capitation funding is increased to the full expected consultation cost ($50) at average utilisation rates (10,000 consultations) for half the enrolees of the two providers S and V from Table 6.5, who now pay no fees. The effective capitation rate at expected utilisation increases for each provider – from 60% to 80% for S and from 80% to 90% for V. This replicates dollar-for-dollar substitution of capitation and fee revenues as assumed by AFIP and Sutton (2000).

However, utilisation variation risk costs (ε) can be shared only with those service users paying fees. A 10% increase in consultations delivered by S leads to a $30,000 deficit which, allocated across 10,000 consultations when all individuals pay a fee, would increase the fee to $22.73. Even though capitation income increases when half the service users become eligible for zero fees, the provider forfeits fee revenues that it would have earned for half of the 10% extra consultations it must deliver, leading to a larger $40,000 deficit which, when allocated across the 5000 remaining fee-eligible service users, raises the break-even fee to $27.27. Similarly, the fee V must charge to break even when half its population becomes eligible for zero fees, and demand is 10% above expected levels, rises from $13.46 to $18.18.

Table 7.2 Iterative Progression to Zero Fees

	Provider S						Provider V						V**	
Capitation %	**60**	**63**	**58**	**80%**	**82%**	**78%**	**80%**	**82%**	**78%**	**90%**	**91%**	**89%**	**78%**	**89%**
Variation		**-10%**	+10%		**-10%**	+10%		**-10%**	+10%		**-10%**	+10%		
Consultations	10,000	9,000	11000	10,000	9000	11000	10,000	9000	11000	10,000	9000	11000	11000	11000
Zero Fee %	0%			50%			0%			50%			0%	50%
User fee	20.00			20.00			10.00			10.00			10.00	
Consult cost	50.00			50.00			50.00			50.00			55.00	55.00
Revenues														
Capitation	300000	300000	300000	400000	400000	400000	400000	400000	400000	450000	450000	450000	400000	450000
Fee	200000	180000	220000	100000	90000	110000	100000	90000	110000	50000	45000	55000	110000	55000
Total	500000	480000	520000	500000	490000	510000	500000	490000	510000	500000	495000	505000	510000	505000
Per consult	50.00	53.33	47.27	50.00	54.44	46.36	50.00	54.44	46.36	50.00	55.00	45.91	46.36	45.91
Costs	500000	450000	550000	500000	450000	550000	500000	450000	550000	500000	450000	550000	605000	605000
Profit/Loss	0	30000	-30000	0	40000	-40000	0	40000	-40000	0	45000	-45000	-95000	-100000
Per billable	0.00	3.33	-2.73	0.00		-7.27	0.00	4.44	-3.64	0.00		-8.18	-8.64	-18.18

Increasing the capitation payments and instituting zero fees for half of S's enrolees raises its expected capitation rate to the same as V's without the zero-fee obligation (80%). However, the fee increase necessary to cover a 10% increase in demand is double ($7.27 vs $3.64) because only half the service users bear 100% of the monetised costs of utilisation variation risk. Even though both providers receive the same share of government and fee income under these assumptions, the inequitable distributional consequences of expecting only fee-paying service users to pay all costs of financial risk management under the NZPHCS are highlighted.

Table 7.2 also graphically illustrates the effect of equalising all provider revenues using the same capitation contract for all providers regardless of differences in underling costs. Provider V** is identical to unlucky provider V, delivering 11,000 consultations, except that its costs per consultation are higher ($55.00 as opposed to $50.00). When all service users share the higher costs, the break-even user fee is $18.64 (average fee $10.00). However, when half the service users pay no fee the break-even fee for the remainder rises to $28.18 – more than twice the increase ($18.18) faced by unlucky V service users ($8.64), where the cost per consultation is only $5 less. This occurs because remaining fee payers must cover the higher costs of their own care as well as the higher costs of the care supplied to service users paying no fee.

As unlucky and high-cost providers could anticipate all of the higher costs of financial risk management, the reduction in the scope to recover the costs and the inequitable effects that will arise for their service users, it is most unlikely that they would willingly accept zero fees agreements that simply substitute capitation for fee revenues. Unlucky provider S, for example, would require an additional $10,000 in capitation revenues to expect to be in the same position after the move to zero fees as before (loss of $30,000 as opposed to $40,000) if fees charged to the remaining fee-paying service users are not to change. This reflects the increased risk premium arising from the change in funding arrangements.

However, as it is impossible to either observe or anticipate the exact effects of providers' luck in utilisation variation, it will be very difficult for the funder to ascertain the exact risk premium to pay for each provider, let alone to compensate different providers differently for cost variation risks that also affect profitability. If the government funder is prepared to compensate even one unlucky or otherwise higher-cost provider by increasing the capitation payments selectively, then it is in the financial interests of all providers to masquerade as the highest-cost unlucky provider in order to receive the maximum increase in capitation payments. Such opportunism results in the risk premium paid to all providers being that required by the most unlucky high-cost provider to break even. Strategic behaviour arising from the information asymmetry will lead to the total expected costs of risk management for the case of increased capitated compensation being even higher than the case of no capitated compensation. For example, lucky provider S can expect a profit of $40,000 under the standard ‘zero fees’ arrangements. Paying the same additional $10,000 in capitation revenues required by unlucky S to remain in the same financial position to lucky S will increase the latter’s profit to $50,000.

The effects of both monetising the costs of higher financial risk and strategic provider behaviour are illustrated by the capitation payment increases paid by the government to induce providers to accept the extension of zero fees to children under 13 in July 2015. Topham-Kindley (2014; 2014a) reports that in order to gain providers’ agreement, the Government was required to increase annual capitation funding by $70 (including GST; $60.87 excluding GST) per enrolee in the 6-12 age group. The increase, based upon two consultations delivered per annum, equates to an expected fee substitution of $35 per consultation. However, the average advertised fee for child consultations in April 2014 was only $22.70 (standard providers, including GST – $19.74 GST-exclusive). Whilst some providers clearly must charge $35 (or even more) to cover their costs, almost certainly the average fee charged in June 2015 was less than this amount.

This appears to confirm that in order to get provider agreement to carry the additional financial risks associated with full-funding for a capitation category, all providers will expect to be paid an average fee substitution subsidy that compensates for the additional risk premium as well as lost fee revenue. For the vast majority of providers to accept the arrangement, it must be sufficiently generous to compensate the most unlucky one. Adding 2015 capitation payments to the new fee substitution payments indicates that a statistically average VLC Access provider delivering exactly the expected number of consultations will receive average revenues of around $95 (excl. GST) and a standard provider $85 per consultation for the newly subsidised capitation group. This compares to an average revenue of between $55 and $60 per consultation supplied to an average-utilising fee-paying adult based on expected utilisation in 2014 (Table 6.6). The arrangements appear to lead to an average provider earning substantially more revenue than it costs to deliver care to the new zero fees group – an outcome that is consistent with both even higher total costs and even higher profits than the NZPHCS status quo.

By contrast, if providers are not compensated for the higher risk premiums in capitation payments, and they are unable to recover the costs in fees, then it would be expected that a significant number of unlucky and high-cost providers would rapidly become unprofitable. This increases the likelihood that the sector would rapidly bifurcate into a small number of large, nonprofit firms delivering lower than average care quality and a large number of small, privately owned, profitable firms delivering higher-quality services.

7.2.2 Extending Zero Fees: Effect on Objectives

The effects of zero fees on cost and equity objectives are summarised in Table 7.3.

Ultimately all service users will pay the same fee ($0), so it would appear that there will be very large increases in financial equity between service users. The distinction between VLC and standard providers will disappear, so zero fees means all providers face the same contractual incentives – 100% responsibility for managing financial risk. This is expected to manifest as very much larger levels of care quality variability for service users than currently, if providers are not compensated for the higher risk premiums in capitation payments (option (b)) or slightly higher variability if they are compensated (option (a)). Likewise, option (a) would be expected to lead to smaller increases in between-provider variations in profitability and hence returns for effort exerted than option (b). As profitability will be largely determined by luck and returns to cream-skimming rather than effort in care delivery, fewer incentives are offered than currently for providers to either deliver more consultations when these are necessary to meet needs, or develop new and collaborative care methods.

Increased incentives for cream-skimming will be expected to lead to increased inequities between individuals as they will likely face greater difficulties in enrolling at a provider of their own choice. The magnitude of the effects in expected care quality variation will be dependent upon the funder’s approach to risk premiums.

Nonetheless, the differences would be expected to be wider than under the current arrangements, and the disadvantages greatest for individuals and service users at providers enrolling larger-than-average proportions of high-need service users. Whilst the removal of fees may lead to increased utilisation by already-enrolled service users, both for legitimate needs and as a consequence of unnecessary demand, it is not clear that the care they receive will necessarily be of the same quality as that received currently. Hence, the overall effect is likely an increase in inequities between both enrolees and service users, relative to the status quo, even though no fees are paid.

Table 7.3 Zero Fees: Effects on Policy Objectives

	NZPHCS	Zero Fees	
	Status Quo	(a) with capitated risk premium	(b) without capitated risk premium
Total Costs			
Transaction Costs	0	no change	no change
Government Costs			
Level	0	very large increase	large increase
Predictability	0	small decrease	small decrease
Private Sector Costs			
Level	0	none	None
Predictability	0	n.a.	n.a.
Equity			
Enrolled Individuals			
Access	0	small decrease	large decrease
Care Quality	0	small decrease	very large decrease
Service Users			
Financial	0	very large increase	very large increase
Care Quality	0	small decrease	very large decrease
Providers			
Horizontal	0	small decrease	moderate decrease
Vertical	0	small decrease	moderate decrease
Provider Incentives to			
Constrain Costs	0	small increase	large increase
Improve Health Outcomes	0	small decrease	moderate decrease
Collaborate/Work in teams	0	moderate decrease	small increase

Key: red: away from objective
green: towards objective

Transaction costs may decrease as fee-setting and AFIP will no longer be necessary, but will likely be replaced by either the costs of negotiating capitation increases (option(a)) or political activity as a consequence of the growing disparities in provider financial performance (option (b)). From the government's perspective, therefore, implementing full funding under the current institutional arrangements will require the amount of funding supplied to increase substantially, as both the share of consultation costs and risk premium currently paid by service users progressively become a charge on the government budget. The costs will be greater when the risk premium is monetised (a), but the lower increase in (b) must be traded off against higher access and care quality inequities. Capitation payments will be fixed, ensuring that the government does not face any short-term consequences of provider utilisation or cost variability. However, the government can no longer choose the share of random cost increase risk it will bear, so relative to the part-funded status quo, medium-to-long-term predictability of government funding liability will likely reduce.

7.3 Adjusting the Capitation Formulae

The current NZPHCS arrangements are characterised by capitation fee-setting formulae that are very poorly adjusted to reflect the expected costs of care delivered to enrolled individuals. This is illustrated by the very poor correlation between the expected number of consultations used to set FC payments and monitor AFIP, and actual observed utilisation discussed in Chapter 6. Indeed, the FC capitation setting formulae cannot truly be described as risk adjustment formulae as they bundle funding to reduce the fees paid by targeted individuals with funding to offset the expected costs of care delivered to particular population groups. However, even if they did not bundle the two forms of funding, they are very poorly adjusted as they do not take into account either underlying random cost variation risks or the characteristics most highly correlated with variability in care utilisation. The relevant characteristics are individuals' historic service usage and socio-economic status, which were removed from the capitation-setting formulae when HUHC status was replaced by Care Plus and individual CSC-holding status was replaced with VLC funding of specific providers.

7.3.1 Adjusting the Capitation Formulae: Characteristics

All else held equal, if the NZPHCS risk adjustment formulae could be improved to take better account of individuals' characteristics to better predict their expected utilisation, and differences in providers' costs that are outside their ability to control, then the expected variability between expected and actual utilisation (ε) would reduce.

An example of an arrangement where such factors are incorporated into the risk adjustment is the English Global Sum calculation. This formula takes account of a range of different individual and provider characteristics not included in the current New Zealand capitation calculations. They include differences in input costs (e.g., labour) in different parts of the country, the additional costs incurred in the first year that an individual is enrolled at a provider, the geographic spread of enrolled individuals and the distance to the nearest alternative provider (both of the last two are expected to lead to higher travel costs for home visits) (Carr-Hill, 2008).

However, the ability to implement a more sophisticated risk adjustment process in New Zealand is hampered by the lack of data collected to support such an endeavour. Sutton (2000) noted significant limitations in developing the current formulae because comprehensive utilisation information had been collected pre-NZPHCS for only targeted service users. As no data at all had been collected on fees actually paid, there was no way of identifying between-provider cost differences, for either targeted or non-targeted service users. In the absence of any better estimate, the fee-for-service subsidy paid for children under six, adjusted upwards to account for the nurse salary subsidy, became the average consultation cost proxy used for setting FC payments. Since the implementation of the NZPHCS no systematic data has been collected centrally on any of: the utilisation by enrolled individuals; fees paid for care delivered; or provider costs. Hence, even if it was desired to improve the risk adjustment formulae, it would not be possible to use actuarial methods to construct a more accurate one. At best, all that could be done would be to estimate better utilisation rates for different age and gender groups using sample data from providers, in the same manner as Sutton (2000).

