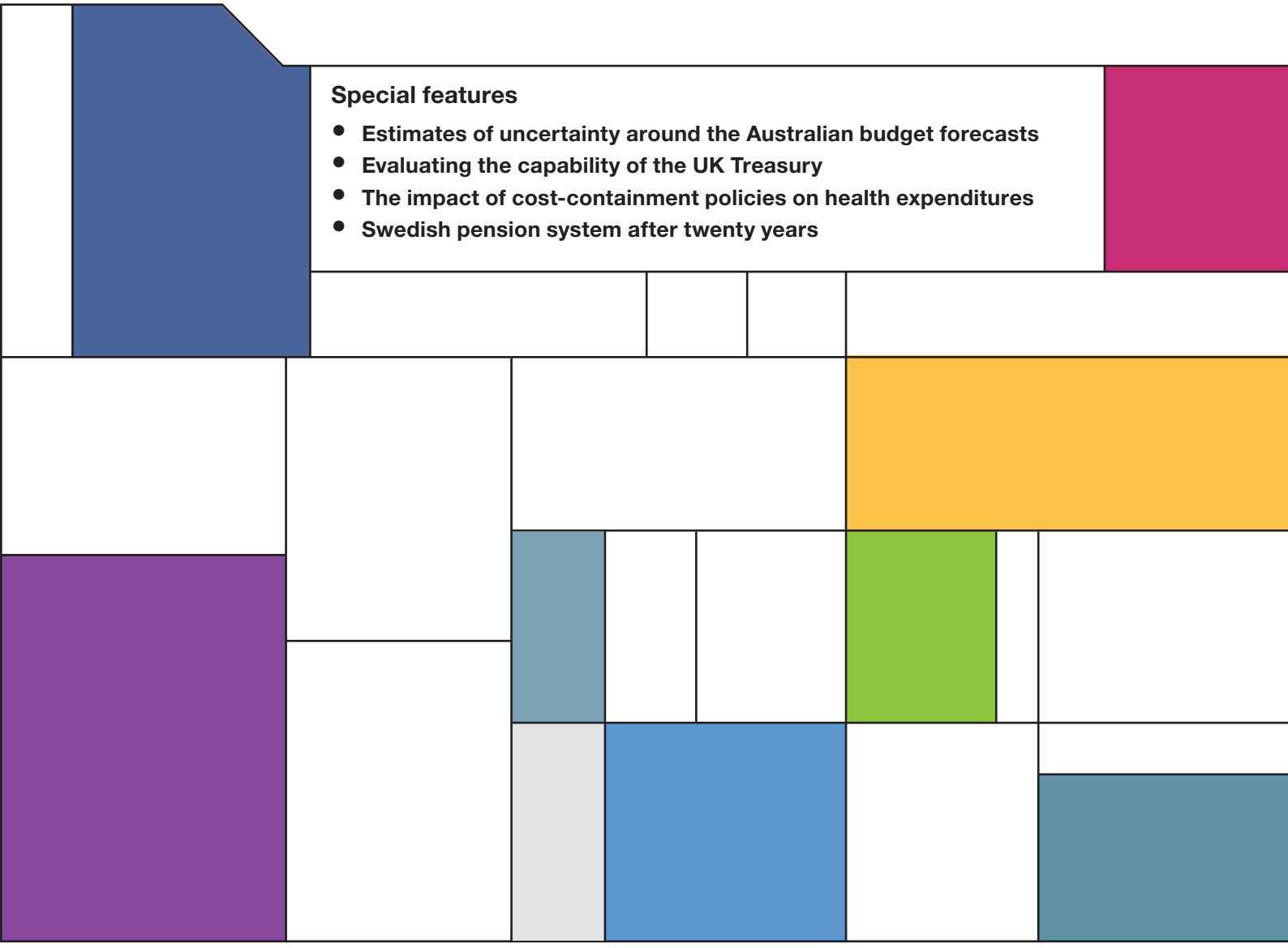
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The OECD Journal on Budgeting *is a unique resource for policy makers, officials and researchers in public sector budgeting. Drawing on the best of the recent work of the OECD Working Party of Senior Budget Officials (SBO), as well as special contributions from finance ministries of member countries and from other practitioners, the* Journal *provides insights on leading-edge institutional arrangements, systems and instruments for the effective and efficient allocation and management of resources in the public sector.*

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OECD Journal on Budgeting

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Evaluating the capability of the UK Treasury, 1990-2013

by
Richard Allen*

The strength of the United Kingdom's central finance agency (H.M. Treasury) has been attributed to its broad and powerful influence on policy issues; the high intellectual standards of its staff; the relatively clear division between the "official" treasury and the political level; and the important role played by the permanent secretary as an anchor and point of communication between officials and ministers. To maintain its power the Treasury has to adapt quickly to changing economic and political circumstances, most recently the global financial crisis. It has also engaged in two major reorganisations over the past 20 years, which have resulted in a substantial streamlining of the organisation, a flattening of the management structure, and a casting out of functions regarded as peripheral to its core finance and economic mandate. Some critics, however, have argued that the performance of the Treasury has failed, and that the department needs to be cut back to its traditional role as a budget and finance ministry.

JEL classification: H50, H54, H80, H83.

Keywords: Treasury, finance ministry, central finance agency, public finance, organisation, change management.

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1. Introduction

The central finance agency[1] in the UK is Her Majesty's Treasury (H.M. Treasury, hereafter "the Treasury"), and this paper focuses on its role and responsibilities. As will be described, the Treasury is an organisation that adapts itself continuously and, in many respects, has a very different structure today than that which existed 30 years ago. But is the Treasury of 2013 more effective in delivering its core economic and financial mandate? It is useful here to distinguish between the capacity of an organisation (namely the volume or scope of inputs such as human resources or IT systems that it uses) and its capability, which focuses on the transformation of these inputs into better economic and fiscal performance.[2] The question posed is seemingly simple, but not so simple to answer. In principle, there are a number of levels at which an answer could be provided:

1. The Treasury processes more information in a more timely way, and delivers more outputs such as, for example, the number of policy notes submitted to ministers, and the number of parliamentary questions answered.
2. The Treasury delivers better outcomes on key economic and fiscal policy parameters such as the rate of economic growth, inflation, the fiscal deficit and public debt.
3. The Treasury provides better advice than it did 30 years ago on key issues such as projections of macroeconomic and fiscal variables, analysis of fiscal policy and budgetary options, alternative tax policies for promoting economic growth, debt management scenarios, and so on.

However, there are difficulties with all three of these approaches, none of which is likely to lead to unambiguous or straightforward answers: Level 1 is a superficial test and does not get under the skin of what is fundamental to the Treasury as a policy-making department; Level 2 would be unlikely to generate a positive picture over the most recent years of economic and financial crisis, and raises complex issues about separating the role of officials in providing advice and the role of ministers in taking decisions that may only be partly based on the advice given and allows much scope for blame deflection;[3] and Level 3 is subject to the difficulty that policy advice is provided on a confidential basis and not readily available for external scrutiny.

A more general issue is the flip side of the pressure emerging in the last twenty years for governments to become more transparent and accountable for their policy decisions and actions. While greater accountability is to be applauded, governments, including the Treasury, have become adept in the spinning of plausible narratives. Across governments, there seems to be more interest in policy-based evidence (to justify chosen policy) than evidence-based policy (where the evidence precedes the policy).[4] Over time, arguments for particular policies (for example, privatisation, PPPs, fiscal rules) become highly polished, without necessarily having much connection with underlying reality.

In this paper, we therefore attempt to answer the question of whether the Treasury has become more effective as an organisation in a less direct and more limited way. Has the

department shown itself to be flexible by responding positively and quickly to external shocks and developments, as well as being one of the international trend-setters in new methods of public management and restructuring finance ministries? How well has the Treasury adapted to developing challenges in the world and domestic economy, and to changes in economic and fiscal policy? What steps has the organisation taken in light of changing circumstances and economic conditions to strengthen its management systems, and the efficiency with which it uses its human capital and other resources?

This paper discusses both the functions of the Treasury and its organisational structure.[5] The two concepts are related but not synonymous. The function of controlling the budget, for example, can be organised in many ways, through the "port-hole system" described below in which groups of officials "shadow" or "mark" a particular spending department, or by regrouping staff according to broader policy issues, themes or programmes. When a department such as the Treasury reorganises it is sensible to start first with the functions. What are the services that the organisation is trying to deliver? Which of these services are core business for an economics and finance ministry, and which are not? Can the non-core services be delivered in an alternative way, for example by another department, or by the private sector, or are they needed at all? In this important sense, functions drive the organisational structure, rather than the other way around. This also implies that an organisational review should be carried out on a top-down basis with a view to streamlining functions and cutting out unnecessary layers of management. The reform carried out in 1994, discussed below, started with a review of the Treasury's core functions and the allocation of these functions among the senior managers of the department.

This paper is organised as follows. *First*, we describe the management of governmental finance functions in the UK, and how these functions have evolved in the past 30 years. *Second*, we review the organisational structure of the Treasury, and the roles and responsibilities assigned to the finance minister (the "Chancellor of the Exchequer"), other ministers, and senior officials. *Third*, we review the arrangements for managing and staffing the organisation, and co-ordinating its work programme and operations. *Fourth*, we examine the approaches taken by the Treasury to increase its capabilities and respond to external events. *Finally*, we offer some comments on the trends that are identified and whether there is evidence to suggest that the Treasury has increased its effectiveness as an organisation.

2. Background

The Treasury is an historic and powerful government department,[6] of some one thousand employees, dating back to the 12th century. It is widely regarded, along with the Foreign and Commonwealth Office, as the most important British department of state. In a formal sense, every Prime Minister since Lord Salisbury has held the title of First Lord of the Treasury and heads a Board of the seven commissioners of the Treasury, which since 1714 has theoretically exercised the ancient office of Lord High Treasurer. However, this board has not met on serious business since 1856.

The Treasury's mandate in the economics and finance area is broad, and there are few economic and strategic issues in which the department does not have an input. According to Peter Hennessy:[7]

> "… The Treasury has a window into every ministry and departmental activity across Whitehall. The Chancellor of the Exchequer, if he is assiduous in his reading, is

> probably better informed than the Prime Minister about his colleagues' business … Always small in number and hugely well-endowed in having the pick of Whitehall's finest [the Treasury] has been a constant battleground for conflicting ideas and approaches."

Hennessy also notes that, despite past attempts to weaken it – for example: the establishment in 1962 of the National Economic Development Council (NEDC) and its secretariat; the National Economic Development Office (NEDO) by Prime Minister Macmillan; and of the Department of Economic Affairs (DEA) by Prime Minister Harold Wilson in 1964[8] – the only time the Treasury genuinely lost power since Gladstone was in the period of the two World Wars. It was during these two periods "when the imperatives of survival obliged the principles of good housekeeping to be jettisoned for the duration" as Lord Keynes put it. Prime Minister Thatcher, by contrast, saw the need to ensure Treasury loyalty and support to ensure the success of her radical policies, and strengthened it in various ways, e.g., by giving it primary responsibility for the civil service and control of the Central Statistical Office.[9] Nevertheless, the relationship between the Treasury and No. 10 was often fraught during the Thatcher years, especially over British participation in the European Exchange Rate Mechanism, as well as domestic issues such as local government finance.

The present Permanent Secretary of the Treasury, Sir Nicholas Macpherson, argues that the failure of the DEA in 1969 created a gap that was filled by a build-up of work in the Treasury on microeconomic and supply-side policies.[10] Privatisation, labour market reform and growth policy – whether through innovation, infrastructure, deregulation and skills – have all become a focus of Treasury activity in recent decades. During the Chancellorship of Gordon Brown (1997-2007), there was an informal accord with Prime Minister Blair under which the Treasury effectively became the super-ministry for economic, social and financial policy. Engagement in the delivery of policies such as social welfare and tax reform, however, ran the risk of diverting the Treasury from its core finance ministry function. Arguably, neither the Treasury nor the Parliament asked tough enough questions during the 1999-2007 period of remarkably high spending growth. And some commentators have criticised the Treasury for its performance during the global financial crisis starting in 2008.

An important characteristic of the Treasury – common to well-managed and effective finance ministries around the world – is its sense of corporate identity, intellectual superiority, and common purpose. This is more of an anthropological characteristic rather than one linked to formal organisational structure. In Hennessy's words:

> "The Treasury operates on the basis of easy informality and confident delegation of authority which is based on the assumption of an aristocracy of talent and an essential community of outlook and view."

Heclo and Wildavsky captured much of the same essence in their classic anthropological study of the Treasury, and its relations with other departments, which they described as the "village culture" of Whitehall.[11]

A second important characteristic of the Treasury, essential to maintaining its power, has been its ability to adapt its organisation and resources quickly to changing events and circumstances. Examples include the refocusing of resources on the priorities of the Thatcher era such as privatisation, local government finance, and the Financial Management Initiative (FMI) and, in recent years, on measures to rescue financial institutions and promote economic growth. These issues are discussed in more detail below.

3. How have the Treasury's functions evolved over the past 30 years?

In broad terms, there are many similarities between the mandate of the Treasury in 1980 and its mandate today. The Treasury was then a dominant player in all economic and financial policy issues as it is now. However, some interesting and important changes have also occurred, which may be divided into several categories discussed below. These developments have directly affected both the functions carried out by the Treasury and its organisational structure.

3.1. Changes in economic conditions and national priorities

First, there have been a series of changes that are linked to developments in prevailing economic policies and priorities, and to some degree changes in views about what constitutes good economic policy. There are several examples of policies which were important 30 years ago but which have subsequently declined in significance, or run their course; and other policies which have assumed increased importance. Such developments have implications for the Treasury's organisational structure, and to some extent the effectiveness of the Treasury can be judged by how rapidly it responds to these changing demands. Some important examples are as follows:

- In the 1970s, the UK was still winding down from a period of indicative economic planning. The NEDO (and its political counterpart, the NEDC, whose membership comprised economic ministers together with leaders of industry and the trade unions) still existed. The remnants of interventionist industrial policies, including support for failing automobile companies such as British Leyland, continued. Regional policies remained in vogue. The Treasury's organisational structure of the time included two groups[12] focusing on industrial and regional policy issues.[13]
- In the late 1970s, priority was given to stabilising prices and wages in light of high levels of inflation which averaged 13% per annum in the 1970s and reached a peak of 25% in 1975.[14] To deal with this issue the government introduced a prices and income policy, and the Treasury established a counter-inflation group that helped design these policies and monitor their impact. That group was disbanded in the 1980s.
- In the 1980s, there was a strong emphasis on privatising state-owned enterprises and on winding-down the government's then active role in managing and overseeing these entities. The Treasury played an important part in developing the policy framework for commercialisation and privatisation, and establishing the required financial criteria and monitoring arrangements. Line ministries were responsible for implementing the privatisation of specific companies. Most state-owned enterprises have now disappeared – with the exception of financial institutions taken over by the government during the global financial crisis – and this area of Treasury business has substantially reduced in importance.
- A related policy area that came into focus much later, in the 1990s, was the development of the Private Finance Initiative (PFI) – otherwise known as public-private partnerships – on which the Treasury took the lead, but which now appears to have lost some momentum. Responsibility for this work has shifted several times since the Treasury established a PFI Task Force in 1997.[15]
- Local government finance was a politically charged issue in the 1980s, and therefore a high-profile issue for the Treasury. Several attempts to reform the revenue base of local government were made through an initiative pushed by Prime Minister Thatcher (the

"poll tax") was opposed by the Treasury, was economically unsound and proved to be politically disastrous. A Local Government Group was dedicated to work on these issues, but as a political consensus was achieved on the basis for financing local authorities, and the new policies implemented, work on local government finance was subsumed within the Budget Policy Group of the Treasury.

- Before the establishment of an independent Bank of England in 1998, monetary policy was formally the responsibility of the Treasury, and the Bank's role in implementing these decisions by setting appropriate interest rates. In practice, however, decisions were taken on the basis of consultations between the Chancellor and the Governor, and their subordinate staff. The Monetary Policy Group in the Treasury was responsible for analysing monetary developments, liaising with officials at the Bank of England, and providing advice to the Chancellor. Since 1998 and the establishment of the Bank's Monetary Policy Committee, these arrangements have changed, and the Treasury's role in monitoring monetary developments is now lighter than previously, at least at a formal level.
- During Gordon Brown's ten years as Chancellor between 1997 and 2007, the Treasury's role in domestic policy-making increased significantly, largely reflecting Brown's powerful personal standing in the Labour party and the Government. For example, new divisions were set up with responsibility for developing policy on productivity, growth and the labour market. The Treasury divisions which shadowed the main public service departments such as health and education, and had traditionally focused on departmental expenditure control, also developed a much greater role in policy development. In 2005, responsibility for providing advice on tax policy was transferred into the Treasury from the newly formed H.M. Revenue and Customs, increasing the size of the tax policy division of the Treasury by around 30 staff. This trend unsurprisingly often led to tensions between the Treasury, other departments and the Prime Minister's office. It may also have led to a reduction in staff numbers and expertise focused on traditional Treasury areas such as fiscal policy, expenditure control and financial stability.
- Another important policy development in recent years has been the international trend toward greater transparency in fiscal reporting. The Treasury has been among the leading countries in promoting this trend which includes the publication of a "pre-budget" statement, widespread consultation on fiscal policy and tax reforms, the publication in 2012 of Whole of Government Accounts[16] (WGA) and the establishment of the OBR. In some areas, however, the application of transparency in the UK remains less than the highest standards found internationally. For example, the 2000 Government Resources and Accounts Act grants the Treasury discretion in deciding which entities are to be consolidated in the WGA based on whether they appear to the Treasury to: a) exercise functions of a public nature; or b) be entirely or substantially funded from public money. This provision effectively provides the Treasury with a power to override the relevant accounting standards in deciding which entities should be included in, or excluded from, the WGA. Although the Treasury established the Financial Reporting Advisory Board (FRAB) in 1996, the Treasury is not bound to follow its advice.

The key message to highlight here is the importance of adaptability and flexibility in the structure and staffing of the Treasury. As issues such as local government finance, privatisation or the regulation of financial institutions fluctuate in importance over time, timely adjustments are needed to the resources devoted to them. However, the Treasury has not always been able to respond with sufficient speed to such events.

A good example of how the Treasury must respond to urgent external events is the global financial crisis. The events created enormous pressures on the Treasury, and exposed weaknesses in the system of financial regulation which are still unresolved. The Treasury's response has been documented in a recent report[17] summarised in Box 1. The number of staff working on financial regulation is shown in Figure 1. The Chancellor of the Exchequer during this period, Alistair Darling, has vividly described the challenges faced by the Treasury in responding to the first signs of the crisis (the collapse of Northern Rock, a small bank in the north of England):[18]

Box 1. **The Treasury's response to the financial crisis**

The decade of economic growth that preceded the crisis was read by many as an endorsement of the UK's principles-based approach to financial regulation and to the tripartite Framework established in 1998 – the treasury, the bank of England and the financial services authority (FSA). International organisations such as the IMF cited the UK as an example of best practice.

Prior to the crisis, bank failures had been a rare occurrence and so, by definition, the treasury's senior management had limited personal experience of them. The financial sector had not been a high profile area of the treasury's business for several years. The Bank had cut back its staffing on financial stability and the FSA was increasingly focused on consumer and competition issues.

The financial crisis placed extraordinary demands on the Treasury. Organisationally, the Treasury responded in nimble and dynamic fashion. Resources were ramped up, although this could have been quicker. Overall, the Treasury was stretched and could have been better prepared.

The number of staff working on financial stability policy and interventions increased from around 20 in September 2008 to around 45 by the end of the year. The number peaked in the summer of 2009 at around 120, although the total number, including officials providing support from other Treasury teams, was closer to 200 (see Figure 2). Experts were brought in from investment banks and legal firms to provide support. However, there was enormous pressure on workloads and staff well-being, including for people not working directly on the crisis. More resources should have been brought in.

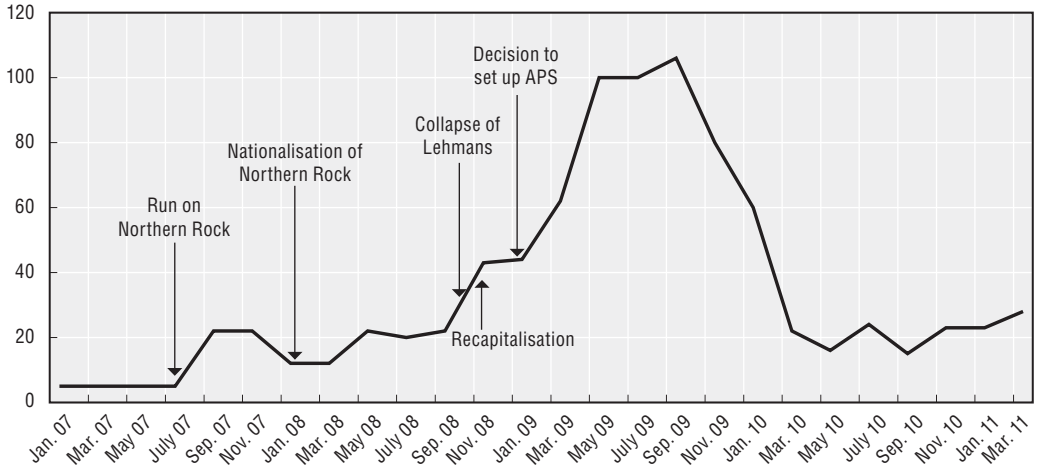
The Treasury drew on the experience of nationalising Northern Rock to resolve subsequent failing financial institutions, such as Bradford & Bingley, more quickly and decisively. The Treasury ramped up its capability again to set up the asset Protection Scheme (APS) and the associated agency that would deliver it, the Asset Protection Agency (APA).

Following its experience of the crisis the government has proposed to reorganise the regulation if the financial sector by placing the Bank's responsibility for financial stability on a statutory footing, and give the Bank responsibility for the Prudential Regulation Authority (PRA) and the Financial Policy Committee (FPC).

Source: H.M. Treasury (2012), *Review of H.M. Treasury's Management Response to the Finance Crisis, www.gov.uk/government/uploads/system/uploads/attachment_data/file/220506/review_fincrisis_ response_290312.pdf.*

"Part of the problem lay with the Treasury, which was simply not tooled up to deal with the job. There were not enough people with the necessary experience. I talked to Nick MacPherson, the Permanent Secretary, about this and we agreed to take the brightest and best away from whatever they were doing and put them on the sorting out of Northern

Figure 1. **Number of Treasury officials working on financial stability**



Source: H.M. Treasury (2012), *Review of H.M. Treasury's Management Response to the Finance Crisis, www.gov.uk/government/uploads/system/uploads/attachment_data/file/220506/review_fincrisis_response_290312.pdf.*

Rock… the Treasury had lost many of its staff over the preceding ten years, and the strains were now evident" (p. 26). Macpherson himself comments that although the Treasury ultimately assumes a leadership role in resolving the British banking system crisis in the autumn of 2008, it had a faltering start reflecting limited capacity in financial services following the collapse of Northern Rock.[19]

Darling also reveals that he asked officials in the Treasury whether the Bank of England could be ordered to increase liquidity to financial institutions: "… The answer was that it might be legally possible, but there would be wider implications of such an action. We had set great store by making the Bank independent, and a public row between myself and Mervyn King [the Governor of the Bank] would have been disastrous, particularly at this time" (pp. 57-58). In Darling's view, King was out of touch with the banks: "The essential day-to-day contact, to feel the pulse and the ever changing mood of these unwieldy corporate entities, was just not there" (p. 62).

With the accretion of its powers in microeconomic policy as well as its traditional fiscal policy responsibilities, has the Treasury's power become excessive? Macpherson[20] draws an interesting contrast with the early 1960s:

> "Then [the Treasury] not only managed the whole civil service, but directly funded the overseas aid programme, higher education, museums and art galleries – these cultural institutions were deemed too important to be entrusted to ordinary Whitehall departments. At the same time, the Treasury of those days was not only creating the macroeconomic framework, it was also implementing the framework by setting interest rates when and how the Chancellor saw fit. And it was presided over by five permanent secretaries and seven deputy secretaries."

Macpherson argues that the Treasury today is much more strategic, working through others. For example, it sets the monetary policy target but delegates its operation to the Bank of England; it determines the regulatory framework but delegates its operation to the FSA, soon to be succeeded by the Prudential Regulatory Authority; it determines that there should be two economic and fiscal forecasts a year but leaves it to the OBR to provide them; growth policy is developed in partnership with the Department of Business.

3.2. Changes in the nature and role of the budget process

A second group of factors that has influenced the use of resources within the Treasury is changes in the form and role of the budget process, and the trend toward devolving authority to line ministries for the day-to-day management of their budgets and other financial operations. Although a medium-term fiscal framework existed by 1980,[21] the framework for planning public expenditure on a medium-term basis was still being developed within the Treasury, and there was an active debate on many technical issues on which, at that time, there were no internationally accepted norms. In the early 1980s, for example, consistent with the new monetary framework for economic policy, The Treasury decided that the basis of preparing medium-term expenditure projections should be changed from constant prices, which required complex calculations of relative price changes ("funny money"), to current prices, and switched to a new policy of "cash limits".

During the next 30 years, many important technical changes in the budget planning process took place. These included the development of a full medium-term framework for planning public expenditure; the introduction of a programme structure to the budget and performance assessment frameworks between the Treasury and line departments; periodic expenditure reviews modelled on the principle of "zero-base budgeting"; and the introduction of accrual accounting and accrual budgeting ("resource accounting and budgeting" as it is called in the UK). For planning and control purposes, expenditure was divided into two categories: departmental expenditure limits (DEL) and annually managed expenditure (AME). There were also significant technical changes in the structure of expenditure Estimates, and a substantial reduction in the number of line items voted by the parliament.

While top-level decisions relating to core issues of budget planning (such as DEL and AME) remain highly centralised, delegated financial management has been taken much further. Up to the late 1980s, the Treasury exercised strong day-to-day control over the financial operations of spending departments: for example, directors of the finance departments of line ministries could not be appointed without the approval of the Treasury. Thirty years later, most detailed controls have been replaced by a much broader monitoring regime, and fewer restrictions on departmental freedom in managing their day-to-day operations remain. Line item control over budgets, for example, has been replaced by broad discretion for line departments to shift funds from one item to another within the year. Year-end carryover of funds was introduced in the 1980s though the rules have changed over time:[22] for example, the substantial amounts that some departments had accumulated over several years through carryover were confiscated by the Treasury in the June 2010 spending review. The introduction of a computerised financial information system (FIS) in the mid-1970s also helped lubricate a more streamlined approach to financial reporting and control.[23]

The development of new arrangements for managing public spending has created its own set of challenges. For example, a number of different systems have been created for presenting government expenditures. The government uses budgets to plan what it will spend; it then presents Estimates to parliament for approval; and finally, after the year end, it publishes resource (accrual-based) accounts. Two main issues have arisen with these arrangements: i) there is a significant misalignment between the different bases on which financial information is presented to parliament;[24] and ii) government financial documents are published in different formats during the year, making it difficult to

understand the links and inter-relationships between them. The Clear Line of Sight project[25] was developed in 2009 to simplify the government's financial reporting to Parliament and ensure that it is more consistent, transparent and straightforward at all three stages – on plans, Estimates and expenditure outcomes.

Over the last 30 years, there have also been important changes in the mechanisms by which ministers take decisions on the budget. Until quite recently the negotiation process was largely confined to a discussion between the spending minister concerned and the Chief Secretary to the Treasury.[26] A "star chamber" of senior ministers was established to resolve disputes that could not be decided on a bilateral basis. In the 1980s, this process was replaced a collective decision-making process involving a cabinet committee responsible for public expenditure. Under Prime Minister Blair (1997-2007), and especially during the following three years when Gordon Brown moved from the Treasury to become Prime Minister, the process of preparing the budget changed again. Consultations through the cabinet became less frequent, spending ministers were more or less excluded from discussion of key elements of the budget package, agreement with the Prime Minister's Office was often delayed until the final moment and Treasury officials were side-lined in what became an essentially bilateral meeting between the Chancellor and the Prime Minister.[27] While these changes did not significantly affect the organisational structure of the public spending side of the Treasury, they did change the way in which the staff of these divisions carried out their functions, and the dialog they have with their counterparts in the line departments.

More recently, the establishment of the OBR has led to further changes in the budget process. The Treasury no longer has responsibility for producing the economic and fiscal forecast and agreeing it with Ministers, which has created more space for it to focus on the development of fiscal and budget policy. For example, the macroeconomic divisions of the Treasury have refocused their activities on providing advice on the economic impact of new policy and on risks to the macro outlook. The budget process is now more structured given the need to have clear deadlines for the exchange of information between the two institutions, and sufficient time for the OBR to scrutinise new policy measures and incorporate them into the forecast. This means it is much harder for the Chancellor to introduce anything new into the budget package at a very late stage of the process, as has been the case in the past. Robert Chote, the current chair of the OBR, sees this as an important benefit of the new system, given that "most observers would not regard 'late political decisions' as one of the historic strengths of British budget making."[28]

3.3. Influence of the New Public Management

Finally, it has been argued that in developing the framework for preparing and executing the budget, and more generally in developing its relationship with other government entities, including arms' length agencies and line ministries, the Treasury was influenced by contemporary developments in public management theory, especially the New Institutional Economics and the New Public Management (NPM). These theories were initially applied to the practical management of government in the 1980s, especially in New Zealand. They centred on the importance of separating the policy-making processes of government (including the functions of the finance ministry) from the delivery of public services, and devolving decision-making, including on financial issues and the budget, to the managers directly responsible for the projects and programmes concerned. In the UK, there was a related trend toward attempting to apply to the business of government,

models of corporate governance, organisational structure and business processes drawn from the private sector. As we shall see in the next section of this paper, such models were important in the reorganisation of the Treasury that took place in the 1990s and in the last few years. An important question is whether the Treasury's capabilities have been weakened by the drastic clear-outs of staff in the mid-1990s and more recently. Taking bitter medicine oneself might make it easier to impose the same remedy on others, but carries big risks such as differential outflow, loss of institutional memory, and damage to peak capacity.

In relation to devolving the functions of the Treasury, several specific examples can be cited.

1. *Government banking services*: In 2004, the Bank of England announced that it would stop providing retail banking services, and focus on its core activities of maintaining monetary and fiscal stability. The Treasury therefore established the Government Banking Service to manage these changes. In 2006, it transferred the Office of H.M. Paymaster General, which had managed government banking services, under the supervision of the Treasury, since 1836 – to the HMRC. Banking operations are now managed under contracts with two commercial banks – the Royal Bank of Scotland and Citibank – though the Bank of England continues to hold government funds as part of the so-called Exchequer Pyramid.[29]
2. *Devolution of the public procurement function*: In the 1970s and 1980s, procurement operations were largely in the hands of line ministries and executive agencies, but the Treasury was responsible for oversight of the procurement process and taking policy decisions on procurement. A Central Procurement Unit was established in the Treasury to advise government departments on large procurement transactions which, it was assumed, would benefit from economies of scale. Later, an Office of Government Commerce (OGC) was established, reporting to the Treasury, which provided advice to departments on their procurement strategies, and on negotiating service contracts. The OGC was switched to the Cabinet Office in 2010 as part of a newly created Efficiency and Reform Group. At an operational level, spending departments are responsible for the procurement function; the Treasury continues to exercise an oversight role and, where appropriate for agencies with large procurement budgets, to set performance targets to be achieved as part of the expenditure review process.
3. *Transformation in the role and status of the government statistical service*: Up to the 1990s, government statistics were produced by a Central Statistical Office (CSO) which at various points of time was under the direct supervision of the Treasury and the Cabinet Office. Later, the CSO was converted into an executive agency, reporting to the Cabinet Office. In 1996, the Office of National Statistics (ONS) was formed by a merger of the CSO and the Office of Population Censuses and Surveys. In 2008,[30] the ONS became a non-ministerial department with a much larger degree of operational independence.
4. *Abolishment of non-core functions of the Treasury*: Several non-core functions of the Treasury were abolished as part of the major reorganisation of the department that took place in the early-1990s. These included privatisation of certain activities,[31] and the relocation of other activities and staff – notably responsibility for many civil service pay and management functions – to the Cabinet Office.
5. *Reinforcement of the Treasury's control over the financial management practices of government*: A recently published report by the Treasury[32] recommends important changes that would

reinforce the Treasury's control over the financial management practices of government, while departments would retain the final decision on the appointment of their finance director. To some extent these changes represent a re-centralisation of the Treasury's powers, and recognise that the Treasury has given insufficient emphasis to this area in recent years. The report recommends that a new Director-General position responsible for public spending and financial management be created in the Treasury, effectively combining two existing positions.[33] Bringing the two positions together within the Treasury consolidates the Treasury's oversight of financial management, and heads off external proposals to create a Cabinet-led "Chief Finance Officer" for government. The review also recommends the creation of an arm's-length body of the Treasury, reporting to the new Director-General, which would be responsible for the oversight of internal audit across government, and support departments in carrying out this work. This again centralises a function that had previously been devolved to departments.

6. *Creation of arm's-length agencies*: Since the 1970s, the government has created several arms'-length agencies that carry out policy and operational functions under the general supervision of the Treasury. These bodies have various legal and organisational forms. The Debt Management Office, for example, established in 1998, is responsible for implementing the government's debt strategy and meeting its financing requirements. It is formally part of the Treasury but has its own board of management and accountability arrangements. The Office for Budget Responsibility (OBR), established in 2011, has its own corporate structure but is not entirely detached from the Treasury.[34] By transferring most of its macroeconomic and fiscal forecasting functions to this body, there is a risk that the Treasury may lose its capacity to analyse macroeconomic and fiscal issues over time.
7. *Collection of taxes and other revenues*: Taxes and customs and excise duties in the UK are collected by H.M. Revenue and Customs (HMRC). In many countries, similar bodies have been established that are either directorates or departments under the central ministry of finance (as in France), or are quasi-independent agencies reporting to the minister of finance. In the UK, the organisational structure of the revenue agencies has evolved substantially in recent years. Up to 2005, Inland Revenue and Customs were separate government departments, which were then merged. Subsequently, HMRC was established as a non-ministerial department under the Commissioners for Revenue and Customs Act, 2005. The governance structure of the HRMC comprises a chairman and board, a chief executive and executive committee. HMRC is legally independent of the Treasury but in practice the two organisations work closely together. The HMRC provides essential support for the Treasury's role in providing advice to ministers on tax policy issues, in preparing the budget, in fiscal forecasting, and in controlling and monitoring the flow of revenues.

