



LUND UNIVERSITY
School of Economics and Management

DEMANDING SUPPLY: MIXED HEALTHCARE FINANCING IN AUSTRALIA

Master's thesis in Health Economics

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By: Joshua Kraindler

Supervisor: Carl Hampus Lyttkens

ABSTRACT

This paper will analyse the financial relationship between private and public health insurance in Australia. Private health insurance in Australia is both highly regulated and subsidised with the argument often being it provides support for the universal public system. With private health insurance providing duplicate insurance in Australia, I present a theoretical analysis of how the private and public system may interact when duplication occurs. I investigate the theoretical arguments for and against the use of private duplicate health insurance. Empirical analysis is performed on both Australia and the OECD to provide numerical evidence of the theoretical arguments. The unique relationship of the private and public health systems is evidenced in the results which provide many interesting and complex policy issues for both Australia, and possibly other similar healthcare systems around the world.

KEYWORDS: Australian healthcare, Private health insurance, healthcare financing

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TABLE OF CONTENTS

1. INTRODUCTION.....	5
2. STRUCTURE OF THE PAPER.....	5
3. PURPOSE	6
4. THE AUSTRALIAN HEALTHCARE SYSTEM.....	8
4.1 Recent Trends in Australian and OECD private healthcare	10
4.2 Types of private health insurance in the OECD	11
4.3 Private Health Insurance policies in Australia	12
5. PREVIOUS RESEARCH.....	13
6. THEORETICAL FRAMEWORK	17
6.1 Arguments for and against the use of duplicate Private Health Insurance	17
6.2 Theoretical Analysis.....	18
7. EMPIRICAL ANALYSIS.....	24
7.1 OECD Analysis.....	24
7.2 Duplicate Insurance Studies.....	27
7.3 Australian Trends	29
8. DISCUSSION	30
9. CONCLUSION	35
REFERENCES	38
ABBREVIATIONS	40
APPENDICES	41

1. INTRODUCTION

Australia operates a mixed system of Universal public health called Medicare, along with a highly regulated Private Health Insurance (PHI) industry. While Medicare is generally viewed by both major political parties as the backbone of Australian healthcare, the parties differ on their opinion on the role of PHI in Australia.

Healthcare costs around the developed world continue to grow at rates faster than GDP, with many governments looking at differing approaches to address the future needs of the healthcare system. Some countries, such as Australia, have been adopting a private health system to operate side by side and in competition with the public system, with the goal of reducing costs, inefficiencies and pressures such as waiting times in the public system.

Australia provides an interesting case study due to its strong universal public healthcare system, yet still has a relatively high portion, approximately 50%, of individuals with some form of private health insurance. In addition, as per the Private Health Insurance Administration Council (2013) approximately 47% of the population holds hospital treatment membership. This is a duplicate form of private health insurance as it covers the same benefits as Medicare, however it provides additional options such as choice of doctor, shorter waiting times and treatment in a private hospital.

Since the mid 1990's, political parties in Australia have pushed different policies towards private health insurance with arguments both for and against its use. Some policies, including subsidies, are frequently discussed in politics, as well as analysed in the Academic environment. In this paper, I analyse the financial relationship of the private and public system in Australia. Similar to some of the other studies I discuss, I find that there is a complex relationship between the private and public health sector, suggesting that the arguments for the use of duplicate private health insurance to reduce burdens in the public system are not as straightforward as they may appear.

2. STRUCTURE OF THE PAPER

I will begin with an introduction and description of the Australian healthcare system, and particular on its financing. I will describe the PHI environment in Australia, as well as a brief summary of the role PHI in different healthcare systems. Following on, I present a theoretical discussion of the arguments for mixed healthcare financing in Australia, focussing on the environment of a duplicate or parallel private health system. Next, I provide an empirical analysis of this framework, analysing key data in Australia, and then look to recent trends in the OECD,

to see if similar effects occur in other developed nations. Based on the theoretical and empirical work performed, I provide a discussion on the trends seen in Australia and the OECD, to understand how mixed financing has been affecting the overall financing of the Australian healthcare system. The results indicate that mixed healthcare financing in a duplicate system is rather complex, and not as straightforward as many argue. In light of this, policy implications are discussed providing a conclusion on the use of mixed healthcare financing in Australia.

3. PURPOSE

The purpose of this paper is to provide a theoretical framework for how mixed financing fits into the Australian healthcare system. Competition is frequently used in economic arguments as a source for efficiency improvements. Private involvement in the public sector is argued to be an effective form of cost control, not only for healthcare, but also for many other parts of a national economy. In Australia, and most OECD nations, we see complete Universal healthcare coverage, with similar goals to provide access to equal healthcare regardless of ability to pay. Analysing private involvement in this context provides an interesting framework, as in many countries such as Australia, there are arguments that the private sector can help reduce pressures in the public system. To understand this relationship in healthcare is particularly unique and complex. I assume that in the context of mixed financing, the goals of governments is to improve budgetary pressures of the healthcare system, while maintaining its universality. This raises an interesting question; can the private sector intervene to reduce burdens in the public system, whilst still maintaining the universality of the entire system?

Australia has been chosen as the case study due to its unique system. It has frequently been rated as a world class healthcare system. Where it provides an interesting case is in the relatively large portion of the population who hold PHI, even in the presence of a strong and effective public healthcare system. Unlike some other countries, Australians who hold PHI do not, and cannot opt out of the public system. Rather, when they hold PHI, they have the choice of using either the public or private health system. If they use the public system, it is fully paid for under Medicare and they are treated as a public patient as would any other individual who does not hold any PHI.

Previous studies on the impact of PHI on the public system in Australia have used waiting times as a focus of the burden. I choose to focus on the financing of the system to see if PHI can act

as a substitute for the public system. What I aim to look for is the substitution effects of private health financing. I analyse the impact that the private health sector can have on both the demand and supply for the public system.

If the private system helps to alleviate cost burdens in the public system, then this may give weight to the argument of a private system supporting a public system. From a financing perspective, a positive argument for PHI intervention would be a significant inverse relationship between private health spending and public health spending. This would demonstrate that the private system helps alleviate the burden effectively on a dollar for dollar basis. An insignificant inverse relationship or even a positive relationship may indicate otherwise. This is critical in the Australian system due to the heavy subsidies paid by the government for both PHI policies and private procedures themselves. An ineffective substitution could mean government spending could be directed elsewhere for better benefit for both the public health system and general government finances.

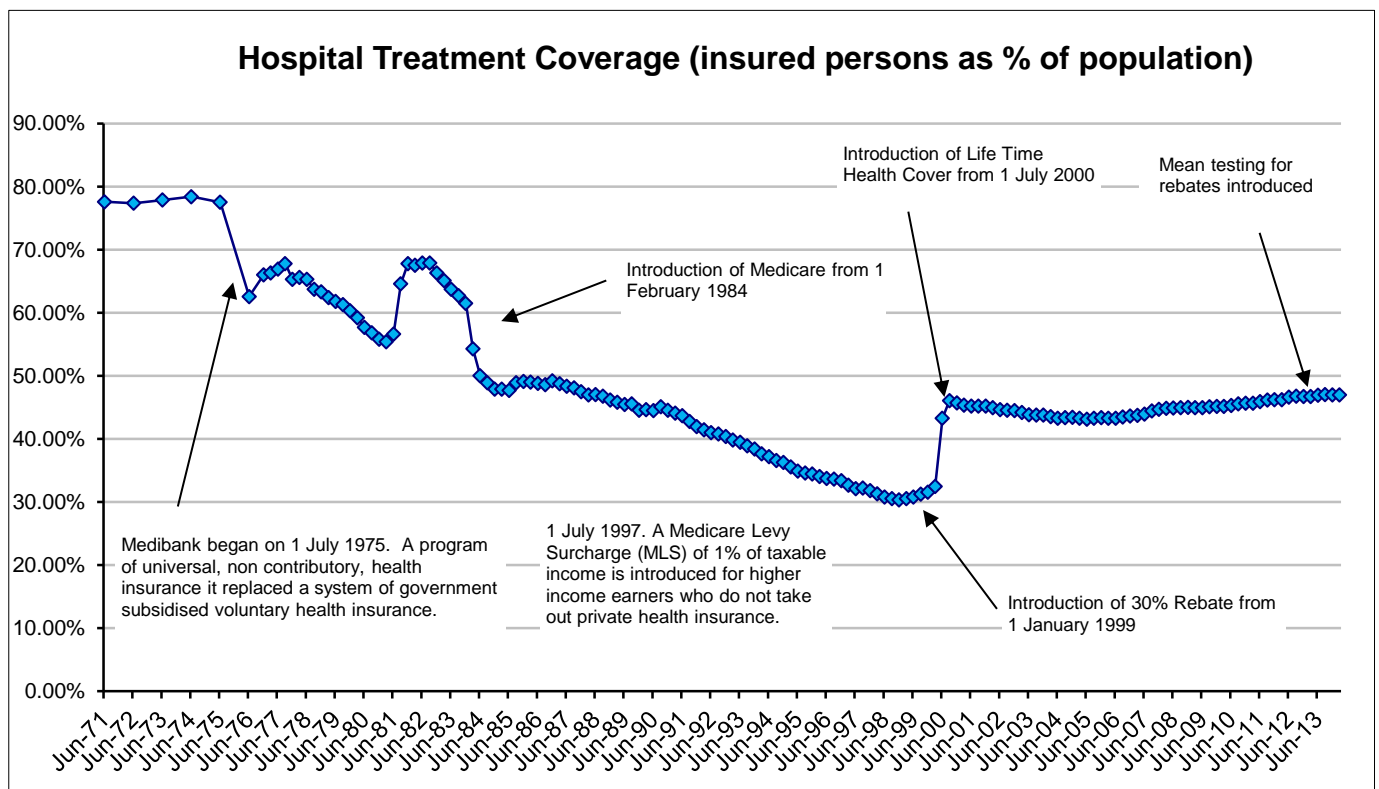
For the purposes of this essay, PHI refers specifically to private health insurance, whereas private finance and private health spending refers to both PHI costs and total out of pocket (OOP) expenditures. In many countries, including Australia, PHI and OOP are linked, since private insurance may have deductibles and other expenses not covered. In the Australian context, the public hospital system is generally completely free at point of service, apart from pharmaceuticals. Those treated in the private system generally face OOP expenses in most transactions.

