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The macroeconomic effects of lower capital inflow

Jyothi Gali and Bruce Taplin¹

In the context of public discussion about the advantages and disadvantages of foreign investment, this article looks at the macroeconomic effects of reducing capital inflows into Australia.

¹ Valuable suggestions were provided by colleagues, including Ben Dolman, David Earl, Christopher Hoy, Steve Morling, Mark O'Shea, Liyi Pan, Sam Reinhardt, Daniel Silva Withmory, Jim Thomson, and Luke Willard.

Executive summary

As a resource rich economy with a relatively high demand for capital, Australia has had more abundant investment opportunities than were fully financed by Australians. This has led to capital inflow that has built up capital, incomes and wages – and also net foreign liabilities. Most of those are foreign debt rather than foreign equity.

A hypothetical policy is considered to reduce capital inflow by restricting investment. Lower investment will lower production and income in Australia. Lower capital inflow, over time, would reduce net foreign liabilities. Modelling using the Monash Multi Regional Forecasting (MMRF) model quantifies these two effects. The reduction in income from lower production is found to be only partially offset by the increase in income arising from lower net foreign liabilities. For example, a reduction of capital inflow and investment of 1 per cent of GDP will reduce gross national income by about half a per cent each year in the first decade relative to baseline.

Other things being equal, restrictions on capital inflow (including foreign investment) would reduce Australian investment, production and incomes. In turn, this would reduce the wellbeing of Australians.

Introduction

Australia has a long history of capital inflow, which is foreign funding of investment in Australia, either by lending to Australians or directly investing in Australian enterprises.² Australia has had more abundant investment opportunities than were funded from the limited domestic saving of a small population. It has relied on foreign funds to finance the shortfall between national investment and national saving for all of the last three decades and for most of its history before that.

Capital inflow has helped to build the stock of productive capital and increase living standards, which have enhanced the wellbeing of Australians. Other benefits of capital inflow could also occur through better access to international markets and greater transfers of skills and ideas from overseas, though these issues are not explored in this article. However, capital inflow has also resulted in an accumulation of net foreign liabilities. Whether this is foreign debt or foreigners' ownership of assets in Australia, this has sometimes caused community sensitivity and concern. Foreign debt has different characteristics from foreign equity, largely concerning who bears risks and

² In this article, capital inflow always means net foreign capital inflow. This is gross inflows less gross outflows. It is the balance on the capital and financial accounts in the balance of payments, and covers both debt and equity inflows. This article abstracts from the data measurement issues that the ABS confronts and that give rise to errors and omissions.

what returns are received in compensation. Restricting one particular type of capital inflow may just shift capital inflow to a different type of inflow.

This article explores the economic consequences of capital inflow by analysing the effects on net foreign liabilities, income and the macroeconomy of a sudden and ongoing reduction in capital inflow arising from lower investment. Unless otherwise specified, in this article no distinction is made between debt and equity. Even if the restriction applied to only part of capital inflow, such as direct investment, it could still reduce total capital inflow. In this case, the results in this article still apply because a reduction in capital inflow must occur with a reduction in investment if saving is unchanged. If the restriction does not reduce total capital inflow then it must change only its composition and the policy would have been ineffective in changing the level of net foreign liabilities.

The first part of this article looks at the history of Australia's capital inflow and net foreign liabilities, including their components. The second part looks at Australia's imbalance between saving and investment in recent decades. The third part has a comparative static analysis of the consequences of lower investment and capital inflow. The fourth part presents some modelling results from a reduction in capital inflow using the Monash Multi Regional Forecasting (MMRF) model of the Australian economy. The technical appendix provides a detailed explanation for these results.

Capital Inflow into Australia

Net capital inflow into Australia represents net new investment made by foreigners in Australia. This is the amount invested by foreigners in Australia, less the amount that Australians invested overseas. It comprises both debt and equity.

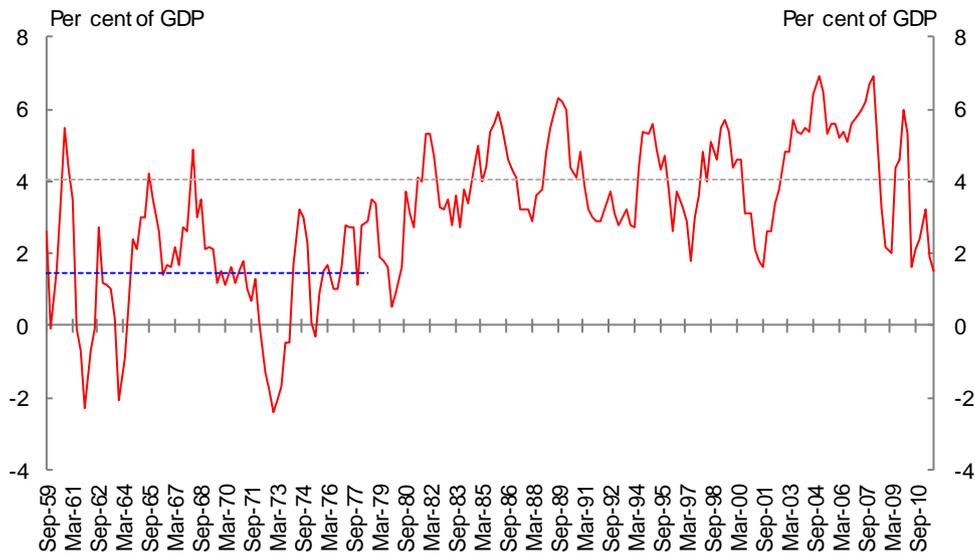
By definition (and abstracting from measurement difficulties), capital inflow also equals Australia's current account deficit (CAD). The value of Australian imports and other current payments to foreigners may be larger than the value of Australian exports and other current receipts from foreigners, which results in a CAD. The CAD must be funded through capital inflow (abstracting from changes in official reserve assets).³

Capital inflow in Australia has fluctuated in the last five decades, averaging about 4 per cent of GDP since the early 1980s, having risen from lower average levels in the 1960s and 1970s (Chart 1).

³ The rest of this article assumes that there is no change in official reserve assets.

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Chart 1: Capital inflow into Australia

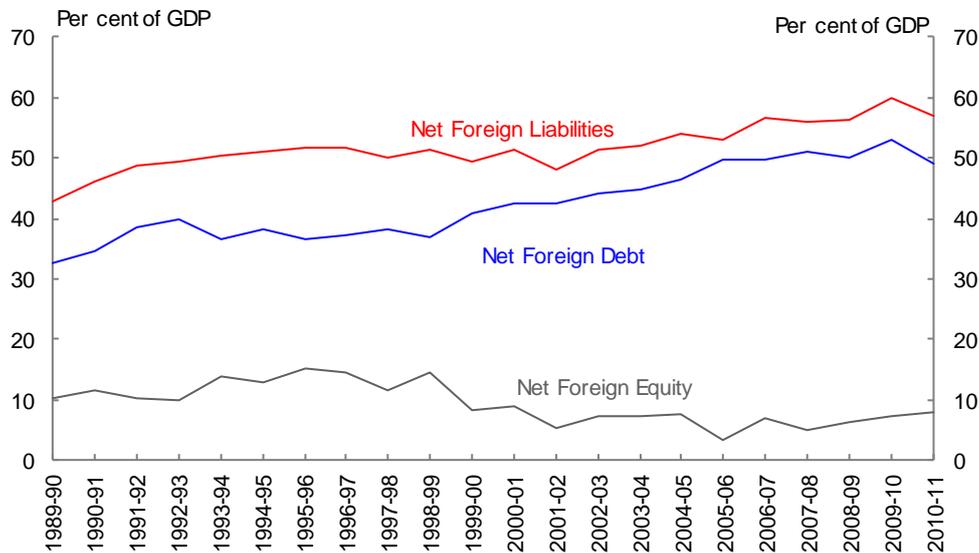


Source: ABS (2011a) Cat No.5302.0 Table 35, Quarterly data, Current Account Deficit to GDP ratio.

Capital inflow accumulates into the stock of net foreign liabilities (Chart 2), which is defined as Australia's gross foreign liabilities less gross foreign assets. This is also referred to as the 'international investment position'. Valuation changes arising from asset price and exchange rate movements also affect the value of net foreign liabilities. Australia's net foreign liabilities have risen, from just above 40 per cent of GDP in 1989-90 to nearly 60 per cent of GDP in 2010-11.

These net foreign liabilities comprise two different parts. Net foreign debt reflects the total debt liabilities of Australian residents to foreigners minus the debt liabilities of foreign residents to Australian residents. Net foreign equity reflects the total value of Australian equity assets owned by foreign residents minus the total value of overseas equity assets owned by Australian residents.

Chart 2: Net foreign liabilities



Source: ABS (2011a) Cat No.5302.0 Table 85.

Net foreign liabilities are expected to earn returns that are sent back overseas. For debt, interest is paid and at the term of the debt the initial borrowed amount is repaid. For equities, dividends are paid (retained earnings increase expected future returns). Dividends and interest contribute to the CAD.

Australia's net foreign debt grew from 33 per cent of GDP in 1988-90 to 50 per cent of GDP in 2010-11. Over the same period, Australia's net foreign equity as a share of GDP declined from 10 per cent of GDP to 8 per cent.

Debt has different characteristics from equity. For example, equity holders bear a greater share in the risks of a project than holders of debt and therefore returns to equity are higher on average. Debt tends to be more liquid (the risk is borne by the borrower) and the returns are lower.

The levels and ratio of foreign debt and equity can have implications for Australia's macroeconomic performance. One way is that if Australian investment is debt funded then it increases the gearing ratio of the Australian economy and increases risks to Australian business. In extreme cases, equity holders can earn nothing or face bankruptcy. Where foreign debt is denominated in foreign currency and not hedged

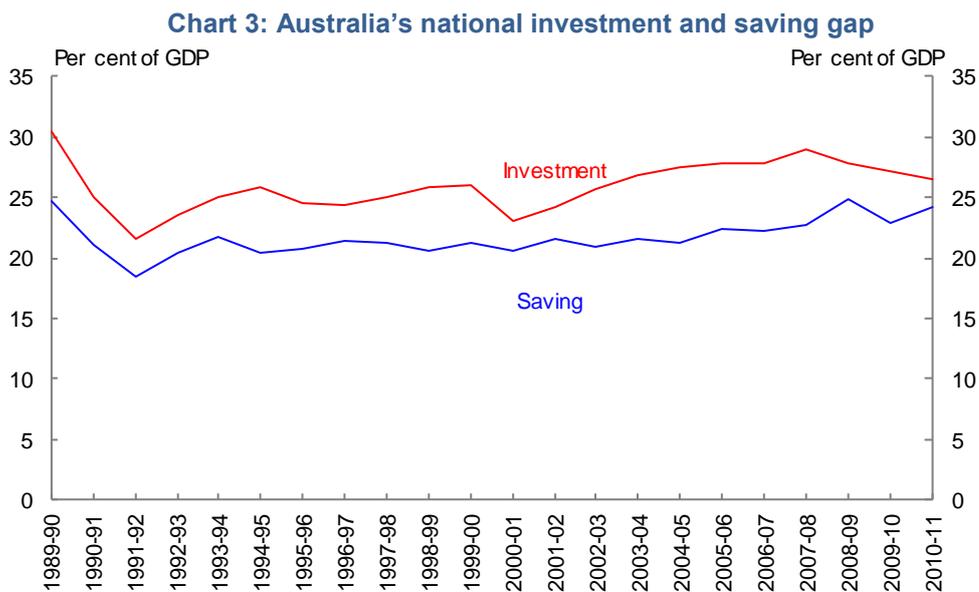
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then a fall in the Australian dollar raises the Australian dollar value of the debt and the interest costs.⁴

Australia's national investment and saving gap

As a resource rich economy with a relatively high demand for capital, Australia has had more abundant investment opportunities than were fully financed by Australians (Chart 3). Consequently, foreign funds have financed the shortfall between investment and national saving for decades. This is the capital inflow described above.

Australia's capital inflow reflects changes in both national saving and investment. National saving, at around 24 per cent of GDP in 2010-11, has been increasing in recent years. It is now above the average levels of national saving of the G7 group of countries, equal with Japan (the highest in G7) and well above the levels in the United Kingdom (13 per cent) and the United States (12 per cent) (IMF 2011, World Economic Outlook).⁵



Source: ABS (2011b) Cat No. 5206.0, Annual, Tables 43 and 65.

⁴ It is worth noting that Australia's exposure to foreign currency risk is minimal – more than 90 per cent of our foreign liabilities are either denominated in, or hedged back into, Australian dollars.

⁵ G7 countries are Canada, France, Germany, Italy, Japan, the United Kingdom and the United States.

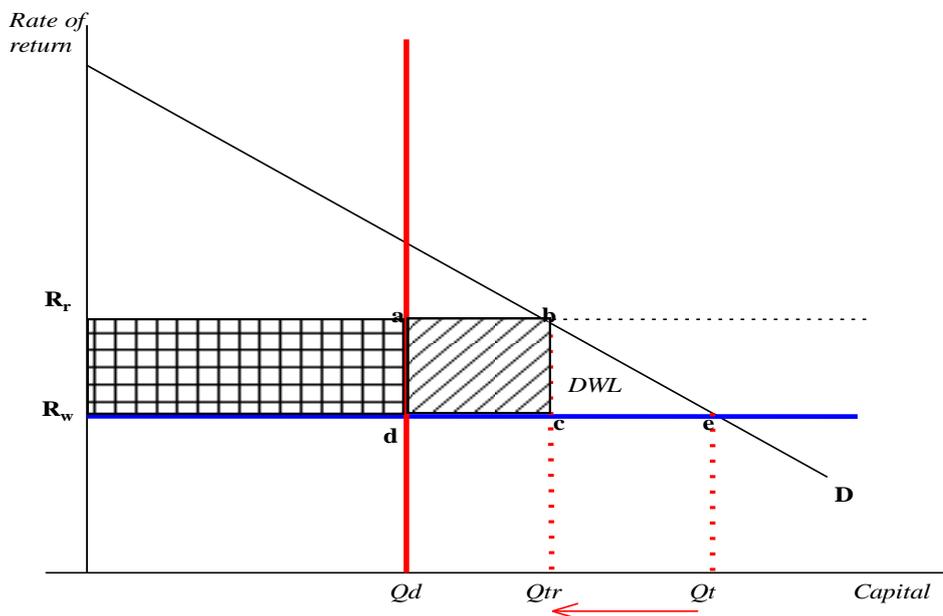
National investment, at around 27 per cent of GDP in 2010-11, has also been higher on average in the last decade. Australia's national investment rate has averaged 27 per cent of GDP in the past decade, considerably higher than the average of 19 per cent of GDP for the G7 economies (IMF 2011, World Economic Outlook). This is higher than any G7 economy and one of the highest levels in OECD countries. The benefits of this investment are considered below.

Overall, the gap between national investment and saving has been around 4 per cent of GDP over the past three decades (Chart 1). In theory and abstracting from measurement difficulties, this is the capital inflow that represents how much foreign savings Australia uses to fund its investment.

Analysing a lower capital inflow

This section presents a comparative static analysis of the consequences of a lower level of capital inflow into Australia arising from lower investment. Assume that the amount of domestic saving in Australia is fixed (Q_d) whereas any amount of foreign saving is available at a fixed rate of return (R_w) (Chart 4). Also assume that the demand for capital is a declining function of the rate of return (D) and that all foreign funding is by equity.

Chart 4: Impact of limiting capital inflow



Without any restrictions on foreign capital, domestic funding will be supplied up to Q_d at the world rate of return. Beyond that, capital inflow funds all investment between Q_d and Q_t .

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With a restriction on capital inflow and investment, the amount of total investment falls to Q_{tr} and the amount of foreign investment falls to the difference between Q_d and Q_{tr} . The lower level of capital drives up the rate of return from R_w to R_r .

The area ' beQ_iQ_{tr} ' is a loss to Australian GDP. Firms would have liked to use foreign capital to produce output shown by D, but they are denied access to Australia. The triangle ' bce ' is the loss to Australian gross national income (GNI) and welfare. The rectangle ' ceQ_iQ_{tr} ' is the loss to Australian production that was produced by foreign owned capital.

The rectangle ' $abcd$ ' represents the increase in payments overseas on foreign owned capital. This arises because the foreign investors who remain enjoy an increase in their rate of return on capital. Previously, this income would have been paid as wages to Australians. While this is not a loss to GDP, it is a loss to GNI and welfare.

The triangle ' bce ' and the rectangle ' $abcd$ ' represent the total loss to GNI and welfare. Other things being equal, they represent a clear loss to the wellbeing of Australians.

Note also that the rectangle ' $R_r ad R_w$ ' represents a transfer of income from Australian wage earners to Australian capital owners. Previously, owners of capital had a rate of return R_w whereas now they have the higher rate R_r . These higher rates of return are at the expense of lower wage rates. This may also affect the wellbeing of Australians because of its distributional consequences.

Modelling a lower capital inflow

This section presents model simulation results for the Australian macroeconomy of a lower level of capital inflow into Australia arising from lower investment.

The precise mechanism that leads to this lower capital inflow is not explored in this paper. Instead, the outcomes from limiting capital inflow and investment are explored. (A change in domestic saving would also affect capital inflow, but would involve different policies, issues and outcomes, and is not considered in this article.)

All results are considered relative to a baseline where no limit or reduction in capital inflow is imposed. For example, an observation that investment is lower would mean that investment is lower than it was in the baseline, rather than that it was lower than in the previous year or that its growth rate was lower.

The model used was the Treasury version of the Monash Multi Regional Forecasting (MMRF) model.⁶ It models over fifty industries and goods and services, covers eight states and territories, and contains a full set of identities for goods markets, labour markets, international transactions and income flows. It also contains some simple assumptions for the behaviour of consumers, investors and government. It abstracts from the behaviour of financial markets, ignores some important distinctions between debt and equity financing and does not model interest rates or changes in inflation.

Since there is no specific policy proposal to restrict capital inflow, a lower level of capital inflow with a magnitude equal to 1 per cent of GDP is considered. That is about one quarter of the average net capital inflow during the last two or three decades and just over one tenth of average gross capital inflow. This amount is blocked but other factors may make an additional change to investment over time. This is explained in more detail in the technical appendix.

Key macroeconomic results of the modelling are reported in Table 1 for the first 10 years after the restriction commences. As described above, all results are the difference between this simulation and the baseline. For example, a result of 1 per cent means that something is 1 per cent higher than the baseline, not that it is 1 per cent higher than the previous year or that its growth rate is 1 percentage point higher.

⁶ The Treasury version of the MMRF model which is used in this article was also used to analyse the impacts of carbon pricing on the Australian economy. More details on this model can be found in the *Strong growth low pollution* (SGLP) report and *Australia's low pollution future* (ALPF) report (Australian Government, 2011 and 2008). The baseline used here is the modelling of the Government carbon pricing scenario done for the SGLP report. The MMRF model has also been used by other agencies for other purposes, including by the Productivity Commission to examine the effects of microeconomic reforms.

The macroeconomic effects of lower capital inflows

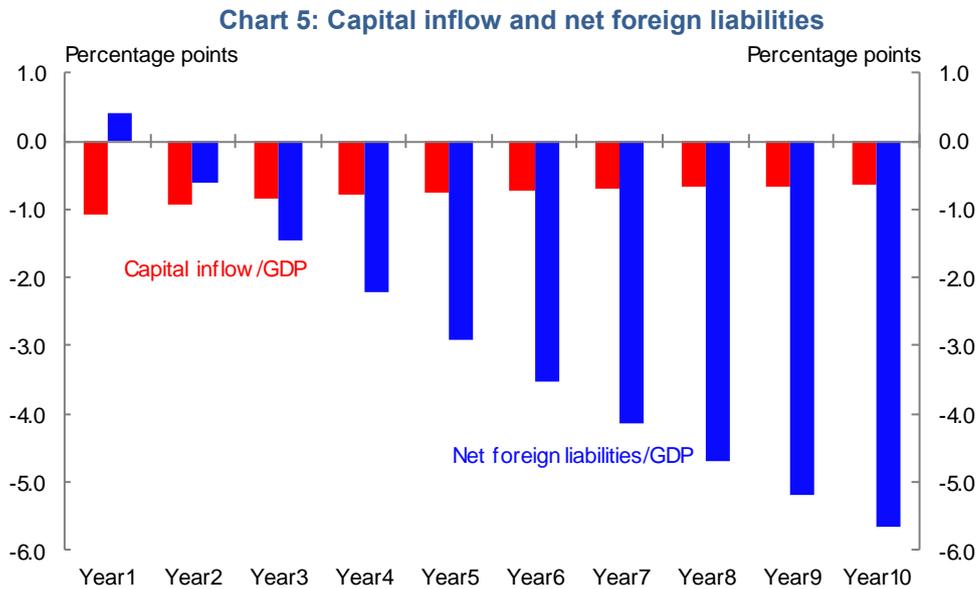
Table 1: Macroeconomic effects of lower capital inflow by 1 per cent of GDP
Change from the baseline

	Year1	Year2	Year3	Year4	Year5	Year6	Year7	Year8	Year9	Year10
GDP	-0.4	-0.4	-0.4	-0.5	-0.5	-0.5	-0.6	-0.6	-0.7	-0.7
Contributions										
Consumption	-0.3	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Investment	-1.3	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
Government	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.5
Imports	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
GNI	-0.6	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.6
Real exchange rate	-4.1	-2.6	-1.7	-1.2	-0.9	-0.6	-0.4	-0.3	-0.1	-0.1
Terms of trade	-0.9	-0.7	-0.5	-0.5	-0.4	-0.3	-0.3	-0.2	-0.1	-0.1
Private consumption	-0.7	-0.5	-0.5	-0.4	-0.4	-0.4	-0.4	-0.4	-0.5	-0.5
Govt consumption	-0.4	-0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
Investment	-3.8	-3.5	-3.4	-3.3	-3.2	-3.2	-3.2	-3.2	-3.2	-3.1
Exports	4.2	3.4	2.9	2.5	2.1	1.8	1.5	1.2	0.9	0.7
Imports	-2.1	-1.6	-1.3	-1.2	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1
Capital stock	0.0	-0.2	-0.5	-0.7	-0.8	-1.0	-1.2	-1.3	-1.4	-1.5
Cost of capital	-0.5	-0.1	0.3	0.6	0.9	1.1	1.2	1.4	1.5	1.6
Price of investment	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.5	-0.5	-0.5	-0.5
Wages	-0.4	-0.8	-1.0	-1.3	-1.4	-1.6	-1.7	-1.8	-2.0	-2.0
Employment	-0.5	-0.4	-0.3	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1
NFL/GDP (% point)	0.4	-0.6	-1.5	-2.2	-2.9	-3.5	-4.1	-4.7	-5.2	-5.7
CAD/GDP (% point)	-1.1	-0.9	-0.9	-0.8	-0.7	-0.7	-0.7	-0.7	-0.7	-0.6

Note: GDP contributions are percentage point contributions to GDP deviation from baseline. NFL and CAD as a share of GDP is the change in the ratio in percentage points from baseline.

Source: Treasury estimates from MMRF model.

In this simulation, capital inflow is lower by design (Chart 5). This also leads to a reduction in net foreign liabilities over time. The exception is the first year, when net foreign liabilities rise because a lower exchange rate increases the Australian dollar value of foreign debt denominated in foreign currency.



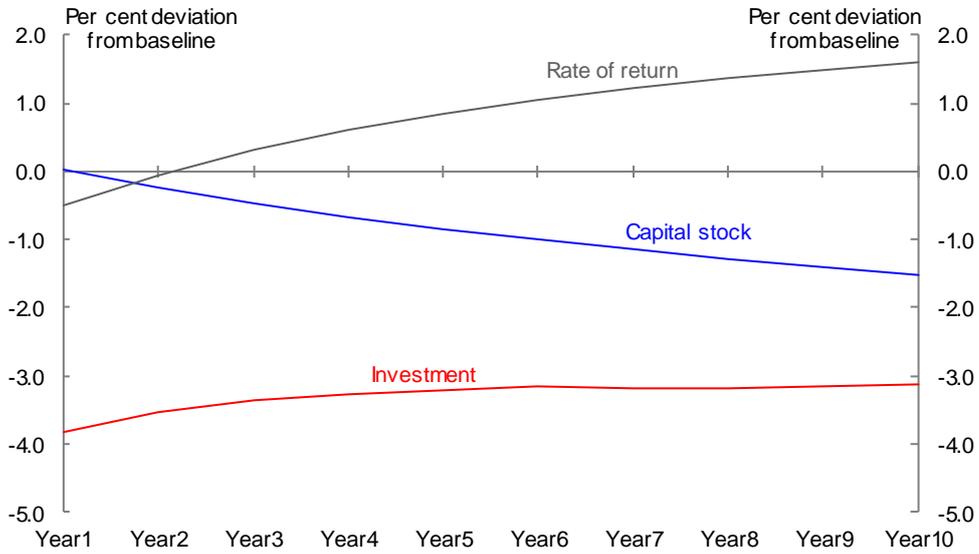
Source: Treasury estimates from MMRF model.

Investment is also lower (Chart 6). The lower investment causes a lower capital stock, with the difference from baseline increasing over time. Initially, this lower investment reduces demand and profitability. Over time, the growing shortage of capital increases the rate of return on capital.

As a result of lower capital inflow and investment, employment and real wages are lower (Chart 7). Over time, the lower employment leads to increasingly lower real wages relative to baseline. These lower real wages gradually help employment return towards its baseline level. Therefore, the initial labour market impact is on employment and wages. The long-run effect is on wages and living standards as employment moves back to its baseline level. The lower levels of wages and employment reduce the incomes and living standards of many Australians and, other things being equal, would lead to lower wellbeing for these Australians.

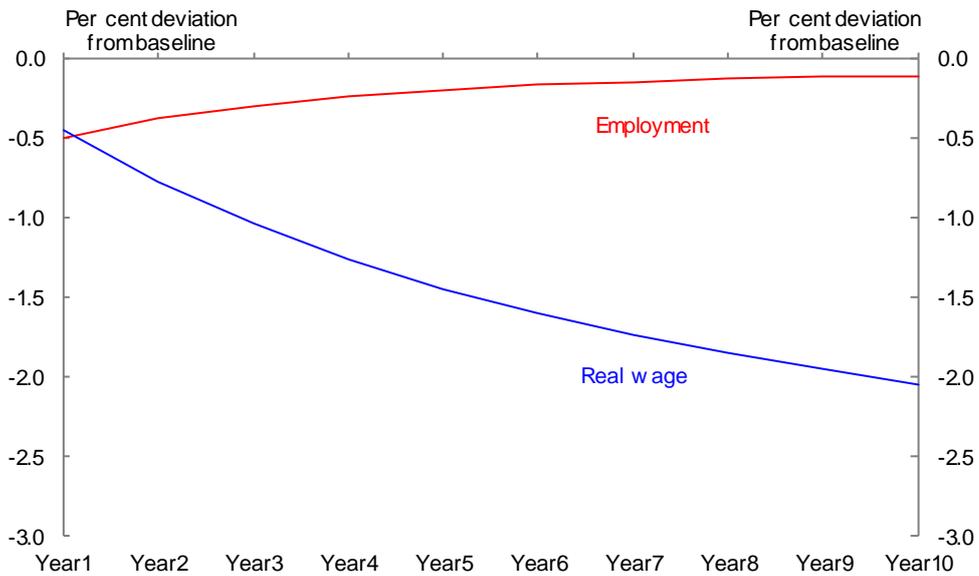
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Chart 6: Investment, capital and profitability



Source: Treasury estimates from MMRF model.