7.3.2 Adjusting the Capitation Formulae: Effect on Objectives

Whilst a more sophisticated risk adjustment formula will necessarily reduce the financial risks passed on to service users, calculating one requires collecting and analysing large amounts of additional data. This would necessarily raise government transaction costs. It would also take time to assemble longitudinal data sufficient to test, compare and adjust the formulae as sector participants adjust to the incentives encapsulated in it.

Table 7.4 Adjusting Capitation Formulae: Effects on Policy Objectives

	NZPHCS Status Quo	Revised Capitation Formula
Total Costs		
Transaction Costs	0	small increase
Government Costs		
Level	0	no change
Predictability	0	no change
Private Sector Costs		
Level	0	small decrease
Predictability	0	small increase
Equity		
Enrolled Individuals		
Access	0	no change
Care Quality	0	small increase
Service Users		
Financial	0	small increase
Care Quality	0	small increase
Providers		
Horizontal	0	small increase
Vertical	0	small increase
Provider Incentives to		
Constrain Costs	0	no change
Improve Health Outcomes	0	no change
Collaborate/Work in teams	0	no change

Key: red: away from objective
green: towards objective

Even if it were possible to collect and process the necessary data, the net effect in reduced total system costs from improved risk adjustment formulae would likely be small. Whilst the absolute level of risk passed on in the FC capitation payments will be less than currently, the very wide variation in relative risks borne between VLC and standard providers will remain. Slightly lower risk management costs mean that service user fees may be a little smaller and slightly more predicable than under the NZPHCS. The wide variations in fees and service quality between the different provider types may also be a little smaller, leading to slightly lower incentives for cream-skimming and quality reductions. Hence, there may be a slightly more equitable distribution of financial and care resources and slightly more equal returns to effort exerted by providers. However, the gains relative to the NZPHCS, summarised in Table 7.4, would not be expected to be large.

7.4 Mixed Funding Model

Discussion of the three preceding proposed changes to the NZPHCS arrangements shows that simple contractual and funding changes will, at best, lead to only small gains towards the cost or equity policy objectives, and in the case of zero fees may be significantly detrimental. The potential gains would likely be modest because none of these options alters the very large number of very small provider-managed risk pools. These characteristics arise largely because of carrying over legacy arrangements in the New Zealand primary health care sector into the NZPHCS. These characteristics are: government funding not meeting full sector costs; provider rights to balance-bill; and multiple objectives for government funding.

The NZPHCS originally anticipated an arrangement where PHOs operated as risk pools in the manner of MCOs, receiving capitated funding and entering into complex, incentive-based contracts with providers to achieve a range of policy objectives. This outcome did not eventuate because the legacy institutional arrangements precluded the evolution of two necessary conditions for successful MCO-type risk pooling and incentive contracting operation:

- risk pools controlling all aspects of sector funding; and
- incentive contracts that share financial risk between the pool and providers in a manner commensurate with the abilities of each party to bear it.

In New Zealand, providers have by default become the risk pools controlling the private share of sector funding. Hence, the use of incentives to change provider behaviour has been largely impotent, but the costs of risk management introduced have been substantial. There is little to discourage or prevent providers from appropriating financial risk premiums embedded in government subsidies and higher service user fees as income.

To deliver the system originally envisaged by the NZPHCS, structural and contractual changes to risk pooling arrangements are necessary. But in the short-to-medium term at least, a fully government-funded system with PHOs or some other MCO-like entity managing all sector funding is both unlikely to emerge for fiscal reasons and untenable for political and contractual reasons. Analysis of the Complex

Contracting option demonstrated that even if there was a will to move to such an arrangement, the relevant information to construct even simple incentive contracts, let alone the information needed to develop more complex contracts such as those observed in, for example, England is simply not available currently. Furthermore, providers are unlikely to willingly cede their right to balance-bill. Thus, progress towards reducing high risk management costs and significant systematic inequities must begin:

- within a system which is only partially government-funded;
- where the private share of funding must continue to be recovered in fees paid by service users set by providers when elements of primary health care are utilised; and
- with limited information.

A pragmatic approach to system change is therefore required that works within these constraints to ameliorate the worst features of the existing arrangements and, if possible, prepares a platform to move towards a system more consistent with the ideals originally held for the NZPHCS. The Mixed Funding Model (MFM) proposes such a change.

The MFM proposes 'unbundling' government funding into two distinct revenue streams:

- prospective capitated payments based solely on the expected health needs of enrolled individuals; and
- retrospective fee-for-service subsidies to reduce the fees paid by targeted service users.

This arrangement will equalise the financial incentives faced by providers with equivalent lists of enrolled individuals. As the subsidies to offset fees would be based upon individual rather than provider characteristics, the wedge that has been created under the NZPHCS between the individuals, service users and owners of VLC providers relative to those of their standard counterparts, would be removed.

MFM still requires providers and, ultimately, service users to bear substantial levels of financial risk (currently around 60% of income fixed for a standard provider). However, it aligns the transactional application of targeted government fee relief with the retrospective service user financing obligations it is intended to offset.

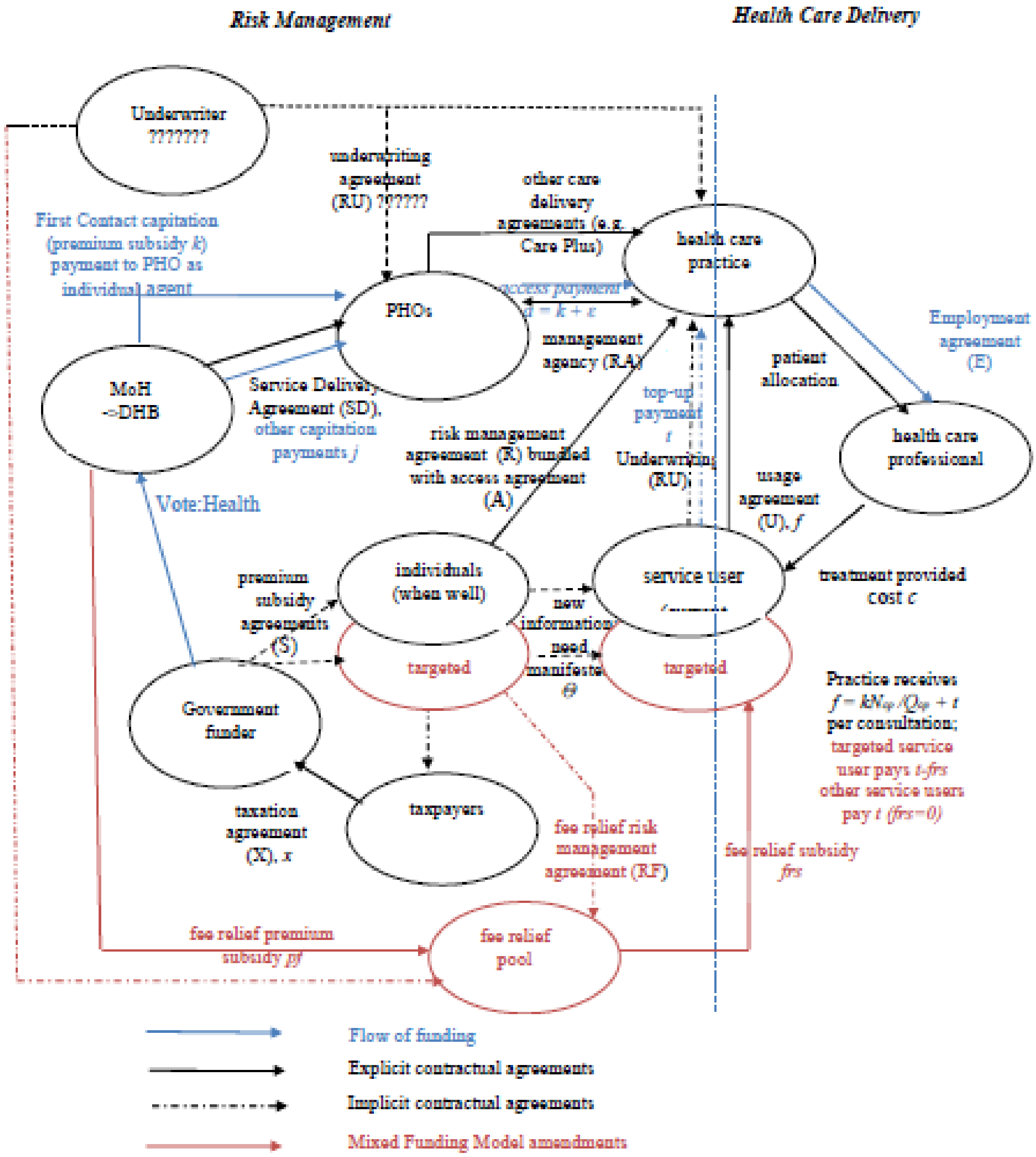
Government and service user revenues will be directly substitutable in this dimension without affecting the strength of the financial incentives faced by providers. The capitated component of government funding can become truly population funding based solely on the characteristics of providers' enrolled individuals. Importantly, this arrangement offers a more sustainable means of progressing towards a fully government-funded system by gradually substituting public for private funding than Zero Fees.

7.4.1 Mixed Funding Model: Characteristics

Figure 7.1 illustrates the institutional arrangements of the MFM. The substantive difference from Figures 6.1 and 6.2 is the second set of risk management arrangements for targeted individuals, alongside the existing NZPHCS provider risk pools, shown in red in Figure 7.1. FC capitation subsidies based solely upon the expected needs for care of all enrolled individuals will be paid to PHOs and subsequently to Providers (S, A, RA). However, a subset of targeted individuals will enter into a second risk management agreement (RF) with a separate fee relief risk pool, which pays a contingent, retrospective fee-for-service fee relief subsidy (*frs*) to the individual as a service user in the event that a need for care becomes manifest. The relevant premium (*pf*) is fully subsidised from taxation under an additional social contract subsidy agreement (S) between the government and targeted individuals. Aside from being sponsored with a government premium subsidy, this arrangement replicates private supplementary insurance purchased by non-targeted individuals wishing to further reduce the financial uncertainty arising from having to pay service user fees.

For providers, no distinction will exist in the fee (*t*) charged for care delivered based upon the capitation category of the service user to whom it is provided, even though targeted service users eligible for a fee relief subsidy make lower out-of-pocket payments (*t-frs*) than non-targeted service users (*t*). Providers will receive the same variable payment for the same services delivered, regardless of the capitation category of the service user. It does not matter whether the fee relief subsidy is paid directly to the provider to reduce transaction costs (as per the *GMS payment* in Figure 6.1) or to the targeted service user. The entitlement will be triggered solely by the service user's status and actual care utilisation. Moreover, the magnitude of the subsidy will not be contingent upon any provider characteristics.

Figure 7.1 Mixed Funding: Capitation and Targeted Fee Relief



Mixed Funding Model: Underwriting the Fee Relief Risk Pool

Figure 7.1 makes no assumptions about the operation and underwriting of the fee relief pool. It could be a single national pool underwritten and managed by the government, as operated under the pre-NZPHCS arrangements. This would ensure that the costs of managing the funder's share of targeted individuals' utilisation variation risk was shared across the whole taxpayer base, and not just a smaller subset in a local pool. A single pool also avoids the need to calculate the explicit risk adjustment formulae for funding separate smaller pools. It also ensures that each targeted individual in each subsidy category across the country would receive the same fee relief subsidy for the same services used. If smaller, local entities (e.g. DHBs or PHOs) were to manage the fee relief pools, then the subsidies paid might be expected to vary with the different risk levels actually borne by the different pools. Furthermore, separate underwriting arrangements (e.g. a government-backed reinsurance fund) would be necessary in order for local entities to accept responsibility for managing the risk.

In principle, and consistent with the original NZPHCS objectives, it would be feasible for PHOs or IPAs to undertake pool management separate to, but alongside, their current care co-ordination activities. But as long as they remain non-profit entities dominated by their provider members, and without either reinsurance options or risk reserves, it is unlikely that PHOs or IPAs would wish to assume the role. At the very least, they would need to be provided with, or be allowed to retain, risk reserves to meet the expected fluctuations in their payment obligations. However, it is not the most efficient use of what may be significant capital sums to retain them in apparently-idle risk reserves. As with most insurance arrangements, it would be more efficient to diversify pool risk by combining it with pools managing other financial risks, and to have them underwritten by a risk-neutral party with access to funds to meet the inevitable financial variations as and when they occur.

In the New Zealand context, DHBs already operate the risk pools for the purchase of all government-funded non-NZPHCS care. They are underwritten by the government, so have access to comparatively low-cost funds for managing variations. They are also able to diversify the financial risks associated with managing the fee relief pool across the wide array of other health funding that they undertake. As they already underwrite risk pools for all other aspects of government-funded health care, DHBs are more consistent with the concept of a comprehensive MCO purchasing all health care for an enrolled population than the specialised PHOs, covering only primary care funding, could ever have been. There would also be synergies in future development of the MFM (discussed subsequently) if DHBs were to gradually assume responsibility for managing provider contracts and setting service user payments at the same time as iterative steps are taken towards the development of integrated care across all of the primary, secondary and tertiary sectors.