A common argument heard for promotion of PHI in Australia is that the private system can be used to reduce the burden on the public system. Others argue that it creates a system of queue jumping, and takes away resources from the public sector, while insufficiently reducing the demand. This is an extremely complicated and detailed issue, and in this paper I aim to provide a simple analysis to show that the relationship of private and public health finance is a complex one with many important considerations that may currently be neglected. Suggesting the theory behind the arguments for the use of PHI, along with recent evidence from both Australia and the OECD, I see how private finance may affect the public system. I aim to demonstrate that the focus of policy discussion should be on how to reform the public and private system, rather than a goal to substitute public for private finance in the goal of assisting the public system.

4. THE AUSTRALIAN HEALTHCARE SYSTEM

As stated, the Australia healthcare system consists of a large public tax funded system called Medicare, and a parallel private health industry. With more than 90% of PHI holders in Australia having a duplicate form of insurance, this will be the focus of this paper. I focus on this section of PHI since it is the driving force behind the both the proponents and opponents of PHI in Australia. Given this relatively unique approach to financing healthcare, Australia makes for an interesting case study for health care financing. Additionally, due to the heavy subsidisation of private cover in Australia, it raises many implications for policymakers. With such a heavy push for subsidies, financing of the system is critical. If there are negative spill over effects from the private system, then government expenditure on private health care could essentially be working against its own spending on the public system. Segal, L (2004) has commented on a potential crowding out effect in Australian healthcare system where the government may in fact be crowding out itself.

Table 1:



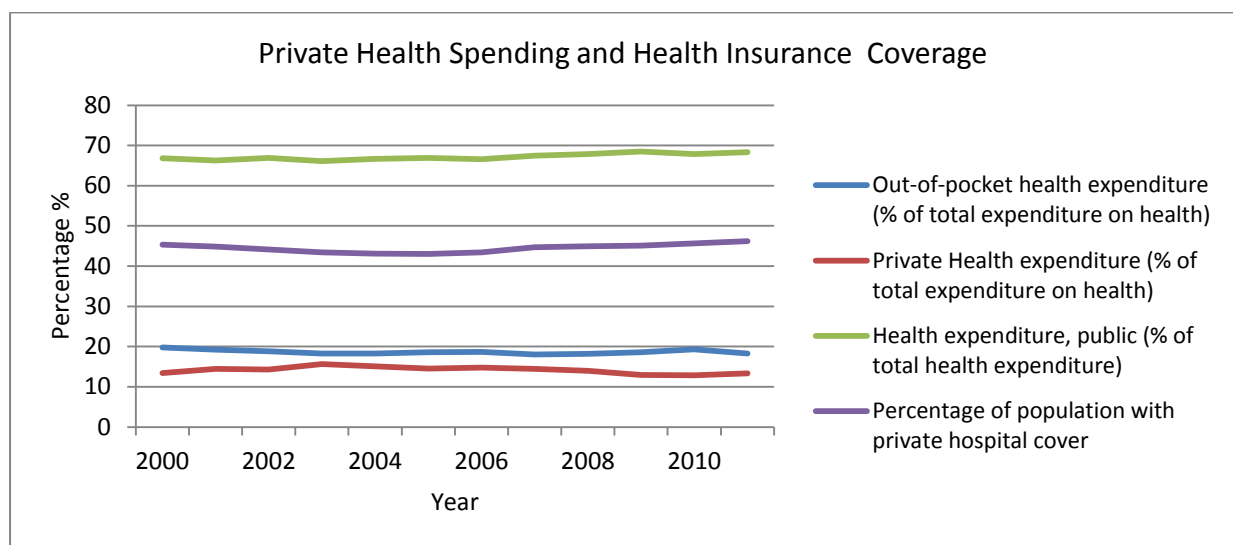
Source: Private Health Insurance Administration Council (2014)

The above table demonstrates the population covered by hospital treatment PHI in Australia. The PHI policies shown in the table as described in detail in the next section. We can see that following the introduction of Medicare in 1984, we saw a steady decline in PHI rates. The

conservative Coalition government in the late nineties began a series of reforms targeted at increasing PHI rates. These can be seen in the table beginning in 1997 and as explained in detail below. It can be seen from the table the sharp rise in 1999 and 2000, with a slight decrease and then slight increase seen since 2001. While from the graph it appears to show a sharp jump from the introduction of the rebate in June 1999, the consensus is quite mixed as to the effectiveness of these rebates. This is discussed in the previous research section, with studies such as Chai Cheng (2013), Hamilton & Denniss (2002) and Robson & Paolucci (2012) highlighting some inefficiencies in the subsidies. From the graph it also appears that there was a drop in coverage post the introduction of the life time health cover. However, when considering this, it should be noted that the life time health cover was announced a while before it came into effect, and thus studies such as Chai Cheng (2013), Hamilton & Denniss (2002) and Robson & Paolucci (2012) have found that the lifetime health cover has been a significant contributor to rising PHI coverage rates.

Recent trends in Private hospital coverage and healthcare expenditure are shown in Table 2.

Table 2:



Source: Out-of-pocket expenditure taken from the World Bank, Private Health Expenditure and public health expenditure taken from OECD, Percentage of population with private hospital cover taken from PHIAC (2013)

The above table demonstrates that the public percentage of total health spending has been slightly increasing in recent years, with drops in private health spending. In the above, Private Health expenditure refers to private health spending not including out of pocket expenses paid by individuals, which is also shown above. The above table demonstrates that the public

percentage of total health spending has been slightly increasing in recent years, with drops in private health spending. In the above, Private Health expenditure refers to private health spending not including out of pocket expenses paid by individuals, which is also shown above.

The mix of private and public healthcare can be a highly political driven issue. Mou (2013) finds that the mix is largely driven by the political beliefs of the leading parties. In the Australian context, we see two major political parties; the current conservative Coalition government, and the left leaning opposition, the Labor party. The two parties both believe in some use of a private system. The following outlines the most recent policy approaches as follows:

“The private health rebate is now fairer, with low and middle-income earners no longer subsidising the private health cover of high-income earners. This will free up \$100 billion to be reinvested into better health services over the coming years.” Australian Labor Party (2013)

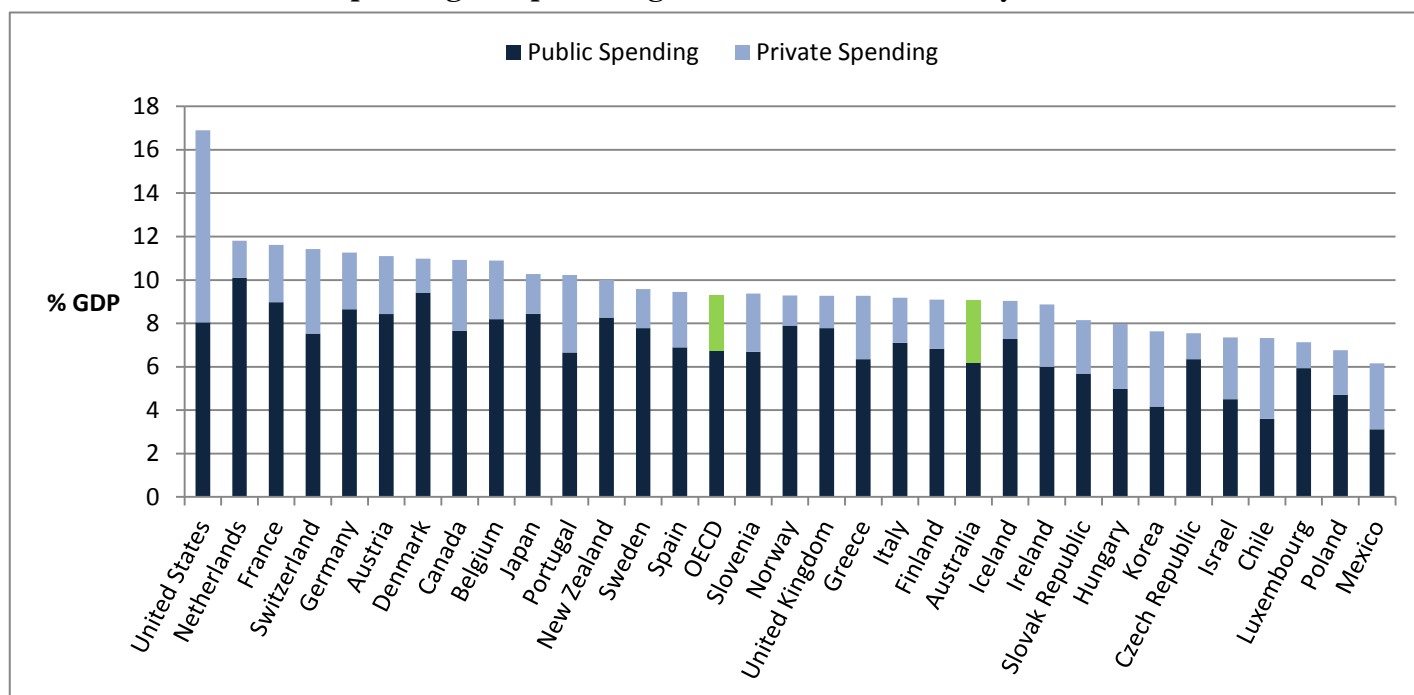
“The Coalition supports private health insurance as an important complement to our public system. The Coalition will reinvest in private health insurance once fiscal circumstances allow. Importantly, a Coalition government will alleviate the burden on our public hospitals by reinvesting in private health insurance rebates as soon as fiscal circumstances allow.” Coalition Party (2013)

The quotes from the two major political parties highlight that both support private health insurance, though to differing degrees. The left leaning Labour party still support a rebate of some sort, although with a focus on rebating low income earners, this suggests their focus may be on helping lower income earners enter the private system. The right leaning Coalition party have a stronger positive stance, indicating a return to previous subsidies for PHI. As is the case in many health care systems around the world, the Coalition use the word “complement” thus indicating the push for choice in the healthcare system. From an economic point of view, the Coalition is a proponent of PHI with the view that it reduces the burden on the public system.

4.1 Recent Trends in Australian and OECD private healthcare

Table 3 shows total health spending in 2012 or most recent year, displaying that Australia appears to be just below average in the OECD in terms of spending as a percentage of GDP. From the table, we can see that public spending as a percentage of GDP is slightly below OECD average, and private spending as a percentage of GDP is slightly above average.

Table 3: Health spending as a percentage of GDP, 2012 or Latest year



Source: OECD Statistical Database

Table 3 shows the recent trends in the portion of private spending as a percentage of total health spending. Australia follows similar trends to the OECD, maintaining a slightly higher average portion of private expenditure as a percentage of total health spending.

When taking into account key health indicators such as life expectancy at birth, where Australia performs near the top of the OECD, it can be seen that relative the OECD the Australian healthcare system achieves its goals at a relatively efficient rate, spending less than many other healthcare systems, and achieving similar or better outcomes.

