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Is the global financial safety net at a tipping point to fragmentation?

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The international monetary system is underpinned by a global financial safety net providing a financial backstop during times of economic and financial crises or serious market dysfunction. Since the mid-1940s, safety net resources have primarily been located at the International Monetary Fund, which has provided a forum for international co-operation and co-ordination in the resolution of crises. However, since the Global Financial Crisis, there has been a rapid diversification and deepening of the global financial safety net. On balance, this has been a positive evolution but we argue that we may be approaching a tipping point which, if reached without the intervention of international economic policymakers, puts at risk the appropriate role of the global financial safety net and in the process, global economic stability.

1 The authors are from the International Finance and Development Division, the Australian Treasury. This paper benefited from comments and suggestions by Barry Sterland, Aaron Van Bridges, Ian South and colleagues from the International Monetary System Unit, the Reserve Bank of Australia's International Department and Australian staff at the office of the Asia and Pacific constituency at the IMF. The views in this article are those of the authors and not necessarily those of the Australian Treasury.

Introduction

Financial systems are indispensable to the functioning of modern economies. They direct savings to fund investment, and allow entrepreneurs to implement their innovative ideas. However, they are also prone to instability and crises. The past couple of centuries are replete with bouts of seizures, usually after a period of exuberance, rattling not just individual financial markets but also entire economies. The more severe of such crises put at risk the stability of the international monetary system.

The international monetary system is the institutional structure and conventions that govern cross border financial transactions and flows of capital. Stability of this system is a public good in the sense that: it is non-rival — benefits of the stability accruing to any individual country do not diminish the benefits other countries derive from the same stability; and it is non-excludable — benefits of the stability cannot be denied to any country regardless of how the country contributes to the stability.

The global financial safety net — the safety net for the purpose of this paper — is that set of financial resources and institutional arrangements that provide a backstop during a financial or economic crisis. The safety net is a form of insurance against crises that affect a country's external payments. By addressing this risk to domestic economies, the safety net supports the stability of the international monetary system.

As with any insurance, the ideal state of the world would be where the safety net is not needed at all. During the so-called Great Moderation years, a sanguine view of the international monetary system, expressed by Rose (2006) for example, was that advanced economies with floating exchange rates and inflation targeting central banks had no need for a safety net. That rosy view has been laid to rest by the events of the past few years.

The Global Financial Crisis and subsequent ongoing volatility in financial markets and capital movements has triggered a reassessment of the size and use of the safety net, and reignited debates about its role. This is very much a live debate, as continued volatility in financial markets around the world suggests that the global economy remains vulnerable to shocks. There have been arguments that the safety net should be expanded from its current insurance role to a more active role including intervening in markets to smooth volatility. Against this backdrop, it is timely to reassess the role, size and composition of the global financial safety net.

After the recent period of transformation, the safety net now comprises three distinct layers: the IMF plays a central role, while the second and third layers include regional arrangements such as the Chiang Mai Initiative Multilateralisation and bilateral arrangements that rely on foreign reserves accumulated by individual countries.

While strong domestic policy settings and institutions help to enhance a country's capacity to absorb and respond to shocks, we argue that a safety net is still necessary to mitigate the economic and social impacts of severe economic shocks and market dysfunction. The reality of financial market imperfections as well as government interventions in financial, foreign exchange and capital markets make the need for a global financial safety net evident. An effective safety net relies on a co-ordinated approach to crisis resolution and prevention to ensure that moral hazard risks are managed and the risk of future crises are reduced. To this end, the safety net must be organised with the IMF in a leadership role.

However, the safety net may be approaching an important tipping point. Through a process of expansion of resources unlinked with the IMF, and atrophy in the much needed reform of the Fund,

the role of an adequately resourced IMF is being slowly displaced. In this paper, we stress that global economic policymakers, through the G20, must work to ensure that the Fund remains at the centre of the institutional framework providing the safety net. The world economy will be more unstable if the IMF loses its role as the leader of crisis prevention and resolution.

The rest of this paper is organised as follows. First, we provide a brief history of the safety net. The following section addresses the debate around the role of the safety net in the post-crisis world. This is followed by a discussion of the appropriate size and composition of the safety net. The penultimate section discusses the institutional structures underpinning the safety net. Finally, we discuss the implications for global economic policymakers.

A brief history of financial safety nets

Throughout modern history, the international monetary system has been fluidly changing and with it the role of the safety net. The system is fragile and the role of the safety net must provide an effective backstop to its operation.

Prior to the First World War, the international monetary system was dominated by the gold standard and its system of fixed exchange rates. This relied on all central banks maintaining the convertibility of currency to gold at a fixed rate, thereby, fixing exchange rates between countries. This required open capital accounts so that imbalances were adjusted by the flow of gold. In surplus countries, exporters would exchange the foreign currency received in trade for gold from the foreign central bank and exchange that gold for domestic currency at their own central bank. This would expand the money supply, placing upward pressure on wages and prices and adjusting the competitiveness of the surplus country until it returned to equilibrium.

In the interwar period, the gold standard was re-introduced, but the exchange rates did not reflect the relative circumstances of major economies, in particular the United Kingdom. The revived gold standard failed because the central banks of some countries sought to sterilise the flows of gold and avoid adjustment from surplus positions. The gold standard required central banks to 'play by the rules of the game', a phrase attributed to John Maynard Keynes, for the system to continue to function effectively. Without any genuine avenue for international cooperation and the lack of a safety net, adjustment by surplus countries could not be enforced nor could financial assistance be provided to smooth the adjustment that was required in deficit countries. Consequently, the gold standard collapsed in the wake of the Great Depression.

In 1944, the Bretton Woods system was established based on a centralised rules-based system and a global financial safety net overseen by the newly created IMF. Unlike the gold standard which relied on the market to ensure external adjustment, this system allowed Governments to fix their exchange rates against the United States dollar. In turn, the US dollar was fixed against gold. Exchange rates were, in theory, periodically adjusted to reflect their fundamental value.

As the system was based on limited reserve assets — the gold held by the US Federal Reserve — the system required a safety net at the IMF. The Fund was able to extend liquidity to countries with 'temporary' deficit positions. This enabled countries to buy and sell US dollars as necessary to maintain their pegged exchange rates. However, the Bretton Woods system broke down as surplus countries resisted shifting their exchange rates and the US undertook a broad monetary expansion. Speculative attacks on the US dollar forced the US to abandon the link with gold on 15 August 1971.

By 1973, the major currencies were floating. The IMF was no longer required to act as a conduit of finance to maintain the fixed exchange rate regime and underpin the link of the US dollar to gold.

Members of the Fund are now allowed to maintain any exchange rate system except for pegging to gold.

Unlike the gold standard where monetary policy was bound by the external adjustment mechanism, the post-Bretton Woods system provides greater flexibility to central banks to pursue monetary policy to influence domestic demand while a floating exchange rate adjusts the external position. Therefore, for those countries that adopted floating exchange rates and liberalised their capital accounts, balance of payments crises became less of a cause of concern.

As the IMF no longer oversees a rules-based system of fixed exchange rates, the decentralised post-Bretton Woods system means that the global financial safety net does not need to be solely located in the Fund. Therefore, there has been a proliferation in the financial safety nets that have been developed in response to the increased volatility in the global economy. As a whole, the global financial safety net is now larger, comprises several intersecting layers and is used more flexibly than before.

Developments since the Global Financial Crisis

In the mid-2000s, questions started to be raised on the need for safety nets, largely due to perceptions that the risk of balance of payments and financial crises was significantly diminished, at least in advanced countries. In his seminal speech delivered to the Eastern Economic Association, Ben Bernanke argued that improvements in monetary policy had played an important role in reducing the variability of both inflation and economic growth over the preceding two decades, a trend sometimes referred to as the Great Moderation. Bernanke (2004) implied that improvements in economic policy settings would mean a less volatile macroeconomic environment going forward.

The incidence of crises among emerging and developing countries was also historically low during this period. Following a number of crises in the 1980s and 1990s — Latin American debt crisis (early 1980s), Mexico (1994), the Asian financial crisis (1997-98), Russia (1998), Argentina (1998-2002) — there was both a fall in the occurrence of new crises, and in the amount outstanding loans from previous crises. The IMF's total lending commitments fell to a low of US$3.9 billion in May 2008, around half a per cent of quotas at that time. Since the IMF relies on its lending activities to generate revenue it operated at financial losses for a period between 2006 and 2008.

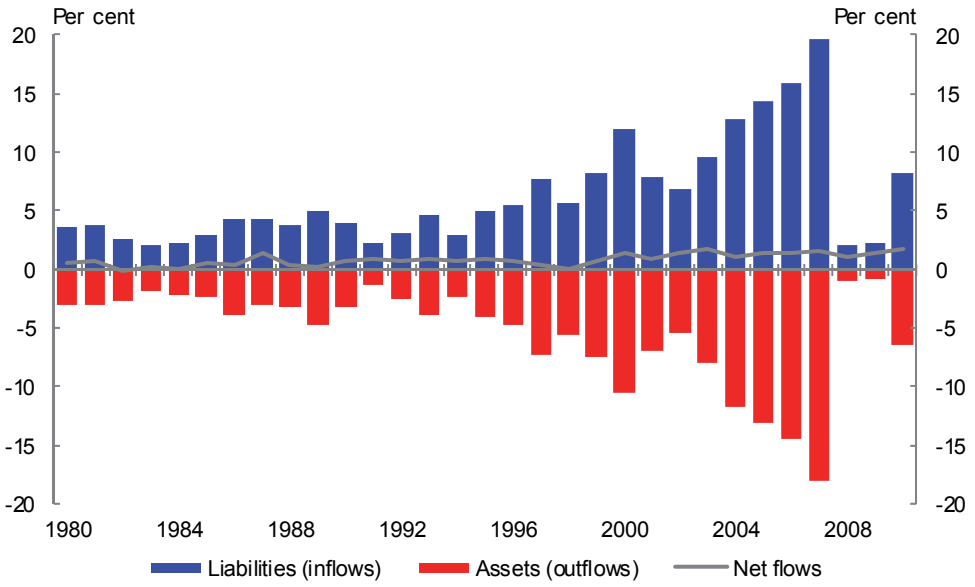
The IMF was facing an identity crisis. In 2007, then Managing Director nominee, Dominic Strauss-Kahn, outlined his view that the two greatest challenges facing the Fund at that time were relevance and legitimacy.

During the later years of the Great Moderation, the attitude of policymakers appears to have been based on an assumption that there had been a systemic fall in the incidence and severity of economic and financial crises. Arguably, however, the Great Moderation was merely a temporary hiatus from financial crises. In fact, the existence of structural imbalances in the global economy with the accumulation of foreign exchange reserves by surplus countries indicated that crises were still a risk.

The onset of the Global Financial Crisis quickly changed perceptions. The collapse of Lehman Brothers in September 2008 and the ensuing turmoil in financial markets demonstrated not only that financial crises in advanced countries were still possible, but also that the degree of interconnectedness and globalisation in financial markets and banking systems elevated the risk of contagion. Volatility in financial markets, including bank-related cross-border flows of capital, has remained elevated since 2008, though the degree of volatility varies widely from country to country.

There was a significant increase in the size of gross flows which was particularly pronounced in the years leading up to the Global Financial Crisis (Chart 1). Global gross flows increased from less than five per cent of global GDP during 1980 to a peak of around 20 per cent by 2007. The bulk of the increase in global capital flows during 2003 to 2007 comprised shorter term flows, including both debt and equity portfolio flows and bank-related flows.

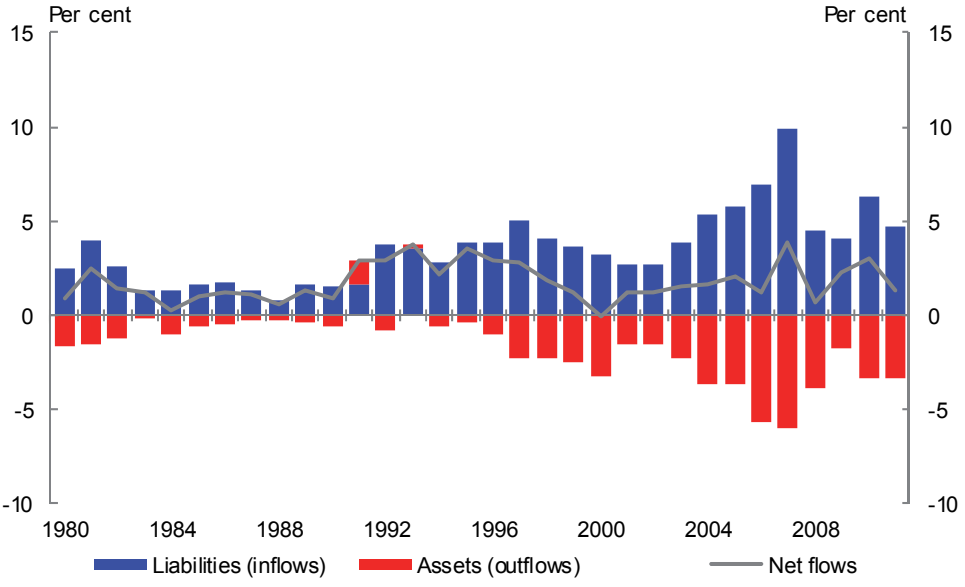
Chart 1: Gross capital flows as a share of world GDP



Source: IMF (2012).

Volatility has particularly affected emerging market economies. While flows to and from emerging market economies are still small in the context of total global flows, they increased dramatically as a proportion of their GDP (Chart 2).

Chart 2: Gross flows to emerging market economies as a share of their GDP

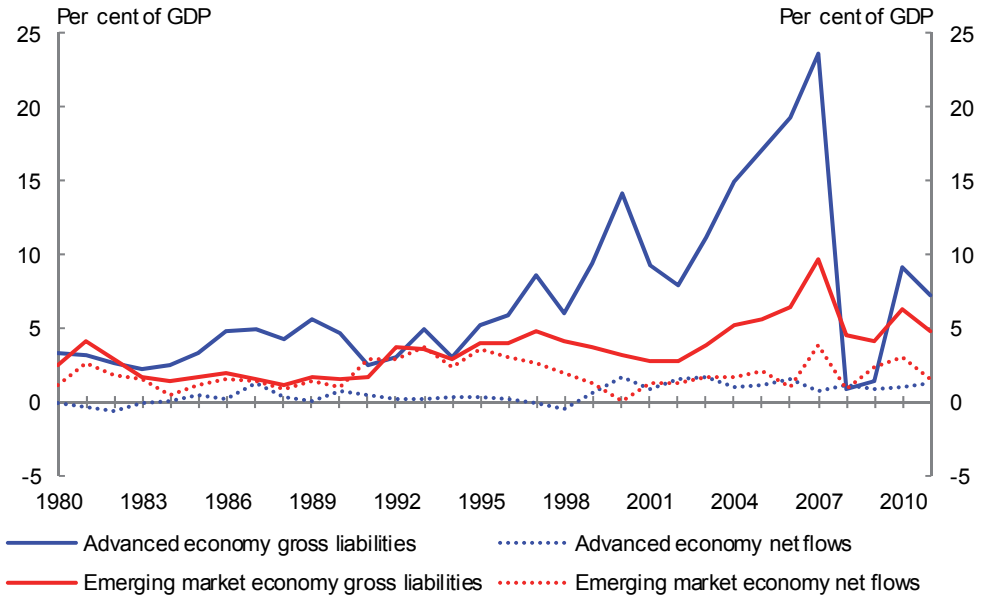


Source: IMF (2012).

Importantly, the level of volatility varies by type of flow, by country (or group of countries) and according to what measure of flows is analysed. For example, net flows do not exhibit an increase in volatility over time. It is also worth noting that gross flows to advanced economies are on average

more volatile than emerging market economy flows. However, negative correlations between flow types and a high degree of substitutability between flows for advanced economies means that their net positions are not overly affected by changes in one type of flow (Chart 3). Emerging market economies do not necessarily demonstrate the same level of substitutability.

Chart 3: Gross liabilities and net capital flows



Source: IMF (2012).