4. Organisational structure of the Treasury

In France, Germany and Spain and many other countries in continental Europe, the organisational structure and staffing level of government ministries and agencies are determined to a high level of detail by law or regulation, which are difficult to change in the short run. In the UK, by contrast, there are few constraints on ministers or permanent secretaries who wish to alter the structure of their ministry. Changes in the organisational structure of ministries and the number of staff allocated to specific tasks and functions occur frequently and, according to a recent report by the UK's National Audit Office, are not always planned with sufficient care or take account of all the costs and benefits of the

proposed changes.[35]

Another feature of the UK system of governance, which distinguishes it from many other countries, is the hierarchy of ministers within the government departments. In the Treasury, there are two senior ministers, the Chancellor and Chief Secretary, who are members of the Cabinet as previously noted. In addition, there are several other ministers, "whose names and titles vary with the needs of the department and the Prime Minister's allocation of posts to party supporters in both Houses [of Parliament]"[36] and who carry out functions at the discretion and under the supervision of the Chancellor. Until 2010, the titles of these ministers were: Financial Secretary, Economic Secretary, Paymaster General and Minister of State. The incoming Conservative-Liberal Democrat government renamed the last two Ministers: Exchequer Secretary and Commercial Secretary respectively.

It can be argued that the Treasury has been in a continuous process of evolution and change throughout its history. In the post-world War II era, there were major reorganisations in both 1962 and 1975. The 1962 reforms followed the acceptance of the Plowden Report[37] which laid down the foundations of the modern system of the public expenditure survey (PES) and expenditure control. Thain and Wright note that:[38]

> "Until that date, the organisation of the department as a whole was based upon the 'port-hole principle', in which each government department was provided with a clear single point of entry to the Treasury. The adoption of a functional structure in 1962 meant the abandonment of that principle, except for the public expenditure side where departments continued to enjoy access through their port-hole."

The port-hole principle that the expenditure divisions of the Treasury could exercise expenditure control most effectively by "marking" spending departments also survived the 1975 reorganisation.

This paper however, will focus mainly on the major changes that have occurred in the last 30 years. During this period, the Treasury has undergone two major reorganisations: the first took place in the early-1990s, while the second is still in the process of being implemented. Figures A1 to A4 trace the interesting evolution in the culture and management style of the Treasury over this period. Figure A1 describes the Treasury's organisational structure in 1980; Figures A2 and A3 depict the structure in 2000, after the first round of reforms took place; and Figure A4 shows the structure for 2012/13. The four charts show how the Treasury's structure has evolved from a classic bureaucracy; divided into administrative units such as departments and divisions, which in turn mirrors the wider structure of the government's administrative system and the economy, to a modern structure with an emphasis on broad functions that are interlinked and may cut across classic administrative structures. For example, one team shown in Figure A4 is responsible for personal tax, welfare and pensions; another team covers enterprise and growth issues, including infrastructure. The emphasis here is on thinking about the inter-connection between policies and functions, and how issues should be resolved.[39]

Up to the 1990s, the organisational structure of the Treasury was characterised vertically by a steep hierarchy comprising many levels and grades, and horizontally by a large number of departments, divisions and other units (Figure A1). The reforms introduced in the early-1990s were part of a wider set or reorganisations applied to all Whitehall departments, in which the Treasury – which was still responsible at that time for civil service management issues – was keen to lead by example. They were also part of a campaign by the Conservative political leadership to transform the governance of

Whitehall in light of the perceived benefits of the private sector corporate governance model, which was fashionable in political and civil service circles at the time. Thus, corporate governance terms such as executive boards, chief executives, directors of corporate services, etc., replaced civil service titles which were seen as old-fashioned and inappropriate in an era in which reinventing the civil service machine was paramount. In planning their own reorganisation, the Treasury took advice from private sector corporations that had also modernised their functions and staffing.

Two sharp contrasts with the present structure stand out. *First*, the organisation reflects the economic policy priorities of the time, including the focus on industrial and regional policy, public enterprises, and counter-inflation policy. Certain responsibilities such as civil service pay, the central computer agency (CCTA), and the Central Unit on Purchasing were abolished as central functions in the reforms of the 1990s. *Second*, the structure of the Treasury in the 1980s was much more complex and top-heavy than now. Senior management included three second permanent secretaries – responsible for public expenditure, economic policy and finance, respectively; seven deputy secretaries (including the deputy chief economic advisor) – responsible for pay, public services, accounting policies, micro economic policies, public enterprises, overseas and domestic finance; and about 25 under-secretaries. It should be noted that, in addition to their responsibilities for policy development in the Treasury, the Chief Economic Advisor was head of the Government Economic Service, and the Chief Accountancy Advisor had a similar managerial and professional development role in relation to the Government Accounting Service. As discussed below, the number of functional categories (or "groups" in Treasury parlance) was substantially reduced in the 1990s reform, and further consolidated to only 11 groups in the recent Strategic Review.

The Fundamental Review of the Treasury that took place in the early-1990s[40] had a number of interesting characteristics (Figures A2 and A3). *First*, it started from the top down, by defining what functions the Treasury should regard as core business, and what functions could be privatised, eliminated or transferred to another government department. *Second*, the top management structure was fundamentally changed. The Treasury's Policy co-ordinating Committee, chaired by the permanent secretary which met weekly, was reinvented as the Executive Management Board and two non-executive directors were appointed to it. *Third*, the number of core functional blocks (or "groups" as they called in the Treasury) was reduced substantially, one level in the senior management structure was removed, and the total number of staff in senior management was reduced by about one-quarter. *Fourth*, the titles of senior managers, except permanent secretaries, were changed.[41] The title "group" was retained, but the name of the organisational unit below that level was changed from "division" to "team".

As a result of the Fundamental Review, the department's organisational structure became much flatter. The number of senior civil servants (SCS) was reduced by 25-30%. Grades below the SCS were amalgamated, and management and policy responsibility was delegated to more junior staff. As there was less opportunity for promotion, the use of non-consolidated performance bonuses increased. The new grade structure is shown in Table 1.

Substantial time and resources, including widespread and frequent consultations with staff, were spent on managing the reorganisation process, which was actively led by the then permanent secretary, Sir Terry Burns. A generous redundancy package was developed to encourage staff to leave, and was broadly successful in this objective, though

Table 1. **Treasury staff grades**

Staff range		Description of role
B	Administrative support roles	Business and policy support; personal assistants: HR, IT or communications specialists
C	Administrative support roles	Business and policy support, personal and executive assistants; finance, HR, IT or communications specialists
D	Policy adviser	Officials with specific policy responsibility
E	Senior policy adviser	Experienced officials with significant policy responsibility
F	Deputy director	Senior Civil Servant (SCS); team leader and member of senior management team
G	Director	Accountable for corporate objectives and policy areas including the budget and staff required to deliver them
H	Director general (formerly managing director)	Part of the Treasury's Executive Management Board, accountable for the Treasury's overall direction and key issues such as resourcing and risk management
1A	Second permanent secretary	Responsible for the oversight of the Treasury's interests in international, European and financial sector issues
1	Permanent secretary	Accounting officer for the Department; responsible for overall decision making, co-ordination and management of the department and communications with the media and public

Source: H.M. Treasury (2012), *Review of H.M. Treasury's Management Response to the Finance Crisis, www.gov.uk/government/uploads/system/uploads/attachment_data/file/220506/review_fincrisis_response_290312.pdf.*

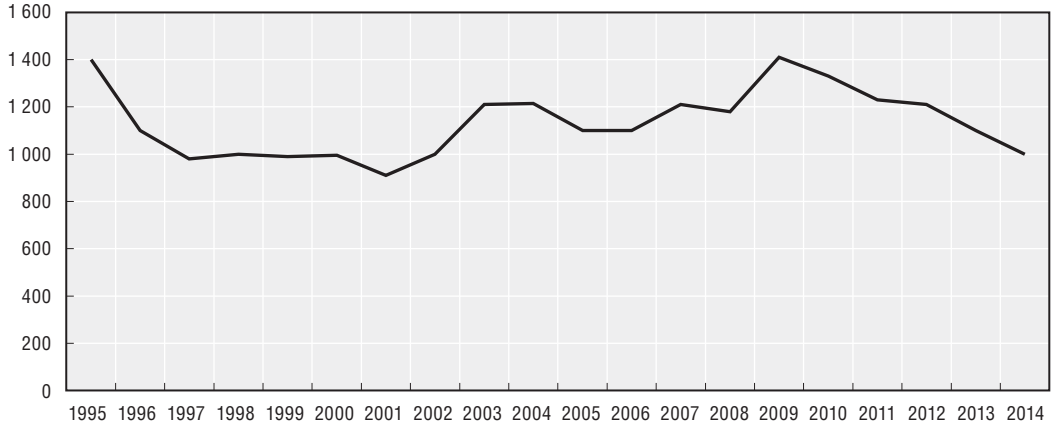
the short-term costs in severance payments were high. The reform was supported by the development of new ICT systems, including intranet and email which were not widely available in the Treasury until the mid-1990s. Support services were streamlined and personal assistants were allocated to work for teams rather than individual managers.

In September 2010, the Treasury launched a Strategic Review which was the first comprehensive review of the department in almost two decades and aimed at: i) focusing on the Treasury's core mandate, with a clearly defined work programme, and effective relationships with its operational partners; ii) managing its resources in a more flexible way, recognising the peaks and troughs that arise in different areas of work; and iii) making the Treasury more efficient and effective, with streamlined operational processes, better support for staff and improved use of buildings and facilities. The Treasury has issued a document[42] highlighting the strategic and policy priorities ahead, and setting out how it proposed to implement the Strategic Review. In the short-term, resources will be focused on areas of work that are critical to economic and financial recovery.[43] The review sets out a "blueprint" organisational structure for the Treasury (see Figure A4).

The revised organisational structure has a number of interesting features. *First*, the core finance functions of the Treasury will be carried out by 11 groups[44] responsible for economic analysis and surveillance; fiscal policy and debt strategy; enterprise and growth; public service reform and monitoring of performance; policy relating to the international economy and the EU; business tax, indirect tax and international tax; public spending; oversight of major public service expenditure; financial services and markets; personal tax, welfare and pensions; and financial management and reporting. In addition, there are four groups – strategy, planning and budget (SPB); ministerial and communications; corporate services; and Treasury legal advisors – which provide support and cross-cutting services to the department as a whole. Finally, as discussed earlier, there are a few arms' length bodies which have a "dotted line" relationship with the Treasury. There is also an important relationship between the Treasury and HRMC, the department responsible for collecting taxes, and customs and excise duties.

Second, the Treasury plans to downsize the organisation from a current headcount of about 1 260 full-time equivalents (FTE) staff to around 1 000 staff in 2014. Movements in total staff numbers since 1995 are shown in Figure 2. Under the reorganised structure, the average number of staff per group is about 60. The detailed breakdown of staff by main function is shown in Table 2. About 72% of Treasury staff work on policy functions and 28% on support functions. The policy functions can be broken down into several main categories: economic analysis and fiscal policy (8%), international and EU (10%), budget and financial management (17%), enterprise and growth (10%), tax policy and social welfare (14%), and financial regulation and financial services (12%). An interesting development is that Senior Civil Service[45] job titles will be brought into line with other government departments, reversing a policy that was introduced at the time of the mid-1990s reform.

Figure 2. **Treasury workforce, 1995-2014**



Source: H.M. Treasury (2012), *Review of H.M. Treasury's Management Response to the Finance Crisis, www.gov.uk/government/uploads/system/uploads/attachment_data/file/220506/review_fincrisis_response_290312.pdf.*

Third, there is an emphasis in the *Strategic Review* of making more flexible use of staff. There are a number of dimensions to this: i) the Executive Management Board (EMB) has flexibility to move resources between groups in response to changing priorities; ii) Directors will have more flexibility to move resources within groups; iii) time-limited project teams will be established within groups and disbanded when projects end; iv) the number of central business will be streamlined, making them easier to use; v) a new resourcing model will be introduced with funding for approximately 150 positions – groups will be able to bid to the centre for project work; and vi) the new Strategy, Planning and Budget Group will help develop new models for flexible resourcing and project work.

Fourth, an important change is being introduced in the respective role of the Directors-General and the Directors/Deputy Directors. Director-Generals will step back from the management of groups, and take on a strategic role in managing the overall work and resourcing for the Treasury as a whole.

Finally, the corporate governance of the Treasury is being further developed. The mid-1990s review had already established an executive management board, chaired by the permanent secretary. The latest review will extend and formalise this arrangement. The governance structure comprises the following components: i) a ministerial board chaired by the Chancellor of the Exchequer, including the five Treasury Ministers, four non-

Table 2. **H.M. Treasury, allocation of staff by function in March 2012**

Function	No. of staff (FTE)	%
Economic analysis and fiscal policy	**99**	**8.0**
Economic analysis and surveillance	46	
Fiscal strategy and debt management	53	
International and EU	**129**	**10.5**
Budget	**213**	**17.3**
Public spending control	58	
Oversight of public services	72	
Financial management and reporting	83	
Enterprise and growth, including infrastructure	**124**	**10.1**
Tax policy and social welfare	**176**	**14.3**
Business and international tax	99	
Personal tax, welfare and pensions	77	
Financial sector	**149**	**12.1**
Financial regulation and markets	49	
Financial stability	51	
Financial services	49	
Support services	**340**	**27.6**
Ministerial and communications	88	
Corporate centre, including HR and IT systems	202	
Strategy, planning and budget	47	
Treasury legal advisors	3	
Total staff	**1 230**	**100**

Source: H.M. Treasury (2012), *Capability Action Plan*, *www.gov.uk/government/uploads/system/uploads/attachment_data/file/191691/HM_Treasury_capability_action_plan.pdf*.

executive members and four executive members. This board will meet quarterly to review the strategic direction and priorities of the Treasury, including the implementation of the Strategic Review; ii) an executive management board, chaired by the Permanent Secretary, comprising all Directors-General and the Directors of SPB and the Corporate Centre Group. This board will meet weekly; iii) two risk management groups – economic risk and fiscal risk – will monitor and analyse the changing nature of the Treasury's risk profile and assess how these risks should be managed; and iv) the Treasury's Audit Committee is responsible for ensuring that the department's control framework is effective in managing spending and risks. It is interesting that the Strategy, Policy and Budget Group play an important role in co-ordinating the work of the various policy groups in the Treasury. In this respect its role is similar to that of the Central Unit which existed in the Treasury until the re-organisation of the mid-1990s.

The functioning of the Treasury, as other Whitehall departments, depends on a finely tuned separation of roles between ministers and civil servants. In contrast to some other countries, only a handful of the employees in the Treasury are politically appointed: these comprise the five ministers and a few political advisors, who are technically appointed and paid as temporary civil servants. All other staff are career civil servants. On the whole, this arrangement has stood the test of time and worked well in enabling advice that is balanced and free of political bias to be submitted for decision by ministers. Nevertheless, in recent years – especially during the Thatcher, Blair and Brown eras – Chancellors have been criticised for relying too heavily on the advice of their political advisors, and diluting the role of the civil servants.[46] As noted, the trend of increasing numbers of political advisers

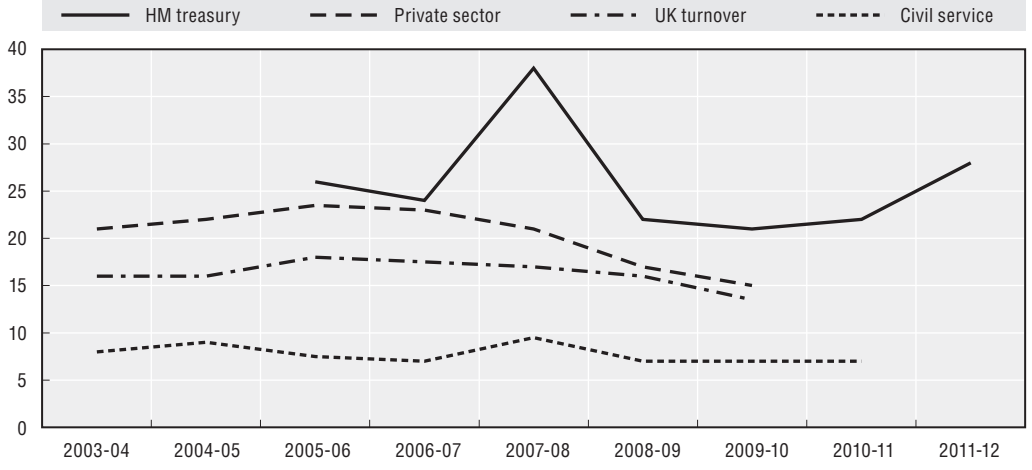
has been associated with an often tense relationship between the Chancellor and No. 10, especially during the Thatcher, Major and Brown premierships.

For example, under Gordon Brown special advisers played a key role in all of the Treasury's business, effectively acting as an additional layer of management lying between the Chancellor and the rest of the department. Most policy advice would be agreed with special advisers before it was provided to the Chancellor, and often the special advisers would have been involved from an early stage of development. The co-ordination of the Treasury's major policy events such as budgets and spending reviews was led by the senior special adviser. When Alistair Darling took over from Gordon Brown as Chancellor in 2007, his special advisers took up a more conventional role – focusing on providing political and presentational advice directly to the Chancellor largely in parallel to the official policy-making process. This required the Treasury to quickly restructure the responsibilities of a number of senior staff and more generally adapt its working practices to align with the return to this more conventional structure.

4.1. Staffing-skills, recruitment and retention

As noted, the Treasury has a high reputation among Whitehall departments, and has always been able to recruit from among the most able entrants into the Civil Service. It is a relatively youthful department with a median age of 32 years compared to 45 years across the civil service. The median age has fallen substantially since the 1980s when it was similar to other departments. Annual turnover is extremely high (around 25-30%) compared to the rest of the public sector (see Figure 3), and has risen substantially since the 1970s and 1980s when it was probably around 10-15%. It is estimated that more than 50% of the staff joined the department in the last four years (H.M. Treasury, March 2012). Such high turnover is more commonly found in semi-skilled parts of the service sector, such as call centres and hospitality.[47] Turnover is elevated by the fact that 10% of the

Figure 3. **Staff turnover rates in the United Kingdom**



Source: H.M. Treasury (2012), *Review of H.M. Treasury's Management Response to the Finance Crisis, www.gov.uk/government/uploads/system/uploads/attachment_data/file/220506/review_fincrisis_response_290312.pdf.*

workforce comes to the Treasury from other government departments or the private sector on a time-limited basis. There is also a lot of internal movement. Most staff are

"generalists" or "professional administrators" and would expect to work in a range of jobs across the Treasury's key functions.[48] At the end of 2011, the median time spent at the Treasury by staff below the SCS was three to four years. A recent report[49] comments that "the vast majority of staff would have had no experience of a period of economic turbulence or bank failure". This is a serious comment on the Treasury's institutional memory which almost certainly would have been different 20 or 30 years earlier. A recent study suggests that poor institutional memory "can be mitigated by a good knowledge management system, but the Treasury systems seem to be variable in quality" (Government Office of Science, 2013).

Uncompetitive salaries and limited career progression are the key reasons cited by staff who leave the Treasury. Compared to other government departments, Treasury pay levels are the lowest by at least 10% (Box 2 and Figure 4), though this disparity may be offset to some degree by opportunities for more rapid promotion. For senior civil servants the pay differential is 14%. Support staff (Ranges B and C) have the lowest median pay and the lowest starting salaries in Whitehall.

Box 2. **Pay in H.M. Treasury**

As the government's economics and finance ministry, the Treasury has sought to lead by example and restrain relative pay for its staff (the process of devolving decisions on pay to ministries and agencies began in earnest in the 1990s). Treasury policy officials are now the lowest paid in the UK civil service: median pay is at least 10% lower at the Treasury than in other ministries. For senior civil servants, the pay disparity is 14%. The Treasury's business and policy support staff have the lowest median pay and the lowest starting salary in the civil service.

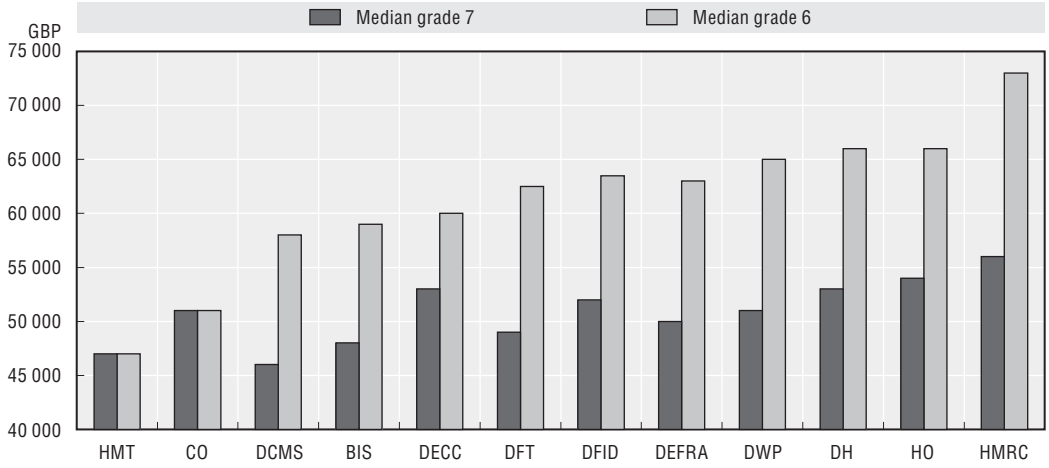
The gap partly reflects the Treasury's lower minimum starting salaries, high turnover and the abolition of certain grades. It may also reflect pay drift in other ministries. In 2005, Treasury median pay at Range D and E (policy and senior policy advisors) was broadly equivalent to median pay across central government ministries. In the 2011 Civil Service People Survey, the Treasury ranked 96th out of 97 organisations in terms of staff satisfaction with pay and benefits.

Pay and grade structure create strong incentives for staff at these grades to seek promotion rather than to move up a pay-scale within a grade. Promotion from the median Range D pay to the minimum Range E starting salary provides a 55% increase in salary; Range E median to SCS starting salary provides a 25% increase. The high level of competition for promotion internally has meant that treasury officials often move at the same grade or on promotion to other ministries to increase their pay.

Treasury pay is significantly below that elsewhere. For example, basic salaries at the Bank of England and the FSA can be as much as 50-100% higher, respectively, for comparable jobs. Pay scales also allow staff significant pay progression at their grade. The pay gap with the City is commensurately greater: evidence suggests that basic salary packages are at least two to three times those in the Treasury.

Source: H.M. Treasury (2012), *Review of H.M. Treasury's Management Response to the Finance Crisis*, *www.gov.uk/government/uploads/system/uploads/attachment_data/file/220506/review_fincrisis_response_290312.pdf*.

Figure 4. **Civil service median pay 2010-11 – Treasury Range D-equivalents, 2010-11**



Source: H.M. Treasury (2012), *Review of H.M. Treasury's Management Response to the Finance Crisis, www.gov.uk/government/uploads/system/uploads/attachment_data/file/220506/review_fincrisis_response_290312.pdf.*

4.2. Improving the effectiveness of the Treasury-Capability Reviews

In addition to the structural adaptability in response to new developments such as the global financial crisis and periodic reviews of its organisational structure, discussed above, the Treasury has also sought to improve its effectiveness by participating in various mechanisms designed to improve the overall effectiveness of government departments in delivering services. There are several of these mechanisms. Under the last Labour government, Public Service Agreements (PSAs) were embedded in successive Comprehensive Spending Reviews (CSRs), starting in 2004. These set strategic objectives for departments to achieve over the period covered by the CSR. In the case of the Treasury, there were two strategic objectives, namely to maintain sound public finances, and to ensure high, sustainable levels of economic growth and prosperity for all. Under the Coalition Government, PSA's have been abolished in favour of a more devolved system where departments are expected to set a range of delivery and performance objectives and report on progress against them in an annual business plan.

Specific indicators, including achievement of fiscal rules[50] and maintaining an inflation rate near the target of 2%, have been established under successive governments to measure and monitor progress against the Treasury's objectives. The Treasury also participates in other government-wide initiatives to improve efficiency and effectiveness, including efficiency savings, relocation and headcount reduction targets.

Another important initiative has been the *Capability Reviews* launched in 2007 by the Cabinet Office. The reviews of a department are carried out by a team of external reviewers drawn from the private sector, and senior officials in other government departments and the wider public sector. The review of the Treasury was released in December 2007, a progress report issued at the end of 2009, and a revised action plan released in April 2012.[51] The reviews of departments are guided by a capability model that is common to all departments. The model focuses on capability in three dimensions (leadership, strategy and delivery) using a "traffic light" methodology for assessing progress in these areas (Table 3). By providing an external assessment, the capability review seems to have been a

Table 3. **H.M. Treasury: Assessment of capability, 2012**

Dimension	Indicator	Assessment of capability
Leadership		
L1	Set direction	Amber/Red
L2	Ignite passion, pace and drive	Amber/Green
L3	Develop people	Amber/Red
Strategy		
S1	Set strategy and focus on outcomes	Green
S2	Base choices on evidence and customer insight	Amber/Green
S3	Collaborate and build common purpose	Amber/Green
Delivery		
D1	Innovate and improve delivery	Amber/Green
D2	Plan, resource and prioritise	Amber/Green
D3	Develop clear roles, responsibilities and delivery models	Amber/Green

Source: H.M. Treasury (2012), *Capability Action Plan*, *www.gov.uk/government/uploads/system/uploads/attachment_data/file/191691/HM_Treasury_capability_action_plan.pdf*.

useful complement to the Treasury's own efforts to improve performance, notably the *Strategic Review* carried out in 2010.

5. Conclusion

The strength of the Treasury has been attributed to several factors: i) its historic role which gives it a mandate to opine on all economic and financial issues – an unusually wide mandate by international standards; ii) its ability to select topmost candidates to fill vacancies, and the high intellectual standards of its staff; iii) the clear (or relatively clear) divide between the "official" treasury and the political level; and iv) the important role played by the permanent secretary as an anchor and a communication link between the "official" Treasury and its ministers (though this anchor role may have been diluted in recent years by the influx of special advisors).

To maintain its power, the Treasury has to adapt quickly to changing economic and political circumstances. It has also engaged in two major reorganisations over the past 20 years, which have resulted in a substantial streamlining of the organisation, a flattening of the management structure, and a casting out of functions regarded as peripheral to its core finance and economic mandate. In general, its record of adaptation is impressive, as the earlier discussion of the Treasury's response to the financial crisis of 2007-10 indicates. However, the Treasury is not without its critics: some have argued that the performance of the Treasury has failed miserably, and that the department needs to be cut back to the bone.[52]

Nimbleness in responding to external events and structural adaptability is one thing. Effectiveness in the delivery of key policy objectives however, is another matter. This is the core question with which this paper opened. Here the evidence is much less clear. The Treasury is largely a policy-making and regulatory department, with few operational functions. Its staff is heavily stretched since, in principle, every policy issue relating to the economy or public finances falls within its mandate. At times, such as the financial crisis, stretching is taken to the limit. In such an environment, measuring "effectiveness" is challenging. Indeed, to some extent, as argued in the opening section of the paper, the question is unanswerable. Nevertheless, the paper suggests some issues on which further research might be fruitful. Has the Treasury's reputation for excellence survived the turbulence of recent years? What have been the effects of high turnover and ephemeral

staffing on the quality of analytical work and, more importantly, the Treasury's institutional memory? Have the lessons of the global crisis been taken to heart so that future crises will be managed in a more timely and efficient manner?

Notes

1. For a review of the literature on central finance agencies, see R. Allen and P. Krause, "The Role, Responsibilities and Structure of Central Finance Agencies", *in* Allen. R., R. Hemming and B. Potter (eds.) (2013), *The International Handbook of Public Financial Management,* London, Palgrave Macmillan.
2. See Allen and Krause, op. cit.
3. Decisions that turn out to be good may be based on bad advice by officials; contrariwise, decisions that turn out to be bad may be based on good advice that is ignored by ministers, or may turn bad because external shocks that could not reasonably have been predicted occur. Moreover, if officials are told by ephemeral ministers to implement misguided policies, accountability becomes hopelessly defused.
4. A recent example from the UK is a study by the Government Office for Science (2013), which focused on evaluating the analytical capability of the Treasury in areas such as macroeconomic forecasting, distributional analysis and public spending control. The remit of the study, however, excluded the key question of whether the Treasury gave ministers good evidence-based advice, thus reducing the value of its analysis and recommendations.
5. The paper thus takes a narrower view of organisations than the literature on political science. It focuses mainly on "formal" aspects of the organisation such as structure, operations, technology and management. But organisations also involve an important "informal" side representing cultural, leadership and political/institutional factors, together with environments that are responsive to stakeholders both internal (e.g., the prime minister, other government departments) and external (e.g., parliament, the media, NGOs, international financial institutions). See, for example, Senior, B., and J. Fleming (2006), *Organizational Change*, 3rd edition, London, Prentice Hall.
6. In the UK, as in the USA, government ministries are referred to as "departments".
7. Hennessy, P. (1989), *Whitehall*, Martin Secker and Warburg, p. 395.
8. Examples quoted by Lawson, N. (1992), in *The View from No. 10: Memoirs of a Tory Radical*, Bantam Press. The DEA was wound up in 1969; the NEDC survived until 1992.
9. Lawson, op. cit.
10. Sir Nicholas Macpherson (2013), *The Origins of Treasury Control*, speech delivered on 16 January, *www.gov.uk/government/people/nicholas-macpherson*.
11. Heclo, H., and A. Wildavsky (1974), *The Private Government of Public Money: Community and Practice inside British Politics*, London: Macmillan.
12. The Treasury uses the term "group" to define an organisational unit that in other countries might be called a directorate or department. Groups are subdivided into divisions and units.
13. These groups were called the Industry and Agriculture (IA) Group and the Industrial Policy (IP) Group.
14. Figures based on the retail prices index (RPI).
15. The original Task Force consisted of two sections: a policy section and a projects section, the latter staffed mainly by investment bankers. In 1999, the policy arm was moved to the OGC but subsequently reverted to the Treasury. The projects section was part privatised and became Partnerships UK, a body that was subsequently disbanded.
16. By consolidating 1 500 entities, the WGA complements existing statistical reports by providing information about a wider range of assets and liabilities, including public sector pensions, provisions for nuclear commissioning and claims for criminal negligence, and contingent liabilities and other fiscal risks.
17. H.M. Treasury (2012), *Review of H.M. Treasury's Management Response to the Financial Crisis*, March.
18. Darling, A. (2011), *Back from the Brink: 1 000 Days at Number 11*, London, Atlantic Press.
19. Speech on 16 January 2013, op. cit., p. 13.
20. Speech of 16 January 2013, op. cit., p. 14.

21. The Medium-Term Financial Strategy was unveiled in 1980. See Thain, C. and M. Wright (1995), *The Treasury and Whitehall: The Planning and Control of Public Expenditure, 1976-93,* Oxford, Oxford University Press.

22. Thain and Wright, op. cit., provides an excellent discussion of end-year flexibility and other developments in public expenditure management up to the early 1990s.

23. Thain and Wright, op. cit., p. 48, note that with the development of the FIS, "monthly figures became available within ten days, and showed for each of the new cash-limited blocks what had been spent, and what remained for the rest of the financial year… Monthly appreciations were supplemented by fuller analysis, five times a year… With such information, the Treasury was better able to distinguish overspending caused by higher than expected prices from that caused by changes in policy."

24. The Treasury has estimated that, in fiscal year 2008-09, about 20% of expenditure (GBP 86 billion) included in Estimates was not recorded in the budget; and 18% of budgeted expenditure (GBP 71 billion) was not recorded in the Estimates. See H.M. Treasury, *Clear Line of Sight (Alignment Project): Aligning Budgets, Estimates and Resource Accounts,* PowerPoint Presentation.

25. H.M. Treasury (2009), *Alignment (Clear Line of Sight) Project*, Cm. 7597, March.

26. The second ranked Minister in the Treasury, the position of Chief Secretary, created in 1961, who is responsible for public expenditure, is also a member of the Cabinet.

27. The difficulties and frustrations of negotiating the budget between No. 10 and No. 11 Downing Street are well described by Alistair Darling, the Chancellor from 2007-10. See A. Darling (2011), op. cit.

28. Lecture on OBR's first three years, May 2013, *http://budgetresponsibility.independent.gov.uk/lecture-on-obrs-first-three-years/*.

29. The Exchequer is defined as the set of bodies – the Treasury, the Debt Management Office and the Government Banking Service – that manages government funds. See National Audit Office (2009), *Report by the Comptroller and Auditor General*, October, Government Cash Management, HC 546, Session 2008-2009, Appendix 4.

30. Under the Statistics and Registration Service Act, 2007.

31. Notably, Her Majesty's Stationery Office, an executive agency supervised by the Treasury, and the Civil Service Catering Organisation.

32. H.M. Treasury (2013), *Review of Financial Management in Government*, December.

33. These two positions are the existing Director-General for Public Spending whose main task is to oversee the spending review process, and the Head of the Government Finance Profession who previously headed a network of government finance directors but with few formal powers and responsibilities.

34. The original Task Force consisted of two sections: a policy section and a projects section, the latter staffed mainly by investment bankers. In 1999, the policy arm was moved to the OGC but subsequently reverted to the Treasury. The projects section was part privatised and became Partnerships UK, a body that was subsequently disbanded.

35. National Audit Office, *Reorganizing Central Government Bodies*, HC 1703, Session 2010-12, 20 January 2012. The Head of the NAO commented in a press release that: "Plans to reorganise central government will bring a range of functions closer to ministers, and the Cabinet Office and departments are on course to deliver cost reductions. However, departments do not have a good enough grasp of the one-off costs of the reorganisation or, secondly, of the ongoing costs of continuing to provide the transferred functions."