Therefore, DHBs probably offer the best option for managing local, decentralised fee relief pools. As DHBs would become responsible for negotiating provider contracts and paying for FC care, PHO/IPAs could then be considered exclusively in the role into which they have evolved under the NZPHCS. That is, as highly specialised care provider coordinators delivering services to both DHBs and provider-members.

Mixed Funding Model: Implementation Issues

Moving from the current arrangements to MFM with a single central fee relief pool would be relatively straightforward. The main requirements are setting the relevant capitation payments and fee-for-service subsidies, and identifying the individuals whose care utilisation would trigger their payment. If the government is willing to underwrite the variations in local DHB pools, then the fee relief subsidies calculated, based upon a single pool, may also provide viable initial rates for payments from these pools too.

Presuming all FC consultations provided to different capitation categories require on average the same effort, then the current standard provider capitation payments for all capitation categories except 00-04 and 05-14 years would become the MFM capitation payments. A Notional Averaged Consultation Fee Relief Subsidy (NACFRS) for each capitation category can be calculated by dividing the VLC capitation supplements for these categories by either expected or observed consultations utilised. The population-weighted average of these sums could then become the category-neutral retrospective fee relief subsidy for targeted service users. The calculations for the child categories are a little more complex, as in addition to determining fee relief subsidies, capitation payments must be adjusted so that on average they cover the same proportion of the average costs of a standard consultation as the adult capitation payments. The fee relief subsidy can then be set so that it covers the difference between the adult capitation share and the expected subsidised share for that capitation class. For children under 13 (paying zero fees), this will be 100%; for others it will be somewhere in between the adult share and 100%.

If income-related targeting is not to be confined to individuals enrolled at VLC providers, then it will be necessary to reintroduce some way of identifying service users eligible for fee relief subsidies. CSC-holding status is still used to identify family income status for non-health social service provisioning. It is also used for access to subsidised primary health care at providers other than the one where the individual is enrolled. It could therefore be reintroduced as an element of enrolment information to enable income-related targeting of fee relief subsidies, as occurred pre-NZPHCS. Historically, CSC-holding status was associated with lower-than-expected utilisation, allegedly as a consequence of social stigmatising. However, this was in the context of a system where compulsory enrolment did not exist, and evidence of entitlement was required each time the subsidy was claimed. Under an enrolment-based system, where individual data is collected, stored, shared and verified, systematic maintenance of individuals' CSC status should be much more straightforward. The widespread use of electronic records within an integrated government information network potentially enables information about changes in an individual's CSC-holding status to be automatically updated in the health system records to ensure that all those entitled to the benefits receive them.

Although there may be some resistance to reintroducing CSC-holding status as a characteristic, it seems the best available metric upon which to target retrospective income-related fee relief subsidies. It is noted that the reintroduction of CSC status into capitation payments is one option proposed by PCWG (2015) to increase equity under the current arrangements, in part because of the apparent ease of its reintroduction. PCWG also proposes the dismantling of the distinction between VLC and standard providers, but differs from MTM in that it still bundles the subsidies paid for targeted service users into capitation payments, rather than separating out prospective population funding from retrospective fee relief payments. The PCWG proposal will still require providers to bear higher levels of financial risk for fully subsidised targeted individuals than partly subsidised untargeted ones, so it will not scale easily to a fully funded arrangement, as will be discussed subsequently for the MTM proposal.

7.4.2 Mixed Funding Model: Effect on Policy Objectives

MFM lowers the total systemic costs of managing utilisation variation risk at the same time as it equalises the financial incentives faced by providers.

Mixed Funding Model Objectives: Costs

Table 7.5 illustrates the effect in risk cost reduction of replacing the 80% capitation subsidy received by Provider V in Table 6.5 with a 60% capitation subsidy as paid to provider S, and a targeted fee-for-service subsidy of $10 for each consultation delivered (Provider V*). Whilst provider profitability is still vulnerable to utilisation variations, the financial incentives faced by V* are identical to those faced by S, as the subsidies to reduce V*'s service user fees are paid retrospectively by fee-for-service and not prospectively by capitation.

Table 7.5 Separating Prospective and Retrospective Subsidies

	Provider S			Provider V			Provider V*		
Capitation %	**60**			**80%**			**60%**		
Incentive	60	63	58	80%	82%	78%	60%	63%	58%
Variation		**-10%**	10%		**-10%**	10%		**-10%**	10%
Consultations	10,000	9,000	11,000	10,000	9000	11,000	10,000	9000	11,000
FFS Subsidy							$10.00		
User fee	$20.00			$10.00			$10.00		
Consult cost	$50.00			$50.00			$50.00		
Revenues									
Capitation	300000	300000	300000	400000	400000	400000	300000	300000	300000
FFS							100000	90000	110000
Fee	200000	180000	220000	100000	90000	110000	100000	90000	110000
Total	500000	480000	520000	500000	490000	510000	500000	480000	520000
Per consult	$ 50.00	$ 53.33	$ 47.27	$ 50.00	$ 54.44	$ 46.36	$ 50.00	$ 53.33	$ 47.27
Costs	500000	450000	550000	500000	450000	550000	500000	450000	550000
Profit/Loss	0	30000	-30000	0	40000	-40000	0	30000	-30000
Per consult	$0.00	$3.33	-$2.73	$0.00	$4.44	-$3.64	$0.00	$3.33	-$2.73

Furthermore, the total cost of managing utilisation variation risk is lower for V* than for V. The profit – or loss - from 10% fewer – or more - consultations is $40,000 for capitation-funded V, but only $30,000 (the same as S) for mixed-funded

V*. This occurs because the government funder bears some of the costs of utilisation variation risk that V would otherwise have been required to share with service users. Whereas the funder's liability is $400,000 regardless of V's utilisation variation, for V* it falls to $390,000 if 10% fewer consultations than expected are delivered and rises to $410,000 if 10% more are delivered. The cost of utilisation variation risk passed to service users in higher fees (or care quality compromises) when utilisation exceeds expectations falls from $3.64 to $2.73 per consultation (windfall profit retained by provider when demand falls below expectations falls from $4.44 to $3.33 per consultation). Both the owners and service users of providers S and V* are treated equivalently.

MFM retains all the institutions and administrative overheads of the NZPHCS, as well as requiring additional risk pool management and payment arrangements, so will incur higher transaction costs. The major transaction cost burden attends to new systems to manage the fee-for-service payments. Most of these costs will be borne by the pool(s), although providers will incur costs from collecting service-related fees from two sources. These are likely to be similar to the costs of making fee-for-service payments in the pre-NZPHCS arrangements.

The overall costs of managing random financial risks will still be higher than the pre-NZPHCS arrangements, but the risk premium faced by VLC providers will reduce to that faced by standard providers (around 60%). The stronger incentives for VLC providers to engage in cream-skimming and other strategic behaviour would be negated, but utilisation would be expected to increase as both their legitimate and provider-controlled unnecessary utilisation are expected to settle at the levels incentivised by the standard capitation remuneration incentives.

Mixed Funding Model Objectives: Equity and Other Objectives

As all enrolled individuals with identical characteristics would command the same capitation funding, there is no reason to limit the payment of income-related fee relief subsidies to only a subset of VLC providers. Presuming a suitable income proxy (e.g., CSC-holding status) can be attached to each individual, fee-for-service fee relief subsidies can be paid to any provider supplying care to eligible service users. Low income individuals could therefore enrol with their preferred provider, and still pay lower fees, regardless of either the characteristics of other enrolees at that provider or the willingness of that provider to agree to special contractual terms. Higher-income individuals currently enrolled at VLC providers and paying lower fees would no longer benefit from fee relief. Horizontal financial equity would therefore be increased, but there would still be differences in the fees paid by otherwise-identical service users attending different providers. Providers could still pass risk management costs on in fees, so those needing care would still pay a greater share of systemic risk management costs than non-users.

As all providers would face similar financial incentives, there should no longer be a greater propensity for quality reductions to occur at currently more highly capitated VLC unlucky providers than their currently less highly capitated, but similarly unlucky, standard counterparts. The differences in the willingness for practitioners to invest effort in care delivered at, and to purchase, VLC and standard providers would no longer apply. Nonetheless, the ownership and effort incentives will still remain weak due to the large absolute amounts of risk shared. The tendency for large, non-profit unlucky and small, privately owned lucky providers to emerge will prevail, but will be slightly lower in intensity. The bias towards VLC providers dominating merger activity would be eliminated.

MFM perpetuates the current focus on consultations as the metric under which providers receive non-capitation funding. Hence it is unlikely that there will be any greater likelihood of a change in sector focus from individuals to populations occurring. However, to the extent that utilisation-based information for a subset of the population is collected, then potential to use this information for enhanced care co-ordination and targeted care delivery is increased.

Mixed Funding Model Objectives: Summary

The effects of the MFM on cost and equity objectives relative to the NZPHCS status quo are summarised in Table 7.6. Two options are considered: a centralised fee relief pool as occurred under the pre-NZPHCS arrangements and decentralised pools operated by DHBs.

Both the centralised and decentralised pool options will increase transaction costs relative to the NZPHCS status quo. The decentralised transaction costs will be higher due to the need to manage multiple pools. Under both arrangements, the government can expect to have both higher and more variable costs. If the government manages a centralised pool, then it will face the variability associated with underwriting it directly. However, if DHBs manage the pools, then government funding will be more predictable in aggregate (presuming the costs of DHBs managing the pool are factored into their Population-Based Funding) and the risk management costs will be lower overall as DHBs can offset primary care funding variability against other health care funding, which a dedicated fee relief pool cannot.

Table 7.6 Mixed Funding Model: Effects on Policy Objectives

	Part Government Funding		
	NZPHCS Status Quo	**Mixed Funding Model**	
		Centralised Fee Relief Pool	**Decentralised (DHB) Fee Relief Pools**
Total Costs			
Transaction Costs	0	small increase	moderate increase
Government			
Level	0	small increase	small increase
Predictability	0	moderate decrease	small decrease
Private Sector			
Level	0	small decrease	small decrease
Predictability	0	~	~
Equity			
Enrolled Individuals			
Access	0	moderate to large increase	moderate increase
Care quality	0	moderate to large increase	moderate increase
Service Users			
Financial	0	moderate to large increase	moderate increase
Care quality	0	moderate to large increase	moderate increase
Providers			
Horizontal	0	moderate increase	moderate increase
Vertical	0	moderate increase	moderate increase
Incentives to Change to			
Constrain Costs	0	small decrease	small decrease
Improve Health Outcomes	0	small to moderate increase	moderate increase
Collaboration/Teamwork	0	small to moderate increase	moderate increase

Key: red: away from objective
green: towards objective
¬: equivocal

The increased costs to government would be expected to be traded off against lower expected fees for service users. Whilst fees charged to all service users on average would be expected to fall as the magnitude of financial risk faced by providers, and passed on in fees, will reduce, the expected benefits will be greatest for VLC providers and their service users. However, there will be small gains at standard providers, as unbundling the subsidies for targeted child and Zero Fees enrolees lowers the risk faced by these providers as well.

The effects of the demonstrable reductions in financial risk bearing costs, and sharing some utilisation variation risk with the government, will flow through into more equitable allocation of resources across sector participants. As MFM both reduces and equalises the financial incentives faced by VLC and standard providers, the strength of the incentives for cream-skimming and stinting reduce to a much greater extent than under the other options. The relative disadvantages faced by high-need individuals will be reduced, increasing access equity. The wide differences in care quality between VLC and standard providers will be expected to diminish, but not be entirely eliminated, as providers will still be faced with comparatively strong incentives as around 60% of revenue will be fixed.

Nonetheless, both enrolled individuals and service users will expect to receive more equitable care. As the service user fee will have a smaller risk component in it, the financial inequities faced by more frequent users paying higher risk premiums each time more care is utilised are muted. This is especially important for low-income high-utilisers, who will face even lower risk as a consequence of the fee relief subsidies. As all providers now face the same financial incentives, the wide range of fee differences between providers will diminish, leading to a smaller disadvantage for service users at perennially unlucky providers. However, absolute differences arising from luck will remain.

The equalisation of financial incentives for providers will also flow through into increased horizontal provider equity. As all face the same incentives, the expected financial returns for effort will be equalised, increasing vertical equity. The expected number of consultations delivered may therefore increase, making it harder to constrain total costs. Whilst random effects will still result in perennially profitable and unprofitable firms, the variations will be less extreme than under the status quo. However, as providers will still set service user fees, the MFM is unlikely to have any demonstrable effect on the incentives faced to improve health outcomes or engage in collaboration or teamwork.

7.5 Moving Forward From Mixed Funding

Table 7.7 summarises the comparative effects on the policy objectives of all four proposals, relative to the current NZPHCS arrangements. Complex Contracting, Revised Capitation Formulae and Mixed Funding (assuming decentralised DHB pools) are shown as options under Partial Government Funding, whilst Zero Fees presumes Full Government Funding.