As a result of these developments in the global economy, there have been differing views on the appropriate role of the global financial safety net in terms of how it is used, what level of resources are required and where those resources should be located.

Role of the global financial safety net

The global financial safety net is a form of insurance against economic or financial crisis that affects a country's external payments and can be 'purchased' by governments through entering official arrangements at a global, regional or bilateral level. In a crisis, official financing can smooth painful adjustments and prevent the destruction of accumulated physical and human capital which would otherwise reduce the output potential of an economy.

Therefore, the role of the safety net is to support economic and financial stability by acting as a financial backstop, providing emergency official financing for a country (or countries) unable to meet external payments and unable to access markets for finance.

Variations in country circumstances and policies mean that the benefits of participating in financial safety nets will differ. However, the structure of the safety net is necessarily imperfect in recognising this through the costs of participation; for example, it would be practically difficult to place a surcharge on riskier countries. There is a disjunct between domestic policy settings, the costs of which are borne domestically, and insurance provided through financial safety nets, the costs of which are mutualised with other countries.

Therefore, a key challenge in the design of financial safety nets is managing the risk of moral hazard. Moral hazard refers to the incentive for the insured to change their behaviour as losses will be compensated by the insurer. In this case, it is the risk that countries will not make domestic policy

changes that would ameliorate the risks of a balance of payments crisis in the knowledge that assistance will be provided by the safety net.

Minimising moral hazard must be balanced against the effective utilisation of financial safety nets during economic and financial crises. To explain this further, let us consider two circumstances where a country may be unable to meet its payments, loses access to market financing and needs to draw on the safety net.

First, countries may encounter issues meeting external payments as a result of domestic structural issues or policy failures (sometimes referred to as a solvency crisis). There is a well-established approach to managing moral hazard risks associated with providing assistance to countries in these circumstances.

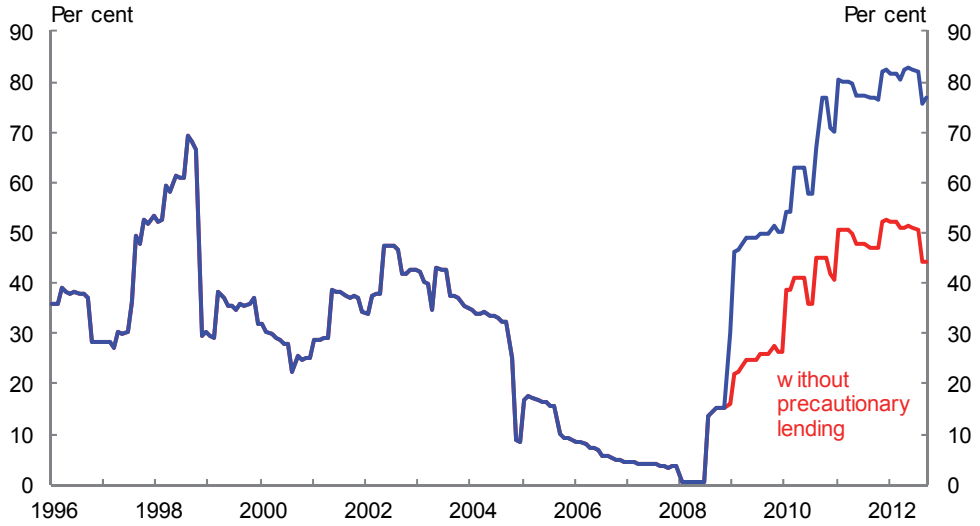
In these cases, IMF assistance will have conditionality requiring country authorities to make adjustments to their domestic policies to address underlying problems that have caused external imbalances and closes the financing gap in the medium term. This can have painful adjustment costs, which in turn, will tend to have high political costs for country authorities. Country surveillance by the Fund aims to assist members in addressing domestic issues prior to a crisis, thereby, also highlighting to country authorities the potential costs of an economic or financial crisis. In addition, IMF assistance will have escalating costs for borrowing countries depending on the level of access.

Debt restructuring or maturity extensions that will reduce the resources required and by imposing losses on private sector lenders will assist in addressing the separate moral hazard risks of excessive lending by the private sector if bailed out by official financing.

Second, countries with sound domestic policies may lose access to markets due to a global or regional shortage of liquidity during a financial crisis (sometimes referred to as a liquidity crisis). Bystander countries may suffer a shortage of liquidity due to a flight to safety or a broad withdrawal of capital associated with market panic. In this context, financial safety nets can have an important role in intervening early to restore confidence by providing support that makes a credible and strong statement regarding the soundness of the domestic settings of that country. In the long-run, this may be less costly than waiting until a full-fledged IMF program is requested.

Precautionary lending has become a more prominent part of the IMF's lending toolkit since the Global Financial Crisis, and has required the commitment of large contingent lines of credit, tying up significant amounts of IMF resources (Chart 4). There is, therefore, a limit on how widely available these programs can be used with the Fund's current resourcing.

Chart 4: IMF lending commitments as a share of quotas



Source: IMF Financial Data.

In 2009 and 2010, the IMF created the Flexible Credit Line (FCL) and the Precautionary Credit Line (PCL) (which has since been superseded by the Precautionary and Liquidity Line (PLL)). The FCL and PLL are both designed for countries with very strong economic fundamentals, policies and track records of policy implementation. They are intended to provide market confidence to countries that are hit by market disruptions and have minor or no domestic vulnerabilities contributing to funding pressures.

Despite having targeted or no conditionality, there remains a stigma attached to requesting support from the IMF inhibiting the take-up of these programs. Only three countries — Mexico, Poland and Columbia — have used the FCL and two — Macedonia and Morocco — the PLL. In these cases, the IMF has found that these programs have largely met their objectives with bond spreads and exchange rate volatility falling around the time of the arrangements.

Those countries who request an FCL or PLL program attract the stigma of IMF support, whereas comparable countries, that the market considers would otherwise be eligible for the same programs, also attract market confidence without the cost. To address this issue, one option that has been widely discussed is prequalification for these facilities. Truman (2010) suggests that the Fund could deem a country suitable for access to precautionary lending at the time of its annual Article IV review.

However, any further easing of access would involve a greater risk of moral hazard. It is crucial to distinguish between support extended to 'crisis bystanders' that is for liquidity problems resulting from exogenous shocks, and any support given to those countries with domestic vulnerabilities that require adjustment. Prequalification would remove the ability to make this judgment at the time assistance is requested.

A different idea is linking central bank swap lines with the IMF's precautionary lending. This would maintain ex-ante conditionality (that is, qualification criteria) set by the IMF but deepen the resources available under these programs and potentially reduce stigma. A formalised network of swaps would augment IMF resources such that it may be viewed as having no funding constraint as it could call on the liquidity of central banks. This would risk creating a dangerous expectation that countries will be bailed out regardless of the size of their financing need. In addition, as noted by Weber (2011), it would also interfere with the monetary policy operations of central banks.

In contrast, the ad hoc approach to swaps taken by central banks during the Global Financial Crisis, worked reasonably well. Therefore, a further variant would be to establish a less formalised approach where central banks contribute resources in conjunction with the IMF's precautionary lending on a case-by-case basis. However, the merits of this approach are doubtful as it would be likely that markets would perceive a participating central bank as relying on the assessment of the IMF rather than making their own assessment of a country's economic position, thereby not addressing the effect of stigma. If markets take the alternative view, this would in practice be central banks conferring their credibility to the IMF, which they may be reluctant to do, and in any case would be better addressed by the IMF dealing with its own credibility issues (which we address in the section on Institutional Framework).

Given this, it can be concluded that designing assistance provided to bystander countries that appropriately manages moral hazard risks is not possible without difficult judgments on the level of conditionality and terms of access.

To further complicate matters, recent history is colouring perceptions with some arguing that recent volatility is solely a result of unconventional monetary policy action in advanced countries. If, however, recent volatility reflects the realisation of markets that crises are not as unlikely as was widely assumed during the Great Moderation, the effects on countries should be proportionate to their domestic vulnerabilities. This appears to be the case with differentiation in volatility across countries.

Given the imperfect nature of determining the cause of crises, we argue that it is crucial that the global financial safety net is structured in such a way as to properly incentivise countries to use domestic policy settings as a first line of defence against economic and financial crises. There are some common principles for consideration.

- First, flexible markets and a floating exchange rate can help a country absorb shocks and act as automatic stabilisers. Demand for exports will be stimulated during depreciation of the exchange rate and will result in increased output if markets are flexible. During appreciation, monetary policy will have freedom to support domestic demand as a result of the deflationary impact of imports.

- Second, capital account liberalisation develops and deepens domestic financial markets. Underdeveloped markets will allocate less efficiently if market participants do not have confidence that markets are liquid, or they are not able to access financial instruments to manage different types of risk. In particular, the strength of financial markets and supporting institutions will be a factor in the type of external flows — for example, foreign direct investment, portfolio flows or debt — that a country receives.

- Third, the domestic economy must be underpinned by credible macroeconomic arrangements including monetary policy that targets price stability and sustainable fiscal management.

- Fourth and finally, effective prudential oversight of the financial system. This will assist in minimising the risk of sudden stops in cross-border flows.

This said, countries are at different stages of development and will require time to nurture the strong institutions and well-established markets that resilient domestic settings rely upon. Further, even with the right domestic settings, financial imperfections in global markets mean it is important for countries to have access to safety nets as insurance against severe economic and financial crises.

Another approach — as put by Fisher (1999) and Fernández-Arias and Levy-Yeyati (2011) — is that, as the world has grown more susceptible to liquidity crises, the role of the safety net be extended to be a global lender of last resort. A global lender of last resort would go beyond the orthodox role of the safety net by providing a largely uncapped amount of liquidity, on demand, at penalty interest rates and without conditionality except for predetermined criteria for access which is applied automatically.

In part, this is a role that was fulfilled by the US Federal Reserve at the height of the Global Financial Crisis as it made available around US$600 billion through swap arrangements with central banks around the world. The majority of these swap arrangements were with advanced economy central banks with the aim of supporting US dollar liquidity in international financial markets.

However, in addition to swap arrangements with major advanced economy central banks, the Federal Reserve entered into swaps with Brazil, Korea and Mexico. The swaps provided liquidity to domestic central banks to act as a domestic lender of last resort where domestic bank liabilities were held in US dollars so that they were not required to draw down foreign exchange reserves which would have sent a negative signal to capital markets. These swaps were designed to minimise moral hazard risks by being limited to short-term financing of financial institutions of up to three months conducted by tender. In effect, it allowed the Federal Reserve to extend US dollar liquidity to financial systems outside of the US on a short term basis.

This intervention was justified due to the dominant role of the US dollar in international finance impairing the ability of domestic central banks to use their own balance sheet to support their role as a domestic lender of last resort. However, implementing an institutionalised global lender of last resort would involve moral hazard issues that would be difficult to mitigate. Whether the causes of a crisis are domestic or are a result of an exogenous shock could not be determined in advance through a process of pre-qualification. Therefore, to make this workable, harmonisation of financial sector regulation arrangements would be required to minimise the risk of governments competing to attract capital flows through lax regulation in the knowledge that they had access to automatic liquidity support. Eichengreen (1999) notes that it would require global integration of rules and institutions in relation to the banking sector to eliminate these moral hazard risks. While there has been some progress in aligning financial regulation through international norms, such as through the Basel agreements, these are not always implemented consistently or enforced consistently.

We are, therefore, not persuaded that a global lender of last resort is a viable option as it would involve ceding a degree of national sovereignty that seems unrealistic.

Size and composition of the global financial safety net

Commitments made to the safety net inevitably carry costs and risks to those contributing. A commitment to lend represents a contingent liability, and in the case of IMF quotas, paid-in capital is required. Paid-in capital and assets lent to the IMF earn interest; however, the interest earnt will typically be less than other low risk commercial assets. Similarly, reserve holdings also carry both direct financial and opportunity costs, and participation in currency swaps carries credit, foreign exchange and sovereign risks that are difficult to mitigate. Further, taxpayer money committed to the safety net carries an opportunity cost as this money cannot be used for other purposes.

Conceptually, the appropriate size of the safety net is where the marginal benefit to global economic and financial stability from committing an additional dollar to the safety net no longer exceeds the financial and opportunity costs associated with committing public taxpayer funds to the safety net.

This depends greatly on forward-looking assessments of the markets of both the probability of crises occurring, and the expected cost associated with responding to those crises. Expectations around the cost of resolving a crisis depend on the size of capital accounts, banking sectors and the fiscal position of countries that may need assistance. The probability of a crisis occurring is assessed by market participants and indicators could include movements in bond yields or sudden movements of capital.

The benefits to stability will be the highest where committed resources can be used in the largest number of countries and are most assured of being able to be accessed in a crisis situation. This means that resources committed to the IMF will have greater benefits on a dollar for dollar basis compared to other layers of the safety net. This particularly applies to the Fund's permanent base of resources that is required for isolated country crises that could be expected to occur at regular intervals.

However, the heightened risks of contagion and the provision of assistance to crisis bystanders means that the benefits of multilateral resources are not as pronounced as they were before the Global Financial Crisis. In particular, where risks are more homogenous and shocks are likely to affect the world simultaneously, the benefits from diversification of committed resources are less as many countries may need support at once.

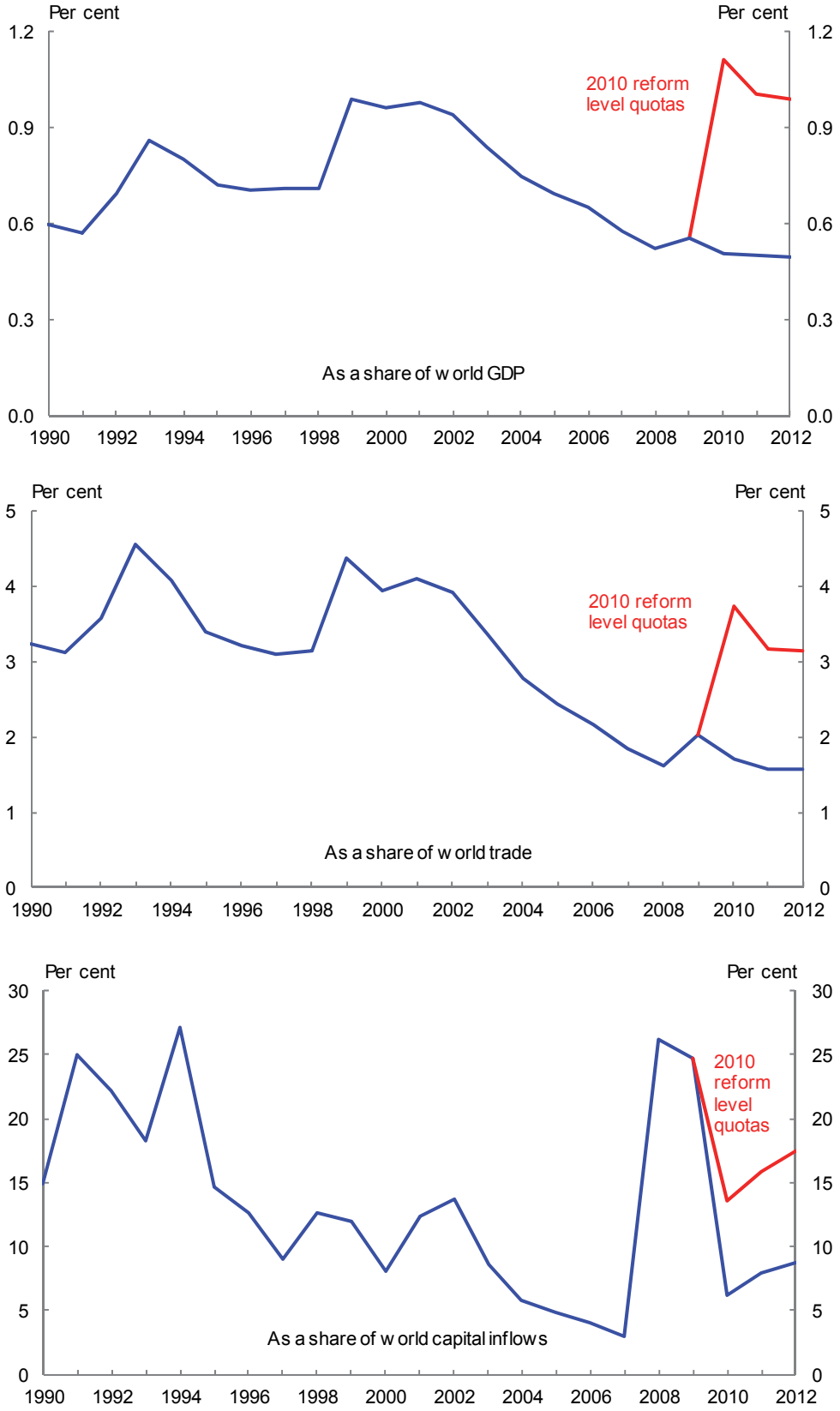
Consequently, a mix of permanent and temporary resources is ideal. This also has the advantage of minimising participation costs and the risk of moral hazard. Making all resources available to financial safety nets permanently may create the expectation that financial assistance will always be available regardless of the circumstances.