36. Thain and Wright, op. cit., p. 87.

37. Control of Public Expenditure, Cmnd. 1432, June 1961.

38. Thain and Wright, op. cit., p. 521.

39. There is an interesting parallel here with the move in the UK and many other countries from an administrative structure of the budget to a structure based on programmes and sub-programmes, in which the focus is on how efficiently and effectively services are delivered rather than on organisational form.

40. H.M. Treasury (1994), *Fundamental Review of H.M. Treasury's Running Costs*. The review of the Treasury was the first in a series of such reviews undertaken by all major government departments.

41. Deputy Secretaries became Director-Generals, Under Secretaries became Directors, and Assistant Secretaries became Deputy-Directors. These changes in title signify the importance attached to the private sector corporate model.

42. H.M. Treasury (2011), *Work Programme 2011-12*, April.

43. These include implementing the deficit reduction plan, implementing the first phase of the growth review with the Department of Business Innovation and Skills, making progress toward a managed exit from financial interventions at best value to the taxpayer, legislating for structural reforms in financial regulation, promotion investor confidence in the UK economy, and managing domestic and euro area risks. See H.M. Treasury, April 2011, p. 5.

44. A reduction from 13 groups planned in 2011-12, the activities of two of the groups – on financial stability and financial regulation – being merged into the financial service group, as the pressures of the financial crisis are assumed to diminish.

45. Director level and above.

46. There is an interesting contrast with political appointees in the US government. In the latter case, the individuals concerned fill line positions down to the level of Assistant Secretary (below the position of Secretary and Deputy Secretary), and are often highly distinguished in their field. In contrast, special advisors in the UK are often young and inexperienced, some looking for parliamentary seats or other political careers. The current Prime Minister, David Cameron, was a special advisor in the Treasury from 1992-93.

47. In an article entitled "The Best Spending Cut of All? Shut down the Treasury", Philip Stephens observes that "staff turnover in the department rivals that of fast food chains – yet its mandarins have lost none of their self-regard", *Financial Times*, 24 June 2013.

48. This important aspect of Treasury culture is well described by Thain and Wright, op. cit., p. 99. Reviewing the expenditure side of the Treasury they note that: "Expenditure controllers are professional administrators, with skills and expertise acquired in a variety of posts… neither by qualification nor by training are they specialists comparable to (say) accountants or economists… nor are they specialists in particular subjects such as health, transport or defence, although some will have had relevant backgrounds in Whitehall departments or in the private sector."

49. Review of H.M. Treasury's *Response to the Financial Crisis*, op. cit.

50. These rules include meeting both the "golden rule" of only borrowing to invest, and the sustainable investment rule of public sector net debt as a proportion of GDP, to be held over the economic cycle at a stable and prudent level. These rules were abandoned as a result of the global financial crisis in 2007. The current Government introduced two new fiscal targets in 2010: to balance the cyclically-adjusted current deficit at the end of the rolling five-year forecast horizon; and to see public sector net debt falling in 2015-16.

51. H.M. Treasury (2007), *Capability Review*, December; H.M. Treasury (2009), *Progress and Next Steps*, December; and H.M. Treasury (2012), *Capability Action Plan*, April.

52. Philip Stephens, for example, has observed that "Everyone makes mistakes. The Treasury's failures have been systematic. Its devotion to unfettered markets led it to ignore the risks of under-regulated financial markets; its disdain for state intervention has blinded it to the needs of industry. The Treasury's attempts to reach beyond finance and turn itself into an economics ministry have not been helpful… The only [solution] is to break the Treasury's devotion to fiscal fundamentalism and untrammeled markets by stripping it down to the core functions of a finance ministry." *Financial Times*, op. cit., 24 June 2013.

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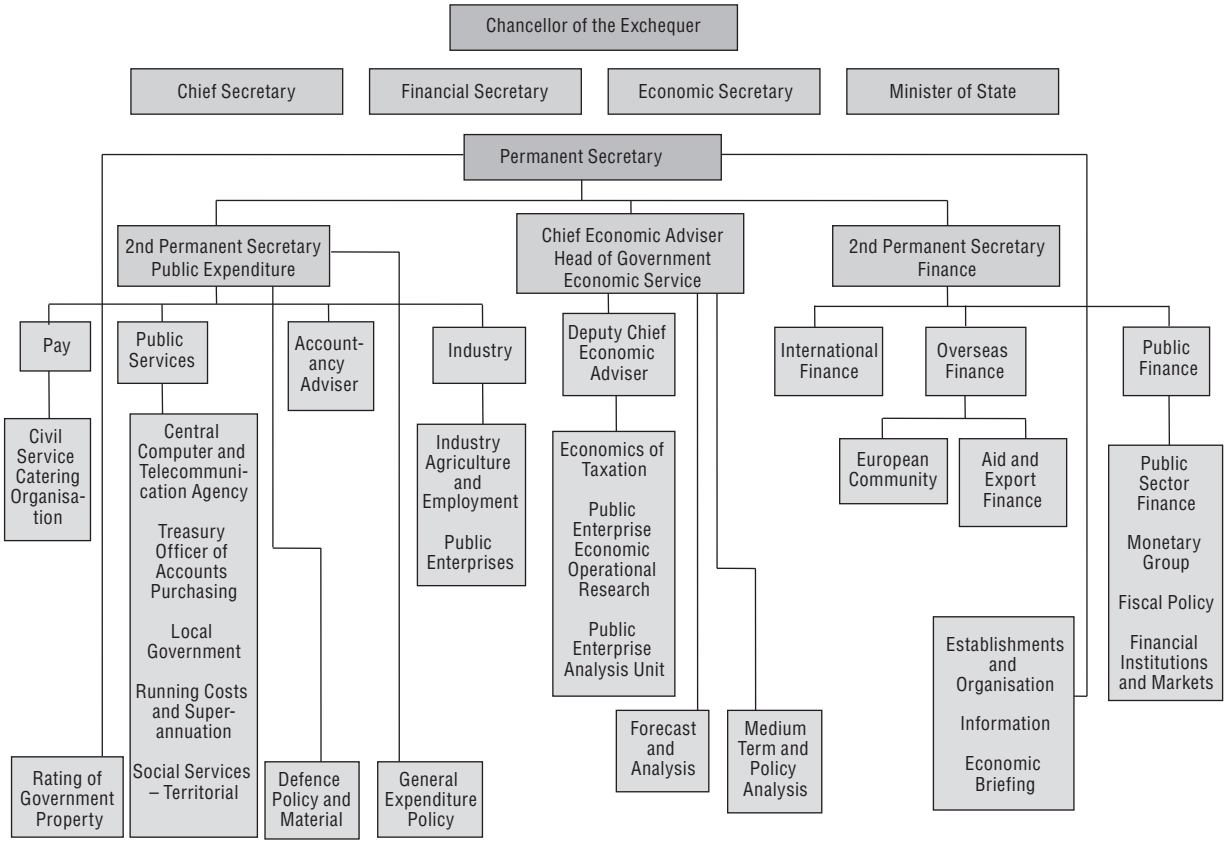
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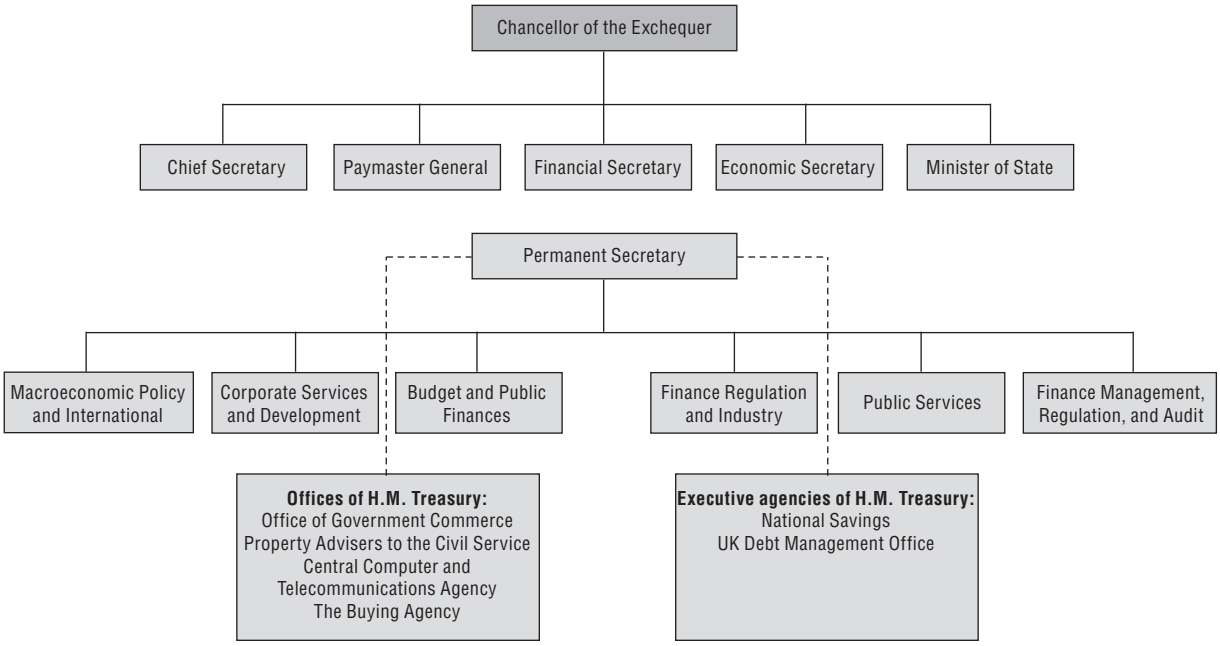
Annex figures

Figure A1. **Organisation of H.M. Treasury, 1980**



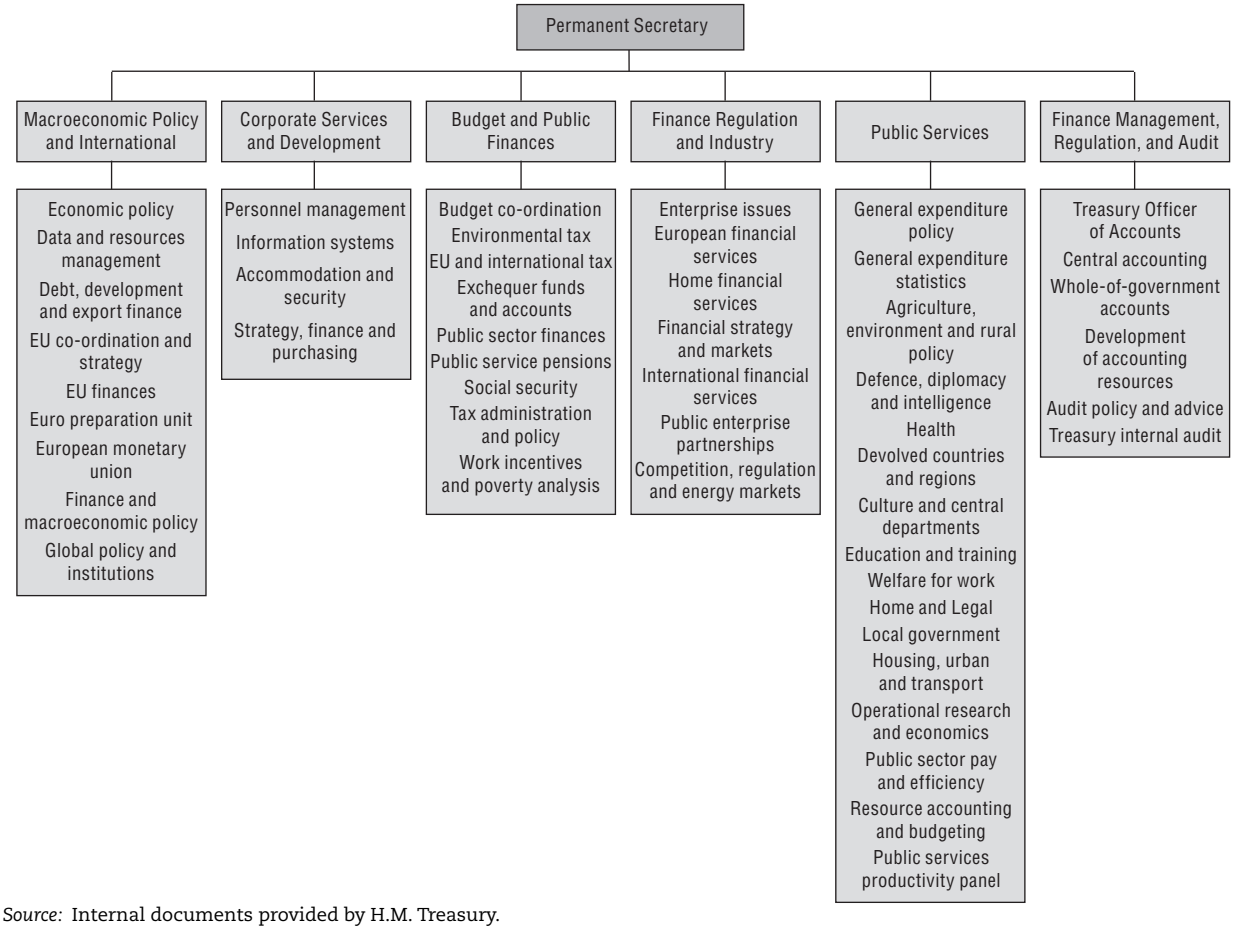
Source: Hennessy, P. (1986), *Whitehall*, Martin Secker and Warburg, London, p. 393.

Figure A2. **Organisation of H.M. Treasury, 2000**



Source: Internal documents provided by H.M. Treasury.

Figure A3. **Organisation of H.M. Treasury, 2000 – Directorates and teams**



Source: Internal documents provided by H.M. Treasury.

Figure A4. **Organisation of H.M. Treasury, 2012/13**

EXECUTIVE MANAGEMENT BOARD

MINISTERIAL AND COMMUNICATIONS

Responsible for decision making, co-ordination and management of the department and communications with media and the public

	Mar. 12	Mar. 13
FTE	88	87

CORPORATE CENTRE

Management and development of corporate policies, processes and change programmes

	Mar. 12	Mar. 13
FTE	202	175

STRATEGY, PLANNING AND BUDGET

Responsible for defining forward strategy, work programme, the budget, and short-term policy projects

	Mar. 12	Mar. 13
FTE	47	44

TREASURY LEGAL ADVISORS

Responsible for provision of advisory and other legal services across the Treasury and certain other agencies and departments

	Mar. 12	Mar. 13
FTE	3	3

FISCAL

Responsible for fiscal strategy, funding and debt management, and monitoring fiscal position

	Mar. 12	Mar. 13
FTE	53	52

INTERNATIONAL AND EU

Responsible for advancing the United Kingdom's economic and financial interests

	Mar. 12	Mar. 13
FTE	129	110

BUSINESS AND INTERNATIONAL TAX

Responsible for business tax, indirect taxes and international tax

	Mar. 12	Mar. 13
FTE	99	90

PUBLIC SPENDING

Responsible for public spending control

	Mar. 12	Mar. 13
FTE	58	57

ECONOMICS

Responsible for United Kingdom economic analysis, surveillance and professionalism

	Mar. 12	Mar. 13
FTE	46	46

FINANCIAL REGULATIONS AND MARKET

Responsible for the financial services regulatory framework and for financial Mar.kets policy issues

	Mar. 12	Mar. 13
FTE	49	41

PERSONAL TAX, WELFARE AND PENSIONS

Responsible for personal tax, welfare, labour Mar.ket and HMRC/DWP expenditure, pensions and savings

	Mar. 12	Mar. 13
FTE	77	80

PUBLIC SERVICES

Responsible for oversight of major public service expenditure

	Mar. 12	Mar. 13
FTE	72	66

FINANCIAL STABILITY

Responsible for ongoing stability issues and resolution of financial interventions

	Mar. 12	Mar. 13
FTE	51	49

FINANCIAL SERVICES

Responsible for policy with respect to financial services

	Mar. 12	Mar. 13
FTE	49	43

ENTERPRISE AND GROWTH AND IUK

Responsible for growth-related policy and expenditure, including infrastructure strategy

	Mar. 12	Mar. 13
FTE	124	114

FINANCIAL MANAGEMENT AND REPORTING

Responsible for embedding good governance and financial management across government

	Mar. 12	Mar. 13
FTE	83	70

Source: Internal documents provided by H.M. Treasury.

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The impact of cost-containment policies on health expenditure: Evidence from recent OECD experiences

by
Rodrigo Moreno-Serra*

Many governments have enacted health cost-containment policies in recent years, and many are currently considering further reform alternatives to tackle growing health spending and promote efficiency in the health system, particularly in light of projections regarding future cost pressures in this sector. The focus of this study is to assess the most robust empirical evidence on the public spending effects of health policy alternatives to contain excess cost growth in the system. A stylised theoretical framework of the relationships between potential cost-containment measures, economic incentives and quantities, and health expenditure is suggested. The developed framework provides structural guidance for reviewing the evidence on the cost-containment impacts of various reforms implemented in OECD countries in the last decades. The accumulated evidence indicates that there are various alternative policies in a government's toolkit that can be combined to achieve better cost control in the health system, provided institutional aspects and policy interactions are carefully considered.

JEL classification: I10, I18, H51.

Keywords: Health financing, cost containment, provider payment, health system reform.

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1. Summary and main findings

Following steady health expenditure growth in many OECD countries in recent decades, and projections of continued pressure on national health budgets in future years, governments have employed – and are continuously considering – a plethora of policy options for cost-containment in the health system. Since financial resources and political capital are scarce goods, it is crucial to identify those policy options with higher potential to achieve cost-containment objectives once implemented. Contrary to earlier assessments,[1] empirical evidence on the effects of several cost-containment reforms introduced in the OECD area has now accumulated and, despite being more abundant for certain policies and country settings, certainly offers valuable elements to inform health policy decisions if adequately put into context.

The present study gathers and summarises the most robust empirical evidence on the health spending impacts of cost-containment policies implemented by OECD countries in recent decades. The evidence assessed refers to policy efforts that have sought to tackle "excess cost growth" in the health system by changing cost-containment incentives to healthcare providers, consumers, or a combination of both, and in cases have also aimed at influencing health system administration costs.[2] Increased efficiency in the use of existing resources has also been targeted in order to help reduce cost pressures in the public health system. The available evidence on cost-containment policies, presented in more detail in the main text, is summarised below (see also Table 1).

1.1. Cost-containment policies aimed at the supply side: What do we know?

- **Provider payment methods.** *Reforms to the way healthcare providers are reimbursed have been mostly effective in influencing health expenditure patterns*. The introduction of physician payment methods based on capitation (e.g., United Kingdom) and cuts in service fees within fee-for-service schemes (e.g., United States) have succeeded in containing overall costs, with no evidence of cost-shifting to higher levels of care. The implementation of hospital payment mechanisms based on diagnosis-related groups has also proved an effective cost-containment tool in many OECD countries, with most of the evidence pointing to no deleterious impacts on care quality. While the cost-containment effects of provider payment reforms enacted more recently are difficult to predict in the longer run, given their potential boosting effect on demand through lower service prices, even relatively short-lived initiatives may result in permanent cost-saving changes in physician practice patterns.[3]
- **Provider competition.** Encouraging competition between hospital care providers has been linked to lower overall costs, greater efficiency and better quality of care in the United Kingdom and United States, provided competition for patients is based on factors other than price (e.g., quality). Regulatory strategies such as enhanced patient choice and dissemination of information regarding hospital performance seemed crucial in that regard. Price-based competition between hospitals has been associated with

Table 1. **Summary of the reviewed empirical evidence on cost-containment policies in OECD countries**

Cost-containment policy	Category	Primary effect on	Empirical evidence of cost-containment?	Main empirical evidence from	Notes
Fee-for-service reduction	Supply-side	Price	Yes	United States	Cost-containment effect partly mitigated by increase in service demand
Capitation payment	Supply-side	Price	Yes	United Kingdom	Combined with GP fundholding and gatekeeping No evidence of cost-shifting
DRG-based payment	Supply-side	Price	Yes	Several OECD countries	May affect quality of services
Hospital competition	Supply-side	Mixed price and quantity	Yes	United Kingdom, United States	Price-based competition linked to lower care quality
Insurer competition and selective contracting	Supply-side	Mixed price and quantity	Mixed	Netherlands, United States	Successful in the United States (combined with payment-for-performance) Less successful in the Netherlands (limited selective contracting and payment-for-performance)
Mandated generic substitution	Supply-side	Price	Yes	Canada, Sweden	
Joint purchasing of pharmaceuticals	Supply-side	Price	Yes	United States	Most evidence methodologically limited
Budget caps (sector and global)	Supply-side	Mixed price and quantity	Yes	Germany, United Kingdom	Most evidence methodologically limited Some evidence of cost-shifting due to sector budget
Workforce supply and wage controls	Supply-side	Mixed price and quantity	No	Canada, United States	Evidence of cost increases due to stricter entry legislation
Malpractice award limitation	Supply-side	Quantity	Yes	United States	Magnitude of cost-savings controversial
Cost-sharing extension	Demand-side	Price	Yes	Several OECD countries	Extended cost-sharing linked to reduced access to necessary and quality care Consequential deleterious impacts on inequalities and health outcomes
Private insurance subsidisation	Demand-side	Mixed price and quantity	No	Australia, Spain, United Kingdom	Subsidy removal probably cost-saving
Gatekeeping role for physicians	Demand-side	Quantity	Mixed	Several OECD countries	Most evidence methodologically limited
Pharmaceutical formularies	Demand-side	Quantity	Yes	Canada, United States	Most evidence methodologically limited
Definition of publicly funded benefit package	Demand-side	Quantity	Evidence unavailable		Direct restriction to services offered within the public health system Link to use of health technology assessment (see below)
Direct price control of pharmaceuticals	Public management, co-ordination and financing	Price	Yes	Several OECD countries	Magnitude of cost-savings from reference pricing schemes heavily context-dependent Long-run effects on costs controversial
Decentralisation of health system functions	Public management, co-ordination and financing	Mixed price and quantity	Mixed	Several OECD countries	Centralised funding associated with higher sub-national expenditures Evidence of aggravation of inter-regional spending inequalities
Recentralisation of health system functions	Public management, co-ordination and financing	Mixed price and quantity	No	Norway	Only one country-case, with concurrent change to provider reimbursement
Reforms to the mix of health financing sources	Public management, co-ordination and financing	Mixed price and quantity	Yes	Several OECD countries	Evidence of cost-savings from move away from social insurance contributions towards general taxes
Use of health technology assessment	Public management, co-ordination and financing	Mixed price and quantity	Evidence unavailable		Cost-containment impacts likely to arise from combination with other reforms, including definition of basic benefit package

worsening health outcomes for inpatients. And although quality controls imposed by the public sector can in principle protect consumers, there is evidence that hospitals may focus on maintaining quality for services more easily monitored by the public authority at the expense of others unmeasured activities (Propper et al., 2008). As with many other cost-containment strategies discussed in the present study, long-term effects on health expenditures will depend on the extent by which aspects such as quality improvements increase aggregate service demand.

- **Insurer competition and selective contracting.** The cost control potential of insurer competition hinges to a large extent on the combined role of selective contracting, particularly in inpatient care. A strong role for selective contracting – with payment-for-performance elements – seems to magnify any cost-savings induced by the encouragement of insurer competition. This highlights the importance of developing and improving comprehensive provider performance indicator systems in addition to effective risk equalisation schemes. Although selective contracting has been used in single-payer systems as well, most evidence on its cost-containment effects comes from the experience in multiple-payer systems that have also promoted health insurer competition (Netherlands, United States). The cost-containment impacts of insurer competition reforms seem to apply in contexts beyond health systems characterised by a unique configuration such as managed care in the United States. Yet the scope for introducing such market-based reforms depends of course on whether there are already multiple insurers in the system, and the extent of provider competition and patient choice.
- **Pharmaceutical policies.** *Mandated generic substitution has helped curb the growth in pharmaceutical expenditures* (Canada, Sweden), at least in the relatively short period of time most research has been able to analyse. *Joint (multi-state) purchasing has also been suggested to decrease the pharmaceutical bill to the public sector* (United States). These policies have frequently been employed alongside other pharmaceutical-related reforms affecting both the supply and demand sides (see below), enhancing their cost-containment potential. It is possible that pharmaceuticals will continue putting upward pressure on health expenditures in the longer term should they enable more people to obtain treatment, and for longer periods of time, due to price reduction.
- **Budget caps.** *Ceilings on global or sector expenditures have had some success in containing health costs* (Germany, United Kingdom). Some cost-shifting from sectors affected by the budget caps towards uncontrolled sectors has been identified in one case (Germany), but the additional costs in other sectors seemed outweighed by the generated savings from the cap policy. Although the OECD experience with budget controls is perceived as mostly positive, particularly in single payer countries (Docteur and Oxley, 2003), the available hard evidence is limited. Also, concerns may be raised about the possibility of other consequences for the system, for instance increased waiting lists as hospitals adjust their activity levels. Unfortunately, there is a paucity of empirical evidence on these aspects.
- **Workforce legislation.** Reforms restricting the supply of health professionals – mainly through stricter professional entry barriers – and wage controls have proved ineffective in containing overall health expenditures (Canada, United States). In fact, empirical research has shown that tighter entry or licensure legislation may be cost-increasing for the health system as a whole, due to reduced provider competition and resulting

increases in the overall wage bill for "protected" professionals. It would be important for health policy design if empirical evidence was also generated about changes in the mix and quality of care induced by workforce legislation reforms.

- **Malpractice legislation.** Limits imposed to malpractice damage awards paid by physicians have helped contain health spending growth in the United States context, by curbing higher volumes of care due defensive medicine behaviour. The magnitude of these gains is controversial, however. The evidence is also unclear about the effects of such reforms on quality of care, as presumably decreased risk of litigation may encourage lenient behaviour by some providers and possibly worse patient outcomes.

1.2. Cost-containment policies aimed at the demand side: What do we know?

- **Cost-sharing.** Reforms expanding the role of cost-sharing in health financing have generally succeeded in lowering overall public spending on health in the short-run. Yet expanded cost-sharing seems to lead to deleterious effects on patients' health outcomes and inequalities, by imposing barriers to access to needed and quality care especially among more vulnerable populations. Since the demand for most medical services is relatively price-inelastic (Cutler and Zeckhauser, 2000), only by imposing substantial increases in cost-sharing can governments expect to significantly limit the demand for health services and associated costs, probably at the expense of damaging consequences on care access and health outcomes. Exemption policies, complementary private insurance and ceilings on spending targeted at vulnerable populations can help mitigate such negative consequences if carefully implemented, as attempted in France and Sweden (Docteur and Oxley, 2003).
- **Private insurance tax policies.** *Subsidies to encourage take-up of complementary private health insurance have failed to relieve public budgetary pressures* (Australia, Spain, United Kingdom). In fact, studies have recommended the elimination of existing tax incentives for enrolment into private health insurance in light of potentially substantial savings for the public health sector, even when increased use of publicly funded care is factored in. Any cost savings for the public sector from the removal of these subsidies may be exacerbated if private insurers reduce their premiums and succeed in keeping part of their enrolees, thereby mitigating increased use of publicly funded healthcare.
- **Physician gatekeeping.** *The implementation of gatekeeping arrangements in OECD countries has contained health expenditure growth*, at least according to cross-country evidence. The combination of gatekeeping with supply-side reforms, such as capitated payment and budget holding for GPs applied in the United Kingdom, seems a promising strategy to curb overall health spending. However, the evidence on the system-wide cost impacts of gatekeeping implementation in individual countries is still methodologically limited.
- **Pharmaceutical formularies (preferred drug lists).** *Formularies seem to have decreased spending on pharmaceuticals and resulted in overall cost-savings in the system* (Canada, United States). As above, the available research on the topic is still limited. Arguably, the benefits in terms of cost control and quality of care are potentially higher if formularies tilt consumption patterns towards drugs with high cost-effectiveness, and exclude those with low cost-effectiveness, highlighting the catalyst role of health technology assessment within broad cost-containment strategies.

1.3. Cost-containment through public management, co-ordination and financing reforms: What do we know?

- **Direct control of pharmaceutical prices and profits.** The joint introduction of direct price controls and other regulations (such as mandated generic substitution) in pharmaceutical markets across the OECD has proved an effective policy lever to contain health expenditures. Strict price regulation has lowered drug prices in several countries (e.g., Canada, France, Germany, Japan and the United States). Differences related to some pharmaceutical market institutional features have been instrumental to exacerbate the cost-containment effect of reference pricing reforms in some contexts compared to others. For instance, mandated generic substitution was key for cost-containment through reference pricing in Germany, while generics price controls magnified cost-savings from reference pricing in New Zealand compared to Germany and the Netherlands. But although direct price control policies have also been found more capable of decreasing the overall pharmaceutical bill to the public sector than cost-sharing (Sweden; Andersson et al., 2006), their long-term cost-control effects remain controversial. More research is also needed on other potential impacts of price and profit control policies, for example the extent to which revenue reductions can negatively affect innovation in the pharmaceutical industry.
- **Decentralisation and recentralisation of health system functions.** Transfer of functions such as planning and service delivery to sub-national levels of government, with mostly centralised funding, seems to have translated into cost-savings at the system level in some contexts (Italy, where the reforms took place in the context of health budget cuts) but not others (Spain). The prevalence of soft budgeting post-decentralisation has been singled out as a major caveat for effective cost-containment in the health system, particularly at sub-national government levels. Interestingly, the scarce evidence on recentralisation policies (Norway) also suggests a lack of cost-containment impacts in the health sector, again owing in part to the persistence of soft budgets after the reform. Sub-national inequalities in health spending seem to be aggravated after decentralisation reforms (Italy, Spain, Switzerland). In these contexts, governments must ensure the implementation of adequate co-ordination and fiscal equalisation arrangements, in order to prevent spill-over effects such as residents seeking healthcare in a different locality due to low quality of care in their area.
- **Sources of health system financing.** Reforms aimed at increasing reliance on social insurance contributions vis-à-vis general taxation have led to higher total and government health expenditures in OECD countries, according to a body of empirical evidence. Due to the broad nature of health financing reforms, the corresponding hard evidence comes almost exclusively from aggregate, cross-country studies, which makes difficult the investigation of the specific channels responsible for higher health expenditures in systems moving towards social insurance financing. Some evidence has been unearthed of higher administrative costs and provider wage bills induced by higher reliance on social insurance funding. More generally, the available research suggests that movements towards social insurance-based financing often involve costly institutional reforms (e.g., creation of a social insurance agency, co-ordination and regulation of multiple payers), which are not usually offset by cost-savings or efficiency improvements elsewhere in the health system.
- **Health technology assessment.** Reforms to enhance the role and quality of health technology assessment (HTA) activities may promote efficiency in health system

funding allocation and free up resources, thus attenuating pressures on the public budget. Although no systematic evidence is available on the direct cost-containment impacts of HTA, it seems more sensible to expect HTA to have cost-containment and efficiency impacts mainly through its judicious use in defining the package of interventions publicly funded in the health system, assisting also with decisions about public funding of new, more expensive (but potentially more clinically effective) technologies. The overall effect of new technology adoption on health costs will depend of course not only on prices, but also on its effects on healthcare demand.[4]

This paper is structured as follows. Section 2 provides some background on the rationale for, and the nature of, cost-containment reforms introduced in the health system in recent years by OECD countries. It also lays out the objectives and scope for the review of the available empirical research assessing cost-containment impacts. Section 3 presents a stylised theoretical framework of the relationships between potential cost-containment measures, economic incentives and quantities, and health expenditure. The developed framework provides structural guidance for Section 4, which reviews the empirical evidence on the cost-containment impacts of various reforms implemented in OECD countries in the last decades. Section 5 presents some concluding remarks.

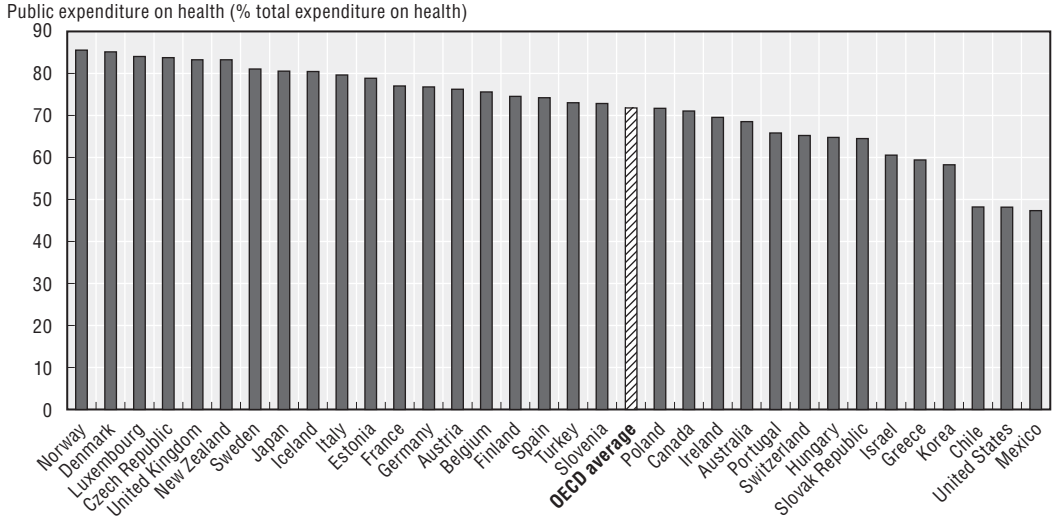
2. Background and study objectives

Most OECD countries finance their health systems predominantly from public sources such as general tax revenues and social health insurance contributions (Figure 1). Following a steady increase in health expenditures among member countries over the 1960s and 1970s, such growth in spending slowed down over the 1980s and part of the 1990s. Yet from the early 2000s onwards countries have experienced a revival in health expenditure growth at rates that many countries find worrying for public finances given current levels of overall economic activity. Health expenditures among OECD countries currently represent on average 9.5% of the GDP (2010), reaching between 11-12% in countries like Canada, France, Germany, the Netherlands and Switzerland, and over 17% in the United States (Figure 2).