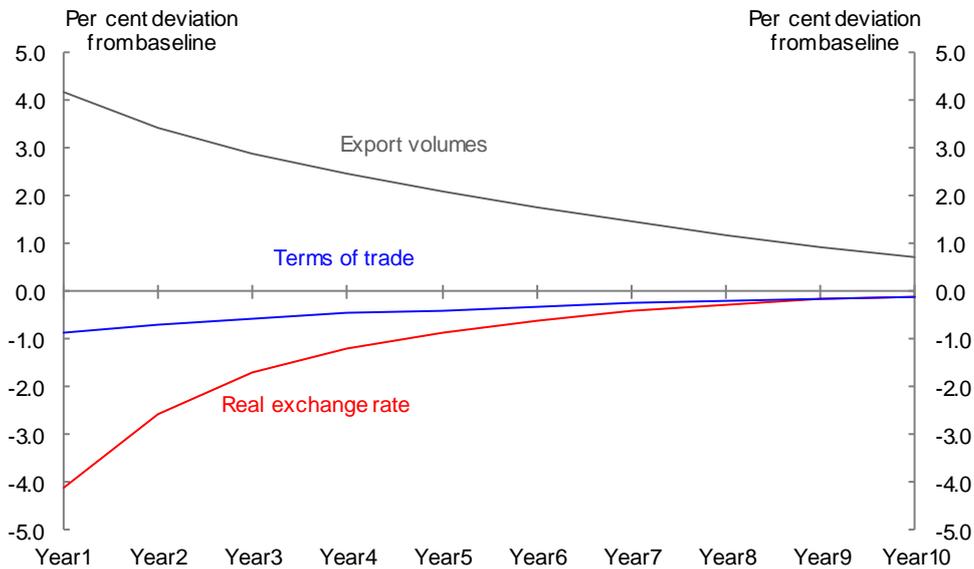
Chart 7: Labour market



Source: Treasury estimates from MMRF model.

The lower capital inflow reduces foreigner’s purchases of Australian currency. That reduces the exchange rate until the lower capital inflow is matched by fewer importers selling Australian currency and more exporters buying Australian currency (Chart 8).

Chart 8: Exports, terms of trade and exchange rate



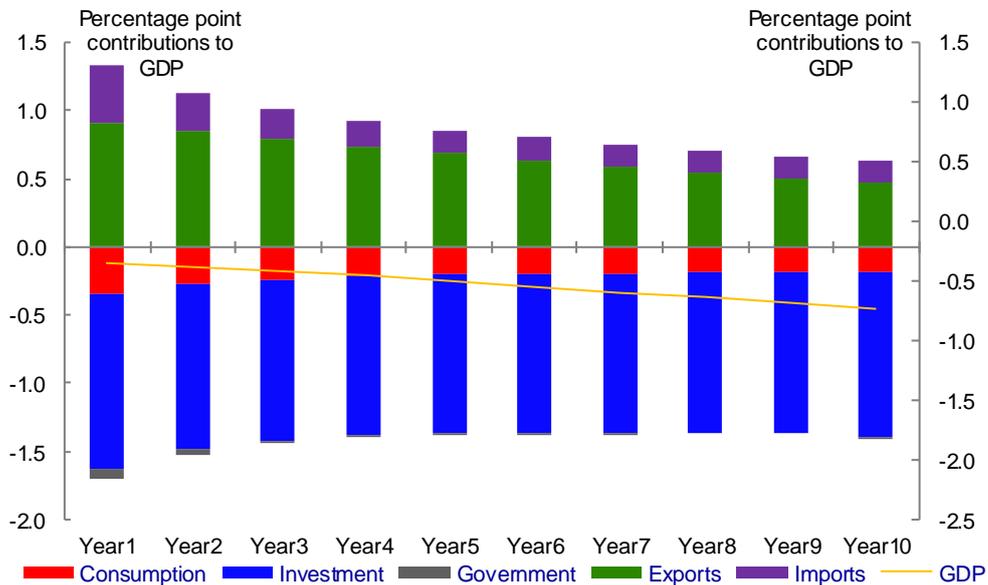
Source: Treasury estimates from MMRF model.

The lower exchange rate and the increase in export volumes also produce a lower terms of trade. Foreigners will buy more from Australia if there is a small reduction in the foreign currency price Australia charges for its exports, which is a small offset to the extra income from higher export volumes. This lower price produces a lower terms of trade.

Given the lower levels of employment and capital, production is lower and this is matched by changes in the composition of demand (Chart 9).

The macroeconomic effects of lower capital inflows

Chart 9: GDP and demand components



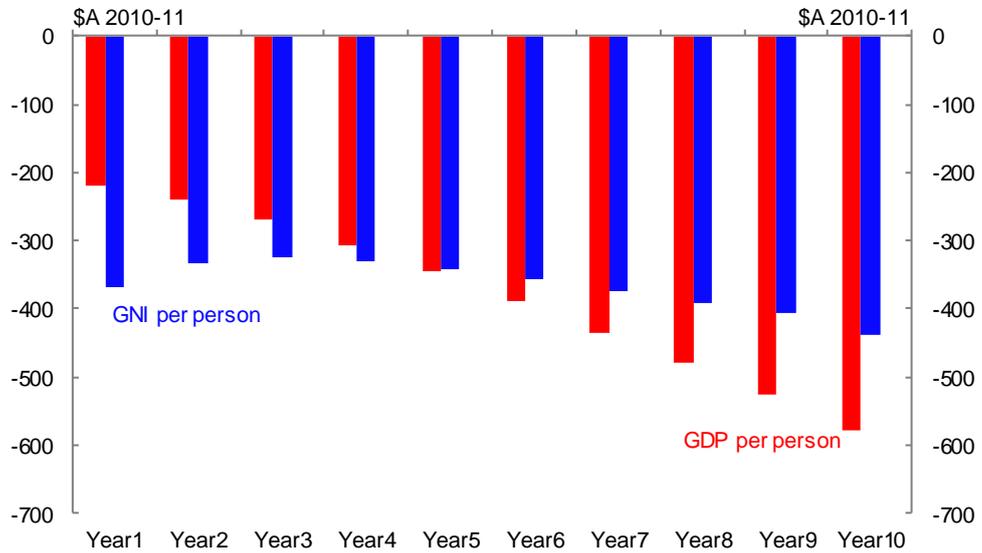
Source: Treasury estimates from MMRF model.

The negative contribution of investment to GDP is shown. In the first year, this is matched by a positive contribution from exports and imports, where the contribution from higher exports exceeds that from lower imports. These contributions match because the lower investment causes lower capital inflow, which causes the lower CAD, which equals the contribution from net exports.

Lower production and the lower terms of trade lead to lower incomes, which reduce consumption.

GDP per capita is lower (Chart 10). Gross national income (GNI) is also lower. Initially, the negative impact on GNI is larger than the negative impact on GDP because the lower international price of exports reduces the terms of trade and the purchasing power of Australian incomes. Later, the terms of trade effect becomes smaller and the lower net foreign liabilities reduce income payments to foreigners. Over time, the loss in GNI becomes smaller than the loss in GDP.

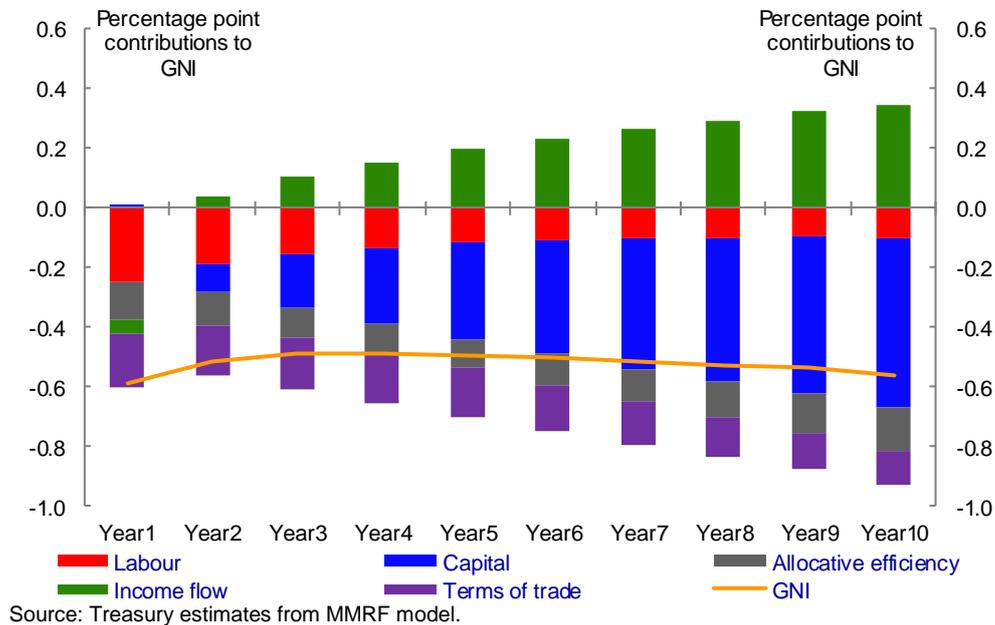
Chart 10: GDP per person and GNI per person
Change from baseline



Source: Treasury estimates from MMRF model.

A key result is that a restriction on capital inflow and investment equal to 1 per cent of GDP will reduce GNI by about half a per cent each year in the first decade (Chart 11).

Chart 11: Contributions to GNI deviation



Different factors contribute to this result. Since employment is lower in the short run, this leads to a lower contribution from labour to GNI. As capital falls relative to baseline, this leads to a lower contribution from capital to GNI. Since the restriction on investment affects capital intensive industries more than labour intensive industries, there is also a loss to GNI from lower allocative efficiency. The lower terms of trade further reduces GNI.

Except for the first year, lower net foreign liabilities lead to lower income payments overseas. The detraction from GNI from lower production and other factors outweighs any supplement to GNI from lower income payments.

The broad magnitudes of these results can be obtained from other models too. For example, similar reductions in investment, GDP and the terms of trade can also be produced with a similar simulation using the G-cubed model of the international economy (McKibbin and Wilcoxon, 1999). This is significant because G-cubed is a different type of model with endogenous interest rates, endogenous inflation, forward looking financial markets and some forward looking investors and savers.

This suggests that, other things being equal, restrictions on capital inflow would reduce the wellbeing of Australians.

Conclusion

This article examined the history of Australia's capital inflow and net foreign liabilities in recent decades. Net foreign liabilities are mostly comprised of net foreign debt rather than net foreign equity. The capital inflow funds that part of domestic investment not funded by domestic saving.

Some of the benefits of capital inflow are shown by using the MMRF model to estimate how much lower gross national income would be if capital inflow and investment was restricted. That would result in Australians having lower levels of income and wages in the long run than they would otherwise enjoy. It is also likely to lead to lower employment levels in the short term. The reduction in national income from less capital outweighs the increase in national income from less net foreign liabilities for at least the first decade. For example, a restriction on capital inflow and investment equal to 1 per cent of GDP will reduce gross national income by about half a per cent each year in the first decade. This suggests that, other things being equal, restrictions on capital inflow and investment would reduce the wellbeing of Australians.

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Technical appendix

This technical appendix contains the detailed analysis underlying the results presented in the article. First it considers the long-run effects of less capital inflow using some general macroeconomic principles. Then it considers the results from the Monash Multi Regional Forecasting (MMRF) model. It also presents the results from a larger reduction in investment and capital inflow.

Long-run effects of less capital inflow

This section considers what effect a lower level of capital inflow arising from lower investment into Australia would have on the Australian macroeconomy once capital stocks have fully adjusted. This abstracts from the adjustment process, which may take some time.

Since there is no policy proposal to restrict capital inflow, a lower level of capital inflow with a magnitude equal to 1 per cent of GDP is considered. That is about one quarter of the average capital inflow for the past three decades. It is also about 4 per cent of investment. This is a reduction in the level of capital inflow under the assumption that other things are unchanged. Since the supply curve for the financing of investment shifts to the left, rather than investment being fixed at a lower level, other things do change, including the levels of GDP and investment. This better replicates the features of a hypothetical policy where the overall level of investment is not set.

The precise mechanism that leads to this lower capital inflow is not important, except that it arises from some limitation on capital inflow and not from domestic saving. (A change in domestic saving would affect capital inflow, but would involve different policies, issues and outcomes, and is not considered in this article.)

The analysis in this section is based on macroeconomic principles under certain simplifying assumptions. It focusses on the most important transmission mechanisms in the economy so that less important effects are not discussed. The numbers presented indicate magnitudes but are not necessarily precise.

This analysis is not specific to any particular model of the Australian economy. Nevertheless, it addresses issues covered in any macroeconomic model because it uses economic principles and theory.

All results are considered relative to a baseline where no limitation or reduction in capital inflow is imposed. For example, an observation that investment is lower would mean that investment is lower than it was in the baseline, rather than that it was lower than in the previous year or that its growth rate was lower.

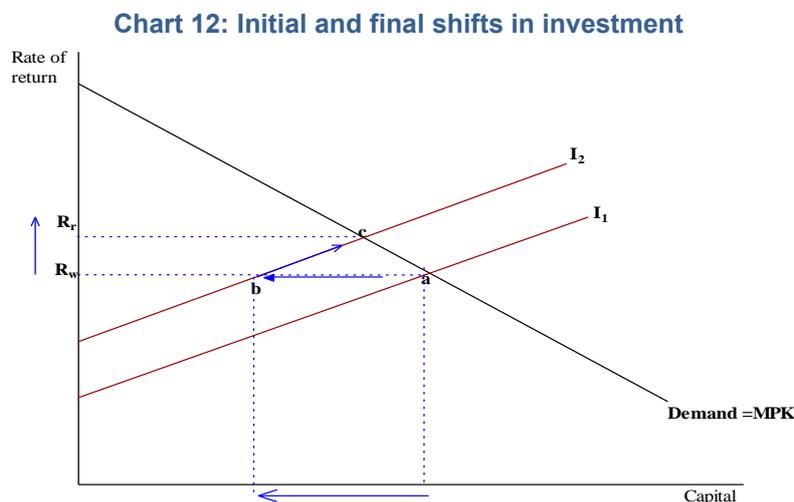
The macroeconomic effects of lower capital inflows

Australia is a small open economy with a flexible exchange rate and relatively free capital mobility between Australia and the rest of the world. The economy-wide saving and investment gap is equivalent to capital inflow or the use of foreign saving. This accounting identity is shown below as equation (1).

$$I - S \equiv \text{capital inflow} \quad (1)$$

This equation shows that investment in Australia (I) must be financed by either domestic saving (S) or by foreigners through capital inflow. If capital inflow is lower and domestic saving remains unchanged then investment must be lower by the same amount. If capital inflow is lower by 1 per cent of GDP then investment will also be 1 per cent of GDP lower, other things being equal. Given the current composition of the economy, this is equivalent to investment being about 4 per cent lower. This lower level of investment will lead to a lower level of capital.

The initial reduction in investment is not the same as the eventual change in investment (Chart 12). Initially, the investment schedule shifts to the left (from a to b) because less investment will be undertaken at any rate of return. However, the lower level of capital will increase the rate of return to capital. That will lead to a greater incentive to invest and more investment proposals (the shift from b to c). While some of these could be funded domestically, the rest will be funded by foreigners. That will lead to additional capital inflow that is a partial offset to the initial amount of capital inflow that was blocked.



The following analysis assumes that the higher rate of return provides a partial offset to investment of (an arbitrary) 1 per cent. That will result in investment being only 3 per cent lower in the long run.

In the long run, lower investment will lead to a lower stock of capital. Lower capital will reduce the supply of factors of production in the economy and so reduce output. Given the current composition of the economy as shown by wages and profits, capital probably contributes about a third of total factors. On this basis, the 3 per cent lower capital will contribute to output being about 1 per cent lower if the amount of labour is unchanged.

The labour market is assumed to clear in the long run so that the demand and supply for labour match. Under the assumption that labour supply is unchanged, employment will also be unchanged.

Unchanged employment will require a change in wages, given that capital and production are lower. With capital and production being lower, an unchanged demand for labour requires a higher ratio of labour to capital and a higher ratio of labour to production. If production is lower by about 1 per cent then the ratio of labour to production must also rise by about 1 per cent if the demand for labour is to be unchanged.

The relevant elasticity for labour demand is likely to be less than one in Australia (including because we have seen the wages share increase when real wages rose in the 1970s). If this elasticity is equal to one half, then a 1 per cent increase in the ratio of labour to production requires real wages to be about 2 per cent lower.

With unchanged employment, but wages about 2 per cent lower, labour income is about 2 per cent lower. This reduction in labour income would reduce the incomes and, other things being equal, the wellbeing of most Australians.

Lower capital increases the rate of return on capital. If production is 1 per cent lower and capital is 3 per cent lower, then the ratio of capital to production is 2 per cent lower. Assuming an elasticity of a half, this leads to an increase in the rate of return to capital of about 4 per cent. (That is not an increase of 4 percentage points. Instead, it means that a baseline rate of return of 10 per cent would increase to a rate of return of 10.4 per cent, which is higher by 4 per cent of 10 percentage points.)

Having considered the size and structure of the supply side of the economy, which is about 1 per cent lower with less capital and more labour intensity, now consider the demand side of the economy.

By assumption, capital inflow is lower. By identity, this means that the current account deficit (CAD) is also lower. If interest payments and the other non-trade components of the CAD change little, then the change must be largely on net exports. If capital inflow is lower by about 1 per cent of GDP then net exports must be higher by about 1 per cent of GDP.

The macroeconomic effects of lower capital inflows

The exchange rate moves to ensure that the lower capital inflow is matched by a lower CAD. If capital inflow is lower then there are fewer foreigners buying Australian dollars to invest here. The exchange rate is reduced to a level where either more exporters buy Australian dollars or fewer importers sell Australian dollars.

Australia's exports are generally thought to be much more price elastic than our imports. That is partly because many of our exports are fairly homogenous commodities sold into large world markets where small differences in price are significant. It is partly because many of our imports are of investment goods and business inputs that are much less price sensitive.

In the (extreme) situation where all of the increase in net export was provided by an increase in exports, exports contribute 1 percentage point to GDP and exports would increase by about 4 per cent. If the elasticity of demand was about -4, then a 4 per cent increase in exports requires an increase in international competitiveness of about 1 per cent. Therefore, the exchange rate is about 1 per cent lower, abstracting from changes in the price of exports, the terms of trade and imports.

To the extent that capital inflow is lower by about the same amount as investment, the positive contribution from higher net exports will be about equal to the negative contribution from lower investment.

Since GDP is about 1 per cent lower and the contributions from investment and net exports broadly offset each other, the contribution from consumption must contribute about 1 percentage point to the lower in GDP. Equivalently, it must be lower by a little more than 1 per cent.

This is not a surprising result. If production is lower by about 1 per cent then private incomes and tax revenue will be lower by about 1 per cent. Also, higher export volumes will require some reduction in export prices, which reduces the terms of trade and further reduces real incomes. With unchanged budget deficits, government expenditure will be lower by about 1 per cent or more in line with lower tax revenue and tax bases. With unchanged private saving rates, private consumption will be lower by about 1 per cent or more in line with private income.

This analysis captures the main transmission mechanisms and establishes some expected directions of change and magnitudes. However, these results are not exact and they abstract from many other influences that are individually of smaller magnitude. For example, relative prices will likely shift, so that the price of consumption and investment may change relative to the price of output. Also, lower capital inflow reduces net foreign liabilities so that interest and dividend payments are lower. Further, different industries will be affected differently and compositional effects have been ignored.

To establish more precise relationships requires more assumptions, elasticities and data. It is also advantageous to take into account all the other relationships that were not considered above. Models of the Australian economy provide these advantages.

Some modelling results

Having analysed the likely long run effects on the macroeconomy, including directions and magnitudes of change, this section considers the results produced by one model of the Australian economy.

The model used was the Monash Multi Regional Forecasting (MMRF) model. It models over fifty industries and goods and services, it covers eight states and territories, and it contains a full set of identities for goods markets, labour markets, international transactions and income flows. It also contains assumptions for the behaviour of consumers, investors and governments. It abstracts from the behaviour of financial markets, ignores any distinction between debt and equity financed projects and does not model interest rates or changes in inflation.

The Treasury version of the MMRF model which is used in this article has been used to analyse the impacts of carbon pricing on the Australian economy. More details on this model can be found in the *Strong growth, low pollution* (SGLP) report and *Australia's low pollution future* (ALPF) report (Australian Government, 2008 and 2011). The baseline used here is the modelling of the Government carbon pricing scenario done for the SGLP report.

The MMRF model has also been used by other agencies for other purposes, including by the Productivity Commission to examine the effects of microeconomic reforms.

MMRF was used to estimate the likely consequences of reducing capital inflow by 1 per cent of GDP, relative to what it would otherwise have been. However, since other things do not remain unchanged, capital inflow can move by more or less than that, including because of further changes in investment (Chart 12).

In MMRF, capital inflow is set by an identity along the lines of equation (1) and the lower capital inflow is achieved by reducing investment. Technically, the lower capital inflow is achieved by inserting into each industry's investment equation an increase in the hurdle rate of return calculated to reduce business investment by 1 per cent of GDP. As shown in equation (1) above, this is equivalent to a reduction in capital inflow equal to 1 per cent of GDP, other things being equal.

Key macroeconomic results are reported in Table 1 for the first 10 years in the main body of this article.

The macroeconomic effects of lower capital inflows

First, compare the results in year 10 to the long-run results discussed in the previous section.

In year 10 in Table 1, investment is 3.1 per cent lower and the capital stock is only 1.5 per cent lower. The level of investment is relatively stable but the capital stock is continuing to fall relative to baseline. That suggests that the economy is half way towards its long run adjustment for the capital stock.

In year 10, the 1.5 per cent lower level of capital has increased the rate of return by 1.6 per cent. This stimulates investment and the extra investment is funded by foreigners. This partly offsets the initial reduction in capital inflow and investment.

The year 10 results for employment and wages show that employment is 0.1 per cent lower while wages are 2.0 per cent lower. That suggests that the labour market is close to its long run result with much larger changes in wages than employment. The extent to which wages are lower is very similar to the long-run results from the previous section, even though the capital stock has only partially adjusted.

Production is 0.7 per cent lower in year 10. That is obtained on the supply side with 1.5 per cent lower capital and 0.1 per cent lower employment and reflects different ratios of labour to capital in different industries and movements between industries. The composition of demand is also broadly consistent with the long-run analysis in the previous section.

Investment makes the largest negative detraction from GDP of 1.2 percentage points.

Net exports make a positive contribution to GDP of 0.7 percentage points in total. The 0.5 percentage point contribution from higher exports is greater than the 0.2 percentage point contribution from lower imports. Imports are lower (1.1 per cent) by a little more than GDP. In contrast, exports are about 0.7 per cent higher despite GDP being 0.7 per cent lower. In summary, exports have moved more than imports, especially as a share of GDP, as expected.

In year 10, the exchange rate is 0.1 per cent lower. This is a smaller reduction than expected from the long-run analysis of the previous section. In MMRF, the export supply of agricultural and mining commodities is determined by the capital stock in those industries. This is determined by investment in those industries in previous years, which is strongly influenced by the exchange rate in those previous years. Since the exchange rate is lower by about 1 per cent on average in the first ten years, investment is higher in export oriented industries. So exports are higher in year 10 because they were previously internationally competitive as well as because of the small increase in international competitiveness in year 10.

Consumption and government expenditure are the remaining demand side components of GDP. Consumption makes a contribution of -0.2 percentage points to GDP. Gross national income (GNI) is 0.6 per cent lower. Lower household incomes lead private consumption to be 0.5 per cent lower. Net foreign liabilities as a percentage of GDP are nearly 6 percentage points lower. This is a result of the lower levels of capital inflow in the preceding years. Capital inflow initially fell by nearly 1 per cent of GDP but by year 10 it has partially recovered as the higher rate of return stimulates investment further, which at the margin is funded by foreigners.

The results for the first year of the simulation from Table 1 are now analysed.

Capital inflow of 1 per cent of GDP will lower investment by 3.8 per cent. This subtracts 1.3 percentage points from GDP on the demand side. So far, demand is lower and that has not yet been matched by lower supply. Three different factors work to bring demand and supply into balance. Employment is 0.5 per cent lower. This lower level of labour inputs explains why production is 0.4 per cent lower. The lower level of employment lowers real wages, which continue to fall relative to baseline for many years subsequently while employment is still lower than the baseline.

The exchange rate is 4.1 per cent lower. This provides the increase in international competitiveness to make exports 4.2 per cent higher and imports 2.1 per cent lower. Together, these positively contribute 1.3 percentage points to GDP, which matches the 1.3 percentage point deduction to GDP from lower investment. This matching is due to the equivalence between the contraction of capital inflow and the CAD. The lower investment corresponds to a lower level of capital inflow, while the initial increase in net exports is a result of the current account deficit being lower by exactly the same amount as capital inflow. As noted above, the lower exchange rate stimulates net exports now and, by drawing investment into the export oriented sectors; helps boost exports in future too.

With investment initially offset by net exports, lower production must be the result of lower consumption and government expenditure. GNI is 0.6 per cent lower. Part of this arises from 0.4 per cent lower production. Part of this also comes from a decline in the terms of trade since exporters cut their foreign currency prices to win higher market shares, which further reduces real incomes. (Note that it is only a partial offset to the boost to exports described above.) Private consumption is 0.7 per cent lower in the first year.

The results above focus on a reduction in capital inflow of an arbitrary 1 per cent of GDP or equivalently investment that is 3.8 per cent lower. Given that Australia has experienced levels of capital inflow over the last thirty years that average about 4 per cent of GDP (Chart 1); Box 1 considers the impact of a larger reduction in investment equal to 4 per cent of GDP.

The macroeconomic effects of lower capital inflows

Box 1: Larger reduction in capital inflow and investment

This box considers the consequences of a larger reduction in capital inflow. Other things being equal, capital inflow is lower by 4 per cent of GDP (rather than 1 per cent), which is about the average level of capital inflow that has occurred in the last three decades (Chart 1). This is also equivalent to investment being 13.8 per cent lower. Table 2 contains some key results, which are about four times larger than the results reported in Table 1.

In the first year:

- investment is nearly 14 per cent lower;
- GDP is 1.2 per cent lower and GNI is 1.9 per cent lower;
- real wages are 1.5 per cent lower; and
- employment is about 1.7 per cent lower.

After ten years:

- investment is 11 per cent lower;
- GDP is 2.6 per cent lower and GNI is 2 per cent lower;
- real wages are 7.2 per cent lower; and
- employment is about 0.4 per cent lower.