Benefits will be highest for the commitment of permanent resources that convinces markets that the safety net is sufficient for responding to a 'once in a decade crisis'. Ideally, these resources would be located at the IMF. Once markets are convinced that the IMF has sufficient resources to respond to the 'expected' crisis, additional permanent resources will have diminishing returns. It should then be sufficient for there to be credible mechanisms to temporarily raise the resources needed for a 'once in a century crisis'. In this respect, regional and bilateral swaps will have a particular role to play.

Against this framework, it is possible to make some qualitative assessments of recent developments in the safety net. From the early 2000's until the Global Financial Crisis, resources available in multilateral financial safety nets were stagnant. No additional resources were committed to the IMF over this period and as a result, in real terms, the size of the safety net was falling. This is largely because market participants and policymakers alike under-estimated the probability of crisis prior to 2008. The permanent resources of the IMF, member quotas, fell to half a per cent of world GDP in 2007. The ratio of quotas to other measures of economic integration fell more markedly (Chart 5).

As a result, an unprecedented commitment of new resources to the safety net was required from 2009 as the full effects of the Global Financial Crisis became clear.

Chart 5: IMF quotas



Source: IMF (2012), IMF (2013a) and IMF (2013b) and authors calculations.

At the IMF, the expansion of the New Arrangements to Borrow in 2009 by around US$500 billion by rolling in a similar amount of bilateral borrowing committed to the IMF a year earlier signalled that additional permanent resources were required in the global financial safety net. The agreement of the

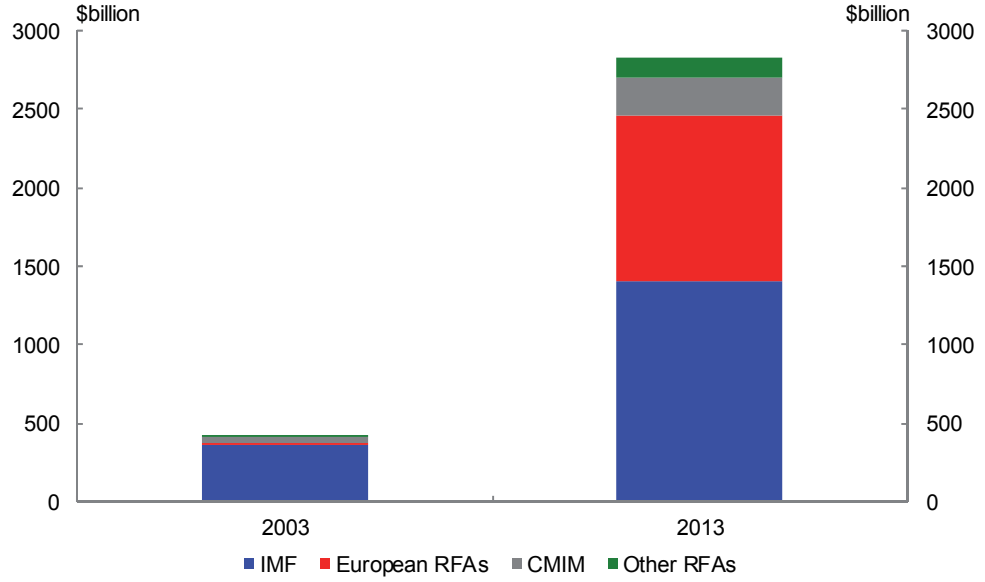
Fund's membership in 2010 to fold a large proportion of this into the permanent quota resources of the Fund confirmed this view, though this has yet to come into effect. In 2012, the commitment of around US$460 billion in bilateral loans, typically with a life of two to four years, to the IMF represented a temporary pre-commitment of resources to what was considered at that time as a rising possibility of an intensified Euro crisis.

Regional arrangements have also gained prominence in the safety net, largely due to a dramatic increase in the lending resources of some existing regional arrangements and the establishment of new regional arrangements in response to the Global Financial Crisis and the European sovereign debt crisis.

In 2010, the European Union and euro area members set up the temporary European Financial Stability Facility, with a lending capacity of €440 billion (US$576.4 billion). This has since been rolled into the European Stability Mechanism, established as a permanent crisis resolution mechanism for euro area member states in 2012. In 2012, ASEAN+3 members agreed to double Chiang Mai Initiative Multilateralisation resources to US$240 billion. Most recently, Brazil, China, India, Russia and South Africa signalled their intent to establish the BRICS Contingency Reserve Arrangement, with a lending capacity of US$100 billion.

In our view, the level of additional resources that has been committed to the safety net is broadly appropriate. However, it has altered the balance of resources within the safety net. While total IMF resources have also increased over the past decade (from US$365 billion in 2003 to approximately US$1.4 trillion in 2013), relative to regional arrangements and as a proportion of the total safety net, the IMF is less dominant than it was (Chart 6). It is critical that the doubling of quotas, as part of reforms agreed in 2010, is completed to provide assurance of the IMF's permanent resources. Beyond this, there is a strong case for a further moderate expansion in the permanent resources of the IMF recognising that crises are likely to be larger and more frequent.

Chart 6: Composition of the global financial safety net



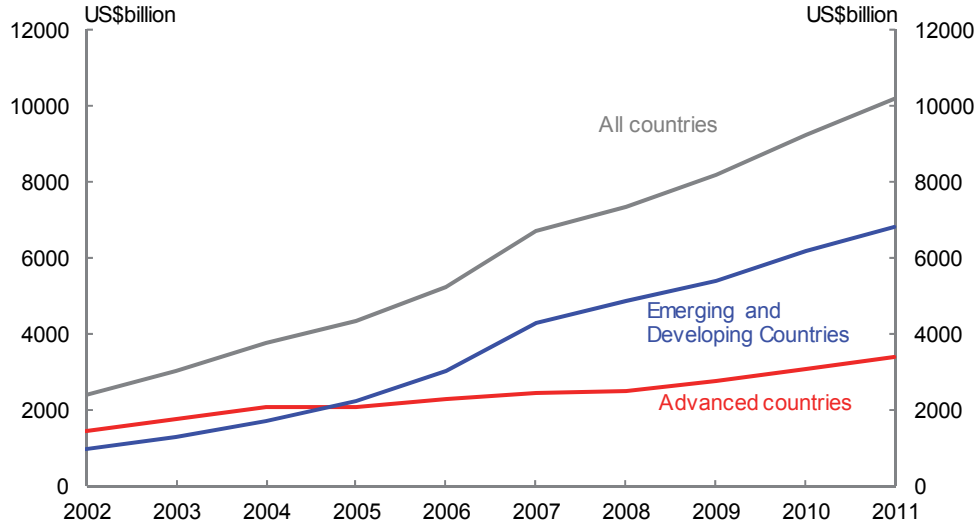
Source: Authors calculations.

At the bilateral level, many countries have sought to establish bilateral swap lines or stand-by loan facilities, though the former often have broader purposes than purely for insurance. Outside of Europe, currency swaps have proven to be a preferred form of financing for countries in need. For

example, Korea drew on a US$30 billion swap agreement with the US Federal Reserve for precautionary liquidity support during the Global Financial Crisis.

In addition, emerging markets and developing countries, particularly those in Asia, have also significantly expanded their foreign exchange reserve holdings during the last decade or so. In 2011, emerging markets and developing countries held a total of nearly US$7 trillion in foreign exchange reserves compared to less than US$1 trillion in 2002 (Chart 7).

Chart 7: Foreign exchange reserves



Source: COFER database.

Institutional framework

The actions taken at different levels of the safety net means there is now greater diversity than in the past. While the increase of safety net resources at an aggregate level appears appropriate, a critical question is how different institutions and arrangements within the safety net work together. It is crucial that they are complementary and that the institutional framework supports a consistent approach to crisis prevention and resolution. A fragmented approach will not only be costly and distort global resource allocation but also risks inconsistent and potentially counter-productive responses to crises.

The IMF's role

The IMF provides the only forum for addressing systemic issues facing the international monetary system. A diverse membership and long history provides the Fund with several unique characteristics that are irreplaceable at a regional or bilateral level. With 188 members, the IMF has the greatest capacity to raise resources in times of need and to ensure that credit risk is diversified to the greatest extent possible. The diversity in its membership means that it is less likely to be captured, giving it a greater degree of autonomy and independence compared to other institutions.

Given the difficulty of assessing the likelihood of crises, distinguishing the various causes of crises and the greater risk of crises spilling over to bystander countries, there is an important role for the IMF to use its expertise and experience in leading crisis resolution. It is uniquely placed to conduct surveillance on the global economy and the linkages between systemically important economies.

For these reasons, the global financial safety net must be structured with the IMF as its linchpin. However, the centrality of the IMF to the safety net depends on its leadership being accepted by its member governments. This is being undermined by the representation of countries not being aligned

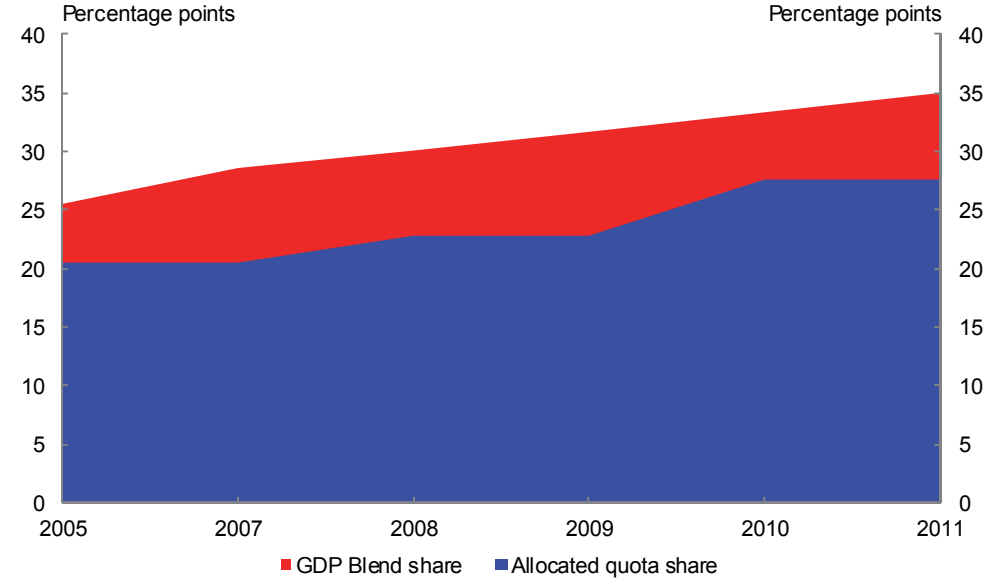
with their position in the world economy. In recent years, the allocated quota shares (which is also the primary determinant of voting shares) of strongly growing emerging and developing countries have lagged behind their position in the world economy.

Landmark reforms to the IMF agreed in 2010 will result in a shift of over six per cent of quota shares to emerging market and developing countries. These reforms will also double the Fund's quota resources with a corresponding winding back of the New Arrangements to Borrow. This is critical for enhancing the Fund's permanent base of funding.

However, these reforms are not yet effective as they require support from at least three-fifths of members and members holding at least 85 per cent of the Fund's voting power. As at February 2014, the first condition had been satisfied but the second has not, and relies entirely on ratification of the reforms by the US Congress. The United States holds approximately 16.7 per cent of the Fund's voting power and therefore, holds an effective veto over these reforms.

Even following the completion of the 2010 reforms, the gap between the representation of strongly growing emerging market and developing countries and their weight in the global economy is not being closed (Chart 8). These countries' share of the world economy in 2011 (measured using the GDP blend component of the IMF quota formula that is calculated with a mix of market exchange rates and purchasing power parity rates) is 12.2 percentage points higher than their allocated quota share. This gap will only narrow to 7.4 percentage points following completion of the 2010 reforms.

Chart 8: Quota shares of selected emerging market and developing countries



Note: Selected emerging and market and developing countries are those countries who have a purchasing power parity GDP share greater than their allocated quota share and who are not over-represented in allocated quota share compared to their quota formula result by more than 25 per cent. GDP Blend is a component of the quota formula that calculates GDP with 60 per cent at market exchange rates and 40 per cent at purchasing power parity rates.
Source: IMF (2013a) and authors calculations.

The IMF also faces perception problems that stem from three inter-related factors. Firstly, there are deeply-held grievances with the conditionality imposed by the Fund on Asian countries that participated in programs during the Asian financial crisis. Secondly, there are perceptions that recent IMF lending to European countries with a sovereign debt crisis have been on 'easier' terms than was provided to countries affected by the Asian financial crisis. For example, Schadler (2013) argues that in designing the European programs, the Fund compromised, under political pressure from key European members, on its principles that were supposed to ensure the sustainability of sovereign

debt. This raises doubts about the Fund's independence. These factors potentially make it politically difficult for some country authorities to seek IMF assistance. This is also linked to 'IMF stigma' —the notion that if a country is on an IMF program then it must have major problems. This is the third perception problem faced by the Fund.

A failure to make progress in these areas increases the risk of countries pursuing other forms of insurance, such as regional and bilateral arrangements, and dislodging the IMF from its central role to the global financial safety net which is crucial for effective crisis prevention and resolution.

Regional and bilateral arrangements

Regional financial arrangements can make a strong contribution to the safety net, if they operate in a way that complements, rather than undermines the IMF. Since the Global Financial Crisis, the presence of large regional arrangements has deepened and diversified the resources available in safety nets. Countries within a region will have closer relationships with their neighbours and are generally more invested in their well-being, compared to a country on the opposite side of the world. This may be partly for political reasons, but it may also reflect greater economic and financial inter-dependence when close neighbours are involved. As such, countries may be willing to contribute more resources to a regional arrangement, as opposed to the IMF.

Regional arrangements may also benefit from greater access to data and information, given that close neighbours may be more willing to share information with each other. Related to this, regional institutions may be able to provide valuable regional perspectives to program design and surveillance. Finally, neighbours within a regional arrangement may be able to exercise suasion over other member countries in a way that the IMF cannot.

That said, there are also significant risks associated with the rise of regional arrangements, particularly if it comes at the expense of an effective, credible and well-resourced IMF.

The closeness of countries that participate in a regional financial arrangement means that imposing potentially painful but necessary reform as a condition for assistance can be difficult and uncomfortable. To date, no regional arrangement has undertaken a large assistance program without the involvement of the IMF. A narrower base of resources means they are less reliable, less diversified and therefore more risky for contributing countries. Therefore, for similar benefits, a greater level of resources needs to be committed to regional arrangements relative to the IMF.

More critically, the rise of regional arrangements has changed the balance of resources in the safety net. A significantly over-resourced global financial safety net would encourage countries to seek assistance on as favourable terms as possible. Competition between the IMF and other institutions would put at risk the importance of policy conditionality and introduce a greater risk of moral hazard. Policy conditionality should remain the responsibility of the IMF as it possesses the expertise, credibility and global perspective to fashion appropriate lending programs.

In a similar vein, the surveillance of regional arrangements will be incomplete as they will lack the access to data and information outside of the region which is crucial for assessing global risks. Regional arrangements must rely on the IMF for assessments of the vulnerabilities of countries and whether the causes of crises at a country level are externally or domestically generated.