Many governments have enacted health cost-containment policies in recent years, and many are currently considering further reform alternatives to tackle growing health spending and promote efficiency in the health system, particularly in light of projections regarding future cost pressures in this sector. For example, a report commissioned by the British government to examine trends in health expenditure over the following twenty years concluded that, under reasonable scenarios of health needs, technological advance, workforce use and productivity changes, total health spending in the United Kingdom would grow from less than 8% of GDP in 2002 to between 10.6% and 12.5% by 2022 (Wanless 2002). In the United States, federal spending on Medicare and Medicaid has been projected to rise from 4% of GDP in 2007 to 12% in 2050, reaching 19% in 2082 (Orszag, 2007).[5]

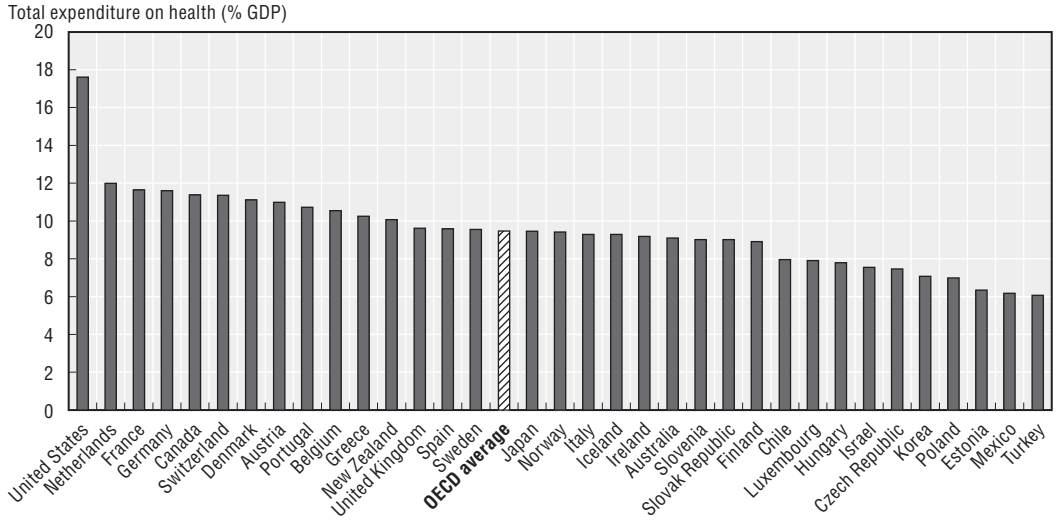
A recent OECD report has developed a framework to discuss the main drivers of health expenditures in member countries, as well as to obtain projections of growth in spending under two alternative scenarios (Oliveira Martins et al., 2006). The first scenario analysed was one of "cost-pressure", in which health expenditures were assumed to grow in line with historical trends over the past two decades in OECD countries, i.e. 1% per annum faster than income. The second was a "cost-containment" scenario, where national health policies were assumed to completely eliminate that extra expenditure growth by 2050. The

Figure 1. **Public expenditure on health as share of total health expenditure (OECD countries, 2010 or nearest year)**



Source: OECD (2013), OECD.Stat Extracts, available at: *http://stats.oecd.org* (accessed: 11 March 2013).

Figure 2. **Total expenditure on health as share of GDP (OECD countries, 2010 or nearest year)**



Source: OECD (2013), OECD.Stat Extracts, available at: *http://stats.oecd.org* (accessed: 11 March 2013).

projections suggested that, under the "cost-pressure" scenario, public spending on health could almost double as a share of GDP in the average OECD country between 2005 and 2050 (from 6.7% to 12.8%), with a significant average rise in health expenditures – of around 3.5 percentage points of GDP – even in the event of successful cost-containment policies.

As for the major health expenditure drivers, the retrospective decompositions and projections of the growth in public spending for OECD countries broadly confirmed the conclusions from previous (and also more recent) research. Population ageing and other demographic factors, including improvements in population health status, account for only a modest share of health spending growth. Specifically, Oliveira Martins et al. (2006)

estimated the age effect to account for less than one-tenth of the increase in government health expenditure per capita between 1970 and 2002. In the United States, ageing is expected to account for less than 20% of federal spending on Medicare and Medicaid by 2050 (and about 10% by 2082; Orszag, 2007). Studies for other countries have obtained similar results (e.g., France; see Dormont et al., 2006).[6]

The OECD work on projections concluded that non-demographic aspects, which include effects from income growth, technology adoption and changes in relative prices, represent by far the most important drivers of the growth in health expenditures. The expenditure growth corresponding to non-demographic factors was estimated to reach around 4% per annum between 1970 and 2002. Income growth seems to have played a significant role for the rising shares of national income devoted to health services in that period. Yet this and other studies for OECD countries indicate that economic growth is not necessarily the key underlying factor, with health spending typically growing faster than income in what is often referred to as "excess cost growth" (Orszag, 2007; White, 2007). Instead, cost pressures associated with the institutional setting around the organisation, financing and delivery of health services – including changes in medical practice and uptake of new technologies – are frequently identified as the most important cost drivers in past and projected increase of national health expenditures, representing between one-third and two-thirds of health spending growth in the OECD as a whole and in countries such as the United States and France (Wanless, 2002; Dormont et al., 2006; Oliveira Martins et al., 2006; Chernew et al., 2012).[7]

Many of the cost-containment reforms introduced in the OECD area from the late 1980s have been primarily aimed at reversing the strong increase in excess cost growth, but a systematic analysis of their effects on health spending, based on hard empirical evidence, is surprisingly lacking. Projection work such as Oliveira Martins et al. (2006) has usually simulated "cost-containment" scenarios in which policies are successful in curbing health spending by the end of the projection period, yet such policies have rarely been modelled explicitly based on actual quantitative evidence about how effective their introduction has been in the past.

This report gathers and summarises the most robust empirical evidence on the health spending impacts of cost-containment policies implemented by OECD countries in recent decades.[8] These policies have been enacted against a background of widespread acknowledgement by policy-makers that changing the incentives embedded into existing arrangements for healthcare organisation and delivery can be fundamental to improve efficiency in the system, thereby helping to tame upward pressures in healthcare costs. From a policy perspective, it is crucial to examine the available evidence on the impacts of alternative measures of cost-containment in the health sector. Planning and forecasting activities require quantitative information about the potential that such reforms have to curb overall spending in the system. Assumptions based on theoretical, expected effects will not necessarily correspond to actual policy effects when those are implemented in real conditions, and may render less valid the conclusions from exercises that seek to estimate growth in health spending based on a strong effect of cost-containment initiatives.

The focus of this review is to assess the evidence on the public spending effects of health policy alternatives to contain excess cost growth in the system. This is, after all, the main component driving up health system costs (apart from overall economic growth), and upon which most policy options readily available for governments are suited to act.[9] It

must also be noted that a detailed description of all cost-containment reforms implemented in the OECD area is beyond the scope of the present study. Other studies have presented these cost-containment reforms in more depth, mainly from a taxonomical perspective (cf. e.g., Mossialos and Le Grand, 1999; Docteur and Oxley, 2003; Langenbrunner et al., 2005), and the reader is referred to them for more details of each policy reform. Yet effective policy-making requires hard evidence on the impact of alternative policies under different contexts, so those more likely to succeed in a particular health system configuration can be selected. Since the quantitative impacts of any policy will likely vary across countries according to the institutional and historical settings, the present review has the modest goal of assisting policy-makers to make more informed decisions on health cost-containment reform paths based on particular country experiences, outlining a number of more specific recommendations for governments grounded on the available empirical research.

3. A stylised economic framework for cost-containment reforms

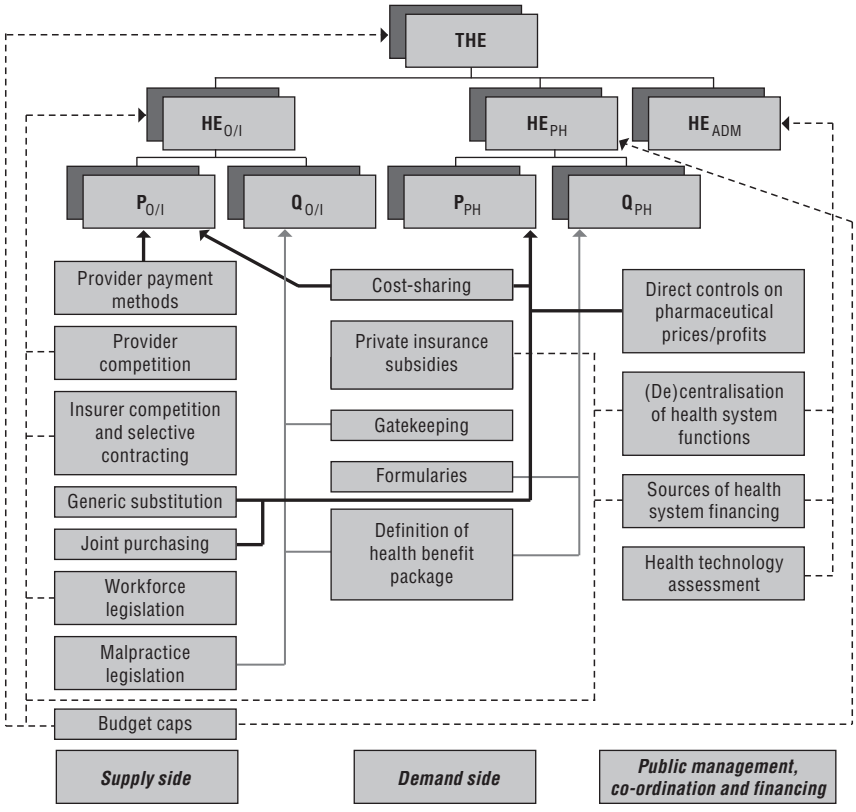
Governments have several options of cost-containment policies at their disposal. These options vary greatly with regard to the specific channels through which they are expected to influence health expenditures. Policies may be expected to change mainly provider or consumer behaviour and activities, or act through a combination of both. Any changes in provider or consumer behaviour may affect the prices and/or quantities of health services provided, sometimes primarily in one sub-sector but with spill-overs to other sub-sectors.

Figure 3 presents a suggested stylised framework to analyse the economic mechanisms and relationships at work. The framework developed here builds on earlier typologies of cost-containment health policy reforms suggested elsewhere (Oxley and MacFarlan, 1995; Joumard et al., 2010), grouping alternatives into i) supply-side; ii) demand-side; or iii) public management, co-ordination and financing reforms. Of course, the boundaries between those categories can be blurred and sometimes debatable. Figure 3 offers one possible, simplified policy categorisation based on whether the cost-containment policy is primarily meant to alter i) provider behaviour; ii) consumer behaviour; or iii) a combination of both (sometimes including also public administrators) through changes in public management and broad institutional arrangements.

The components of total health expenditure (THE) are disaggregated into three sub-sectors: outpatient and inpatient expenditure ($HE_{O/I}$); pharmaceutical expenditure (HE_{PH}); and public administration expenditure (HE_{ADM}). Further structure is added to the proposed framework by the introduction of basic economic parameters, the price (P) and quantity (Q) of health services, so as to generate clearer insights about the potential direction of health spending variations induced by each reform.

Policy instruments may then – at least in theory – influence health expenditure by acting directly or primarily on service prices (black lines) or quantities (light grey lines). Policies may also affect sector and overall health expenditures by indirectly stimulating administrative units, providers and consumers to adjust prices and/or quantities (dotted lines). It is sensible to expect policy reforms to exhibit important interactions among them and with institutional aspects of the health system, thus mitigating or exacerbating their "pure" cost-containment effects, as well as causing indirect knock-on effects on other sub-sectors of the system. For the sake of exposition, these are not modelled in the framework

Figure 3. **A stylised economic framework for cost-containment reforms**



proposed here, but rather discussed on a case-by-case basis according to the available empirical evidence reviewed below.

The policy reforms displayed in Figure 3 are not intended to represent the whole menu of cost-containment instruments available to policy-makers. They mostly represent those interventions for which some robust empirical evidence is available on their effectiveness to control health expenditure. Despite its simplicity, the proposed framework offers a tractable and insightful structure, based on economic parameters, to think straight about the possible and observed impacts of policy reforms to address non-demographic drivers of health expenditure.

4. Cost-containment policy reforms in OECD countries: Reviewing the evidence

4.1. Supply-side reforms

4.1.1. Reforms to physician payment mechanisms

Physicians are often involved in the role of deciding how health resources are allocated, as they act as agents of the patients, and are often entrusted with the authority to determine the need for and arrangement of specialist or hospital care. Effective implementation of primary care reforms, such as the introduction or reinforcement of gatekeeping role for general practitioners (GPs), depends largely on the financial incentives provided by the accompanying payment system for physicians. The latter operates on health costs primarily through changes in the relative price of services (cf. Figure 3).

Payment methods for physicians can be crudely categorised into salary arrangements, capitation, and fee-for-service (Ellis and Miller, 2008). Economic theory and empirical studies have long indicated that salary and fee-for-service (FFS) arrangements rarely provide physicians with the incentive to contain cost (Gerdtham and Jönsson, 2000; Ellis and Miller, 2008). FFS schemes may even proliferate supplier-induced demand, although there have been attempts to control costs in such systems by directly cutting service fees or implementing FFS within a hard budget.

Nguyen (1996) used time series data to examine physician response to fee reduction within the FFS arrangements for the United States Medicare programme. Results show that the volume of services whose fees were cut by the Omnibus Budget Reconciliation Act of 1989 increased by 3.7% for every 10% fee reduction. In other words, for every dollar cut in fees, physicians were able to recoup 37 cents through increasing volume of services provided. In comparison, procedures whose fees were not reduced did not seem to have experienced a volume increase. The Medicare experience suggest that simple fee reductions within FFS arrangements are likely to have their impacts on health cost-containment attenuated if taken in isolation, with no further provisions to curb the high-powered spending incentives possibly leading to undesired behavioural responses such as supplier-induced demand.

In contrast to FFS payment, capitation methods and more generally the use of pre-defined budgets for GP payment are often argued to allow funders to keep a tighter control over health expenditures. Such arrangements have been used as a strategy to transfer the responsibility over resource allocation onto physicians or GPs even though, depending on the details of implementation, they may provide GPs with little incentive to maintain or improve quality of care (Ellis and Miller, 2008).

Dusheiko et al. (2006) used the introduction of GP fundholding in the United Kingdom in 1991, and its subsequent abolition in 1999, to compare trends in hospital admission rates among fundholding and non-fundholding GP practices before and after the policy change of the late 90s. During the existence of the GP fundholding policy, general practices could choose to be given a budget to pay for the costs of certain types of elective surgery (chargeable electives) for their patients and could retain any surplus, but they did not pay for other types of elective admissions or for emergency admissions. The removal of financial incentives associated with budget holding was found to increase chargeable elective admissions by 3.5-5.1% among former fundholding practices, implying estimated savings in the range of GBP 46 million to GBP 67 million for the English National Health System had fundholding remained in place in 2000. Evidence from this natural experiment suggests that gatekeeping physicians are indeed likely to respond to the introduction of capitation or budget payment by cutting back service volume, through which there is potential for reduced overall spending in the health system.[10]

4.1.2. *Reforms to hospital payment mechanisms*

There is hard evidence from OECD countries also with regard to the potential impact of reforming payment methods to hospitals – the biggest spenders in a health system – as policy tools for overall cost-containment. As with physician payment methods, reforms to hospital payment arrangements are expected to change the behaviour of providers by altering the relative price of healthcare services.

Payment mechanisms to hospitals can be broadly classified into three groups: payments based on provider characteristics (e.g., line-item budgets); payments based on service characteristics (e.g., FFS); and payments based on patient characteristics (e.g., variants of diagnosis-related groups, DRGs). In theory, under otherwise similar institutional contexts, payment arrangements based on provider or patient characteristics give hospitals stronger financial incentives to contain spending than payment methods based on the characteristics of the services, in which providers are usually remunerated according to the volume of procedures (Ellis and Miller, 2008).

A study by Kwon (2003) examined changes in hospital throughout and costs associated with the implementation of DRGs within a pilot programme in Korea, covering a selected group of diseases with voluntary provider participation. This DRG experiment was intended to pave the way for the eventual roll-out of case-based payment for all inpatient care funded by the Korean national health insurance programme, which had been paying providers by fee-for-service since its inception. Simple comparisons pre- and post-pilot showed that total medical expense per claim case decreased by 14% after DRG introduction, owing in part to sizeable reductions in typical length-of-stay. This conclusion, although only indicative, echoes findings from studies conducted elsewhere in the OECD area (and comparative studies including OECD countries) suggesting that providers have responded to the incentives embedded in DRG-based payment towards curtailment of overprovision of services and reduced hospital expenditures (cf. e.g., Louis et al., 1999, for Italy; Gerdtham et al., 1999, for Sweden; Moreno-Serra and Wagstaff, 2010, for some recent OECD member countries).

However, the above provider response to the introduction of DRG-based payment may in cases be linked to undesired consequences elsewhere in the health system. For example, although studies have frequently been unable to detect deleterious impacts on healthcare quality arising from DRG introduction or expansion reforms (Dismuke and Guimaraes, 2002; Or and Hakkinen, 2010; Moreno-Serra and Wagstaff, 2010; among others), some empirical research in the area has concluded that lack of adequate quality assurance mechanisms may be behind increased hospital readmission rates or lower-than-expected quality gains in a few contexts (Forgione et al., 2004).

4.1.3. *Reforms to promote competition among providers*

The existence of market failures mean that unregulated competition between suppliers in the health sector is unlikely to result in lower prices and improved quality of care (Arrow, 1963). In many instances governments have fostered the development of "quasi-markets" in healthcare by, *inter alia*, introducing and regulating choice of providers and insurers, and controlling the extent to which providers can compete for patients. The idea behind market-oriented reforms is that they will encourage providers and insurers to seek efficiency gains (in addition to improvements in aspects like quality of care), thereby helping to contain the growth of health expenditures. In reality, the introduction of competition reforms in the OECD health systems has focused mainly on the hospital and insurer (payer) levels. Market-oriented reforms have been adopted or are under discussion in countries such as Australia, Belgium, Czech Republic, Israel, Netherlands and the United Kingdom, while in the United States markets have long been used for the delivery of health care.

The system-wide effects of different competitive regimes for providers introduced in the 1990s and 2000s in the United Kingdom offer valuable insights for policy-makers,

particularly concerning the aspects on which provider competition is based. Gaynor et al. (Gaynor et al.) studied the introduction of market-oriented reforms in the English NHS in 2006, whereby GPs were required to offer patients a choice of provider for elective inpatient care, and providers started to be remunerated based on prospective fixed prices (a variant of DRGs). Examining data for all English hospitals, the authors show that the reforms encouraged providers to compete for patients through improvements in quality of care, since prices were fixed. Hospital efficiency was found to improve in that better health outcomes were achieved in hospitals more exposed to competitive pressure, with lower average length-of-stay and no general increases in hospital expenditures. One of the channels by which competitive pressure may have improved efficiency among English hospitals is through encouraging service reconfiguration (consolidation and reallocation) across hospital sites, which has been associated with elimination of excess bed capacity and sizeable cost-savings for some providers (Palmer, 2011).

A word of caution regarding the set-up of provider competition comes from a previous market reform enacted in the United Kingdom in the early 1990s. Despite evidence of lower waiting times and cost reductions through lower expenditure per patient after the reform, the fact that under this previous regime prices were negotiated, hospital reimbursement was based chiefly on retrospective cost, and measures of quality were very limited and not publicly available, meant that competitive pressure ended up reducing quality of care measured by indicators not monitored (unobserved) by the regulator (Propper et al., 2008). The importance of the institutional framework for the quality-cost trade-off from enhanced provider competition is reinforced by studies of price competition in other settings, with similar results (Volpp et al., 2003).

4.1.4. Reforms to promote selective contracting and competition among purchasers

Insurer competition and selective contracting have also been used as policy tools for health cost-containment and improved efficiency in OECD countries. In the United States, this has translated into the implementation of managed care organisations since the early 1980s, which are intended to achieve cost-savings relative to "traditional" private insurers (indemnity plans) by negotiating service prices from selected, competing hospitals and steer their enrolees to them, as well as shifting away from cost-based hospital reimbursement towards prospective payment mechanisms. Another example is the Dutch case, where managed competition has been rolled out since the early 1990s focusing primarily on purchaser competition and selective contracting of providers within reforms to implement a compulsory private insurance scheme.

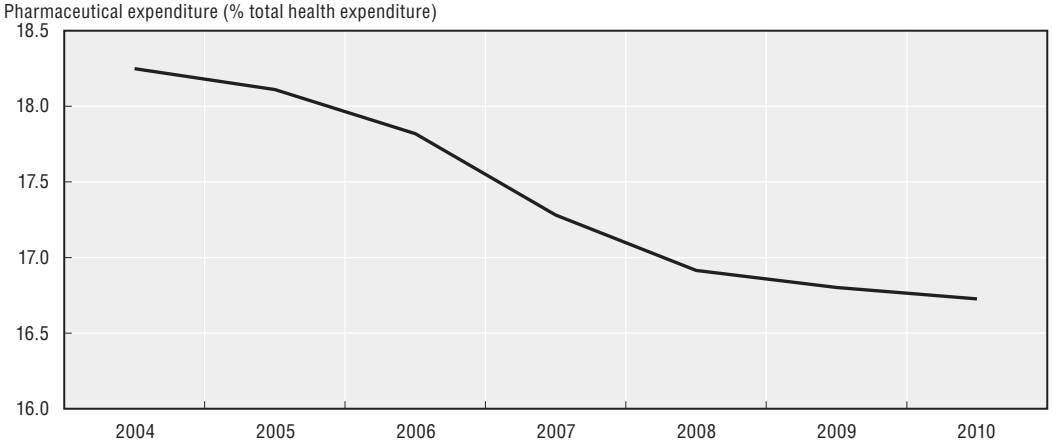
A number of studies have concluded that purchaser competition coupled with selective contracting and payment-for-performance in the United States have delivered reductions in the growth rate of health insurance premiums by containing costs and improving system efficiency (Dranove et al., 1993; Zwanziger et al., 1994, 2000). More specifically, both for-profit and not-for-profit hospitals located in more competitive areas exhibited slower spending growth (compared to their counterparts in locations with lower pressure from other competitors) after the emergence of selective contracting (Zwanziger et al., 2000). There is also indicative evidence on spillover effects of managed care and selective contracting for health expenditures within the traditional Medicare system. For example, the average fee-for-service inpatient expenditure of traditional Medicare enrolees has been found to decrease by as much as 2.5% for a 10% increase in the market share of managed care organisations, with similar results for outpatient expenditure (Baker, 1999).

The available evidence for the Netherlands emphasises the substantial degree of interdependence between distinct features of "quasi-markets" in healthcare. In addition to encouraging price competition among health insurers, the move towards purchaser competition in the Dutch health system has been found to lower price inflation among non-price regulated hospitals and significantly reduce generic drug prices between 2006 and 2009 (Schut and van de Ven, 2011). Nevertheless, there is no hard evidence that the pro-market reforms have played a role in reducing the growth of overall health expenditures in the Dutch health system. To some extent, this seems due to two main reasons. One is the limited practical role for selective contracting based on provider performance within current purchasing processes, since most service prices are still subject to substantial regulation and health insurers typically have most deficits on hospital expenses reimbursed retrospectively (van de Ven and Schut, 2009). This dilutes the incentive insurers have to push for lower prices from providers, and allows providers to compensate for lower prices by raising the volume of services delivered. Another possible reason is the reluctance of insurers (possibly driven by medical profession opposition) to integrate vertically with providers – one of the expected outcomes of the reform – and set up managed care organisations similar to those found in the United States and Switzerland (Schut and van de Ven, 2011).

4.1.5. *Reforms to pharmaceutical markets*

The rapid growth of expenditure on pharmaceuticals in the OECD area during most of the second half of the 20th century presented a challenge for national health budgets.[11] As a response, countries like Canada, Germany, Spain, Sweden and the United States have enacted an array of alternative cost-containment policies targeted at all levels of the production and distribution of pharmaceuticals. Supply-side policies for cost control have focused mainly on influencing the price of individual drugs (Figure 4). Although pharmaceuticals still represented on average over 16% of total health expenditure in the OECD area in 2010 (OECD, 2013), those cost-containment policies may have played a role for the declining share of pharmaceutical spending in total health spending observed in recent years (Figure 4).

Figure 4. **Evolution of pharmaceutical expenditure as share of total health expenditure**



Note: Simple averages for 24 OECD countries with available data for the entire period.
Source: OECD (2013), OECD.Stat Extracts, available at: *http://stats.oecd.org* (accessed: 11 March 2013).

One example of such policies is mandated generic substitution of brand name drugs in publicly funded outpatient and inpatient care. In Canada, a reform was introduced in British Columbia in 1994 subsidising purchases of pharmaceuticals for the amount equal to the cost of generics, requiring senior citizens to pay extra for a branded drug. In spite of a gradual increase in prices charged for existing products, this trend was more than offset by increased use of generics between 1991 and 2001 (Morgan et al., 2004). A 2002 mandate for generic drug substitution in Sweden has had qualitatively similar impacts on patients' spending and reimbursed cost for outpatient prescription drugs under the Swedish Pharmaceutical Benefits Scheme. Increasing trends in pharmaceutical spending before mandatory generic substitution seem to have reverted after the reform, for both patient expenses and government subsidies, and at both the country and county council level (Andersson et al., 2007).

Another example of cost-containment policy aimed at pharmaceutical providers, more feasible in some specific institutional settings, has been the use of joint purchasing arrangements with other states pursued by Michigan's Medicaid programme in the United States in the early 2000s. Joint purchasing and pooling for supplemental rebates were expected to generate reductions in drug manufacturers' prices and lower administrative costs for the public sector (through economies of scale). Multi-state drug purchasing arrangements were found to contribute to savings in prescription drug expenditures, yet this result should be treated with caution given the several concurrent reforms enacted at the time (Kibicho and Pinkerton, 2012).

4.1.6. Reforms to introduce ceilings on health expenditures

Budget caps have long been introduced by governments alongside other supply-side reforms as a way of targeting cost-containment measures, both in "older" and "recent" OECD countries (Docteur and Oxley, 2003; Schneider, 2007).[12] As displayed in Figure 4, ceilings on provider spending can be applied by sector (e.g., inpatient care) and/or referring to overall (global) government health expenditure, and have sometimes been employed within broader programmes of fiscal consolidation. If implemented in isolation, one theoretical disadvantage of sector budgets compared to global budgets for effective spending control is that the former may stimulate cost-shifting and raise expenditure in sectors not subject to explicit budget ceilings (e.g., outpatient care).

Again, since the implementation of budget caps has often occurred within a broader array of cost-containment measures in health systems, hard evidence specifically about budget cap impacts on overall health spending is limited (Gerdtham and Jönsson, 2000). Informal assessments have concluded that the experience of most OECD countries with budget ceilings is likely positive regarding health expenditure control (Mossialos and Le Grand, 1999).[13] Moreover, country evidence on cost-shifting in the context of sector budgets indicates that additional (shifted) costs tend to be smaller than the savings obtained from imposing such spending ceilings. In Germany, the imposition of a budget cap on drugs prescribed at the individual physician level (in which doctors were meant to be fined for exceeding the budget) resulted in an upsurge in the number of referrals and hospital admissions, presumably due to physicians referring their patients to other physicians or hospitals for fear of exceeding the ceiling (Schöffski and von der Schulenburg, 1997). However, the additional costs from admissions and referrals elsewhere were estimated to amount to just one-quarter of the total cost savings induced by the budget cap policy. This adds to the results of a previously mentioned analysis of the

physician fundholding experience in the United Kingdom, which found no evidence of cost-shifting to other sectors (and identified net savings) due to the presence of capitated physician budgets (Dusheiko et al., 2006).

4.1.7. Reforms to workforce and malpractice legislation

The perception that the growth in overall health expenditures was to a great extent due to inflationary pressures related to the health workforce has led some governments to introduce direct or indirect controls over the total wage bill in the sector. Workforce supply and wage controls have been applied (under various alternative designs) in countries like Denmark, France, Italy, Spain and Sweden, among others, succeeding in areas such as controlling the growth of physician numbers (Mossialos and Le Grand, 1999). Where increases in workforce cost have been attributed primarily to oversupply of professionals (especially physicians), tighter entry or licensure legislation has been enacted, apparently resulting in further inflationary pressures on the total wage bill or service prices in Canada and the United States due to reduced provider competition (Bärnighausen and Bloom, 2010). In the United States, stricter entry rules for alternative medicine providers in a given state have been linked to higher mainstream physician earnings (Anderson et al., 2000). Freezes or cuts in health sector wages have also been employed (e.g., Luxembourg and Spain during the 1990s), but there is virtually no robust quantitative evidence about whether their immediate cost-saving impacts actually translate into lower growth rates of overall health costs later in time.

Financial incentives aimed at physicians and capable of influencing trends in health sector expenditures may also take forms other than distinct reimbursement arrangements, according to the specific institutional context. One such case is the enactment and operationalisation of malpractice laws that act as an incentive for health professionals to be prudent in their treatment choices. Some have argued that such laws, if not carefully implemented, may push service provision above its "optimal" level (from a social welfare perspective, for instance) by promoting defensive medicine practices, whereby physicians tend to prescribe marginally useful tests, procedures or medication for fear of litigation (Thomas et al., 2010).

The health sector spending effects of alternative designs for malpractice laws have been investigated empirically mainly in the United States, where some states have limited malpractice damage awards in the hope of reducing the healthcare bill associated with defensive medicine. The general message from available studies is that, although capping malpractice damages does seem to succeed in lowering costs arising from defensive medicine behaviour and contribute to slower health spending growth overall, the magnitude of such savings is controversial. Analyses of macro-level data have suggested that the existence of a cap on malpractice damages in a given state is associated with a reduction of between 3-4% in its annual health expenditure per capita. Yet investigations using micro-level data have estimated only modest impacts on total medical costs from reductions in medical malpractice insurance premiums (a measure of "perceived liability risk" by physicians), amounting to savings of merely 0.13% for a 10% decrease in malpractice premiums (Thomas et al., 2010; Hellinger and Encinosa, 2006).

4.2. Demand-side reforms

4.2.1. Reforms to expand cost-sharing

Some degree of patient cost-sharing has long been used in publicly funded health insurance schemes in most OECD "old" member countries, and countries that joined the OECD more recently have generally followed suit (e.g., Czech Republic, Hungary and Korea). Cost-sharing has taken a plethora of forms, including user payments for certain services in primary, specialist and inpatient care, as well as prescription drugs, in the form of co-payments (fixed amount), co-insurance rates (share of costs) and/or deductibles (patient reimbursement only above a given minimum threshold cost) per prescription or service. In many instances, an enhanced role for patient cost-sharing in OECD health systems has been advocated as a policy lever to contain perceived overconsumption of specific therapies and reduce pressure on national health budgets (Schokkaert and van de Voorde, 2011).

By effectively raising the price of healthcare for users, it is hardly surprising that most empirical research points to lower service utilisation and reduced public health spending arising from reforms increasing reliance on cost-sharing. A prime example is the well-known Rand Health Insurance Experiment that took place in the United States in the early 1980s, where enrolees were randomly allocated to five types of health insurance plans with varying levels of co-insurance. Findings from the experiment indicated significant reductions in annual health expenditures for higher co-insurance or deductibles (though at decreasing rates), with people in the plan with no co-insurance having estimated annual expenditures 46% higher than those in the 95% co-insurance plan (Manning et al., 1987). Evidence on short-term reductions in health expenditures owing to expanded cost-sharing has since accumulated in many other OECD countries, including sub-areas such as pharmaceutical spending (cf. e.g., Rubin and Mendelson, 1996; Zweifel and Manning, 2000; Goldman and Zheng, 2007; Schokkaert and van de Voorde, 2011; Kenneally and Walshe, 2012).[14] Evidence about the longer-term effects of higher cost-sharing on the trajectory of cost growth remains scant, however.

Higher reliance on cost-sharing as a health policy tool has sometimes proved a politically difficult option, mainly due to widespread public perception that increases in user charges end up translating into more difficult access to necessary and good quality care, possibly harming people's health (Robinson, 2002). And generally the available hard evidence on cost-sharing in OECD countries does support public attitudes in this case. The Rand insurance experiment and subsequent studies in the United States have found that higher cost-sharing resulted in lower rates of initiation of needed medical care and utilisation of outpatient care, especially among low-income and high-risk populations, with adverse consequences for health status (Manning et al., 1987; Gruber, 2006; Haviland et al., 2011). Similar patterns have been found in many other OECD countries (Rubin and Mendelson, 1996; Lundberg et al., 1998; Robinson, 2002; Jemiai et al., 2004; Kim et al., 2005).[15]

4.2.2. Reforms to encourage private health insurance enrolment

In light of the above arguments against extended cost-sharing, some governments have turned to demand-side policies encouraging the use of private sector health insurance as complement or supplement to insurance provided within a universal health care system. These policies have usually taken the form of subsidies (tax relief on premiums) to individuals taking up insurance coverage from private companies and funds, in the hope that the value of released capacity and lower cost pressure in the public sector

proves larger than the value of public subsidies towards private insurance (Mossialos and Thomson, 2002).

Yet the cost-containment promise of private insurance subsidisation does not seem to hold in practice. Analyses taking stock of the costs and benefits from such tax incentives – under various distinct designs in countries such as Australia, Ireland, Spain and the United Kingdom – have often concluded that they their costs to the public purse surpass the savings obtained in the public health sector, in addition to being a generally regressive tax policy (Emmerson et al., 2001; Mossialos and Thomson, 2002; López Nicolás and Vera-Hernández, 2008). In Australia, for example, there is now accumulated hard evidence that removing existing private insurance subsidies altogether would lead to substantial net reductions in government health expenditures, with one study suggesting savings in inpatient care of around 1.6 billion Australian dollars from the elimination of subsidies, after any costs from increased public health sector use are considered (Palangkaraya et al., 2009; Cheng, 2011).[16] Therefore, the overall message from the available evidence for OECD countries is that the *removal* of private insurance subsidisation may actually constitute an effective tool to curb publicly funded health expenditures.