Table 2: Macroeconomic impacts of capital inflow lower by 4 per cent of GDP
Change from the baseline

	Year1	Year2	Year3	Year4	Year5	Year6	Year7	Year8	Year9	Year10
GDP	-1.2	-1.3	-1.4	-1.6	-1.7	-1.9	-2.1	-2.2	-2.4	-2.6
Contributions										
Consumption	-1.1	-0.9	-0.8	-0.7	-0.7	-0.7	-0.7	-0.6	-0.6	-0.6
Investment	-4.6	-4.2	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1
Government	-0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports	3.3	2.9	2.7	2.5	2.3	2.1	2.0	1.8	1.6	1.5
Imports	1.4	1.0	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.6
GNI	-1.9	-1.7	-1.6	-1.7	-1.7	-1.8	-1.8	-1.9	-1.9	-2.0
Real exchange rate	-13.6	-8.4	-5.6	-4.0	-2.9	-2.0	-1.4	-0.9	-0.4	-0.2
Terms of trade	-2.8	-2.1	-1.7	-1.5	-1.2	-1.0	-0.8	-0.6	-0.4	-0.2
Private consumption	-2.2	-1.7	-1.5	-1.5	-1.5	-1.5	-1.5	-1.6	-1.6	-1.7
Govt. consumption	-1.3	-0.7	-0.4	-0.3	-0.1	-0.1	0.0	0.0	0.0	-0.1
Investment	-13.8	-12.4	-11.7	-11.3	-11.2	-11.1	-11.1	-11.0	-10.9	-10.8
Exports	14.3	11.4	9.6	8.1	6.8	5.6	4.6	3.6	2.6	1.9
Imports	-7.0	-5.3	-4.6	-4.2	-4.0	-3.9	-3.9	-3.8	-3.8	-3.9
Capital stock	0.1	-0.8	-1.5	-2.2	-2.8	-3.4	-3.9	-4.4	-4.8	-5.2
Cost of capital	-1.4	-0.1	1.0	2.0	2.9	3.6	4.2	4.7	5.2	5.6
Price of investment	-1.2	-1.3	-1.4	-1.4	-1.5	-1.6	-1.7	-1.8	-1.9	-1.9
Wages	-1.5	-2.7	-3.6	-4.4	-5.1	-5.6	-6.1	-6.5	-6.9	-7.2
Employment	-1.7	-1.3	-1.0	-0.9	-0.7	-0.6	-0.5	-0.4	-0.4	-0.4
NFL/GDP (% point)	1.3	-2.4	-5.4	-8.1	-10.5	-12.7	-14.9	-16.8	-18.6	-20.3
CAD/GDP (% point)	-4.0	-3.3	-3.0	-2.8	-2.7	-2.5	-2.4	-2.3	-2.3	-2.2

Note: GDP contributions are percentage point contributions to GDP deviation from baseline. NFL and CAD as a share of GDP is the change in the ratio in percentage points from baseline.

Source: Treasury estimates from MMRF model.

Treasury's Wellbeing Framework

Stephanie Gorecki and James Kelly¹

In undertaking its mission Treasury takes a broad view of wellbeing as primarily reflecting a person's substantive freedom to lead a life they have reason to value. Treasury has long had an understanding of welfare or wellbeing that extends beyond narrow measures of living standards, and a formal wellbeing framework since the early 2000s. That framework, as revised in 2011, is discussed.

¹ The authors are from Macroeconomic Group, the Australian Treasury. This article has benefited from comments and suggestions provided by Christine Carmody, Harry Greenwell, David Gruen, Simon Nash, Martin Parkinson, Kate Phipps, Spiro Premetis, Daniel Royal, Duncan Spender and Barry Sterland. A draft of this article was provided at the Wellbeing and Public Policy Conference, Wellington, June 2012, and benefited from comments by the discussant, Nick Carroll. The views in this article are those of the authors.

Introduction

As a central policy agency providing advice to the Australian Government, the Treasury is expected to anticipate and analyse a wide range of public policy issues from a whole-of-economy and a whole-of-society perspective, understand Government priorities and stakeholder circumstances, and respond rapidly to changing events and directions.

The breadth of this role is reflected in Treasury's mission statement, that states our objective is 'to improve the wellbeing of the Australian people by providing sound and timely advice to the Government, based on objective and thorough analysis of options, and by assisting the Treasury ministers in the administration of their responsibilities and the implementation of government decisions'.

While Treasury has had long standing and ongoing interest in wellbeing, since the early 2000s Treasury has also had a 'wellbeing framework' that sets out a conceptual approach for understanding wellbeing and provides high-level guidance to staff as to what needs to be considered in providing an objective and thorough analysis of options in advice to the Government of the day.

The original framework can be found in Treasury (2004), and was revised in 2011 following further internal discussions. It now forms part of the Treasury's Strategic Framework document (Treasury 2011) and is set out in full in Box 1.

Our goals in this paper are to provide historical context around the framework's development, and to flesh out the concepts and concerns underlying the framework. While we draw heavily on the thoughts and ideas of others expressed internally over many years, and in particular the views of former Secretary to the Treasury, Dr Ken Henry AC – under whose leadership the framework was originally developed – the views expressed remain very much our own.

Treasury's changing role and the development of a wellbeing framework

Over its history Treasury has evolved beyond its original role of balancing the Government's ledgers to having a central role in the broader policy debate in government. The role of Treasury with which we are familiar today is attributable in particular to the influence of Sir Roland Wilson, Secretary from 1951 to 1966, who sought to transform Treasury from its traditional accounting and budgetary role to an institution with the chief responsibility of providing economic advice to government.

Box 1: The wellbeing of the Australian people — the wellbeing framework

'In undertaking its mission Treasury takes a broad view of wellbeing as primarily reflecting a person's substantive freedom to lead a life they have reason to value.

This view encompasses more than is directly captured by commonly used measures of economic activity. It gives prominence to respecting the informed preferences of individuals, while allowing scope for broader social actions and choices. It is open to both subjective and objective notions of wellbeing, and to concerns for outcomes and consequences as well as for rights and liberties.

Treasury brings a whole-of-economy approach to providing advice to government based on an objective and thorough analysis of options. To facilitate that analysis, we have identified five dimensions that directly or indirectly have important implications for wellbeing and are particularly relevant to Treasury. These dimensions are:

- The *set of opportunities* available to people. This includes not only the level of goods and services that can be consumed, but good health and environmental amenity, leisure and intangibles such as personal and social activities, community participation and political rights and freedoms.
- The *distribution* of those opportunities across the Australian people. In particular, that all Australians have the opportunity to lead a fulfilling life and participate meaningfully in society.
- The *sustainability* of those opportunities available over time. In particular, consideration of whether the productive base needed to generate opportunities (the total stock of capital, including human, physical, social and natural assets) is maintained or enhanced for current and future generations.
- The overall level and allocation of *risk* borne by individuals and the community. This includes a concern for the ability, and inability, of individuals to manage the level and nature of the risks they face.
- The *complexity* of the choices facing individuals and the community. Our concerns include the costs of dealing with unwanted complexity, the transparency of government and the ability of individuals and the community to make choices and trade-offs that better match their preferences.

These dimensions reinforce our conviction that trade-offs matter deeply, both between and within dimensions. The dimensions do not provide a simple checklist: rather their consideration provides the broad context for the use of the best available economic and other analytical frameworks, evidence and measures.' (Treasury 2011)

When Sir Roland moved to Treasury from the Commonwealth Bureau of Census and Statistics in 1951, he set about building up the economic policy skills within Treasury. Prior to Sir Roland, Secretaries to the Treasury had come armed with accounting backgrounds; Sir Roland was the first economics-trained Secretary. The *Launceston*

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Examiner described Wilson's appointment as 'the first Australian experiment of this kind', and correctly predicted that all his successors would be economists too (Cornish 2001).

As a consequence, during the 1950s and 1960s Treasury was transformed into an agency that sought to achieve greater consistency between policy objectives within a market economy, bringing what today is described as a whole-of-government, whole-of-economy perspective to policy analysis and advice.

Early interest in wellbeing

Along with this economic focus came an unsurprising interest in wellbeing, for the 'ultimate purpose of economics ... is to understand and promote the enhancement of well-being' (Bernanke 2012). Doing so requires a concern for more than, for example, the fiscal position, material consumption or GDP alone. Two early works demonstrating this broad understanding of the objectives of public policy are noteworthy and are an historical link with Treasury's current understanding of wellbeing.

First, the November 1964 Supplement to the Treasury Information Bulletin, *The Meaning and Measurement of Economic Growth*, explored the nature of economic growth and its connection to wellbeing (Treasury 1964). Among other things, the paper explained that measures of trends in the market value of output, whether adjusted for price effects or not, cannot be taken as comprehensive and unambiguous measures of changes in total welfare.

Second, the Treasury Economic Paper, *Economic Growth: Is it Worth Having?* explored the broader wellbeing impacts of policy (Treasury 1973). The paper, written partly in response to the apocalyptic claims of the *Limits to Growth* study commissioned by the Club of Rome, examined the costs and benefits of economic growth with a focus on non-pecuniary outcomes, such as those in the natural environment. Precursors to the wellbeing framework can be glimpsed throughout the paper.

Why have a framework

Despite these antecedents, prior to the early 2000s there had been no explicit articulation of what wellbeing meant, and in particular, how an institution such as the Treasury should be incorporating consideration of wellbeing in its policy advice.

Treasury's mission statement prior to the current one focused on improving living standards, and emphasised economic policies and developments. The mission statement changed to its current form in October 1997, containing for the first time a direct reference to wellbeing as the primary objective. But with divergent internal

views as to how to interpret wellbeing, the Department initiated a process of internal discussion and debate on its meaning and application to policy analysis and advice.

The wellbeing framework developed as a consequence has the goal of setting out a broad understanding of wellbeing and related dimensions of particular relevance to Treasury. By providing an ongoing reminder to staff of the underlying objectives of their work it is one of the common threads that help tie the Treasury's work together. More specifically, the framework can be seen as having a number of roles, including:

- educating staff as to the objectives of public policy to motivate their analytical work, including understanding the underlying trade-offs that often need to be grappled with;
- signalling to those outside of the Treasury – individuals, organisations, other government agencies, and the Government – that our approach to public policy does not conform to simplistic stereotypes about Treasury;
- assisting staff in engaging with external parties and influencing the policy debate, not only through the signalling function but also by improving our ability to appreciate external viewpoints;
- influencing internal resource allocation by affecting, over time, internal decisions as to what is important in the context of the Government's priorities; and
- providing a common language for staff that assists in the communication or raising of issues and ideas internally.

The framework has also influenced and provided a means for engaging with other institutions, domestically or overseas, who have developed frameworks of their own (for example, see New Zealand Treasury (2011)).

The current wellbeing framework

The current wellbeing framework is set out in Box 1. It is effectively made up of three parts. First, a generalised expression of what we think constitutes wellbeing. Second, a set of dimensions that affect or are related to wellbeing and that are relevant to Treasury's responsibilities and to providing thorough and objective advice. Third, there is a statement on how the framework should be used. These parts are discussed in turn.

Wellbeing: a life you have reason to value

In pursuing its mission Treasury interprets wellbeing as primarily reflecting **a person's substantive freedom to lead a life they have reason to value**. Such an interpretation

Treasury's Wellbeing Framework

seeks to avoid being too narrow or prescriptive in understanding wellbeing while still making some important substantive claims that are discussed further below: in particular, that it is individuals who count and what they value in life that matters.

The language used borrows from Amartya Sen, the Nobel prize winning economist and philosopher, whose 'capabilities' approach is concerned with providing individuals with the substantive freedom to lead a life they value: where a person's substantive freedom depends not only on their rights and liberties but also on their own abilities and characteristics, and the economic, social and natural environment around them.²

The interpretation also reflects major schools of thought concerning wellbeing or related ideas that have influenced economic thought. To the extent that people value the exercise of their liberties and rights, then what is valued begins to align with libertarian ideas. Whereas to the extent people also value the substantive outcomes achieved, such as happiness, then what is valued aligns with utilitarian and consequentialist perspectives.

Consequently, the interpretation reflects Treasury's intellectual heritage. It also shares much with the views on wellbeing adopted by other policy orientated agencies and institutions. For example, the OECD's view that 'most experts and ordinary people around the world would agree that it [wellbeing] requires meeting various human needs ... as well as the ability to pursue one's goals, to thrive and feel satisfied with [one's] life' (OECD 2011).

It is individuals that count

Under Treasury's approach to understanding wellbeing it is individuals, and the things that matter to them, that are the ultimate concern. From this perspective, families, friends, a sense of the community and the like, and other aspects of life such as the natural environment, matter as they are of value to individuals, and assist individuals in achieving other things they value, but are not themselves ascribed independent value in assessing wellbeing.³

A focus on individuals or households is consistent with the conceptual underpinnings of domestic and overseas approaches to measuring progress or wellbeing, including the Australian Bureau of Statistic's *Measures of Australia's Progress* (ABS 2001), the OECD's *How's Life?* publication (OECD 2011) and the Stiglitz-Sen-Fitoussi

² For example, see Sen (1999) chapter 3 and Sen (2009) Part III. While the language used is similar, not all of Sen's ideas or views should be taken as reflected in the framework.

³ None of this is to say that what an individual values arises independently of others and of those gone before them, or that the ideas of households, families, community, society, culture and the like are not useful ways of understanding these interdependencies and considering public policy issues – as reflected in the dimensions discussed below.

Commission's report on the measurement of economic performance and social progress (Stiglitz et al 2009).

It also accords with the approach in economics of choosing between alternative states of the world by reference to a social welfare function, that is an aggregate measure or ranking of the overall welfare of the individuals in a relevant population based on those individuals' utilities alone. While, as discussed below, the meaningfulness of utility, a concern for utility alone, and the use of social welfare functions can be questioned, the underlying focus on individuals is similar.

What is of value to individuals matters

In thinking about individuals, particular emphasis should be given to what it is that each individual values, with reason, in their life. Such an emphasis does not preclude government or other social or collective actions, but does provide a basis for evaluating such actions.

The emphasis on what individual's value is again consistent with the approach that underlies much economic analysis, where utility is interpreted as preference-satisfaction. But a focus on what a person values or prefers is also broadly consistent with alternative, more traditional, interpretations of utility as happiness or the like. An individual's preferences or happiness will also typically reflect a concern for others – selfishness is not presupposed.

Adopting this viewpoint supports respecting (though not necessarily rewarding or subsidising) unusual preferences. Prima facie a person who can have a high pay and status job but chooses to live otherwise should be seen as better off than if they took the high pay job. Measures of wellbeing often struggle to reflect such individual valuations.

The weight placed on individual preferences is, however, conditioned in the wellbeing framework by reference to what individuals have reason to value. Viewed positively, the attention placed on having (good) reason reflects the importance attached to people having the education, skills and information necessary to make informed choices about their lives.

The challenges of paternalism...

Viewed negatively, the concern with reason is recognition that what we choose to do may not always be consistent with our own underlying preferences. This is not a blanket claim that what people 'really' value or should value is best decided by a social planner or by government, but acknowledgement that public policy must invariably grapple with issues of paternalism. The case for paternalism is most obvious, and least contentious, for children and the mentally incapacitated.

More contentious is how government policy should respond to self-control problems (including various personal addictions) and other innate behavioural and decision making biases and limitations identified by psychologists and in the behavioural economics literature. The concern here is seemingly irrational preferences or otherwise mistaken choices, rather than unusual preferences. For example, where the choices of an individual appear internally inconsistent or are inconsistent over time, and seem likely to lead to outcomes that the person would sensibly not prefer.

The dividing line between irrational and unusual preferences is, however, not always clear (Kroft 2011): governments' lack information, and competing models of behaviour can be used to explain particular actions. It is also a simple step towards a paternalistic viewpoint to confuse or conflate irrational with unusual or simply different preferences. For example, take Ng's (1997) statement of 'my definition of irrational preference as preferring something that decreases one's own happiness or welfare, neither due to ignorance nor to a concern for the welfare of others.'

There is no simple answer as to when paternalism is appropriate or not, or how in practice policy advisers should consider these issues (Box 2).

...and ignored preferences

Separate from consideration of paternalism, which can be seen as imposing or correcting the exercise of preferences, is whether some preferences – particularly those that reflect dislikes about others' conduct or lives – should be disregarded in formulating public policy, as economics often does by assuming self-centred preferences. For example, in general we have little hesitation in disregarding or heavily discounting preferences for gender or racial discrimination or disregarding pleasure from causing hurt to others.⁴

Box 2: approaches to paternalism

There are a variety of ways of categorising paternalism, such as in terms of strong versus weak, new versus old, soft versus hard, pure versus impure (Thomas & Buckmaster 2010). At one level, we can categorise policies based on how they relate to the preferences of individuals, and how they operate to affect those preferences.

Non-paternalistic policies respect individuals' revealed preferences: the choices people actually make. In contrast, strong forms of paternalism will impose others' views as to appropriate preferences, possibly reflecting moral or ideological positions, or distributional objectives such improving a poor person's health or housing but not their unfettered consumption per se (Currie and Gahvari 2008).

Weaker forms of paternalism concern those incapable of forming preferences (the seriously mentally disabled), or seek to respect individual's underlying preferences

⁴ On the latter example, see Sen (1981).

Box 2: approaches to paternalism (continued)

while correcting for their incompetent pursuit (from lack of self-control or bounded rationality). Underlying preferences may be ascertained by reference to usual preferences, stated preferences (from surveys), experienced preferences (reflecting subjective wellbeing measures) or evidence of irrational decisions (from psychology).

Acting to address negative externalities – harm to other persons not taken into account by those acting – is not usually seen as paternalistic. But then, arguably, addressing ‘internalities’ – when a person’s current-self acts to the detriment of their future-self (for example, by smoking) – is also not paternalistic, with intrapersonal conflicts sharing some conceptual similarities to interpersonal conflicts (Congdon et al 2011).

Paternalistic policies can also be implemented in a variety of ways. They can aim to improve the outcomes for the population at large, trading off the gains from a paternalistic policy for individuals otherwise making sub optimal decisions with the costs to those who are otherwise making a choice that provides them a net benefit, or it can try to be more targeted (Congdon et al 2011).

Policies may also override or otherwise punish particular preferences, whether by the use of regulation, the imposition of taxes or the loss of benefits (for example, where job search or training requirements are not met). Alternatively, libertarian paternalism – exemplified by Thaler and Sunstein (2008) – involves ‘nudges’ to correct for the negative effects of inherent behavioural tendencies or lack of information, while still allowing (or even encouraging) individuals to ultimately make their own choices. Such approaches are now attempting to be explicitly implemented in some jurisdictions.

But there can be a fine line between what’s a nudge and what’s a push. For example, Thaler and Sunstein’s ‘nudge’ of having businesses report certain information so that they risk bad publicity and being targeted by activists is more a non financial tax than a nudge. Similarly, while the public provision of information would generally not be seen as paternalistic, information presented in a way that attaches stigma to certain choices may.

There are also a number of arguments against state paternalism. States may not know what is in a person’s best interests: they lack information as they are too far removed and so rely on crude proxies. There are often unintended consequences, such as increased dependency on others. In practice government imposed preferences can be faulty, not least because policy makers and voters exhibit similar behavioural failings without the same incentives to correct behaviour (Glaeser 2005). And as governments do not always act with the best motives, it can be argued that the allowable justifications for government actions are best constrained.

But in some instances things are less clear cut. For example, as to what is the appropriate level of enforcement of social norms concerning public dress and language. And whereas some see evidence that one person by increasing their own (relative) income reduces the happiness of others as an argument in favour of a greater redistribution of income by government (to correct for a negative externality), others

categorise redistribution as the politics of envy and argue such concerns should be disregarded.

Disregarding what are seen as objectionable preferences can be justified on instrumental grounds: ignoring them may be a sensible approach to reducing the long run prevalence and cost of such preferences: Ng (1981); Kaplow (2008).⁵ But for most of us the reason for disregarding such preferences would be a moral concern, that goes beyond a concern for observable consequences. Indeed, one of Sen's objections to policy making based solely on utility is that such moral concerns are disregarded (Sen 1979).

It is Australians we are directly concerned with

Treasury's mission is to improve the wellbeing of the Australian people. While the wellbeing framework does not directly address the issue of who are the Australian people, the Australian people can be seen largely as consisting of Australian citizens and residents, present and future.

Two related questions often arise for Treasury staff. On what ethical basis do Australians count while non-Australians do not? And if only Australians count, what should be Treasury's approach in advising on foreign aid and other policies that affect people in other countries.

Looking at the first of these, mainstream philosophical and economic thought would not consider that the wellbeing of individuals of a particular nation is more valuable than that of others by reason of nationality or residence alone. However, our mission statement expresses Treasury's objective in a way that reflects Treasury's function as an instrument of the Australian Government. That Australia's government should take particular care of its own people, and other countries' governments of their own, is not necessarily inconsistent with a concern for all individuals. Arguably it will better achieve that than every agency in the world seeking to improve world wellbeing.

For the second question, one answer is that Australians ultimately benefit materially or otherwise from assisting other nations and peoples. For example, we in part depend on the goodwill and favour of other countries, and also as there may be positive outcomes such as improved regional security or enhanced opportunities for mutually beneficial trade or people to people links. Perhaps more importantly for many, it is also the case that Australians place a positive value on the wellbeing of people other than themselves, and so value assistance provided to others. That is, the national interest

5 Kahneman (2011), at page 169, provides an example of this viewpoint, arguing that 'the social norm against stereotyping, including the opposition to profiling, has been highly beneficial in creating a more civilized and more equal society'.

does not preclude an interest in others, in the same way that individual self-interest does not preclude an interest in the wellbeing of other Australians.

If individuals count can they be added up?

Even if it is individuals alone that count, policy advisers and makers cannot avoid considering the impacts of policies on individuals in aggregate, whether in respect of their liberties or material outcomes or some other thing of value. That is, looking at the overall effects on the community or society of a change. However, levels or changes in individual wellbeing cannot always easily be added up or indexed.

Pareto rules – that support policy choices where either everyone benefits (utility increases) relative to the alternative or at least one person benefits and no one loses – offer one way of choosing between policies that does not require adding people up. In practice, though, Pareto improvements can be difficult to find, even more so if relative outcomes matter to people.⁶

Welfare economics uses social welfare functions to aggregate and order different states of the world by reference to the ‘utilities’ of the relevant population of individuals. The use of such functions is appealing as it provides a means of ranking different policy choices in cases where Pareto-type rules do not provide an answer. They are a common tool of economic analysis that has in turn directly affected policy advice and ultimately decisions across countries. For example, the optimal income taxation literature, which provides a systematic means of taking efficiency and distributional concerns into account together, has influenced policy outcomes in some areas.

However, social welfare functions have their problems. There is no agreement on the appropriate form of a social welfare function, in part reflecting differences of view over distributional issues (see below). Social welfare functions, for reasons of tractability, also usually make strong assumptions about how to measure individual utility, such as that individuals are all alike and that one individual’s utility is not dependent on another person’s utility or circumstances.

This lack of agreement also reflects a lack of clarity over what utility is meant to be. If utility is simply an ordinal ranking of a person’s preferences (Varian 2010), the addition of utilities is strictly meaningless. If utility is equated with happiness, then even accepting its cardinal nature and the possibility of its approximate measurement (Ng 1997), it is unclear why it is happiness alone that matters in determining or ranking social welfare – see the discussion of opportunities below.

⁶ Another approach is provided by the theory of fair allocations literature, that looks for outcomes where no individual would prefer another individual’s consumption bundle, and where they are indifferent between their bundle and an equal share of a reference bundle (Fleurbaey 2009).

Another difficulty is who to count over time. Where policy choices can affect the size of the population of individuals of concern (for example, by affecting fertility or mortality rates), should the goal be to maximise the aggregate utility of the population, or the average utility per person per moment of time or per life lived?

Dimensions of particular relevance to wellbeing

While Treasury's concern is to improve the wellbeing of the Australian people, we seek to do so primarily by bringing a whole-of-economy and whole-of-system approach to providing advice to the Government based on an objective and thorough analysis of options.

To assist in that task, the wellbeing framework identifies five dimensions that directly or indirectly relate to wellbeing and are particularly relevant to Treasury. They cover the ground of what are key determinants or elements of wellbeing, and their distribution currently and across generations, while also giving explicit attention to risk and complexity given the relevance of these concepts to Treasury's responsibilities around macroeconomic policy, well-functioning markets and taxation.

The set of opportunities available to people

The set of opportunities – what it is that people can achieve in their life – is central to people's ability to lead a life they have reason to value.

In practice, an important subset of opportunities for people are opportunities to consume goods and services, as reflected in common measures of living standards such as household income or consumption, as well as in-kind benefits received or produced and the use of owner-occupied homes, or in cruder measures such as GDP per capita.

But opportunities in regard to other things that affect the quality of life are also important; though access to material goods and services can clearly help improve some of them. People value good health and a long life, the natural environment as experienced, and cultural, social and political relationships and engagement.

In this context then, the idea of opportunities is not limited to legal and social rights that permit you to achieve certain things if you are able. Your real or substantive opportunities are also affected by your natural talents, health, education, family circumstances, luck and the broader economic, social and environmental context.

Importantly, the focus in the framework is on the *set* of opportunities available, not just on the outcomes achieved. Reference to a set emphasises the importance of respecting individual preferences, and that the value of the outcomes achieved is dependent on how they accord with personal, rather than uniform, preferences and needs.

What individuals value can be expressed in many ways

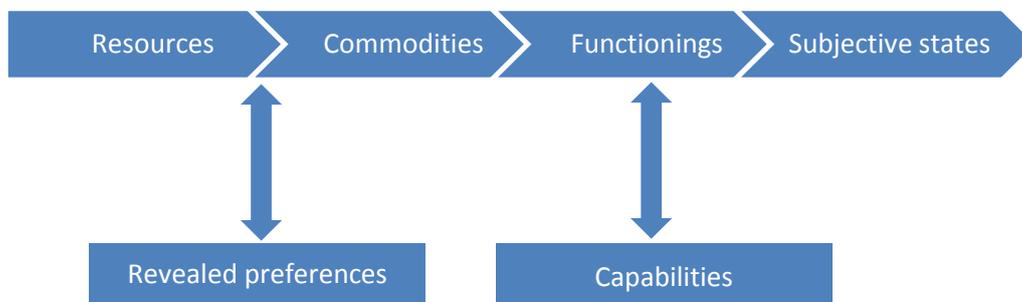
There is no definitive unchanging answer to the question of what individuals' value and hence of what opportunities matter. While there is much commonality in the things that people can be seen as valuing, as reflected in various measurement frameworks, preferences differ between individuals, and they can change over time and with circumstances.

A useful distinction to draw in considering what people value is between instrumental and constitutive things or goals. The end goals, or what an individual ultimately values, can be seen as *constitutive* of their wellbeing. However, an individual may value or aim for certain things not because they value them for their own sake, but because they are a means or *instrument* to achieve the desired ends.

Some things, such as work, may have both instrumental value (work provides income that allows material desires to be satisfied and provides a degree of independence from others) and constitutive value (work, or an occupation or doing something useful with some of one's time, is valuable to most people in its own right).