4.2 Types of private health insurance in the OECD

With many different approaches to healthcare across the OECD, it is important to understand the role of PHI in different countries. Most OECD countries have achieved universal, or near universal health care in current times. Across the OECD, we saw four types of health insurance roles for the OECD:

1. *Primary insurance* –Basic and general cover is provided by PHI. This occurs in countries such as the United States, Germany and Chile. In Australia, primary insurance is provided by the publicly funded system
2. *Supplementary Insurance* – PHI covers additional goods and services not covered by the primary system. This occurs in many countries, including the Netherlands, Israel, Austria

and Switzerland. In Australia, this makes up a relatively small portion of PHI and private spending on areas such as dental and physiotherapy.

3. *Complementary Insurance* – This refers to a cost-sharing in PHI, whereby PHI will complement the general insurance to cover costs that are not otherwise covered. This occurs in countries such as Australia, Belgium and Canada.
4. *Duplicate Insurance* – PHI covers the same health services already included in the government insurance program. Generally it offers a choice component, as well as different level of service, i.e. faster access. This is the main form of PHI in Australia, and also occurs in countries such as Ireland, Spain, Greece, Mexico and Israel.

It is important to note that the above are not mutually exclusive. It can be the case (and often is) that PHI may provide multiple roles. As already mentioned, a small component (approximately 6% of the total population as of 2014) of PHI in Australia is supplementary.

4.3 Private Health Insurance policies in Australia

When discussing the goals of the Australian healthcare system, it is important to understand the median voter, as well as the major political parties. Australia has two major political parties, with the Coalition government currently in power, with the opposition Labor party and some minority parties holding the remaining seats. However, the Coalition government does not hold majority in the Upper house, with the balance of power being held by minority parties. The Coalition government, led by Tony Abbott has led to an increased focus on Medicare costs, with much current conjecture and discussion about the future policies. Currently, no major reforms in regards to the three major policies discussed in this paper have been put through. However, the Prime Minister has stated his desire to return to the non-means tested Private Health Insurance Rebate (PHIR). PHI in Australia is also very regulated with community ratings and no exclusions.

As noted in table 1, there are major government policies towards encouraging holding PHI in Australia as follows; they are as follows:

1. The *Medicare Levy Surcharge* (MLS) – All Australian taxpayers face a Medicare levy of 1%. In addition to the levy, there is a surcharge, the MLS, for individuals who are above certain thresholds, and do not hold an appropriate level of PHI. There is no surcharge for those who earn under \$84,000, and then there are 3 tiers with surcharges of 1%, 1.25% and 1.5% as incomes fall into different brackets.
2. *Private Health Insurance Rebate* (PHIR) – Those who purchase PHI are entitled to a government rebate according to different income brackets. Same tiers as the MLS,

however with opposite outcomes. The bottom tier receives up to 38.72% rebate according to age, while the top tier receives zero rebates.

3. *Life-time health cover (LHC)* – A unique policy designed to encourage PHI for younger ages. If an individual does not have PHI cover by age 30, for every year after that they do not hold PHI, their premium will face a 2% loading when they decide to join a health fund. For instance, an individual joining at age 40 will pay a 20% loading on their premium every year. This is capped at 70%.

There has been considerable debate about the effectiveness and equity of the above policies, with each policy being unique and leading to potentially different outcomes. The major papers in this area are discussed in the previous research section.

In Australia, the government defines the cost of each medical service or item through the Medicare Benefits Schedule (MBS). In public hospitals, generally 100% of the MBS amount is paid for by the government, with public hospitals generally not allowed to charge a co-payment. However, a private service may essentially charge any fee. The Australian government covers 75% of the MBS amount for private health procedures, regardless if an individual holds PHI. If the service is above the MBS amount, which is almost always the case for a private service, then various scenarios may occur. As such, private fees are basically unregulated, with the MBS acting as a floor price. Some physicians may enter into ‘gap agreements’ with PHI funds so that an individual’s PHI will cover all extra costs. If these are not entered into, then the PHI holder will receive 25% of the MBS amount from their PHI company, and be out of pocket for the remaining amount. The most recent statistics from the Private Health Insurance Administration Council in Australia (2014) show that a relatively small portion of total private procedures (less than 5%) were under a known gap agreement.

5. PREVIOUS RESEARCH

I refer to key relevant studies in the area of mixed health care, seeing evidence from Australia and the rest of the world. Previous research in Australia has focussed on waiting times, with Duckett (2005) performing an analysis finding median waiting times in Australia inversely related to the proportion of public patients. This finding is based on the design of the systems in place in Australia, commenting on the perverse incentive for surgeons to maintain waiting times to induce patients to seek private care. The study concludes that policymakers should be cautious expanding private insurance as a means to reduce burden. This is highly relevant for analysing the financing of healthcare; if the evidence suggests waiting times are not going down, it may

relate to cost pressures. Duckett also highlights that the relationship of mixed healthcare could be driven by either public or private sector actions (or both). If we see a failure of the public system to address the demand, then this can influence the private market response, as opposed to the crowding out impact of private care.

Segal (2004) comments that it is critical to understand that a universal public system changes the role that a private system plays, yet current policy is dictated towards ignoring this point. As Segal comments, with a fully encompassing public system, there is no incentive or even rationale for a private insurer to offer similar, but rather focus on the profitable areas that they can adopt from the public system. This appears to be an intuitively valid argument in the Australian system, and the analysis by Segal on the composition of private health services support this claim.

Chai Cheng (2013) and Eldrige et al (2013) find that patients with PHI are more likely to use private treatment. In Australia, individuals can still use the private system without PHI, and they still receive Medicare rebates. They will just face larger OOP expenses in the process. These studies are important in this paper as there are subsidies for both PHI and for private health procedures. As such, I do assume in the theoretical section of this paper that increasing PHI rates should increase the demand for private health services.

Touhy, Flood & Stabile (2004) comment that the design of the Australian system, with highly subsidised private systems may exacerbate rather than assist the problems associated with a parallel private system. This is due to subsidies reducing the actual cost of private system, and also providing further incentive for physicians to operate in the private industry. The authors note that the policies in the late 1990's and early 2000's have resulted in extremely large levels of public subsidy. This study provides an empirical framework for analysing the financial relationship between private and public spending, and I build on this in the later empirical section.

In the Australian context, another interesting issue can arise. Since the Medicare levy acts an incentive, particularly to higher income earners to take up PHI, there can be a potential issue of people taking up PHI simply to avoid paying the surcharge. Hamilton & Denniss (2002) estimate 735,000 people taking up PHI to simply avoid the tax. I consider this as an argument in my theoretical analysis. This also ties in the Medicare Rebate, where some see it as producing a net loss to the healthcare system, with many receiving a subsidy for something they would still purchase in the absence of the subsidy. In countries like the Netherlands, Switzerland, Israel and the USA, the government may subsidise those in need of health insurance. However, the

Australian Government already fully subsidises all citizens through Medicare. Studies such as Chai Cheng, (2013) indicate that these subsidies may actually be unprofitable. In 2008, the Labour government decided to means test the rebate, with many from the private sector predicting a significant drop in PHI rates. Since 2008 rates, PHI rates have continued to rise, suggesting that the previous rebates may have in fact been a costly procedure. Robson, A, Ergas, H & Paolucci, F (2011) have performed an analytical analysis, identifying demands for PHI coverage, and the impacts of the rebates.

White (2009) comments on the arguments for and against duplicate or parallel insurance, including those on how the private sector may provide its care from extra or new resources. On the other side, we see the argument of the lucrative nature of the private sector naturally drawing away the supply of services. Additionally, we also see arguments of deliberate waiting times in order to induce demand in the private sector, and even some potential flow on effects of private coverage on the public system. White also highlights three conditions for a parallel system to have a positive effect on the public system, which include:

- a) “if parallel coverage does not create perverse incentives to reduce efficiency in the statutory system”
- b) “if parallel coverage raises extra resources that cover the costs of any extra care”
- c) “and if these extra resources are not funds that the government could have used for the statutory system” White, J (2009), pp 571-572.

The above three conditions will be considered in further discussions when analysing the demand and supply effects. Points a) and b) are critical in a demand and supply analysis of public and private care, as they demonstrate the way the substitution of private and public care would need to operate to generate a positive outcome. Point c) is relevant for the empirical results. While it may produce a positive impact, the question that still needs to be answered is if the money could have been spent elsewhere in a more effective way. An interesting conclusion is reached, that the government may be crowding itself out. If the government is raising the prices of medical care through its subsidisation of private care, then the policy is actually working completely against its goal.

Ireland operates probably the most similar mixed financing system to Australia, with duplicate insurance numbers similar to Australia. As Nolan (2006) highlights, serious equity concerns have been raised in Ireland, as well as efficiency issues due to the incentives in the system. These are quite similar arguments to those seen in Australia. As Nolan notes, it can be rather difficult to

compute if the private sector is using previous public resources, or additional resources it brings in. The authors highlight, then when the systems are so intertwined, it becomes particularly complex to quantify the exact financial relationship, especially when subsidies are involved. These arguments are all similar to those in Australia, showing that the issues are faced in other countries. Like some of the studies in Australia, the authors also highlight that there has been no attempt to actually assess the quality benefits a private system has brought to the public system. In other countries, studies such as Hurley et al (2002) and Glied, S (2008), both studies in the Canadian health system, highlight some caution to using Australia as an example of successful duplicate insurance, suggesting both equity and financing issues. Colombo, F & Tapay, N (2003) also provide a useful overview of the private health system in Australia, highlighting issues that it faces.

On the topic of PHI subsidies, Chai Cheng (2013) concludes that reducing PHI subsidies would lead to a net cost savings for the government. This is largely based on the conclusion that of the demand elasticity of PHI in Australia. Chai Cheng concludes that many individuals would continue to purchase PHI even without the subsidies. The study also focusses on the other two PHI policies in place in Australia, identifying that they likely have a large effect on the demand for PHI, without using government money to increase demand. Robson & Paolucci (2012) perform an analysis of the introduction of means testing the PHI rebates, expecting PHI coverage rates to dip. They raise issues such as welfare losses due to individuals being encouraged into purchasing PHI which they value at less than it currently costs.

In my theoretical analysis, I highlight the substitutability of private and public healthcare in Australia. Efficiencies of both systems are important to consider, with Duckett and Jackson (2000) finding that with an appropriate adjustment for differential case mix, that public hospitals in Australia are 10% more efficient than private hospitals. This raises interesting questions on the supply side issues. Robson & Paolucci (2012) comment that when analysing the effects of reductions in PHI, it is important to consider the cost substitution rate of the private and public health systems.