All options are expected to lead to higher government costs overall. However, ‘Zero Fees’ is substantially more costly for the government, regardless of the approach taken to the payment of the additional risk premium incurred by shifting all financial risk management responsibility to provider risk pools. Zero Fees is also more inequitable than the current arrangements. Although it will likely increase provider incentives to constrain costs and work collaboratively, these effects arise from perverse consequences of the risk-sharing arrangements and not the positive consequences originally intended. The three part-funded options all lead to more equitable outcomes than the status quo for all of individuals, service users and providers, but Mixed Funding will have greater positive effects because it leads to both more significant reductions in the risk premium borne by providers overall, and eliminates the distinction between risks borne by VLC and standard providers. Only MTM and Revised Capitation Formulae are expected to lead to lower out-of-pocket costs for service users overall.

The major benefit of MFM not captured in Table 7.7 is that by creating risk pools separate from the provider pools emanating from FC capitation payment, a platform could be created to move iteratively towards a fully government-funded system at lower cost, and with fewer inequities, than under Zero Fees. It would also enable the evolution of MCO-style risk pools engaging in complex contracting with both providers and PHO/IPA provider aggregators as originally envisaged for the NZPHCS. This subsection explores how this might evolve.

Table 7.7 Mixed Funding Model: Comparative Effects on Policy Objectives

	Partial Government Funding			Full Government Funding	
	I Revised Capitation Formula	**ii Complex PHO IPIF Contract**	**iv Mixed Funding (DHB pools)**	**iii(a) Zero Fees with risk premium**	**iii(b) Zero Fees without risk premium**
Total Costs					
Transaction Costs	small increase	moderate increase	moderate increase	no change	no change
Government Costs					
Level	no change	small increase	small increase	very large increase	large increase
Predictability	no change	small decrease	small decrease	small decrease	small decrease
Private Sector Costs					
Level	small decrease	no change	small decrease	none	none
Predictability	small increase	no change	~	n.a.	n.a.
Equity					
Enrolled Individuals					
Access	no change	no change	moderate increase	small decrease	large decrease
Care Quality	small increase	small increase	moderate increase	small decrease	very large decrease
Service Users					
Financial	small increase	no change	moderate increase	very large increase	very large increase
Care Quality	small increase	small increase	moderate increase	small decrease	very large decrease
Providers					
Horizontal	small increase	small decrease	moderate increase	small decrease	moderate decrease
Vertical	small increase	no change	moderate increase	small decrease	moderate decrease
Provider Incentives to					
Constrain Costs	no change	no change	small decrease	small increase	large increase
Improve Health Outcomes	no change	small increase	moderate increase	small decrease	moderate decrease
Collaborate/Work in teams	no change	small increase	moderate increase	moderate decrease	small increase

Key: red: away from objective
green: towards objective
¬: equivocal

7.5.1 Toward Zero Fees via Fee Relief Subsidy Increases

Separating government funding into a population-funded component and a fee-for-service component will create a standardised partial capitation remuneration arrangement where all providers will receive a similar share of revenue from the fixed capitation (around 60%) and variable (fee plus fee relief subsidy – around 40%) sources. As the fee relief subsidy is transactionally equivalent to the fee it subsidises, it will be possible for the government to reduce the private share of the service user fee without altering the balance between the fixed and variable components of provider revenues by substituting dollar-for-dollar increases in the fee relief subsidy.

In this manner, it will be feasible to move successively over time to a fully government-funded system by gradually adding more service users to the groups eligible for relief subsidies, and increasing the subsidies paid for others, so that all eventually qualify for effectively zero fee care. The additional government funding would be paid to the fee relief pools, leaving FC capitation payments unchanged. The magnitude of financial risk faced by providers would remain constant. It would not be necessary, as has occurred with 0FU13, to pay providers on average more than the expected costs of fees substituted to roll out higher government subsidies to the chosen category.

7.5.2 Dealing with Cost Variation Risk: a First Step to Complex Contracting

Substituting fee relief subsidies for service user fees would reduce out-of-pocket payments, but so long as providers can balance-bill service users, differences between government funding and actual costs can still be passed on in fees. These costs include both random and controllable risks. Preventing balance-billing requires providers to bear these risks.

Whilst it may be feasible to expect providers to take steps to manage utilisation risk when there is a well risk-adjusted mixed capitation contract, it does not appear reasonable to expect them to manage the consequences of underlying cost variations over which they have no control. New Zealand providers' reluctance to surrender the right to balance-bill has, in part, been because historically government funding has made no allowance for these cost differences. This is in contrast to the English Global Sum payment arrangements, where legitimate between-provider cost differences are explicitly compensated. A major impediment to introducing such compensation in New Zealand has been the lack of provider-specific cost information which could be used to set the payments. Somewhat paradoxically, there has been no need to collect the relevant information so long as the cost variations can be passed on differentially to service users in the balance-bill.

However, moving to a fully government-funded system will ultimately lead to the removal of the right to balance bill, as has already occurred for children under 6 and under 13 years. Inevitably, if a fully-funded system is envisaged, it will become necessary to explore ways of making provider remuneration agreements more complex by addressing these underlying cost differences.

However, even when cost information is not fully known, cost variation risk can be shared between risk pools and providers by gradually introducing separate remuneration of different elements in a manner that reveals – and potentially compensates providers for – underlying cost differences. For example, reductions in fees to specific levels could be negotiated in exchange for the risk pool assuming responsibility for meeting specific costs that are known to vary between providers, such as premises rental. In this way, the risk neutral pool, and not risk-averse providers and service users, will assume responsibility for these cost variation risks as the system moves towards full government funding. Of course, such activities will increase transaction costs. However, this appears to be an inevitable consequence if moving to a fully government-funded system is not going to result in extreme differences in care quality delivered between providers facing different underlying costs.

7.5.3 Building From Mixed Funding to an MCO Integrated Care Model

The MFM provides a pragmatic means of introducing risk pool and elementary contractual changes to enable progression towards the MCO-style complex contracting arrangement as envisaged by the original NZPHCS. It is also feasible to move to a fully government-funded version of those arrangements. However, it will take time to bring these into effect.

A fully government-funded MCO arrangement requires the risk pool to manage all aspects of provider remuneration. To bring this about, the provider right to balance-bill must be surrendered. However, for providers to agree to such an arrangement it will be necessary to develop a sophisticated provider remuneration agreement that addresses many of the different sources of financial risk inherent in a primary health care system. Small steps such as direct reimbursement of selected provider costs go part of the way, but to develop an agreement such as the English GMS contract will require much better information than is currently collected.

A significant benefit of the MFM is that it paves the way for collection of much of the relevant data. In the first instance, the fees posted by each provider (before fee relief subsidies are paid) will be based on receiving equivalent funding for identical patient lists. Differences will reflect both different underlying costs and enrolment biases, so enables some estimate of the magnitude of these effects to be gained, at an aggregate level at least. Furthermore, the payment of fee-for-service fee relief subsidies allows central collection of individual utilisation data that is not available under the NZPHCS arrangements. Unless otherwise agreed, it will be collected only for targeted individuals. However, this data was sufficiently powerful to underpin calculation of the original expected consultation numbers on which the current capitation formulae were based. These formulae have not been reviewed in large part because the comparable data has not been collected. Over time it may be possible to negotiate the supply of additional data (such as provider costs) in exchange for alterations to the provider remuneration arrangements. In this manner, contract complexity can evolve at the same time as progression is made towards a fully government-funded arrangement that balances the shares of financial risk reasonably borne by both the government and providers.

The MFM may also prepare the way for incentivising the provision of a range of different care types. For example, different fee-for-service subsidies could be paid for nurse-delivered FC care, or for the delivery of particular types of preventative care, in a similar manner to the separate fee-for-service subsidies already paid for vaccinations. Separately subsidising nurse-delivered care provides a clearly defined contribution of this type of care to provider revenue streams. It enables nurses to identify and measure their specific contributions in a way that would facilitate their participation as equity partners in practitioner-owned provider firms. Such changes are complementary to, but follow the precedents created with, the development of other separately remunerated initiatives such as Care Plus and IPIF. As the financial risks are being spread across large pools, and are potentially able to be diversified across other health care funding pools, these initiatives pose much less financial risk, so are more likely to be trialled under DHB pool management than under PHO or provider pool management.

If DHBs are managing the fee-for-service pools, then tailored fee-for-service subsidies could be introduced to encourage provider compliance with new models of integrated care delivery between primary and non-primary sectors, in a manner not possible under the current simple FC capitation payment arrangement. DHBs could also explore the potential under the MFM to set the service user fees for specific new service types, regardless of whether or not they are they are subsidised from the fee relief pool. If the range of these new service types increases, then DHB risk pools could gradually assume control for setting the absolute level of service user fees, rather than just fee increases, as occurs currently.

It is also noted that under MFM with DHB pool management, DHBs bear some of the costs of decisions that they make that increase care utilisation at primary care providers, which they do not under the current capitation-only arrangements (e.g. capping waiting lists at six months' demand and referring unmet need back to primary care providers – Howell, 2007). At the same time as the arrangement leads to more equitable allocation of random financial risks amongst providers, it also offers a means of mitigating some potential for opportunistic cost-shifting that can occur currently. It also sends a strong signal that the government is a willing participant in risk-sharing, and not simply seeking to shift costs and risks that it has chosen not to bear under the NZPHCS (specifically, utilisation variation and cost variation) onto providers and Service Users.

7.6 Looking Forward: Summary

Chapter 7 thus leads to an answer for the third research question raised in Chapter 1. Although the total amount of government funding provided to the primary health care sector and funding volatility might increase, progress towards the desired policy objectives requires fundamental structural changes that return at least some of the responsibility for risk pooling back to the government. The MFM proposed here offers one means of advancing in that direction.

The MFM also clearly separates out government funding addressing two distinct policy objectives: reducing fees paid and moving towards a population-funded primary health care system. In this regard, it explicitly unbundles both government funding and the different roles played by government in delivering these two separate obligations to enrolled Individuals, Service Users and taxpayers. It clarifies the differences between population funding and capitation funding; between capitation funding of risk pools and capitation payment of providers; and between funding and risk pooling that were conflated in the NZPHCS. It therefore provides a conceptual, as well as practical, way of progressing towards the desired policy objectives in a manner not possible with the NZPHCS arrangements.

8. Conclusions

This thesis has sought to answer three research questions:

1. How have the changes to government funding introduced by the NZPHCS altered:

(a) the magnitude; and

(b) the allocation of responsibility for managing;

financial risk in the New Zealand primary health care sector?

2. How have the magnitude and allocation of responsibility for managing financial risk in the New Zealand primary health care sector affected the likelihood of achieving policy objectives to:

(a) constrain cost growth;

(b) allocate financial and health care resources equitably between:

i. individuals and population sub-groups;

ii. service users; and

iii. providers; and

(c) incentivise collaborative and team-based care delivery?

3. What policy changes (if any) would increase the likelihood of achieving the desired objectives?

To address them, a simplified transaction-based theoretical institutional model of a primary health care sector was developed to explore in greater detail how the various interactions influence the magnitude and allocation of the different forms of financial risk. The financial risk characteristics of the simplified system were mapped to a range of indicators, enabling evaluation of their relative effects on the achievement of various generic and NZPHCS-specific cost and equity policy objectives. The mapping drew upon theoretical and empirical insights from industrial organisation, transaction cost economics, health economics and primary health public policy literatures. Together, the model and mapping framework provided a systematic means of thinking about the various risks arising in primary health care systems, and how their allocation, and trade-offs between them, might influence the achievement of the desired objectives.

The model was applied first to the New Zealand primary health care sector pre-NZPHCS to establish a counterfactual against which the NZPHCS effects were assessed. The model was then applied to the arrangements following the introduction of the NZPHCS, and three subsequent changes introduced to address theoretically perceived shortcomings of the original arrangements. Changes in financial risk characteristics relative to the preceding arrangements were identified, and their theoretically relative effects on the achievement of the policy objectives assessed. Where possible, empirical evidence from secondary sources was sought to confirm or refute the theoretically derived expectations. Finally, four alternative policy changes: complex contracting of PHOs; full government funding under the current ‘zero fees’ arrangements; adjusting the capitation formulae; and a mixed funding model were evaluated using the same analytical framework. Benchmarking the proposed changes to the NZPHCS arrangements informs future policy-making in the New Zealand primary health care sector.

The model and mapping framework were simplified and theoretically based. They used transactions as the fundamental unit of analysis and financial risk as the lens of inquiry. The simplified model enabled the essential effects of micro-level changes in interactions as a consequence of the macro-level NZPHCS funding changes alone to be captured. Whilst the New Zealand primary health care sector both pre- and post-NZPHCS was characterised by many complex interactions, multiple funding streams and extensive private sector financing, the model focused on the fundamental funding change and its effects on the most common provider form. These were the change from fee-for-service to capitated government funding for First Contact services, and a practitioner-owned general practice affiliated to an IPA which evolved into a PHO under the NZPHCS. Hypothetical scenarios were developed to analyse commonly observed situations arising in the sector.