4.2.3. Reforms to directly contain demand through introduction of gatekeeping and drug lists

Other policy alternatives for demand-side management of healthcare utilisation and consequent reductions in expenditure have included reforms to expand the role of primary care doctors as gatekeepers and the introduction of formularies (also known as preferred drug lists). Although formularies are meant to curb health expenditure growth through their potential effect specifically on drug spending, whereas gatekeeping is expected to have a more general influence on outpatient and inpatient care spending, these two sets of policies are similar in spirit. Both are intended to affect the behaviour of patients imposing restrictions on healthcare demand (Figure 4), often according to evidence-based clinical guidelines or protocols.

Several OECD countries have introduced gatekeeping arrangements in recent decades so as to help control healthcare costs, by requiring primary care physicians to pre-authorise service use by patients, screening out unnecessary services (Docteur and Oxley, 2003). Currently in the OECD area, gatekeeping is more prevalent in countries such as Italy, the Netherlands, Norway, Spain and the United Kingdom, and somewhat more restricted in countries like Belgium, France and Germany. The system-wide evidence on the cost-containment impacts of gatekeeping arrangements is severely limited in that many empirical studies have used claims data from only a few units (such as individual managed care organisations in the United States), and sometimes with no cost data from an adequate comparison group of units (cf. e.g., Kralewski et al., 2000; and research reviewed in Forrest, 2003). This makes it difficult to draw conclusions about cost effects at a more aggregate level. The aforementioned studies find little association between gatekeeping and better cost-containment, which is in contrast with a cross-country analysis in the OECD area (Gerdtham et al., 1998).[17]

Formularies or preferred drug lists refer to systems where some pharmaceuticals are granted a preferred status (usually based on criteria such as cost-effectiveness) so they may be dispensed without prior authorisation by a physician. There are many examples of OECD countries that have adopted formularies so as to deter patients from purchasing more expensive drugs where cheaper and clinically equivalent options are available, hence

helping reduce public expenditure on pharmaceuticals. These include Italy, Spain, Switzerland and the United Kingdom, among others (Ess et al., 2003). Since formularies have often been introduced alongside other pharmaceutical policies (e.g., encouragement of consumption of generic drugs[18]), it becomes difficult to disentangle the specific cost-containment effects of formularies from those due to concurrent reforms in the pharmaceutical sector, which tends to explain the relative scarcity of hard evidence on the topic. There is, however, some indicative empirical evidence that formularies have contributed to contain public expenditure on pharmaceuticals in Canada (Morgan et al., 2004), and resulted in lower purchasing prices and overall cost savings for the public sector and managed care organisations in the United States, as pharmaceutical companies were avoiding going off-list (Elzinga and Mills, 1997; Kibicho and Pinkerton, 2012).

4.3. Public management, co-ordination and financing reforms

Governments have also implemented policies that include health cost-containment elements through changes to public management and institutional arrangements in the health sector, at times within the context of broader macro-economic reforms. Arguably, such policies differ conceptually from those reviewed above in that their health expenditure impacts are expected to arise from a combination of changes in incentives to providers, consumers and public administration, affecting – directly or indirectly – healthcare prices and quantities (Figure 4).

4.3.1. Reforms to pharmaceutical markets

Authorities in countries such as France, Italy, Japan and Spain have introduced direct price control of pharmaceuticals through unilateral reduction of the maximum selling price by drug companies, with the aims of encouraging consumption of cheaper alternatives in a given drug class and reducing the total pharmaceutical bill to the public sector. Furthermore, some OECD countries including Germany, the Netherlands, New Zealand and Sweden, have determined maximum or reference reimbursement prices for all drugs with similar therapeutic effects in a particular cluster, usually set based on the lowest priced product in each cluster, with the ultimate goal of stimulating price competition and cost savings. Consumers are normally required to pay the difference if manufacturers charge prices above the reference price.[19] Profit controls for the pharmaceutical industry – mark-up adjustments and maximum annual limits on profits or profit growth rates – have also been put in place by a few governments (e.g., Spain and the United Kingdom) as an indirect way of containing public expenditure on drugs. In theory, all the policy reforms above may stimulate lower pharmaceutical prices, but the overall cost savings in terms of drug expenditures will depend on the extent to which such policies (and their interaction with other features of the health system) also encourage further demand for pharmaceuticals.

There is indeed empirical evidence pointing to net cost-containment impacts of direct price control policies in OECD countries. Review and cross-country studies have concluded that direct price regulation does systematically lead to lower pharmaceutical prices (mainly for older and globally diffused drugs), although it is less clear that direct price controls are more effective in reducing national pharmaceutical spending than indirect price controls such as mandated generic substitution (Danzon and Chao, 2000; Danzon, 2011). By contrast, the potential cost-containment effects of reference pricing seem more heavily dependent on context. In Sweden, the implementation of a reference pricing

scheme was associated with slower growth in total drug expenditures, with cost reductions in reference priced drugs apparently extending to non-reference priced drugs as well (Andersson et al., 2006). Reference prices appear to have pushed down brand name drug prices shortly after introduction also according to a study involving three other OECD countries, although cost reductions have been of modest magnitude in Germany and the Netherlands compared to New Zealand (Danzon and Ketcham, 2004).[20]

It is unclear whether contemporaneous reductions in drug expenditures driven by price controls help contain the growth of public spending on drugs in the longer run. For instance, a compulsory price reduction policy enacted in 1999 in Catalonia, Spain, was estimated to have saved 1.7% in annual pharmaceutical spending per capita in the year after its implementation, with no effects afterwards (and no effects from subsequent compulsory price reductions until 2006) (Moreno-Torres et al., 2011). A similar pattern was found for the imposition of mark-up controls in the same Spanish region, and for reference pricing in Sweden (Andersson et al., 2006). On the other hand, a study using data for the group of OECD countries concluded that the cost-reducing impacts of price controls on pharmaceuticals actually become larger over time (Sood et al., 2009). Finally, despite the best efforts from researchers, distinct price and profit control reforms have frequently been applied simultaneously as a mixed cost-containment strategy, proving a challenge to single out individual reform impacts.

4.3.2. *Reforms to the level of centralisation of health system functions*

As well as seeking to impose *a priori* limits on the total amount of resources going to the health sector or sub-sectors, many OECD countries have sought to improve efficiency in the use of existing healthcare resources and contain waste through decentralisation of health system functions to sub-national levels of government (including planning, management, financing and delivery of services) (Saltman et al., 2006).[21] The premise behind decentralisation is that it can accomplish cost-efficiency and control by aligning resource allocation with local preferences and cost structure. However, some national governments (e.g., Denmark, Norway, Poland and the Slovak Republic) have recently taken measures to promote the recentralisation of key functions within their health systems, partly due to perceptions that the previous decentralised system was damaging cost-containment efforts by weakening co-ordination and encouraging duplication of services (Magnussen et al., 2006). Both decentralisation and recentralisation measures in the health system have often been part of wider public management restructuring processes involving political, economic, organisational and legal aspects.

A study for 20 OECD countries during the period 1990-2000 found that decentralised health systems have higher total health expenditures compared to more centralised systems (e.g., France and the United Kingdom) (Mosca, 2007). Nonetheless, the numerous alternative decentralisation models adopted in OECD countries makes it problematic to draw policy conclusions from comparisons between broad aggregate categories such as "decentralised" vs. "centralised" systems. Single country studies may be more illuminating in that respect.

Analyses of the Spanish and Italian experiences with decentralisation – funding controlled by the central government while local authorities oversee administration and execution of regional-level health policy – offer some insights concerning cost-containment in the health system. The 1992 healthcare reform in Italy sought to suppress growing health costs by delegating central funds and granting some tax raising powers to

regional authorities, accompanied by measures such as wage controls and budget cuts. This strategy was found to result in a significant spending reduction at the central level, lowering the annual rate of growth in per capita public expenditure on health from 2% (1980-91) to less than 0.5% (1992-95) (Giannoni and Hitiris, 2002).

The cost-containment effect of decentralisation observed in Italy does not seem to have taken place in Spain, which saw an increase in per capita health expenditure following the gradual process of healthcare decentralisation starting from the early 1980s (Costa-Font and Pons-Novell, 2007). In this case, political competition within a centralised funding system has meant that local legislators seeking public support lack the incentive to cut back on spending in regions where healthcare is seen as a priority. A more recent study of the Spanish process speculated that the initial increase in health spending may be due to sunk costs of decentralisation, i.e. an "experience effect" that opens the door for cost reduction in the longer run (Costa-Font and Moscone, 2008). A less encouraging policy consequence of the Spanish and Italian decentralisation reforms identified in the previous studies has been an increase in inter-regional health spending inequalities, a phenomenon also associated with decentralisation in the Swiss health system (Crivelli et al., 2006).

Contrary to the trend of decentralised health system models in Europe, Norway initiated a health sector reform in 2002 aimed at recentralising ownership or control over inpatient and outpatient specialised care, as a way of eliminating weak cost-control incentives at the sub-national levels due to soft budgets (the guarantee perceived by local governments or providers that any deficits incurred will be eventually covered by higher-level or central funding). The evidence to date on the Norwegian recentralisation reform points to a lack of general cost-containment impacts. Overall, health expenditures have continued to rise in line with previous trends, likely due to the fact that soft budgets were not eliminated post-reform (the proportion of supplementary funds granted by the Parliament continued to rise according to health spending increases), coupled with the growth in activity-based financing (Magnussen et al., 2006, 2007).[22]

4.3.3. Reforms to alter the mix of health system financing sources

National discussions around health sector reform in the OECD area have invariably considered whether the currently employed mix of health system funding sources is in itself a potential driver of total cost (Mossialos et al., 2002). Although the crude dichotomy Beveridge-Bismarck has lost meaning in a context where most health systems are funded by a mixture of revenue sources, it seems reasonable to enquire whether changing the mix of funding – for instance, the relative importance of general taxes vis-à-vis payroll-based contributions – has any potential effects on trends in total government health expenditures. While the set-up of payroll-based (social insurance) systems may promote efficiency by separating purchasing from provision and encouraging selective contracting, some predominantly tax-funded systems have also introduced such mechanisms as discussed previously, and social insurance arrangements may entail additional administrative and co-ordination costs (e.g., through the creation of sickness funds).

In the United Kingdom, an influential report concluded that there was no evidence to date that moving away from general taxation for health system funding would lower healthcare costs, and such move could actually prove more costly (Wanless, 2002). Recent international evidence seems to lend empirical support to that conclusion. In an analysis of reforms to health funding systems in the OECD between 1960 and 2006, higher reliance on social health insurance (payroll-based) contributions was found to lead to a 3-4%

increase in annual per capita health spending (with no apparent improvements in population health outcomes) compared to higher reliance on general taxation (Wagstaff, 2009). A similar conclusion was reached by Mosca (2007). A study including recent OECD members from Central and Eastern Europe also concluded that countries that reformed their health financing systems towards chief reliance on payroll-based contributions ended up spending more on health per capita than those countries which remained predominantly tax-funded, even after accounting for factors such as the frequent use of fee-for-service payment methods in inpatient care by social insurance countries (Wagstaff and Moreno-Serra, 2009). In the latter case, the swell of overall health expenditures from social insurance reforms seemed mainly driven by a rise in government health spending, possibly through increased wage and administration bills.

4.3.4. Reforms to expand the role of health technology assessment for resource allocation

Since the introduction of new technologies in the publicly funded health benefit package is not commonly cost-saving, and technological innovation is expected to become even more intense in certain areas such as diagnostic equipment (Chernew and May, 2011), some governments have sought to take a more active role in health technology assessment (HTA) in order to curb cost-explosion driven by more expensive therapies. Assessment of the costs and benefits of new technologies as a criterion for the definition of the publicly funded health benefit package is largely expected to promote value-for-money and reduce waste by directly restricting demand for specific interventions whose benefits are not worth the costs. This was a major force behind the creation of several national agencies to assess new technology in Europe in recent decades, for instance in France, Spain, Sweden and Finland (Mossialos and Le Grand, 1999). The National Institute for Clinical Excellence has long played a major role in assisting resource allocation decisions in the United Kingdom. Notwithstanding its cost-containment potential, the creation of HTA bodies is likely to add to management and administration costs in a health system.

Quantitative evidence on the cost-containment impacts associated specifically with the introduction or expanded role for HTA in resource allocation is scarce. Yet, it must be noted that the expected cost savings from HTA are likely to arise from its combination with other system reforms: HTA should be seen primarily as an instrument, a means to an end. If the recommendations from HTA agencies are used to inform decisions about healthcare guidelines (for example, implementation of pharmaceutical formularies), cost-sharing schedules (for example, lower user charges for cost-effective preventive interventions that reduce the use of more expensive outpatient and inpatient care), and the broader definition of the public benefit package (for example, by providing the basis for exclusion of certain therapies with low cost-effectiveness from public funding), HTA will probably serve as a catalyst to maximise the cost-containment effects of these accompanying supply- and demand-side reforms.

5. Concluding remarks

This study has sought to review the most robust empirical evidence on a fundamental policy topic: the potential that the several options of health policy available to national governments have to contain the growth of health system expenditures. There is now robust evidence on the cost-containment effects of many of such reforms implemented by OECD countries, and examining this evidence offers valuable insights for policy decisions.

Of course, as usual in the policy arena, it is clear that there is no magic bullet. The end result of cost-containment reforms is often context-dependent. Policy levers need to be carefully introduced and co-ordinated with other institutional features of the health system to ensure that cost-containment benefits in one sub-sector are not offset by poorer performance elsewhere. But if policy-makers learn from the experience of past reforms, and wisely tailor interventions to their specific context, there are various alternative policies in a government's arsenal that can be combined to achieve better cost control in the health system.

Notes

1. For instance, Docteur and Oxley (2003), in their comprehensive description of health reforms enacted in OECD countries particularly during the 1990s, concluded that most reforms had been implemented too recently in order for conclusions on their relative effects to be drawn. In fact, while the authors acknowledge that the growth in health spending had slowed noticeably over the 1980s and 1990s, their general assessment of the then available empirical evidence on policy reform impacts was that it constituted a very thin body of knowledge, and offered limited statistical support to claims that budgetary caps or other cost-containment initiatives had played an important role in reducing healthcare cost escalation.
2. See Section 2 for the definition of "excess cost growth" in health spending studies.
3. One such example is the British GP fundholding experience during the 1990s (see Section 4).
4. Moreover, despite not being the rule, it has been argued that some new technologies have replaced more expensive ones (for instance, some types of pharmaceuticals; Griliches and Cockburn, 1994).
5. The same study forecast an increase in total spending on health for the United States (including the private sector) from 16% of GDP in 2007 to 37% in 2050 and 49% in 2082.
6. This relatively minor role played by population ageing in projections of health spending growth is also due to the so-called "healthy ageing" assumption, which is in line with observed trends in most OECD countries (Oliveira Martins et al., 2006). Even though the fraction of older population has been increasing (and is expected to remain so in future years), elderly people today tend to enjoy better health and hence require less healthcare per capita than did their counterparts in the past, offsetting to some extent pressures on the demand for health services arising from the overall rise in the share of older people. Moreover, as the elderly today also live longer than in the past, death-related costs – which constitute the major component of individuals' healthcare spending over the life cycle – are postponed, and their financial burden decreases in present value (see Savedoff et al., 2012 and references therein).
7. White (2007) estimates that, while rates of health spending growth due to ageing and economic growth were similar in the United States and the other OECD countries between 1970 and 2002, annual excess cost growth in the United States was twice that of the rest of the OECD. This further highlights the crucial role of health sector institutional factors – and reforms targeted to those factors – for the effective control of national health expenditures.
8. Empirical studies on cost-containment policy impacts were included if they attempted to deal statistically with potential estimation biases arising from observable and unobservable differences across analytical units (e.g., hospitals or health systems). These studies typically use data from situations where groups of "treatment" and "comparison" units can be identified in (or are generated by) health policy reforms, often employing econometric regression models to seek causal inference instead of simple correlations. See, for example, Jones (2000).
9. This is not to say that demographic cost drivers and policies addressing them are not important for cost-containment in health. Research has shown that public health interventions that affect the health status of survivors, for instance restrictions on alcohol and cigarette consumption, may be cost-saving (Kenkel and Sindelar, 2011). However, as mentioned above, the relatively small overall component of spending growth owing to demographic drivers implies that policies aimed at these factors will likely have lower aggregate cost-containment impacts. Also, cost drivers such as changes in population structure seem less readily amenable to health policy reforms.
10. Depending on the specific configuration of the health system, the introduction of capitation payment methods or budget holding may in principle encourage physicians to transfer the burden

of cost through referrals to higher level care. Although a theoretical possibility, there is no evidence from the British experience that such a phenomenon took place, or at least the net result of the GP fundholding policy seems to have been one of overall cost reduction (Dusheiko et al., 2006). Also, since fundholding was a GP choice, the cost-containment effect of such policy could in principle have been larger had it been a compulsory programme, which has implications for current discussions in the United Kingdom about a renewed fundholding role for GPs.

11. The immediate pressure on public budgets arising from rising pharmaceutical costs remains in practice even if part (or most) of such spending refers to better drugs with a beneficial impact on population health.

12. Country examples include Canada, Denmark, Finland, Poland, Slovenia and the United Kingdom, among several others. Global budgets have also been developed in some countries mainly as a strategy to control volume of care where providers are paid through fee-for-service (Mossialos and Le Grand, 1999).

13. A cross-country analysis for 22 OECD countries over a twenty-year period found that introduction of global budgets was not a successful mechanism to contain the growth of national health expenditures (Gerdtham et al., 1998). However, the authors acknowledged that their results may be confounded by the possibility that countries with high expenditure may be more prone (or quicker) to adopt budget caps.

14. An exception is a study of the pharmaceutical cost-sharing reforms implemented in Sweden during the 1990s, which failed to find any effect of increased co-payments in the total cost or volume of prescription drugs (Andersson et al., 2006). Nonetheless, issues pertaining to the enactment of various pharmaceutical policies during the period of analysis – including reference based pricing and changes in the reimbursement schedule – have limited the study's ability to distinguish the specific spending effects of each of these policy reforms.

15. Moreover, cost-sharing typically appears to deliver far less than expected as a supplement to pooled health sector revenues (Robinson, 2002) and has been found to be a highly regressive source of health sector financing among OECD countries (van Doorslaer et al., 1999).

16. Cheng (2011) also concluded that such public subsidies end up disproportionately benefiting higher-income individuals in Australia, who presumably would be able to purchase private insurance coverage without public subsidisation.

17. Although the jury is still out concerning "pure" gatekeeping impacts on health expenditures, more recent (and methodologically robust) empirical work for England has indicated some cost-containment effects of a reform coupling gatekeeping with capitated budget fundholding (Dusheiko et al., 2006; see above), as well as a beneficial impact on patient satisfaction with services provided (Dusheiko et al., 2007).

18. See above discussion on mandated generic substitution policies.

19. In addition to the expected change in consumer behaviour, and the competitive incentive theoretically provided to drug companies by reference pricing, incentives to other health sector agents have been introduced to reinforce cost savings from cheaper prescriptions. An example is allowing pharmacists to share the savings between the reference price and the manufacturer's price in the Dutch health system (Danzon and Ketcham, 2004).

20. Price competition stimulated by reference pricing seems to have been weak in Germany and the Netherlands, since manufacturers had no incentive to reduce prices below the reference price, leading those countries to implement additional measures such as mandated generic substitution. In New Zealand, reference pricing has been more successful in reducing costs of pharmaceuticals, possibly due to the requirement by the government (single purchaser) of price cuts for new generics and their subsequent application to all drugs in the cluster (Danzon and Ketcham, 2004).

21. Switzerland has adopted full devolution of both managerial and fiscal powers to local authorities, with the public health care budget being primarily financed by cantons and municipalities (only 20% of funding comes from the central authority) (Crivelli et al., 2006). Other countries such as Italy, Spain and Norway (until 2002) have delegated managerial responsibilities to regional authorities while reserving fiscal responsibilities for the central government.

22. The damaging effect of soft budgets to cost-control in decentralised health systems has been highlighted in a recent study by Crivelli et al. (2010). The authors use data for OECD countries to find that soft budgets, in the form of large reliance on central government transfers and high borrowing autonomy, lead to higher sub-national health spending. Specifically, the authors estimate that a one percentage point increase in their measure of vertical fiscal imbalance induces

a 4.5% greater increase in annual sub-national health spending per capita for countries where sub-national governments have high borrowing autonomy relative to those with less.

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The Swedish pension system after twenty years: Mid-course corrections and lessons

by
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Elements of the Swedish pension reform enacted in the 1990s have served as a model for reform initiatives in a number of other countries. Sweden's experience suggests that a Notional Defined Contribution (NDC) pension reform can be sustained in a supportive political environment, but it has not been immune to electoral pressures to prevent visible cuts in pension benefits. Moreover, efforts to lengthen working lives have encountered major barriers both in the way that the state pension system is perceived and in the structure of the occupational pension system. Design of Sweden's individual account tier has major successes in lowering administrative costs and in providing information across sources of retirement income, but efforts to increase active engagement in selecting retirement savings portfolios have faltered. Sweden has modified its new pension system in several ways over the past decade to address perceived problems and political concerns, and debates are now arising on a "Pension Reform 2.0" package of more comprehensive changes.

JEL classification: H5, H55.

Keywords: Pension reform, pension system, income contribution, retirement, stabilising mechanisms.

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1. Introduction

During the 1990s, Sweden carried out a major reform of its public pension system, with most of the legislation enacted between 1994 and 1998. The new system was proclaimed by its designers to be financially sustainable indefinitely, despite a rapidly aging population. Several components of the new system, including a large Notional Defined Contribution (NDC) tier with an automatic balancing mechanism, a defined contribution tier with centralised administration of accounts and a state-sponsored default fund, and collective investment funds for managing surpluses in the NDC tier, were considered highly innovative.

Most elements of the new Swedish pension system have now been in place for twenty years, and it has been viewed as an important model for pension reform in other countries (see for example Holzmann and Palmer, 2006; Holzmann, Palmer and Robalino, 2012 and 2013). This paper examines the Swedish experience since 1994, including several mid-course corrections that have been made. It also draws both positive and negative lessons from the Swedish experience for policymakers in other countries.

2. Sweden enacts new pension system

Sweden has a very extensive welfare system. By the late 1960s, the public pension system in Sweden consisted of three tiers. A flat-rate basic pension (*folkpension*) operated on a Pay-As-You-Go basis. A partially pre-funded earnings-related national supplementary pension (ATP) was added to the flat-rate pension in 1959 after a very contentious political debate. The ATP was widely regarded as the "jewel in the crown" that helped to solidify middle class support for the Social Democratic welfare state (Lundberg, 2003; Loxbo, 2007 and 2013). Both tiers were financed largely by earmarked employer contributions. A means-tested pension supplement was created in 1969 to provide a higher pension floor to those whose earnings-related benefits were very low. The pension supplement, in combination with the other two tiers, moved almost all seniors in Sweden out of poverty.

By the 1980s, funding the pension system through payroll taxes was becoming increasingly problematic due to slower economic growth and an aging population. This was further exacerbated by design features of the old system that led to a poor linkage between earnings and benefits and to distortions in the labour market (for a discussion, see Könberg, Palmer and Sundén, 2006: 451-452). To address these challenges, successive Swedish governments enacted a number of ad hoc incremental changes in the pension system, including restrictions on early retirement. They also enacted more fundamental changes that would stabilise financing and benefits for the long term and therefore keep pensions from becoming a recurrent (and divisive) item on the policy agenda (see Anderson and Immergut, 2007: 367-372).

The enactment of fundamental reforms was accelerated by the election of a four-party centre-right (non-Social Democratic) minority government in 1991 that faced a severe economic and budgetary crisis and lacked a parliamentary majority. The new government

sought to develop a reform package that could obtain broad support from parties in the Swedish parliament across the dividing line between centre-right parties and parties of the left, lowering the risk that any reform would be reversed when the Social Democrats, at that time still by far the largest party in Sweden, returned to power. The pension working group, initially comprised of members from all seven parties represented in parliament, issued their first report in August 1992, including a sketch of proposed principles for reform. An agreement was reached in January 1994 supported by the four centre-right coalition parties and the Social Democrats, but not the smaller Left or New Democracy parties, and legislation based on that agreement was enacted in June 1994. The working group of five parties supporting the reform continued its work after the Social Democrats returned to power in September 1994, and most implementing legislation was enacted by 1998, after a two-year delay caused by conflict within the Social Democratic Party about whether to move forward (Könberg, Palmer and Sundén, 2006).

The new pension system has several major characteristics, including a permanently fixed 16% contribution rate for a new earnings-related pension, and the addition of a relatively modest (2.5% of payroll) mandatory defined contribution "premium pension" tier. There was also a new income-tested "guarantee pension," financed from general revenues and payable from age 65, to replace the former pension supplement.[1]

The key change was replacement of the former flat-rate pension and earnings-related pension by a new "income pension" based on what came to be called Notional or Non-Financial Defined Contribution (NDC) principles (see Holzmann and Palmer, 2006; Williamson, 2004; Settergren, 2001). Sweden's NDC pension system bases benefits on earners' lifetime contributions to the system, which may include contributions made on a person's behalf by the state for periods of unemployment, child-caring, disability or sickness, military service, etc. In terms of stabilising pension system finances, the key feature of the new NDC pension tier is an "automatic balancing mechanism" that uses a complex formula to correct for increases in life expectancy and slow wage growth by lowering initial benefits (for those who have not yet retired) and benefit indexation (for retirees) until the system comes back into balance (for details on the formula used in the system, see for example Lindquist and Wadensjö, 2009). Payroll tax rates for the NDC tier were permanently fixed at 16% of earnings, and general revenues cannot be used to pay benefits. Thus, NDC pensions make any automatic adjustments exclusively on the benefit side. Pensions are indexed to developments in real wages rather than prices. Rather than simply raising the "standard" retirement age, the new pension system sidestepped the retirement age issue entirely by setting a flexible retirement age for receiving the income and premium pensions beginning at age 61, with increased incentives for continued work. The NDC tier uses "buffer funds" of past surpluses to smooth spending across demographic peaks and valleys.

Several aspects of the structural reform enacted in the 1990s contributed heavily to its adoption. The reform package was extremely complex and many of its specific provisions were opaque. Those who were at or near retirement (those born in 1937 or earlier) received pensions largely under the old rules, while those born in the next sixteen cohorts received an increased share of their pensions under the new system: only those born in 1954 or later were fully under the new system (see Ministry of Social Affairs, 2010: 15). Thus older workers, who are most likely to pay attention to pension issues, were less affected, lowering the prospects for political opposition. Many aspects of the proposed reforms, such as the introduction of a life expectancy index and a new post-retirement inflation index,

were highly technical. These reforms made future benefits dependent on later developments, including the performance of the Swedish economy, performance of individuals' investment funds, and demographic trends, thus allowing reductions to occur without politicians having to take direct, visible actions. Thus, it is difficult for most voters to conceptualise, let alone estimate, the impact of the various budgetary fail-safes in the "notional defined contribution" tier of the new pension system and to develop a clear sense of how much lower (if at all), that their pensions would be in the future. It is also difficult for potential partisan opponents of the reform to articulate a clear and convincing critique of it that voters can understand. Moreover, pension reductions were supposed to accrue slowly over a long period of time. In addition, increasing the linkage between social insurance pension benefits and lifetime contributions allowed politicians to claim that the new system was more "fair." This helped to defuse opposition from those who would stand to lose in the new system. All of these factors meant that politicians were unlikely to incur voter retribution for supporting cuts in pension obligations.

The fact that the pension restructuring bore the fingerprints of most of the largest parties lessened the potential for finger pointing and partisan conflict even further. And while the Social Democrats consulted with their traditional partners in the blue-collar labour confederation, Landsorganisationen (LO), labour and employers did not participate directly in the negotiations. The fact that party representatives could bargain without social partners exercising veto power over solutions far from their preferred positions helped to facilitate major trade-offs rather than simply incremental reforms on some major issues, including addition of an individual accounts tier and long-term stabilisation of contribution rates (favoured by conservatives) and increased investment freedom for the state buffer funds (for Social Democrats). The same cartelistic behaviour carried over to the public debate process as well. As one member of the pension working group put it:

> "Some would argue that it's a bad thing about that group – that we buried valuable differences of opinion. And there could be something to that. The very fact that we did agree, the five parties, [meant that] there wasn't much heat in the first public debates. We did our best to provide study materials and tried to be out there talking. But the heat wasn't there because we weren't angry with anyone. In a way, it's a democratic problem. You can't change a system which is too generous if there is someone to take political advantage of it. So then democracy doesn't work well with a heated debate. On the other hand, it's a price for democracy that too much agreement also takes away some of the useful political debate."[2]

3. Lessons learned from the Swedish premium pension reform

Experience since the enactment of the Swedish pension reform suggests several lessons for countries considering reform initiatives of their own. Overall, the lessons from Sweden are as much about politics as about technical issues of design and economic consequence: many of the problematic features of the Swedish system reflect political compromises and constraints when the system was being set up, and efforts to address those features are also constrained by the need to maintain a broad multi-party consensus on pension reform to avoid stalemate or policy bidding wars that could undermine the objectives of the reform. Similar constraints are likely to be encountered in other countries, so Sweden's experiences in implementing and adjusting its reform are likely to be as useful to other countries as its policy design features.

3.1. Maintaining a broad political support base for pension reform, both among political parties and key interest groups is critical to avoiding erosion of reform initiatives

One notable feature of Sweden's implementation of its new pension system is that the cross-party pension working group established to design the system was maintained in a modified form (initially referred to as the Implementation Group) after the new system was established. This mechanism has facilitated resolution of conflicts as new issues arise during implementation. Equally important, it has helped to sustain multi-party commitment to the pension system and enabled collaborative solutions to emerging problems.

Cross-party consultation groups are extremely fragile, however, and success of the mechanism depends on the willingness of the parties to co-operate and compromise with each other. Even modest transgressions may evoke distrust that causes the group to break down, something that can have significant repercussions on the stability of the system.

The biggest political challenge to maintaining support for the pension reform across bloc lines occurred after the 2006 election, when a new four-party centre-right coalition government was elected into office after twelve years out of power. The new government enacted legislation that lowered the pensions of early retirees – rather than calculating the pension for early retirees based on 93% of their income, it was to be based on 80% of their income – and it did so without getting approval of the five party pension group. The Social Democrats argued that modifications of the pension system required unanimous agreement among the five parties, while the government argued that the pension agreement did not apply to early retirement (Fröman, 2007; Nandorf, 2007). As one of the Social Democratic politicians involved in the pension reform put it, the decision made by the centre-right coalition-government:

> "… was against the principle of the pension reform. Although it was a very small question, it was on the principle very serious […] The way that the new government didn't understand how to take care of the reform, making these kind of changes without discussing it with the Social Democratic party. That changed the culture."[3]

The Social Democrats argued that they had scrupulously complied with this principle throughout their time in office, and decided to manifest their disappointment by calling off all ongoing cross-party pension discussions until the issue was resolved (TT, 2007b). Moreover, they publicly announced that, unless this policy was reversed, the centre-right coalition had destroyed the five-party pension agreement that had served the country well since the 1990s (Sahlin and Eneroth, 2007).

Eventually, a special committee was created to resolve this issue, but the negotiations quickly broke down (TT, 2007a). Discussion resumed a few months later, and in November 2007 the centre-right coalition-government agreed to reverse the contested policy. They justified this reversal by a desire to preserve and save the pension agreement (Runblom, 2007). These negotiations also resulted in the establishment of Pensionsgruppen, a renewed consultation group consisting of representatives from each of the five parties supporting the original pension accord to facilitate cross-party pension discussions and avert similar conflicts from arising in the future. A detailed document covering both the history of the pension agreement and its provisions was created to guide this group and minimise the risk of future breakdowns, as turnover in the group led to new members joining the group who had not been involved in the creation of the initial reform (Ministry of Social Affairs, 2010).

The Swedish pension reform thus provides both good and bad news for proponents of fundamental pension reform. The good news is that it is politically possible in a democratic society to undertake quite profound reforms of old age pensions that shift substantial risks for poor economic performance and increased longevity from government (and taxpayers) to pensioners, even when that pension system is a mature contributory plan. The bad news is that this may only be possible when policy elites operate in a cartelistic manner across party lines rather than in an open, participatory manner with major stakeholders directly represented in the negotiations. And policy change may be most attainable when the public is baffled by the complexity and opacity of a pension restructuring package rather than when they understand it.

3.2. Automatic stabilising mechanisms can help to make pension retrenchment more politically feasible, but design features that increase the visibility and volatility of cutbacks make them more vulnerable to political interference

Given the political difficulties of enacting pension retrenchment, it is not surprising that election-seeking politicians in Sweden were attracted to automatic stabilising mechanisms (ASMs) that make pension cutbacks or raise revenues in the future without direct intervention by politicians. Such ASMs essentially change the "default": painful policy changes go into effect unless politicians take positive action to block them, so politicians have "clean hands" when retrenchment occurs. ASMs are likely to be particularly effective when their effects are slow and invisible to the public – for example, making inflation adjustments in pension benefits that produce nominal benefit increases each year, but that are below inflation. Indeed, a recent study for the Swedish insurance company Folksam argued that the percent of final salary (averaged across the last four years of work) replaced by initial public pension benefits fell from 61% for the cohort born in 1938 to 49% for the cohort born in 1946, though the absolute amount received was higher for the latter group because they had much higher lifetime earnings (Folksam, 2014).[4]

Two aspects of the Swedish ASM – officially called the "automatic balancing mechanism" in Sweden, and known in common parlance as the "brake" – make it less likely to avoid public notice, however. *First*, the annuity divisor used to calculate the initial benefit in the income pension includes an adjustment factor that produces higher initial benefits, but causes annual benefit adjustments in later years to be 1.6% of the previous year's base below what they would otherwise be. This mechanism makes the decline in initial replacement rates less visible, but it also makes it more likely that there will be highly visible nominal benefit cuts in some years. *Second*, the income pension benefit is particularly vulnerable to the economic disruptions caused by financial crises because the solvency of the income pension system is based in part on the value of accumulated contribution surpluses that are held in five "buffer funds".[5] About 60% of these funds are invested in equities in Sweden and overseas.