On the specific topic of substitutes, Duckett (2005) concludes that in Australia, the public and private sectors are not perfect substitutes for one another. This conclusion is reached based on the findings that private hospitals specialise in elective surgery. He calculates that government expenditure for each additional patient treated in the private sector is well above the rate they pay in the public sector. With this, we see an argument that potentially the government is crowding itself out.

In regards to equity issues, we see many studies concerned of the benefits of PHI, both on the subsidies, and on who actually receives the treatment. Palangkaraya et al (2009) have highlighted income distributive effects.

The research above indicates that private systems, and in particular the one in Australia, may not be perfect substitutes for the public system. Analysis on waiting times indicate that as private spending increases, waiting times increase, hint that the private sector may not reduce demand as much as it absorbs supply.

6. THEORETICAL FRAMEWORK

In this section, I put forward a simple theoretical perspective on the arguments for and against the use of PHI, particularly in Australia. I use a simple demand and supply analysis to demonstrate that the relationship may operate differently to what some argue. I use a combination of theory from various papers to propose a demand and supply analysis of the public and private healthcare system. This is performed assuming a duplicate private health insurance environment. In this environment, it is simple to think of private and public finance as substitute's goods and services. As Robson & Paolucci (2012) comment, it can be complex to analyse how they actually act as substitutes.

6.1 Arguments for and against the use of duplicate Private Health Insurance

The opponents and proponents of duplicate PHI argue of different substitution effects. Proponents argue that the demand on the public system is reduced through more private services, while opponents focus on supply side issues, such as the private system taking away resources, as well as equity issues such as the evolvement of a two-tier health system. For this analysis, I focus on the demand and supply arguments. Equity considerations should certainly be a key consideration in any policy decisions, however for the purpose of a financial analysis, I do not consider them in the demand and supply outcomes directly. Rather, commentary from previous research on equity concerns will be mentioned in the discussion section.

To examine the demand and supply arguments, I study the scenario of an increase in the demand for private health services. I aim to interpret what may happen with a rise in the demand for private health services as a result of the policies in place in Australia. In this scenario, I do assume subsidies for both private health insurance, and for private procedures. As previously discussed, individuals without PHI can still go to a private hospital, they will just face a slightly higher OOP expense than an individual who holds PHI.

With the argument of reducing the burden on the public system, I examine the three possible outcomes of an increase in the demand for private health services in Australia.

1. *Private system reduces burden on the public system* – In this argument, the private system reduces demand in the public system by more than the reduction in supply
2. *Public option remains steady* – The public option can remain with its current quality/efficiency, however it decreases in size.
3. *Private system increases burden on the public system*– The private system reduces demand in the public system by less than the reduction in supply

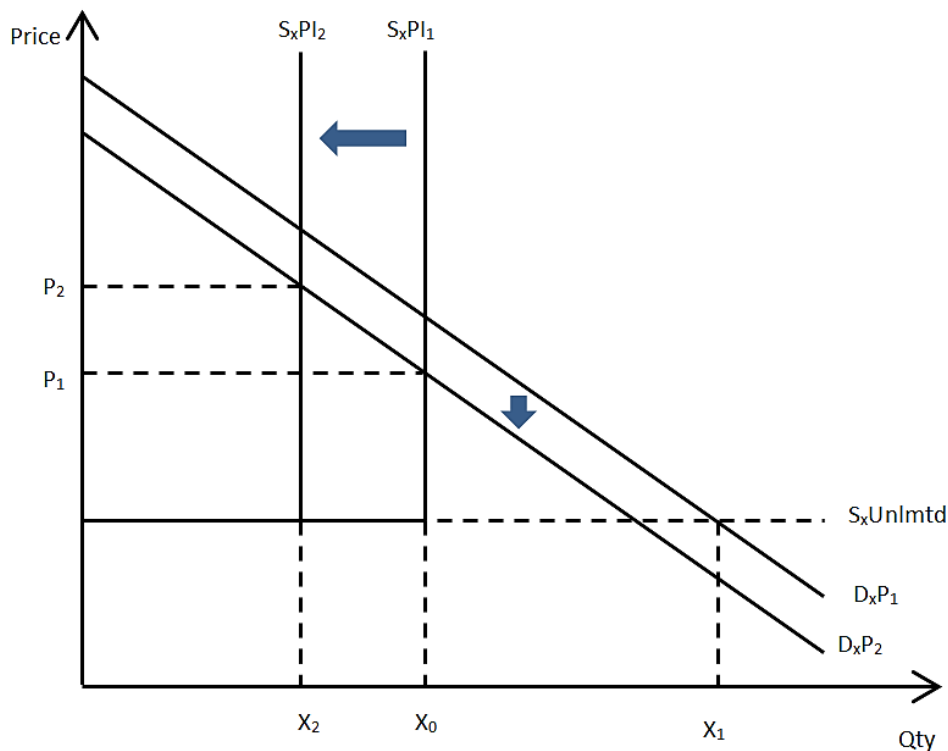
6.2 Theoretical Analysis

Using analysis from Eldrige et al (2013), I use their theoretical assumptions for the markets for public and private care, building on them in the context of health financing. Where Eldrige et al (2013) aim to calculate the demand effects, I aim to provide a theoretical explanation for both demand and supply effects. Whilst in Australia, duplicate PHI covers only hospital care, I perform this analysis assuming the markets are the same. A simple way to think of this is that the market for public health care that I use is the market for public hospital care. When equating this to the entire healthcare system, we would just expect the results to be smaller, since this is only a portion of the public healthcare market.

For simplicity Eldrige et al (2013) assume that the supply of public patient hospital care is perfectly elastic up until a capacity point, and then it is perfectly inelastic. This is illustrated in Figure 1. This appears to be a logical and simple way to approach the problem, and I will continue to do likewise. Since in Australia, the government tends to budget for certain amount of healthcare costs, we can view this as a strict amount, and then perform the analysis from there. This analysis has relevance for all duplicate systems, however, I provide a demonstration of the demand and supply movements in the Australian environment of subsidies for the private system. For other duplicate systems, we just need to take out the effects of subsidies.

As previously discussed, since it can be relatively easy for physicians to switch between public and private, it is important to consider that when demand for private care increases, we may see a decrease in supply of public care. Hence, I assume in this analysis, that once the demand for private care increases the capacity constraint may shrink shown in Figure 1 may shrink. This is indicated by the movement from X_0 to X_2 in Figure 1.

Figure 1 – The Market for Public Health Care



Note: X_0 corresponds to quantity before the increase in demand for private health services. Likewise, P_1 refers to the price before the same increase. The arrows reflect the movements in both curves due to the change in policy. In this case, I assume the government budgets a fixed amount, and once it reaches this, the supply curve is restricted, and as such is vertical.

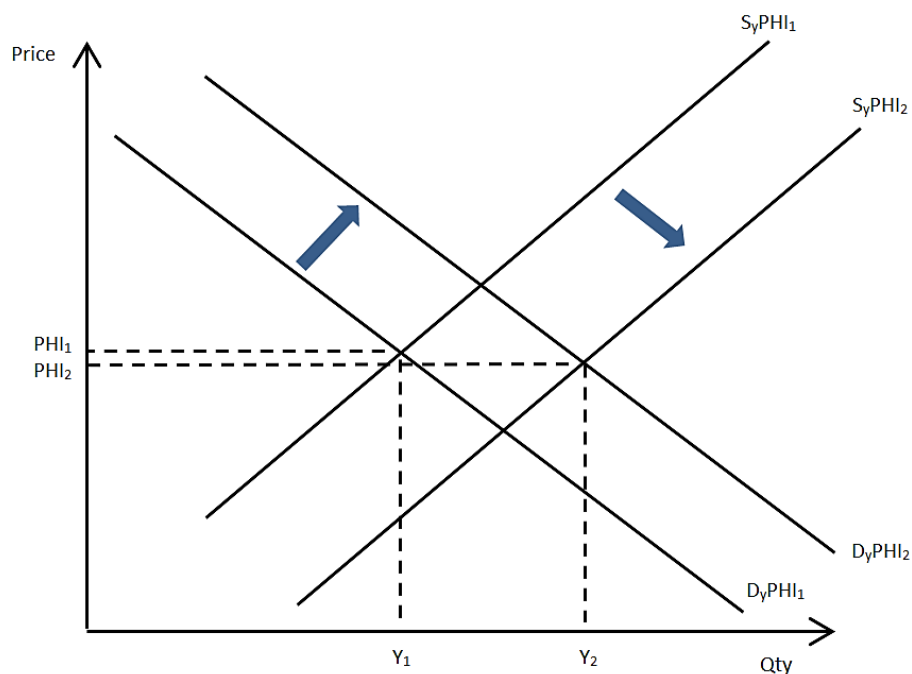
Due to both subsidy effects, and physician switching effects mentioned in studies such as Duckett (2005), we may see a decrease in supply. With this, we should also see a decrease in demand for the public services as some switch to the private sector. In the above I have demonstrated a scenario where the shift in supply is larger than the shift in demand. This is for a graphical representation to show how negative effects may occur. While we see a decrease in quantity, we see an increase in relative price. This could be due to a variety of factors such as economies of scale and more expensive procedures being left in the public system. Overall, in this scenario, to demonstrate a good outcome for the public system, we would like $P_1 * X_0$ to be significantly smaller than $P_2 * X_2$; this movement will then need to be compared to the movements in Figure 2.

Since private health insurance is subsidised, and every duplicate private service is subsidised by the government at 75% of the Medicare Benefits Schedule, I expect a decrease in the supply of public services every time a private service is used. If we assume a fixed amount of funding for healthcare, then more private insurance and more private services naturally decreases the supply

constraint since less funding is available for public care. This assumes that the money used on subsidising private is taken from the pool of public spending. However, a positive outcome of this, argued by proponents of PHI, is that the subsidies may reduce the total costs to the government.

There can be varying viewpoints on the capacity constraint of the public sector. This may come from a funding point of view, or from a supply side issues such as number of physicians. This is a key input into the entire process, and the drivers of this constraint will likely have big impacts on the outcomes when private spending is increased. The issue for this analysis is how the constraint moves as private spending increases.

Figure 2 – The Market for Private Health Care



Note: Y_1 refers to the original quantity before the increase in demand and supply. PHI_1 refers to the original price. PHI_2 and Y_2 refer to the new price and quantity with the increase in demand and supply for private health services. The arrows demonstrate the movements in the demand and supply curves as a result of the policies described. Unlike the public market, the supply curve in the private health market is upward sloping as in an ordinary private market. Private producers will want to supply more at higher prices.