On balance, the advantages that regional arrangements bring to the safety net are positive if the risks are correctly managed. In particular, the weaknesses of these arrangements will only become critical if they seek to compete with the IMF. Henning (2011) proposes criteria for deeming regional

arrangements to be consistent with the IMF including that regional arrangements: must not create a conflict with members obligations under the IMF's Articles of Agreement; be as transparent as the IMF; have sound rules for financing by lending to countries with liquidity shortfalls at premium interest rates and with assurance of repayment; and have sound conditionality or link with IMF lending.

The strengths of the IMF mean that an effective global financial safety net must be centred on the Fund. The IMF should have the lead role in designing programs and conditionality, while regional arrangements are able to contribute additional resources and regional perspectives to program design, surveillance and technical assistance.

As with regional arrangements, bilateral lending and swap arrangements can also play an important role in the safety net, either by supplementing IMF programs and other forms of support, or in their own right to address short-term liquidity shortages in bystander countries. However, due to their ad hoc nature bilateral arrangements tend to be less consistent in managing moral hazard issues. When utilised for safety net purposes, bilateral swaps should form a temporary source of resources.

Foreign exchange reserves

Foreign exchange reserves can provide a form of self-insurance over which a government has autonomy in addition to the broader safety net. As reserves are within the control of domestic policymakers, they can be deployed rapidly to forestall liquidity shortfalls and maintain payments in a fast moving crisis. While there are various ways of assessing the adequacy of reserves, it is prudent for countries to hold a moderate level of reserves that can be used until other safety net resources can be mobilised.

Furthermore, unlike the other aspects of the safety net, reserves are held for a number of reasons that go beyond precautionary or self-insurance purposes. For countries with fixed or managed exchange rates, a certain level of reserves is needed to maintain and give credibility to the exchange rate. While countries with floating exchange rates may not have this need, they still need a certain level of reserves to perform critical functions such as the conduct of monetary policy, to support government transactions requiring foreign exchange, and to smooth periods of extreme volatility and market dysfunction.

However, foreign exchange reserve accumulation to substitute for holding resources in multilateral or regional safety nets is both costly and inefficient. At a domestic level, there are significant opportunity costs on top of the carry costs that most central banks need to incur to hold US dollars. While there are various methods for calculating the opportunity cost, at its highest it is all of the returns, both internal and external, that would come from utilising those reserves for public investments, for example, infrastructure.

Excessive reserve accumulation also carries an undesirable consequence of distorting exchange rates, and therefore the flows of capital and trade. Over time, this increases the risk of global instability by perpetuating imbalances between long-term surplus and long-term deficit countries.

In addition, there are questions about the effectiveness of relying on reserves for self-insurance purposes. Running down reserves risks sending a negative message about the fragility of the domestic economy which, in turn, could exacerbate volatility and reinforce negative perceptions held by financial markets.

Future directions

Recent developments have shown the adaptability of the safety net. Global economic policymakers, at various levels, have been able to work together to provide financial backstops at short notice. Furthermore, new approaches to crisis prevention and resolution have been developed to meet the challenge of a more volatile world.

While these innovations have been borne out of necessity due to the scale of recent crises, they should be seen as a positive evolution of the safety net. More resources can be brought to bear on financial crisis than ever before, while the resources are now increasingly diversified between various layers of the safety net.

In our assessment, the efforts to increase the size of the safety net have been appropriate policy responses to the recognition that the probability of crises is not as low as thought before the Global Financial Crisis and that larger assistance packages are likely to be required to deal with future crises. One challenge facing international economic policymakers insofar as the safety net is concerned is to decide whether the distribution of resources between various layers of the global financial safety net is appropriate for satisfying its core function.

Our conclusion is that the composition of resources between permanent and temporary resources could be rebalanced towards additional permanent resources that are ideally located at the IMF, and supplemented by maintaining resources in regional institutions which are structured to be temporary and as a complement to the IMF. This will support an appropriate balance in the institutional framework of the global financial safety net.

However, there is a real risk that continued stagnation in reform of the IMF will result in the opposite. Unabated growth in regional and bilateral resources will create challenges for co-ordination of crisis resolution and prevention. At worst it risks a situation where assistance is provided to countries without addressing moral hazard issues, thereby increasing the likelihood, magnitude and severity of the next crisis.

Unless international economic policymakers act decisively, we may well be approaching a tipping point beyond which the global financial safety net will fragment because of a combination of stasis at the IMF and increasing concentration of safety net resources that are unlinked with the Fund. The G20 must work to avoid this tipping point, ensuring that the various elements of the global financial safety net are complementary and work together to achieve a common set of objectives.

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On a highway to help: multilateral development bank financing and support for infrastructure

Ruth Moore and Simon Kerr[1]

Multilateral Development Banks (MDBs) are important providers of financial and non-financial support to developing countries to assist with meeting their infrastructure needs. Australia contributes to these multilateral efforts and has identified infrastructure financing as a priority for its 2014 G20 Presidency. This article explores the traditional and emerging forms of infrastructure financing support that MDBs provide to developing countries, in order to inform discussions of potential new facilities.

1 The authors are from International Finance and Development Division, the Australian Treasury. This article has benefited from comments and suggestions from Shaun Anthony, Peter Depta, Matthew Flavel, Paul Horrocks, Paul Hubbard and Julia Minty; as well as colleagues at the ADB, DFAT, the EBRD, and the World Bank. The views in this article are those of the authors and not necessarily those of the Australian Treasury.

Introduction

Multilateral Development Banks (MDBs) are important providers of financial and technical assistance to developing countries. Financing infrastructure investment is a key area of MDB support and has been identified by the G20 as a priority in its investment and infrastructure agenda. This article explores the traditional and emerging forms of infrastructure financing support being provided by MDBs, in order to inform discussions of potential new facilities.

Australia is a member of three MDBs.[2] In 2012-13 Australia provided $522.6 million to the World Bank, including $315.7 million in funding for joint activities.[3] The Asian Development Bank (ADB) is also an important development partner for Australia. Australia is the second largest donor to the ADB's concessional lending arm, the Asian Development Fund (ADF), and the 5th largest shareholder of the ADB. Australia's contribution to the ADF in the period 2013-16 will be $629 million.

Infrastructure for development

The development of productive infrastructure encourages economic growth, private enterprise and employment. It contributes to the reduction of poverty and improves livelihoods though access to basic services. Reliable electricity supply, efficient transport systems, a clean water supply, access to sanitation, and modern telecommunications improve the health and wellbeing of the poor and allow them to better engage with the formal economy and lift themselves out of poverty (see for example BenYishay and Tunstall, 2011). While the extent to which infrastructure development contributes to economic growth has been the subject of academic debate, there is evidence that infrastructure services make a substantial contribution to GDP, generally exceeding the cost of provision (Esfahani and Ramirez, 2003).

The diversity of developing countries is relevant in considering their infrastructure needs and financing capacities. Middle-income countries, for example, have access to international capital markets and may only require MDB technical assistance; whereas low-income countries may be more financially risky so MDB financing and assistance is appropriate. Moreover, some countries, such as fragile, conflict-affected and small island states, may lack even basic access to finance and greater MDB assistance is warranted.

More than US$800 billion is invested in infrastructure in developing countries each year (ECDPM, 2013). While most of this investment comes from domestic sources, the provision of MDB financing of infrastructure globally is important. The World Bank provided US$25.2 billion in 2011 for infrastructure-related projects (World Bank, 2012c), accounting for almost half the average total funds disbursed by the World Bank annually; and the ADB lent US$7.5 billion for infrastructure in 2012, 64 per cent of its total lending (ADB, 2012b). Bilateral Official Development Assistance (ODA) from advanced countries has played only a limited role in filling the infrastructure financing gap, providing approximately 2.5 — 3 per cent of total investment in developing country infrastructure (World Bank, 2012b).

2 Australia is a member of the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD), and the five constituent institutions that make up the World Bank Group. This article focuses on the ADB and World Bank, given that these two MDBs are the recipients of most of Australia's annual multilateral funding and Australia has worked closely with both banks on infrastructure projects.

3 Despite Australia's significant contributions to the World Bank, the size of the organisation is such that we maintain a relatively modest shareholding of 1.56 per cent in the World Bank's International Bank for Reconstruction and Development (IBRD).

Despite this investment, a significant gap exists between funds that are currently financing infrastructure projects in developing countries and the funding required by recipient countries to achieve desired development outcomes. MDBs and other international organisations have made attempts to estimate the size of the gap. Their use of different methodologies and definitions has resulted in different estimates of the scale of financing required. Some of these estimates are provided in Box 1, but we do not attempt to establish their accuracy.

Box 1: The global infrastructure financing gap

The World Bank has estimated that an additional US$1 trillion per annum to 2020 is required by developing countries to keep pace with consumer and producer demand for infrastructure. To keep pace with projected global GDP growth, the infrastructure financing gap increases to an estimated US$57 trillion over the period to 2030 (MDB Working Group on Infrastructure, 2011). Alternatively, the World Economic Forum estimates that close to US$2 trillion per annum will be required to meet the infrastructure needs of developing economies by 2030 (WEF, 2012).

For the Asia-Pacific, the ADB estimates that $750 billion in financing each year will be required by 2020 to meet the region's infrastructure needs (ADB, 2011).

Like estimates of the infrastructure financing gap, estimates of the global pool of private savings that could finance infrastructure also vary, but figures cited by the World Bank suggest that existing global savings potentially available for infrastructure investment total US$17 trillion (World Bank, 2013d). For the private sector to finance infrastructure, whether in a developed or developing country, they will naturally expect a project to generate sufficient cash flow in order to provide an investment return. This cash flow is what makes a project economically viable, or 'bankable', and will ultimately need to be funded by user charges and/or public sector payments.[4]

Aside from finance, strengthening the broader investment climate in developing countries — the regulatory and legal frameworks that provide assurance to investors and certainty to populations — is necessary to encourage greater private sector investment in infrastructure. Improvements in infrastructure planning, the development of pipelines of viable projects and better project selection and delivery are also critical. While MDBs and donors have an important role in assisting developing countries to improve their regulatory environments, developing countries themselves are ultimately responsible for taking the steps that will encourage long-term investment, and for contributing their own funding.

Infrastructure is currently a focus for the G20 (see Box 2) and improving the global investment environment to facilitate the development of productive infrastructure is a priority for the G20 in Australia's 2014 host year.

4 It is therefore useful to differentiate between the terms funding and financing, which tend to be used interchangeably. Funding refers to how infrastructure is paid for. It consists of government expenditure or direct user charges (in a sense, it is money that is not intended to be returned). Financing refers to the raising of debt and/or equity to purchase and operate an asset, such as a power station, that is too expensive to simply buy outright. Financiers naturally expect a return from their investment (so this can be thought of as money that is intended to be returned). Refer Infrastructure Finance Working Group (2012) for more on this.

Box 2: G20 initiatives

The G20 has, since the first Leaders' Meeting in 2008, championed MDB support for infrastructure development, including the agreement in London in 2009 to increase MDB capital resources by US$100 billion[5]; the announcement in Seoul in 2010 of a high level panel to recommend measures to mobilise infrastructure financing and review MDBs' policy frameworks; general support for the panel's recommendations in Cannes in 2011; and the commissioning in Los Cabos of Finance Ministers and Central Bank Governors 'to consider ways in which the G20 can foster investment in infrastructure,' including through MDB financing and technical support.

G20 Finance Ministers and Central Bank Governors met in February 2013 and considered the Chelsky and Morel paper (see below) and other diagnostic papers on factors affecting long-term investment financing. Ministers and Governors established a Study Group on Financing for Investment to consider issues raised in the diagnostic papers and the role of the private sector and official sources (including MDBs) of long-term financing. In October 2013 they noted the work underway in the MDBs 'to mobilize and catalyze additional financing for infrastructure investment' — reiterating a sentiment expressed by Leaders in Saint Petersburg in September. This work has been elevated to an Investment and Infrastructure Working Group in Australia's 2014 host year.

How MDBs support infrastructure development

MDBs are evaluating how their activities impact on infrastructure development in developing countries and considering ways to expand their involvement. To inform recent G20 meetings, the World Bank (Chelsky and Morel, 2013) led the preparation of a paper on the role of MDBs in support of long-term financing. Infrastructure development often requires long-term financing given the high construction costs and long asset lives of facilities like road, ports and power stations.

Chelsky and Morel considered the 'additionality' provided by MDBs to long-term financing. This included whether a project would have gone ahead without official-sector involvement which, if so, would represent a waste of MDB resources. This concept of 'additionality' is also referred to as 'catalysing', 'mobilising' or 'crowding in'[6] new resources. The extent of additionality MDBs provide for infrastructure financing cannot easily be proven (or indeed disproven, such as when an investor says s/he would not have invested if not for the presence of an MDB).

The paper identifies a variety of ways in which MDBs contribute to long-term investment, which we have grouped into four basic categories, as follows.

Direct financial assistance from MDBs

The provision of traditional financial products (loans, grants, equity and guarantees) has been the primary mechanism for MDBs to assist developing member countries. With their AAA-rated financial position — underwritten by the financial strength of their major shareholders and historically conservative portfolio management — MDBs have been able to provide developing countries with financial products at prices that those countries would not have been able to secure from financial markets independently. For some fragile and conflict-affected countries, with no access to formal financial markets, MDBs are the only source of high quality financial products.

5 This funding was not specifically earmarked for infrastructure, but given the high proportions of MDB assistance that flow to infrastructure (as noted earlier in this paper), the infrastructure portion is likely to be similarly high.

6 'Crowding in' is emerging as a term used in contrast to the more pejorative 'crowding out', which refers to government (or, potentially, MDB) activity undermining potential growth of the private sector through excessive borrowing and/or spending.

The loans an MDB provides offer greater flexibility for developing countries (and private sector investors in developing countries) in relation to interest rates, loan fees and repayment terms. The World Bank's concessional lending arm, the International Development Association (IDA), for example, provides loans and grants with little or no interest, and with repayment periods as long as 40 years. Developing countries also benefit from MDBs being able to issue products in foreign or local currencies, providing loans counter-cyclically, and targeting public goods that the private sector may have little appetite to finance.

MDBs are also able to provide financial support to private sector investors *in* developing countries, rather than *to* the governments of developing countries, in the form of loans, equity investments and guarantees.[7] Equity investments refer to the purchase of shares or similar instruments directly, or indirectly through private equity funds (to which we return later in this article), in companies in developing countries. Guarantees are insurance products. MDBs often provide political and non-commercial risk cover for things like currency inconvertibility, expropriation, politically-motivated violence or sovereign breach of contract — thus addressing key risks which can impede investment by the private sector.[8]

Indirect financial assistance — the MDB as catalyst

In providing the loans and equity investments referenced above, an MDB can bring other financing partners into the transaction though syndications or other co-financing arrangements. These partners could include other MDBs, private companies and funds, commercial banks, and quasi-sovereign investors.[9] As a first lender or lead financier, the MDB is able to bring these investors on board by virtue of its global/regional presence, technical expertise, due diligence, negotiation capability and, in some cases, by extending its preferred creditor status to other investors. For an outside investor, these benefits serve to reduce the financial risk of, and regulatory costs associated with, investing in a given developing country.

Non-financial MDB project assistance

Beyond direct and indirect financial assistance, there is a wide array of project preparation facilities through which the MDBs support developing countries' infrastructure projects. Whether as a project participant, or engaged in a consulting capacity for its technical expertise, an MDB can improve the quality of a project by applying prudent risk management policies, project design standards, governance, environmental and transparency safeguards, and related advisory or capacity building services that are not readily available in many developing countries.

There can also be a regional integration component to infrastructure projects, such as roads or power networks, which cross international borders. In these cases, infrastructure projects potentially provide broader benefits of supporting cross-border trade and communication, and promoting regional economic integration. MDBs are well-placed to assist with such projects, some of which may be beyond the financial or technical capacity of a single country. This is of particular relevance to regionally constituted MDBs like the ADB.