This vulnerability was made evident during the Great Recession, a financial crisis that led to a decline in the value of the assets held by those funds of more than 21% in 2008. This was expected to lead to a 3.28% reduction in income pension benefits in 2010, though low-income retirees would be protected by an increase in the guarantee pension (Forsäkringskassan, 2009). The annual adjustment in income pension benefits for retirees already receiving pensions is shown in Table 1. Clearly there has been a high level of volatility in pension benefits, including three years – 2010, 2011 and 2014 – in which there has been a downward nominal adjustment in income pension benefits. As shown in the

Table 1. **Annual nominal adjustment in income pension and ATP benefits in payment compared to former price index, 2002-2014**

	Income-pension and ATP pension adjustment index	Former price index	Single-year difference	Cumulative difference
2002	+3.3	+2.7	+0.6	+0.6
2003	+3.6	+1.8	+1.8	+2.3
2004	+1.8	+1.8	+0.0	+2.3
2005	+0.8	+0.3	+0.5	+2.9
2006	+1.1	+0.8	+0.4	+3.2
2007	+1.6	+1.5	+0.1	+3.3
2008	+2.8	+1.7	+1.1	+4.4
2009	+4.5	+4.4	+0.1	+4.5
2010	-3.0	-0.9	-2.0	+2.4
2011	-4.3	+0.9	-5.2	-2.9
2012	+3.5	+2.8	+0.7	-2.2
2013	+4.1	+1.1	+2.9	+0.6
2014	-2.7	-0.2	-2.5	-1.9

Source: Pensionsmyndigheten (2014b), *Orange Rapport: Pensionssystemets årsredvisning 2013* [*Orange Report: Annual Report of the Pension System 2013*], Stockholm: Pensionsmyndigheten.

last column of Table 1, this led to a significant decline between 2009 and 2014 in indexed benefits relative to the price-based index formerly used to adjust benefits.

3.3. Automatic stabilising mechanisms are not "politician-proof", especially as elections get near

Although ASM policies may be politically attractive, they may encounter political opposition both in the adoption stage and once they are actually triggered. It may be politically easier to stand by and do nothing while visible "automatic" cuts go into effect than to enact those cuts directly, but it may be even more politically expedient to block the cuts rather than allowing them to go into effect, especially if they are scheduled to occur at politically sensitive times in the electoral cycle. The experience of Sweden in the wake of the worldwide financial crisis beginning in 2007 sheds light on this dynamic, and offers valuable lessons to policymakers interested in putting automatic stabilising mechanisms in place (see Kruse, 2010; Settergren, 2010).

Would the stabilising mechanism hold up under the pressure of nominal benefit cuts, especially with a general election scheduled for September 2010? A former Social Democratic Finance Minister, Erik Åsbrink, suggested injecting SEK 200 billion in general revenues into the pension system to prevent triggering the "brake," asking "are the five parties behind the pension arrangements ready to go to the polls on this, with all the opportunities for other parties – inside and outside parliament – to propose measures that would seem far more attractive to 1.6 million pensioners?" (Åsbrink, 2008). The Swedish Social Insurance Agency suggested alternatives for adjusting the automatic balancing mechanism and how the buffer funds should enter the calculation of the notional defined contribution "balance ratio". Sweden's Minister of Social Affairs suggested additional policy options, including compensating retirees from the state budget. The matter was then referred to the multi-party pensions working group representing the five parties that had agreed to the original 1990s pension reform package. The working group agreed to a change that would base the activation of the automatic balancing mechanism on buffer fund balances averaged over the past three years rather than over only the last year. Thus

any benefit cuts that were made in benefits based on swings in the buffer fund balances were likely to be moderated over time – phasing in more slowly, but also rebounding more slowly during stock market upturns. While the five parties that belong to the pension group rejected the Swedish Social Insurance Agency's preferred option for changes in the balancing mechanism, the change that they endorsed is consistent with the principles of their original agreement by not injecting new money into the system. It is at least arguably a "fine-tuning" improvement because it weakens the measure's volatility.

In addition to adjusting the automatic balancing mechanism, the centre-right coalition government also reduced taxation on pension benefits so that very few pensioners would experience a cut in their nominal net benefits, again reducing the visibility of the cutbacks. Since the onset of the Great Recession, the government has embarked upon five rounds of tax reductions on pension benefits (Table 2). The aggregate cost of these tax cuts amounts to SEK 16.45 billion annually (about USD 2.5 billion), equivalent to an increase of SEK 2 100 in monthly disposable income for the average pensioner (Finansdepartementet, 2014).

Table 2. **Selected legislative and administrative changes in the Swedish pension system after enactment of the automatic stabilising mechanism**

Year enacted	Government type	Nature of change	Effective date or phase-in period
2003	Social democratic minority coalition	Restriction of eligibility and benefits in Survivors pension and early pension	2003
2004	Social democratic minority coalition	Public-private co-operation in administrative structure	2004
2007	Conservative-led majority coalition	Contraction in outreach to first-time choosers	2007
2008	Conservative-led majority coalition	Tax cut on pension benefits	2009
2009	Conservative-led majority coalition	Revision of automatic balancing mechanism in income pension to reduce volatility (and reduce cuts in short term)	2010
2009	Conservative-led majority coalition	Tax cut on pension benefits	2010
2008	Conservative-led majority coalition	New pension administrative structure	2010
2010	Conservative-led majority coalition	Tax cut on pension benefits	2011
2010	Conservative-led minority coalition	New default fund for Premiepensionssystemet	2010
2011	Conservative-led minority coalition	Prohibition of bulk trade for Premiepensionssystemet	December, 2011
2012	Conservative-led minority coalition	Increase of pensioners' housing supplement (Bostadstillägget)	2013
2013	Conservative-led minority	Tax cut on pension benefits	2014

The most substantial tax cut was enacted in the fall of 2010, came into force in January 2011, and reduced the aggregate tax burden of pensioners by SEK 7.5 billion (Finansdepartementet, 2014). This tax cut reduced the incidence and visibility of the cutbacks caused by activation of the automatic stabilising mechanism substantially, allowing 85% of the retirees to enjoy an increase in pension benefits rather than causing a reduction in pension benefits for 80% of the Swedish pensioners (TT, 2010). The most recent tax cut, which came into effect in January 2014, had a similar, albeit smaller, effect (Larsson, 2013b).

The principal justification that the centre-right coalition government has relied upon for rationalising these tax cuts has been that retirees were disproportionally affected by the crisis and the associated recession, and that the tax cuts served to minimise the undesirable spill-over effects on pensioners (TT, 2010). More politically salient, however, is the fact that following the implementation of Jobbskatteavdraget, an employment income tax credit, in 2007, retirees have faced higher income tax rates than workers. The tax

differential has been heavily criticised by pensioners' organisations, and the government has further justified the tax cuts on pension benefits by a desire to offset the tax inequality between these two groups (Reinfeldt et al., 2012) – even though the employment tax credit had been enacted by the very same government. The centre-right coalition government was presumably unwilling to go to the polls in 2010, and is most likely disinclined to go to election in 2014, with more than 1.6 million upset pensioners (TT, 2010).

The tax cuts illustrate the reluctance of politicians to accept the political risks associated with automatic stabilising mechanisms – especially nominal (and thus very visible) cutbacks in benefits in the period leading up to elections. They also show that ASMs do not necessarily shield the government from public pressure or prevent it from engaging in blame-avoidance behaviour, and that politicians can respond to this pressure in ways other than a direct modification of the automatic balancing mechanism.

Overall, the experience of the first major "pothole" of the Swedish NDC system suggests substantial resilience of automatic stabilising mechanisms. The automatic balancing mechanism, while modified in details, remains largely unchallenged in its broad principles. But Swedish experience also suggests that a high degree of volatility in the automatic stabilising mechanisms can make retrenchment more visible – and intervention by politicians more likely.

3.4. Putting automatic stabilising mechanisms in place is unlikely to eliminate periodic ad hoc pension reforms

As shown in Table 2, the new Swedish pension system has been far from set in stone since the enactment of the 1990s pension reform. While the fundamental structure of the system remains intact, almost every major component of the new system except for the payroll tax rate has been subject to revision. The automatic balancing mechanism in the income pension has been revised to make it less volatile – and to make cutbacks less visible. Taxation of pension benefits has also been altered to make cutbacks in pension benefits less severe and less visible. Premiepensionsmyndigheten (the Premium Pension Agency) has been eliminated as a separate agency, with its functions merged into the new Pensionsmyndigheten (Pension Agency) separated from the National Social Insurance Board. Efforts to get individuals to make an active choice in the premium pension system have been scaled back substantially. Access to Housing Supplement benefits for seniors has also been eased.

3.5. Major changes in retirement behaviour and retirement savings behaviour require clear signals and relatively intrusive instruments to affect behaviour – strong penalties for non-compliance rather than just "nudges"

Rather than setting a standard retirement age, the new Swedish pension system sets a flexible retirement age between 61 and 67. A flexible retirement age can be a mechanism for lowering opposition to pension retrenchment if it is supplemented with incentive mechanisms that encourage workers to remain in the labour market longer. This approach also has drawbacks, however: a flexible retirement age is more politically palatable precisely because it does not send a clear signal about the need to work longer to maintain anticipated pension levels. The risk is that as a result of this ambiguous signal, many workers will not alter their behaviour, and will end up with inadequate pensions.

Although Swedes now receive annual pension statements that clearly show the impact of delaying retirement on benefits, changes in retirement behaviour under the new pension

system have been modest. The age of labour market exit has increased by 1.3 years since 1994, but labour force participation rates for workers aged 65-74 measured in full time equivalents have been stagnant since 2008, and increased life expectancy has meant that the gap between the age of labour market exit and average life expectancy has actually increased slightly since the late 1990s (SOU, 2013: 124-126; see also Pensionsmyndigheten, 2014a). The dominant trend has been a dispersion of retirement ages under the new, more flexible retirement age system. The percentage of persons taking their public pensions at age 65 declined 21.9% for the cohort born in 1948 (55.4%) compared to the cohort born in 1938 (77.3%). The percentage of persons taking their public pension prior to age 65 increased 15.4% between the two cohorts (from 10.3% to 25.7%) while the percentage of individuals not taking a pension before age 66 increased by 6.5%, from 12.4% to 18.9% (Pensionsmyndigheten, 2014b).

A Swedish government commission of inquiry reporting in April 2013 (SOU, 2013) has recommended a variety of measures to try to further increase labour market participation by older workers. The commission recommended increasing the minimum age of receipt for the income and premium pensions from 61 to 62 in 2015. The commission also recommended setting a "target" or "recommended" retirement age that would provide a stronger signal to workers about the appropriate age to retire and receive an adequate pension. Changes in the minimum age for receiving the income pension, premium pension and guarantee pension would all be linked to increases in the target retirement age (and thus to life expectancy) beginning in 2019 – thus, the earliest age for receipt of the income and premium pensions would be 62 in 2015 and 63 in 2019, while the minimum age for the guarantee pension would be 66 beginning in 2019. The commission also recommended increasing the age below which employees are protected from compulsory retirement from 67 to 69, increasing the minimum age for payment of occupational pensions from 55 to 62, strengthening protections against age discrimination, and giving older workers more opportunities to upgrade their skills. In short, the commission recognised that stronger signals and floors need to be sent to encourage later retirement, and that workplace barriers need to be addressed as well as pension system signals.

3.6. Factors outside the state pension system may pose important barriers to longer working lives

A recent government investigation suggests that an increasing number of individuals desire to work past 65 (SOU, 2013), but that they have encountered multiple barriers to doing so. These barriers include provisions in many occupational pensions that allow them to be paid starting at age 55. Moreover, for 70% of Swedish workers, occupational pensions normally start paying automatically at age 65 (SOU, 2013: 50). The progressive structure of charges for occupational pensions frequently makes it more expensive for employers to keep an older worker on the job than to hire a younger work in his or her place (Inspektionen för Socialförsäkringen, 2012a). Moreover, because these provisions are the result of bargaining between the social partners, they are not easily adjustable through legislation.

3.7. Requirements for longer working lives will exacerbate inequality

The fact that effective retirement ages, after an initial upswing, seemed stuck around age 63 means that many pensioners will have inadequate incomes in retirement. Leaders of the Moderate Party, including Prime Minister Fredrik Reinfeldt, have argued that it will be necessary for Swedes to work longer in the future – perhaps even up to age 75 – if they are to receive adequate pensions (Larsson, 2012; Stenberg, 2013a). As noted above, a

government-appointed commission has recommended a more modest increase in the retirement age band. However, raising the pensionable age will increase concerns about the fairness of the system, given the lower life expectancy and greater physical requirements of jobs held by many workers with low lifetime earnings, because they will not be able to stay in their current jobs.

3.8. Engaging citizens – especially young workers – in planning for retirement saving is extremely difficult

A new mandatory "premium pension" individual account system was a major component of Sweden's 1990s structural pension reform. Patterns of participation in that system illustrate well the barriers to engagement in retirement planning and actual participation in retirement savings decisions. In the initial round of pension fund choice, which occurred in 2000, 67% of eligible individuals in Sweden made an active choice of pension funds. Even in the initial round, some individuals were much more likely than others to make an active choice of pension funds: controlling for other attributes, those who were employed in the financial services sector and had substantial private savings were much more likely (at least 1.3 times as likely) to make an active choice of pension funds than others (Engström and Westerberg, 2003). Individuals with high incomes and advanced education were also more likely to make an active choice. The same survey suggests that engaging non-native speakers in retirement savings schemes can be particularly difficult: those born outside the Nordic region were less than 60% as likely to make an active choice as those from the region. Fund managers are unlikely to devote a lot of resources to appealing to this group because they perceive that the management fees that they may receive from attracting this group's savings are likely to be low.

The Swedish case also suggests potential barriers to participation that may increase over time. Active choice of a pension fund dropped rapidly after the initial year: only 8% of those eligible to choose a fund for the first time in the 2005 round did so, and active choice of funds fell further in 2007 and in later years to less than 2% (Table 3). In 2013, only one per cent of new labour market entrants made an active choice of funds (Pensionsmyndigheten, 2014c). Further, as the last two rows of Table 3 show, after the initial round only one-fifth or fewer of those who came into the Premium Pension after the initial round made an active fund choice post-entry in the first few years after they came into the system. It should be noted, however, that the very large group (all labour market participants) that came into the system in the initial 2000 round were not only more numerous but were also older and had higher earnings than the small cohorts of new labour market entrants that came into the Premium Pension system in later years. As a result, individuals who had chosen their own Premium Pension portfolios still constituted 55% of participants, and held 72% of the capital, at the end of 2013 (Pensionsmyndigheten, 2014c).

Table 3. **Active choice and non-choice by entrants to the premium pension system (percentage)**

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
% Making choice in entry year	67.0	18.0	14.0	8.4	9.4	8.0	7.4	1.6	1.6	1.6	1.6	1.5
Men	66.0	16.8	14.3	8.3	9.5	7.7	7.5	1.7	1.8	1.8	1.7	1.7
Women	68.0	18.2	14.0	8.4	9.3	8.3	7.4	1.6	1.4	1.5	1.4	1.4
% of entrants still in the default fund in 2010	25.0	61.0	66.0	71.0	72.0	78.0	79.0	85.0	89.0	92.0	98.4	n.a.
% of entrants making choice after entry	8.0	21.0	20.0	21.0	19.0	14.0	14.0	13.0	9.0	6.0	n.a.	n.a.

Source: Pensionsmyndigheten (2012b), *Premiepensionen: Pensionsspararna och pensionärerna 2011* [*The Premium Pension: Pension Savers and Pensioners 2011*], Stockholm Pensionsmyndigheten Document PID119407.

Studies of the Swedish premium pension suggest that a number of reinforcing factors led to the dramatic decline in active choice among new entrants to the system between 2000 and 2007 (Weaver, 2005; Thaler and Sunstein, 2009). Perhaps most important is the fact that after the initial round, only new labour market entrants were choosing funds. The new entrants in later rounds were young, which meant that they were far from retirement and thus particularly prone to myopia about the need to start saving for retirement early. They also had little money at stake so perceived little incentive to make a fund choice, and they were presented with too many options (465 in the initial round, and approaching or exceeding 800 in recent rounds; see Table 4). Sweden's Premium Pension Agency (PPM) mounted substantial outreach campaigns in the initial rounds and tried to increase Internet accessibility for making choices. But private fund managers, recognising both the small sums at stake and the very broad field of funds available, did not mount substantial campaigns in later rounds to attract new entrants into the Premium Pension system. Moreover, much of the information that was provided by fund managers was overly simplified and even inaccurate (Thaler and Sunstein, 2009: Chapter 9). The media also paid much less attention to pension fund choice in the rounds held after 2000. The widespread publicity given to the negative returns experienced by most premium pension savers in the early years of the premium pension – especially those in many of the most popular fund choices – may have diluted enthusiasm for making an active choice. The state-sponsored (though autonomously operated) default fund also outperformed the weighted average of actively-chosen funds in the first years of the premium pension system, which likely further decreased the attraction of active engagement and fund choice.

Table 4. **Number of registered funds in the premium pension system**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Funds	625	664	697	725	779	785	773	777	789	797	793	850

Source: The Annual Reports of the Swedish Pension System (2003-2013), available at Pensionsmyndigheten's publication page, *http://secure.pensionsmyndigheten.se/Sok.html?sv.url=12.70e56c27145a7fdc958301b6&tab=3&query=publikationer&page=0*.

3.9. Keeping workers engaged in retirement savings is as difficult as securing initial engagement

Keeping individuals engaged in retirement planning is just as challenging as getting individuals engaged in the first place – and just as important, since portfolios that are appropriate for young workers may not be appropriate for older workers. As of 2011, only 55 per cent of those who made an active choice of pension portfolios upon entering the Swedish premium system, and only 23 per cent of those who originally opted for the default fund, had made any changes since that time (Pensionsmyndigheten, 2012b: 61).

The emerging evidence on low levels of active and continuing engagement in publicly-sponsored retirement investment schemes suggests that governments need to think through how and at what stages of life (e.g., at the time that children begin school, at certain "round-numbered" birthdays) they can improve financial literacy and engage contributors, especially when individual account funds are only a small part of total expected pension benefit. Governments also need to think through more specific engagement strategies for particular sectors of the labour force who are least likely to do so on their own, and create differentiated messages for different age groups. For younger workers, for example, the messages should include the need for asset diversification and a

concern with long-term asset growth, while for older workers messages should include giving consideration to adjusting their portfolios and, in some cases, potential vehicles for annuitisation of assets.

3.10. Financial literacy efforts are difficult and have low returns

Evidence from a number of countries suggests that individuals' levels of financial literacy and engagement in retirement savings planning affect their preparedness for retirement in a variety of ways. People who are more financially literate are more likely to avoid high cost debt, diversify investment risk, engage in retirement planning, and be aware of pension fund management fees (see for example Lusardi and Mitchell, 2011, Sundén, 2013). A number of recent studies from many OECD countries suggest that there are major gaps in most individuals' financial literacy.

To improve the financial literacy of the public, and ensure that every eligible individual participates, Sweden's Premium Pension Agency initially pursued substantial information and education campaigns to facilitate active choice of pension funds. In the initial round of active choice, PPM mailed information to pension savers, launched advertising campaigns and engaged in outreach activities to groups with special needs. PPM also mailed an annual fund catalogue to every new participant in the premium pension system, containing information on past rates of return, risk level and fees for each of the funds. Outreach efforts were scaled back in later years as the high costs (paid for out of the administrative fees charged to current participants in the premium pension system) and low returns on those efforts became clearer, and commitment to active choice both among politicians and the Premium Pension Authority waned. A printed catalogue is no longer mailed to new participants, but can still be ordered from the website. To make information on fund options easily accessible to the pension savers, the Pension Agency (successor agency to the PPM) currently maintains a webpage that is continuously updated to ensure that the pension savers receive the most accurate information available.

Despite PPM's efforts to communicate information to pension savers, few have been able to translate this information into useful knowledge that allows them to make active choice: many do not look at the information, do not understand the information, or are overwhelmed by the amount of information that they receive. In an annual survey of new premium pension participants sponsored by the PPM, only 7% of the 2009 respondents fully agreed with the statement "I have sufficient knowledge for making an informed decision about my premium pension", while 29% fully disagreed (PPM, 2009).[6] This response distribution is almost identical to the one obtained in the 2005 survey (Table 5).

Table 5. **Survey response to "I have sufficient knowledge for making an informed decision about my premium pension"**

	2005	2006	2007	2008	2009
Fully agree	8	7	10	7	7
Partially agree	17	15	18	12	14
Neither agree nor disagree	22	20	28	30	22
Partially disagree	20	17	21	24	27
Fully disagree	31	36	22	25	29
Don't know	1	3	2	2	1

Source: The Annual Reports of the Premium Pension System (2005-2009), available at Pensionsmyndigheten's publication page, *http://secure.pensionsmyndigheten.se/Sok.html?sv.url=12.70e56c27145a7fdc958301b6&tab=3&query=publikationer&page=0*.

Although this unsatisfying result can be a consequence of a multitude of factors, it is likely that the design of the PPM system, which assumes that individuals can, on their own, put together a diversified portfolio of up to five funds from among 800 options, is overly optimistic. Government commissions have proposed the implementation of guidance services, increased financial education in high school, and a framework that can be used to pick appropriate funds. However, the state is not allowed to provide recommendations for private investments, which means that any proposals to guide fund choice must be carefully designed. In November 2011, the Pension Agency introduced a web-based "Fund Selection Guide" (*fondvalsguiden*) that allows users to specify their risk tolerance, time horizon, fund management tolerance and other sources of retirement income. Based on that information, the Fund Selection guide recommends five funds with low fees and high returns. A proposal to create a warning system that alerts pension savers when their funds have dropped significantly in value has also been proposed.

3.11. Permissive entry for funds in an individual account system may overwhelm system participants, increase system costs, and increase risks

There are enormous differences across national individual retirement fund systems in the degree and types of restrictions that they place on funds that can be offered. Some offer relatively open access to all funds that meet asset diversity requirements, while others offer only a few fund choices. In some countries, employers play a substantial role in setting the options available to their workers.

The simplest option available to governments is to allow open access to all funds that meet minimum diversification requirements. This also has some political attractions, since it does not require government to undertake the politically fraught role of picking and choosing fund providers. As behavioural economists have noted, however, this "just maximise choice" policy also has important disadvantages (Thaler and Sunstein, 2009). *First*, it may discourage some participants from making an active choice because they are overwhelmed by the range of choices. *Second*, if those making the choices are not highly motivated, they make poor choices. International evidence suggests several biases and flaws in the investment practices of poorly informed and intermittently engaged individuals that may lead to sub-optimal returns – and to inadequate retirement incomes (see especially Benartzi and Thaler, 2007). Moreover, because individuals differ in their preferences, biases and information levels, the types of sub-optimal investment decisions that occur will vary across individuals.

Swedish policy-makers refrained from establishing stringent entry requirements for fund providers in the premium pension system. Fund providers must i) meet the directive of the EU on portfolio diversification (with the exception of Swedish equity funds); ii) agree to give fund rebates to the Premium Pension Agency; and iii) allow contributors the right to change funds as frequently as they like without charges (Weaver, 2004).

With minimal entry barriers, the Swedish pension savers are faced with hundreds of funds to choose from (Table 4). The overwhelming drop in initial active fund choice by new entrants to the premium pension system has already been noted, and choice overload is almost certainly among many factors contributing to this outcome. The concentration of many funds in Sweden's premium pension system in specific industries or regions also increases volatility in the accounts of individuals who invest in those funds. Other investment practices noted in the literature have also been found in Sweden. *First*, some individuals pay too much attention to recent fund performance, believing that it is a reliable

indicator of future asset performance; they thus overinvest in highly volatile funds or those that have overly concentrated assets. *Second*, many individuals have a "home bias," overinvesting in domestic assets and with domestic fund managers with whom they are familiar, regardless of that fund's actual performance (see SOU, 2005). At the end of 2011, for example, those who chose their own portfolios in the Swedish premium pension system had an average of 25.5% of their assets in Swedish equities (Pensionsmyndigheten, 2012b).[7] Moreover, eight of the ten most self-chosen funds in the premium pension system measured by percentage of persons choosing were offered by fund companies based in Sweden – five from the same company. The other two were offered by a Norway-based fund manager (Pensionsmyndigheten, 2012b: 43-45). *Third*, individuals may also be susceptible to advertising claims that provide little actual information on the performance of the fund. (Cronqvist, 2005). Given these multiple potential sources of investment bias – with different implications for return on retirement savings – there is no simple set of decision rules regarding the options offered in a retirement savings system that will protect a heterogeneous set of individuals against all of the risks.[8]

3.12. Centralised administration of an individual account system can contribute to higher returns for account holders and improved information on total expected retirement income streams

High management fees on fund balances and transaction fees can eat up a sizeable share of retirement savings in individual accounts over time. Fees can be kept low in several ways, notably by centralising some functions in government or an independent agency to take advantage of economies of scale rather than having them performed by employers or even by individuals. Sweden has chosen to centralise a number of functions, including collection of contributions (through the tax system), decisions on which funds are available to participants, negotiation of fee structures with fund managers, management of switches between funds, provision of default funds, and provision of information on fund balances and likely income streams upon retirement.

The centralisation of some of the account management functions has proven to have a number of advantages, most notably in lowering system costs and administrative burdens on employers. It can also give governments additional bargaining leverage in dealing with fund providers. In Sweden, for example, the Pension Agency requires that all funds participating in the Premium Pension system provide a discount on their normal fund management fees. These discounts range from 0.3% to 0.5% percent of assets annually, which the Pension Agency estimates will result in eventual increases of 10-15% in premium pensions payable (Pensionsmyndigheten, 2012b). Overall, fees are very low, especially for those who choose the default fund (discussed further below). All participants in the Premium Pension system pay an administrative fee to the Pension Authority. In 2013, the fee was 0.14% of account balances, with a cap of SEK 110 (about USD 16.60); averaged across all pension savers the fee was SEK 74 (about USD 11.20) or 0.1%. In addition, participants in the Premium Pension system pay fees to pension fund managers, which average 0.39% (after rebates) for those who have chosen their own funds. Fees are 0.12 for those under age 55 in the default fund, declining to 0.07% for those aged 75 and above (Pensionsmyndigheten, 2014b). Lower administrative fees are an important contributor to the higher long-term average performance of the default fund over the weighted average of the self-chosen funds for all cohorts of entrants into the Premium Pension System

(Pensionsmyndigheten, 2014b: 20-21). Caps on fees for funds in the "fund marketplace" (i.e., self-chosen funds) are under consideration in the Pensions Agency (Englund, 2014).

Centralised account management has also facilitated provision of information to workers on expected income streams in retirement that cumulates across sources. The vehicle for this information is Minpension ("My Pension"), a web-based service launched in December 2004 as a partnership between the trade association for Swedish insurance companies and state pension agencies (PPM, 2006: 9). The service provides a comprehensive overview of individuals' current pension savings and allows pension savers to calculate their projected future pensions. The service is available to all current pension savers in Sweden, and is offered free of charge. When the service was launched it provided an overview of an individual's current state pension and occupational pensions under collective agreements (Tjänstepension). In 2005, the service was expanded to enable pension savers to manually upload information on their private pension savings (PPM, 2007). In 2007, private pension savings were more fully integrated into the service, fund providers were allowed to upload information on PPM savings, and occupational pensions for those outside of collective agreements were added (PPM, 2007). Although initial reluctance by the PPM fund providers meant that the majority of pension savers were unable to obtain information about their premium pensions on Minpension, later years have seen a substantial improvement in the co-operation between fund providers and Minpension. Currently, 98% of total pension capital and 83% of private pension capital are available on Minpension (Pensionsmyndigheten, 2012:4). The service had 1.7 million registered members in 2012, roughly 31% of current Swedish pension savers. However, major information gaps remain, especially among the estimated 2.3 million pension savers who either have no access to, or do not use, the internet (Pensionsmyndigheten, 2013: 43).

In order to increase the number of registered users, there have been a number of advertising campaigns aimed at raising awareness about the service. The most substantial campaign took place in 2011, when Minpension was advertised in the "orange envelope" (the annual pension statement sent to all system participants), as well as on selected popular webpages, in newspapers and on television, resulting in 150 000 new members for Minpension – the largest increase since the launch of the web-based service in 2004 (Pensionsmyndigheten, 2013: 47).

3.13. Get the design of the default in an individual account system right, including changes in optimal asset allocations over the life cycle

Given the low interest of most workers in making active choices about their retirement savings, many if not most of them are likely to end up in whatever the default option is. That has clearly been the case in Sweden after the initial 2000 round.

Several characteristics of the default fund are likely to be critical in determining how successful the default fund is in providing an adequate income in old age for those who end up in it. Recent experience from Sweden suggests several lessons about good practices for such funds. As noted above, they should have very low administrative fees, since high fees on fund balances and transactions can eat up a sizeable share of retirement savings over time. *Second*, they should take a life-cycle approach, moving from higher-risk-and-return asset classes to lower volatility assets as retirement nears. *Third*, the balance between asset classes should take into account not just the funds in the individual account scheme but the broader government-sponsored retirement income stream as well. The main Swedish default fund, for example, allocates 100% of fund balance into stock funds

until age 55, at which point it gradually drops every year until age 75, when it reaches 33% of fund balances. The logic of this allocation is that about 85% of the individual's pension contributions go towards an income-related pension (supplemented by a guarantee pension for those with low lifetime earnings) that does not have a high degree of market volatility: taking a higher degree of risk for the individual account portion is therefore justifiable. Finally, default options can be combined with a limited set of investment options rather than a one-size-fits-all approach, but it is unlikely to attract many participants. Sweden's default fund offers alternatives that are higher risk or lower risk than the standard default, as well as an option that is equally balanced between equities and interest-bearing securities. The alternatives offer the same low fees as the main default option. In practice, however, very few savers have chosen these alternatives: more than 99% of contributors and invested funds using the AP7 are in the main "Såfa" fund (Palm and Johannisson, 2011).

3.14. Dividing responsibility for defined benefit and individual account DC tiers in separate agencies may constrain efficiency, cost-effectiveness, and integration of technology and service delivery

As a part of the Swedish pension reform, a new Premium Pension Agency was assigned the responsibility of administrating the premium pension, while the existing Social Insurance Agency continued to be responsible for other income support programs for the elderly.[9]

By utilising two separate agencies, the government tried to make the distinction between the premium pension, where individuals were expected to manage their own pension portfolios, and other income support programmes. They also believed that this would augment communication efficiency with pension savers and maximise operational efficiency and cost-effectiveness (SOU, 2006). Moreover, the design of the premium pension system makes it subject to capital market regulations and insurance laws and places the system under the supervision of the Ministry of Finance, while the income pension is supervised by the Ministry of Social Affairs.

Although theoretically sound, this decision led to a number of unanticipated problems (SOU, 2006). *First*, the multi-agency structure led to lack of co-ordination and communication between the two administrative units, as well as uncertainty concerning the specific tasks that pertained to each unit. As a consequence, the two authorities oftentimes pursued the same tasks, independently from each other, which led to a type of "double information work" (notably two separate IT-systems) that raised administrative costs. The division of responsibility also led to confusion concerning which agency to contact when the pensioners needed help.

Following a number of government-sponsored investigations regarding the administrative structure of the pension system (see, for example, Statskontoret, 2002; SOU, 2003; RRV, 2003; SOU, 2005), several modifications to the administrative structure were made. The two authorities improved co-ordination of administrative routines, established a working group to improve communication and co-operation, and developed a joint strategy for disseminating pension information to the public (SOU, 2006). At the beginning of 2010, a new Pensions Agency (Pensionsmyndigheten) was created by taking pensions functions out of the Social Insurance Agency and merging them with the Premium Pension Agency. However, the Pensions Agency continues to purchase many services from the

Social Insurance Agency, which has created a new set of co-ordination problems (Inspektionen för Socialförsäkringen, 2010 and 2011).

3.15. Anticipate that private interests will try to take advantage of individuals' low information and high anxiety about retirement incomes for their own benefit

Given the low levels of financial literacy of many individuals and the limited success of financial literacy campaigns in addressing those gaps, it is not surprising that many people use professional investment advisors or other financial intermediaries to guide (or take over) management of their retirement savings portfolios, paying a fee for that service. How well these services do at compensating for the financial literacy gap depends on whether they are reaching the people who need them most, and whether they offer good value for money.

Swedish experience suggests that individuals who have limited financial literacy skills and feel low pension efficacy may be particularly susceptible to heavily marketed appeals by financial consultants to take over management of accounts in deals that offer very poor value for money. Consultancy firms emerged in Sweden after 2000 to manage individual premium pension accounts on behalf of pension savers in exchange for annual service charges (approximately SEK 1 000, or about USD 150) (Nordh, 2013). This fee is billed directly to the client and is in addition to the account and fund management fees charged by the premium pension system. There are currently more than 700 000 individuals registered with PPM consultants.[10] The PPM consultancy business is highly profitable, with small PPM consultancy firms having recorded annual profits that exceed SEK 100 (Palm, 2012). A recent report published by the Social Insurance Inspectorate (Inspektionen för Socialförsäkringen, 2012b) suggests that these services are most commonly used by individuals with low levels of education and income. Unfortunately, the government's failure to anticipate this auxiliary market development has allowed PPM-consultants to take advantage of a fairly unregulated market (Lucas and Flores, 2012).[11]

A number of problems have emerged. *First*, PPM consultants use the lax legal framework to report higher than actual returns, engaging in false advertisement as a means to attract clients (Eriksson, 2013). *Second*, the laws governing the PPM consultants enable them to receive "kick-backs" (commission) from the owners of the funds that they choose to invest their clients' money in. As a consequence, rather than investing the clients' premium pension money in high-return low-risk funds, some PPM consultants may choose funds that guarantee them a high commission (Lindemark, 2008). The Social Insurance Inspectorate (Inspektionen för Socialförsäkringen, 2012b), in a report that attempted to match consultancy users with non-users with similar characteristics, estimated that users had a small added return net of consultancy fees, but also noted that the widespread use of mass fund switches increased overall transaction fees and led to fund value fluctuations for other participants in the premium pension system and increased information technology costs for the Pensions Agency.