In figure 2, I assume that we see both a demand and supply subsidy in the private health sector. I consider the three policies towards the take up of private health insurance (Rebate, Levy Surcharge and Lifetime health cover) to influence the demand for private services, and as such, we see an upward shift in demand curve. From the supply side, since the government also subsidises the private procedures, then we see an expansionary movement in supply curve. This is based on the assumption that an increase in PHI rates will lead to an increase in the demand

for private services. As discussed in the previous research section, various studies indicate that this is the case.

Critical components for analysis are how much the movement in figure 2 differs on a total level to the movement in figure 1. We would like to compare $PHI_1 * Y_1$ to $PHI_2 * Y_2$. With this calculated, we would like to calculate this ratio to determine the substitution rate. This can be done as follows:

$$(1) \quad \frac{(P_2 * X_2) - (P_1 * X_0)}{(P_1 * X_0)} = \beta \left(\frac{(PHI_2 * Y_2) - (PHI_1 * Y_1)}{(PHI_1 * Y_1)} \right)$$

In the above, β represents the substitution rate. In this duplicate system, we expect it to be negative. If a private procedure costs significantly more, then an increase in demand for private services, on a dollar level, may not decrease significantly, and as such β would be relatively small. If we think of an individual procedure, if it costs double in the private sector, ignoring subsidies, then it may take double the amount of spending in the private sector to reduce the same cost to the public system. If these were perfect substitutes, then β would be equal to -1.

Where it becomes particularly complex is deconstructing the figures into the relevant components in the Australian health care system. We have; Public health spending (PHS), Government subsidies for PHI (PHIR), government subsidies for private services (GPS), Private Insurance Coverage (PIC) and individual private spending (IP). I consider IP to consist of both insurance premiums, and OOP expenses. PIC refers to the amounts spent by Private Insurance funds, that is, how much they cover on a particular service or good. The argument I am looking at, is what happens to PHS when IP and PIC increase. In the Australian environment, it becomes more complex, as we see GPS and GS influencing the private demand. I have already commented that these both decrease the supply in the public market. Figure 2 demonstrates the impact of GPS, whereby we see a shift in the supply of private services. This also reduces the budget constraint in Figure 1 for each service that occurs. It can be easy to see that this is a complex mix of payment providers.

In Figures 3 and 4 in Appendix 2, I demonstrate how the demand and supply may change when government subsidies on PHI policies are removed. Using analysis from Chai Cheng (2013), I assume that an increase in the supply of the public sector, that is larger than the decrease in the demand in the private sector. Without considering the Australian context, this may seem like an unusual outcome. However as Chai Cheng comments, this is due to the already existing policies in place for the take up of PHI in Australia, and also the value many individuals already see in it.

Since individuals may already purchase PHI in the absence of subsidies, then the government may be shrinking the public sector using its own funding to do so. If the subsidies are removed, without much of a decrease in demand for private services, we may see a stronger relationship between private finance and public finance. We may also see a better outcome in the public sector, since we can assume there is more funding available. As less government expenditure is used to stimulate private demand, the negative relationship should grow stronger. This of course assumes that decreasing the PHI policy subsidies will not significantly decrease the use and take up of PHI. As the trends already stated have shown, since the rebates for PHI membership have become means tested, PHI rates still continue to rise.

It is important to consider the nature of duplicate private health insurance, as occurs in Australia. Under duplicate private health insurance in a strong universal healthcare system, it appears unlikely that the private system would actually stimulate demand in the public system. While in the Australian system there may be certain services that are not completely duplicate, such as dentistry, these make up a relatively minimal amount of coverage and as such, are not separated as part of the analysis. The impact is likely very minimal, and as such, for the purpose of this theoretical argument is ignored.

As the graphical analysis demonstrates it is important to understand the movements in both demand and supply in these scenarios. In the Australian system, we need to take into account who pays for the extra supply that the private system takes. As I demonstrate in the figures, with subsidies in place, the extra supply taken in the private sector is funded by the government, effectively reducing funds in the public sector. Since every duplicate private service in Australia is subsidised, they all contribute to a reduction in supply for the public sector. A key point for consideration is the shift in the demand curve in figure 2. Due to the use of an additional levy for higher income earners in Australia who do not purchase PHI, many have argued to remove or change the structure of the subsidies for PHI policies in Australia. Analysis in Chai Cheng (2013) suggests that this demand curve is already shifting this way through other PHI policies in place such as the Medicare Levy and lifetime health cover, and as such, the government may be subsidising demand that is already there. This means that if parts of the subsidies are removed, we may see little or no change in figure 2, but a shift outwards in figure 1 due to the increased funds the government may now have.

The critical component of this analysis is how the funding relates in the change from private to public. Two distinct effects that are of importance are how much the extra services in the private sector cost, and how much of this was subsidised. If the costs of these procedures are significant,

then this indicates it would take a significant increase in private spending to have a large effect on the public system. Additionally, the portion of this that is subsidised must also be larger than the decrease in public spending, otherwise we see that government spending may be increasing due to its own policy. Separate to the actual costs, is also the consideration of where the resources are coming from.

In terms of health care financing, under this scenario, we would expect private finance to either have a slightly inverse relationship to public finance, or potentially (but unlikely) a positive relationship. By slightly, I refer to a relationship where an associated rise in private finance is associated with a fall in public finance that is less than the rise in private finance. If we assume a fixed amount of government spending, then the Australian system of subsidisation may potentially exacerbate the worries of supply side issues. Since incentives may be ripe for physicians to operate in the private system, we not only see a decrease in the number of available physicians, we actually see a decrease in funds for the public sector as a result of them leaving to operate in the private sector.

The theoretical analysis above, in line with the previous research in the field demonstrates in a simple way how the interaction of private and public healthcare may occur in Australia. In the above analysis, I ignore any potential learning improvements a private industry may bring, such as efficiency or advanced research. I do not suggest that there is any evidence for or against this argument; rather I examine the relationship between the private and public system in terms of demand and supply, excluding any learning impacts.

It is important to consider that if the private system is actually increasing a burden on the public system, then this in itself may stimulate the demand in the private system.

Overall, the theoretical analysis displays the possible scenarios for how the financing of healthcare can be affected in a mixed healthcare system with duplicate private cover. I have provided a simplified analysis of how the two markets may substitute for each other, and what may be driving this relationship. The relationship is obviously more complex; however this is rarely discussed by policymakers. I try to demonstrate that even at a simplified level, there is much to consider when involving a duplicate private health insurance system in an environment with a large and universal public system.

Following on from the theoretical analysis above, what I expect to see in the data on Australia and other duplicate healthcare systems is some sort of decrease in public spending as private spending increases. A small inverse relationship would suggest that the private system acts as a

substitute that may reduce some public spending, but overall leads to increased healthcare costs in the economy. For a positive argument for the use of duplicate PHI, a strong inverse relationship would need to be seen. This would suggest that the private system acts as an effective substitute, and increasing private expenditure can reduce financial burdens on the public system quite effectively, and for a relatively low cost. As mentioned, what I would like to identify is how much does private spending does it take to reducing public spending. This essentially quantifies the movements in figures 1 and 2. Quantifying the analysis from the graphs provides a numerical understanding of this relationship, and this follows in the Empirical section of this paper.

7. EMPIRICAL ANALYSIS

In this section, trends in Australia and the OECD are discussed and analysed. While the three policies mentioned for PHI uptake in Australia are relatively unique, it is also useful to analyse the trends in private health finance in the OECD, and in particular, those OECD countries with a duplicate insurance system to see if other major healthcare systems observe similar outcomes to Australia. With panel data across the OECD, we can analyse relationships in other countries to provide evidence of how private finance may perform in other healthcare systems, and may also highlight where Australia is either performing strongly or weakly.

The relationship I am interested in, as similar to the theoretical section, is what occurs to public spending when private spending increases. As I have stated previously, private spending refers to all spending outside the government; essentially contributions made by both private insurance funds and also OOP expenses. This can be a particularly hard relationship to quantify due to various influencing factors, however, a simple analysis can be performed to analyse the relationships. Whilst a simple analysis at the economy level may not provide sufficient results to prove causation, they can show an association between private and public spending across Australia and the OECD. Secondly, what this empirical analysis aims to show is that if the mechanisms in place were so simple that increasing private health spending would decrease public spending, then we should at least see some significant evidence of this using health spending data at the economy level.

7.1 OECD Analysis

To start with, I analyse the data at the entire OECD level. This provides an overview of how private insurance functions across all the major developed health systems. I believe this is of relevance to both the theoretical framework, and empirical evidence for both Australia and the

OECD, to see a comparison of how private financing is related to public financing across the entire OECD. Whilst different private health systems are in place across the OECD, this will highlight the use of private insurance in other developed nations and is a useful comparison for Australia.

For the OECD data, I build on the specification in Touhy, Flood & Stabile (2004). This involves regressing the lagged effects of private spending on public spending. Extending the previous study, I use the same data, in addition to more current data to examine the effects across the OECD. Following this, I then disaggregate the data into similar healthcare systems to Australia, and then just to Australia itself. The key reason I present all three of these in this particular paper is to demonstrate the different outcomes that we may see across different healthcare systems. This may show that private systems can work in many different ways. Since this is annual data, the sample size is quite small for Australia, and as such, I use the duplicate insurance countries to make some judgements for Australia.

Touhy, Flood & Stabile (2004), page 382, specify the following model for analysing the financial relationship between public and private spending across the OECD.

$$(2) \ln(\text{pubhs})_{it} = \alpha + \beta \ln(\text{privh})_{it-j} + \theta \ln(\text{pubsp} - \text{pubhs})_{it} + \pi \ln(\text{toths})_{it-j} + \tau \ln(\text{GDP})_{it} + \delta t + \gamma_i + \epsilon_{it}$$

Pubhs refers to total public health spending. Private health spending refers to total private health spending, which includes both OOP and PHI costs. This coefficient reflects what is specified as β in the theoretical section of this paper. This is lagged using 1, 2 and 3 year lags to estimate the effects. The remaining variables act as controls variables for the model, with $\text{pubsp} - \text{pubhs}$ referring to total government spending in a year, excluding health spending. *Toths* refers to total health spending, and like private spending is also lagged. Additionally, *GDP* is used, along with country (γ_i) and year (δ_t) controls.

In the previous study of data from 1980 to 1997, Touhy, Flood & Stabile (2004) find that across the OECD that a 10 percent rise in private spending leads to between a 1 and 3 percentage decrease in public spending. This indicates that they do not act as perfect substitutes, as it takes significantly more private spending to reduce the public spending. The results are quite interesting, and differ to Mou (2013), who find that when using a mix of OECD countries, a slightly positive outcome with a 1 year lag.