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7 The World Bank Group provides private sector finance through its subsidiary the International Finance Corporation (IFC). The ADB refers to private sector lending as non-sovereign operations — financing that is not guaranteed by a government or guaranteed by a government under certain terms.

8 For example, the World Bank Group's Multilateral Investment Guarantee Agency (MIGA) guarantees investments in developing countries against political and other non-commercial risks.

9 Such as export credit agencies, sovereign wealth funds or state-owned enterprises.

MDBs improving the investment climate

MDB support can also assist developing countries to improve the underlying investment climate, such that the assistance described above might eventually become unnecessary. The investment climate, which includes underlying principles like the rule of law, property and creditor rights, sound government finances, competition and consumer protection, provides investors with confidence that their investment will not be expropriated, subjected to political interference or discriminated against.

These are the kinds of factors considered in the World Bank's *Doing Business Report*, which seeks to encourage more efficient regulation by comparing regulatory environments across economies and over time. The Report's simple and transparent methodology provides governments and regulators with a useful guide to identify areas of potential economic reform in support of an improved investment climate.

MDB assistance also allows developing countries to improve the infrastructure financing aspects of the investment climate through encouraging the establishment and development of domestic capital markets. This includes well-functioning currency, equity and bond markets, financial regulators, and local insurance providers. With this kind of *financial infrastructure* in place, countries can better utilise local savings to finance their own infrastructure needs. MDB involvement can also support nascent domestic financial markets in linking to regional and international markets.

Infrastructure in MDB strategies

The World Bank is seeking, under its updated infrastructure strategy, to encourage greater private sector involvement in the sector in order to increase the overall financing envelope for infrastructure (World Bank, 2012c). The ADB's *Strategy 2020*, approved in 2008 and currently subject to a midterm review under new President Takehiko Nakao, put infrastructure first among the Bank's five priority areas[10] that would together represent 80 per cent of its operations. The document was blunt in stating that '[n]eglect and years of insufficient investment in infrastructure have led to overcrowded, unsanitary, unhealthy living conditions in the region's large cities.' The Bank undertook to be an agent for change, with greater effort to catalyse private sector involvement, more finance for infrastructure, advice to governments on the investment environment, and support for public-private partnerships. Though not limited to infrastructure, the ADB refers to the trio of finance, partnerships (third party finance) and knowledge (technical assistance) it provides as *Finance*++, which it is seeking to make 'an integral part of its long-term mission' (ADB, 2013b).

Given the extensive support — both financial and non-financial — for infrastructure that MDBs are already providing to developing countries, there is debate within the G20 and amongst MDB shareholders over what else, if anything, MDBs would be able to provide. To inform that debate, the following section explores several emerging models of infrastructure financing support that MDBs are increasingly employing.

Emerging models of MDB infrastructure financing support

The scale and reach of MDBs support to developing countries allows them to trial non-traditional forms of development assistance, which, if successful, can be integrated into the wider suite of programs. We focus on three models of MDB assistance that, while being relatively mature in the developed world, are emerging as important mechanisms for promoting greater private sector

10 The five core operational areas articulated are: (i) infrastructure; (ii) environment, including climate change; (iii) regional cooperation and integration; (iv) financial sector development; and (v) education.

involvement in infrastructure in developing countries: private equity funds, public-private partnerships, and output-based aid. This section explores each, and their risks, in turn.

Private equity funds

A private equity fund is an investment vehicle through which investors pool their funds, which are then invested in private, both listed and unlisted, companies. The private equity fund itself is usually unlisted, targeted at institutional investors, structured to receive funds over a set time period, and managed by a specialist private equity firm. Given their time-bound design, private equity funds seek to exit their investments and return the funds (plus any yield income and capital appreciation) to investors (Kaplan and Strömberg, 2008). This approach has been used to acquire controlling shares in distressed companies (sometimes using debt as well, which is called a 'leveraged buyout'), turn them around, and hopefully make a profit upon exiting.

Private equity funds can also target their investment portfolios to a particular type of asset or geographic area, such as infrastructure in emerging markets. Chowdhury, Orr and Settel (2009) have identified this as a trend among MDBs' private sector operations, including the ADB and the World Bank's IFC. They argue that targeting infrastructure is 'politically easier' for MDBs because the provision of these kinds of public goods has historically been a public sector responsibility, and MDBs have experience directly supporting such projects.

By investing in a private equity fund, rather than in projects directly, an MDB can promote greater reputational credibility, development credentials and good governance, whilst drawing on the deal-making capabilities of the private sector. With these benefits, MDBs argue they can 'catalyse' or 'mobilise' greater private sector involvement in financing infrastructure in developing countries.[11] Like any investment, there is a risk that yield income will fall short of expectations, or that the value of the fund's underlying infrastructure investments will decline. Accordingly, retaining quality fund managers is an important challenge for MDBs involved in these funds.

Moreover, Chowdhury et al identify one of the key challenges for MDBs in utilising private equity funds as reconciling the profit motive of private sector investors and the development motive of MDBs. This is evident in reporting frameworks, where typical rate-of-return metrics need to be supplemented with metrics on infrastructure coverage, access and service quality. MDBs also need to remain cognisant of safeguarding their AAA credit rating and shareholders' callable capital (see Box 3) when investing in higher-risk asset classes such as private equity funds.

11 See, for example, the websites of the private sector financing arms of the ADB (www.adb.org/site/private-sector-financing/main) and the World Bank (www.ifc.org), which provide investment, advisory and asset management services to the private sector in developing countries.

Box 3: MDB callable capital

An MDB's callable capital is the collective financial commitment, as distinct from paid-in capital actually disbursed, from member states to meet the liabilities of the MDB. As this is a formal commitment from sovereign states, callable capital underlies the MDBs' financial strength and enables them to raise debt from international capital markets on favourable terms.

As an example, for its 5.8 per cent shareholding in the ADB, the Australian Government's uncalled capital subscription in the Bank is US$7 billion (around $6.8 billion), which is reported as a contingent liability in the annual Budget papers (Australian Government, 2013).

In the event of financial difficulty, such as an inability to repay loans following investment failures, member states would be obliged to meet their share of those repayments. No MDB has ever needed to draw on its callable capital.

Public-Private Partnerships (PPPs)

PPPs are long-term relationships between private contractors and the government to provide for the construction, operation and maintenance of infrastructure assets (English, 2006). The OECD (2011) identifies the key features distinguishing a PPP approach as including: a focus on purchasing services rather than assets; clear specification of outputs; appropriate risk of asset performance being borne by the private party; and assessments of value for money.

PPPs have been commonplace in Australia since the 1990s. Australia is also actively involved in the region, including through the Asia-Pacific Economic Cooperation (APEC) forum, lending our expertise in the area of PPPs, to improve infrastructure outcomes (see Box 4). PPPs are also being used extensively by MDBs, an approach supported by the G20. The ADB is expanding its work with the private sector under its *Strategy 2020* and considers PPPs to be important vehicle for this increased interaction. The World Bank, through the IFC, is heavily involved in supporting PPPs.

One example of this support is the Private Infrastructure Development Group (PIDG) — a multi-donor organisation established by the World Bank in 2002 to increase private sector investment in the world's poorest countries through the use of PPPs. The methods employed to increase investment vary between countries and across the infrastructure sector. For example, PIDG assistance ranges from advice to developing country governments on how best to structure projects to attract investment; to financial cover for specific construction phase risks; to providing guarantees to lenders to support local currency finance for infrastructure projects; and to promoting domestic financing and capital market development. PIDG supports energy generation and distribution, industrial infrastructure, telecommunications, and air transport (World Bank, 2012a).

In 2012, the then AusAID's Australian Multilateral Assessment (AMA) found that the overall performance of PIDG was strong, and particularly so in the measure of PIDG's focus on achieving value for money (AusAID, 2012a). Risks around the delivery of aid in this manner remain. PPPs are complex financial and legal arrangements and appropriately pricing services to encourage investment is difficult, as is ensuring the risks and responsibilities associated with projects are effectively allocated between private and public sector participants.

Box 4: APEC initiatives

At the most recent APEC Finance Ministers' Meeting hosted by Indonesia in September 2013, Finance Ministers agreed to create an APEC PPP Experts Advisory Panel which would develop a 'repository of skills' to promote PPP best practices, including through a pilot PPP Centre under the Indonesian Ministry of Finance. This was subsequently endorsed by APEC Leaders at their Summit in October 2013.

The challenges associated with attracting private capital to fund public infrastructure projects, particularly in Asia, are considerable and often relate to the economic viability of projects. The broad role of the Panel is to draw on the experience and resources of other APEC economies and multilateral development partners, including the World Bank, the ADB and the Organisation for Economic Co-operation and Development (OECD).

The pilot PPP Centre will be commissioned to develop a pipeline of viable Indonesian public infrastructure projects in order to attract private sector investment, which would include undertaking the appropriate due diligence (such as cost benefit analyses and meeting regulatory requirements).

Output-based Aid

Output-Based Aid (OBA) is an approach designed to increase access to and delivery of basic services (outputs) to people living in poverty using performance-based incentives, rewards, or subsidies. OBA links the payment of aid to the delivery of specific services. Under an OBA scheme, service delivery is contracted out to a third party, which receives a payment from the MDB (or other aid agency) to either complement or replace user charging. The third party is responsible for 'pre-financing' the projects until services are delivered. The subsidy is performance-based, meaning that most of the subsidy is paid only after the services have been delivered and independently verified. By focusing on service outputs, OBA represents a change from traditional methods of aid that focus on inputs to service providers.

Infrastructure projects can employ an OBA approach. For example, a project may involve providing a solar energy system to poor households with payments made to the service provider when the solar panels have been installed and sustainable maintenance programs demonstrated. Road projects have employed an OBA approach by having payments to contractors made for kilometres of road constructed and maintained. The World Bank's Global Partnership on Output-Based Aid is an example of a program attempting to improve the delivery of basic infrastructure and social services to the poor by integrating the OBA approach across MDB financing operations (World Bank, 2013b).

The challenge for the OBA approach is to ensure that the right incentives are established so outputs meet appropriate project specifications. Payments based on each kilometre of road built could provide a perverse incentive for a contractor to build an unnecessarily longer route. Risks also exist around governance, potentially leading to collusion, price fixing and mis-targeting of projects, such that intended beneficiaries are denied services and geographic reach is insufficient (Mumssen and Kenny, 2007).

Conclusion

This article has shown that multilateral development banks provide a variety of financial and non-financial services to support infrastructure in developing countries. Utilising their strong financial positions, the MDBs provide direct loans, grants and equity to infrastructure projects or funds; and bring in third party investors to likewise contribute. Drawing on their expertise and reputation, the MDBs provide project consulting services, technical assistance, and work to improve the investment climate such that investors will, in time, invest regardless of MDB involvement.

The sheer size of the developing world's infrastructure needs is well beyond MDBs' financial resources, but it may not be beyond the private sector's — provided there are sufficient incentives to invest. Outside of the traditional forms of financial and non-financial assistance, MDBs are increasingly using alternative financing models to encourage greater involvement from the private sectors of both the developed and the developing world through a variety of forms of finance. These forms, as explored in this article, variously draw on private sector expertise, private funds, new ways of mitigating project risks, and innovations in funding outputs rather than inputs.

These are welcome developments that have the potential to mobilise additional finance, and encourage greater private sector involvement in infrastructure. However, as non-traditional forms of infrastructure financing can involve greater complexities and risks than MDBs have traditionally borne, effectively managing these risks and protecting members' callable capital remains paramount.

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The incidence of company tax in Australia

Xavier Rimmer, Jazmine Smith and Sebastian Wende[1]

This paper uses a computable general equilibrium framework to provide estimates of where the costs of company tax are borne and to test the importance of certain assumptions. The welfare benefits of a small fall in the company tax rate are shared between company owners and workers. The paper finds that in the long-run around one-third of the benefit accrues to the owners of capital in the main scenario, with the remaining two-thirds flowing to households, primarily through rises in real wages. Results with alternative assumptions are also presented.

1 The authors are from Macroeconomic Group, the Australian Treasury. This article has benefited from comments and suggestions provided by Ben Dolman, Graeme Davis, Brendan McKenna, Damian Mullaly, Dan Smith, Alexander Beames, Rob Heferen and David Gruen. The views in this article are those of the authors and not necessarily those of the Australian Treasury.

Introduction

Taxes fund public services and transfer payments to improve the wellbeing of the Australian people as a whole, but by themselves reduce the welfare of some people. The economic incidence of a tax is an estimate of whose welfare is reduced, and by how much.

Those that bear the burden of a tax are sometimes different to those who have the legal liability to pay the tax. The legal liability for company taxes falls on the company, so in the near term the effects of raising or lowering the company tax rate will be felt by the owners of capital. However, as the economy adjusts the burden of a tax will be determined by the way it affects the behaviour of firms and consumers, including the distortions it creates. In general, the burden of company tax in terms of welfare lost is shared between company owners, workers and consumers.

Tracing the effects that taxes have on decisions within companies through to changes in prices and wages requires modelling of the economy as a whole. Modelling results depend upon the assumptions made about the capacity of companies and households to change their behaviour. The international literature generally finds that company taxes reduce real wages, including by increasing production costs and the price of final goods, so that a substantial share of the welfare costs of company taxes are borne by labour. Studies of how economies have responded to actual changes in company taxes are consistent with this finding (Sorenson and Johnson 2010).

This paper presents the concepts of legal and economic incidence, outlines the key determinants of economic incidence noted in the literature and presents results from economic modelling of the incidence of company tax in Australia. As a mechanism for conceptualising and quantifying the long-run incidence, the paper considers the welfare effects of a fall in the company income tax rate. Long-run modelling results are presented for a 1 percentage point cut in the company income tax rate. The paper also presents results from a range of scenarios to illustrate some of the uncertainties around estimates of incidence.

Economic versus legal incidence

The economic incidence of a tax is different from its legal incidence. Those entities that bear a legal responsibility to pay tax to the government are said to bear the legal or statutory incidence of the tax. Companies and other legal entities may face the legal incidence of a tax, for example by having to forward receipts to the government from a consumption tax or amounts withheld from employees.

Economic incidence is a measure of whose wellbeing is reduced by a tax and by how much. The economic incidence is the welfare reduction from the tax borne by consumers, workers or owners of capital.[2] A common approach to assessing the incidence of company tax is to look at the changes in welfare that result from small changes in the tax rate.

The economic incidence of company tax is potentially borne by both labour and the owners of capital. The general principle is that the incidence of tax is borne predominantly by the least responsive or flexible factor of production. In the short run, with the capital stock fixed, most of the incidence is borne by the owners of capital, but in the long run more of the incidence of company tax is borne by labour, which is the less responsive factor of production.

2 It is not possible disentangle consumers and workers in the modelling framework used in this paper. As such the modelling and analysis considers the income or welfare accruing to the factors of production, capital and labour.

Similarly, the benefits resulting from a reduction in the company tax are shared across these factors of production. In the near term, a decrease in the company income tax rate would increase the after tax rate of return on capital. As such, the owners of capital would gain a large share of the immediate relief from the reduction in the company tax rate.

However, the higher rate of return results in higher investment and, over time, a larger capital stock. This process continues until, in the long run, the return on further investment has fallen back to the rate required by global investors. The increased stock of capital means that labour is more productive and real wages are higher. Employment is, by comparison, relatively less responsive with households typically changing the amount of labour they supply only to a small degree in response to the higher wages on offer.

Factors affecting the economic incidence of company tax

The economic incidence of company tax depends on many factors. When examining the literature on the burden on company income taxes, findings vary based on assumptions about:

- the degree of market competition and the existence of economic rents;
- the international mobility of capital investments;
- how easy it is to substitute international and domestic products;
- the size of the domestic economy; and
- how easy it is to substitute labour for capital.

Economic rents

Economic rents are earnings in excess of normal returns on investment. Economic rents can be categorised as being derived from either location-specific or firm-specific factors.

Rents from location-specific factors may arise from legislated protection or monopolies, existing fixed investments (such as factories), exploitation of natural resources, agglomeration (where businesses obtain benefits from co-location such as economies of scale), attractive local infrastructure, public services and institutions. They may also arise from market power, for example where consumers prefer domestically produced goods over imported goods. They are relatively unresponsive to tax rates.