Problems with respect to the PPM-consultancy industry have been exacerbated by Swedish laws that dictate that oral agreements are binding and that costumers do not have the right to withdraw from transactions made in public places (*canvasförsäljning)*. By designing sales strategies revolving around telephone and canvas sales, the PPM consultants have been able to utilise these laws to isolate consumers and persuade them to purchase consultancy services without giving them time to deliberate (Gustavsson, 2009). Once the consumers have acquired additional information and call the PPM

consultants to revoke the oral agreement or the canvas purchase, the PPM consultants refuse. These problems threaten the credibility and public support of the new pension system; in 2012, 9% of all phone calls made to the Pensionsmyndigheten revolved around complaints regarding contractual agreements with PPM consultants (Eriksson, 2013).[12]

To partially combat the issues surrounding the PPM-consultancy industry, the government implemented a law in 2011 that prohibited bulk trade via "*robotskjutning*" [automatic triggering of bulk trades] by PPM consultants (Friskman, 2011). By implementing a captcha-solution to prevent bulk trades via "*robotskjutning*", mass switching of funds is no longer possible. This policy resulted in a drop from 4.6 million fund changes in 2011 to 1.4 million in 2012, while the number of individuals making changes fell from 1.1 million to 600 000 (Pensionsmyndigheten, 2014c, 31). While two PPM consultancy companies left the market in response to the policy, the majority responded by raising the service fees and establishing funds-of-funds (Lindemark, 2012). Although these funds-of-funds are available free of charge via *fondtorget* (funds that participate in the premium pension system), the pensions savers continue to rely on PPM consultants for managing their premium pension, and the money spent on PPM consultancy services did not decrease post-legislation. Rather, it increased by SEK 140 million (Lindemark, 2012).

The broad lesson of these experiences is that profit-incentives can create perverse auxiliary markets around a retirement savings system, taking advantage of the fact that some individuals – especially those with low financial literacy – are struggling to make informed decisions about their retirement savings. Educating pension savers on the workings of the financial markets, or establishing comprehensive regulations to combat undesirable market developments, can partially mitigate this risk, but those who need financial education most may be least likely to obtain it. Moreover, difficulties in anticipating the precise form that these potential auxiliary market developments will take means that policymakers may be left scrambling to address them once they have developed.

3.16. Mandatory individual accounts may further exacerbate inequality concerns

Yet another concern relates to whether Sweden's premium pension system is contributing to new forms of inequality among seniors. At least three potential areas of concern are suggested by the Swedish experience. A *first* potential problem is that there are likely to be varying levels of engagement across different social groups. Thus if financial returns for those who take default options are significantly below the median, they may have lower incomes in retirement as a result. A *second* potential area of concern, as noted earlier, is that individuals who have limited financial literacy skills and feel low pension efficacy may be susceptible to appeals to marketing from financial intermediaries to manage their accounts in deals that offer very poor value for money.

A *third* potential area of concern relates to individuals who do take an active role in their retirement savings but make poor choices when doing so. While most individuals choose the default or stay with their original fund choices, there is tremendous variation in the tails of the distribution. Because the Swedish premium pension system allows concentration in very specific asset classes and unlimited fund switches, it is possible for expert market timers to do extremely well and poor choosers to do very poorly. This raises the question of whether it is fair to place individuals with knowledge of financial markets at a competitive advantage in an activity that is mandated by the state. That this may be an undesirable element of the premium pension system was noted in 2012 by the Minister of Social Insurance, Ulf Kristersson, who argued that "the skilled individuals should be

rewarded, but on the other hand, the system is mandatory and one must ask oneself how much risk one is willing to accept in a mandatory system" (TT, 2012).

Potential solutions to this third issue are currently being explored. Reaching an agreement about what to do – if anything – to combat the dispersion of outcomes and prevalence of non-choice has been politically difficult, reflecting disagreements within current four-party centre-right governing coalition and the pension working group. The Liberal Party (Folkpartiet) is content with the current system. The Moderates, the largest party in the coalition appointed Peter Norman, former managing director of the AP7 default fund, to be Minister of Financial Services and he, not surprisingly, likes the default fund and use of index funds. The opposition Social Democrats, on the other hand, have never liked the premium pension system.

Concerns over inequality induced by government policy may echo more loudly in Sweden than in many other countries given its history as a social democratic welfare state that places a high value on equality and fairness. That two individuals with identical earnings histories might enjoy vastly different returns on the premium pension portion of their pension is thus highly controversial. Even though such issues may be less salient in other countries, it is an inevitable consequence of mandatory retirement savings schemes that offer a wide range of fund choices. None of these potential inequality-enhancing problems are insurmountable: restrictions on asset specificity, frequency of fund switches and fund administrative charges are all potential ways to address these "new inequality" concerns. Regulation of financial consultants can also be useful. In considering the design of mandatory retirement savings schemes, policymakers need to consider the extent of specific new inequality risks, their likely incidence, and how much of each risk they are willing to tolerate.

3.17. Pension Reform 2.0

As Sweden approached the twenty-year anniversary of the 1994 legislation that established the new pension system, pension reform was once again an important issue on Sweden's policy agenda. Five separate expert groups were examining specific aspects of the pension system, focusing on the age of retirement, the premium pension system, the structure of the automatic balancing mechanism, the structure of the buffer funds in the income pension, and problems connected with premium pension consultants.

Several forces came together to bring about the resurgence of interest in legislative change. One was that the automatic balancing mechanism triggered pension cuts in 2010, 2011, and 2014 – and triggered more severely than had originally been anticipated, with substantial swings in both an upward and downward direction. Moderating those swings is in the interest of all of the signatories of the pension agreement in order to keep populist parties (notably the right-wing Sweden Democrats) and the Left Party, who are not members of the pension accord, from exploiting the issue for their own political gain. Changes are unlikely to affect the basic structure of the system, since any changes must gain the acquiescence of all five parties that are members of the pension working group; failure to do so would risk breaking up the pension agreement and setting off a bidding war that all parties would like to avoid (Schøyen and Stamati, 2013). But cracks in the five party agreement are emerging: in August 2013, Stefan Löfven, the leader of the Social Democratic Party, labelled the premium pension "an expensive flop". He argued that it cost billions of kronor in management fees, and that transferring those funds into the income pension system could keep the pension brake from hitting so often. But rather than

proposing a break with the pension accord, he said that changes should be negotiated within the five-party agreement (Thurfjell and Stiernstedt, 2013).

Current proposals to increase the minimum and "target" retirement ages will be controversial with the Social Democrats as well as labour unions and pensioners organisations, and the government will have to give up something in return – for example, increasing the share of the current 18.5% payroll tax that goes to the income pension system, with a declining share devoted to the premium pension, in exchange for an increase in the minimum age for various components of the Swedish pension system (including negotiated occupational pensions). Other changes, such as shifting payroll tax above the earnings threshold that currently goes to the general treasury rather than the pension system (and does not accrue pension contribution credits) into the income pension system to make the system "brake" hit less frequently have also reached the elite discussion agenda (Dahlberg, 2014). Having more issues on the agenda could give a governing coalition more bargaining chips, and allow all parties in the Pension Working Group to claim that they have gained something in a new comprehensive accord, much as occurred in the 1990s negotiations. But as in the 1990s, Sweden is likely to face the trade-off of having a relatively closed debate centred in the Pension Working Group that facilitates agreement but stifles useful public debate and public understanding.

Notes

1. The guarantee pension requires far more resources than the pension supplement it replaced, since it took over much of the function of supporting very low income pensioners who had previously received the flat-rate pension.
2. Interview, November 2000.
3. Interview, 2013.
4. The decline in initial replacement rates was partially offset by a rise in the replacement rate for occupational pensions, which rose from 17-21% of final salary. All figures are calculated on a gross (pre-tax) basis (Folksam, 2014).
5. About 12% of the assets used in calculating the balance ratio are "fund assets" in the buffer funds. The remainder is made up of "contribution assets" – statistically adjusted prior contributions.
6. The survey was discontinued in 2010 following the merger of the PPM into the Pensions Authority.
7. In contrast, the 7th AP Equities Fund, the equities component of the Premium Pension default fund, holds only 3.6% of its assets in Swedish equities. See Pensionsmyndigheten, 2014e.
8. For a detailed discussion of risk management in defined contribution systems and account of different national experiences, see Ashcroft and Stewart, 2010.
9. Specifically the new Income Pension, the old ATP pension, guarantee pension, survivor's pension, housing for seniors, and other small pension-related benefits under the old law.
10. A recent survey conducted by Pensionsmyndigheten indicates that this number might be even larger, approximateley 1.2 million (Nordh, 2013).
11. In particular, 1) PPM-consultants are not monitored by the Financial Services Authority unless the company combines PPM consultancy with securities business; 2) they are exempted from the Federal Law of Financial Consultancy as they are not considered "Individual Economic Consultants"; and 3) they are generally not subject to scrutiny by the Board of Consumer Complaints as the service charge falls below the minimum required for involving the *Allmäna Reklamationsnämnden*.
12. In addition, the majority of the individuals calling to complain about the consultants explicitly thought that the PPM Consultancy Firms were government owned firms operating through *pensionsmyndigheten* (Avanza Bank, 2012b).

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Estimates of uncertainty around Australian budget forecasts

by
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In this article, past forecast errors are used to construct confidence intervals around Australian Government Budget forecasts of key economic and fiscal variables. These confidence intervals provide an indication of the extent of uncertainty around the point estimate forecasts presented in the Budget.

JEL classification numbers: E17, H68.

Keywords: Confidence intervals, forecast errors, government budget, nominal GDP, real GDP, treasury, uncertainty.

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1. Introduction

Similar to Budget documents in other countries, Australian Government Budget documents present forecasts for key economic and fiscal variables. Estimates of uncertainty around such forecasts can help convey to readers a better appreciation of the risks associated with the economic and fiscal outlook. For example, they can help inform readers about how likely it is that outcomes will be close to the forecasts. This can be useful for informing government policy and public discourse more generally. For example, confidence intervals can highlight the amount of adjustment required to meet a budget target should particular risks materialise, throwing into sharper relief the trade-offs that government may face.

Estimates of forecast uncertainty can also improve the credibility and transparency of the forecasting process, key topics in the *Review of Treasury Macroeconomic and Revenue Forecasting* (Australian Treasury Forecasting Review) (Treasury, 2012). Explicit estimates of uncertainty can aid in making clear that point forecasts may turn out to be incorrect and that forecasts may be more usefully considered as a range rather than a point estimate. Being explicit about inherent uncertainties may lead to fewer misunderstandings about the forecasts and what they represent.

A number of fiscal agencies provide estimates of uncertainty around their forecasts. This includes the US Congressional Budget Office (CBO), which publishes a fan chart of probabilities around its projections for the budget balance (as a share of GDP). The UK Office for Budget Responsibility (OBR), in its *Economic and Fiscal Outlook*, publishes measures of uncertainty around its central projections for real GDP growth, public sector net borrowing (as a share of GDP) and cyclically-adjusted budget balance (as a share of GDP). The New Zealand Treasury reports confidence intervals around its revenue forecasts and cyclically-adjusted budget balance forecasts as part of *New Zealand Budget Papers* (New Zealand Treasury, 2013).[1] For Australia, the 2013 *Pre-election Economic and Fiscal Outlook* (PEFO) also presented confidence intervals around key aggregates; the first time this was done.[2] Table 1 describes some measures of forecast uncertainty provided by a range of fiscal institutions.

Publishing measures of uncertainty around economic forecasts is also common practice among central banks around the world. The Reserve Bank of Australia (RBA), the US Federal Reserve, the European Central Bank (ECB) and others report measures of uncertainty around their GDP and inflation forecasts (see Table 2). In the Australian context, confidence intervals around RBA forecasts have been published in an RBA discussion paper (Tulip and Wallace, 2012) and have been subsequently reported in the RBA *Statement on Monetary Policy*.

In addition, some institutions, like the UK Office for Budget Responsibility and the European Central Bank, provide a comparison of forecasts from a number of institutions, making differences in views between different forecasters more transparent. This

Table 1. **Some measures of uncertainty published by fiscal institutions**

Institution	Variables reported	Measure of uncertainty	Method of construction
Congressional Budget Office (US)	Budget balance	10%, 20%, 30% … 90% confidence intervals	Based on historical forecast errors, assuming normally distributed errors
Office for Budget Responsibility (UK)	Real GDP growth, public sector net borrowing and cyclically-adjusted budget balance	20%, 40%, 60%, 80% confidence intervals	Based on historical forecast errors, assuming modified normal distribution
NZ Treasury	Core crown tax revenue and cyclically-adjusted balance	20%, 40%, 60%, 80% confidence intervals	Based on historical forecast errors, assuming normally distributed errors

Note: The approach adopted below uses root mean square errors of past forecast errors to construct confidence intervals in line with the NZ Treasury. More detailed information about what is reported can be found in the original sources.
Sources: CBO (2007a), CBO (2007b), OBR (2012), OBR (2013), New Zealand Treasury (2013), Parkyn (2010).

Table 2. **Some measures of uncertainty published by monetary institutions**

Institution	Variables reported	Measure of uncertainty	Method of construction
Reserve Bank of Australia	Real GDP growth and underlying CPI inflation. Unemployment rate and CPI inflation also reported in discussion paper	70% and 90% confidence intervals	Based on historical forecast errors, assuming symmetric errors
Bank of Canada	CPI inflation and core inflation	50% and 90% confidence intervals	Combination of historical forecast errors and model errors, assuming normally distributed errors
Bank of England (UK)	CPI inflation and level and growth of real GDP	30%, 60% and 90% confidence intervals in some charts; detail varies over time and within publication	Based on forecast errors, modified for judgement
Bank of Japan	GDP growth and CPI excluding fresh food	Range and confidence intervals	Based on forecast distributions of individual Policy Board members.
European Central Bank	Real GDP growth and its components and Harmonised Index of Consumer Prices inflation	Range	Twice the past mean absolute projection errors, with outliers excluded
Federal Reserve (US)	Real GDP growth, unemployment rate and inflation	Root mean square errors. Also participants' range of forecasts and judgement of risk and uncertainty	Root mean square errors based on historical forecast errors. Also presents views of FOMC participants
Sveriges Riksbank (Sweden)	Real GDP growth, CPI and core CPI inflation and re-purchase rate	50%, 75% and 90% confidence intervals	Based on past forecast errors, assuming normally distributed errors
Norges Bank (Norway)	Policy interest rate, output gap and CPI and core CPI inflation	30%, 50%, 70% and 90% confidence intervals	Based on model, assuming a normal distribution, constrained by zero lower bound for the policy interest rate

Note: The approach adopted below uses root mean square errors of past forecast errors to construct confidence intervals in line with the Riksbank. More detailed information about what is reported can be found in the original sources.
Sources: Bank of Canada (2009), Bank of Canada (2013), Bank of England (2007), Bank of England (2013), Bank of Japan (2008), Bank of Japan (2013), ECB (2009), ECB (2013), Federal Open Market Committee (FOMC) (2012), Kjellberg and Villani (2010), Norges Bank (2013), Sveriges Riksbank (2007), Tulip and Wallace (2012).

potentially serves as a basis both for a better appreciation of the difficulties in forecasting and for discourse about why forecasts differ.

This paper presents estimates of uncertainty around key Australian Budget parameters, similar to those developed by other institutions. After discussing the theory

behind our approach in Section 2 and data issues in Section 3, we use recent forecast errors to construct confidence intervals around the 2013-14 Budget forecasts, presented in Section 4. These confidence intervals highlight the important point that there has always existed a range of plausible alternative outcomes around any given point estimate.

2. Theory

The appropriate method to construct measures of uncertainty around forecasts depends on the way the forecasts were generated.[3] As discussed in the Australian Treasury Forecasting Review, there are a variety of approaches to modelling the economy. For example, one distinction between models is the trade-off between their coherence with economic theory and their coherence with economic data.

One approach could be to forecast using an economy-wide econometric model. In that case, it would be possible to use the model to generate measures of uncertainty around the forecast using statistics derived from that model. For example, suppose the forecasting model is:

$$AY_t = BX_t + e_t$$

where Y is the vector of macroeconomic and fiscal variables being forecast, X is the vector of other variables (such as historical data), A and B are matrices of parameters (which are estimated) and e is the vector of errors in the model.

Once this model is estimated over historical data, estimates of uncertainty can be generated around the forecasts based on the errors. For example, draws could be taken from the estimated errors and each draw used to calculate a forecast. This would generate a distribution of forecasts that would give a measure of uncertainty around the central forecast under the assumption that the future will experience similar shocks to those experienced in the past and that the structure of the economy will be similar in the future. Some of the issues and details around such an approach, known as bootstrapping, are discussed in Berkowitz and Kilian (1996).

In practice, however, many forecasters, including the Treasury, draw upon a combination of modelling techniques and a range of other information, including judgement, to produce forecasts. The use of a combination of approaches to produce forecasts reflects the judgement that each method has its advantages and disadvantages. For example, an econometric model is an imperfect representation of the world, so it may be desirable to adjust a model-based forecast with judgement (see the discussion in OBR, 2011).

In the absence of a single econometric model describing all key inter-linkages between different aspects of the economy, it is not possible to use the above approach to provide reliable measures of uncertainty around the forecasts. This is because without a whole-of-economy model, which captures the relationships throughout the economy and the data-generating process of each variable, the impact of shocks on all forecast variables cannot be appropriately estimated.

However, to the extent that both the economy and the forecasting process used by a forecaster are similar to the past, uncertainty about a forecast can be assessed by the performance of similar forecasts in the past. Specifically, if the data-generating process for both the economy and forecasts is similar to the past, the forecast errors of the past will be a guide to future forecast errors. Reflecting this, a number of fiscal and monetary authorities have used their own historical forecast errors to derive measures of uncertainty (see Tables 1 and 2).

To construct confidence intervals (or prediction intervals) around the point estimate forecasts, we need to derive an estimate of the standard deviation of the forecast error.

For this, we calculate the root mean squared error (RMSE) for each forecast horizon:

$$RMSE_s = \sqrt{\frac{1}{n}\sum_{j=1}^{n}\left(y^f_{j+s} - y_{j+s}\right)^2}$$

where y^f is the forecast variable, y is the actual outcome and the summation is over all n observations at that forecast horizon, s.[4]

Assuming the forecast errors are normally distributed with zero mean, the past is representative of the future and the variable is stationary, confidence intervals can be calculated around the central forecasts:

$$Confidence\ Interval = y^f_{t+s} \pm Z \times\ RMSE_s$$

where y^f_{t+s} is the central forecast and Z is the value of the relevant Z statistic for the confidence interval. For example, the 70% confidence interval, used below, has a Z statistic of about 1.04, so the 70 per cent confidence interval is similar to the confidence interval of ±1 standard deviation. Reporting the 70% and 90% confidence intervals below gives a sense of the risks around the forecasts and follows the practice of the RBA.

When using the above approach for the forecasts of fiscal variables as a share of GDP (such as receipts as a share of GDP), the estimated confidence intervals will be affected by uncertainty in both the level of the fiscal variable (such as the level of receipts in dollar terms) and the level of nominal GDP. In the context of thinking about uncertainty around the level (or dollar value) of the fiscal variables, this can be misleading, as we will see shortly.

An alternative method of calculating confidence intervals, which reflects uncertainty only in the level of the variable, is to normalise the forecast errors by the actual outcome of GDP. To be specific, if we assume:

$$\frac{R^f_{t+s} - R_{t+s}}{GDP_{t+s}} \sim N\left(0, \sigma_s^2\right)$$

where R is receipts, GDP is nominal GDP and $\sim N\left(0, \sigma_s^2\right)$ means that errors are normally distributed with zero mean and constant variance, σ_s^2 (so we are assuming the error in the forecast of receipts as a share of GDP is stationary), then the confidence interval is calculated as:

$$Confidence\ Interval = \frac{R^f_{t+s}}{GDP^f_{t+s}} \pm Z \times \sqrt{\frac{1}{n}\sum_{j=1}^{n}\left(\frac{R^f_{j+s} - R_{j+s}}{GDP_{j+s}}\right)^2} \qquad [1]$$

where the term under the square root sign is the maximum likelihood estimator of σ_s^2. We refer to this as the *no-GDP-error approach*.

Taking account of the uncertainty about GDP in the confidence intervals around receipts (as a share of GDP) will tend to increase uncertainty (due to the variability of GDP), compared to the no-GDP-error approach which abstracts from GDP uncertainty, unless there is a positive relationship between errors in GDP forecasts and in receipt forecasts.

To explain this important point algebraically, the estimated variance of receipts as a share of GDP can be written as

$$\frac{1}{n}\sum_{j=1}^{n}\left(\frac{R^f_{j+s}}{GDP^f_{j+s}} - \frac{R_{j+s}}{GDP_{j+s}}\right)^2 = \frac{1}{n}\sum_{j=1}^{n}\left(\frac{R^f_{j+s} - R_{j+s}}{GDP_{j+s}}\right)^2 + \frac{1}{n}\sum_{j=1}^{n}\left(\frac{R^f_{j+s}}{GDP^f_{j+s}} - \frac{R^f_{j+s}}{GDP_{j+s}}\right)^2 + \frac{1}{n}\sum_{j=1}^{n}2\left(\frac{R^f_{j+s}}{GDP^f_{j+s}} - \frac{R^f_{j+s}}{GDP_{j+s}}\right)\left(\frac{R^f_{j+s} - R_{j+s}}{GDP_{j+s}}\right) \qquad [2]$$

So the estimated variance of receipts as a share of GDP (the left hand side of the equation) can be decomposed into three terms. The first is the estimate of the variance using the no-GDP-error approach, the second is always non-negative and is a function of uncertainty around GDP and the third term reflects how GDP and receipt forecast errors are related. If over-predictions of GDP are usually associated with over-predictions of receipts (and similarly for under-predictions) then this third term will be negative.

We will see below that the confidence intervals around receipts as a share of GDP using the no-GDP-error approach are larger than those which take account of uncertainty in nominal GDP, reflecting the strongly positive relationship observed between forecast errors for nominal GDP and for receipts.

To understand this point, consider the (extreme) scenario in which there are large errors in the forecasts for the levels of both receipts and GDP, but these errors are perfectly correlated so there is no error in the forecasts for the receipts-to-GDP ratio. In this case, there would be no confidence interval around the forecast ratio of receipts to GDP, which would clearly not be representative of the confidence intervals around the level of receipts. To generalise the point, small variances in the forecast errors of the receipts-to-GDP ratio can correspond to large forecast errors in the level of receipts when there are also large nominal GDP forecast errors. With the no-GDP-error approach (which does not allow for any error in the GDP forecast in the denominator of the receipts to GDP ratio), the error in the ratio is driven entirely by errors in forecasts for receipts, regardless of their causes (including GDP forecasting errors).

By contrast, the confidence intervals around payments as a share of GDP using the no-GDP-error approach are smaller than those which take account of uncertainty in nominal GDP, reflecting the negative relationship observed between forecast errors for nominal GDP and for payments.

The assumptions that the forecast errors are normally distributed with mean zero may not be exact, though it or similar assumptions are often made in generating confidence intervals (see Tables 1 and 2). Table A1 (in Annex 1) presents some summary statistics which shed light on the extent to which the assumptions are satisfied for the sample of historical forecast errors used in the calculations below (see below for information on how variables have been constructed and other details about the data).

Our analysis indicates that, in this sample, there are some signs of bias, with a tendency to under predict nominal GDP growth and over predict payments (Table A1). However this particular sample may be unrepresentative of the population or of future forecasts. Examining a longer sample suggests that the Treasury's real GDP, nominal GDP and revenue forecasts exhibit little evidence of bias for the Budget year (Treasury, 2012). Moreover, even if there is systematic bias in our particular sample, forecasters are expected to learn and adjust their forecasts. So, any bias in errors is unlikely to persist.[5] Table A1 suggests that it is difficult to reject the hypothesis that the errors are normally distributed in our sample. This is consistent with the forecast error being the average of many miscellaneous factors and so by a central limit theorem, the forecast errors should be approximately normally distributed.

The assumption that the future is similar to the past is also important. While this is not testable, confidence intervals generated using this assumption, provide a useful guide to likely risks around the forecasts.

3. Data

To calculate confidence intervals around the Australian Budget forecasts, we compare the Budget forecasts from the 1998-99 Budget onwards with current outcomes to generate historical forecasting errors.[6] Outcomes for nominal and real GDP are from the quarterly national accounts release for the June quarter 2013.

For the fiscal aggregates (receipts, payments and the underlying cash balance), there are some specific issues to bear in mind. *First*, the fiscal impact of all policy decisions made after a forecast was published have been added back to the relevant fiscal aggregate forecast to eliminate this potential source of error from the analysis. As a result, the root mean square errors for receipts, payments and the underlying cash balance do not reflect variations caused by subsequent policy changes. However changes in public debt interest as a result of policy decisions have not been removed from the data set.

Second, there was a change in the Budget reporting standard from cash to accrual in the 1999-2000 Budget. This change does not have a material impact on the underlying cash series. However, for many years in the sample, the Budget Papers published the effect of policy decisions only in accrual terms. As a result, we have constructed a composite series of policy decisions from records of cash and accrual measures, which has been used to adjust the relevant fiscal series.

Third, the potential for actual spending to exceed payment forecasts is taken into account through the Budget process. This is done through a provision made in the Contingency Reserve called the Conservative Bias Allowance (CBA). The CBA is an allowance for the tendency for expenses estimates of existing Government policy to be revised upwards in the forward years. This is of particular importance for demand driven programmes, where precise cost estimates are difficult to forecast. The allowance is calculated as a percentage of accrual expenditure and is unwound at each estimate update until it is removed completely when the year becomes the budget year. The reduction in the percentage over time reflects the fact that programme estimates are progressively updated, thereby decreasing the bias. As such, the incorporation of the CBA into the budget updates is used to reduce bias and improve the accuracy of payment forecasts. For further detail on the CBA see page 6-63 of *Budget Paper* No. 1 of the 2013-14 Australian Government Budget, *Budget Strategy and Outlook*.

Fourth, abstracting from policy changes to construct confidence intervals around the fiscal variables does not encapsulate some cases where parameter variations have more in common with decisions of government, particularly concerning payment forecasts. For example, specific decisions to re-profile spending (due to changes in timing of projects) are captured as parameter variations. Similarly, the Natural Disaster Relief and Recovery Arrangements enable all new spending decisions relating to unprecedented natural disasters to be captured as parameter variations. We have abstracted only from variations that have been reported for budgeting purposes as policy decisions, and have therefore included errors that in reality are not driven by parameter variations in isolation. Further, in line with longstanding convention and due to inherent difficulties in forecasting future impacts of natural disasters, estimates of the impact of disasters are not included beyond the Budget year. The forecast errors that arise as a result of this treatment have not been removed from the data.

Fifth, the underlying cash balance and receipts series have been constructed from each published Budget update and then payments have been derived as a residual. Note that

underlying cash balance data exclude Future Fund earnings, while receipts data do not. To ensure the residual series (payments) is consistent with the reporting of payments in budget documentation, Future Fund earnings have been removed from the residual data.

Finally, the incorporation of GST receipts and payments in the 2008-09 *Budget Papers* saw significant changes to the Government's balance sheet as this was not considered a Commonwealth tax in budgets prior to that year (it was considered a state tax prior to that year). Consequently, GST data have been removed from receipts and payments data to abstract from any forecasting error associated with this change.

Further details on the data can be found in Annex 1.

4. Results

4.1. Real and nominal GDP forecasts

This section presents 70% and 90% confidence intervals around key GDP forecasts from the 2013-14 Budget. For GDP forecasts, confidence intervals could be presented around forecasts of annual growth rates, average annualised growth rates or cumulative growth rates. While all three measures have merit, a key role of the GDP forecasts is as an input for producing revenue and expenses forecasts for the Budget. In this context, the forecast of the level of nominal GDP is particularly important. For this purpose, the average annualised GDP growth rate or the cumulative GDP growth rate is the more relevant summary statistic, since the level of GDP depends on cumulative growth over time. To get a good forecast of the level of GDP in 2013-14, the quality of the individual GDP growth forecasts in 2012-13 and 2013-14 is not in itself important, but rather the quality of the forecast of cumulative growth over the two years to 2013-14. It is possible that a forecaster could incorrectly predict growth in both 2012-13 and 2013-14 but these errors may be offsetting such that the prediction of cumulative growth over the two years is accurate. We have opted to report the average annualised growth rate (Figures 1 and 2) as it captures the effects of cumulative growth, while still giving a sense of what the annual growth rate would be. For Figure 3, we use the cumulative growth rate to calculate confidence intervals around the level of nominal GDP.[7]

Figure 1 presents point estimates and confidence intervals for the Budget forecast for average annualised real GDP growth. In the 2013-14 Budget, real GDP was expected to grow by 3% in 2012-13 while average annualised growth over the three years to 2014-15 was also expected to be 3%.[8] The observed outcome for 2012-13, which was not known when the 2013-14 Budget was delivered, is also noted on this and the following figures. The observed outcome for real GDP was close to the central forecast in the Budget.

Figure 1 suggests that, at the time when the 2013-14 Budget forecasts were published, there was a 70% probability that the average annualised growth rate over the two years from 2011-12 to 2013-14 would lie between around 2% and 3.75%.[9]

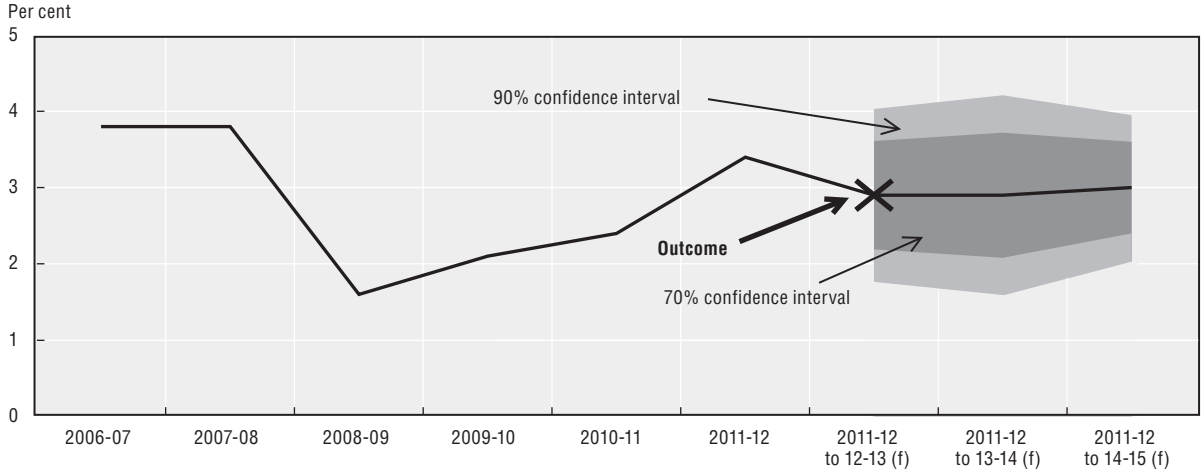
It is noticeable that the confidence intervals shrink in width for the 2014-15 year forecast. This occurs because reporting the average annualised growth rate moderates the impact of errors over longer horizons. By contrast, if confidence intervals were reported around the cumulative growth rates they would continue to widen.

Figure 1 suggests that there is significant uncertainty around the Budget point estimate forecasts for real GDP growth. While not directly comparable (because the RBA confidence intervals are based on year-ended growth rates rather than year-average

growth rates, as reported here), this is consistent with findings of Tulip and Wallace (2012) who conclude that there is a high level of uncertainty around RBA real GDP forecasts.

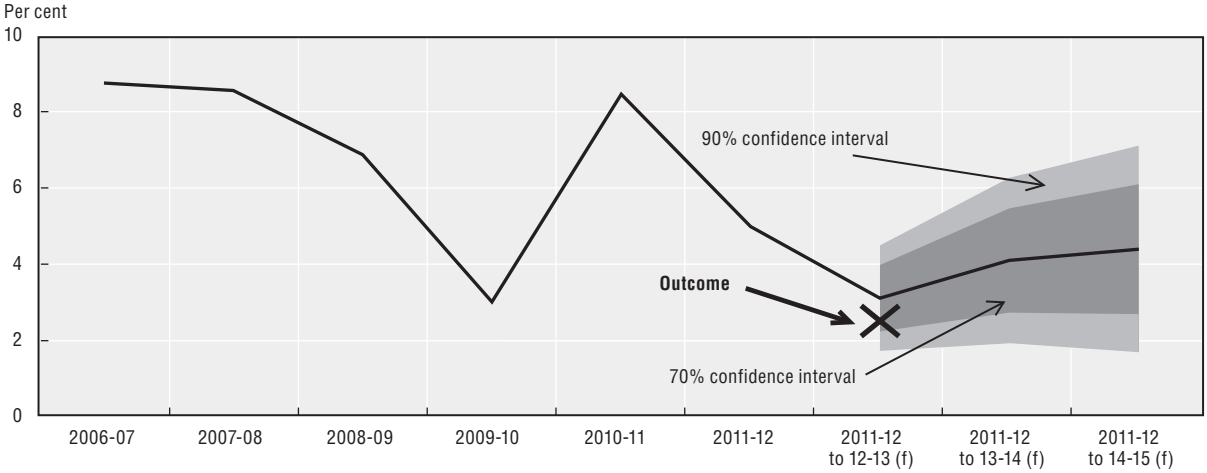
In the 2013-14 Budget, nominal GDP growth was expected to weaken in 2012-13, with growth of around 3.25%, before picking up in subsequent years, with annualised average growth of 4.5% in the three years to 2014-15 (Figure 2). As shown, the subsequently released outcome for 2012-13 was weaker than the Budget forecast, though it fell within the 70% confidence interval.