I use more recent data, extending the period from 1980 to 2011 to see if any differences have occurred. All data is obtained from the OECD except for total public spending, which has been obtained from the World Bank. GDP and total public spending minus health spending act as controls for fiscal capacity of the government and for any annual shocks. For a full list of the countries used, refer to table 4.

Table 4: Estimation results for all OECD Countries

Model	All Lag 1	All Lag 2	All Lag 3
PrivHsp ₋₁	-0.001		
PrivHsp ₋₂		0.059***	
PrivHsp ₋₃			0.017
GDP	0.529***	0.511***	0.544***
Toths Lag _{-t}	0.152***	-0.010	-0.047
Pubsp _{-pubhsp}	0.152	0.005	0.0294**
N	712	676	643
R	0.356	0.367	0.397
Durbin Watson	1.933	1.672	1.78

* p<0.10

** p<0.05

*** p<0.01

Countries: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States

I make one key change to the model specified above. Unlike Touhy, Flood & Stabile (2004), I use a first difference approach due to the non-stationary nature of the time series data. The parameters are estimated with cross-section and period fixed effects. When analysing the data at log levels amounts, through the Augmented Dickey Fuller Test, I found evidence of a unit root in the data on the level of public health spending. The results of the test on log levels of public health spending and private health spending data are shown in Table 4. I also show the results of testing for a unit root with first differences being applied, rejecting the null hypothesis of a unit root. Additionally, when looking for autocorrelation, there is serial correlation in the levels data, as evidenced in Appendix 1. The correlogram for both log levels of private health spending, and the first difference of log levels of private health spending are displayed, demonstrating the fix for the autocorrelation problem in the data.

Using a first difference approach to the above specification, I find results as seen in Table 4. Here I find only significant results for a 2 year lag, with a positive relationship seen. The results show some similarity to Mou (2013), however the coefficients are hard to compare, as Mou uses

the share of private spending, whereas I use the change. These results suggest that a 10% rise in private spending would increase public spending by approximately 0.5%. These are likely driven by the more dominant role that Complementary and Supplementary PHI plays across the OECD.

The results vary significantly to the Touhy, Flood & Stabile (2004). I attribute most of this variance to the change in approach. As the data is non stationary, I have corrected for this, and expect different results. This is also reflected in the next component, where I select the countries with duplicate coverage, noting that this is only a small portion of the OECD countries.

Additionally, total health expenditure has consistently grown since then, averaging 6.9 percent of GDP in the previous study by Touhy, C J. Flood, C M, Stabile, M (2004), compared to 8.3% over the years I use. This provides a new and relevant dataset to perform the study, since many countries, including Australia, use the argument of private intervention in the climate of total rising health costs. Hence, it is particularly relevant to analyse the data in the environment of rising health costs, to see if private finance can act as an appropriate substitute across the OECD.

The results across the OECD suggest it is critical to understand the actual role that PHI plays in a healthcare system. Whilst the systems are not similar to Australia, the results can indicate that if Australia opens up its PHI industry to more complementary and supplementary services, then we may see it follow some of these results.

7.2 Duplicate Insurance Studies

To provide additional relevance to the Australian situation, using classifications similar to Mou (2013) I perform the same regression as above, picking the countries, which like Australia, operate a duplicate private health insurance system. This provides a relevant data with sufficient sample size, as we can see how PHI and the public system operate with similar market forces. While each of these countries have different systems and policies in place, they may provide evidence that is relevant in this analysis. If we see different relationships across different systems, it provides evidence of how different policies can work in similar environments.

I run the same model as above, again using a first difference approach to ensure the data is stationary. This time I only select the countries with private insurance that is mainly duplicate. I base the classification on the OECD Health at a Glance (2014) and Mou (2013), which results in Australia, Finland, Ireland, Spain, Portugal and the United Kingdom. Whilst some countries may

have some form of duplicate insurance, the OECD has viewed some as negligible in size, and as such, I only include the above countries. The results are reported in Table 5. In these results, contrary to the OECD results above, we see some evidence of a negative relationship. Similar to Mou’s study, I find significant results only with a 1 year lag. This suggests in countries with duplicate insurance, a 10 percent increase in private health spending would decrease public spending by approximately 1.3 percent. This is a rather small relationship, indicating that in these systems, private spending is not a large contributor to a drop in public costs.

Table 5: Estimation results for countries with Duplicate PHI

Model	Duplicate Lag 1	Duplicate Lag 2	Duplicate Lag 3
PrivHsp ₁	-0.134**		
PrivHsp ₂		0.067	
PrivHsp ₃			0.031
GDP	0.6251***	0.714***	0.718***
Toths Lag	0.139	-0.012	-0.062
Pubsp_pubhsp	0.003	0.010	0.033
N	190	181	174
R	0.40	0.339	0.416
Durbin Watson	1.8747	1.77	1.773

* p<0.10

** p<0.05

*** p<0.10

Countries: Australia, Finland, Ireland, Spain, Portugal and the United Kingdom

These results are certainly not conclusive, as there are many other factors to consider. As Mou (2013) suggests, results like those above do not necessarily indicate proper causation, rather an association and trend of what has been occurring. There are many mechanisms in place which the data does not consider, including deliberate policy interventions that may take place in the individual countries. Further composition is required of the data to understand what is occurring at both the public and private level. It is particularly complex in Australia due to the subsidies involved.

However, the results demonstrate that the simple argument that the private system helps “reduce the burden” in the public system is not as straightforward as suggested. The results indicate that private spending may not have a large impact on public spending, suggesting that demand for the public system remains strong as private expenditure grows. As the results show that private spending does not result in a likewise drop in public spending, this raises the condition stated in White (2009) of where the resources for the private sector come from.

7.3 Australian Trends

With the above results for comparison, I run a similar time series regression on Australia. Whilst this is a relatively small sample size, I am interested to see if there are any significant differences to the results in the OECD and the countries with duplicate private systems.

The results in Table 6 show the Australian model struggles to find a significant relationship for private health spending regressed on public health spending. This likely suffers from sample size issues. I also add in a model with no lag, finding that it picks up a slight negative relationship. Given the small sample size, and the lack of a statistically significant result in the lags, it is hard to interpret the economic value of these results. Rather, it suggests that in the Australian environment, a simple model of actual health costs is not a good predictor of the financial relationship between private and public health spending. If these two were highly correlated, we would expect the results to come through in some way in these models.

Table 6: Estimation results for Australia

Model	No Lag	Australia Lag 1	Australia Lag 2	Australia Lag 3
	-0.320***			
Priv Hsp				
PrivHsp ₁		-0.096		
PrivHsp ₂			0.115	
PrivHsp ₃				0.126
GDP	0.692***	0.403	0.535	0.238
Toths Lag		-0.312	-0.017	0.715**
Pubsp _{pubhsp}	-0.0538**	-0.071*	-0.079*	-0.069**
N	31	30	29	28
R	0.666	0.35	0.29	0.47
Durbin Watson	2.124	1.80	1.75	2.212

* p<0.10

** p<0.05

*** p<0.01

One interesting observation in the Australian data is that there is some evidence of a statistical relationship between public spending (excluding health spending) and public health spending. This may seem like an obvious relationship, but this was not reflected in the other models. For both OECD countries, and the duplicate group, no statistically significant relationship was found for this variable, indicating that these governments may treat health spending separately to other forms of public spending. This leads me to interpretations similar to Mou (2013), that there are many other factors at play, and likely political ones.

As such, I suggest that a much deeper study is required on Australia. This also could be a reflection of the convoluted nature of the private system. With an unregulated mix of public subsidies, private health insurance funding and out of pocket expenses, it can make the relationship difficult to quantify. As mentioned in the theoretical section, we may see both an increase in supply and demand in the private sector due to government subsidies. This would drive up both private spending and public spending. However, since proponents argue that the subsidies are used to reduce pressure on the public spending, then we still should see some evidence of an inverse relationship. This would demonstrate that the subsidies reduce overall public spending.

However, given that the results are not statistically significant with different lags, this suggests that the relationship between private and public spending is rather complex. The results may also indicate that with the current policies in place in Australia there is not a large association between private and public spending. Rather, other mechanisms may be operating that drive this relationship. Understanding the political decisions is certainly relevant, and in Mou's study, we see evidence that using a right left analysis provides a statistically significant impact on public spending.

As I have also mentioned, Australia is particularly complex to analyse to the extremely complex workings of who actually pays for a private service. This can skew the results, and also makes finding relevant statistics much more difficult. Whilst I acknowledge that separating the components of private spending can be useful, it is also important to understand how total private finance fits in. If the private system leads to significant OOP expenses, then this is critical to include in the analysis, as I have done. If only actual PHI spending is included, this leaves out a key component of the actual relationship between public and private spending in Australia. OOP expenses may also be a reason that many do not use the private system, and as such I have felt that it is relevant when considering the private system.

8. DISCUSSION

Through the theoretical framework and empirical results above, I draw a few conclusions. It is important to understand, particularly in the empirical analysis on Australia and the OECD that this does not conclude that a duplicate private sector is not an appropriate mechanism to help finance the public system. Rather, I propose that recent evidence suggests, like Segal (2004), that in the current design of the system, an increase in private finance may not simply flow on to a likewise decrease in public finance. Whilst the simple modelling does not pick up statistical

relationships at all lags, this may provide support to the notion to decrease financial pressure on the public system, that simply substituting to a private system may not provide reduce cost pressures. Rather, if the policies in place were designed to support this relationship, then this analysis may have revealed different results.

Separating the analysis to either only Australia, or on OECD countries with duplicate PHI healthcare systems, there is some evidence that increasing in private expenditure can act as a small form of substitute for the public spending. The empirical results suggest an inverse relationship, though the results are likely more indicative of an association, rather than a pure causation. In Australia and the duplicate insurance countries, the results raise a few questions, particularly in the context of the heavy subsidisation of private health insurance. The results suggest that for a dollar drop in public health spending, we would need to see a fairly larger rise in private spending.

With subsidies, there is an inherent link between public and private expenditure. The government increases its own expenditure to increase private expenditure. From the theoretical argument and empirical results, we see have seen some evidence of cost reductions. This could be improved by policies that don't contribute to government spending. If indeed subsidies are inefficient and not contributing to more demand, then reducing them may show a more negative relationship between private and public spending. This also makes the interpretation of the data rather complex, and many different angles can be taken. While I have used data at the total health spending level, further analysis specifically on public and private hospital spending could provide further evidence of this result. However, only looking at hospital data would also ignore any flow on effects to other parts of the healthcare sector.