Analysis undertaken to answer the research questions used comparative and not absolute measures, and was based upon theoretical expectations derived from the literature rather than actual observations. This recognised: the difficulty in observing and objectively measuring some characteristics and effects; the lack of available data to facilitate empirical analysis of financial risk and risk management practices; and the difficulty of separating out the effects of multiple intertwined activities in a single case operating in the complex system environment. Subjective measurements were employed in some instances, but this was necessary in order to establish base levels against which changes could be assessed. The emphasis was in identifying the direction of changes even though exact empirical measurement was not always possible. Nonetheless, secondary data or other evidence from the New Zealand primary health care sector was sought to verify or refute the plausibility of the theoretically derived effects wherever this was feasible.

8.1 Findings

The inquiry finds that the substantial changes in the magnitude and allocation of financial risk in the New Zealand primary health care sector brought about by the NZPHCS would, contrary to expectations, be expected to militate directly against objectives for a more cost-effective and equitable system. The resulting arrangements also vary considerably from the classical use of risk-sharing to incentivise collaborative and team-based care delivery.

The conflation of capitation funding of PHOs with capitation payment of primary care providers as the NZPHCS was implemented has resulted in providers becoming the primary risk pools. Responsibility for managing enrolled individuals' utilisation variation uncertainty was passed from a single large government-managed risk-neutral risk pool to over a thousand very small provider-based risk pools owned predominantly by extremely risk-averse practitioners. Provider lists of enrolled individuals thus became the populations funded under the NZPHCS arrangements.

Applying the theoretical model and mapping framework suggests that the costs of managing random risks will have increased substantially relative to the preceding arrangements. The consequences would have been passed on by providers to service users in either or both higher-than-expected fees or lower-than-expected service quality given the substantial increases in government funding. These findings appear to have been borne out in empirical evidence from Cumming & Gribben (2007) and Raymont & Cumming (2013) that fees have fallen less than expected. Attempts to constrain cost increases via a quasi-regulatory fee increase approval process would have been largely ineffective. Instead, these attempts have likely increased the costs of risk management because they continue to presume that capitation payment of providers can be equated to historic fee-for-service subsidies and seamlessly substituted with fee-for-service payments by service users. PHO mergers, restrictions on their reserve levels and the use of additional financial incentives in a performance improvement programme would not have materially altered the high expected financial risk-bearing costs, because PHOs are not the principal risk pool operators.

The very much higher expected costs of random risk management would have been allocated very much more unevenly across enrolled individuals, service users and providers than under the preceding arrangements. They would also have been allocated in a manner contrary to the policy intentions. This too appears to be borne out in empirical evidence from Cumming & Gribben (2007). Although fees have fallen, the reductions have been smaller in proportionate terms for those population groups that the government intended would benefit most from the funding changes: low-income and high-need individuals. Furthermore, Carr & Tan (2009) showed that, on average, less care than expected was likely being delivered to fully and highly funded children, whilst more than expected was being delivered to higher-fee-paying adults. NZHS (2015) offered evidence that the reduction in the amount of care supplied to children has likely persisted over the life of the Strategy. These findings are consistent with the theoretical expectations.

First, breaking one large risk pool into over a thousand small pools would have resulted in a very wide distribution of the random effects of utilisation variation risk. Wide differences in the expected costs of care between extremely lucky pools with healthier-than-average enrolees and extremely unlucky ones with less-healthier-than-average enrolees have likely emerged. Wide variations in profitability between providers would be expected, with either the highest risk premium in fees and/or lower care quality being disproportionately borne by the service users of providers with less-healthy-than-average enrolees needing more care, if these providers are to remain financially viable.

Second, the flawed assumption that capitation funding is interchangeable with service user payments led to capitation funding for targeted enrolled individuals incorporating components intended to offset their service user fees to a greater extent than non-targeted individuals. This has played out in some providers – notably VLC providers accepting higher capitation payments in lieu of charging lower fees – facing very much more random risk than others. VLC providers thus likely face much more variable profits, and their service users much more variable fees and service quality, than other providers.

The greatest financial risks have thus likely been passed on to the financially vulnerable service users of VLC providers for whom the government intended to reduce fees the most. Whilst VLC service users pay lower fees than those at standard providers, it is likely that they will experience more variable care quality because their providers are restricted in their ability to pass on higher financial risk costs in fees. VLC providers are also more likely to respond by engaging in activities leading to higher costs of controllable risk, such as cream-skimming, stinting and other strategic actions. Analysis of the limited amount of empirical evidence available appears consistent with this outcome. VLC firms will also probably become less desirable for investor-owners, as they are more likely to fail financially. The likelihood of the sector bifurcating into a small number of large non-profit firms, staffed largely by salaried employees, and a large number of profitable small firms owned by practitioners is increased. This further exacerbates the inequities inherent in the allocation of financial risk under the NZPHCS.

Third, the change from fee-for-service to capitation payment would have been most unlikely to provide incentives for providers to collaborate and increase team-based care delivery. This is because providers' ability to balance-bill service users enables them to undo any financial risk-sharing endeavours in the first place. To the extent that changes in care delivery focus and method have occurred under the NZPHCS, they appear to have emerged from other separately funded initiatives such as Care Plus and Services to Improve Access at PHO level, rather than capitated First Contact funding of providers. These initiatives share very little random risk with PHOs having few means of managing it. Instead, they focus predominantly on sharing controllable risks.

It is unlikely that policy changes altering only the way PHOs and providers are contracted, or the formulae by which capitation funding levels are set, will substantially alter progress made towards the desired cost containment and equity objectives. Moving to a fully funded system under the current arrangements may appear to increase equity by ensuring all service users pay no fees. However, it would be expected to lead to either or both of an even more costly system and a more inequitable allocation of health care resources. This is because it will increase the total costs of risk management as providers would bear 100% of random financial risk without any means to manage it other than varying care quality.

Substantial progress towards the desired policy objectives would first require larger effective risk pools to be formed. These pools could then share both random and controllable financial risks with providers in a manner that reflects the respective abilities of each to bear them. However, legacy sector institutional arrangements militate against their formation. Historic funding arrangements and the long-held right for providers to balance-bill mean that the information necessary to construct a comprehensive population-funded system incorporating service user payments simply does not exist currently. Balance-billing also militates against the development of effective risk-sharing in complex contracting arrangements between a risk pool and providers.

The mixed funding model proposed here does not of itself resolve the financial risk-bearing challenges posed by the NZPHCS, because it presumes providers will still operate risk pools associated with population funding and continue to balance-bill service users. However, it does offer a more equitable set of outcomes in the short term. Furthermore, it provides a pathway towards a longer-term system where either or both of full government funding and complex provider contracting are feasible. In the short term, it requires the Government to assume some responsibility for managing utilisation variation risk for targeted service users, by paying their fee relief as a separate fee-for-service subsidy. Whether this is undertaken using one single central pool, or several dispersed local pools (e.g. based on DHBs) depends upon longer-term objectives for the primary health care sector. If primary care is intended to be part of an integrated, geographically focused Managed Care-style system, then DHBs should integrate and manage primary care risk pools with their other underwriting arrangements. Alternatively, primary health care could be funded by a single central government pool managing all contracts with providers, as occurs in the English GMS system.

8.2 Limitations

This inquiry has been based primarily upon theoretical expectations of the NZPHCS arrangements to meet policy expectations. The reasons for this approach are twofold.

First, using financial risk as the primary inquiry lens in an institutional analysis based upon transactions is novel. Consequently, the development of a theoretical basis for the inquiry constitutes a substantial proportion of the thesis. The application of the theoretical framework to the NZPHCS arrangements contained in this thesis is a first step towards developing empirically testable hypotheses. However, empirical testing would have expanded the scale of the inquiry beyond that which could be reasonably addressed within a single thesis. A decision was made to limit this inquiry to the theoretical level.

Second, even if it was desired to undertake more detailed empirical testing of some of the theoretical projections, the ability to do so at a macro (policy) level was significantly constrained by the absence of relevant data. The problem of access to the relevant data to assess the effects of the NZPHCS has constrained all evaluations of its effects (Raymont & Cumming, 2013). Whilst it may have been possible to undertake limited micro-level inquiries (e.g., within a small subset of providers or PHOs) to obtain evidence in support of, or contravening, the theoretical expectations, these would have been limited in their application or extension to the aggregated macro level. These limitations are noted in almost all of the sample-based analyses which form the basis of Raymont & Cumming's (2013) summary of the policy effects.

The theoretical approach taken for the inquiry may be seen as a limitation of the research, if for some reasons yet unknown the interactions in the New Zealand primary health care sector under the NZPHCS may have played out differently to the expectations in this thesis. If this is the case, then it will only be revealed when the relevant empirical analysis is undertaken. Whilst for the two reasons outlined above, this thesis has stopped short of undertaking empirical analysis, the theoretical expectations developed here can stand as hypotheses for future research either when relevant data may become available, or via micro-level analyses which may collectively inform macro-level decision-making.

Regardless of the empirical limitations of the research, the theoretical analysis still offers relevant insights to inform future policy development. A pragmatic reality is that policy tools are often selected on the basis of theoretical expectations, with limited empirical support. For example, Cumming (1999) notes the shortage of empirical analysis supporting the use of capitation funding to achieve the desired NZPHCS policy outcomes.

8.3 Implications for Policy

The implications for primary health care funding policy arising from this inquiry are that policy-makers should be clear about the allocation of responsibility for managing risk pools, separate from the funding of care provision, when formulating and changing funding arrangements. Over time, in systems where the government has historically funded providers directly, the distinction between government as both the funder and operator of risk pools may have become opaque. This leads to the potential for the distinction to be overlooked when changes are made from funding services to funding populations. Such an oversight appears to have occurred with the NZPHCS, as neither King (2001) nor NHC (2000) make any reference to risk pooling activities. Consequently, the policy implementation has resulted in a set of arrangements allocating both random and controllable risk in a manner contrary to the achievement of the desired objectives.

A further important insight arising from the examination of the NZPHCS is that population funding and capitation funding are not seamlessly interchangeable. Population funding is a risk-rated input into a risk pool, based solely upon the expected needs for primary health care for the enrolled individuals. Capitation funding may be paid per individual enrolled, but if it includes components not directly related to the expected costs of care, then it will not constitute population funding. If non-population based capitation funding is used as the input to a risk pool, then it will lead to perverse allocations of random utilisation variation risk. If government funding is intended to serve multiple objectives, then it should be separated out so that each objective is funded separately using unique tailored arrangements. Thus, funding to relieve targeted service users of fee obligations should not be bundled with population-based funding of individuals paid into risk pools.

A third insight is that neither population funding nor capitation funding can be assumed to be interchangeable with capitation contracting of providers. Whilst the former are primarily related to funding risk pools and managing random risk on the risk pooling side of a primary health care system, the latter is concerned primarily with the incentivising of providers to manage controllable risk on the care delivery side of a primary health care system. This is especially important when considering changes in funding policy from funding services to funding populations.

Inevitably, financial risk-sharing capitation contracts between a risk pool and providers will bundle some responsibility for managing random risk along with the incentives to manage controllable risk factors (Newhouse, 1998). Hence, the amount of risk shared must be carefully balanced with the providers' ability to manage it. Unless the providers are sufficiently large enough to adequately diversify the risks shared across their enrolled individuals, or have access to sophisticated reinsurance arrangements, the financial incentives cannot be very strong. Risk adjustment formulae using individual characteristics such as age, gender, past utilisation and income levels at best are weak predictors of expected demand, and demand in primary health care is strongly correlated due to repeat transacting with the same individuals within and between time periods. Hence, the fixed share of provider revenues in partial capitation contracts should be lower the smaller are the provider lists (Robinson, 2001; Goodson et al*.*, 2001). If the incentives are too strong, the effects of managing random risk may come to crowd out the changes in behaviour desired from using incentives to share controllable risk with providers (Holmstrom & Milgrom, 1991).

Indeed, capitation contracts alone may not be the most effective means of incentivising providers to prioritise the delivery of specific types of care, or to alter behaviour in ways that can be specifically prescribed contractually. If the desired activity is easily observed or measured then it may be more reliably obtained by having separate contracts incentivising its delivery, rather than bundling expectations for it into a generic but rather blunt capitation agreement (Ma & McGuire, 2002). The appropriate risk-sharing remuneration for the task in hand can then be devised. Examples are the separate fee-for-service payments for vaccinations in New Zealand, and the QOF payments for performance in the English GMS.

8.4 Contribution of the Thesis

This thesis makes three substantial contributions. The first contribution is the addition to the body of NZPHCS analysis of extended and new insights into the effects of financial risk allocation and management on the achievement of policy objectives. This contribution includes the proposal of the mixed funding model as an alternative funding arrangement. The second contribution is the simplified model and mapping methodology developed to examine the macro and micro-level interrelationships sharing financial risk between funders, risk pools and providers in a primary health care system. The model distinguishes between the different origins and effects of, and hence need for different allocation and management of, random risks arising from risk pooling and controllable risks addressed in transactions between sector participants. The third contribution, which derives from the second, is the clarification of objective and contractual distinctions between Alma-Ata-inspired macro-level population funding arrangements and the micro-level agreements remunerating providers for delivering care.