Figure 1. **Real GDP growth rate**



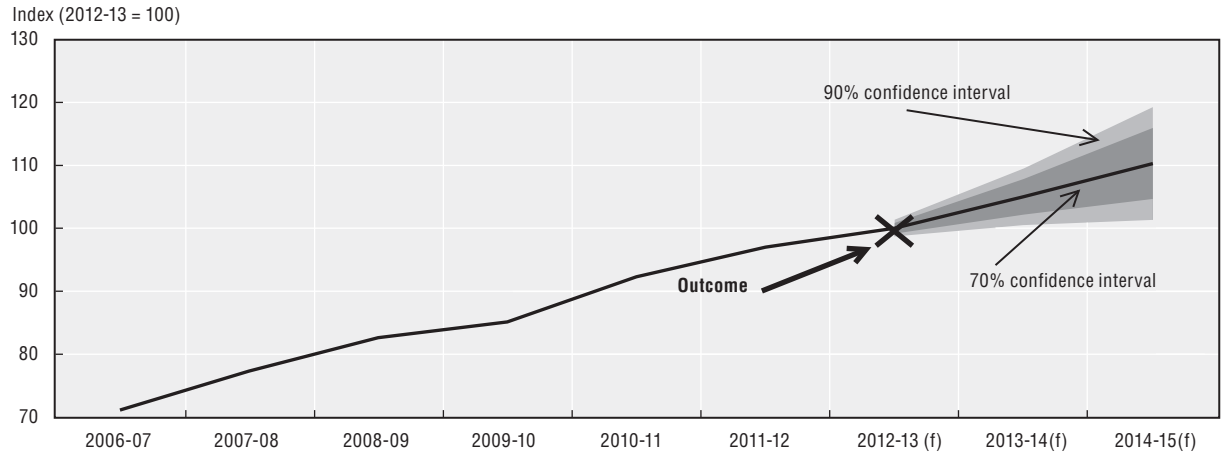
Notes: The central line shows the outcomes and point estimate forecasts in the 2013-14 Budget. Annual growth is reported to 2011-12. Annualised average growth rates (from 2011-12) are reported from 2012-13 onwards. Confidence intervals are based on the root mean square errors of Budget percentage growth rate forecasts from the 1998-99 Budget onwards. (f) are forecasts. Before the 2009-10 Budget, a projection rather than a forecast was made for the year after the budget year. The figure reports seasonally adjusted financial year outcomes. The central forecast, outcome and confidence interval widths have been rounded.
Source: Budget Paper No. 1 from Budget 1998-99 onwards and internal Treasury documents and calculations.

Figure 2. **Nominal GDP growth rate**



Notes: The central line shows the outcomes and point estimate forecasts in the 2013-14 Budget. Annual growth is reported to 2011-12. Annualised average growth rates (from 2011-12) are reported from 2012-13 onwards. Confidence intervals are based on the root mean square errors of Budget percentage growth rate forecasts from the 1998-99 Budget onwards. (f) are forecasts. Before the 2009-10 Budget, a projection rather than a forecast was made for the year after the budget year. The figure reports seasonally adjusted financial year outcomes. The central forecast, outcome and confidence interval widths have been rounded.
Source: Budget Paper No. 1 from Budget 1998-99 onwards and internal Treasury documents and calculations.

Figure 3. **Nominal GDP**



Notes: The central line shows the outcomes and point estimate forecasts in the 2013-14 Budget. Confidence intervals for the levels are derived from the root mean square errors of Budget forecast errors of the cumulative growth rate from the 1998-99 Budget onwards. (f) are forecasts. Before the 2009-10 Budget, a projection rather than a forecast was made for the year after the budget year. The figure reports seasonally adjusted financial year outcomes. Numbers are indexed such that the 2012-13 forecast equals 100. The central forecast, outcome and confidence interval widths have been rounded.
Source: *Budget Paper* No. 1 from Budget 1998-99 onwards and internal Treasury documents and calculations.

At the time of the Budget, there was a 70% probability the average annualised growth rate for nominal GDP over two years from 2011-12 to 2013-14 would lie between 2.75% and 5.5%. The confidence intervals around the annualised average nominal GDP growth rate are significantly larger than those around the real GDP growth rate forecasts. This reflects the compounding nature of two sources of uncertainty; the uncertainty associated with the outlook for real GDP and the uncertainty associated with the outlook for prices or the GDP deflator. The forecasting of the GDP deflator was discussed in the Australian Treasury Forecasting Review.

The level of nominal GDP is expected to continue to grow over the forecast period (Figure 3). The confidence intervals get wider over time, with a 70% confidence interval of roughly AUD 170 billion in 2014-15. This compares to a central forecast of nominal GDP of almost AUD 1.7 trillion. The confidence interval gets wider because the root mean square error of the cumulative growth rate increases when predictions are made further into the future (that is, forecast errors tend to accumulate).

It is difficult to make comparisons between the confidence intervals reported here and those reported by other institutions, in part because different institutions often report somewhat different variables. However, Table 3.5 of the Australian Treasury Forecasting Review suggests that the Reserve Bank of Australia's forecast accuracy for real GDP is similar to that of Treasury, implying that the uncertainty around its forecasts is similar to the Treasury's. Also the UK Office for Budget Responsibility's estimates of uncertainty for annual real GDP growth, as reported in its March 2013 *Economic and Fiscal Outlook*, seem no smaller than those of the Treasury (treating their current year forecast, made early in the year, as roughly equivalent to the Treasury's budget year forecast).

4.2. Fiscal forecasts

We now turn to confidence intervals around key fiscal forecasts from the 2013-14 Budget. The figures show confidence intervals around forecasts of fiscal variables as shares of GDP.

Showing the fiscal variables relative to the size of the overall economy is in many ways more informative and easier to understand than the level of the fiscal variables over time.

We present confidence intervals in two different ways. First, we present confidence intervals based on the errors in the forecasts of the fiscal variables as a share of GDP. As discussed above, this captures uncertainty in both the fiscal variable and GDP. However, if the key variables of interest are the levels (or dollar values) of receipts, payments and the underlying cash balance, then it is more informative to focus on confidence intervals that abstract from uncertainty about GDP, which are also presented below.

4.2.1. Confidence intervals incorporating both fiscal and GDP uncertainty

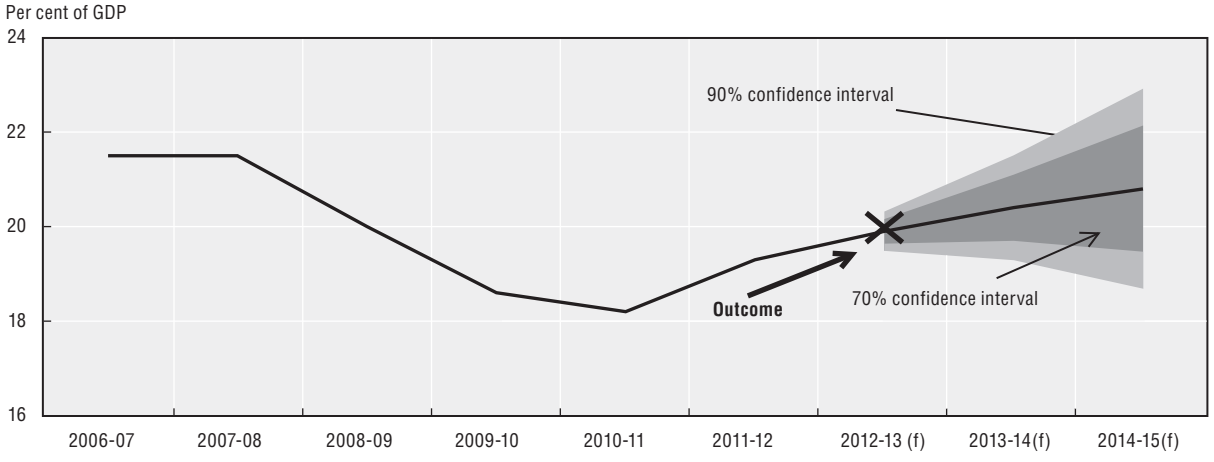
Figures 4, 5 and 6 report the Budget forecasts for receipts (excluding GST and including Future Fund earnings), payments (excluding GST) and the underlying cash balance (excluding Future Fund earnings). For these three figures, the confidence intervals have been calculated comparing the forecasts of the relevant fiscal variable as a share of GDP with the outcome.[10]

The confidence intervals are substantial and widen over time. They suggest that, at the time of the 2013-14 Budget, there was a 70% probability that receipts would lie between 19.7% and 21.1% of GDP, payments between 20.5% and 22.2% of GDP and the underlying cash balance between -2.2% and 0.0% of GDP in 2013-14 (Figures 4, 5 and 6).

As previously discussed, these confidence intervals reflect uncertainty about both the level of the fiscal variable (the numerator of the share) and nominal GDP (the denominator of the share). The above figures may suggest that the historical errors around forecasts of the level of payments are greater than for receipts. In reality, however, historical errors around payment forecasts (in level terms) are substantially smaller than those of receipts.

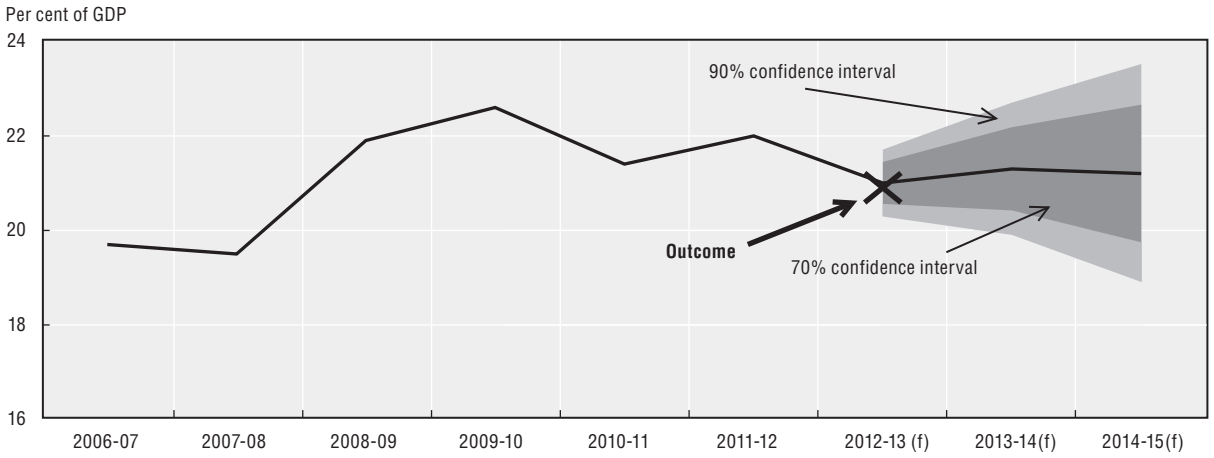
This potential misconception arises because the confidence intervals shown above are strongly influenced by the correlation between the forecast errors of the fiscal variables and nominal GDP (as highlighted in equation [2] above). This issue is discussed further below and results are presented that do not reflect this correlation.

Figure 4. **Receipts (excluding GST) as a percentage of GDP**



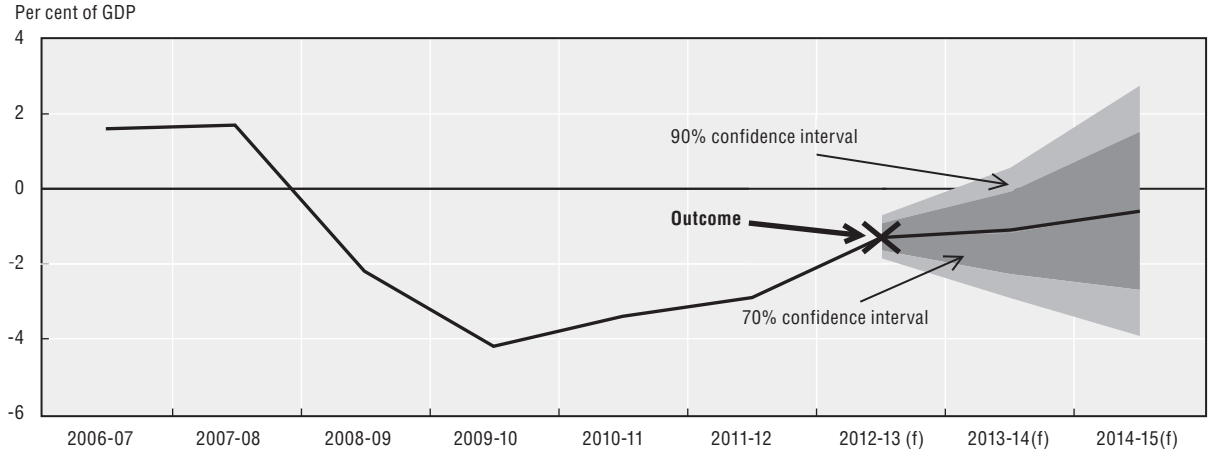
Notes: The central line shows the outcomes and point estimate forecasts in the 2013-14 Budget. Confidence intervals use root mean squared errors (RMSE) for Budget forecasts from the 1998-99 Budget onwards. RMSE do not reflect forecast errors caused by policy decisions taken after the relevant Budget. (f) are forecasts. Before the 2009-10 Budget, a projection rather than a forecast was made for the year after the budget year. The outcome is based on information available at the time of the Final Budget Outcome. The central forecast, outcome and confidence interval widths have been rounded.
Source: *Budget Paper* No. 1 from Budget 1998-99 onwards and internal Treasury documents and calculations.

Figure 5. **Payments (excluding GST) as a percentage of GDP**



Notes: The central line shows the outcomes and point estimate forecasts in the 2013-14 Budget. Confidence intervals use root mean squared errors (RMSE) for Budget forecasts from the 1998-99 Budget onwards. RMSE do not reflect forecast errors caused by policy decisions taken after the relevant Budget. (f) are forecasts. Before the 2009-10 Budget, a projection rather than a forecast was made for the year after the budget year. The outcome is based on information available at the time of the Final Budget Outcome. The central forecast, outcome and confidence interval widths have been rounded.
Source: *Budget Paper* No. 1 from Budget 1998-99 onwards and internal Treasury documents and calculations.

Figure 6. **Underlying cash balance as a percentage of GDP**



Notes: The central line shows the outcomes and point estimate forecasts in the 2013-14 Budget. Confidence intervals use root mean squared errors (RMSE) for Budget forecasts from the 1998-99 Budget onwards. RMSE do not reflect forecast errors caused by policy decisions taken after the relevant Budget. (f) are forecasts. Before the 2009-10 Budget, a projection rather than a forecast was made for the year after the budget year. The outcome is based on information available at the time of the Final Budget Outcome. The central forecast, outcome and confidence interval widths have been rounded.
Source: *Budget Paper* No. 1 from Budget 1998-99 onwards and internal Treasury documents and calculations.

4.2.2. Confidence intervals incorporating fiscal uncertainty only

As discussed in Section 2, an alternative approach, which takes account of uncertainty only in the fiscal variable, is the no-GDP-error approach. Figures 7, 8 and 9 report receipts, payments and the underlying cash balance as shares of GDP but with confidence intervals based on the no-GDP-error approach (see equation [1] above).

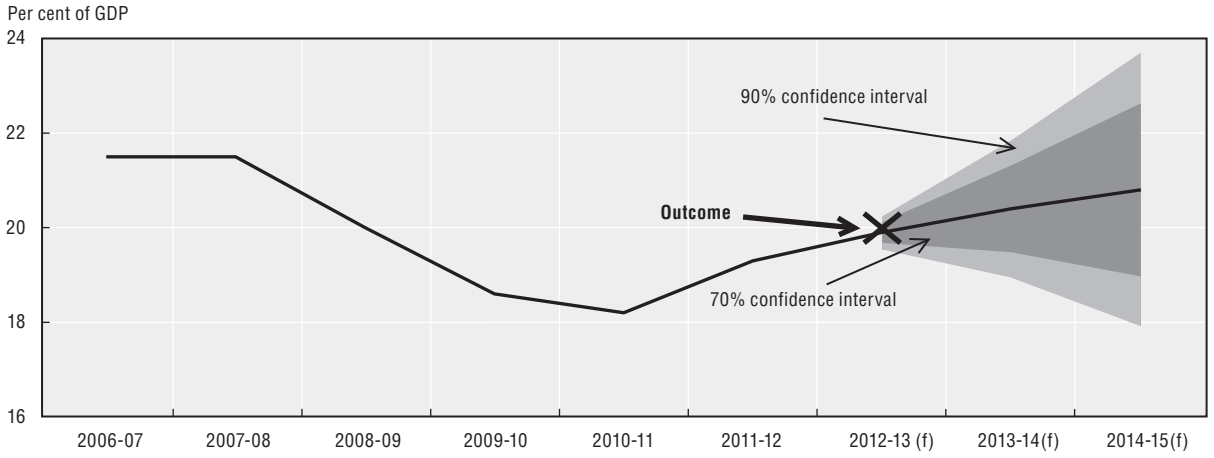
Figures 7 to 9 suggest that there is substantial uncertainty around the fiscal forecasts and this uncertainty grows over time. They suggest that, at the time of the 2013-14 Budget, the widths of 70% confidence intervals for forecasts in 2014-15 were roughly AUD 60 billion

for receipts, AUD 20 billion for payments and AUD 70 billion for the underlying cash balance. We get similar results when using an alternative approach based on cumulative growth forecast errors (discussed in Clark et al., 2013).

The 70% confidence intervals for the underlying cash balance are wider than for both receipts and payments (see Figures 7 to 9) reflecting that the forecast errors for receipts and payments tend to be negatively correlated. The correlation coefficients between the

Figure 7. **Receipts (excluding GST) as a percentage of GDP**

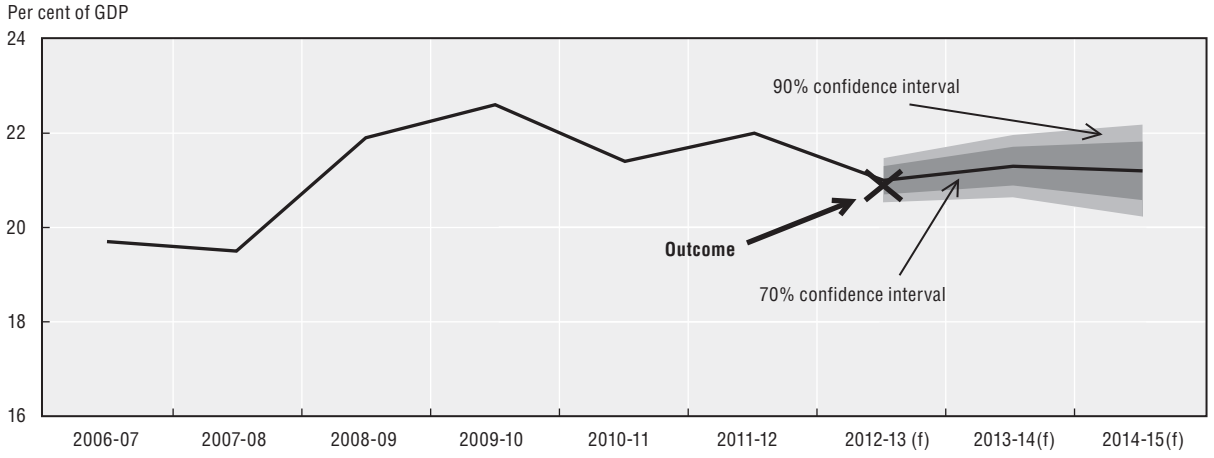
No-GDP-error approach



Notes: The central line shows the outcomes and point estimate forecasts in the 2013-14 Budget. Confidence intervals use root mean squared errors (RMSE) for Budget forecasts from the 1998-99 Budget onwards. RMSE do not reflect forecast errors caused by policy decisions taken after the relevant Budget. Confidence intervals do not reflect uncertainty about nominal GDP. (f) are forecasts. Before the 2009-10 Budget, a projection rather than a forecast was made for the year after the budget year. The outcome is based on information available at the time of the Final Budget Outcome. The central forecast, outcome and confidence interval widths have been rounded.
Source: Budget Paper No. 1 from Budget 1998-99 onwards and internal Treasury documents and calculations.

Figure 8. **Payments (excluding GST) as a percentage of GDP**

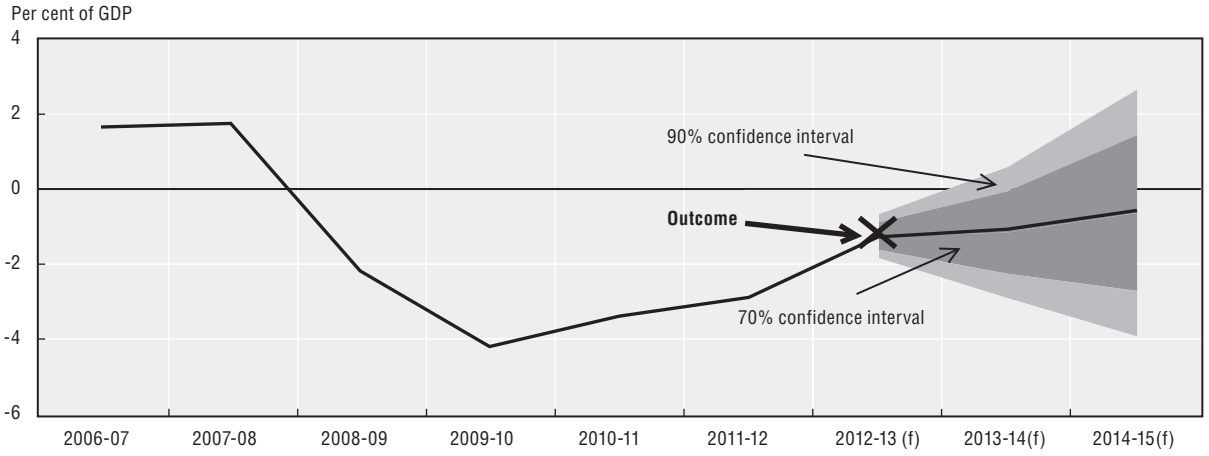
No-GDP-error approach



Notes: The central line shows the outcomes and point estimate forecasts in the 2013-14 Budget. Confidence intervals use root mean squared errors (RMSE) for Budget forecasts from the 1998-99 Budget onwards. RMSE do not reflect forecast errors caused by policy decisions taken after the relevant Budget. Confidence intervals do not reflect uncertainty about nominal GDP. (f) are forecasts. Before the 2009-10 Budget, a projection rather than a forecast was made for the year after the budget year. The outcome is based on information available at the time of the Final Budget Outcome. The central forecast, outcome and confidence interval widths have been rounded.
Source: Budget Paper No. 1 from Budget 1998-99 onwards and internal Treasury documents and calculations.

Figure 9. **Underlying cash balance as a percentage of GDP**

No-GDP-error approach



Notes: The central line shows the outcomes and point estimate forecasts in the 2013-14 Budget. Confidence intervals use root mean squared errors (RMSE) for Budget forecasts from the 1998-99 Budget onwards. RMSE do not reflect forecast errors caused by policy decisions taken after the relevant Budget. Confidence intervals do not reflect uncertainty about nominal GDP. (f) are forecasts. Before the 2009-10 Budget, a projection rather than a forecast was made for the year after the budget year. The outcome is based on information available at the time of the Final Budget Outcome. The central forecast, outcome and confidence interval widths have been rounded.
Source: *Budget Paper* No. 1 from Budget 1998-99 onwards and internal Treasury documents and calculations.

forecast errors for the cumulative growth rates for receipts and payments are around -0.2 for the 2013-14 forecast year and -0.3 for 2014-15. To understand this point, suppose the underlying cash balance was initially forecast to be zero and then there were forecast errors for both receipts and payments equal to half a per cent of GDP. If these errors were in the same direction, they would cancel each other out, with no impact on the underlying cash balance. However, if the forecast errors were in opposite directions, the forecast error for the underlying cash balance would be 1% of GDP (around AUD 17 billion in 2014-15).

It is worth noting that the different ways of characterising uncertainty around the fiscal variables lead to significantly different measures of uncertainty. For example, the reported confidence intervals for receipts as a share of GDP in 2013-14 and 2014-15 are wider in Figure 7 (based on the no-GDP-error approach) than Figure 4 (based on share of GDP forecasts). This is because forecast errors in GDP are strongly positively correlated with forecast errors in receipts, with a correlation coefficient between the forecast errors for the cumulative growth rates for receipts and nominal GDP of 0.6 for both the 2013-14 and 2014-15 forecast horizons. As a consequence, the impact on the forecast error of the ratio of receipts to GDP from these two sources is offsetting.

The confidence intervals for payments are smaller in Figure 8 (based on the no-GDP-error approach) than Figure 5 (based on share of GDP forecasts). This reflects a negative correlation between the forecast errors of payments and nominal GDP, with a correlation coefficient between the cumulative growth rate forecast errors of payments and nominal GDP of roughly -0.5 for both the 2013-14 and 2014-15 forecast horizons. As a consequence, the impact on forecast errors of payments as a share of GDP from these two sources is not offsetting as was the case for receipts.

The confidence intervals around the underlying cash balance as a share of GDP are similar based on either the share of GDP forecast errors (Figure 6) or no-GDP-error approach (Figure 9).

We have seen that the different ways of estimating uncertainty around the fiscal variables sometimes leads to significantly different measures of uncertainty. When the variable of interest is the level (or dollar value) of receipts, payments or the underlying cash balance, it is more appropriate to focus on confidence intervals that reflect uncertainty around these levels. The no-GDP-error approach provides a way of doing this.

Measures of uncertainty around fiscal variables to our knowledge are not common. However the CBO, when calculating confidence intervals around the primary surplus, uses a procedure based on normalised forecast errors (in the spirit of our no-GDP-error approach), though they normalise relative to revenue rather than GDP (CBO, 2007b).

For the underlying cash balance (as a share of GDP) in Figures 6 and 9, the width of Treasury's 70% confidence interval for the budget year is around 2.2 percentage points. This compares to the US Congressional Budget Office's equivalent confidence interval around the budget balance of about 1.7 percentage points for the current year (although the forecast horizon is different with the CBO often forecasting for the year that has already begun rather than the year about to begin). For the subsequent year, the width of the Treasury confidence interval is a little over 4 percentage points compared to the CBO estimate of around 3 percentage points (CBO, 2007b). The UK Office for Budget Responsibility reports confidence intervals for the cyclically-adjusted budget balance which is appropriate for their purposes (as the UK Charter for Budget Responsibility defines the fiscal mandate in terms of this measure), though this makes it difficult to compare to Australia's underlying cash balance measure.

5. Conclusion

Confidence intervals provide a guide to the degree of uncertainty around forecasts. We have presented confidence intervals around key Australian budget forecasts, which suggest that rather than focusing on precise point estimates, a more nuanced discussion would acknowledge that uncertainty is an unavoidable feature of forecasts, with confidence intervals spanning a wide range of outcomes. This is particularly true of the nominal macroeconomic and fiscal variables, for which uncertainty increases as the forecast horizon lengthens.

Reporting confidence intervals provides a way of improving the understanding of the uncertainty inherent in forecasting. Reporting confidence intervals complements existing approaches to convey uncertainty including the discussion of risks to the forecasts and sensitivity analysis provided in the Budget as well as analysis of ways to improve forecasting performance, such as that in the *Treasury Forecasting Review*.

Notes

1. In New Zealand, the Budget forecasts in the Economic and Fiscal Update are supplied to the Minister of Finance by the New Zealand Treasury, while the Australian Budget forecasts are produced by the Australian Government after receiving the advice of the Australian Treasury and Department of Finance.
2. The Australian *Charter of Budget Honesty Act 1998* requires the Secretaries to the Treasury and the Department of Finance to release a PEFO prior to an election.
3. An alternative approach would be to report subjective estimates of uncertainty. However, many studies have found these to be too low, often by large margins (see Tulip and Wallace, 2012).

4. In the analysis in Section 4 for the Australian budget, the horizons are the financial year that is about to end and the two subsequent financial years. For the 2013-14 Budget delivered in May 2013, these correspond to 2012-13, 2013-14 and 2014-15.
5. Generally, the amount of serial correlation in the errors is statistically insignificant, though there are some signs of serial correlation in our sample for the forecast errors for receipts as a share of GDP.
6. In this analysis, the latest available estimate of the outcome is used as the measured outcome. Another approach could be to use a vintage of data close to when the forecasts were released. For example, Tulip and Wallace (2012) use GDP as reported in the fourth-published estimate (that is, released around four quarters after the event). Using later data vintages lessens issues around incomplete incorporation of source data but may increase issues from changing data definitions. However the use of forecast growth rates rather than levels in this paper should lessen the problems associated with changing data definitions (see Note 10).
7. Confidence intervals based on the average annual growth rate and cumulative growth yield very similar results for the level of nominal GDP, as would be expected.
8. Consistent with the Australian Budget, in this paper point estimates and confidence intervals of economic forecasts are reported rounded to the nearest quarter of a percentage point. Charts similar to Figures 1 and 2 were publishing in the 2013 PEFO, though they reported the PEFO forecasts of the Treasury and the Department of Finance and Deregulation. Confidence intervals around forecasts have also been published in the *Mid-Year Economic and Fiscal Outlook* 2013-14 and the 2014-15 Budget.
9. The confidence intervals around the 2012-13 forecasts in this and subsequent figures are based on forecasts from the 1998-99 Budget to the 2013-14 Budget (16 observations), with the forecast from the 1998-99 Budget being for the financial year 1997-98. The confidence intervals for the 2013-14 forecasts are based on forecasts from the 1998-99 to 2012-13 Budgets (15 observations). Similarly, the 2014-15 confidence intervals are based on 14 observations. The sample periods reflect the availability of data on outcomes. The confidence intervals in this and the other graphs are broadly similar if they are calculated excluding 2008-09 and subsequent financial years which could have been effected by the global financial crisis.
10. To calculate the forecast errors for the shares, an adjustment has been made to allow for historical revisions to GDP. This is particularly relevant because the September 2009 National Accounts moved to the new international standard (SNA08) which made several significant revisions to the GDP historical data. For example, GDP was revised to consider research and development as capital formation rather than as a business expense. The effects of the revisions were to increase the historical level of nominal GDP by between 1.5 and 3 per cent. Hence a ratio to GDP forecast on the previous basis cannot be compared to an outcome on the current basis. Growth rates were largely unaffected by the revision. Therefore, forecasts of nominal GDP growth have been applied to the historical GDP series (as at the June Quarter 2013 National Accounts release) to generate forecast shares that allow comparisons between forecasts and outcomes on a more comparable basis.

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ANNEX 1

Data

Data sources

Budget forecasts used to construct historical forecasting errors have been sourced from *Budget Papers* from the 1998-99 Budget through to the 2013-14 Budget.

Actual fiscal outcomes used to compare against Budget estimates have been sourced from Final Budget Outcome documents spanning 1998-99 to the latest published outcome. Fiscal variables relative to GDP are calculated using original (non-seasonally adjusted) series with adjustments to allow for revisions in data concepts (see Note 10). Note that for all the data and analysis in this paper, receipts exclude GST and include Future Fund earnings, payments exclude GST and the underlying cash balance excludes Future Fund earnings. Hence receipts less payments measured in this way will not exactly equal the underlying cash balance.

Note that unless otherwise stated, all references to the Treasury are to the Australian Treasury including for sources.

For nominal and real GDP, the forecasts are compared to seasonally adjusted financial year average outcomes of the following series:

Australian Bureau of Statistics, 2013. Table 1 – Key National Accounts: Seasonally Adjusted Gross Domestic Product: Chain Volume Measure. *National Accounts: National Income, Expenditure and Product, June Quarter 2013. ABS Catalogue 5206.0*. Australian Bureau of Statistics: Canberra. 4/9/2013.

Australian Bureau of Statistics, 2013. Table 1 – Key National Accounts: Seasonally Adjusted Gross Domestic Product: Current prices. *National Accounts: National Income, Expenditure and Product, June Quarter 2013. ABS Catalogue 5206.0*. Australian Bureau of Statistics: Canberra. 4/9/2013.

Table A1 summarises some features of the forecast errors which were described in the main text.

Table A1. **Summary statistics of forecast errors**

Forecast error	Bias (forecast – actual)	Serial correlation	Normality
Real GDP (average annual growth rate in percent)			
Year about to end	-0.4**	-0.1	1.2
Budget year	-0.3	-0.3	0.4
Subsequent year	-0.1	-0.3	1.3
Nominal GDP (average annual growth rate in percent)			
Year about to end	-0.6**	0.4	0.1
Budget year	-0.7*	-0.1	0.1
Subsequent year	-1.0*	-0.1	0.2
Receipts (as share of GDP in percent)			
Year about to end	0.1	-0.2	1.1
Budget year	0.1	0.5*	1.1
Subsequent year	-0.2	0.7**	0.7
Payments (as share of GDP in percent)			
Year about to end	0.4**	0.3	0.4
Budget year	0.5*	0.2	0.4
Subsequent year	0.8*	0.1	1.1
Underlying cash balance (as share of GDP in percent)			
Year about to end	-0.3**	0.1	0.5
Budget year	-0.5	0.3	1.7
Subsequent year	-0.9	0.4	1.5
Receipts (no-GDP-error approach – level error as a percentage of GDP)			
Year about to end	0.0	-0.2	1.4
Budget year	-0.2	0.4	0.9
Subsequent year	-0.7	0.4	2.0
Payments (no-GDP-error approach – level error as a percentage of GDP)			
Year about to end	0.2**	0.3	3.5
Budget year	0.2*	0.4	1.3
Subsequent year	0.1	0.5	1.0
Underlying cash balance (no-GDP-error approach – level error as a percentage of GDP)			
Year about to end	-0.3**	0.1	0.5
Budget year	-0.4	0.4	1.6
Subsequent year	-0.8	0.4	1.4

Notes: Bias is the average forecast error (expressed as forecast less actual so a positive number indicates overprediction), where significance is tested using White heteroskedasticity-consistent standard errors. Serial correlation is the first order autocorrelation of the mean-corrected forecast errors with the statistical significance based on the Ljung-Box Q-statistic for first order autocorrelation. For normality, the Jarque-Bera statistic (which has a chi-squared distribution with 2 degrees of freedom under normally distributed errors) is reported for the forecast errors. The sample is based on forecasts from the 1998-99 Budget onwards (see Note 9). * indicates statistical significance at the 5 per cent level and ** at the 1 per cent level.
Source: Internal Treasury documents.

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