One very interesting viewpoint on subsidies is that they may work against the arguments for a duplicate insurance system. If the policies already in place in Australia are contributing strongly to PHI growth, then as some studies have shown, the subsidies may in fact be costing the government significant amounts. If this is the case, then the proponents of PHI and subsidies in Australia may actually be hurting their own arguments. If the subsidies are removed without a likewise drop in demand, then we should a stronger inverse relationship between private spending and public spending.

The key results of interest for Australia are those of the other duplicate insurance environments in the OECD. The analysis demonstrates some evidence that in a duplicate system, some cost controlling in the public sector can arise from a private system. Other countries with duplicate

insurance, such as Ireland, do not subsidise private health as heavily as Australia. This can indicate that there can be an inverse relationship in a parallel system. However, like Mou (2013) comments, results like these may be more indicative of an association, rather than causation.

There is little focus in policies in Australia on using the private system to alleviate the burden on the public system. It appears that the Government focus is on increasing the take up of PHI in Australia, with the goal that this will improve the 'overcrowding' in public hospitals. This naturally neglects the unique nature of the health care system, and how the private and public systems actually act as substitutes. If policies are designed taking this relationship into account, then it may give more substance to the proponent's arguments for a duplicate private health system.

With evidence from this study, and others already mentioned, there is evidence that increasing private expenditure does not lead to an associated similar decrease in public expenditure. Combining this with studies performed on waiting times leads me to conclude that the demand being taken by the private sector is smaller than the supply that it takes. As discussed previously, there are likely two causes of this, already identified in studies such as Duckett (2005). One is that private hospitals may simply be less efficient, and as such, actually require more supply of services than the public system. Another is that due to the incentives inherent in the system, physicians swap to the private system and may simply work less, or use a greater deal of resources than the public system currently performs.

As White (2009) mentions, the primary focus should be on addressing the conditions to optimise this relationship, rather than simply increase the role of the private system. With subsidies in place, if the role of the private system is to reduce the burden on the public system, then the evidence needs to support that financing pressures are eased through private involvement. An interesting argument is the use of extra resources by the private sector. In theory, if the private sector attracts new investment without taking away resources from the public sector, then this could certainly lead to a positive outcome. While this may be a topic for future research, it is also inherently linked to previous studies. If the financial burden is reduced then we may expect waiting times to be decrease, and a key study by Duckett (2005) has demonstrated that this may not be the case.

As previously discussed, perverse incentives are ripe in a duplicate insurance industry. In Australia, with no opt-out for the public system, private hospitals can essentially provide the services that are highly profitable. With strong faith in the public system in Australia, it makes

little sense for physicians to offer their services for procedures with short waiting times or that are unprofitable. This essentially leads to a system where it appears that the private system caters to the high demand areas, yet with the financing data shown, and previous studies on waiting times, we see that it is not producing strong results to stifle the demand in the public system. When the government puts in block funding to hospitals, it essentially provides it with a reason to offer more private services. If a hospital will only receive a certain amount of funding, regardless of output, then to raise additional resources, it provides more private services. This naturally comes at a cost of swapping a public patient for a private patient.

First, we could argue that this is simply because private procedures cost more than public procedures. This is most certainly true in Australia, and as such, we cannot expect that one dollar more spent in the private system on a particular surgery will mean one dollar less spent in the public system. It would be incredibly rare for a procedure to cost less in a private situation in a duplicate scenario. This would mean that the procedure would be more profitable for a physician to perform in the public system.

In Mou (2013), the author only uses the share of private spending that is covered by private health insurance. This is certainly an alternative and useful way to perform this analysis. However, in the analysis performed above, I aim to see how total private spending fits in. When a private system such as Australia has significant OOP expenses, it is important to consider this in the analysis, as these may be causing problems. Issues already identified including perverse incentives for physicians with higher wages in the private sector are partially caused because they can receive large OOP payments on top of the fees offered in the public sector.

This analysis, apart from commentary on previous studies, has also ignored the relationship between private insurance take up and waiting times in the public system, a much debated topic. In further studies, it would be ideal to study the relationship between private and public spending, and also waiting time, to see how these correlations work. Improvements in the financing of a healthcare system should naturally flow on to improvements in waiting times. This is of critical importance as a policy designed to achieve both improvements in waiting times and in spending seems like an ideal starting point. An argument such as “reducing the burden” should naturally also include a discussion of waiting times in the public system.

Overall, it appears that the theoretical argument against duplicate PHI and the empirical results align. Whilst there is some evidence in duplicate healthcare systems of some cost reductions, it is not that large. This leads me to conclude that the arguments for the use of duplicate PHI as a

means of reducing cost pressures on the public system are unconvincing. It is critical to understand the relative substitutability of private for public health care, as this can lead to different supply and demand effects. As we note from the OECD data, there can be a positive relationship between private and public spending, if the private health care system leads to additional patient costs in the public system. This does not appear to be an issue in Australia but is of relevance for future policy discussion on health care costs since supplementary insurance is still a part of the Australian healthcare system.

The results are also in line with previous studies on waiting times, both in Australia and other studies. Since the data on financing shows that private and public spending in Australia may not act as perfect substitutes on a dollar level, this helps to explain why waiting times do not necessarily decrease. To put it simply, if demand shrinks by less than supply, it appears logical that waiting times should not decrease.

The future

A final issue that is not discussed above is any future trends the Australian health care system may see. As noted in Mou (2013), an ageing population does not necessarily lead to further support for the private system. A key trend to be followed into the future is how this relationship works as the funding mix changes. As noted in Segal (2004) currently, the Australian private system offers the relatively specialised procedures, due to the incentives in the system. However, if PHI rates continue to increase and further funding is devoted to private health care, we may see the private system grow in its capacity. Additionally, deregulation of the industry may also occur. If the system grows, then arguments can likely be made from both sides. One that the system may become a better substitute as it provides a more encompassing service. Another area of concern is the two-tier health care system, such as the American system. This argument has been relatively ignored in this paper; however, it is becoming a larger topic of discussion in Australia.

If PHI rates in Australia continue to rise, its healthcare sector may become even more unique, in that an even large majority of the population will be covered by PHI, yet not opt out of the public system. It is also critical to understand the equity aspects of the outcomes delivered. Studies such as Menadue & McAuley (2012) have highlighted that a majority of the benefits of PHI go to the wealthier portions of the population.

In future studies, it would be very useful to use much more specific data. Even though Australia essentially operates a single payer public system, and each private insurance holder uses only one

private payer for their private health services, the actual payment system is incredibly convoluted. There is a large web of out of pocket payments, government subsidies, gap payments, private health payments and more, that makes the analysis of the data rather complex to analyse in the financial context. With no real regulation on out of pocket expenditure, it can be difficult to separate who is paying for what private service, unless individual procedures are looked at. Using economy level data naturally suffers from this system.

Complementary and Supplementary Insurance

I have stated various times in this paper, that the purpose is to analyse the financial relationship of duplicate PHI. However, it is worth noting a couple of key points on complementary and supplementary insurance, since it makes up a very small portion of private health spending in Australia. As seen in the OECD data, there is some evidence of a positive relationship between PHI and public spending as these included countries where complementary and supplementary insurance plays a larger role. Additionally, in Mou (2013), the author separates into these groupings, also finding a positive relationship. This may become a topic of more focus in the future for Australia, for if this portion of PHI in Australia grows then it may hide some of the effects of duplicate insurance.

9. CONCLUSION

This paper has provided a theoretical and empirical discussion of duplicate private health insurance financing in Australia, along with some analysis in the OECD. It is clear from the theory and the results that it is a complex issue with many arguments to be made.

As Mou (2013) discusses, much of the discourse and policy decisions on mixed health care financing stems from political beliefs. It is important to understand these both in policy decision making going forward and any analysis performed, since political decisions may be driving some of the results. What is very clear is that mixed financing of health care is a complicated area of the simple economic terms of demand and supply. The environment of a universal healthcare system provides a unique environment to study demand and supply forces. While this paper has been critical of duplicate insurance in Australia, this is not to say that a policy of duplicate private insurance should be abandoned. The critique has focussed on the policies towards duplicate insurance, rather than on duplicate insurance itself. I argue that if there is a focus on using the private system to reduce the burden on the public system, the focus should be on the incentives and environment for this to operate, rather than on simply increasing private expenditure.

For the most part, this paper has ignored any benefits that individuals may receive and enjoy from private coverage. I have argued solely from a financing perspective. It is also critical in further studies to include how this interaction can affect the universality and equity of a healthcare system, a comment argument held by many opponents of PHI in Australia. Choice in health care is also becoming a topic of discussion and this is something that the private system currently provides. I have not tried to downplay the equity concerns; rather, this has not been the focus of this paper. Equity concerns are frequently discussed in Australia, and similar countries such as Ireland, whereby many oppose the use of duplicate PHI simply because of the inequitable outcomes that it may bring. This is most certainly a key issues that needs frequent attention.

What can be clear from the theory and data analysis is that a private system operating a duplicate role to the public does not necessarily mean there will be a substantially reduced burden on the public system from a financing perspective. While I do not suggest that I have demonstrated causality in this analysis, I believe I have shown that relationship of private and public finance is not as straightforward as it may appear.

While the Australian health care system continues to achieve impressive results at efficient cost levels, it may face challenges from the interaction of the private system if PHI rates continue to grow. It is also critical to understand the role subsidies play in the health insurance marketplace. Health care costs in Australia, like the rest of the world, continue to rise. It is critical that policymakers analyse the value of subsidising duplicate private health insurance. As the theoretical analysis demonstrates, the design of the private health system in Australia means that it takes away the supply from the public system. If the private system continues to grow, there may become further worries of support for the public system, since many individuals will be active private insurance users.

What this paper has attempted to make clear is that if policymakers continue to push for a role for PHI in Australia, the evidence suggests that there should be a focus on understanding the interaction it has on the public system. I do not conclude that there should be a focus away from encouraging the use of private health finance in Australia. Rather, I suggest the focus should be on policymakers using the private system to help the public system, instead of just encouraging and subsidising the use of the private system. I agree with Segal (2004) where she concludes that the arguments for PHI use in Australia need to be argued rather than presumed. The market forces at play do not suggest that the policies are working in a way that improves the public system. Since Australia is heavily subsidising PHI, it appears the proponents of this should

provide evidence of the appropriateness of these subsidises to demonstrate that these actually reduce cost pressures.

Further research at the individual procedure level could provide a much better analysis of how the different systems act as substitutes. Disaggregating the data may provide very useful analysis. Items such as specific procedures, specific subsidies and potentially data on physicians switching habits can provide a detailed empirical analysis of the financial relationship in the healthcare system.