The thesis makes a unique contribution to the analysis of the NZPHCS and future New Zealand policy development. The institutional analysis undertaken to explicitly link macro-level funding changes to micro-level transactions in the sector, across the boundaries of the risk pooling and care delivery sides of the system is novel in many dimensions. Whilst some analyses have considered the interrelationships between funding and care delivery arrangements (e.g. Cumming et al., 2005; Cumming & Gribben, 2007; Mays & Blick, 2008; Smith, 2009), they have used methodologies other than the institutional analysis used for this inquiry. It is also the first analysis to look primarily at the allocation of financial risk, rather than the funding levels (Cumming & Gribben, 2007; Raymont et al., 2013) or providers' responses to changes in their contracts (Gauld, 2009; Hefford et al., 2005), in order to explain why service user fees have not fallen as much as expected given the very large increases in government funding. Some analyses have identified inconsistencies in the allocation and management of financial risk, alone and in combination with the role of balance-billing, as potential explanators of unexpected NZPHCS outcomes (e.g. Mays & Blick, 2008; Cumming & Mays, 2011). However, their focus was on the terms of provider contracts, and did not address the distinction between the management of random financial risks arising on the risk pooling side of a primary health care system and controllable risks embedded in provider contracts. This thesis builds on and extends their initial observations.

The institutional analysis approach and financial risk lens have enabled a range of alternative explanations not previously canvassed to be theorised for perplexing observations, such as lower-than-expected fee decreases and the scant evidence of new contracts and care delivery methods emerging. These explanations do not invalidate the findings of other analyses (e.g. provider opportunism – Cumming & Mays, 2011; absence of human capital – Smith, 2009). Rather, they build on the body of learning about the NZPHCS and the New Zealand primary health care sector.

Furthermore, the thesis has exposed a range of potential inequities arising from the risk management arrangements that have not been identified in any other analysis. These inequities derive in large part from the peculiar manner in which policy and sector institutional arrangements of a partly government-funded system have co-evolved over time in New Zealand. Hence they may not have been revealed without detailed institutional analysis of both the NZPHCS and the arrangements preceding it, as undertaken in this inquiry. Consequently, the mixed funding policy option proposed here as an alternative to policies proposed in other analyses is also unique. It is the only policy proposal that addresses the blurring of population funding and fee relief objectives that have arisen in New Zealand FC capitation payments. It is also the only proposal that explicitly identifies the need to separately consider risk pooling and provider contracting arrangements. By taking account of the evolution of the New Zealand institutional arrangements, it offers a pragmatic pathway to the implementation of complex contracting not addressed in other proposals recommending this approach (e.g., Mays & Blick, 2008).

Second, the simplified model of a primary health care system and mapping framework developed for this inquiry make a unique contribution. There is a large body of public policy literature examining funding policies at a macro level, and a further large body in the health economics and industrial organisation literatures examining the effects of various contractual arrangements between risk pools and providers at the micro level. However, the literature linking these two bodies is sparse, and what exists pertains mostly to countries with Bismarck-inspired health care systems characterised by multiple competing insurers (e.g. USA – Newhouse, 1997; the Netherlands – van Dijk, 2012). It is uncommon for the link to be addressed in literature pertaining to Beveridge-inspired single-funder systems. The model and mapping framework developed for this inquiry drew extensively upon literature pertaining to, or derived from, Bismarck-inspired multi-payer systems (e.g., Cutler & Zeckhauser, 2000; Glied, 2001; Dranove & Satterthwaite, 2000; Scott, 2000) to inform policy in single-payer systems.

Consequently, the model and framework make no particular assumptions about either the number or origin of either funders or risk pools in developing a systematic means of linking funding with care delivery, and macro-level funding policies with micro-level care delivery transactions. They are unique in their use of a transaction cost frame and financial risk as the lens with which to explore the interrelationships. And as they were developed first from a theoretical perspective, they are generic and can be applied in a wide variety of situations to examine the effects in both government, private and mixed funding arrangements.

The potential of the model and mapping framework has been revealed in the NZPHCS analysis for evaluating the effects of changes in either or both of government funding or provider remuneration arrangements in sectors where private – and notably service user – financing already occurs. They would also be useful for evaluating the effects of funding policy changes in systems where private financing does not already exist but its introduction is being considered. Specifically, they allow policymakers to trade off the effects on policy objectives of private financing taking the form of any or all of: premium payments by individuals to risk pools; co-payments and deductibles made by service users to risk pools; or balance-billing payments by service users to providers.

Finally, the thesis makes a contribution by exploring some of the wider risk management implications arising from the Alma-Ata Declaration's dual imperatives. The declaration calls for refocusing primary health care funding from paying for services to funding populations, and a change in primary health care delivery philosophy from isolated instances of care delivery by solitary practitioners to integrated, coordinated services delivered by teams of providers. However, the arrangements under which providers are remunerated to deliver care to service users cannot be seamlessly interchanged with the arrangements for funding populations.

Even though embodied in the same physical person, individuals as members of a population and service users are not contractually interchangeable. Population funding addresses an individual's membership of a risk pool managing the financial uncertainty about future primary care utilisation. Associated utilisation variation risk is a random risk factor best addressed by diversification in large pools. Care delivery agreements are primarily concerned with the procurement of care for service users whose need for care is certain. Supply-side risk-sharing in care delivery agreements typically deals with controllable risk factors deriving from care subsidies and the unobservability of provider effort. Controllable risks are typically addressed with financial incentive terms. Random and controllable risks thus derive from different origins and should be managed differently.

However, some forms of care delivery contract result in random and controllable risks being bundled together and shared with providers. Capitation contracts are a classic example. Well-balanced contracts will allocate controllable risks to the party best able to manage the events that give rise to them, but limit the extent to which random risks are shared with risk-averse providers. The optimal arrangements for funding risk pools will therefore never be optimal arrangements for funding providers. Separate attention must be given to the contractual arrangements for funding each if both the macro-level funding policy and micro-level care delivery objectives are to be achieved. The distinctions in the origins, allocation and management of random and controllable financial risk should be clearly understood in primary care policies if costly and inequitable outcomes, such as those observed in the NZPHCS implementation, are to be avoided.

8.5 Future Research

The generic nature of the simplified model and analytic mapping framework developed for this inquiry can be applied to gain understanding of the effects of different institutional arrangements on the allocation of financial risk and hence the achievement of policy objectives in a wide range of primary health care contexts. The modelling and mapping approach could also be extended to consider the effects of other population-based financial risk-sharing arrangements between the government social service providers. This includes, but is not limited to, government-funded public-private partnerships and social impact bonds, which are predicated upon various elements of financial risk previously managed by the government being transferred to private sector participants.

The theoretical nature of the inquiry has also created a platform for further empirical research in the New Zealand primary health care policy context. This includes, but is not limited to, endeavouring to obtain empirical estimates of the various effects identified in Chapter 6, and comparing the extent to which the financial risk-related explanations, compared to other possible explanations, can account for the observed limitations of the NZPHCS outlined in Chapter 2. Further, as the Mixed Funding Model proposed in Chapter 7 was proposed and evaluated solely from a theoretical perspective, future policy-making would be enhanced by exploring the views of sector participants regarding the feasibility and desirability of implementing such an arrangement.

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Appendix 1: Capitation Rates

Capitation rates from 1 July 2015. All rates exclude GST and are annualised amounts.

1. First level health services by access practices for enrolled persons

Access First Contact		HUHC	
Age Group	**Gender**	**Y**	**N**
00–04	F	$591.8876	$395.9588
	M	$591.8876	$416.8892
05–14	F	$379.5048	$125.3340
	M	$379.5048	$117.3144
15–24	F	$365.5776	$115.6512
	M	$365.5776	$63.6512
25–44	F	$365.5776	$101.6272
	M	$365.5776	$65.6932
45–64	F	$400.3948	$139.1972
	M	$400.3948	$103.9652
65+	F	$429.4092	$239.8772
	M	$429.4092	$206.8680

2. First level health services by non-access practices for enrolled persons

Non-Access First Contact		HUHC	
Age Group	**Gender**	**Y**	**N**
00–04	F	$591.8876	$386.4136
	M	$591.8876	$411.1972
05–14	F	$379.5048	$99.4860
	M	$379.5048	$94.2880
15–24	F	$365.5776	$115.6512
	M	$365.5776	$63.6512
25–44	F	$365.5776	$101.6272
	M	$365.5776	$65.6932
45–64	F	$400.3948	$139.1972
	M	$400.3948	$103.9652
65+	F	$429.4092	$239.8772
	M	$429.4092	$206.8680

3. Health promotion services

Health Promotion	Non High Use Health Card Holders	
	Māori/Pacific	Non Māori/Non Pacific
Deprivation deciles 1–8	$2.6436	$2.2032
Deprivation deciles 9–10	$3.0840	$2.6436

4. Services to improve access for high need groups

Services to Improve Access		Non High Use Health Card Holders			
		Māori/Pacific		Non Māori/Non Pacific	
Age Group	Gender	Deprivation deciles 1–8	Deprivation deciles 9–10	Deprivation deciles 1–8	Deprivation deciles 9–10
00–04	F	$75.0724	$150.1444	$0.0000	$75.0724
	M	$79.0400	$158.0812	$0.0000	$79.0400
05–14	F	$23.7620	$47.5252	$0.0000	$23.7620
	M	$22.2424	$44.4844	$0.0000	$22.2424
15–24	F	$21.9268	$43.8532	$0.0000	$21.9268
	M	$12.0676	$24.1360	$0.0000	$12.0676
25–44	F	$19.2680	$38.5364	$0.0000	$19.2680
	M	$12.4552	$24.9104	$0.0000	$12.4552
45–64	F	$26.3908	$52.7824	$0.0000	$26.3908
	M	$19.7112	$39.4228	$0.0000	$19.7112
65+	F	$45.4796	$90.9600	$0.0000	$45.4796
	M	$39.2216	$78.4424	$0.0000	$39.2216

5. Care Plus services

$246.0380

6. Fees for administering vaccine episodes

Childhood immunisation	$19.94	
Influenza immunisation	$19.94	

7. Rural ranking score

Rural ranking score	Rate per capita
35–40	$7.72
45–50	$11.60
55–65	$15.46
70+	$19.31

8. Management services

1. If the number of Enrolled Persons in the PHO is 40,000 or below, and the DHB has approved the PHOs' Management Services Plan, then the rate will be $15.7176 per person up to 20,000 and $0.9064 per person from 20,001 to 40,000.
2. Otherwise, if the number of Enrolled Persons in the PHO is between 40,001 and 75,000 the rate will be $11.1848 per person up to 20,000 and $5.4392 per person from 20,001 to 75,000.
3. If the number of Enrolled Persons in the PHO is 75,001 or above then the rate will be $522,852.00 plus $6.1080 per person over 75,000 enrolees.

9. Very Low Cost Access (VLCA) payment

Individual practice component of payment available to each eligible PHO practice – annual rates.

Age Group	Gender	Annual Rate in dollars
	F	$103.4676
00–04	M	$108.9356
	F	$52.2740
05–14	M	$51.6556
	F	$29.6752
15–24	M	$16.3328
	F	$26.0764
25–44	M	$16.8564
	F	$35.7164
45–64	M	$26.6764
65+	F	$61.5504

10. Zero Fees for Under Six Year Olds payment

Age Bands	Gender	Annual Rate
00–04	F	$77.6004
	M	$81.7024
05–14	F	$2.4168
	M	$2.2616
15–24	F	n/a
	M	n/a
25–44	F	n/a
	M	n/a
45–64	F	n/a
	M	n/a
Over 65	F	n/a
	M	n/a

11. Zero Fees for Under 13 Year Olds payment

Age Bands	Gender	Annual Rate
00–04	F	$77.6004
	M	$81.7024
05–14	F	$45.0256
	M	$44.8704
15–24	F	n/a
	M	n/a
25–44	F	n/a
	M	n/a
45–64	F	n/a
	M	n/a
Over 65	F	n/a
	M	n/a

12. VLCA co-payment thresholds

	0 to 12	13 to 17	18+
Maximum	$0.00	$12.00	$17.50

Source: http://www.health.govt.nz/our-work/primary-health-care/primary-health-care-subsidies-and-services/capitation-rates Downloaded July 12, 2015.

Capitation rates from 1 July 2014. All rates exclude GST and are annualised amounts.