However, what is the appropriate level or way to express what is constitutive of or instrumentally relevant to wellbeing, or related ideas, is not clear and there is no common approach. A schema of some of the more prevalent approaches is at Figure 1.

Figure 1: alternative perspectives on opportunities



Wellbeing can be expressed by relation to the *resources* available to an individual. Most obviously this includes production or income, and financial and non-financial wealth. Less obviously, and at a stretch, resources can be seen as including your human resources – your physical and mental capacities – and non-market external resources such as your legal rights, social norms and social networks and the surrounding physical environment.

Commodities are closely related to resources, but focus more on what resources allow you to consume: market goods and services, public goods such as roads and

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emergency and police services, the use of your own home, leisure and other non-work activities, and even your experiences of nature.

Welfare economists typically take individuals' preferences between different bundles of resources or commodities as providing a rank ordering of what individuals value, and the satisfaction of such preferences as revealed by actual choices made as a more reliable indicator of utility, understood even as happiness, than measures such as self-reported happiness.

The idea of *functionings* – 'the various things a person may value doing or being' (Sen 1999) further extends commodities, by looking at what commodities give you: material satisfaction; interesting work and activities; knowledge; a good family life and friendships; social and political engagement; and safety. Looking at functionings explicitly factors in your ability to convert resources or commodities into desired ends, and takes into account factors or constraints such as ill-health or disability, climatic conditions, family arrangements, and social and political risks and prohibitions.

Sen distinguishes functionings from *capabilities*. Capabilities are the set of different functionings that it is open to you to achieve. Sen places value on people having the practical ability to choose between alternative sets of functionings, and hence on their capabilities. This mirrors the emphasis he places on the value of freedom in people's lives. Economists would generally accord higher value to the set of commodities or functionings that a person chooses, and the ability to exercise choice can also be seen as a valuable good or functioning in itself.

So far, each move from left to right in Figure 1 can be seen as broadening the range of factors seen as important for wellbeing, or getting closer to describing what is actually constitutive. Though, as noted, what you see as resources or commodities can be stretched to have a meaning much the same as functionings or capabilities.

Subjective wellbeing: multiple concepts

Similarly, *subjective states* can also be seen as part of the continuum that gets ever closer to what is constitutive and less instrumental, where the concern now moves from objective things that can be obtained (resources/commodities) or achieved (functionings/capabilities) to the resulting subjective states such as 'happiness' that are argued by some to better represent the opportunities constitutive of wellbeing.

Happiness in particular has been claimed to be the thing (in its many different forms) in particular that constitutes wellbeing and that should be the goal of public policy. It has also been suggested that even if happiness is not seen as the end goal, it can be used to weight or place values on non-market costs and benefits (Graham 2011);

though in principle this seems an equivalently strong claim. Richard Layard is one of the best known proponents of the primacy of happiness:⁷

'I think there is one simple test of what is the ultimate good for humans – that we find it self-evidently good. So we can list all the goods we consider important: freedom, health, achievement, income, happiness and so on. We can then ask of each, Why is it good? If we ask, for example, why freedom is good, people will say slavery makes people miserable. So does ill-health, and so on. But if we ask, why does it matter if people are miserable or happy, no reason can be given. It is self evident.' (Layard 2009)

However, equating wellbeing with subjective states is seen by others as representing a narrowing of the concept of wellbeing, and often an unconscionable narrowing, with wellbeing no longer necessarily a function of capabilities or resources or commodities and not part of a continuum in the way Figure 1 suggests.

Sen (1999), for example, points to the possibility of a slave, or a woman in a society where men are accorded preference by custom, being relatively happy with their lot by means of adaption or mental conditioning. It can also be asked whether anyone would choose a world with less resources or commodities or capabilities, even if they would still remain as happy (Fleurbaey 2009).⁸

However, it is not the case that people always adapt completely to changes in circumstances (Stiglitz et al 2009). Perhaps more importantly, many of the concerns over the use of subjective wellbeing concepts to describe wellbeing reflect in part too simplistic the equating – by proponents as well as opponents – of subjective wellbeing with happiness understood simply as mood happiness/unhappiness experienced across time.

Rather, subjective wellbeing covers a range of subjective states: 'hedonic' experiences over time, such as feeling happiness, sadness, anger, joy, tiredness or pain (Stiglitz et al 2009); remembered happiness;⁹ life satisfaction, that moves beyond immediate feelings to reflective evaluations of life; 'eudemonic' states such as 'autonomy, competence, personal growth, positive relationships, self-acceptance, engagement, and meaning'

7 See also Ng (1997). Layard (2009) makes his argument in favour of the primacy of happiness by reference to what appears more akin to mood happiness or affect, but then incongruously suggests life satisfaction is the appropriate measure for public policy to target.

8 The Easterlin paradox – that, above a certain point, average national income or production is not correlated with higher average national (self-reported) happiness, while for individuals within a country higher income is positively correlated – has also been questioned; see Stevenson and Wolfers (2008). The paradox may also reflect people's concern for relative incomes rather than just adaption per se, see Clark et al (2008).

9 See Kahneman (2011) chapter 35 for a discussion of the remembered self.

(Clark et al 2008); and narrower categories such as feelings of physical or economic insecurity (OECD 2011).

It seems unlikely that people's underlying preferences can be reducible to a desire to achieve any single one of these.

In a study of underlying objectives, Benjamin et al (2012) found that subjective wellbeing (mood happiness or life satisfaction) was a uniquely important motive underlying individuals' choices, with life satisfaction the best predictor. However, other factors were also found to matter in their own right: a sense of purpose and control over life, family happiness and social status. Experienced happiness and life satisfaction were also relatively weaker explanators of choices seen by individuals as representative of important decisions in their lives, while people would deliberately choose more money in preference to greater subjective wellbeing.

When such other states or preferences are taken into account, concerns like those over 'happy slaves' are less compelling. Life satisfaction or other life evaluations, which can be seen as subjective reflections of the 'capabilities' concept, appear to suffer less from adaptation (Fleurbaey 2009). And motives such as autonomy and a sense of purpose and control over life, which reflect the importance attached by Sen to agency and freedom, are also likely to be affected differently.

Other concerns about the use of subjective wellbeing are less conceptual or philosophical than practical. These include concerns about the practical ability to measure subjective states (and the value, reliability, and comparability of self-reported measures in particular), and that whatever it's conceptual merits it may not be a sensible explicit objective for public policy given a possible lack of community support.

The distribution of opportunities¹⁰

The distribution, and not just the aggregate level, of opportunities matters. Indeed, three of the five dimensions identified in the framework concern distributional issues: distribution within a generation (and over that generation's lifetime); across generations (sustainability) and between contingent states (risk).

Implicit in most discussions of distributional issues are normative judgements about: among *whom* it is that we're concerned about distribution, such as households within Australia; *what* it is that is of distributional concern, such as financial income or wealth, or of rights; and what is the appropriate *distributive rule* or concern, whether providing a minimum or safety-net or achieving equal positions.

¹⁰ The discussion of distribution in this article, including Appendix One, draws on Gruen et al (2011).

Choices along any of these dimensions can be controversial, and also biased by the data sets available in practice to analyse them. And even where the state of play on distribution can sensibly be described, identifying the underlying determinants and suitable policy instruments to affect a distribution can be difficult.

Without being overly prescriptive, the framework makes the following points:

- most obviously, that Treasury staff should be concerned with distributional issues in advising the government of the day on policy;
- the distribution of substantive opportunities matters, not just of income and goods and services. So, for example, the distribution of productive capacity, of rights and freedoms, and of environmental goods are also relevant; and
- a concern for distributional issues can start with a concern for the least well-off in society and addressing the limited opportunities they face, separate from seeking equality for all for its own sake.

The distribution of opportunities among Australians — the distribution of ‘what’

Discussion of distributional issues often focusses on measures of inequality or of poverty in respect of wealth (both financial and land and other property) and of financial income (either in respect of wages; or wages and other financial income before taxes and transfers, or after taxes and transfers). This reflects the ready availability of poverty and inequality measures and of data; analogous to the factors that have driven the use of GDP as a proxy measure of community welfare.

However, in the same way that the set of opportunities or living standards can reflect narrow or broad concepts, so can discussion of distributional issues. Figure 2 sets out a spectrum of ‘what’ may be the focus of distributional concern. A goal of equal distribution at one point along the spectrum shown, or of particular subsets such as rights and liberty, must inevitably entail acceptance of the failure of that equality goal measured against other points or sets.

Figure 2: Alternative focuses of distributional concern



As you move from left to right in Figure 2, from narrow to arguably broader concepts, we can expect inequality for a given population to fall but without ever becoming equal. Taking a life time view, or adjusting for risks knowingly taken would also narrow differences.¹¹ The ranking of particular individuals or households, or measures of their relative position, could also change and sometimes significantly (for example, retirees would be seen as more advantaged looking at financial wealth than income or consumption).

The perspective the wellbeing framework takes is that it is the substantive opportunities open to people that matter overall. Taking again the example of the person who forsakes a high paying job, such a choice should not be of concern simply because it can be categorised as leading to someone falling below a poverty benchmark. Choices involving risk taking can, however, be problematic: an individual living in dire poverty as a result of a risk deliberately taken in the past is hard to pass by even if, *ex ante*, his or her opportunities were the same as others.

Why do we care about distribution?

While most people would agree that distribution matters, and concern over distribution between contingent states and over a lifetime is reflected (however imperfectly) in peoples' attitudes to risk and in saving to smooth consumption, exactly why it matters, and what is an appropriate distributional rule or objective for public policy, are more contentious.

In economics a more equal distribution of income or consumption – everything else unchanged – is usually seen as improving social welfare. This arises from the unremarkable observation that in general a poor person will likely derive more utility or satisfaction than a rich person from spending an additional dollar. That is, there is diminishing marginal utility from consumption.¹²

A *utilitarian approach* therefore typically favours a more equal distribution of resources or commodities for instrumental reasons.¹³ Concerns over the prevalence of positional goods and evidence that individuals' self-assessment of happiness or life satisfaction

11 As individuals take a life time view and so, to some extent at least, consumption is smoothed out over time; measures of consumption inequality tend to be less than those of income inequality and better related to poor substantive outcomes or having fewer opportunities; see Meyer and Sullivan (2011). On risk, lotteries, for example, generate *ex post* inequality even if, *ex ante*, players start off equal and have an equal chance of winning.

12 There may of course be exceptions to this general rule, see Frankfurt (1987).

13 Social welfare functions often embody an additional bias in favour of a more equal distribution of income or the like, though the ethical basis for doing so is typically assumed rather than justified.

can depend on how much they have relative to others may add a further instrumental argument for caring about distribution.¹⁴

Utilitarian approaches do not, however, aim per se for equality between individuals of their capabilities or of individual total utility. Were individuals alike, equalising individuals' marginal utilities would equalise individuals' total utilities. But as individuals are not alike it will not. Hence Sen's criticism that utilitarianism would leave a cripple with a low level of utility (and capabilities) and justify taking resources from them if they were less able to convert a marginal dollar into utility (Sen 1979).

It is also the case that in practice everything else will not be unchanged. Achieving a more equal distribution – whether directly via the tax-transfer system or indirectly via more regulated labour markets – may reduce the aggregate level of consumption, or efficiency, by adversely affecting behaviour and given the related administrative and compliance costs. Hence, there will often be a trade-off between redistribution and efficiency.

Another common motivation for caring about distribution is that more unequal distributions, or distributions of a particular character (for example, of groups suffering extreme poverty or enjoying extreme wealth), will cause *social and political conflict or instability*.¹⁵ Distribution viewed along ethnic, age, geographic, social and religious lines typically also align with this concern.

Individuals' disquiet and concern for the poverty they observe may also provide a reason for reducing (apparent) poverty, and if distributional outcomes directly affect individuals' utility or welfare then those outcomes can be seen as a form of *public good* (Leigh 2012).

A different approach again is that of John Rawls, who constructed a thought experiment – as to the institutions we would choose if we started behind a veil of ignorance as to where we would individually end up if we were born into society today – to argue that fairness, or justice, requires the equality of rights and liberties, and subject to that equality, that we choose those institutions that maximise the resources (primary goods) available to those with the least.

14 See Ng (1997) and Clark et al (2008). Redistribution in these circumstances is intended to reduce the incentives for what is essentially wasteful competition between individuals. But how the utilitarian calculus is affected by individuals' perceptions of how a given distribution is achieved, which may argue against mandated redistribution, seems to have been explored less.

15 Stability is usually assumed to be a good thing, but where a government is repressive instability may of course be preferred.

Under a *Rawlsian type approach* only the conditions of those who would otherwise be at the bottom are relevant, and the rest of the distribution can be ignored: in principle at least a more unequal distribution (other than of rights and liberties) may sometimes be preferable.

Unlike the other motivations discussed above, the reasoning in this approach is not instrumental: it is argued on the basis of *fairness*. Whatever the merits of Rawlsian type approaches, it is undoubtedly true that what is an appropriate distribution is often seen as essentially a question of fairness. Unsurprisingly then, in considering distributional issues policy advisers and decision makers must inevitably grapple with the issue of what is fair (Appendix One).

The sustainability of opportunities over time¹⁶

The wellbeing framework gives particular attention to the sustainability of opportunities available over time. In particular, consideration of whether the productive base needed to generate opportunities (the total stock of society's capital, including human, physical, social and natural assets) is maintained or enhanced for current and future generations. It relates to ideas of intergenerational equity or distribution, though one with a potential positive bias towards future generations.

Each generation can be seen as having the challenge of making choices about the use of their stock of resources without knowing what knowledge and technological advancements will be available to future generations, or how those generations will make use of their endowments. Whether an economy is sustainable or not therefore is best seen as a question of whether the economy's productive base is being maintained or enhanced, or is contracting (Dasgupta 2007a; 2007b).

This distinction between current wellbeing (a flow concept) and sustainability (a stock concept) is important, and was highlighted by the Stiglitz-Sen-Fitoussi commission, who made a case for the separate measurement of current wellbeing and sustainability (Stiglitz et al 2009). The OECD has adopted a similar perspective (OECD 2011), as did the 2010 Intergenerational Report, which also considered the sustainability of the environment and aspects of human and social capital (Commonwealth of Australia 2010b).

The two concepts remain closely linked, however, as the wellbeing of the current generation may be affected by intergenerational considerations. Current wellbeing is affected by the way in which resources are used at present, including the creation of

16 This discussion of sustainability draws heavily on Gorecki et al (2011). Carmody (2012) provides a more comprehensive discussion of sustainability and its implications for wellbeing and public policy.

stocks bequeathed to children and future generations, whereas sustainability is affected if the stock of resources itself is affected (Gorecki et al 2011).

While the idea of sustainability is often given an environmental focus, natural capital is not the only source of wellbeing. An economy's productive base includes not only its capital assets (stocks of manufactured and human capital) but also its natural capital (stock of environmental capital) and its institutions (or stock of social capital, see Box 3). These are often referred to as the three pillars of sustainability – economic, environmental and social capital.

Other dimensions of policy that Treasury is concerned with also reflect a concern for sustainability. The global financial crisis and subsequent events have illustrated the importance of fiscal sustainability. And the successful microeconomic and macroeconomic reform agendas that began in the 1980s and continued into this century improved Australia's institutional settings and can be seen as a created endowment for future generations (Parkinson 2012).

Weak versus strong sustainability

Arguments regarding sustainability are often framed in terms of weak or strong sustainability – each presenting a different perspective of sustainability by giving priority to assets in general or particular classes of assets, most typically environmental ones. The key difference between both perspectives relates to the degree of substitutability between different forms of capital.

Weak sustainability allows trade-offs between the different forms of capital, so long as the total capital stock is not declining. The concept was developed through a body of work undertaken in the mid-1970s in response to the debate surrounding the *Limits to Growth* publication. These approaches extended standard neo-classical growth theories, in which output is determined by technology and available quantities of labour and capital, by introducing natural resources as an additional factor of production (Stiglitz et al 2009).

In these models, natural resources are finite, non-renewable, and essential to production, and human-made capital is indefinitely substitutable for natural capital (Pezzey and Toman 2002). So long as natural and human made capital are substitutes, output can grow indefinitely even in the presence of scarce resources, and the current generation can draw on the finite pool of resources so long as they add to the stock of reproducible capital (Gutés 1996).

Box 3: Social capital

The World Bank (1998) defines social capital as including 'the institutions, the relationships, the attitudes and values that govern interactions among people and contribute to economic and social development ... It includes the shared values and rules for social conduct expressed in personal relationships, trust, and a common sense of 'civic' responsibility, that makes society more than a collection of individuals'.

In any coordinated activity, participants can achieve more with whatever sources of capital resources they draw on if they are able to coordinate activities and credibly commit to a sequence of future actions that produces a better joint outcome (Ostrom 2000). Social capital can reduce transaction costs in exchanges if the parties can legitimately expect each other to be non-exploitative should an uncovered contingency arise (Solow 2000).

When individuals trust each other transaction costs in economic activities are reduced, through generating expectations, informal rules and common understandings, people are able to conduct personal interactions and business dealings more efficiently (Alesina and La Ferrara 2002). It is of course possible to achieve coordinated activities by drawing up contracts relying more on monitoring, negotiating, litigating and enforcing agreements. But these will almost always be incomplete, and tend to be inflexible and costly to enforce, undermining their effectiveness.

Another way of considering social capital is as a product of iterated prisoner's dilemma games. If individuals interact with each other repeatedly over time, they develop reputations which affect the outcomes of the interactions, and so it is in their interest to develop a reputation for honesty or reliability to maximise payoffs from interactions (Fukuyama 2000).

Public policy and social capital

Social capital is often a by-product of factors that lie outside the direct control of government such as religion, cultural traditions, and shared historical experiences. Yet many existing policies aim to build up or support social capital – education, family support, funding for sports and cultural and national events. This likely reflects not only a concern for more efficient markets, but also to improve daily life and social opportunities. Low social capital in depressed communities can also reinforce existing inequalities (Productivity Commission 2003).

Government can indirectly foster social capital through the efficient provision of public goods, particularly property rights and public safety (Fukuyama 2000). Educational institutions, in addition to developing human capital, can generate social capital through teaching social rules and norms.

On the other hand, policies can inadvertently reduce social capital. For example, public liability laws can make it harder for community groups to form and prosper. Social capital can be reduced where public policy crowds out activities best left to private individuals (Green and Cromwell 1984). If unused, social capital deteriorates. An over-reliance on the state can lead to the loss of habit and experience by individuals, and the loss of the ability to spontaneously work together without external prompting.

The normative basis for weak sustainability is that the current generation owes its successors generalised productive capacity, or, access to a certain standard of living or wellbeing. But how this productive capacity is transmitted across generations is a matter of efficiency rather than equity. So whether for example it is more efficient to transfer mineral deposits or capital equipment or technological knowledge is a question of efficient resource allocation, and not of justice (Solow 1986). Provided that each generation ensures that the expected welfare of its offspring is no less than its own perceived wellbeing, it is justified in pursuing its preferences (Howarth 1995).

Strong sustainability does not allow for substitution (as normative value is attached to protecting the environment for its own sake) or alternatively sees practical limits in the scope for trade-offs between the environment and any competing economic and social goals. Proponents of strong sustainability argue that substitution possibilities between forms of capital necessarily face physical limits, and so impose a constraint of a non-declining natural capital stock in volume terms. A variant is that levels of most natural resources must be maintained sufficiently to keep reasonable levels of environmental resilience; that is, the capacity of eco-systems to regenerate and return to equilibrium aftershocks (Stiglitz et al 2009).

Differences between weak and strong sustainability are best seen as resting on different positive claims (which can be tested) as to the degree of substitutability between different capital stocks and the risks attached to assuming that such substitutions will continue to be available.

The overall level and allocation of risk¹⁷

Risk refers to the intrinsic uncertainty in possible outcomes regarding the future that is also present in almost all decisions. In this broadest conceptual sense, risk impacts on all individuals, and is everywhere in the economy and in society (Treasury 2004). Risks arise across the range of opportunities of interest to people, including financial, physical and environmental.

Risk is marked for particular attention in the wellbeing framework because of its value as a concept in analysing and understanding a range of public policy issues and how those issues relate to overall wellbeing. It also reflects an awareness of the difficult challenges involved in factoring consideration of risk and uncertainty into advice, whether policy advice or forecasts or projections, and the danger that that difficulty may see risk being ignored.

¹⁷ This section draws heavily on, without completely following, Banerjee and Ewing (2004) who provide a more extensive discussion of risk and its connection to wellbeing.

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People have different preferences regarding risk, depending on factors such as their relative financial security, their aspirations for the future, or in some cases a desire for risk as a good in its own right.

Under a conventional approach, it can be expected that wellbeing would be improved if there is a better match between people's risk preferences and the risk borne. Risk itself (or alternatively, positive goods such as security or certainty) can be seen as part of the set of opportunities in which individuals make trade-offs or choices, with people generally willing to trade-off other things to reduce risk. As for other goods, the ability to do so depends on the existence and efficiency of relevant markets.

A general disposition against risk can, as often assumed in economics, be seen as a consequence of diminishing marginal utility of consumption, which favours a more even distribution of outcomes.

However, more recently, 'prospect theory' has made clear that actual behaviour often contradicts the conventional assumptions of well-ordered risk preferences. Some of this reflects bounded decision making, such as biases in the way probability is assessed. In these cases people's risk preferences if acted on may limit their ability to achieve what they value.

But prospect theory also suggests that actual behaviour can also reflect the value of each outcome being measured relative to a reference point which is dependent on how the prospect has been framed. Such behaviour arguably reflects underlying preferences. There is, consequently, a challenge for public policy in distinguishing between behaviour that is inconsistent with underlying preferences and behaviour that reflects a person's real concerns for the path they have followed and other context.

Government actions and the level and allocation of risk

Importantly, almost all government actions have impacts on risk, whether or not the original intent of the action is risk-related. One useful distinction for the impact of government actions on risk is between those which affect the *level of overall risk* in society, and those which *reallocate risk* between groups in society.

Government actions which seek to affect the level of risk in society are generally aimed at reducing overall risk, though they will generally affect its allocation as well. Examples include providing a system of enforceable and consistent property rights, prudential regulation, monetary and fiscal policies that minimise the likelihood and consequence of economic shocks, meteorological services, and specific regulations which prohibit or constrain risky activities like driving without a seatbelt.

While the presence of government tends to reduce overall risk, some government actions can also add to the level of risk at the margin. For example, while national defence spending can provide insurance against and reduce the risk of uncertain (even

if remote) future threats and natural disasters, defence capabilities acquired to obtain influence over other countries may sometimes increase the risk of conflict.

Government actions can also affect the distribution of risks between groups in society. Such risk reallocation may shift risk from one group to another, or spread the risk across a large number of groups (which by itself may reduce overall risk through diversification). The redistribution achieved by the overall tax-transfer system can be seen as in part shifting resources from those who are lucky (whether in investments they make or by avoiding accidents or illness) to those who are not.

The case for government action to affect private decisions concerning risk or the trading of risk typically reflect a concern over information problems, contractual problems (the difficulty of contracting for all possible circumstances), and the existence of externalities.

As in other areas of public policy, government intervention will often involve a trade off with other things of value. Defence spending, for example, has an opportunity cost of higher taxes (and hence reduced private consumption), or reduced spending in other areas of public benefit. Redistribution achieved by the tax-transfer system, and other fiscal decisions, typically has an efficiency cost. And financial market regulation can involve a trade-off between stability and competition.

The complexity of the choices facing people and the community

Like risk, complexity can also be seen as a dimension of the set of opportunities available to people. We all make choices between simple or more complex things based on our personal preferences. In the choices we make concerning work, and leisure, can be seen a preference for a degree of complexity rather than the simplest possible outcome: routine repetitive work is shunned by many, and leisure activities are not enjoyable if too simple.

At the same time we also organise ourselves and make choices to manage and reduce complexity, such as through specialisation. Complex things when mastered become simpler. Specialisation together with the ability to take advantage of it via markets and organisations can be seen as the basis for current high living standards (Hausmann et al 2011).

But people not only make choices about the desired degree of complexity given their preferences and trade-offs with other objectives or other opportunities, they also make choices or decisions that are complex. As noted in the discussion of paternalism above, the evidence suggests that there are some decisions that people find inherently difficult to make.

Complexity in this context can impose costs on people. There are the direct costs of dealing with complexity (of time, effort or cost of expert advice). There also the costs of making the wrong decisions, reducing the resources available to people or their ability to convert them into functionings or desired subjective states. Consumer law, for example, reflects a concern for these issues.

Complexity imposed by government

Complexity is also explicitly highlighted because of a concern over unwanted complexity. That is, complexity imposed by governments including through the taxation system and various market regulations for which Treasury has policy advising responsibility.

Even in that context, a degree of complexity is likely to be optimal. As noted in Treasury (2004), 'Increasing complexity usually brings benefits both through a better targeting of rules and through the provision of greater certainty. However, it may also impose significant costs through increasing resources devoted to verification and compliance'. There are trade-offs to be made.

Reference to complexity in this context should however also be seen as reference to distinct, though related, issues that are often conflated with complexity or a goal of simplicity.

Most obviously there is a concern to reduce *compliance and administration costs*. These costs include not only the cost of advice, but also of lost leisure and any psychic costs, and the negative effects of any uncertainty created. Even if typically such costs and complexity go together, they are distinct: a relatively simple tax such as a broadly based single rate value-added tax can still have high compliance costs because of the volume of transactions to which it applies, and a complex system coupled with a good user interface may have relatively low compliance costs.

We are also separately concerned with *complexity facing advisers and decision makers*. This is not just the complexity of the legal constructs and rules, but also of understanding the system as a whole and its economic consequences. For those who advise on the tax-transfer system, and for agencies, governments and parliaments who ultimately make decisions as to its administration and design, its sheer complexity (and the complexity of the world to which it applies) is challenging to say the least.

Related to this is a concern for *transparency*. Voters are the ultimate decision makers, but the complexity of the system as a whole may limit or bias community debate and choices by reducing transparency as to what the choices actually are. Some design choices that reduce or otherwise do not affect complexity per se may still reduce transparency. For example, indirect taxes may be less apparent to voters, while some

have expressed concern that systems that largely remove the need for individuals to lodge their own income tax return may also reduce transparency.

The wellbeing framework and day to day policy advising

A common question within Treasury has been whether the wellbeing framework can be used – or be refined to be used – as an analytical tool that staff can use to work through specific policy issues. The answer is clearly ‘no’.

The framework's role is, as discussed above, to provide broad context and direction for policy advice, and cannot replace the vast body of economic, social and analytical frameworks, statistical and other evidence, and relevant measures available to staff. As such, it cannot be used as a simple checklist to provide easy answers to complex problems.

When considering a specific issue, the framework does serve as a useful high level reminder of things to be concerned about in undertaking the ‘thorough and objective analysis’ asked for in Treasury's mission statement. But appropriate analytical frameworks must be employed to work out what the problem is, or is not, that may justify government action, or inaction, and assess the policy instruments available.

The framework is, however, not divorced conceptually from the more common analytical frameworks that are used in providing policy advice.