Rents from firm-specific factors may arise from specialised production techniques or technological knowledge, corporate structure and managerial expertise, brand names and patents. Investments generating firm-specific rents can be moved from one jurisdiction to another, with the choice of location affected by the after tax rate of return available in each jurisdiction. Over time, firms are able to move these factors between countries in response to differences in the rates of return available. In the same way that a reduction in the company tax rate affects the domestic capital stock, it raises the return available to firm-specific factors and would result in a larger domestic pool of firm-specific rents.

Australian company income tax applies to the normal return to equity from investment required to draw the capital into use, as well as any economic rents. The existence and type of economic rents in the economy affects both the efficiency and the incidence of company taxation. The location-specific factors that give rise to rents are relatively immobile and hence less affected by tax rates. The larger

the extent of location-specific factors, the smaller the effect of company tax on investment, labour productivity, wages and economic activity per dollar of revenue collected. That is, the larger the extent of location-specific factors, the more efficient company tax would be and the greater the share of the incidence of company tax that would be borne by owners of capital, rather than workers.

Mobility of capital

The mobility of capital refers to how easily financial capital (debt and equity) flows into and out of a country. Greater capital mobility will shift more of the burden of taxation from capital to labour through larger changes in the domestic capital stock, and hence in domestic labour productivity and wages (Grubert and Mutti 1985; Gravelle 2010). In this situation, a reduction in the company tax rate will result in large inflows of foreign capital to ensure that there is no material difference between the after tax (risk adjusted) rate of return on investment in Australia and the rate available abroad.

While international capital is highly mobile between advanced economies, it is clearly not perfectly mobile. If capital is less internationally mobile—for example if foreign appetite to hold investments in Australia is limited—then a reduction in the company tax rate will result in a smaller inflow of foreign capital with the after tax return remaining above the international rate. This can be thought of as a premium required by foreigners to invest in the domestic market. In this situation, more of the burden of company tax is borne by capital, and less by labour as the smaller change in the capital stock flows through to a smaller change in wages.

International product substitution

The ability of consumers to substitute between domestically and internationally-produced goods and services affects the incidence of company income tax. With a high degree of substitutability, domestic producers face highly elastic demand for their products and so a reduction in the company tax rate will flow through to greater domestic production and higher demand for labour while leaving margins relatively unchanged. In this case more of the incidence of the company tax is on labour. If consumers are unwilling to substitute between domestic and international products, then a reduction in the company tax rate will see a smaller increase in domestic production and an increase in margins, so that more of the incidence of the company tax is on capital (Harberger 2008; Gravelle 2010).

Size of the economy

The size of an economy will affect the ability of domestic firms to pass the burden of taxes onto consumers, as larger economies have a greater ability to affect international rates of return on capital and product prices (Randolph 2006; Gravelle 2010). Through their implied global market power larger economies are likely to see more of the burden of company income taxes fall on capital as changes in the return to domestic capital will also affect the return to international capital.

Australia is generally considered a small economy, making up less than 2 per cent of world GDP.[3] As such, Australian taxation policy has little effect on global rates of return on capital. On the other hand, domestic changes can potentially have some (limited) effect on world prices for commodities where Australia accounts for a larger share of world production, such as wool, wheat, coal and iron ore, or where there are only imperfect substitutes available for Australian exports, such as tourism services. In these cases, domestic producers are able to pass on some of reduction in the domestic company income tax rate in the form of lower prices and so foreign consumers share some of the benefits of the reduction in the tax rate.

3 Data taken from the World Bank data resource, accessed 25 September 2013, available at http://data.worldbank.org/indicator/NY.GDP.MKTP.CD.

Labour and capital substitution

The extent to which firms are capable of substituting labour and capital in production also has an impact on the incidence of company tax (Gravelle 2010). If these factors are highly substitutable then the incidence of a reduction in the company tax rate will be felt more strongly by labour.[4]

Modelling the incidence of company tax in Australia

A computable general equilibrium (CGE) modelling approach was taken to estimate the incidence of company tax. Computable general equilibrium models are useful for exploring the economic impacts of changes to company income tax rates as they provide a detailed representation of the factor and product markets and their linkages. While these models have their limitations, they provide an integrated framework for analysis, based on economic theory and using the best available economic and tax data.

The Independent Economics CGE model was used for this analysis. The model was developed by Independent Economics and Treasury to be suitable for modelling the Australian business tax system.[5] The model has been designed to estimate the economic effects of changes in the company tax system, including: the size of the capital stock in each industry; the mix of capital types; labour force participation; the location of multinational profits; and the location of multinational firm-specific assets, such as intellectual property.

The model is a comparative static long-run model. It assumes that investment, and therefore the capital stock, can fully adjust to any shock imposed. While this provides a comprehensive picture of the enduring impacts of a policy change, it is silent about the transition path over time from the existing settings to the proposed change. We analyse incidence in terms of changes in welfare and how these changes are driven by different income streams.[6]

The modelling makes the standard assumption that any change in government revenue due to changes in the company tax rate is offset by a cash or lump-sum transfer from the government to households.[7] This allows us to isolate the economic impacts of an individual policy.

Before considering the detailed incidence results, it is useful to explain the expected and actual macro-economic impacts of a 1 percentage point cut in the company income tax.

The initial effect of a cut in the company income tax rate is to increase the after tax rate of return on investment in Australia, relative to the rate of return required by foreign investors.[8] The higher domestic rate of return attracts further investment until the marginal product of capital, net of tax and

4 With more elastic substitution of labour and capital in production the capital stock increase resulting from a cut in the company tax rate will be larger. This leads to stronger increases in wages and therefore greater household welfare gains.

5 Independent Economics designed the overall economic structure of the model and Treasury calibrated the model to match the business tax data and provided a range of parameters, such as the profit shifting elasticity and the share of rents that are firm-specific. The structure of the model is described in Appendix A, with further detail published in Independent Economics (2012).

6 Incidence calculations are sometimes presented in terms of producers and consumers. This is straightforward in partial analysis, but in a CGE model this division is less clear. The benefit of lower consumer prices can be attributed not only to consumers but also to labour through higher real wages. As consumers not only consume but are also suppliers of capital and labour, in a CGE model it makes more sense to split the welfare impacts in terms of income streams.

7 This approach was adopted by KPMG Econtech (2010) in their modelling for the *Australia's Future Tax System* and was one of the options adopted by De Mooij and Devereux (2011)

8 The modelling assumes that Australian company tax acts as a final tax for 90 per cent of foreign investors. Among major categories the main exception is US direct investment.

depreciation, again equals the rate of return required by foreign investors. The extent of capital mobility is important: the higher the degree of capital mobility, the larger the increase in the size of the capital stock

This process of capital deepening—increasing the amount of capital available per worker—acts to increase the productivity of labour which flows through to higher wages. Labour supply is assumed to increase to a small degree in response to higher real wages, at the expense of a decline in leisure. The overall size of the economy increases due to increases in both the capital stock and the labour supply.

The cut in the rate reduces company tax revenue collections. However, this is partially offset as the increase in the size of the economy leads to expansion in the company income, labour income and consumption tax bases.

The cut in the company tax rate also results in windfall gains to the owners of location-specific fixed factors, including land. The larger capital stock increases the intensity of use of these fixed factors and hence the flow of income to them, while the cut in the company tax rate means that more of this income is retained by owners. Some of these fixed factors are foreign owned, resulting in a flow of income offshore.

Households, as the suppliers of labour and majority owners of capital, benefit from higher rates of return on the fixed factors they own, higher wages and greater labour force participation. As the cut in the company tax rate is assumed to be funded through a reduction in government lump sum transfers the reduced government revenues from a cut in the tax rate reduce the welfare of transfer recipients.

A range of alternative sets of assumptions (or 'scenarios') are also presented in this paper.[9] First, we will consider the small, open and competitive economy as a baseline. Arguably, a pure open and competitive economy case is not representative of the current Australian economy. An important feature of the Australian economy is the existence of economic rents in a range of sectors, such banking and finance, and mining. The second scenario builds in certain assumptions about the size and location of economic rents. A third scenario extends the model further by making assumptions about the degree of international capital mobility.

Scenario 1: The open and competitive economy

This scenario assumes that financial capital is perfectly mobile internationally, and the domestic economy is competitive, with individual firms operating as competitive price takers yielding no economic rents. As capital is highly mobile, changes in the company income tax rate produce relatively large changes in the capital stock to ensure that the domestic after tax rate of return remains at the rate required by global investors. Consequently, the incidence of the company income tax is borne almost entirely by land, which is in fixed supply, and labour, as a less responsive factor of production (Gravelle 2010).

Scenario 2: Economic rents (main scenario)

The main scenario allows for the presence of economic rents in the mining, financial, telecommunication and selected other industries, while maintaining the assumption of perfect capital

9 The scenarios reported are those, identified in the literature review, which had the most significant impact for a plausible change in their parameterisation. Further results are presented and briefly discussed in Appendix B.

mobility. An industry is said to be earning economic rents when the calculated rate of return on capital, based on the input-output tables and national accounts data, is higher than a 'normal' rate. For the mining industry, rents were calculated assuming the level of the terms of trade seen in 2007-08.

Economic rents may be location-specific or firm-specific. Modelling of the European business tax system by De Mooij and Devereux (2011) assumed that 70 per cent of rents are location-specific. Given the significance of the finance sector and the larger role of natural resources in the Australian economy, the modelling assumes that 90 per cent of economic rents are location-specific.

Compared to the first scenario, a reduction in the company income tax rate produces smaller rises in economic activity as less of the tax is levied on a mobile resource. Domestic welfare increases are also smaller because part of the tax cut accrues to foreign owners of fixed factors.

Table 1: Assumed level of economic rents by sector

	Mining sector[1]	Finance sector[2]	Telecommunications services	Other industries[3]
Economic rents				
Level ($m 2011-12)	21,219	36,820	4,217	2,180
Share	33%	57%	7%	3%

(a) Mining covers the coal mining, oil and gas extraction, iron ore mining and non-ferrous metal ore mining industries.
(b) Finance covers the finance, and insurance and superannuation funds industries.
(c) Other industries covers the soft drinks, cordials and syrup, wine, spirits and tobacco, and beer manufacturing industries.
Source: Independent Economics database.

Scenario 3: Economic rents and imperfect capital mobility

The third scenario reflects an economy with the same economic rents as the main scenario, but with less mobile capital. Imperfect capital mobility has been implemented in the model by placing a premium on the domestic returns to capital required to attract foreign investment. This premium is a positive function of foreign investment, so as the stock of foreign investment grows, the premium drives a growing wedge between the domestic after tax rate of return and the required rate of return, dampening the capital flows associated with changes in the company income tax rate.

Limited mobility of capital results in smaller welfare gains from a company income tax cut due to smaller inflows of financial capital and smaller increases in the capital stock. This is compounded by the fact that some of the tax cut benefits foreign owners of capital and economic rents in Australia. This scenario yields the smallest gains in output and productivity and thereby the largest reductions in government revenue and transfers to households.

Modelling by KPMG Econtech (2010) for the *Australia's Future Tax System* report used a semi-elasticity for the required rate of return with respect to the foreign value of foreign owned capital of 0.5.[10] That is, a 10 per cent increase in the foreign ownership of the capital stock results in a 5 percentage point increase in the required rate of return. This scenario is presented as an upper bound of the likely premium required to attract foreign investment.

Aggregate effects of a company income tax cut

The modelling suggests that a company income tax cut from 30 to 29 per cent would increase the level of GDP by between 0.15 and 0.35 per cent in the long-run compared with what would otherwise be

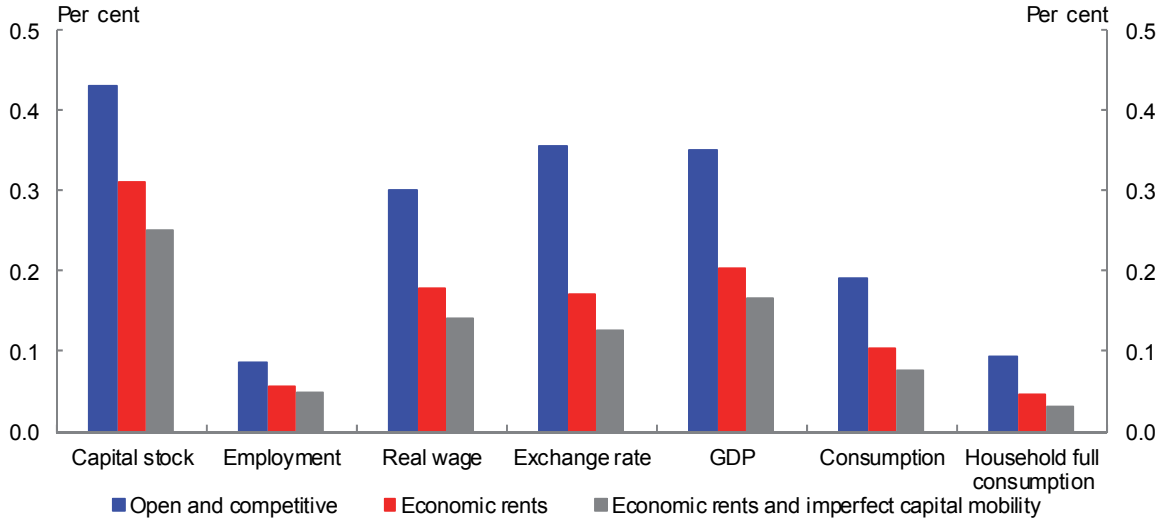
10 A semi-elasticity is the percentage change in a variable for a unit (or marginal) change in another. For the function y = f(x) it is $\frac{\delta \ln(y)}{\delta x}$.

the case. This increase in GDP is mainly driven by greater foreign investment flows into Australia to fund additional projects that are made viable by the reduction in the tax rate. Additional capital investment increases the capital stock by between 0.25 and 0.45 per cent.

The modelling also suggests that Australian workers benefit from the company income tax cut in the long-run. The productivity of labour increases with the increase in the size of the capital stock and this flows through to an increase in after tax real wages of between 0.14 and 0.30 per cent and a small increase in labour supply of between 0.05 and 0.09 per cent. Overall, the modelling shows that cutting the company income tax rate can deliver a permanent rise in consumption by Australian households of between 0.07 and 0.19 per cent.

Household welfare is measured by changes in full consumption, which is the combination of conventional household consumption of goods and services and the consumption of leisure priced at the wage rate. Full consumption improvements range from 0.03 to 0.09 per cent.

Figure 1: Macro-economic impacts of cutting the company income tax by 1 percentage point



Source: Treasury modelling results from the Independent Economics CGE model.

While the macro-economic benefits across these measures are all positive, it is also important to consider the cost associated with achieving these results. In isolation, a reduction in most taxes would be expected to produce such positive results, however, where budget-neutrality is required, the relative efficiency of raising revenue based on different mixes of taxes is important.

The marginal excess burden describes the welfare gain associated with forgoing an additional dollar of government revenue. The reduction in the company income tax affects government revenue in two ways: the lower rate generates less revenue for a given base; while growth in the economy increases the base.

Table 2: Welfare and revenue implications of a 1 percentage point company income tax cut

Change ($m 2011-12)	Open and competitive	Economic rents	Economic rents and imperfect capital mobility
Household full consumption	1,294	636	421
Government revenue	-769	-1,143	-1,242
Marginal excess burden	168%	56%	34%

Source: Treasury modelling results from the Independent Economics CGE model.

Estimates of the marginal excess burden of the company income tax vary across the scenarios. The highest estimate occurs in the open and competitive scenario. In this scenario, the loss of 1 dollar of government revenue is accompanied by a gain of 1.68 dollars of household welfare. For the central and imperfect capital mobility scenarios, household welfare increases by 56 cents and 34 cents respectively.

To put these estimates in context, Table 3 presents previous KPMG Econtech (2010) estimates of the marginal excess burden of the company tax and some other major taxes. In all three scenarios, our modelled marginal excess burden of company income tax is higher than their earlier estimates for labour income tax or the goods and services tax.[11] Some caution is warranted in drawing comparisons, though, given that these results come from different models, with different assumptions and calibrated to represent the Australian economy at different points in time.