1. First level health services by access practices for enrolled persons

Access First Contact		HUHC	
Age Group	Gender	Y	N
00–04	F	$587.1900	$392.8164
	M	$587.1900	$413.5804
05–14	F	$376.4928	$124.3392
	M	$376.4928	$116.3832
15–24	F	$362.6760	$114.7332
	M	$362.6760	$63.1460
25–44	F	$362.6760	$100.8208
	M	$362.6760	$65.1720
45–64	F	$397.2172	$138.0924
	M	$397.2172	$103.1400
65+	F	$426.0012	$237.9736
	M	$426.0012	$205.2260

2. First level health services by non-access practices for enrolled persons

Non-Access First Contact		HUHC	
Age Group	Gender	Y	N
00–04	F	$587.1900	$383.3468
	M	$587.1900	$407.9336
05–14	F	$376.4928	$98.6964
	M	$376.4928	$93.5396
15–24	F	$362.6760	$114.7332
	M	$362.6760	$63.1460
25–44	F	$362.6760	$100.8208
	M	$362.6760	$65.1720
45–64	F	$397.2172	$138.0924
	M	$397.2172	$103.1400
65+	F	$426.0012	$237.9736
	M	$426.0012	$205.2260

3. Health promotion services

Health Promotion	Non High Use Health Card Holders	
	Māori/Pacific	Non Māori/Non Pacific
Deprivation deciles 1–8	$2.6228	$2.1856
Deprivation deciles 9–10	$3.0596	$2.6228

4. Services to improve access for high need groups

Services to Improve Access		Non High Use Health Card Holders			
		Māori/Pacific		Non Māori/Non Pacific	
Age Group	**Gender**	**Deprivation deciles 1–8**	**Deprivation deciles 9–10**	**Deprivation deciles 1–8**	**Deprivation deciles 9–10**
00–04	**F**	$74.4764	$148.9528	$0.0000	$74.4764
	M	$78.4128	$156.8264	$0.0000	$78.4128
05–14	**F**	$23.5736	$47.1480	$0.0000	$23.5736
	M	$22.0660	$44.1312	$0.0000	$22.0660
15–24	**F**	$21.7528	$43.5052	$0.0000	$21.7528
	M	$11.9720	$23.9444	$0.0000	$11.9720
25–44	**F**	$19.1152	$38.2304	$0.0000	$19.1152
	M	$12.3564	$24.7128	$0.0000	$12.3564
45–64	**F**	$26.1812	$52.3636	$0.0000	$26.1812
	M	$19.5548	$39.1100	$0.0000	$19.5548
65+	**F**	$45.1188	$90.2380	$0.0000	$45.1188
	M	$38.9104	$77.8200	$0.0000	$38.9104

5. Care Plus services

$244.0852

6. Fees for administering vaccine episodes

Childhood immunisation	$19.79
Influenza immunisation	$19.79

7. Rural ranking score

Rural ranking score	Rate per capita
35–40	$7.72
45–50	$11.60
55–65	$15.46
70+	$19.31

8. Management services

1. If the number of Enrolled Persons in the PHO is 40,000 or below, and the DHB has approved the PHOs' Management Services Plan, then the rate will be $15.5928 per person up to 20,000 and $0.8992 per person from 20,001 to 40,000.
2. Otherwise, if the number of Enrolled Persons in the PHO is 75,000 or below the rate will be $11.0960 per person up to 20,000, and $5.3960 per person from 20,001 to 75,000.
3. If the number of Enrolled Persons in the PHO is 75,001 or above then the rate will be $518,700.00 plus $6.0596 per person over 75,000 enrolees.

9. Very Low Cost Access payment

Individual practice component of payment available to each eligible PHO practice – annual rates.

Age Group	Gender	Annual Rate
00–04	F	$100.7752
	M	$106.1012
05–14	F	$31.4088
	M	$29.3988
15–24	F	$28.9328
	M	$15.9240
25–44	F	$25.4240
	M	$16.4348
45–64	F	$34.8228
	M	$26.0088
65+	F	$60.0104
	M	$51.7524

10. Zero Fees for Under Six Year Olds payment

Age Bands	Gender	Annual Rate
00–04	F	$75.5812
	M	$79.5764
05–14	F	$2.3560
	M	$2.2048
15–24	F	n/a
	M	n/a
25–44	F	n/a
	M	n/a
45–64	F	n/a
	M	n/a
Over 65	F	n/a
	M	n/a

Source: http://www.health.govt.nz/our-work/primary-health-care/primary-health-care-subsidies-and-services/capitation-rates Downloaded July 12, 2014.

Appendix 2: Analysis of PHO and IPA Financial Statements

PHOs are required by the Ministry of Health and their DHBs to make their annual reports, including audited financial statements, available publicly to facilitate scrutiny of their use of public funds. Many (but not all) make them available on websites. As PHOs are required to be non-profit entities, many (but not all) are registered on the Charities Register. Registered entities must make annual returns (including financial statements) which are made publicly available.

The Charities Register and PHO websites were used to obtain PHO Annual Reports (including financial statements) for the 2012-13 financial year. Of the 33 PHOs currently recorded by the Ministry of Health, reports were expected to be found for 31 (Primary and Community Services in South Canterbury DHB is not formally a PHO, and Compass Health – Wairarapa in the Wairarapa DHB reports via its parent Compass in the Capital and Coast DHB). Searching the Charities Register on 17 November, 2014 revealed 28 were registered, and 27 reports were retrieved from their annual filings (Table A2-1)[1,2]. Searching websites yielded the reports for a further two PHOs. However, no online reports could be found for either the National Hauora Coalition or ProCare Networks Limited (Auckland DHB). The subsequent analysis is based on the 29 reports identified in Table A2-1.

The purpose of the analysis was to identify how PHOs treat capitation funding received from DHBs. Of particular interest were two questions relating to financial risk management:

- To what extent were PHOs passing on First Contact funding intact to care providers?; and
- Were PHOs maintaining explicitly identified risk reserves?

[1] The report for Pegasus Health (Charitable) Ltd on the Charities Register was only a summary report providing specific information requested by the Registrar. The full financial statements were contained in the full annual report found on the website.

[2] The National Hauora Coalition (Counties Manukau DHB) was registered on 02/04/2014 but had not made a filing.

Table A2-1 PHO Financial Statement Availability

	Lead DHB	PHO Name	Charities Register	Comments
1	Auckland	Alliance Health Plus Trust	Y	
2	Auckland	Auckland PHO Limited	Y	
3	Auckland	ProCare Networks Limited	N	registered at Companies Office; not on website
4	Bay of Plenty	Eastern Bay Primary Health Alliance	Y	
5	Bay of Plenty	Nga Mataapuna Oranga Limited	Y	
6	Bay of Plenty	Western Bay of Plenty PHO Limited	Y	
7	Canterbury	Christchurch PHO Limited	Y	
8	Canterbury	Pegasus Health (Charitable) Ltd	y (summary)	full report on website
9	Canterbury	Rural Canterbury PHO	Y	
10	Capital and Coast	Compass Health - Capital and Coast	Y	
11	Capital and Coast	Cosine Primary Care Network Trust	Y	
12	Capital and Coast	Ora Toa PHO Limited	Y	
13	Capital and Coast	Well Health Trust	Y	
14	Counties Manukau	East Health Trust	Y	
15	Counties Manukau	National Hauroa Coalition (NHC)	N	registered; no returns filed; not on website
16	Counties Manukau	Total Healthcare Charitable Trust	Y	
17	Hawkes Bay	Health Hawke's Bay Limited	N	retrieved from website
18	Hutt Valley	Te Awakairangi Health Network	Y	
19	Lakes	Rotorua Area Primary Health Services	N	retrieved from website
20	MidCentral	Central Primary Health Organisation	Y	
21	Nelson Marlborough	Kimi Hauora Wairau (Marlborough PHO Trust)	Y	
22	Nelson Marlborough	Nelson Bays Primary Health	Y	
23	Northland	Manaia Health PHO Limited	Y	
24	Northland	Te Tai Tokerau PHO Limited	Y	
25	South Canterbury	Primary and Community Services	Not a formal PHO	
26	Southern	Southern Primary Health Organisation	Y	
27	Tairawhiti	Ngati Porou Hauora	Y	
28	Waikato	Hauraki PHO	Y	
29	Waikato	Midlands Health Network	Y	
30	Wairarapa	Compass Health - Wairarapa	Incorporated with Compass (Capital & Coast)	
31	Waitemata	Waitemata PHO Limited	Y	
32	West Coast	West Coast PHO	Y	
33	Whanganui	Whanganui Regional Network	Y	

Ancillary questions relate to the extent to which PHOs undertake care delivery, and whether this is FC care that otherwise might be provided by GP-led primary care practices, or complementary services.

The hypothesis is that if a PHO was passing on FC funding intact to providers then it was unlikely to be entering into bespoke arrangements with providers for FC that differed substantially from the back-to-back agreements. If a PHO entered into different arrangements with providers for the delivery of FC services, then it should be maintaining risk reserves to buffer against the financial consequences of utilisation variation risk. If not, it would be exposing itself to losses (eroding reserves) and threats to the financial viability of other projects for which it received funding (e.g. SIA, Care Plus and other special projects agreed with the DHB).

More than Half of PHOs Itemise FC Revenues and Expenditure

More than half the PHOs (15 out of 29) recorded revenues at a level of detail that allowed FC funding to be separated out from other revenue streams (Table A2-2). All of these PHOs also separated out FC payments from other payments made to contracted providers. In all cases, FC income and expenditure figures were sufficiently close to assert with confidence that the PHOs were passing on FC capitation revenues intact to providers. The accounts for Hauraki PHO were the most transparent. They itemised the revenues from all separate PHO sources and their allocation to each of its contracted providers and operations provided internally by the PHO itself.

FC revenues constituted between 31% (Well Health Trust) and 83% (Cosine) of PHO revenues. The average was 60%. The PHOs with the smallest share of revenues from FC funding were in areas of very high socioeconomic deprivation so received very much larger sums for special projects from their DHBs than those with a higher share.

West Coast PHO did not separate out FC revenues. However, contract payments (80% of revenues) were separately recorded. The Annual Report identified the PHO has as one of its key activities “to pass on the funding for ‘first level services’ to contracted practices” (West Coast (2013) p. 6). It is therefore confidently concluded that this PHO also passes on FC funding in full to care providers.

Thus, it can be concluded with little doubt that 16 of 29 PHOs pass on FC funding intact to providers.

Table A2-2 PHOs Declaring FC Revenues

PHO Name	FC revenue	Total Revenue ($)	FC % of Revenue
Alliance Health Plus Trust	10,299,503	17,158,560	60
Auckland PHO Limited	8,035,624	11,021,371	73
Western Bay of Plenty PHO Limited	21,898,376	32,926,846	67
Compass Health - Capital and Coast	32,730,619	49,150,406	67
Cosine Primary Care Network Trust (consists of:)	4,554,591	5,480,487	83
Ora Toa PHO Limited	1,660,364	4,422,348	38
Well Health Trust	2,182,914	6,946,053	31
Health Hawke's Bay Limited	22,809,565	33,018,007	69
Te Awakairangi Health Network	17,139,743	24,906,816	69
Rotorua Area Primary Health Services	10,931,056	15,375,035	71
Central Primary Health Organisation	20,926,650	39,119,513	53
Manaia Health PHO Limited	15,493,598	24,633,509	63
Te Tai Tokerau PHO Limited	10277555	17,419,857	59
Hauraki PHO	9,316,527	14,873,553	63
Whanganui Regional Network	8,515,470	16,396,911	52

Two PHOs Pass on ‘Capitation’ Funding Intact

A further two PHOs – East Health Trust and Total Healthcare Charitable Trust (both in Counties-Manukau DHB) – separated health care capitation revenues (in aggregate) from other contract revenues and PHO management funding. Capitation accounted for 77% and 71% of total revenues respectively. In both cases, capitation funding receipts were equal to capitation payments in aggregate, suggesting that all health care capitation payments (i.e., excluding management payments) were passed on directly to providers.

East Health’s Related Party Transactions disclosures indicate that in respect of practitioner-board members affiliated with contracted providers, “the medical centre receives funding from the Trust on the same terms and conditions as all other medical centres” (East Health (2013), p. 9). If all providers are paid under the same contract, and capitation expenditure exactly equals capitation income, then it is most unlikely that the PHO has entered into contracts with providers that differ from those under which it is itself funded (i.e., a back-to-back arrangement in indicated).[3]

Total Healthcare’s Related Party Transactions declaration reveals that one group of companies – ETHC Healthcare Group, comprised of 14 separate limited

[3] If any contractual arrangement other than ‘back-to-back’ was used, then random variations from the new contract would almost certainly mean that revenues would not exactly equal expenditures.

liability companies clearly identifiable as medical centres – provides all health care and clinical medical care services to the PHO, and that "these companies receive capitation and health project funding for their services" (Total Healthcare (2013), p 10). Again, taken with the equivalence of capitation revenues and expenditures, this is strongly suggestive of the use of back-to-back contracts to pass FC and other capitation funding on intact to care providers. If not, then there would be no need to identify 'capitation' as a separate payment type.