The framework's primary concern with individuals, and their own choices as to what they value in their lives, fits with the general approach in Treasury of viewing government interventions in society and the economy as needing to be motivated by market and other failures that have the consequence that individuals' choices left to themselves lead to sub-optimal outcomes.

So the wellbeing framework reinforces the need for staff in providing policy advice to correctly identify the problem or issue of concern, by reference to such things as the presence of public goods and the like; negative or positive externalities; information failures and asymmetries, including principal/agent failures; systematic failures in personal decision making; and short-run macroeconomic variability.

The presence of such failures does not of itself make the case for government action, as government may not be able to rectify or counteract the market failure, or such action may not achieve benefits, relative to what would arise through private and community action, that outweigh the costs of intervention. In assessing the costs and benefits of policy options, where possible the full range of costs and benefits should be taken into account, as should their sustainability, using valuations reflecting as far as possible the underlying preferences of the people concerned.

Similarly, tax and transfer system policy advice, in its concern for efficiency, will generally favour settings that minimise distorting personal choices, such as those around work and leisure and the timing of consumption, unless itself being used as an instrument to correct market failures.

Treasury's approach to distributional issues

Separate from concerns over market or other failures, concern over the distribution of opportunities may also merit government action, as reflected in the current tax-transfer system. At the same time, the distributional impact of changes – and the potential for winners and losers – can act as a constraint over changes to policy settings. Taking these concerns into account in providing policy advice can be particularly challenging.

Treasury's approach to doing so is typically cautious given what is often a lack of clear community agreement as to an appropriate distributional rule, to 'what' that rule is to be applied to in particular circumstance, and as to what is fair. In taxation policy, axioms such as vertical and horizontal equity are often referred to even if they are not always conceptually well grounded (Kaplow 2008).

This general caution notwithstanding, Treasury's underlying concern is that Australians should in general be able to lead a fulfilling life and participate fully in the community.¹⁸ Such a perspective would have general community acceptance, and reflects the 'need' principle discussed in Appendix One. While it does not directly advocate more egalitarian or redistributionist policies that a government may be minded to implement, it does not preclude them either.

Such an objective is of course concerned with more than just the distribution of cash income over a defined period. And it does not neatly fit in either the absolute or relative poverty camps: it treats both senses of poverty as relevant, as what is needed in absolute terms to participate fully in a society will change as a society becomes wealthier.¹⁹

Distributional concerns and policy advice

To be concerned with distributional issues is not to say that policy advisers should factor such concerns into their advice on all issues. In economics there is a long tradition of trying to separate consideration of efficiency issues from those of equity or distribution. For example, the Kaldor-Hicks criterion that only requires that the losers from a change could *potentially* be compensated.²⁰

18 For example, see Henry (2007).

19 See Sen (1999) at pages 72-74.

20 For a more recent attempt at a separation, see Kaplow (2008).

For policy advisers, it usually seems sensible to adopt such an approach and focus on efficiency concerns except where affecting distribution is the primary goal. So, for example, the recent review of the Australian tax system argued that (Commonwealth of Australia 2010a):

‘The transfer system, together with progressive personal taxation, is better suited to this task, and should be the primary means through which the government influences the distribution of income in the economy...’

Government action to achieve distributional outcomes is of course not limited to using the tax-transfer system, with its focus on transfers of cash or in-kind benefits. Governments of all persuasions are aware of the potential negative consequences of transfer payments in entrenching disadvantage, and the benefits for some groups of attaching labour force participation requirements to transfers made to them, supplemented where appropriate by active labour market programs.

This is not only because of the potential improvements in the distribution of disposable income in the medium- to long-run through earlier attachment to the labour force. It is also because, in general, work can have benefits of its own beyond the income provided. Unemployment may give rise to feelings of loss of control and diminished self-worth (Bernanke 2010), and individuals may not always fully factor this and costs such as a loss of skills and future employability into account (Harrison 2008).

There is also now more awareness of the importance of human capital, of education and good physical and mental health, for the outcomes people achieve and the overall distribution of opportunities (Henry (2007)). Education is associated with improved participation in the labour market, higher lifetime incomes, and longer lives. Assistance provided through education could be subject to fewer of the adverse incentive effects of cash and like transfers.

Also of importance are the non-income benefits associated with education – that it gives people greater capacity to convert other resources or income into positive outcomes, and more sensibly choose between them. Education has been argued to improve health, reduce crime and increase political engagement (Goldin and Katz 2008).

Conclusion

Treasury's wellbeing framework is a product of its history and intellectual heritage and the mission it has been given by the Australian Government. It also reflects the need for a central policy agency of government to have an informed understanding and debate as to the objectives of public policy, how those objectives relate to its work and responsibilities, and the trade-offs that must often be faced.

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The current wellbeing framework is valued within Treasury and it, and the internal discussion it has generated, has allowed Treasury to better engage with and understand a wider range of external parties and their views. It is, however, modest in its goals: it cannot and does not seek to replace the analytical and measurement frameworks available from economics and other disciplines and from statisticians.

Appendix One: What is a fair distribution?

We are all likely to have a sense of what is fair, even if most of us struggle to articulate it clearly. One way to approach the question of what is fairness is to look at the evidence as to what people see as fair. An example of this approach is Konow (2003), who looked at a range of surveys, responses to vignettes and social laboratory experiments aimed at shedding light on attitudes to fairness.

Konow claimed three principles underlay what people consider a fair distribution:

- *need*, concerning the satisfaction of basic needs;
- *equity* (or *just deserts*), concerning proportionality (for example, of income to work effort or risks deliberately taken) and individual responsibility; and
- *efficiency*, concerning maximising aggregate income, consumption or even subjective outcomes like enjoyment.

Strikingly, if perhaps unconvincingly, Konow argued that equality or egalitarianism is itself not an underlying principle, but rather a default rule that people apply when they lack information on need, equity or efficiency.²¹ Reflecting the behavioural economics literature, Konow also noted that context also matters, and sets the stage for the playing out of the three competing principles. He also noted that people appear to trade off the three principles rather than giving precedence to one over the others.

One way to interpret the importance Konow attaches to proportionality over equality is that the question of what is a fair distribution depends, unsurprisingly, on what is being distributed. If we are looking at the distribution of cash income, then people naturally want to take account of individuals' effort and risk in obtaining that income. If our starting measure of income is a broader one, that factors in leisure, work amenity and adjusts for risk, then concern for equality could become prominent.

It is not hard to see the principles identified by Konow playing out in public debate. Mankiw (2010), for example, sees differences in the weights that people place on equality and just deserts as explaining major political fault lines in the United States. Angst over inequality in the United States is focussed more on those in the financial sector – seen as undeserving of their bonuses, especially in the aftermath of the financial crisis – and not people who make more obviously useful things, like Steve Jobs did.

²¹ But equality may be the dominant distributional principle in the context of friendships and family relations, Konow et al (2009).

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A concern for equity and just desserts may also lie behind the interest in social and intergenerational mobility.

These principles, taken separately rather than together, are also reflected in the various philosophical camps: need in the views of Rawls and Sen; equity or just deserts in Robert Nozick's concerns for procedural fairness; and efficiency in the concerns of utilitarians to maximise aggregate utility.

Economics and fairness

Given Treasury's reliance on economics to underpin and give coherence to its policy advice, community notions of fairness can constitute a challenge. Economists typically give weight to efficiency, with perhaps a division between those whose conception is maximising aggregate resources or wealth (broadly understood) and those who seek to maximise aggregate utility (so that distribution is an aspect of efficiency).

Economists and policy makers are also not averse to using proxies and tags to achieve more efficient outcomes, which may sometimes run counter to community views as to what is equitable or proportional.

For example, rather than providing every one with sufficient transfers to ensure a minimum acceptable standard of living which in turn requires high tax rates, a given redistributive goal may be more efficiently achieved (that is, have less effect on labour supply and effort) by providing benefits only to certain groups who are likely to have relatively limited ability to work and are likely to be needful (Akerlof 1978). Old age and having severe disabilities are obvious examples.

Such 'tagging' is one strand of optimal tax theory, which seeks to maximise social welfare by taking account of both the efficiency and distributional consequences of tax and transfer policy settings.

A major area of debate in optimal tax theory is whether and to what extent savings should be taxed: whether the tax system should operate more like an income tax, or more like a consumption or expenditure tax. One argument for taxing savings is that individuals with higher natural ability, who are less likely to reduce labour supply and effort as taxes increase and who can earn higher incomes than others, tend to save more. Taxing savings then acts as proxy for taxing ability.

Old age and severe disability as tags, and savings as a proxy, may not clash with community ideas of fairness, but other tags – such as those based on racial or cultural identity – and proxies may.

Mankiw and Weinzierl (2010), somewhat tongue in cheek, noted that a person's height is also (like savings) positively correlated with underlying ability (and unlike savings

is harder to alter) and so having taller people pay relatively more tax than others would be welfare enhancing. But while a height based tax may be 'efficient', even the most hardened public finance economists find the idea of tax based on height disagreeable: it seems strikingly unfair.²²

22 While it would be unfair for tall people with relatively low ability, it is also the case that current non-height based arrangements are arguably unfair to low ability individuals who work harder or in unpleasant or high risk jobs, as the compensation for lost leisure, low amenity and high risk is typically subject to income tax. But as Kahneman (2011), page 229, notes for a different but analogous case, the '...rational argument is compelling, but it runs against a stubborn psychological reality: for most people, the cause of a mistake matters.'

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Considering future generations — sustainability in theory and practice

Christine Carmody¹

The concept of sustainability has become increasingly popular in international and domestic debate on social progress; it is also a key dimension of the Treasury wellbeing framework. However, confusion surrounds the concept, its measurement and its application in decision-making. Defined as maintaining or increasing wellbeing between generations, sustainability requires a focus on aggregate stocks of capital. Key features of the sustainability problem are uncertainty about the future, thresholds and substitutability between capital stocks. It is these issues, rather than theoretical paradigms, that are of practical importance to decision-makers.

¹ The author is from Macroeconomic Group, the Australian Treasury. This article has benefited from comments and suggestions provided by James Kelly, Simon Nash, Richard Parkhouse, Brant Pridmore, Spiro Premetis, Duncan Spender, Bruce Taplin, and Angela Woo. The views in this article are those of the author and not necessarily those of the Australian Treasury.

Introduction

‘Because we can expect future generations to be richer than we are, no matter what we do about resources, asking us to refrain from using resources now so that future generations can have them later is like asking the poor to make gifts to the rich.’

Julian Simon

An assumption that future generations will be always better off has permeated economic thinking since the work of Adam Smith and David Hume. It has been used to justify arguments that society need only worry about today because the future will take care of itself. If we begin to consider whether we owe the future something, then, as Abraham Lincoln has said, ‘posterity has done nothing for us’.

Such arguments hold only if actions today do not harm future generations; however, this cannot be known with certainty. It is possible that future generations can be made worse off by inheriting fewer resources from the current generation than they need to match our standard of living (Anand and Sen 2000).

Treasury’s mission is to improve the wellbeing of the Australian people, and the Treasury wellbeing framework identifies the sustainability of the opportunities available to Australians over time as relevant to that objective (Gorecki and Kelly 2012). In recent years, calls for inclusion of sustainability principles within policy-making and alternatives to Gross Domestic Product (GDP) as a measure of social progress have also increased. If there are reasons to consider future generations, how should this be conceptualised, measured and implemented?

A large literature on intergenerational equity and sustainable development has sought to answer these questions, with significant contributions from the fields of economics, philosophy and environmental science. In economics, it has been part of the economic growth literature since the work of Frank Ramsey (Ramsey 1928).

This literature continues to influence the international and domestic policy dialogue, including the G20 policy agenda;² the recent Rio+20 United Nations Conference on Sustainable Development; the work of the Organisation for Economic Cooperation and Development, World Bank and International Monetary Fund; international action on climate change; and the Australian Government’s Intergenerational Reports and Measuring Sustainability program. It is linked to ongoing efforts to improve measures

2 The Leaders’ Statement from the 2009 Pittsburgh G-20 meeting includes the quote: ‘As we commit to implement a new, sustainable growth model, we should encourage work on measurement methods so as to better take into account the social and environmental dimensions of economic development’.

of social progress, examples of which include the Australian Bureau of Statistics Measures of Australia's Progress and the United Nations-adopted System of Environmental-Economic Accounts.³ It underpins cost-benefit analysis and discounting that are widely used to assess the future impacts of current actions. The related theories of Hotelling and Hartwick are also standard elements of many natural resource management textbooks and are embedded in efforts to measure and apply sustainability concepts.

However, techniques and policy prescriptions derived from this literature are based on particular theoretical models of economic development whose underlying assumptions greatly simplify reality. Applying them without appreciating the consequences of these assumptions – or being aware of the range of alternatives – can lead to false confidence that we understand and are able to manage the impacts of our actions on future generations.

This paper distils the economics literature on sustainability and intergenerational equity concepts and offers insights relevant to their practical application in policy-making. After reviewing the assumption that future generations will always be better off, it offers a simple but broad definition of sustainability that addresses confusion about the concept. Different theoretical constructs for sustainability are then briefly presented and their assumptions contrasted. The consequences of these assumptions for sustainability measurement are explored, revealing complex implications for discounting. The fact that information about the future is lacking is a common theme throughout, and underpins concluding suggestions for improving decision-making in the face of uncertainty.

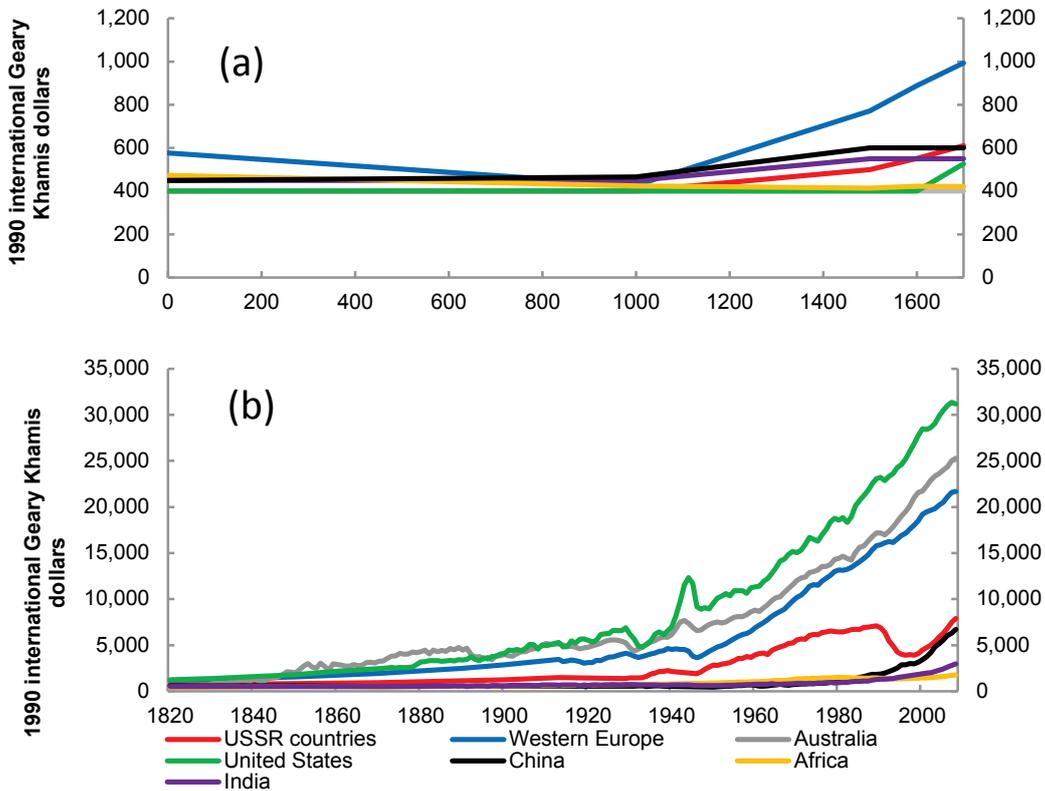
Will future generations be better off?

Historical trends in wellbeing and projections about the future state of the world can inform a sense of whether future generations will be better off, notwithstanding the significant data gaps associated with each.

Angus Maddison attempted to infer historical trends in wellbeing by drawing disparate and patchy data on the lives of past generations into a measure of GDP per capita, as shown in Chart 1. While GDP is an incomplete measure of wellbeing in that, among other things, it inadequately measures contributions from the environmental and social spheres, it can nevertheless provide some insight.

3 See for example Stiglitz, Sen and Fitoussi (2009).

Chart 1. Estimated country and region GDP per capita, (a) 1-1700 AD, and (b) 1820-2008 AD



Source: Maddison (2010).

GDP per capita appears to have remained at relatively low levels for many centuries, below even levels in the poorest African countries today, before growing rapidly following the industrial revolution. In the first one and a half millennia AD, life was short and marked by disease and famines. Average life expectancy at birth was 24 years in Roman Egypt during the first two centuries AD, and also in Medieval England (Maddison 2001), compared with 80 – 90 years in developed economies today (CIA 2012).

During the World Wars and Great Depression of the 20th Century, the wellbeing of affected countries declined. However, these events did not last for a generation and wellbeing as measured by GDP per capita resumed its growth during the periods of reconstruction that followed. Since the end of the Second World War, average world GDP per capita has more than tripled, driven by strong growth in developed economies and, more recently, Asia (Maddison 2010). Living standards in developing

countries remain much lower than those of the developed world, but they are still increasing. Higher incomes have been accompanied by better health, education, longevity, environmental amenity (particularly in advanced economies), and reductions in working hours and absolute poverty. Average world GDP per capita is currently around eleven times that of 1820, while the world population has grown nearly sixfold.

While the Maddison dataset suggests increasing wellbeing over time, there have been periods where the wellbeing of successor generations has decreased. For example, wellbeing in Europe declined between the first and tenth centuries, following the fall of the Western Roman Empire. As the Belgian historian Henri Pirenne described the region covering parts of today's France and Germany during the ninth century:

'If we consider that in the Carolingian epoch, the minting of gold had ceased, the lending of money at interest was prohibited, there was no longer a class of professional merchants, that Oriental products (papyrus, spices and silk) were no longer imported, that the circulation of money was reduced to a minimum, that laymen could neither read or write, that taxes were no longer organised, and that the towns were merely fortresses, we can say without hesitation that we are confronted by a civilisation that had retrogressed to the purely agricultural stage; which no longer needed commerce, credit and regular exchange for the maintenance of the social fabric' (Maddison 2001).

So, while recent history supports optimism about future generations' wellbeing, it does not provide certainty.

Looking forward, it cannot simply be taken for granted that the current growth in living standards can be maintained for future generations. The current economic turmoil in Europe risks creating persistent negative impacts on the wellbeing of some European countries that could be felt on a generational timescale. Productivity growth in developed economies has also been undergoing a decline since the 1970s; potentially reducing the momentum that has driven increasing living standards in recent times (TED 2012). For the first time in history, we are affecting our natural environment on a global scale, and the consequences of climate change are another potential source of long-lived declines in wellbeing. Thus, we cannot be sure that future generations will be better off.

Sustainability defined

In the broadest sense, sustainability refers to the problem of allocating scarce resources over the very long term. It is linked, but not identical, to the concept of intergenerational equity, which requires some kind of 'fairness' in such allocations

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between generations.⁴ The Brundtland Report (UNWCED 1987) established a conceptual basis for sustainable development and produced what has become the most widely recognised definition of it as:

‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’.

However, beyond this basic idea, there is little common understanding and much confusion of what sustainability means and what it requires in practice, including how it should be measured and how to develop policies consistent with the concept. By the late 1990s, John Pezzey felt that sustainability definitions could readily be counted in the thousands (Pezzey 1997). Such definitions range from ‘environmental protection’, to ‘fiscal sustainability’ to ‘sustainable economic growth’. Sudhir Anand and Amartya Sen note that while ‘economic sustainability is often seen as a matter of intergenerational equity... the specification of what is to be sustained is not always straightforward’ (Anand and Sen 2000).

A stock-based approach to sustainability

Such confusion can be resolved by applying the broadest concept of progress, namely wellbeing. This results in an overarching definition that is consistent with the literature and encompasses the range of narrower sustainability definitions already in circulation.

In this view, current *wellbeing*, seen by Treasury as reflecting a person’s substantive freedom to lead a life they have reason to value, is supported by economic resources, such as income, and also non-economic aspects of peoples’ lives (such as what they do and what they can do, how they feel, and the natural environment they live in). *Sustainability* refers to maintaining or increasing this wellbeing across generations. It depends on whether stocks of capital that matter for our lives are passed on to future generations, including:

- economic and financial stocks – the value of fixed assets such as plant and equipment and financial assets and liabilities;
- human stocks – the productive wealth embodied in our labour, skills and knowledge and in an individual’s health;
- environmental stocks – our natural resources and the eco-systems which include water, productive soil, forest cover, the atmosphere, minerals, ores and fossil

⁴ This can be interpreted as ‘just desserts’, as discussed Appendix Two of Gorecki and Kelly (2012).

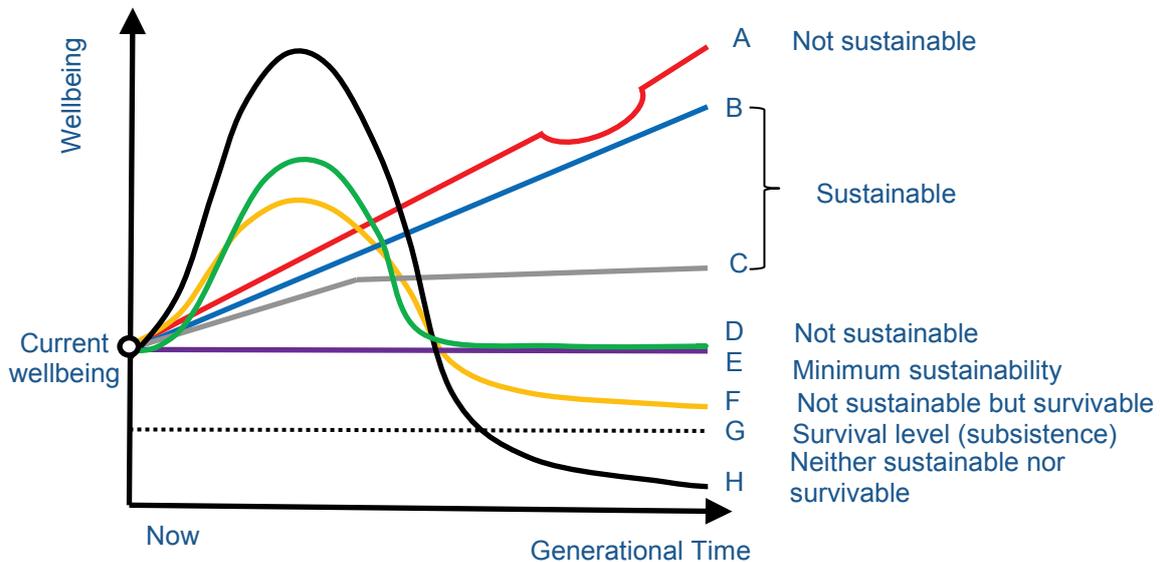
fuels. In other words, all the natural resources that support life and other services to society; and

- social stocks – which includes factors such as openness and competitiveness of the economy, institutional arrangements, secure property rights, honesty, interpersonal networks and sense of community, as well as individual rights and freedoms (Parkinson 2011).

Thus the wellbeing of future generations depends on the flow derived from stocks passed on to them.

Some of the confusion surrounding sustainability arises from efforts to combine current wellbeing, environmental and sustainability concepts, such as in green growth and green GDP measures.⁵ For example, the green GDP concept falls short of addressing sustainability as defined in this paper as it only focuses on economic and environmental flows, ignoring human and social aspects and whether wellbeing can be maintained over time through an assessment of aggregate stocks.

Chart 2. The relationship between possible economic paths, sustainability and intergenerational equity



Source: After Pezzey (1992).

⁵ Green growth refers to economic growth that emphasises the use of natural resources in an 'environmentally sustainable' manner. The green gross domestic product (green GDP) charges GDP for depletion of or damage to environmental resources, as valued in monetary terms.

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A definition of sustainability as maintaining wellbeing across generations does not always coincide with *intergenerational equity*, which is commonly interpreted as meaning that resources are allocated across generations so that the wellbeing of each is equal. Different development paths can therefore be described as survivable, sustainable or equitable, as shown in Chart 2. A path of constant wellbeing defines the minimum sustainable path E, which is also equitable. This may be different to the subsistence level G, another equitable path below which there are insufficient resources to survive. Development paths with rising wellbeing across generations, such as paths B or C, would be classed as sustainable but not strictly equitable.

Sustainable paths with the highest wellbeing overall are preferred (for example path B). Paths A, D, F and H are neither equitable nor sustainable, because wellbeing is neither constant nor rising continuously.

Substitutability between stocks has important implications for sustainability

In seeking to improve and maintain wellbeing, trade-offs may be necessary between or within environmental, social, human and economic stocks. Accordingly, the substitutability of individual stocks must be considered in relation to the effects on future generations, which leads to different policy prescriptions according to two ‘types’ of sustainability. Weak sustainability at its most basic applies when all the different forms of capital are completely substitutable. In this case, wellbeing can increase or be maintained so long as depletion of one type of capital is at least offset by increases in the other types. By contrast, strong sustainability applies when there is no substitutability between the different types of capital. This implies that each form of capital must at least be maintained to ensure that future wellbeing does not decrease. Since we live in a world where some stocks are substitutable and others are not, the relevant policy prescription lies somewhere between these two extremes.

Although relevant to all stocks, substitutability has been linked in particular to environmental stocks as an argument for strong sustainability. Environmental stocks (such as plants and animals) are argued to have limited substitutability – because their loss is irreversible or they are critical for human survival – requiring that they are preserved in their entirety. However, wellbeing could conceivably be maintained or even increase following irreversible loss of some stocks, or parts of stocks, provided the accompanying benefits of a trade-off at least offset the environmental losses.⁶ The question of substitutability is better characterised as whether a trade-off will be made that involves loss of or damage to individual stocks. This depends on the relative

⁶ Natural extinction rates must also be considered in relation to some environmental stocks, such that their management may not always be within human control, regardless of which sustainability prescription (strong, weak or in-between) is applied.

contribution to current and future wellbeing of the stocks in question, the quantities involved and whether the loss is irreversible.⁷

A stock or part of a stock is not substitutable when the negative impacts on wellbeing from its irreversible loss cannot be compensated for. Appropriate quantities of environmental stocks needed to sustain human life such as a supply of breathable air, drinkable water and conditions for growing food (such as soil quality and climate) provide a critical contribution to wellbeing. Certain amounts of trust and freedom (social stocks), and minimum amounts of health and knowledge (human stocks), are also critical for human survival, and once lost, cannot be readily regained. There is a strong justification for ongoing protection of appropriate quantities of such stocks.

Determining these quantities depends on threshold effects. For example, an ecosystem may be reduced to a certain size and still remain 'healthy', below which key organisms will have insufficient resources to survive. At this size, the stock is vulnerable to unforeseen events (such as natural disaster) reducing it below the threshold. Similarly, once trust is reduced below some critical point, society would cease to function. If a stock is not substitutable beyond some threshold, the appropriate risk-management response is to maintain the stock above that threshold, with a sufficient buffer to minimise vulnerability.