Table 3: Marginal excess burden across a range of taxes

Source	Tax	Marginal excess burden
KPMG Econtech 2010	GST	8%
KPMG Econtech 2010	Labour income tax	24%
Economic rents and imperfect capital mobility	Company income tax	34%
KPMG Econtech 2010	Company income tax	40%
Economic rents	Company income tax	56%
Open and competitive	Company income tax	168%

Source: KPMG Econtech (2010) and Treasury modelling results from the Independent Economics CGE model.

The incidence of a company income tax cut

Changes in household full consumption can be decomposed into components associated with labour income, capital income, government transfers and leisure (Table 4).

A reduction in the company tax rate leads to an increase in labour income in all scenarios through both higher labour force participation and higher wage rates. Initially the increase in capital improves the productivity of labour which pushes up wages. This higher wage increases labour-force participation at the expense of leisure, which further increases labour incomes. The associated declines in leisure partially offset these increases in full consumption.

A reduction in the company tax rate also leads to a reduction in government revenue in all scenarios. The modelling makes the standard technical assumption that the reduction in government revenue flows through to a reduction in lump sum transfers to households to maintain the budget balance; this partially offsets the gains in household income from other sources.

11 KPMG Econtech (2010) estimated the marginal excess burden of company income tax to be 40 per cent. The current modelling exercise provides a more detailed analysis of the company tax system. This includes separating economic rents into firm-specific and location-specific rents, and allowing for profit shifting and foreign ownership.

Table 4: Contributions to changes in household full consumption

Welfare change and contributions ($m 2011-12)	Open and competitive	Economic rents	Economic rents and imperfect capital mobility
Leisure	-510	-333	-284
Consumption	1545	842	622
Labour income	2307	1391	1129
Capital income	-481	174	333
Variable capital	-913	-790	-566
Fixed factors	432	964	899
Lump sum transfers	-281	-722	-840
Household full consumption	1035	509	337

Source: Treasury modelling results from the Independent Economics CGE model.

The effects of a reduction in the company tax rate on capital income flows to Australian households vary markedly across the scenarios. The reduction in the tax rate delivers a windfall gain to the owners of fixed factors in all scenarios, both directly by the cut in the tax rate and indirectly by the rise in the return on fixed factors as they are used more intensely when more variable capital is available. The extent of this gain varies across the scenarios mainly due to the assumed size of the fixed factors: in the open and competitive economy scenario, the only fixed factor is land, while the other scenarios include additional sources of rents.

On the other hand, in the long-run, the reduction in the company tax rate tends to reduce income flows to domestic owners of variable capital. This, perhaps, requires some explanation. The modelling assumes that the domestically-owned stock of capital is fixed in volume terms, but the price of the capital stock is determined within the model. The reduction in the company tax rate makes capital cheaper to use and so reduces the price of goods whose production is capital-intensive. Capital itself is produced in a relatively capital-intensive fashion, and so its price falls relative to the price of consumer goods and services. This means that the value of the domestically-owned capital stock falls when measured relative to the price of consumer goods and services. Hence the purchasing power of income flows to domestic owners of variable capital declines. This effect is partially offset in the scenario with imperfect capital mobility because the rate of return on capital, which is determined by the rate required by foreign investors, rises as the size of the foreign-owned capital stock increases.

Table 5: Aggregated welfare change and contributions

Welfare change and contributions ($m 2011-12)	Open and competitive	Economic rents	Economic rents and imperfect capital mobility
Domestic			
Labour & lump sum transfers	1517	336	4
Capital income	-481	174	333
Household full consumption	1035	509	337
Foreign			
Fixed factors	202	223	207

Source: Treasury modelling results from the Independent Economics CGE model.

Another way to think about incidence is to aggregate changes in household full consumption into changes due to capital income (to both variable and fixed factors) and changes due to labour market outcomes (labour income net of leisure) and lump sum transfers (Table 5). In the main scenario, around two-thirds of the increase in domestic household welfare occurs through changes in labour market outcomes net of lump sum transfers, and only one-third of the welfare gains accrue to the domestic owners of capital.

Results vary across scenarios. In the open and competitive scenario, labour is substantially better off, while the domestic owners of capital are worse off. In the scenario with economic rents and imperfect capital mobility, almost all of the increase in household welfare occurs through an increase in capital income.

The discussion of incidence has focussed on the flow of benefits to Australian households. Foreigners will also be affected in a range of ways, through changes in their level of investment in Australian capital and through changes in Australian demand and supply of traded goods and services. The welfare effects of these changes are complex given the range of alternative foreign investment and trade options available. As foreign households are not modelled explicitly and given that the changes in trade and investment flows with Australia are likely to be due to substitution away from other countries, the model does not produce complete estimates of foreign welfare impacts. However, it is possible to quantify the windfall gains received by foreign owners of fixed factors in the Australian economy, which can be seen as a partial estimate of the change in foreign welfare due to a cut in the Australian company tax rate.

Conclusion

While the legal incidence of company tax is borne by companies themselves, the economic incidence of company tax, in terms of whose welfare is affected and by how much, is determined by the way the tax affects the behaviour of firms and consumers. To explore the incidence of company tax, this paper presents estimates of the long-run welfare effects of a 1 percentage point cut in the company tax rate. At an aggregate level these estimates suggest that, in comparison with previous modelling by KPMG Econtech (2010), the welfare gain from cutting the company tax rate is higher per dollar of revenue forgone than is the case for labour income tax or the goods and services tax.

The welfare effects of a 1 percentage point cut in the company tax rate are shared between company owners and workers. Estimates from the main scenario, which includes economic rents, suggest that in the long run only around one-third of these benefits accrue to the owners of capital, with the remaining two-thirds flowing to households primarily through higher wages. This has implications for the social distribution of income as capital ownership is significantly more concentrated than labour income (ABS 2013).

Alternative assumptions about the structure of the economy result in different estimates of the incidence of the company tax. As a sensitivity analysis, the paper presents estimates for an open and competitive economy in which there are no companies earning economic rents. In this scenario, none of the benefits of a company tax cut accrue to the owners of capital in the long-run. The paper also presents estimates from a scenario in which there are both economic rents and limits to international capital mobility, in which almost all of the benefits of a company tax cut accrue to the owners of capital in the long-run. Over time, as the Australian economy transitions through the current mining cycle and the rates of profit in that industry return towards more normal levels, and if the world economy continues to become more open and closely interconnected, it is likely that the results from the open and competitive scenario will become more relevant.

Taken together, these results suggest that there may be larger welfare gains available from cutting the company tax rate than from other major revenue sources and that in the long-run, only a minority of the welfare gains will accrue to the owners of capital, with the majority shared more broadly through the community. That said, such estimates of the marginal excess burdens of various taxes in isolation ignore their potential interactions, such as the ability for taxpayers to move their income between labour and capital forms in response to differences in statutory rates. The efficiency gains are dependent on the assumptions made in the three scenarios in this paper.

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Appendix A: Independent Economics CGE model

The analysis was undertaken using the Independent CGE Model, Independent Economics' computable general equilibrium model. This is a comparative static model of the Australian economy. Treasury and Independent Economics worked together to extend and calibrate the model to make it suitable for modelling the business tax system.[12] The model has been designed to represent economic effects of changes to the company tax system including: the size of the capital stock in each industry; the mix of capital types; labour force participation; the location of multinational profits; and the location of multinational firm-specific assets, such as intellectual property.

The modelling results represent long-run changes to the economy. They provide an analysis of the change in the economy from now to a time in the future when capital and labour markets have fully adjusted to policy changes. A reasonable working assumption may be that half of the change in the economy will occur within approximately seven years, and the adjustment will be largely complete within 20 years.[13]

Key features of the baseline model include the following.

- **Up-to-date database.** The model is designed to represent the 2011-12 Australian economy, based on an uprated version of the Australian Bureau of Statistics' 2007-08 input-output tables. The model is calibrated based on the 2007-08 level of the terms of trade.

- **Rich industry detail**. The model distinguishes 111 industries.

- **Sophisticated production processes.** Output in the model is produced by labour, land, location-specific factors, firm-specific factors and nine additional types of capital: transport equipment; machinery; information technology; structures; dwellings; transfer costs; mineral exploration; research; and other intellectual property.

- **Company tax system.** The model reflects many features of the company tax system, including: deductibility of debt; revenue clawback through dividend imputation; depreciation allowances that reflect a historical cost basis and other aspects of tax laws; expensing of certain investments; and foreign tax credit arrangements.

- **Fixed factors.** The model identifies fixed factors in industries in which Australian Bureau of Statistics data suggest there may be above normal rates of return on capital and where there are economic grounds for believing these may be sustainable: mining, banking and finance, telecommunications, and beverage manufacturing. These are further divided into location-specific, immobile factors (90 per cent) and firm-specific, mobile factors (10 per cent).[14]

12 Independent Economics designed the overall economic structure of the model; Treasury calibrated the model to match the business tax data and provided a range of parameters, such as the profit shifting elasticity and the share of rents that are firm-specific.

13 This timeline is consistent with the transition path in response to tax changes within the Monash Multi Regional Forecasting Model, a widely used dynamic model of the Australian economy.

14 Actual rates of return have been estimated for each industry using data on capital stocks and net operating surplus from the Australian Bureau of Statistics. An industry is said to be earning economic rents, attributed to fixed factors, when their estimated actual rate of return is higher than a 'normal' rate for that industry. In modelling the European business tax system, De Mooij and Devereux (2011) assumed that 70 per cent of rents are location-specific (and hence 30 per cent firm-specific). Given the greater significance of natural resources in the Australian economy, the modelling assumes that 90 per cent of economic rents are location-specific.

- **Foreign marginal investor.** The model assumes that the marginal investment is funded by a foreigner, that capital is perfectly mobile between countries and that investments at the margin are funded through a mix of debt and equity that matches the historical average.

- **Profit shifting.** Company tax can affect where firms declare their profits for tax purposes. The model assumes a semi-elasticity of the tax base to the statutory tax rate of -0.5. This affects both the revenue take and the firm's cost of capital.[15]

- **Labour force participation.** Households choose between employment and leisure, taking account of the after tax wage available.[16]

The model also relies on a range of general assumptions, many of which are shared with other long-run computable general equilibrium models. Consumers choose between different purchases to maximise their wellbeing. Firms choose how to produce and how much to produce in order to maximise profits. Wages adjust so that labour markets clear. The capital stock adjusts so that the after tax rate of return matches the required world rate. Australia is a price taker in import markets and is close to a price taker in most export markets.[17]

The main welfare measure is full household consumption. This takes account of household consumption and leisure.

Modelling exercises are always a simplification of the real world. They are designed to capture the most important features of the economic response to policy changes in a sufficiently flexible way. Not all features of the decisions affected by tax changes are incorporated. In particular, while the modelling takes account of the historical shares of corporations and unincorporated entities in the economy, and the historical shares of debt and equity financing, it does not model potential changes in the legal structure of business operations or leverage in response to policy changes.

15 Recent modelling of European business tax (de Mooij and Devereux 2010) assumed a semi-elasticity of -0.73. The model assumes a lower elasticity reflecting the smaller role of multinational corporations in the Australian economy.

16 The assumed uncompensated elasticity of labour supply of 0.2 is consistent with the range of empirical estimates from Australian studies (Dandie and Mercante 2007).

17 An elasticity of demand of -12 for Australian exports is assumed for most industries, but a lower elasticity of -6 applies in industries where Australia has some market power (some parts of agriculture and mineral commodities) or product differentiation (such as tourism and education).

Appendix B: Further modelling outcomes

The body of the paper presented three scenarios based on changes to the modelling assumptions that are most important for understanding the incidence of company tax. This appendix presents the results of additional sensitivity analyses around the main scenario.

Price elasticity of export demand

The Independent Economics CGE model assumes that Australia is close to being a price taker in export markets. By varying this assumption we can approximate the impacts of increasing and decreasing the size of the economy.

Generally the export price elasticities in the model are -12 although a value of -6 is used for industries in which Australia is assumed to have some market power or product differentiation (including some agriculture, mining, tourism and education related industries). In performing sensitivity analysis on export demand, the elasticities were doubled or halved. It was found that with greater (weaker) global market power the change in all measures is smaller (larger) than in the main scenario.

Price elasticity of import demand

The impact of stronger and weaker substitutability between domestic and imported products is modelled by directly inputting higher and lower import price elasticities. The central assumption is for an import price elasticity of 3, meaning that if the price of imports relative to local production is 1 per cent higher, the quantity of imports used relative to local produced goods will be 3 per cent lower. Sensitivity analysis on this elasticity uses values of 4 (high) and 2 (low).

Factor substitution (capital-labour substitution elasticity)

The elasticity of substitution between these factors is exogenous in the model and can therefore be directly altered. The central estimate for the elasticity of substitution for labour and capital is 0.9 meaning that a 1 per cent increase in the ratio of the price of labour to the price of capital will lead to a 0.9 per cent fall in the ratio of labour to capital used in production. Sensitivity analysis is conducted for the substitutability of the factors of production by varying this elasticity: using values of 0.7 (low) and 1 (high).

Table B1: Contributions to changes in household full consumption

Welfare change and contributions ($m 2011-12)	Central scenario	Export price elasticity		Import price elasticity		Capital-labour elasticity	
		High	Low	High	Low	High	Low
Leisure	-333	-327	-341	-332	-333	-323	-354
Consumption	842	906	734	848	834	843	839
Labour income	1391	1414	1345	1395	1385	1366	1446
Capital income	174	191	148	171	178	182	156
Variable capital	-790	-788	-792	-788	-793	-789	-793
Fixed factors	964	980	940	959	971	971	949
Lump sum transfers	-722	-699	-759	-717	-729	-705	-763
Full consumption	509	578	393	515	500	519	484

Source: Treasury modelling results from the Independent Economics CGE model.
Note: Relative to the main scenario increases are in green and decreases in blue.

Whole-of-Government Benefits Framework — Standard Business Reporting Case Study

Niki Laycock and Neil Tothill[1]

This paper examines how national and international developments in benefits management and the integration of government Information and Communication Technology (ICT) services were applied to produce a new Benefits Framework for the Australian Government's Standard Business Reporting (SBR) program.

1 The authors are from the Standard Business Reporting program, Australian Taxation Office (ATO) [formerly located at the Australian Treasury]. This article has benefited from comments and suggestions from the SBR Board; as well as colleagues in Business Reporting and Registration, ATO. The views in this article are those of the authors and not necessarily those of the Australian Treasury.

Introduction

In 2006 the Taskforce on Reducing Regulatory Burdens on Business delivered its report '*Rethinking Regulation*'. This report made 178 recommendations on actions to reduce 'red tape' across a wide range of policy areas. The SBR program was established in response to one of those recommendations, which included the development and adoption of a business reporting standard, to reduce burdens across government.

SBR simplifies business reporting to government through the use of harmonised definitions and standardised electronic reporting; it offers both a communication format and a way of re-engineering business processes to reduce compliance costs.

The key capabilities of SBR: include a national online gateway; a common dictionary of terms; a digital business credential (single secure log-on) and a standard set of technologies that enable business to government interactions.

Since the program's inception, there has been ongoing consideration given to defining and measuring the benefits of SBR. While the 2007 Business Case for SBR did provide an estimate of the benefits for business, as well as forecasting potential take-up rates; importantly it failed to recognise a range of other benefits from the use of the SBR capabilities. These benefits include those accruing to governments, the Australian public (citizens) in general, and the benefits generated through the partial use of the SBR solution, as well as the wider use of the capabilities, such as in business to business interactions.

As the program progressed through implementation, it was clear that the capabilities of SBR could be employed more widely to generate a range of additional benefits. This recognition led the SBR Board (chaired by the Secretary to the Treasury) to ask the program to re-examine the benefits profile of SBR.

In response to the Board's request, a new SBR benefits framework was developed, which was subsequently accepted by the SBR Board in April 2013.