This paper has provided an analysis at the economy level to demonstrate how a parallel private health insurance system may fit into and interact with a universal public health system. By looking at the numbers at the economy level, I have highlighted that the relationship and outcomes require more analysis than is currently being put forward in the political environment. I have highlighted that the proponents of PHI in Australia, particularly those in favour of subsidies, may need to provide further evidence in favour of their arguments. It appears from the analysis that the focus of public health care reform should be the public system itself, rather than switching and subsidising individuals to the private system.

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Tables and Data

Table 1: Private Health Insurance Administration Council (2014) Annual Coverage Survey March (2014) [Online] http://phiac.gov.au/annual_survey/annual-coverage-survey-data-tables-december-2012 [Accessed 7 July 2014]

All OECD Data obtained from <http://stats.oecd.org/>

All World Bank Data obtained from <http://data.worldbank.org/>

Statistical Analysis

All regressions in this paper have been performed using EViews 7.1

ABBREVIATIONS

Abbreviation	Meaning
GPS	Government subsidies for private health services
IP	Individual private health spending
LHC	Lifetime health cover
MBS	Medicare Benefits Schedule
MLS	Medicare Levy Surcharge
OECD	Organisation for Economic Co-operation and Development
OOP	Out-of-pocket
PHIAC	Private Health Insurance Administration Council
PHI	Private Health Insurance
PHIR	Private Health Insurance Rebate
PHS	Public Health Spending
PIC	Amounts paid for by private health insurance funds/companies

APPENDICES

APPENDIX 1: UNIT ROOT TESTING:

Unit root test – Log Public Health Spending

Null Hypothesis: Unit root (individual unit root process)		
Series: LNPU BSP		
Exogenous variables: Individual effects		
Automatic selection of maximum lags		
Automatic lag length selection based on SIC: 0 to 3		
Total number of observations: 763		
Cross-sections included:		
34		
Method	Statistic	Prob.**
ADF - Fisher Chi-square	29.2214	1.000
ADF - Choi Z-stat	6.02027	1.000

Unit root test – Log Private Health Spending

Null Hypothesis: Unit root (individual unit root process)		
Series: LNPRIVHSP		
Exogenous variables: Individual effects		
Automatic selection of maximum lags		
Automatic lag length selection based on SIC: 0 to 7		
Total number of observations: 742		
Cross-sections included:		
34		
Method	Statistic	Prob.**
ADF - Fisher Chi-square	157.379	0.000
ADF - Choi Z-stat	-3.09908	0.001

Unit root test – Log Public Health Spending – First Difference

Null Hypothesis: Unit root (individual unit root process)		
Series: DLNPU BSP		
Exogenous variables: Individual effects		
Automatic selection of maximum lags		
Automatic lag length selection based on SIC: 0 to 2		
Total number of observations: 729		
Cross-sections included:		
34		

Method	Statistic	Prob.**
ADF - Fisher Chi-square	374.968	0.000
ADF - Choi Z-stat	-14.6399	0.000

Unit root test – Log Private Health Spending – First Difference

Null Hypothesis: Unit root (individual unit root process)
Series: DLNPRIVHSP
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Total number of observations: 722
Cross-sections included:
34

Method	Statistic	Prob.**
ADF - Fisher Chi-square	396.486	0.000
ADF - Choi Z-stat	-15.0004	0.000

Correlogram – Log Private Health Spending

Sample: 1980 2011
Included observations: 804

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob	
		1	0.946	0.946	722.80	0.000
		2	0.895	-0.004	1370.3	0.000
		3	0.845	-0.015	1948.2	0.000
		4	0.796	-0.019	2461.3	0.000
		5	0.748	-0.019	2914.5	0.000
		6	0.702	-0.004	3314.2	0.000
		7	0.656	-0.019	3664.5	0.000
		8	0.611	-0.026	3968.7	0.000
		9	0.568	-0.013	4231.3	0.000
		10	0.525	-0.018	4456.2	0.000
		11	0.486	0.005	4648.8	0.000
		12	0.447	-0.019	4812.1	0.000
		13	0.407	-0.033	4947.9	0.000
		14	0.376	0.053	5063.8	0.000
		15	0.345	-0.016	5161.6	0.000
		16	0.315	-0.013	5243.3	0.000

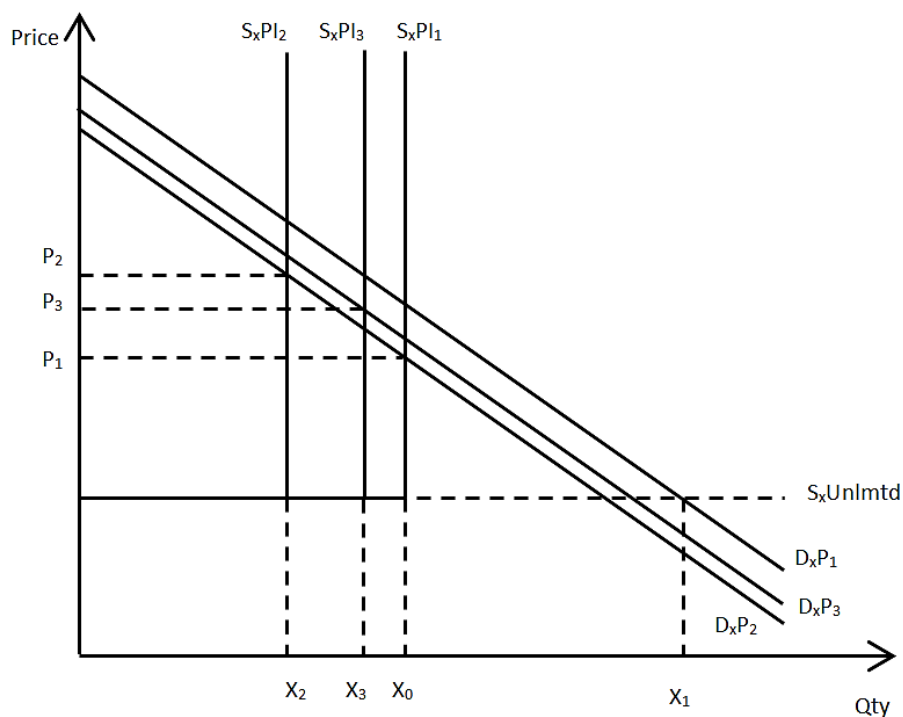
Correlogram – Log Private Health Spending – First Difference

Sample: 1980 2011
Included observations: 765

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob	
		1	0.101	0.101	7.8950	0.005
		2	0.104	0.095	16.183	0.000
		3	0.085	0.067	21.766	0.000
		4	0.000	-0.024	21.766	0.000
		5	-0.003	-0.016	21.773	0.001
		6	0.019	0.018	22.056	0.001
		7	0.022	0.024	22.444	0.002
		8	0.029	0.024	23.099	0.003
		9	0.005	-0.007	23.116	0.006
		10	-0.007	-0.015	23.151	0.010
		11	0.038	0.038	24.293	0.012
		12	0.031	0.029	25.064	0.015
		13	0.017	0.007	25.288	0.021
		14	0.048	0.034	27.108	0.019
		15	0.009	-0.006	27.165	0.027
		16	-0.010	-0.019	27.250	0.039

APPENDIX 2: ADDITIONAL FIGURES OF THE PUBLIC AND PRIVATE HEALTH MARKETS IN AUSTRALIA

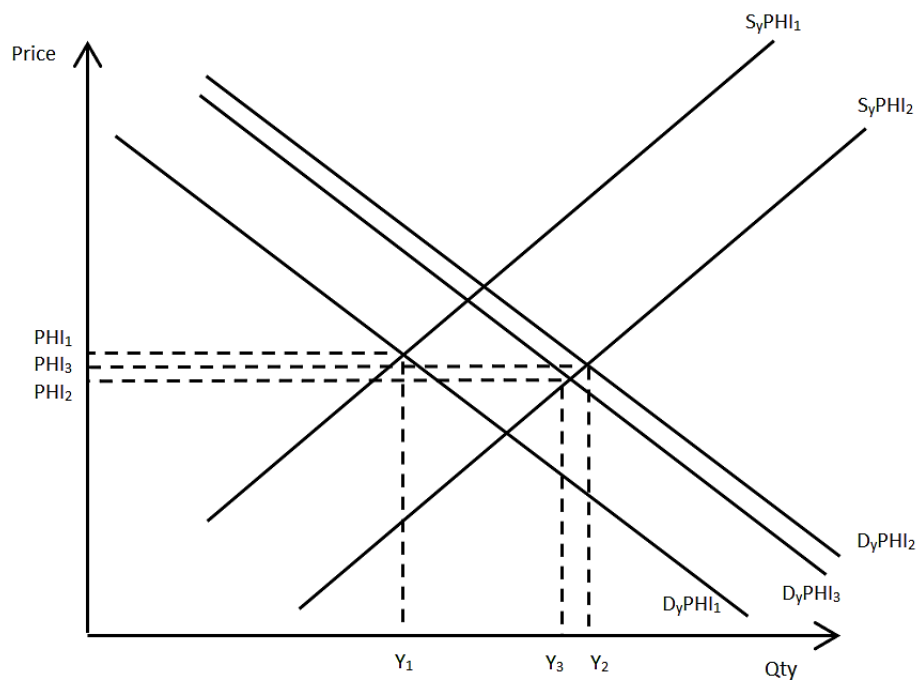
Figure 3 – Public Health Market, Government removes subsidy for PHI policies



Note: This graph represents shows what occurs when subsidies are removed (or reduced) for private health insurance policies. With studies such as Chai Cheng, T (2013) highlighting the subsidies may be inefficient, we see an increase in public supply due to additional funds. This moves the supply curve from S_xPI_2 as from Figure 2, to S_xPI_3 . However, we may only see a small increase in the demand for public services, as

individuals may still hold PHI even in the absence of subsidies. This reflects the movement from D_xP_2 to D_xP_3 .

Figure 4 – Private Health Insurance Market, Government remove subsidy for PHI policies



Note: This graph reflects what may occur when subsidies are removed (or reduced) for private health insurance membership in Australia. The supply curve remains the same as in Figure 2, since I assume the subsidies for private health insurance membership do not influence the supply of private care. Rather, they affect the demand for private health services, since holders of private health insurance are more likely to use private health services. Since the subsidies may be ineffective to some degree, I assume that with a removal (or reduction), we may only see a small decrease in the demand, which is reflected in the movement from D_yPHI_2 to D_3PHI_3 .