Damage to some stocks can be reversible and, depending on the costs and times involved, may increase the likelihood that a trade-off involving damage would be chosen. For example, loss of habitat or pollution of a waterway could be rehabilitated over time.

Maintaining or improving wellbeing over generations should therefore involve applying weak sustainability where possible, and strong sustainability for stocks, or parts of stocks, that are not substitutable. As argued by Anand and Sen 'Preserving productive capacity intact is not...an obligation to leave the world as we found it in every detail [strong sustainability]. What needs to be conserved are the opportunities of future generations to lead worthwhile lives' (Anand and Sen 2000). Similarly, Robert Solow felt that 'recognition of the fact of substitutability or fungibility converts a matter of 'simple justice' into a complicated question of resource allocation' (Solow 1986).

To make effective trade-offs, information on the relative contributions to wellbeing of alternate courses of action is needed. However, this information is often not available or incomplete. Because future generations' preferences and technology are unknown, we are unable to determine with certainty whether a stock, or parts of a stock, will be

⁷ It is also worth noting that the increasing scarcity of any stock will increase the marginal costs of its loss (assuming it is measured).

substitutable. Current experience regarding fundamental determinants of wellbeing can serve as a guide to stocks that are likely to not be substitutable below a certain point – for example basic freedoms and education, supplies of breathable air, drinkable water and food. Beyond this, identification of thresholds and reversibility of damage will be important in improving our ability to make such judgements in the face of uncertainty.

Theoretical approaches to sustainability

The main approach to intergenerational allocation of resources within economics was pioneered by Frank Ramsey in 1928, and defines economic growth as being ‘optimal’ when resources are allocated between generations to maximise the summed present value of utility (or wellbeing) of all generations, according to:

$$\int_0^{\infty} e^{-\rho t} u(c_t) dt, \quad (1)$$

where ρ is the rate of pure time preference and $u(c_t)$ is wellbeing as a function of consumption. Here consumption can include enjoying the existence of stocks without necessarily using them, for example freedom of speech or a national park. It is assumed that the wellbeing of a generation is the summed wellbeing of all the individuals in that generation.

It is natural to want to consider the wellbeing of different generations as having equal weight. However, adding the wellbeing of an infinitely long stream of different generations would result in an infinite sum. To make the optimisation tractable, the wellbeing of different generations is typically weighted by the discount factor $e^{-\rho t}$.

Under appropriate conditions, the optimising approach selects a ‘golden rule’ path in which output and consumption per capita and stocks are at maximum feasible levels.⁸ For a hypothetical economy with only reproducible stocks, such as plant and equipment, this typically results in consumption per capita increasing according to the rate of technological change. For hypothetical economies with only depletable stocks, such as mineral resources, no golden rule could exist because there is no reproducible capital, and the optimal path if it exists tends to result in declining consumption per capita.⁹ The optimal path for economies with reproducible, depletable and naturally renewable resources (such as forests) depends on a number of factors such as the rates of population growth, technological change, natural resource extraction, natural resource renewal and discovery, and the degree of substitutability between the different types of resources.

8 Phelps (1961) described the golden rule as the growth path that gives the highest indefinitely maintainable level of consumption per head. This requires a balance between consumption and capital accumulation.

9 Assuming no discovery or recycling.

Because this approach (hereafter referred to as the Ramsey optimising approach) selects the greatest sum of wellbeing across generations, the wellbeing of one generation can be traded off against that of another, so long as the loss to some generations is outweighed by gains to other generations.

Optimal growth is not necessarily sustainable

However, Ramsey's requirement that the present value of all generations' wellbeing is maximised does not rule out unsustainable outcomes. Since the worst off generation is allowed to exist at any point in time, optimal growth can result in future generations being relatively worse off than current generations, as illustrated by paths D, F and H in Chart 2. Moreover, since the use of discounting results in the wellbeing of generations further into the future being given less and less weight, this approach has been argued to represent a 'dictatorship of the present'. Sustainability is not necessarily implied by optimality.

The 'maximin' approach

An alternative approach has evolved from John Rawls' *A Theory of Justice* (Rawls 1971), which argues that the fairest allocation of 'primary social goods' in a society can be identified using a 'veil of ignorance', where if an individual does not know what her allocation of primary social goods is, she will choose to maximise the position of the worst-off member of society.¹⁰ This is also known as a 'maximin' principle.

Although Rawls did not explore this concept in relation to intergenerational questions, Kenneth Arrow (Arrow 1973), Robert Solow (Solow 1974) and many others have, arguing that under a similar veil of ignorance, an individual would choose to ensure that the welfare of the least well off generation was maximised. Here the implication is that the consumption of all but the worst-off generation should be reduced to benefit that generation; the optimisation is sensitive only to the wellbeing of the poorest generation. This approach will be pro-future if the future is relatively poor, and pro-present if the present is relatively poor. While inequality between generations is allowed under maximin as long as the wellbeing of the poorest generation is improved, this approach has been used to argue that the fairest outcome is when wellbeing (or consumption) of all generations is equal, but at the maximum feasible level, for example path E in Chart 2. Thus, the 'fairest maximin' approach is defined as an optimising approach with the added constraint that consumption is constant.

Solow showed that, for a hypothetical, fully substitutable economy with both renewable and depletable resources (and ignoring trade), achieving constant consumption requires that the total capital stock is maintained – in other words zero

¹⁰ Primary social goods are defined by Rawls as liberty, opportunity, income, wealth, and the bases of self-respect.

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net saving – in cases where technology is constant, and negative net saving when technology is growing (Solow 1974). In the latter case, it is assumed that growing technology will create more capital in the future, such that future generations will be sufficiently compensated for a reduction in aggregate stocks today. However, this approach does have some undesirable properties, including that an initially poor economy would be locked into maintaining low levels of wellbeing.

Other approaches to considering future generations

Graciela Chichilnisky sought to generalise the Ramsey optimising approach so that neither current nor future generations are preferred, by maximising (Chichilnisky 1997):

$$\alpha \int_0^{\infty} \Delta(t)u(c_t)dt + (1-\alpha) \lim_{t \rightarrow \infty} u(c_t), \quad 0 < \alpha < 1. \quad (2)$$

The first term of Equation (2) represents Ramsey's approach and favours the selection of the maximum sum of the wellbeing across generations, weighted using a general discount factor $\Delta(t)$. The second term favours the path with the highest wellbeing level in distant periods. The two approaches are weighted through α , determining which approach dominates. Depending on the choice of α , economies that begin with low levels of wellbeing are not locked into them.

With a similar intent, sustainable discounted utilitarianism resolves intergenerational conflicts by imposing on Ramsey optimisation that the evaluation is insensitive to the interests of the present generation if the present is better off than the future. This approach trades off present and future consumption if and only if the present is worse off than the future, while it gives priority to the interests of future generations otherwise (Asheim and Mitra 2010).

Alternatively, the rank-discounted utilitarian approach gives priority to worse off future generations not only in terms of their absolute level of wellbeing but also their relative rank in wellbeing, by applying a negative discount rate. If the future is better off than the present, this criterion is the same as the Ramsey optimising approach, whereas if future generations are worse off, it calls for more protection of the future (Zuber and Asheim 2012).

While these approaches seek to weight different generations more equitably, all of them require knowledge about future generations' wellbeing to be implemented.

The Hartwick and Hotelling results appear to provide a prescription for sustainability

Shortly after the first oil shock in 1973, John Hartwick sought the fairest maximin outcome for a hypothetical economy with one perfectly non-renewable and one

perfectly renewable resource, assuming constant population and no technological progress (Hartwick 1977). He showed that, if the competitive rents from consuming the non-renewable resource are invested into the reproducible resource, constant consumption can be maintained. The competitive rents are given by Hotelling's result that the shadow value of the resource rises at a rate equal to the current marginal product of reproducible capital in a perfectly efficient economy (Hotelling 1931). Thus, Hartwick showed that accumulation of reproducible capital through investment of the Hotelling rents exactly offsets the (efficient) depletion of the exhaustible resource.

However, critics of Hotelling's rule have pointed out that observed resource prices do not move along a smooth price path, rising with the interest rate. This can be attributed to several factors, such as producers continually adjusting expectations regarding present and future demand and supply conditions, and imperfect competition.

Further, because markets do not fully reflect the needs of future generations and the technologies available to them, Hartwick's rule does not provide certainty that our actions today are sustainable (see for example Asheim, Buchholz and Withagen 2003). Determining whether short-run behaviour is compatible with sustainability requires understanding the long-run properties of an economy's path. This calls for complete knowledge about the future behaviour of the economy, which is impossible to obtain.

Theoretical conclusions should be applied with care

The theoretical approaches reviewed above have provided useful and popular insights regarding the requirements of sustainability. However, care must be taken in applying them to the real world, given their assumptions of perfect markets, closed economies, constant technology and population, costless extraction of resources, absence of discovery and simple fully-substitutable two-stock economies.

Apart from simplifying assumptions, lack of knowledge about the wellbeing of future generations prevents confident application of any of the theoretical approaches described in this paper to the real world. Despite these practical limitations, all of the approaches allow earlier generations to draw down the stock of exhaustible resources so long as they add sufficiently to the stock of reproducible capital (where the stocks that are being depleted and those that are being produced are substitutable), such that overall stocks are maintained. While it is possible that future generations could indeed be better off, such that negative net savings could be more appropriate, maintaining aggregate stocks represents a 'no regrets' approach in the absence of certainty about future wellbeing. This provides a practical basis on which to focus effort, as already highlighted in the definition of sustainability presented above.

Sustainability measurement

The difficulties in selecting an appropriate framework for sustainability are reflected in efforts to measure it. Several decades of international effort on this front have resulted in a large variety of sustainability measures influenced by the range of sustainability definitions that have been developed.

Depending on the underlying concepts, some measures may not reflect sustainability as described in this paper. For example, those measures with a strong environmental focus that ignore social aspects, such as institutional arrangements, would be incomplete measures. Thus there is a risk that using the wrong measure will mislead decision-makers about the impacts of their decisions on future generations (Gorecki *et al.* 2011).

Beyond these concerns, developing an ideal and comprehensive sustainability measure is likely to be impossible given intractable information gaps regarding future and current wellbeing. Identifying and comprehensively quantifying the factors that make up current wellbeing is costly and accurate knowledge about the future is impossible. This means that, while sustainability measures will continue to be refined, it is important that decision-makers maintain awareness about their particular limitations. Estimates of impacts on future wellbeing will always be based on incomplete, though improving, measures of current stocks and best estimates about future preferences, consumption and technology.

Comprehensive Wealth and Adjusted Net Savings

An economy's *comprehensive wealth* represents a single measure of its aggregate stocks and thus is directly relevant to the measurement of sustainability. Comprehensive wealth is defined as the shadow value of all economic, natural, human, and social stocks, where true shadow values of these stocks should reflect the entire future of the economy. A change in comprehensive wealth at constant shadow prices is defined as comprehensive investment.

Assuming a constant population and constant shadow prices, non-declining comprehensive wealth, in other words non-negative comprehensive investment, amounts to a variation of the Hartwick Rule. Notwithstanding the already-described practical limitations of the Hartwick Rule, attempting to improve the underlying data for this measure can provide useful information regarding changes to stocks over time.¹¹

11 Recent efforts to generalise this for a varying population have shown that non-declining comprehensive wealth per capita is only consistent with intergenerational equity and sustainability under restrictive conditions, including that population grows at a constant rate (Arrow *et al.* 2010).

Since the 1990s, the World Bank has produced estimates for comprehensive wealth and comprehensive investment, known as Adjusted Net Savings (ANS). Australia's comprehensive wealth (in 2005 United States dollars) increased from around \$8 trillion in 1995 to \$11 trillion in 2005, and comprehensive wealth per capita increased from around \$416,000 to \$519,000 in the same period (WB 2011). This provides some comfort regarding Australia's levels of aggregate stocks; however, data limitations mean that only tentative conclusions about sustainability can be drawn. Because of a lack of data, the estimates exclude natural resources such as diamonds, uranium, lithium, fisheries, hydro-power, ground water, wetland ecosystem services, the aesthetic value of natural landscapes, biodiversity and carbon storage. The values of protected environmental areas are also underestimated and measures of social and human stocks are lacking. Non-market valuation techniques were used to value stocks which are not traded in markets in monetary terms, bringing further uncertainty. Moreover, as information about future generations' wellbeing is lacking, an estimated future consumption stream was used to generate net present values of stocks.

Sustainability measurement using a dashboard

Given problems associated with converting all stocks into monetary equivalents, the 2009 Report of the Commission on the Measurement of Economic Performance and Social Progress recommended that a single sustainability measure may not be appropriate. Rather, the state of various stocks should be reported in a 'dashboard' format, presenting stocks in monetary units where appropriate but otherwise in physical units (Stiglitz, Sen and Fitoussi 2009). The ABS Measures of Australia's Progress is one such attempt to do this for Australia, with measures for both stocks and flows grouped within social, economic and environmental domains.

This approach avoids contestability associated with aggregation or making assumptions about the future, although its accuracy is still influenced by methodologies for measuring individual stocks. The downside is that no guidance is provided on how to weight the various stocks to assess the state of overall wellbeing at a given time. This seems appropriate where aggregation methodologies cannot be rigorously defended, and a variation on this approach would be to aggregate where possible and provide separate measures otherwise.

Sustainability has implications for discounting and cost-benefit analysis

The use of a discount rate to allow the value of economic effects occurring at different times to be compared – by converting each future dollar amount associated with a project (or an action, trade-off, or non-action) into a present dollar amount – is a key feature of efforts to measure impacts of current actions on future generations.

In the ANS approach to monitoring the sustainability of society as a whole, discounting is used to estimate present values of stocks. Discounting is also used to

evaluate the future impacts of decisions by individual social agents by looking at the associated costs and benefits. Factoring future effects into cost-benefit analysis (CBA) is seen by many as sufficient to meet the requirements of sustainability. However, the theoretical approaches explored earlier have implications for discounting that suggest otherwise.

The Ramsey optimising approach is typically used to derive an expression for a social rate of time preference. Although the other theoretical constructs described in this paper could also be used, use of Ramsey optimisation automatically implies that the resulting discount rate and CBA may not be consistent with sustainability. The discounted utility flow is maximised according to Equation (1), where ρ is the rate of pure time preference and $u(c_t)$ is utility as a function of consumption. This leads to an expression for social rate of time preference (SRTP), also known as the consumption discount rate:

$$SRTP = \rho + \eta g \quad (3)$$

where η is the elasticity of marginal utility with respect to consumption and g is the rate of growth of per capita consumption.^{12, 13} η reflects concern for equity between generations, such that if g is large and positive, a high η leads to a greater SRTP and the consumption of future generations is given less weight. If income is increasing, each successive generation will be better off than the previous generation. In such circumstances, it makes sense that the present generation would discount the future, preferring an extra unit of consumption today to consumption tomorrow, since the latter is relatively more plentiful and so less valuable. Conversely, a low η reflects a greater concern for future generations. It is possible that the SRTP can vary over time, depending on the behaviour of g , although it is often assumed that g is constant.

Arriving at a value for the SRTP requires judgements about its constituent elements and a range of values have been advocated between -3 and 27 per cent (Weitzman 2001). A key reason for the variation in recommended values occurs because Equation (3) can be interpreted positively or normatively. This has driven ongoing debate regarding the choice of a discount rate that effectively captures concern for intergenerational equity or sustainability, most prominently in relation to climate change.

12 See Heal (2005), for example, for a derivation.

13 Along an optimal path, a planner equates the marginal return from saving, represented by the market rate of interest, r , with the marginal cost of saving, represented by $\rho + \eta g$. In cost-benefit analyses it is common to compare present values of time streams of money values of consumption, using a 'consumption discount rate', rather than the so-called 'utility discount rate' (the pure time preference rate), ρ (Creedy and Guest 2008).

From a positive perspective, the appropriate question might be: ‘To what extent can the return on investments be maximised to benefit future generations?’ (Arrow *et al.* 1995). As such, the SRTP is selected according to how individuals behave in the market or in experiments – in other words, observing market rates of return. Alternatively, a normative approach selects the parameters g , η and ρ according to what the population’s preferences should be on an ethical basis. The key question from this perspective might be: ‘How (ethically) should impacts on future generations be valued?’ For example, ρ is often specified as equal to zero (or very close to zero) under a normative approach.

Both of these questions are valuable, and in a hypothetical economy with perfect (Pareto optimising) markets, sustainable transfers between generations and full information about all future states, they should provide equivalent results.¹⁴ The disagreement between these approaches relates to judgements about how markets reflect the interests of future generations. It is exacerbated by confusion about concepts and the fact that there is no escape from fundamental judgements made by individual analysts about the current and future state of society.¹⁵ ‘Society’ itself cannot be thought of as a decision-maker, since no one agent controls the whole of society; accordingly, such judgements must always be attributed to analysts, who should be transparent about their use (Creedy and Guest 2008).

Positive discount rates are unlikely to adequately consider future generations

The positive approach focuses on the opportunity cost of capital – what benefits to society or individuals would the funds return if left in the private sector – and the need to direct investment to the most productive uses, given that even small differences in rates of return result in large differences in the long run. As market rates of return are positive, the implication is that future generations will be better off, and that compensation from one generation to another for any loss of stocks will occur automatically. Thus, the positive approach argues for choosing the path that maximises the market value of consumption, making transfers between generations separately out of the larger present value of consumption.

Under a positive approach, the nature of individual costs and benefits associated with different stocks, for example their risk profile (if not using a certainty equivalence approach), may warrant the use of different discount rates according to the relevant market rate of return.

14 Sustainable transfers between generations are taken to mean transfers that ensure that wellbeing of subsequent generations is maintained at current levels or increases.

15 One confusing concept is the difference between discounting one’s own wellbeing and discounting the wellbeing of others in the future.

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Market returns for a small, open economy such as Australia are determined by global interest rates, or essentially global saving behaviour (Harrison 2010). However, observed market rates of interest reflect how individuals are willing to trade-off consumption over time, and there may or may not be a close correspondence to how a hypothetical ethical social planner would be willing to trade-off consumption across generations. Dietz, Hepburn and Stern (2008) note the difficulties in observing ethics from behaviour, listing four conditions necessary for revealed preferences to perfectly guide ethical social policy decisions:

- the observed behaviour reveals a unique preference;
- the revealed preferences are 'true' preferences, based on full, correct information without decision-making error;
- the preferences are derived from a context that can map appropriately to the ethical judgement being made (that is, the preferences are 'contextually relevant'); and
- the preferences are appropriate for social rather than private ethical choices.

Therefore, market interest rates may not provide a robust indicator of the marginal trade-offs to society over the long term.

This is exacerbated by market imperfections and the challenges in making appropriate transfers to future generations, which can be made through taxes, regulations and fiscal policy.¹⁶ For dollars invested today, the intervening generations must keep investing for the benefit to be passed to future generations, and there is no guarantee that the transfer will reach the intended recipients when there are many intervening generations.¹⁷

There is a case for variable normative discount rates

The normative approach assumes that market measures are insufficient to indicate whether a project is worth undertaking, and that the right discount rate depends upon

16 A large literature on 'Sen's Isolation Paradox' (Sen 1967), according to which an individual will only sacrifice consumption in favour of future generations if others are guaranteed to do likewise, explores reasons why private saving behaviour fails to provide the right amount of bequests to future generations, including that such bequests represent a public good which is undersupplied by the free market.

17 Harrison argues that the risk that intervening generations would not keep investing could be included in a risk component (Harrison 2010).

judgements (which can be supported by empirical evidence or ethical considerations) about the correct distribution of resources between generations.¹⁸

The Ramsey optimising approach is usually assumed in the selection of the parameters g , η and ρ , which then may not be consistent with sustainability despite the intention of analysts to reflect the interests of future generations in their values. The resulting normative discount rate is usually set as a constant value below the market rate of return to capital that would be selected using the positive approach. Ramsey argued that, because there is no ethical or moral basis for giving less weight to the wellbeing of future generations, ρ should be equal to zero (Ramsey 1928). However, even if ρ is equal to zero, the SRTP will not be zero if g and η are nonzero. Others have argued that ρ should be adjusted for the probability of extinction, although plausible estimates to this effect would result in a very small value (Arrow *et al.* 1995). Moreover, economists don't know what the likely rate of future per capita economic growth g will be over the very long term, and different rationales exist for the choice of η based on distributional and intergenerational concerns and relative risk aversion.

The other theoretical approaches discussed in this paper will result in different versions of the SRTP that are consistent with sustainability, and generally lead to the conclusion that the discount rate should vary with time. Under the fairest maximin approach, the optimising process results in a sequence of variable discount factors ρ_t , which are derived as a price support of the constant consumption path (Withagen, Asheim and Bucholtz 2003). The Chichilnisky criterion, requiring that the ranking of consumption paths be sensitive to consumption in both the present and the very long run, has been shown to lead to a declining discount rate (Chichilnisky 1997). Even the Ramsey optimising approach can lead to a variable discount rate through the parameter g ; for example if g is declining, this implies a decreasing SRTP, all else equal.

Moreover, the degree of substitutability between stocks can affect the social discount rate. When there is perfect substitutability between a produced and a depletable stock, the social discount rates associated with both stocks has been shown to equal the rate of pure time preference. For limited substitutability between produced and depletable stocks, the discount rates of each can be constant, increase or decline over time depending on the degree of substitutability between them (Traeger 2011).

18 As argued by Harrison, the normative approach “implies that the current generation goes not save and invest enough for the future and makes a case to reduce private and public-sector consumption and increase savings and investment instead” (Harrison 2010). Harrison feels that the appropriate response is to increase savings and investment until the rate of return on private capital falls to the advocate's prescribed ethical discount rate. However, this still requires a judgement about the appropriate prescribed rate.

A declining SRTP is consistent with observed behaviour, which suggests that individuals apply higher discount rates in the short term and lower rates for longer time horizons, leading to a so-called ‘hyperbolic discount function’ (Frederick *et al.* 2002).^{19, 20} In 2003, the United Kingdom Green Book began to recommend hyperbolic discount rates for the evaluation of long term projects, starting at a rate of 3.5 per cent and declining to 1 per cent beyond 300 years (HM Treasury 2003).

While varying discount rates would be consistent with sustainability in theory, the correct sequence can only be determined using full information about all future states of the economy. The lack of this information means there is no obvious way to choose between theoretical approaches with which to derive the discount rate sequence. The consequences are that it is difficult to evaluate relative impacts through time in a way that adequately considers future generations; such impacts can only be assessed on a best-estimates basis.

Beyond this difficulty, CBA encounters similar measurement issues as comprehensive wealth, in that it requires valuing stocks in monetary terms.

Implications for policy and measurement

An exploration of the rich literature on theoretical and practical approaches to sustainability has revealed three common, interlinked elements that are critical to appropriately designing public policy on this issue. These elements are: uncertainty about the future, a focus on stocks, and an understanding of the degree of substitutability between those stocks.

Decision-making in the face of uncertainty

The most difficult of these elements is uncertainty, a number of sources of which have been raised in this paper. For example, while economic forecasts play a very important role in public policy, the uncertainty associated with such forecasts increases with lengthening timescales. Modelling risk several hundred years into the future is likely to give spurious results, because we simply don’t know what the probabilities are (Dasgupta 2008). There are fundamental uncertainties about the rate of economic growth, the amount of capital that will be accumulated, the degree of diminishing returns, the state of the environment, the state of international relations, the level and pace of technological progress, the rate of pure time preference, the degree of

19 Noting that individual behaviour may not reflect ethical social behaviour, as previously described.

20 A well-known consequence of non-constant rate of time preference is continual revision of (formerly) optimal plans, otherwise known as time inconsistency (see for example Phelps and Pollak 1968 and Traeger 2011), although this may not occur when it is associated with uncertainty (Weitzman 1998, Dasgupta and Makin 2005).

substitutability of stocks, and the many other features that might be relevant to determining the impacts of current actions on future generations (Weitzmann 1998).

We cannot even say for certain whether future generations will be better off. This in turn hampers our ability to select the right theoretical framework for considering future generations, with consequences for selection of discount rates. We know that discount rates should probably be variable, and they should probably be different depending on the substitutability of stocks being assessed, but we lack the information to be able to say how they should vary.

Accordingly, discounting and cost benefit analysis should not be expected to provide more than a best-efforts guide to impacts on future generations, regardless of whether the discount rate is chosen using a positive or normative framework, or using different theoretical constructs such as Ramsey optimisation or the Chichilnisky criterion. It is also clear that a normative discount rate could be inconsistent with sustainability if based on the commonly-used Ramsey optimising approach. The policy implications are that decisions will continue to be made with a high degree of uncertainty and on the basis of 'best estimates'.

This result does not materially change the current realities of decision making; rather, it highlights them. It does not preclude decision makers seeking as much information as possible about the impacts of decisions on future generations. What is important is that decisions affecting future generations are made in a transparent way. This requires making underlying assumptions clear; choosing and using discount rates appropriately for the particular issue being addressed; and testing an array of scenarios covering whether, and by how much, future generations will be better off. For example, the *Intergenerational Report 2010* presents a wide range of information relevant to the wellbeing of future generations (AG 2010). No net present value analysis is applied to those estimates. Instead, the data for future years is presented so that readers can make their own assessments. While transparency by itself does not guarantee appropriate transfers to the future, it should increase awareness that a choice about transfers is being made.

Decision-makers should be aware of the risk and uncertainty associated with decisions that affect future generations, and design policy to manage this by allowing scope for revision when better information about future impacts becomes available. In the absence of full information, doing 'nothing', in the sense of not considering future generations, is not a way of minimising risk that they will be worse off, because it nevertheless implies a choice about transfers to the future.

Maintaining aggregate stocks according to substitutability and thresholds

The second and third elements, the maintenance of appropriate stocks of social, human, economic and environmental capital for future generations, and the substitutability of those stocks, describe both a fundamental approach to achieving sustainability and further practical opportunities to reduce uncertainty.

The stocks that we have and are able to produce today represent the totality of what we are able to leave to future generations, should we choose to do so. The more we know about the quantity and quality of these stocks, and the more we are able to monitor the rate at which they are being used or replenished, the more informed we will be regarding that choice. Understanding the degree of substitutability between stocks will further enable informed decisions about trade-offs between them. As such, ongoing improvements to sustainability measures (whether they are dashboards or measures of comprehensive wealth) and forecasting techniques are of value. Efforts to better understand how the various contributions to wellbeing might be weighted, and how those weights might change over time, are also important.

While we cannot know what future generations will value, we can know whether a particular non-renewable stock is near to being entirely consumed or destroyed. This should send signals to decision-makers regarding the potential loss of opportunities for future generations associated with the loss of that stock. A precautionary approach might then be taken, where an appropriate amount of the stock is preserved for posterity. In some cases this could also provide incentives to find substitutes – through market signals or government decisions – for example through research and development.

We can also be better informed regarding thresholds associated with those stocks. In the absence of such knowledge, neither market prices nor calculated shadow prices will appropriately identify when a non-substitutable stock is at risk, and a threshold could be passed without the opportunity being taken to decide whether this is the right choice.