Red tape and the reporting burden

A long standing concern for both business and governments is the cost of complying with government regulation — often termed the 'red tape' problem. Reporting to government is a significant contributor to this regulatory burden. The obligation to provide accurate information to various levels of government using various methods, not only imposes significant compliance costs on business, but also more broadly impacts economy efficiency by restricting innovation and dampening productivity.

The Australian Government is committed to easing the red tape and compliance costs for business, with an announced goal of reducing red and green tape by $1 billion per annum. The SBR program plays a significant role in this endeavour by decreasing business compliance costs and government

administration costs. The beneficial effect of these decreases mean that the overall 'efficiency cost'[2] to the economy is reduced and productivity is increased.

The underlying objective to increase productivity is one of Australia's key policy challenges going forward, as it is likely that improvements in productivity will be one of the main sources of increasing our incomes and standards of living into the future.[3] Regulatory reform, including reform or other initiatives to reduce the compliance burden on business, will be one of the key contributors to increasing productivity.[4]

Government service integration and transformation

Since 2000 e-government (electronic government) programs around the world have rapidly moved from providing simple information and interactions on websites to more complex transactional exchanges. ICT is now integral to the way governments provide services and interact with citizens.

The next stage in e-government maturity is service transformation[5] — also described as 'i-government' (integrated government). I-government initiatives focus on developing cohesive services that provide cross-government, nationwide, data integration and seamless transactions. Integrated government ICT services are also characterised by their alignment with natural life (or business) events, such as the birth of a child or commencing a new business.

Governments globally are developing initiatives to move them towards i-government transformation. Examples can be seen in the establishment of the UK 'Government Digital Service', the creation of Republic of Korea's 'E-Government Roadmap', and the European Commission's 'Digital Agenda for Europe'. Each of these initiatives is ongoing and includes multiple projects to improve the connectedness of governments and their constituencies.

In Australia, the *Australian Public Service Information and Communications Technology Strategy 2012-15*[6] clearly annunciates the desire for a coordinated approach to ICT. The Strategy also acknowledges the supporting role ICT plays in the Government's productivity agenda and other related policies directed towards efficient and effective interactions with Government. SBR is referenced in the ICT Strategy as an example of an initiative designed to '*improve national productivity by increasing efficiency, streamlining processes, being innovative and enhancing interactions with government*'.

In September 2013 the Government (then in opposition) released their policy on e-government and the digital economy.[7] The policy established a number of goals, including to *'Designate the Internet as the default way to interact with users … look to establish a Digital Service Standard … Give people the option to elect to receive material from the government in digital form or in hard-copy … by 2017*'. The increased use and expansion of SBR provides a further opportunity for the Government to advance these policy agendas.

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2 2006, *An Agreement between the Governments of the Commonwealth of Australia, the States and the Territories to continue in existence and provide for the operation of the Australian Building Codes Board*, April, Australian Productivity Commission.

3 Gruen, D 2012, *'The importance of productivity'*, paper presented at the Productivity Commission-Australian Bureau of Statistics Productivity Perspectives Conference, Canberra, 20 November.

4 Banks, G 2010, *'Successful Reform: Past Lessons, Future Challenges'*, paper presented at the Annual Forecasting Conference of the Australian Business Economists, 8 December.

5 OECD 2003, *The e-Government Imperative*, August, Organisation for Economic Co-operation and Development.

6 Department of Finance and Deregulation 2012, *Australian Public Service information communications technology strategy 2012-15*, November, Australian Government Information Management Office.

7 2013, The Coalitions Policy for E-government and the Digital Economy, September, Australian Liberal Party.

SBR, as a set of capabilities, has the potential to be used in a multitude of ways beyond business to government information exchanges. In the future, SBR's capabilities could be increasingly used to enhance efficiency and productivity around business to business and government to government exchanges; as well as transforming government service delivery so that it is personalised, innovative and timely.

The original SBR benefits profile

The original benefits for SBR considered the efficiencies generated for business by direct electronic lodgement of reports to government using SBR-enabled software, versus the existing practice of lodging paper forms (or rekeying data into portals) already processed using accounting or record-keeping software.

The 2007 SBR Business Case benefit calculations were conducted by an external service provider using a custom-made tool and methodology. They focused on the efficiency metric of 'time saved' by the business when using software enabled for SBR, and an ancillary need for less re-work required in reporting to government, to produce a financial benefit figure. The Business Case estimated the net cost savings (benefits) to business by 2013-14 to be $795 million per annum.

In 2012, using a revised 'time saved' methodology, actual take-up rates to date and taking into account key future commitments to SBR by Australian government agencies, the Australian Productivity Commission (PC) provided a reforecasting of the SBR program benefits via their study on the *Impacts of COAG reforms: Business Regulation*. The PC study revised the potential benefits of SBR for business under the program's initial financial reporting scope of $500 million per annum, including $100 million for benefits not directly related to the efficient lodgement of reports.

Although the 2012 PC study once again estimated benefits based on 'time saved' and reduced rework effort by business, it also included an estimate of benefits to governments and identified additional benefits for future examination. Further as the program was now operational, the study was able to provide a more realistic estimate of 'time saved' by business.

The PC assumed the potential benefits for governments to be $10 million per annum, which included the time saved by government agencies, resulting from the standardisation of information received, the timeliness of the information reported, and improved data analysis.

Measuring the benefits of i-Government

As with the original SBR benefits study, the forecasting of benefits for early e-government projects focussed on measuring transactional type services with the cost/benefit ratio derived using traditional commercial methodologies. These methodologies were unable to take into account the now recognised broader impact of e-government services, for example in relation to national productivity, the economy, global competitiveness and social wellbeing.

In a review of the benefits of e-government initiatives, a UK government study suggests that as projects move from the informational to the integrated, transformational level, the 'payback period on e-government investments decline and net present values rise'.[8] Australian data also suggests that maximum value will be achieved as governments move to more complex informational exchange

8 OECD 2005, *E-government for better government*, November, Organisation for Economic Co-operation and Development.

e-government models.[9] However, research also shows that the expected benefits of i-government initiatives — better services and improved productivity — may take significant upfront investment and many years to materialise.

A benefits model for SBR

In re-examining the benefits of the SBR program, numerous national and international examples of work to quantify, measure and manage e-government initiatives were reviewed.[10] There is a general consensus that further work needs to be done in this field to develop frameworks and methodologies to provide baseline data and greater comparability across nations. Although there is no universal framework or method, there are many examples to draw upon.

In reviewing the benefits framework, it was important to take account of the broader benefits of SBR which have been realised since the program's launch, as well as recognising the transformational nature of the capabilities as indicated by the experiences of international i-government initiatives like SBR, the PC study and the Government's ICT Strategy. Therefore, particular consideration was given to employing a new benefits model which could describe, categorise and assist in measuring the benefits of SBR to Australian economic productivity.

The OECD has conducted extensive work in the fields of benefits management, measurement and realisation. The model below is taken from an OECD E-Government project paper[11] which recommended it as a new 'outline' for identifying and assessing e-government benefits. It was selected as being the most applicable to the SBR program for use as the basis of the new SBR Benefits Framework (Attachment I).

9 NOIE 2003, *E-government benefits study*, April, National Office of the Information Economy, Commonwealth of Australia.

10 See attachment III for examples of international e-government projects and benefits.

11 Mayer-Schönberger, V and Lazer, D 2007, Governance and information technology: From electronic government to information government, MIT Press, Cambridge.

The OECD E-Government project model:

Beneficiaries / Type of benefit	Business	Citizens	Government
Financial	Reducing burden: Administrative simplification	Reducing burden: Administrative simplification	Efficiency savings to government: Freeing resources for public and private innovation
Public	***Improving trust in Government:*** customer satisfaction and equity; achieving overall policy and program outcomes; meeting security and privacy expectations		
Economic	***Supporting Growth:*** contributing to a sound business environment: promoting the information economy; creating new business opportunities		

SBR Benefits Logic Map

Once the model for the new Framework was selected, a SBR Benefits Logic Map was developed (Attachment I — *see* footnote 11). The Map is designed to be read with the 'Benefits' in the centre as the focus. Leading inwards from either side are the 'Problem' (strategic drivers and objectives) and the 'Solution' (the capabilities of SBR and the intermediate benefits produced). The Logic Map is based on a previous version of the Investment Logic Map developed, and still used, by the Victorian Government.[12]

The SBR Benefits Logic Map clearly shows the linkages between the SBR capabilities and Australian Government policy, for example reducing the compliance burden to increase economic productivity. The alignment to a Strategic Driver (Increase Productivity) and three Strategic Objectives (Deregulation; Digital First; Service Innovation) is important in ensuring that future decisions made by the program will lead to the ultimately desired benefits, and that the most effort/resources are put into the activities (or enabling capabilities) which provide the most value in reducing the compliance burden on business and delivering innovative online services to support increased productivity.

Some difficulty arises when considering the numerous other initiatives contributing to these strategic outcomes. Consequently, describing the final Benefits (also known in the benefits field as 'end' benefits) in such over-arching terms makes allocating and measuring particular benefits for the SBR program problematic. Therefore, it is considered more effective to use the more easily measured

12 2008, *Benefit management framework, congestion and network improvements sub program*, June, Department of Treasury and Finance, State Government of Victoria.

Intermediate Benefits shown in the Logic Map, and then extrapolate them to calculate the 'end' benefits for SBR.

Measuring the benefits of SBR

The next step for SBR benefits management is to produce a range of forecasts and measurements for each of the Intermediate Benefits using a combination of the original survey metrics, international proxy indicators, available statistical information on Australian business and actual SBR usage data.

As SBR is a mature program, the expense and complexity of establishing a new performance measurement regime is compounded, that is implementing new data collection activities at this business-as-usual stage would be considerably more difficult and expensive than during implementation. Additionally, the original benefits study only provides a partial baseline for the new Framework.

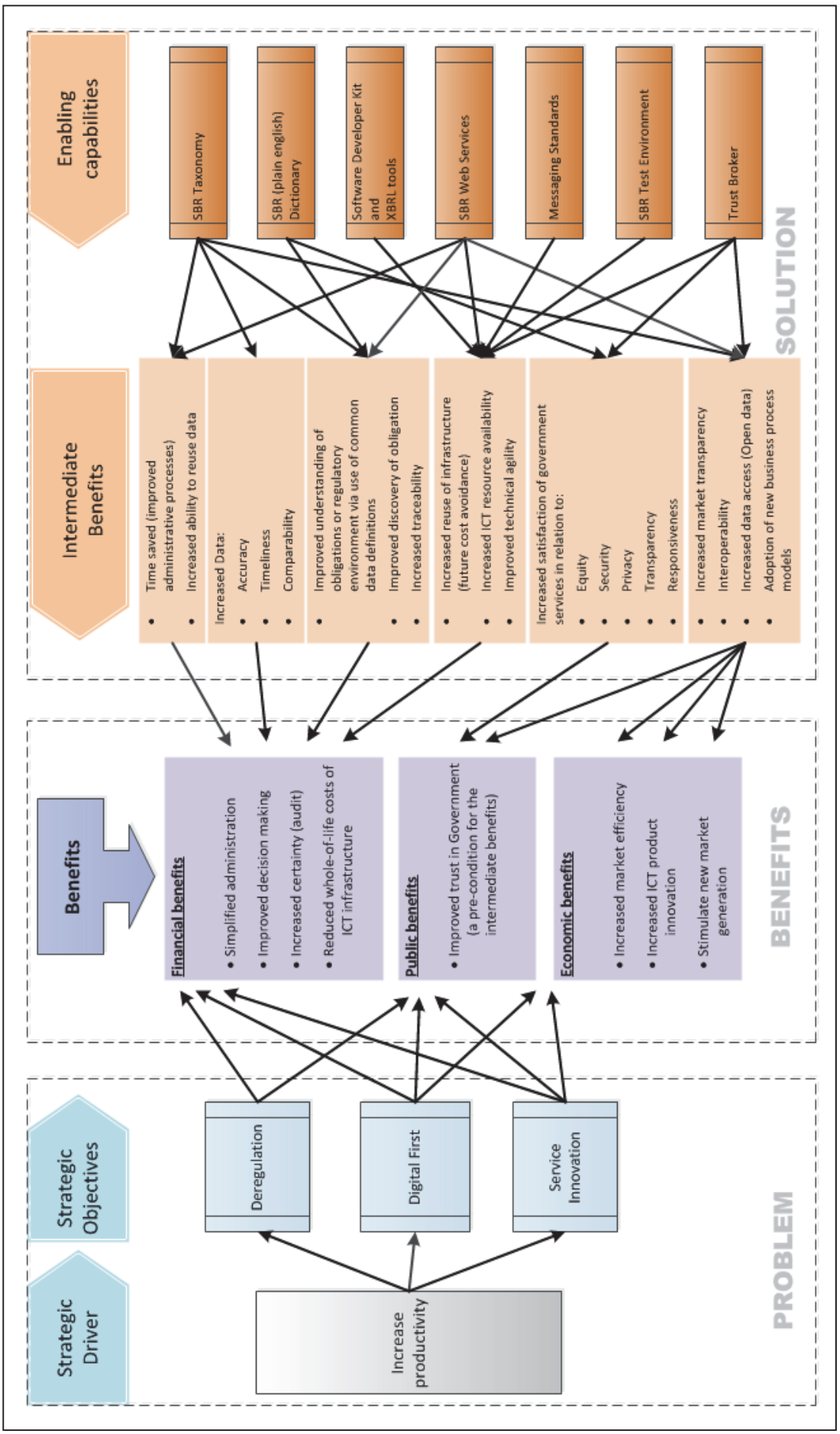
In this situation, the principles of benefits management encourage utilising information from similar government initiatives to establish the initial metrics. Fortunately, there is a wide range of statistics and studies available in relation to measuring the benefits of government ICT initiatives[13] as well as data in relation to Australian business and the ICT industry.

This work to quantify and forecast SBR benefits using the new Benefits Framework is underway and due for completion in mid-2014.

13 See attachment III for examples of international e-government projects and benefit.

Attachment I

SBR Benefits Logic Map



The new SBR Benefits Framework

Attachment II

Utilising the OECD model and incorporating parts of the SBR Benefits Logic Map

Beneficiaries **Type of benefit**	**Business**	**Citizens**	**Government**
Financial • Simplified administration • Improved decision making • Increased certainty (audit) • Reduced whole-of-life cost of ICT infrastructure	• Time saved (improved administrative processes) • Increased ability to reuse data • Increased data accuracy • Increased timeliness of data transfer • Increased data comparability • Improved understanding of obligations via use of common data definitions • Improved discovery of obligation • Increased traceability • Increased reuse of infrastructure • Increased ICT resource availability • Improved technical agility	• Increased data accuracy • Increased timeliness of data transfer • Increased data comparability • Increased traceability • Increased ICT resource availability	• Time saved (improved administrative processes) • Increased ability to reuse data • Increased data accuracy • Increased timeliness of data transfer • Increased data comparability • Improved understanding of regulatory environment via use of common data definitions • Increased traceability • Increased reuse of infrastructure • Increased ICT resource availability • Improved technical agility
Public • Improved trust in Government (pre-condition for SBR intermediate benefits)	• Increased satisfaction of government services in relation to equity, security, privacy, transparency and responsiveness • Increased data access (Open data)		

Beneficiaries / Type of benefit	Business	Citizens	Government
Economic • Increased market efficiency • Increased ICT product innovation • Stimulate new market generation	• Increased market transparency • Increased interoperability • Increased data access (Open data) • Adoption of new business process models		

Attachment III

Examples of international e-government projects and benefits research

- Canada and the Information Society, Government of Canada, 2003.
- Delivering the Prize — A joint all-Ireland study on change leadership and benefits realisation, APM and CIMA (UK), 2012.
- Digital Agenda for Europe (A Europe 2020 Flagship Initiative), European Commission, 2012 (revised).
- *Related Projects*
  STORK (Secure Identity Across Borders Linked): electronic identity for access to public services;
  PEPPOL (Pan-European Public Procurement Online): cross border public e-procurement;
  SPOCS (Simple Procedures Online for Cross-border Services): points of single contact; and
  e-CODEX (e-Justice Communication via Online Data Exchange): accessible judicial information.
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