Limited Transparency in Over One Third of Statements

The remaining 11 statements vary substantially in the quality of the financial and information provided. However, in some instances, the Annual Reports and website information combined with the financial statements provide strong circumstantial evidence that FC funding is passed on intact to care providers

Related Party Transactions Indicate FC Capitation Pass-Throughs

Three PHOs – Christchurch, Rural Canterbury and Southern – have a very common format. All are contractually affiliated with IPA South Link.[4] Although their financial statements do not separate out capitation revenue explicitly, "Contract Funding" and "Contract Payments" are separated from other revenues and expenditure. Contract Payments vary between 91% (Southern) and 96% of Contract Funding. Related party transaction notes for all statements identify that Trustees who are also practitioners received "capitation and other payments" in their capacity as GPs supplying services. As with East Health, if contract revenues were being converted into other payment arrangements, there would be no need to identify capitation as a separate payment type. Once again, this is strongly suggestive of FC capitation funding being passed on intact to GP-providers. This is supported by the full Annual Reports, that identify the PHOs supplying only services complementary to general practices (e.g. Care Plus, SIA, Health Promotion, Mental Health). Whilst it cannot be discounted that FC capitation funding is paid to IPA South Link which may

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[4] Christchurch and Rural Canterbury have the same registered address as South Link Health Incorporated – Level 9, 10 George Street Dunedin, and South Link and Southern PHO have a director in common – Murray Tilyard – who in his capacity of "Executive Director of BPAC Inc. and South Link Health Inc." in the Southern disclosure of related party transactions (p22) is party to "IT contracts with the Trust".

then enter into other contracts with providers, the Southern annual report (Southern (2013) p. 7) identifies only one contractual relationship with South Link – for IT services. Furthermore, South Link's website supports the contention that its role is to provide management support for PHOs and general practices, in addition to supplying clinical programmes that assist PHOs to "promote good health, prevent ill health, improve health status and contribute to the effective management of disease."[5] It therefore appears that all South Link-affiliated PHOs pay FC capitation and all other remuneration for services provided directly to providers.

Three further PHOs – Eastern Bay Primary Health Alliance (Bay of Plenty DHB), Kimi Hauora Wairau and Nelson Bays (Nelson-Marlborough DHB) – provide no separate recording of revenue types, and bundle contract expenditure with other operational expenditure. Kimi Hauora Wairau identifies in its Annual Report (p. 6) that "General Practice Subsidies" comprise 61% of expenditure, but the financial statements provide no way of identifying how this was determined. However, it is very similar to the 60% average of FC revenues as a share of total revenues for the 15 PHOs in Table A2-2. Kimi Hauora Wairau and Nelson Bays both identify board member GPs as related parties receiving capitation and/or other payments, strongly suggesting the passing on of FC payments in these PHOs at least. Eastern Bay of Plenty identifies its related-party GPs received "practice payments". It cannot be discounted that these were not in the form of capitation pass-throughs. The Annual Report provides no further detail.

Nonetheless, the circumstantial evidence for these six PHOs is strongly suggestive of FC payments being passed through intact to care providers.

Unclear Treatment by Iwi-Owned PHOs

Two PHOs – Nga Mataapuna Oranga Limited (Bay of Plenty DHB) and Ngati Porou Hauora Charitable Trust (Tairawhiti PHO) – are wholly owned subsidiaries of Iwi Authorities. Nga Mataapuna Oranga aggregates PHO funding and pays 90% as "Subcontractor Services". This is not inconsistent with 'passing on' FC funding to GP-providers under a contact model such as that of East Health and Total Healthcare.

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[5] South Link Health (2013). *Services offered by South Link Health to Primary Health Organisations (PHOs)*. Retrieved from http://www.southlink.co.nz/member-services/primary-health-organisations/ on 24 November, 2014.

Ngati Porou Hauora does not identify the sources or destination of any funding, instead categorising it into service types (Specialist, Mental Health, Primary, Clinical, Support), but from its statements of deferred revenues and related parties, it appears to provide services in-house, so is in effect the risk-bearing service provider.

Considerable Opacity in Three PHOs

The remaining three PHOs – Midlands Health Network (covering Waikato and Taranaki DHBs), Pegasus Health (Charitable) Limited (Canterbury DHB), Waitemata PHO Limited (Waitemata DHB) – provide little detailed information, and indeed appear to have gone to some lengths to make it quite difficult to ascertain what is occurring. The common link with all three is their close association with IPA identities which – unlike South Link – appear to have taken on significant care provision activities in conjunction with the PHO. Understanding how this occurs is far from transparent.

Impossible to Discern Midlands Heath Network Practice

The least informative is Midlands Health Network Limited. This is problematic, because under the RHA/HFA innovations of the 1990s, the Midland region was where capitation funding was both most popular and most mature. If alternative contractual arrangements were being used, then it is more probable to be at? Midlands than any other PHO or IPA. For example, Macdonald (2002) observes contracts prior to the NZPHCS in the former Midland RHA region where care provider capitation payments were adjusted to take account of changes in fee-for-service payments made to care providers (i.e., increasing capitation payments if fee-for-service payments exceeded expectations, as a reflection of higher-than-average demand).

However, the financial statements supplied to the Charities Register provide no breakdowns of either revenues or expenditure, and make no disclosures about related party transactions. The PHO's website identifies that it is affiliated with an IPA, Pinnacle Incorporated, but contains no obvious links to full Annual Reports for either Midlands Health Network or Pinnacle. Pinnacle Incorporated's financial statements obtained from the Charities Register are equally uninformative (indeed, notes on revenue and expenditure referenced in the statements are not even present in the subsequent text). Nonetheless, Pinnacle's income ($16,036,828) is so large that it must include government revenues for services provided. Hence it cannot be excluded that Midlands Health Network passes at least some funding received from the DHB to the IPA as an agent of its care provider members. However, neither can it be excluded that either Midlands or Pinnacle have entered into contracts for FC services with care providers where the remuneration structure differs from the back-to-back arrangement.

Pegasus Acts as Agent for GP Members

The Charities Register financial statements provided by Pegasus Health (Charitable) Limited give only very aggregated figures, so provide as little information as those of Midlands. However, the Annual Report and Financial Statements obtained from the website provide much more detailed information.

Pegasus records revenues of $26 million for the provision of health services, and paid $17.5 million in wages and salaries, indicating a substantial amount of self-provision. However, note 11 to the Financial Statements (Pegasus (2013) p. 14) identifies that "the Company acts as agent for various funding parties and in that capacity pays a variety of claims to general practices and other parties, for which it is reimbursed. These receipts and payments do not flow through the Statement of Comprehensive Income, but are included in the operating cash flows." The cash flow statements indicate that slightly more than $21 million passed through to these agents in 2012/13. This would be consistent with the passing-through of FC capitation funding intact to a large number of care providers. It is not consistent with Pegasus entering into contracts with primary care providers for FC services that vary from the back-to-back agreements, because any such payments would have had to come into Pegasus' Statements.

If all of the $21 million passing through to firms for which Pegasus acts as agent relates to FC payments, it represents around 40% of total funding – somewhat less than the 61% average indicated by the PHOs in Table A2-2. However, Pegasus receives substantial funding from the DHB for special projects. It also provides some FC care directly, including the provision of 24 hour acute care in the community which is staffed by a mix of salaried and GP-member practitioners (Pegasus (2013a), p. 19). This might necessitate the retention of some FC funding within the PHO.

Thus, the circumstantial evidence strongly suggests the passing-through of much, but perhaps not all, FC funding intact to providers.

Waitemata Linked with Comprehensive Health Services

Whilst MoH PHO data records one PHO – Waitemata PHO Limited – operating in the Waitemata DHB, the DHB's website[6] identifies two PHOs operating in its region – ProCare Networks Limited and Comprehensive Care in Association with Waitemata PHO. Comprehensive Care's website[7] indicates that it provides services typically supplied by PHOs (Mental Health, Child Health, Health Promotion, SIA) and IPAs (General Practice support services, General Practice education) in other DHB regions. There are no clear links on the site to any annual reports or other financial information.

Examination of Waitemata PHO Limited's financial statements from the Charities Register indicates that the related party firm is Comprehensive Health Services Limited. It is registered at the Companies Office, not the Charities Register, so its financial returns are not in the public domain. Hence, unlike South Link and Pegasus, it is not possible to examine Comprehensive's financial activities in conjunction with those of its PHO(s).

Waitemata PHO Limited's financial statements for the 2012/13 financial year reveal revenues of $48,500, and expenses of $5.3 million, including payments of $2 million as a contract fee to Comprehensive Care Limited. As the remaining $43.2 million (89% of revenues) appears to have neither passed through to Comprehensive nor entered the operations of the PHO, it is assumed that it has passed directly through the PHO to providers. This most likely includes all FC funding. Whilst the proportion of funding passed through is of similar proportion to the South Link PHOs, there is no accompanying statement regarding payment of capitation to related parties. The only statement of related party transactions pertains to transactions with Comprehensive Health Services Limited.

[6] Waitemata DHB (2014). *Primary Health Organisations*. Retrieved form http://www.healthpoint.co.nz/public/other/waitemata-dhb-primary-care/im:337181/ on 24 November, 2014.

[7] Comprehensive Care (2014). *Services*. Retrieved from http://www.comprehensivecare.co.nz/ on 24 November, 2014.

Thus, once again, the circumstantial evidence suggests that FC funding passes through intact to care providers, simply because of an absence of evidence that it is passed to Comprehensive.

Risk Reserves

Of the 29 sets of PHO financial accounts examined, only one – Health Hawkes Bay Limited – identified designated risk reserves. However, these related to clinical programmes subject to separate contracts between the PHO and DHB, and not generic FC services. Indeed, the PHO concerned was one of the 15 clearly passing FC capitation payments directly on to providers. For the other 28 PHOs, the only financial risks identified in the financial statements related to normal commercial operating risks.

Therefore, it appears that none of the PHOs is operating in the commercially prudent manner of an insurance risk pool managing the variations in demand between periods. This is consistent with the assertion that PHOs view themselves primarily as care providers and agents for their care provider-members and not managers of insurance risk pools for designated populations.

Summary

There is considerable direct and circumstantial evidence that the vast majority of PHOs are passing on FC capitation payments intact to providers. However, caveats exist in the case of the two Iwi-owned PHOs, Midlands and ProCare. It is not possible to draw any conclusions regarding the two Iwi-owned PHOs and Midlands PHO due to the lack of detail in their financial statements. However, it cannot be discounted that Midlands may be using alternative arrangements, due to historical use in its region of capitation contracts taking account of practice-specific financial risk factors. As ProCare accounts could not be examined, no view could be formed of its contracting activities. This provides a major accountability gap, as ProCare is the enrolling PHO for nearly 20% of the New Zealand population receiving government funding under the NZPHCS.

Appendix 3: Adult Fee and Consultation Data, 2001-5

TABLE 1 **Mean Patient Co-payments by Funding Model and CSC Status**

Funding Type	**Age**	**CSC**	**2001/2**	**2002/3**	**2003/4**	**2004/5**	CAGR **2001-5**
Access	**18-24**	**N**	23.2	24.6	17.44	17.09	-26%
		Y	17	16.57	13.6	13.85	-19%
	25-44	**N**	26.17	26.11	19.88	19.75	-25%
		Y	15.93	15.57	13.24	13.91	-13%
	45-64	**N**	25.54	25.33	19.43	19.22	-25%
		Y	16.43	16.25	14.04	14.14	-14%
	65+	**N**	24.77	25	19.88	16.1	-35%
		Y	15.8	16.65	15.03	14.08	-11%
Interim	**18-24**	**N**	32.69	35.01	36.76	37.02	13%
		Y	26.04	27.19	29.02	30.01	15%
	25-44	**N**	33.95	35.99	37.51	39.08	15%
		Y	24.42	25.52	27.5	29.44	21%
	45-64	**N**	33.17	34.3	35.57	37.04	12%
		Y	23.39	24.09	25.65	26.82	15%
	65+	**N**	30.99	32.21	33.01	22.84	-26%
		Y	20.59	21.77	23.09	20.4	-1%

TABLE 2 **Mean Consultation Rates by Funding Model and CSC Status**

Funding Type	**Age**	**CSC**	**2001/2**	**2002/3**	**2003/4**	**2004/5**	CAGR **2001-5**
Access	**18-24**	**N**	1.34	1.45	1.57	1.71	28%
		Y	2.16	2.39	2.4	2.59	20%
	25-44	**N**	2.18	2.31	2.36	2.47	13%
		Y	3.39	3.61	3.7	3.77	11%
	45-64	**N**	3.54	3.86	4.16	4.29	21%
		Y	5.51	5.97	6.17	6.41	16%
	65+	**N**	5.04	5.87	5.99	6.6	31%
		Y	8.15	8.94	9.41	9.78	20%
Interim	**18-24**	**N**	1.75	1.82	1.75	1.7	-3%
		Y	2.92	3.16	3.17	3.13	7%
	25-44	**N**	2.36	2.53	2.54	2.46	4%
		Y	3.72	4.05	4.15	4.03	8%
	45-64	**N**	3.66	3.91	4.11	4.15	13%
		Y	5.45	6.02	6.52	6.64	22%
	65+	**N**	5.06	5.55	5.96	6.48	28%
		Y	7.68	8.57	9.26	9.66	26%

Source: Cumming & Gribben (2007), p. xx (Table 1) and p. xxv (Table 2)