International efforts to address climate change are a clear example of policy action in response to information about thresholds, and work on better identifying thresholds at the global, regional and local levels continues. For example, the 2009 paper by Rockstrom, Steffen and others (Rockstrom *et al.* 2009) proposes a framework of nine planetary boundaries that define a 'safe operating space for humanity' as a precondition for sustainable development. The authors argue that some of these boundaries have already been crossed, while others are in danger of being crossed. The concept of planetary boundaries has grown in popularity, and appears in the United Nations Environment Programme's Global Environmental Outlook reports. Whether

all of the boundaries identified by Rockstrom *et al.* represent accurate global boundaries beyond which human wellbeing is threatened remains the subject of debate, however, such efforts are a first step. Work on global boundaries must also be complemented by improved understanding of thresholds at the local and regional levels, which may be more applicable for particular stocks such as localised ecosystems.

While the number of stocks that are relevant to wellbeing is very large, this does not necessarily imply an impossible monitoring and research task. Assuming that many stocks will be substitutable, attention could focus in particular on stocks that are being depleted and are not substitutable, especially those for which market valuation is poor or non-existent. Priorities for policy action, identification of thresholds and searches for substitutes could be established as follows. Stocks that have no substitute, which exist in small quantity and which are being depleted rapidly or are nearing their threshold, should be protected unless there is certainty that future generations' wellbeing will not be adversely affected. Protection and research on thresholds should be the focus for stocks which are being depleted rapidly but for which a threshold is unknown. Research on substitutes should be a priority for stocks which may be substitutable but are being depleted rapidly, whether or not thresholds are known. Stocks which exist in large quantity, are substitutable and are being depleted slowly require no action.

Conclusion

While history suggests an increasing trend in wellbeing, we cannot take for granted that future generations will be better off. Sustainability – requiring that wellbeing is at least maintained for future generations – is therefore an important consideration for decisions that have long term impacts.

A range of theoretical approaches to sustainability have been developed, however, lack of information about the future makes choosing between them difficult, with implications for the choice of discount rates. Notwithstanding this uncertainty, a focus on maintaining aggregate stocks represents a no-regrets approach to sustainability. As concepts and techniques for measuring sustainability continue to be refined, a practical, best-efforts way to consider future generations appropriately requires monitoring changing levels of stocks, their substitutability and their thresholds, and protecting parts of stocks where future compensation for their loss is uncertain.

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Tax policy challenges in a changing world

Rob Heferen

This speech was delivered on 1 August 2011 by Rob Heferen, Executive Director, Revenue Group, as part of the Australian National University's Gruen lecture series.

Introduction

It is a great pleasure to be asked to speak with you this evening, and a particular honour to present a Gruen lecture, named after Fred Gruen, a widely respected Economics professor here at ANU and the father of David Gruen, a close colleague of mine at Treasury. Fred Gruen was an academic economist who had a keen interest in public policy and its impact on ordinary people. His concern to find workable solutions to contemporary policy problems fits very well with what I want to talk about tonight.

I've been lucky enough to have spent a significant part of my working life thinking about tax, from both a policy and law design perspective. It is something that gets more interesting as time goes on, but it certainly doesn't get any easier.

Jean-Baptiste Colbert, a French finance minister in the 17th century, famously quipped that 'The art of taxation consists in so plucking the goose as to obtain the largest possible amount of feathers with the smallest possible amount of hissing'. Taxation is a practical art, and governments will always get hissed at. Tax debates in the public domain are intensely political, and I certainly don't want to stray into such debates given my role as a policy advisor, not a policy maker.

But we all know that for the government to finance needed public services, it needs to raise revenue from taxation. And levying taxes has major economic costs well beyond the costs of collecting the revenue. Taxation has distorting effects on behaviour that will affect individuals' decisions about how much they work, how much and through what vehicles they save, and how much and what they consume, as well as decisions by business about investment and production. The costs of tax, then, stem not from the money it raises – because at least that can be put to good use – but the key economic decisions it changes.

In theory the government could raise much of its revenue from taxes that perfectly correct for external costs of one kind or another, and this could do away with the type of distortions I've just mentioned. But people's preferences are highly heterogeneous and the detailed information needed to set such taxes is, in practice, not available. It is therefore very difficult for the government to set such 'corrective' taxes in a way that avoids introducing unintended incentives. So this avenue will usually result in some net efficiency losses.

We must also remember that efficiency is not the end of the story. A tax's perceived fairness is a crucial determinant of its social acceptability, and therefore its capacity to remain part of the policy fabric. So we must seek to raise the revenue we need at the

lowest possible cost, while recognising that some cost is unavoidable – and the way we do that must be seen as fair.

Moreover, the challenges of an ageing population, even with expenditure restraint, will place further pressure on revenue. Given the many worthwhile things that we citizens will probably want Governments to do more of in future, raising the tax revenue needed at the lowest cost to public wellbeing will become increasingly important.

All fairly standard stuff so far. What I would like to drill into is how our system might in future cope with a rapidly changing external environment but to set the scene for this, I would first like to paint a picture of what we know, and just as important, what we don't.

The recent history of tax

Perhaps we should start with some of the recent history of tax.

Before the twentieth century, and in the early part of it, governments' revenue raising options were much constrained by practicality in a world where record keeping and information gathering were more limited than they are now. Distributional concerns were often addressed by taxing tangible things that rich people tended to have more of.

Some of the results were less than wonderful. Window taxes – which was a property tax based on the number of windows in a house – saw windows bricked in and road frontage taxes led to long thin homes.

These were early lessons that if you change the 'rules of the game' to try to extract money from current behaviours, you are likely to change behaviour, put a hole in the tax base and end up with less than desirable outcomes. This is not to deny that taxes can be used effectively to influence behaviour, but the dangers of distorting behaviour when you don't want to are an important lesson, and one that has been hard to learn.

With increases in the administrative capacity of governments, and with demands for war finance, policy was pushed towards the taxation of income generally, rather than tangible proxies for it. The work of Robert Haig and Henry Simons in the 1920s and 30s made the case for comprehensive income taxation, and this remained the dominant paradigm for the next 40 odd years.

Across developed countries, the need to raise more revenue to meet the demands of the post-war welfare state led to pressure on the personal tax base, and two broad directions emerged. High marginal rates ensued (particularly in the US and Australia) and European countries did the same, as well as pursuing a fairly comprehensive

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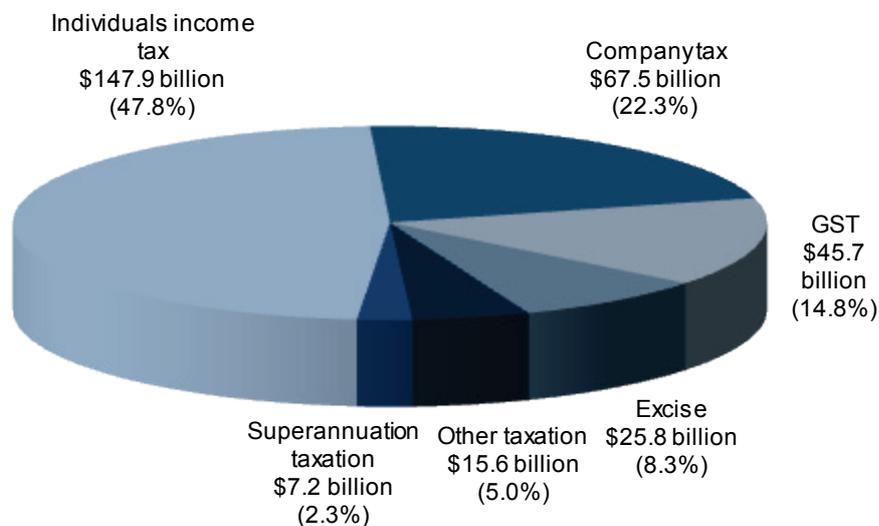
model for taxing consumption via the Value Added Tax. But by the 1970s, at least in Australia, the damaging effects of high marginal rates on personal income became painfully obvious, in terms of incentives to avoid and evade tax. It was clear that change was needed. This led to the McMahon government commissioning the Asprey review in 1972.

Justice Ken Asprey's report, delivered in 1975, provided a coherent set of recommendations to, amongst other things, broaden the income tax base. Much of this vision became a reality through the 1980s as governments introduced reforms that included taxing capital gains, fringe benefits and foreign source income.

I suspect those in my role were increasingly comfortable with these directions, but not everyone agreed.

Throughout the 80s and 90s and up until now the PIT has continued to be the 'workhorse' of the Australian tax system, hauling most of the load but sometimes a little confused about its direction.

Chart 1: Sources of tax revenue, 2011-12

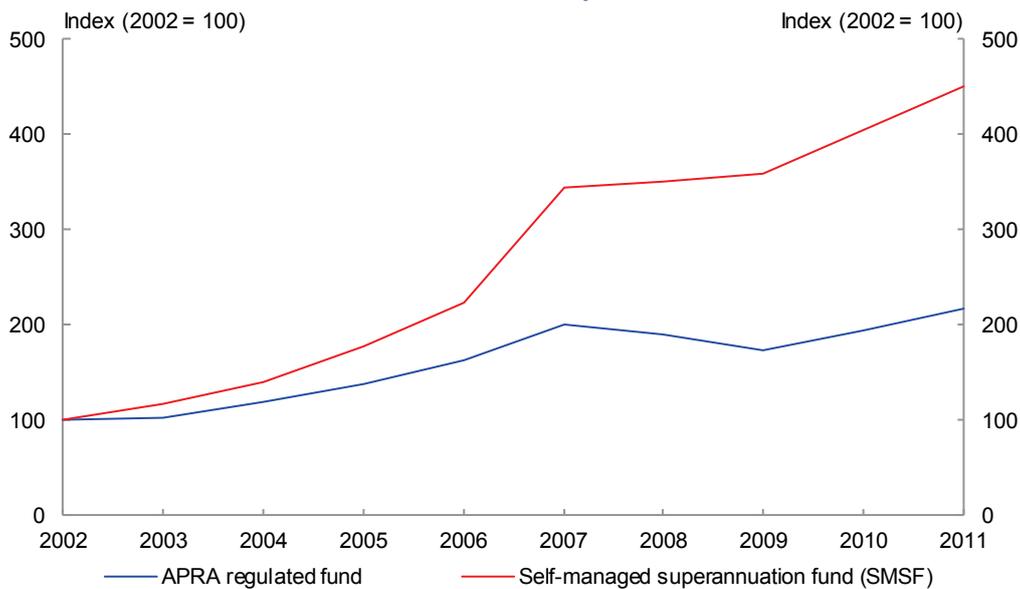


Source: 2012-13 Budget

A central issue for the personal income tax is the concern that a comprehensive income tax will lead to inter-temporal distortions, as it would double tax savings. These ideas were formalised by Nicholas Kaldor and John Hicks and gave rise to recommendations for a broad based personal expenditure tax.

It's interesting to now reflect on the current system. While it is nominally a comprehensive income tax at the personal level, the capital gains tax discount and the treatment of superannuation has shifted it closer to an expenditure tax model. And not surprisingly, people do seem to be adjusting their behaviour to take advantage of the preferential tax treatment of these forms of saving, as the rise in self-managed super funds suggests.

Chart 2: Growth of assets in superannuation funds



Source: ATO, APRA

While these developments have been under way on the personal tax side, what has been happening with business tax?

Under either the Haig-Simons or Kaldor-Hicks view, company tax — throughout the common-law countries at least — was seen as a backstop to the personal tax system, reducing the incentive to re-characterise labour income as business income, and taxing the domestic activity of foreign residents.

Since the late 1970s theory has pushed in two different directions on company tax. The base-narrowing camp argue that by taxing only 'pure profit' or economic rent, and thereby exempting the normal return to capital, investment decisions will not be affected. One of the policy recommendations that sprang from this reasoning was a cash flow tax of the kind proposed by the report of the Meade Committee in the UK in 1978. Cash flow tax is often seen as the 'holy grail' of corporate tax. It is, however, limited in its uptake due to its inherent volatility, narrow base and difficulties in transitioning to it from an income tax.

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In an effort to find a way through these challenges but still exempt the normal return to capital from tax, a variant known as an allowance for corporate equity was recommended by the Gammie Report in 1991. More recently, the Mirrlees Report has also recommended a move to an ACE for the United Kingdom.

On the other side, those arguing for a broad base, low rate approach to capital taxation, might favour a Comprehensive Business Income Tax. The idea was first articulated by the US Treasury in 1992. A CBIT would impose tax on the whole of the return to capital, regardless of how it has been financed. In essence this would mean no deductions for interest expenses and allow a cut in the headline corporate tax rate.

Australia's experience has been a mix of approaches. At the broad level, the reductions in the corporate tax rate from the mid-80s onwards and, most notably, those arising from the Ralph Review in 1999, have all been funded through broadening the company tax base, principally by removing accelerated depreciation. So we seem to have been expanding the base in order to cut rates.

A closer inspection, however, might suggest a different conclusion.

Traditionally the alternatives for the company income tax have been a residence base (that is, taxing residents on their world-wide income) or a source base (that is, taxing income where production takes place).

The decision implemented in 2006 to largely exempt non-residents from CGT, for example, seems to have the curious effect of gradually converting our source based income tax to a weakened residence based tax, which exempts foreign source income. And that's before we confront the full challenges of globalisation!

Of course Australia, with its abundant natural resources and several strong oligopolistic sectors of the economy that earn large location specific economic rents, is really a country that needs to protect its source based income tax. But this has continued to be difficult.

So far I've tried to paint a picture of where we sit vis-à-vis our personal and company income tax. There are many other taxes we could discuss, but I think leaving it at these two for the moment will be enough.

I would now like to touch briefly on the incentive effects of these two taxes and then where the changing external environment might push them.

Before we begin, we should note that when we are thinking about policy in our information rich environment, it is important to be clear about what we know and

what we don't. And where there is genuine uncertainty, as there often is, policy design should be robust rather than engineered to fit a particular state of the world.

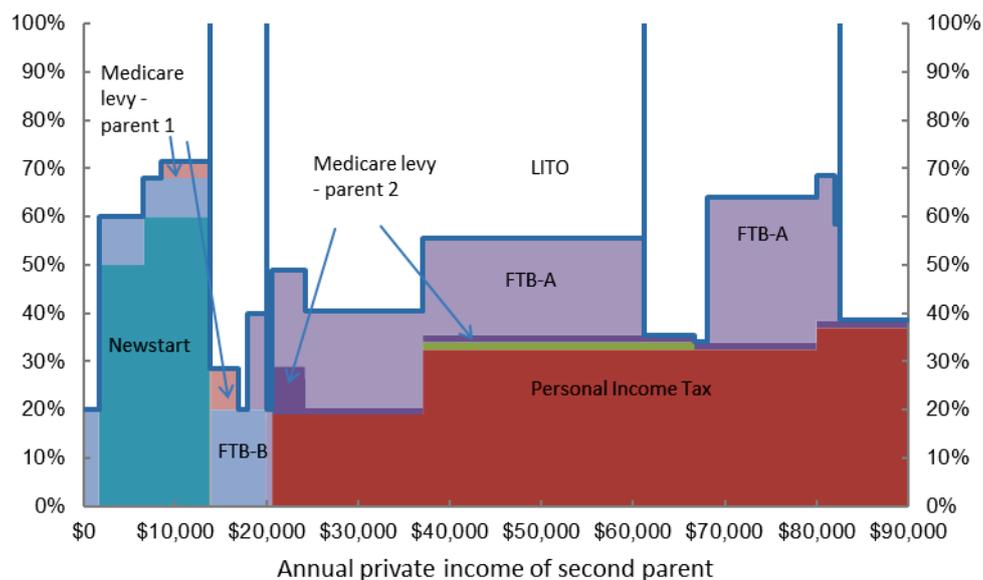
Personal Tax

On personal tax we have a lot of information.

We have information about individual and family incomes, education, family circumstances and the like. And we can say for a hypothetical individual or family in a particular circumstance what a change will mean.

For example, we can model the interactions of the tax and transfer systems on any particular family type.

Chart 3: Effective marginal tax rates, Couple with children aged 13 and 15, 2012-13



Source: Treasury

People might be familiar with this STINMOD-type chart (Chart 3). From it we can see that the EMTR faced by a second income earner who is earning \$21,000 and thinking about working a little more, would be 49 per cent, made up of withdrawal of Family Tax Benefit Part A (20 per cent), personal income tax (19 per cent) and Medicare levy shade in (10 per cent).

But for all this knowledge and detailed modelling there is still a lot we do not know.

For example, we know that a policy change will change incentives but it is hard to predict just how individuals will react. A tax increase will change the relative costs of

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labour and leisure, but how will this change an individual's labour supply decision? Will their labour supply curve continue to slope upwards or will it start to bend backwards? And will the demand for their labour remain unchanged? And what about the family? Might the labour supply decision be made jointly? We cannot give much of an answer to these questions.

But, you might say, at least it's a start.

The current 'accepted wisdom' with respect to high marginal tax rates is that they are a disincentive to labour force participation, and possibly a disincentive to people accumulating high levels of human capital, and are thereby a negative influence on productivity. We might also suspect that high rates of personal income tax may encourage mobility of labour, that is emigration. But is this the case for Australia? As I mentioned earlier, in the 50s and 60s both the US and Australia had unsustainable top marginal rates above 90 per cent 70 per cent respectively. But back then the challenge was the availability of different structures to avoid tax. That challenge is still with us today but we also face much greater international mobility of labour.

The data we currently have do not suggest our PIT rate schedule is pushing people overseas. But how confident can we be that this will remain the case in the future?

Business taxation

Turning to business tax, we should remember that, while business and personal tax are often regarded as separate domains of policy, they are intimately related and the inter-relationship between them has become more important and complex over time.

With the introduction of dividend imputation in 1987, the corporate and personal tax systems became more closely integrated so that investment income would not be double taxed for domestic investors.¹ This meant that the tax rate on dividend income for domestic investors would be their marginal tax rate on personal income. However, capital gains realised by individual taxpayers have received a 50 per cent concession since 1999, which provides an incentive to convert income to capital gains where possible.

Other structures complicate matters further because the way an investment is held and the timing of activities can significantly change tax outcomes. Assuming owners respond to these incentives, business managers are also likely to do so.

¹ Companies paid \$86.7 billion in dividends in 2009-10, of which \$77.5 billion were franked dividends. This approximately 90 per cent ratio of franked dividends has held for the last decade. ATO Taxation Statistics 2009-10.

One of the largest and most rapidly growing legal structures is superannuation. While capital income, such as dividends, would otherwise be taxed at marginal personal rates, superannuation contributions are taxed at a flat 15 per cent rate, earnings are generally taxed at 15 per cent and most benefits paid out over age 60 are tax free. Accordingly, a super fund investing in a company and then receiving franked dividends would be entitled to a refund of 15 per cent, and can then drive its earnings tax to zero.

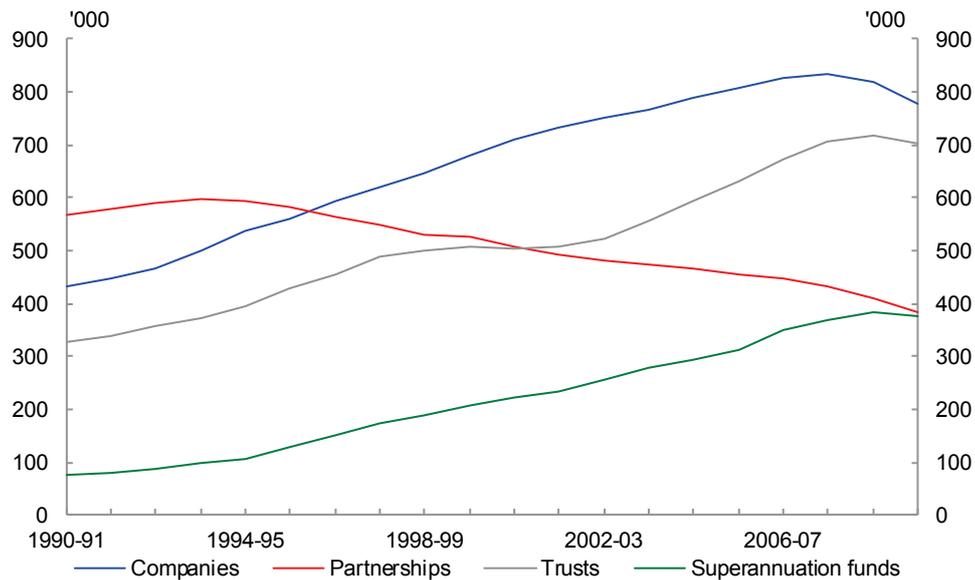
The total income of superannuation funds rose from \$50 billion in 2001-02 to \$143 billion in 2006-07, before falling to \$112 billion in 2009-10. Superannuation funds own roughly 30 per cent of the ASX. Given the refundability of franking credits, it's not surprising that super funds demand the distribution of fully franked dividends. This is great for shareholders in the short term, but a challenge for companies because it eats into retained earnings that may otherwise be used to finance investment. The tax free treatment of superannuation investment returns during the retirement phase adds another twist, with potential implications for business decisions.

Trusts other than superannuation funds have also become an integral part of the tax system (Chart 4). Their number has increased from a little over 500,000 in 2001-02 to a little over 700,000 in 2009-10.² The total net income of trusts rose from \$57 billion in 2001-02 to \$190 billion in 2006-07, before falling to \$123 billion in 2009-10 due to the financial crisis.³ The net capital gains earned through trusts rose dramatically from under \$10 billion in 2003-04 to over \$30 billion each year from 2005-06 to 2007-08, spiking to over \$60 billion in 2006-07. Since then, they have fallen back as capital losses have offset these gains.

² See ATO Taxation Statistics 2009-10.

³ Net capital gains explain most of the discrepancy for before and after financial crisis. See ATO Taxation Statistics 2009-10.

Chart 4: Growth in different business structures



Source: ATO

Many small businesses have a trust structure combined with a company and possibly a self-managed super fund which allows them to effectively manage their taxes. For example, income could be derived as labour income, or paid out as a dividend and routed through the trust, or reinvested to build up the capital value of the business and, perhaps, rolled over into the self-managed super fund when the business is sold.

Complex? Certainly is. And in trying to examine questions of fairness it just gets harder.

While companies are the legal entities that actually remit company tax to the ATO, they are not the ones that actually bear the economic burden of company tax. Indeed they are not able to do so. Ultimately, the economic burden of any tax must be borne by individuals in their capacity as workers, consumers or the owners of capital.

In the company income tax context, the burden of the tax is often passed to shareholders by way of lower dividends or retained earnings, or to consumers, by way of higher prices.

The burden of company income tax may also be passed to workers by way of lower wages than they would otherwise receive. When company tax is changed, capital owners or customers are likely to face the entire short term burden or enjoy the entire short term benefit because, among other things, changes in the capital stock happen over an extended period and wages take time to adjust. However, in the longer run

firms are much more willing and able to change their investments, so that a large portion of the company tax burden will actually fall on workers.

This is the case for most businesses, but we need to remember that in cases where the company income tax taxes pure profit – that is, the profits that shareholders enjoy beyond the level they need to maintain their investment in the business – theory tells us the burden should fall on shareholders.

How the long run costs are shared between shareholders, consumers, and wages depends on the nature of the particular factor and product markets that the business operates in. The mobility of tax burdens is essential to understanding the impact of our taxes, and is becoming more crucial as Australia becomes more and more closely integrated into a global economy.

As Alan Auerbach notes in 'The Mirrlees Review: A US perspective' taxing corporations is a complex issue, and has become more complex since Meade first suggested shifting the corporate tax to a rent tax.

He identifies three issues for the US.

First, the growth in importance of multinational enterprises (which now account for around 25 per cent of world GDP) has made the treatment of international capital flows a key issue of first-order importance.

Second, financial innovation has increased the ability of corporations to exploit differences in the tax treatment of debt and equity.

Finally, the corporate-noncorporate boundary has shifted, with a much greater share of business activity and income escaping the traditional corporate form and the corporate income tax.

For Australia, these issues are even more profound.

As multinationals have considerable latitude in choosing where to locate their production, they are likely to be more sensitive than other businesses to the tax rates that apply to them. Of course, other factors are important too: the quality of the labour force, infrastructure, the rule of law, and access to both raw materials and markets.

Despite rules to contain profit shifting, multinationals also have some latitude about where to locate their profits – and here tax is likely to be *a*, if not *the*, primary driver.

So setting tax policy to deal with multinational enterprises is an increasingly difficult task. There are a range of conflicting objectives. Policy should support innovation and attract investment but also help uphold the integrity of the corporate tax system. Yet

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policy makers must take into account how other countries tax multinationals as well as the wide range of successful tax planning strategies available.

We can see these difficulties in transfer pricing rules. When a firm 'trades' with itself across borders, we want to ensure it is using the prices an independent party would have paid, rather than manipulating prices to gain a tax advantage. But this principle can be very difficult to enforce in practice. There are many goods which are either proprietary or rarely traded, so there may be no market price for the asset.

With regard to financial innovation, it is now easier than ever to move funds between jurisdictions at little cost and to re-characterise financial assets from debt to equity or vice versa. These options place further pressure on the system and support entities seeking to minimise their worldwide tax. Australia, and many other countries, treat debt and equity differently for tax purposes. One of the problems is we do not all define them the same. And Australia has added a further quirk. Our ToFA regime provides the capacity for financial institutions to account for tax on an accrual basis, not a realisation basis. More arbitrage opportunities. And with regard to Auerbach's third point, about the corporate/non-corporate boundary, my earlier reference to the increase in the use of trusts is pertinent.

From an Australian perspective, we should perhaps add a couple of other issues to Auerbach's three: the increasing role of intangibles in developed and emerging economies, and the growing importance of Asia in the world economy.

Intangible assets include brands, intellectual property, customer lists, internal processes, and copyrights which are often the result of investments such as R&D and marketing. Investment in intangible assets is growing faster than investment in tangible assets. As these assets have no fixed physical form, it is much easier to relocate them to low-tax jurisdictions than it is to relocate people or machinery. For example, Pfizer and Microsoft have relocated a considerable part of their R&D to Ireland while Shell's central brand management is located at its Swiss affiliate which charges royalties to operating subsidiaries worldwide (Dischinger and Riedel, 2009).

For Australia, rapid growth in Asian economies has produced a resources boom which has highlighted the taxation of non-renewable natural resources. You can't move these resources: your choice is when to develop the site or to leave it in the ground and profitability often depends on natural factors, such as the ore grade. While resource prices were very low in the late 1990s, they are now relatively high and are expected to remain well above historical averages for some years to come. This means resource firms are making profits which are well above the level needed to make these projects a worthwhile investment. Taxing the gap between expected profit and the level needed to induce investment will not discourage investment and this is the rationale behind

the Mineral Resources Rent Tax as a means of securing greater public return on the resources boom.

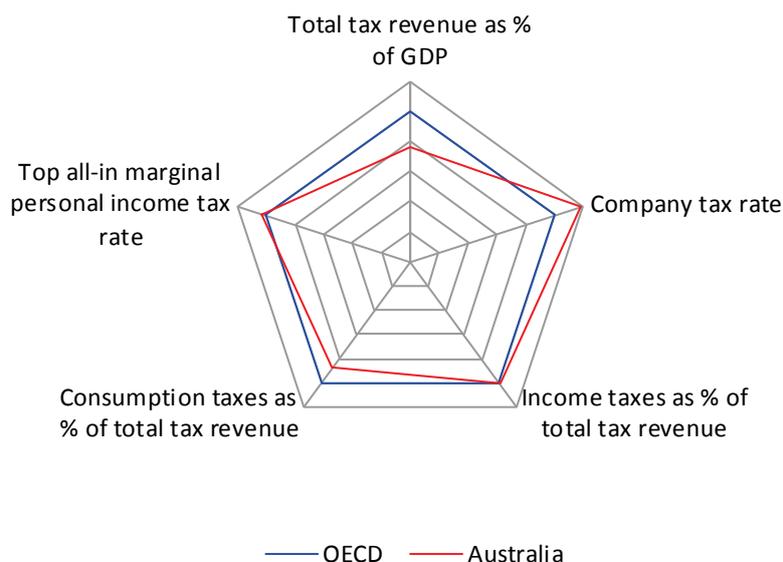
Tax design and reform

So how should Australia's tax system respond to these global pressures?

A natural place to start is to consider how other small, open economies have been adjusting to globalisation.

OECD work has suggested that for the average OECD country a change in the tax mix away from income taxes and towards potentially less mobile and distorting bases would have economic benefits. Other work suggests that small and open economies, as a group, have configured their tax systems so as to rely less on income taxes and more on taxes that are levied on less mobile bases (Hines and Summers, 2009).⁴

Chart 5: How Australia compares to the OECD



Source: OECD

This common feature reflects the fact that in smaller economies policy changes cannot affect the global price of products or factor inputs, and capital and labour may be more mobile than in larger economies. So in small open economies, the deadweight costs of

⁴ Hines and Summers (2009) found that countries with a 10 per cent smaller population in 1999 have a 1 per cent smaller ratio of personal and corporate income tax collections to total tax revenues. These results have been supported by Furceri and Karras (2010), who used GDP rather than population as a measure of the size of an economy.

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taxes on income derived from those factors may be higher because taxpayer responses at the relevant decision margins are greater.

Therefore small economies have to live with a more mobile tax base and rely relatively more on less mobile sources of revenue, such as resource rents, land, consumption and possibly, labour, which are possibly more sound from an efficiency point of view. However, raising taxes on some immobile bases, most notably consumption, may also have implications for the fairness of the tax system, its social acceptability and the ability of the government to redistribute income.

Chart 6: Where should Australia sit?

		Openness	
		Low	High
GDP	Large	<p>(Relative reliance on income taxes)</p> <p>Canada, Italy, Japan, UK, USA (income)</p> <p>France, Mexico, Spain (consumption)</p>	<p>Belgium, Germany, Netherlands, Sweden, Switzerland (income)</p> <p>Korea (consumption)</p>
	Small	<p>New Zealand (income)</p> <p>Poland, Portugal, Turkey (consumption)</p>	<p>(Relative reliance on consumption taxes)</p> <p>Austria, Czech Republic, Greece, Hungary, Iceland, Ireland, Slovak Republic (consumption)</p> <p>Denmark, Finland, Norway, Luxembourg (income)</p>

Source: Treasury, based on Furceri and Karras 2010.

The chart is an attempt to characterise a number of countries and their tax systems. As with any such characterisation, there is considerable room for debate around each country’s relative reliance on income or consumption taxes. The main point here is not the location of any individual country but the framework overall.

Where should Australia sit?

On the Hines-Summers configuration, Australia’s longer-term tax mix would be consistent with less reliance on income tax.

In the longer term, if we opt to keep relying on mobile bases for a high proportion of revenue, we may see increased risks for tax base erosion and stronger disincentives for capital investment and for individuals to acquire productivity-enhancing skills.

Tax reform that envisages a sustainable re-balancing of tax bases would need to gain community acceptance as to how best to use these bases. This would be a difficult process. For many people, tax reform has come to mean personal tax cuts. Raising taxes or making any individual tax less progressive usually meets strong community resistance.

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Since many people consider progressivity to be the most important measure of the fairness of the system, any such change would require a long and carefully designed transition path.

Are there other options we might consider?

Some leading academics have suggested that policy makers need to think more about a different base for corporate tax. Rather than the traditional alternatives of a residence base, or a source base, or an uncomfortable mixture of the two, what has been suggested is a destination based tax, which is levied where the sale to a final consumer is made. This tax would be a source-based tax which would make border adjustments that eliminate the incentives for companies to shift location or earnings to other countries. Auerbach argues that 'the appeal of destination-based taxation may grow over time as the mobility of rents put further downward pressure on tax rates under existing source-based systems'.

Such a system may seem quite remote from our current situation, particularly given the preponderance of location specific rents in the Australian economy, but we should not underestimate the power of structural change in the global economy to shape policy in new and unexpected ways.

Conclusion

As the Asian century continues to rearrange the global economic landscape, Australia's current tax system, which relies heavily on income taxes, will come under increasing pressure. Reforms to the way taxes are raised will be needed, particularly with an ageing population. But in thinking about specific changes, we need to think carefully about how they would affect the whole of the system.

Changing part of the system often results in unwanted changes elsewhere that are hard to anticipate and correct. We can shuffle a number of decisions without realising it. We also have many highly paid people trying to find these gaps and make money from them. For that reason, attempting to fine tune outcomes through better modelling alone is likely to be inadequate for developing robust policy responses.

Future governments will need to strike a new balance between raising sufficient revenue and lowering the economic costs of taxation. By speeding up the process of globalisation with its associated pressures and opportunities, the Asian century makes the case for ongoing tax reform more compelling. While reducing the efficiency costs of the tax system is clearly a worthy goal in any circumstances, the unfolding developments in Asia increase the need to make genuine progress towards this end.

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Key themes from Treasury's Business Liaison program

Overview

As part of its quarterly Business Liaison Program, Treasury met and held teleconferences with businesses and organisations during August 2012. Meetings took place across five capital cities, including outer-suburban areas, as well as in regional areas via teleconference. Treasury greatly appreciates the commitment of time and effort by the organisations that participate in this program.

Key messages from business liaison largely followed the pattern of previous rounds, with businesses again identifying the uncertainty around the global outlook as a significant drag on the domestic economy.

There were signs that, with recent global commodity price falls, mining companies were looking to reduce costs in their operations. Outside of the mining sector, the economy was viewed as uneven, with uncertainty around global conditions weighing on business sentiment and investment intentions.

In general, labour market conditions were expected to remain soft in the near-term. As a result, consumer sentiment was also expected to remain restrained with businesses identifying uncertainty around employment as a key factor inhibiting household activity.

Activity and Prices

Contacts reported that activity on resources-related investment projects remains robust, with businesses reporting solid progress on projects under construction.

Coal and iron ore miners noted that recent price movements had highlighted the unpredictable nature of prices in the short-term. It was generally noted that resources investment decisions are taken over a longer term horizon where the outlook for resources and energy demand remains very positive. However, producers observed that prices as low as those seen in August would induce a reduction in global supply from high cost producers if sustained for more than a few months.

Several contacts in the retail sector reported a pick-up in activity in June and July, possibly linked to the household assistance payments that formed part of the *Clean Energy Future* package. Aside from these temporary spikes, reports were mixed. Some suggested that, although sales had been solid in volume terms, with consumer confidence remaining weak, significant discounting would continue with margins remaining tight. By contrast, a few contacts in niche areas reported record rates of growth and were projecting that this would continue in the near-term.

Consistent with reports of margin compression in parts of the retail sector, businesses in related industries, such as transport and wholesale trade, reported pressure being placed on prices from firms further up the supply chain.

Outside of mining-related work, activity in the construction sector remained weak. Contacts noted that activity remained subdued in the non-residential construction sector, outside of a few major developments and public-supported health-related projects.

In residential construction, reports suggested that the conversion time from enquiry to sale for new residential developments had noticeably increased over the first half of 2012. It was also noted that there was a trend towards both smaller dwelling footprints and increased household size, a view supported by businesses in related manufacturing and services sectors.

Looking forward, the outlook for the residential construction sector was cautiously optimistic, although this varied between states. There was generally a favourable view of conditions in Western Australia (WA) and New South Wales (NSW) as a result of both market fundamentals as well as, in the case of NSW, recent changes to planning policy. Reports were more varied with regard to Victoria and Queensland, while it was expected that South Australia would be relatively flat in the near-term.

In the manufacturing sector, reports suggested that the elevated exchange rate remained a concern and continued to place competitive pressure on firms. In response to this pressure, some contacts reported a shift in their business model, away from domestic manufacturing to leveraging their strong brand and refocussing their activities towards design, distribution and retail.

Employment and wages

Contacts largely expected employment conditions in the mining sector to remain solid, although some reports suggested that strong recruitment in WA over the first half of 2012 had seen skill shortages become less pronounced in that State when compared with Queensland. Despite this, recruitment of workers in specialised fields such as project management and engineering was expected to be challenging and result in strong wage outcomes for these occupations.

Staff retention was reported as a concern by some businesses in sectors that are in competition for labour with the mining sector, such as manufacturing, professional, scientific and technical services and transport. Contacts noted that, once recruited and trained, skilled employees were often able to move to jobs in the mining sector where they were able to command a significantly higher wage.

Key themes from Treasury's Business Liaison program

Outside of the mining sector and specialised skill areas such as information technology, businesses generally suggested that hiring intentions were modest. While wage pressures were not pronounced, some contacts noted that, along with other cost pressures in their businesses, wage increases were contributing to margin compression.

Financing and Credit

Firms in the financial sector noted that, while demand for credit had been weak, there were signs of a modest recovery over recent months.

Consistent with these reports, in general, businesses reported little difficulty in accessing credit. However, in some cases, it was noted that lending practices were more focussed on underlying credit quality than prior to the global financial crisis.

Contacts in the mining sector reported little difficulty in accessing credit. However, some contacts noted that, for investment funded internally, recent falls in commodity prices would have an impact on the availability of funds through lower revenues.

Leslie Bury — from Treasury to Treasurer

John Hawkins¹

Les Bury was a Treasury employee who rose to become Treasurer. Although one of the best qualified treasurers, with a serious interest in economics, he only had a short time in the job and was by most accounts well past his peak before he became treasurer. He was ahead of his time in advocating broader measures of wellbeing, taking steps towards replacing some income tax with indirect tax and supporting the compilation of forward estimates.



Source: National Archives of Australia²

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- 1 The author formerly worked in the Domestic Economy Division, the Australian Treasury. This article has benefited from information provided by Jonathan Holmes, Keeper of the Records at Queens' College, Cambridge, and comments, information, reminiscences and suggestions provided by Mike Bury, Nick Bury, Selwyn Cornish, Ian Hancock, Alex Millmow and John Wanna. The views in this article are those of the author and not necessarily those of the Australian Treasury.
 - 2 Portrait of Leslie Bury, Minister for Labour and National Service in the Australian Federal Parliament, National Archives of Australia: A1200, L29420.

Introduction

Bury was a Treasury employee who rose to become Treasurer.³ He was also the first professional economist to hold the post. Indeed he has been called 'among treasurers, the one best qualified as an economist'.⁴ But unfortunately this was not enough to guarantee success as by the time he held the post his health had deteriorated.

Bury admired 'the greatest economist of all time, Adam Smith.'⁵ He had a 'close interest in economics' since schooldays.⁶ But he once said of it, '...if one pursues the learned journals in this subject, both the abstractions of the arguments and the passion of the disputants recall to mind the theological controversies of long ago. All this adds up to is the recognition of judgement in so-called economic science, the acknowledgment of the subject as a coupled art and science'.⁷

From his schooldays to his time in cabinet Bury was generally taller than his peers. With a languid manner, he was sincere, decent, gentle, charming, courteous and convivial. ⁸ He was described as 'a gentleman amongst piranha'⁹ who had friends across the aisle in parliament. Bury once said that 'civilisation rests on grace, manners...and the subtle civilities'.¹⁰

While possessing enough self-confidence to aspire to be prime minister,¹¹ and a capacity to command, he lacked the 'killer instinct', being somewhat bemused and disinterested in political infighting.¹² While erudite, he spoke in a 'sonorous, parsonic voice'.¹³

3 He is the only treasurer to have worked in Treasury. Former prime minister George Reid had worked in the NSW treasury, and became NSW treasurer. Paul Hasluck, Alexander Downer and Kevin Rudd served in the department of foreign affairs before becoming the minister, and Billy Snedden served in both the immigration and attorney-general's departments before becoming minister for both, but such transitions have been most uncommon.

4 Weller and Grattan (1981, p 73).

5 Leslie Bury, Hansard, 14 August 1962, p 282.

6 Bury (1975).

7 Bury (1970, p 503).

8 Similar impressions are recorded by Aitchison (1971, p 97), Boadle (2007), Davidson (1970, p 14), Fitchett (1967, p 2), Freudenberg (2009, p 124) Hall (1964, p 13), Killen (1989, pp 23, 62), Alan Ramsey, Sydney Morning Herald, 17 May 2003, Reid (1969, p 191), Snedden and Schedvin (1990, p 79), Trengrove (1969, p 191) and Whittington (1964, p 120 and 1968).

9 Canberra Times, cited by Millmow (2010b).

10 Adelaide Advertiser, 4 January 1968, p 2.

11 Whittington (1964, p 120) says he had 'unbounded confidence in his own ability' and was 'neither retiring nor unassuming'.

12 Davidson (1970, p 14); Hall (1964, p 15).

13 Whittington (1968, p 7).

Bury's early life

Leslie Bury was born in London on 25 February 1913, the son of an Anglican clergyman (although by the time he was treasurer he had hardly any trace of an English accent). It was a sporting family¹⁴ and Les captained the school rugby team.

Les had shown an early interest in economics but his father, while sharing the interest, was concerned that Les should study something he saw as a sounder base for a career.¹⁵ Bury therefore studied law as well as economics at Queens' College in Cambridge, graduating with second-class honours¹⁶ in 1934 and serving as secretary of the University Conservative Association.¹⁷ He was 'fascinated' by the lectures he attended by Keynes and Joan Robinson also made a lasting impression.¹⁸

Bury was recruited from England to join the Bank of New South Wales in 1935, where he worked under the redoubtable Alfred Davidson as a bank economist.¹⁹ He took notes for Davidson at the Royal Commission into the Monetary and Banking System and was invited to his economics discussion groups at his Leura house.²⁰ Bury also participated in the Keynesian coffee shop discussions in Sydney with Nugget Coombs and others.²¹

In 1940 Bury married Anne Weigall, the daughter of the NSW solicitor-general, and they had four sons.

14 His great uncle Lindsay Bury played football for England and was sufficiently strong at other sports that he would probably have gone to the Olympics were they held before 1896.

15 Bury (1975, p 2).

16 He obtained a 2-2 in the Economics tripos Part I in 1932 and a 2-1 in the Law tripos part II in 1934.

17 Continuing a tradition of previous Australian treasurers, Bruce and Casey, at Cambridge, he was in one of the college rowing teams. He was a much less accomplished and keen rower than Bruce, however. Bury was in Queens' third boat in the Lent Bumps in 1932 but apparently took no further part in rowing. Another rower (and short-term treasurer) Gough Whitlam once quipped that it was an apt sport for politicians as you could face one way while going in the other; MacCallum (2012, p 151). Bury also played in Queens' rugby team in 1932/33.

18 Bury (1975, p 3). Keynes was sick for the latter months of 1931; Skidelsky (1992, p 432). In summer 1932 Keynes was lecturing on the 'pure theory of money'; Skidelsky (1992, p 460).

19 Davidson had charged Hytten with recruiting a young economist of 'open, liberal thought' while attending a conference in Europe; Millmow (2010a, p 241). Nick Bury recalls that his father had earlier met Davidson in England, and apparently made a good impression.

20 Schedvin (1988, pp 349, 356).

21 Coombs (1981, p 5) and Whitwell (1986, p 62). Other members included Jock Philips, James Plimsoll, Arthur Tange and EB Richardson.

Bury as a Treasury officer

After some years' war service in the army, Bury became an economist in the Department of External Affairs, where 'Doc' Evatt was developing the department's economic expertise. In 1945 he participated in a conference developing the *White Paper on Full Employment*, arguing for greater clarity in its presentation and suggesting it discuss a possible role for exchange rate adjustments.²² In October 1946 he was part of a delegation to London, headed by Coombs, which pushed for the full employment goal to be incorporated into the International Trade Organisation charter.²³

In 1948 he transferred to Treasury's international division. At that time Chifley was the minister and Bury was an admirer notwithstanding their political differences.²⁴

From 1950 to 1956 he was seconded to Washington, initially as an alternate to Leslie Melville and then as an executive director himself of the IMF and World Bank. During this period he struck up a friendship with treasury secretary Roland Wilson – as well as a common interest in economics they were both keen amateur carpenters.

Parliament

Bury was elected member for Wentworth at a 1956 by-election.²⁵ He was known as one of the 'Oxbridge group' of outspoken backbenchers with an interest in economic matters.²⁶ Bury was an ardent free-trader, sometimes critical of Australian Keynesians. He attacked the Arbitration Commission as 'one of the major causes of inflation and instability in Australia'.²⁷

He reportedly criticised Treasurer Fadden's banking bills at a Liberal Party meeting in 1957, in particular the broad charter given to the Commonwealth Development Bank.²⁸ He said the establishment of a central bank was 'a generation late' as the existing hybrid of central bank and trading bank was 'extremely queer' and praised Theodore's efforts during the depression to establish one.²⁹ But he was ahead of his time in

22 Cornish (1981, p 86).

23 Rowse (2002, p 128).

24 Bury recalled Chifley's astute questioning, going back to the Royal Commission, and also regarded him as the 'nicest politician he had met'; Bury (1975, p 7).

25 Menzies backed him for pre-selection but this proved counterproductive as the local branches resented the intrusion and Bury just scraped through; Henderson (1994, p 179). Returning to Australia involved a large pay cut.

26 The others were Jim Forbes, Harry Turner and William Wentworth.

27 *Sydney Morning Herald*, 31 January 1960, p 11.

28 'S.E.' (1958, pp 229-30). Perhaps making an analogy with the Martian invaders in HG Wells' *War of the Worlds*, he described the new Commonwealth Banking Corporation as a 'tri-legged monster'; *Hansard*, 21 November 1957, pp 2796-7.

29 *Hansard*, 21 November 1957, p 2396.

arguing that 'whenever the independence of the central bank in relation to the treasury has been greatest, inflation has been least'.³⁰

In December 1961 Bury was appointed minister for air. Reflecting his experience and expertise, he also became minister assisting the treasurer.³¹

In July 1962, Bury made headlines when he gave a speech describing the exaggerated concerns about the impact on Australia of the UK entering the Common Market as 'far-fetched', leading to his dismissal from office by Menzies on the grounds of a breach of Cabinet solidarity.³²

Bury returned to the ministry in December 1963 in the new housing portfolio where he introduced grants for first home buyers.³³ Holt promoted him to cabinet in January 1966 as minister for labour and national service, where Bury made his mark by removing the 'marriage bar' which precluded the appointment of married women as permanent public servants, while opposing the move to equal pay for women. He was viewed as 'a highly competent minister'.³⁴ Indeed a visiting British academic regarded him as among seven Australian politicians who were among the world's best.³⁵ He was acting treasurer for a month in 1967 while William McMahon was overseas.

Earlier than most of his peers, Bury recognised that controls on banks were being circumvented by non-bank financial intermediaries such as hire purchase companies

30 *Hansard*, 21 November 1957, p 2398.

31 As he put it, doing 'dogsbody work for Harold Holt'; Bury (1975, p 27).

32 Bury (1962). He repeated from the backbench his opinion that 'from the viewpoint of the Australian economy as a whole...the overall economic impacts of Britain's entry into the European Common Market are likely to be minor; *Hansard*, 14 August 1962, p 282. He may have added to the offence by saying that the exaggerated concerns were held by the 'older generation'. Downer (1982, p 20) describes Menzies as having been reluctant to dismiss Bury, but 'Bury, resembling a matador flaunting his red cloak before a bull, should have possessed a clearer understanding of ministerial solidarity'. While McEwen is often said to have demanded Bury be sacked, (example Aitchison (1971, p 97), Brown (2002, p 67), Millmow (2007, p 39), Starr (2012, p 142), West (1965, pp 228-9)), McEwen denied demanding Bury's head; Bury (1975) and Golding (1996, p 209). Bury's motives for making the speech are variously described as his own economic beliefs, putting forward Treasury's views or specifically those of its head Roland Wilson, attempting to support treasurer Holt in his rivalry with McEwen or as part of a leadership bid of his own: Gelber (1966, pp 179-183), Hughes (1962, pp 91-93), West (1965, p 231) and Whittington (1964, pp 60, 121 and 1968, p 7). Menzies' letter to Bury on 27 July notes his assurance that his views 'were not prompted by any other minister or...official'; National Library of Australia MS 1647. As Scibberas (1971) documents, Bury was proved right.

33 Influential NSW Liberal Party secretary John Carrick was one pushing Menzies to reinstate Bury; Starr (2012, p 143).

34 't Hart (2006, p 9).

35 David Butler, cited in *Sun-Herald*, 10 December 1974, p 4.

Leslie Bury: from Treasury to Treasurer

and so regulations were losing effectiveness: 'if you screw down one part of the economic structure in a lively country such as Australia it bursts out in another place'.³⁶

Bury was an economic optimist, saying '...economically Australia has been a lucky country. In our last decade our known resources and potential have grown out of all proportion to previous experience...our economic prospects for the future appear almost limitless'.³⁷

Bury was the victim of protestors over the Vietnam War. Being also angry with army minister, Philip Lynch, they shouted 'lynch Bury, bury Lynch'.³⁸

Treasurer

By the late 1960s Bury had 'a frankly covetous eye on the Treasury' and admitted as much to McMahon.³⁹ After Holt's disappearance Bury stood for the Liberal leadership⁴⁰, but none too fervently, taking off on a walking holiday in the Snowy Mountains. He was eliminated in the first round of voting. The new leader, John Gorton, initially retained McMahon as treasurer (possibly he had promised to do so to gain his support in the leadership ballot). After the 1969 election there was another leadership ballot. Gorton retained the leadership in the face of a challenge from McMahon and in November 1969 Gorton replaced McMahon as treasurer with Bury.⁴¹

Unfortunately by the time he became treasurer, he was 'a worn-out and a tired man, suffering from ill-health and lacking concentration'.⁴² Coronary arteriosclerosis and

36 Bury, *Hansard* 24 May 1965, p 5.

37 *Hansard*, 19 August 1969, p 397.

38 Boadle (2007).

39 Reid (1969, pp 110, 162). This was despite his stated view that 'in many ways the task of a treasurer is a hapless one. He stands at the main pressure point of government where many conflicting and irreconcilable forces meet'; *Hansard*, 21 August 1958, p 648.

40 Fellow minister Peter Howson (1984, pp 366, 369, 371, 372) encouraged him to stand, but warned he needed to do a lot of organising. He also records that Menzies preferred Bury over Gorton as leader if Hasluck could not win. 't Hart (2006, p 9) describes Bury's decision to run as 'somewhat enigmatic' given 'he was not considered a political heavyweight'. Freudenberg (2009, p 124) says that 'the principal claim of Bury...was that he represented a Sydney electorate'.

41 In the leadership ballot after the 1969 election Bury did not run and supported Gorton. It has been suggested he was promised the treasurership; Peter Howson's diary entry for 5 November 1969, in Howson (1984, p 573). Hughes (1976, p 184) suggests Bury's attraction to Gorton was that he was 'more complaisant' and Oakes and Solomon (1973, p 40) that he was 'more compliant'. Bury (1975) recalled his 'great joy' at the appointment.

42 Millmow (2010b). By November 1970 there were serious concerns about his health and about the subsequent lack of influence of Treasury; Peter Howson's diary entries for 24 November 1970 and 1 February 1971, in Howson (1984, pp 676 and 690). Snedden and Schedvin (1990,

hypertension meant his work and mental sharpness suffered and in cabinet he was dominated by McEwen and Gorton. By January 1970 it was said that Gorton was effectively by-passing Bury and acting as treasurer.⁴³ Philip Lynch, his assistant minister, was relatively inexperienced. In addition, Bury faced the rare problem of having the previous treasurer also in the cabinet and in the case of McMahon one who deeply resented no longer holding the post.

Bury and Treasury

Bury's Treasury secretary Richard Randall had been 'a friend for thirty years'⁴⁴, but 'Treasury despaired of him early. He lost too many cabinet fights'.⁴⁵

Unusually, Bury worked from his office at Treasury rather than in a ministerial office in Parliament House.

Bury's 1970 budget

Bury's sole budget was described as 'very much a Treasury-inspired document'.⁴⁶ It also had significant input from Gorton, partly reflecting Gorton's interventionist nature and partly because Bury's health was deteriorating.⁴⁷ Perhaps reflecting these varied inputs, it lacks consistency. While there is a stress on the risks of excessive demand in 'an economy still threatened by disruptive inflation'⁴⁸, (which was exceeding 5 per cent for the first time since the mid-1950s), Bury said he had 'also taken as mandatory a sizeable reduction in personal income tax'.⁴⁹ Contrary to Gorton's reputation as a centralist, the budget also featured 'a massive diversion of the nation's material resources to help meet the needs of the states'⁵⁰, mostly for housing and public works. While aiming at a balanced budget – 'a precautionary but not a repressive one'⁵¹, outlays were budgeted to increase by over 11 per cent, faster than the previous year. The budget raised company tax and a number of indirect taxes. The

p 86) are perhaps uncharitable in describing him as merely 'going through the motions'. Don Chipp (1987, p 10:11) described Bury as 'absolutely past it, should never have been treasurer'.

43 McMahon claimed this to Peter Howson, as recorded in the latter's diary entry of 31 January 1970, in Howson (1984, p 595). Weller and Cutt (1976, p 99) referred to Bury as 'a weak and unsupported treasurer'.

44 Bury (1975).

45 MacCallum (1971).

46 Millmow (2007, p 37).

47 Hancock (2002, p 295); Millmow (2010b). Reid (1971, pp 393-4) describes Bury as 'clearly dominated by Gorton'.

48 *Hansard*, 18 August 1970, p 10.

49 *Hansard*, 18 August 1970, p 11.

50 *Hansard*, 18 August 1970, p 11.

51 *Hansard*, 18 August 1970, p 20.

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subsequent rises in the prices of petrol, cigarettes, stamps, television and clothing made the budget rather unpopular.⁵²

Overall, the contemporary judgement was mixed; some thought the budget would 'provide a moderate stimulus for economic activity' and others 'mildly deflationary'.⁵³

While Bury was treasurer it was observed that 'the art of fine tuning the Australian economy has been performed with great success.'⁵⁴ But Bury was none too confident of budget forecasts, noting 'the unhappy record of past endeavours to foretell the economic future'.⁵⁵ Nonetheless he stuck his neck out with a longer term prediction: 'I may hazard a guess that the rate of growth of productivity in the seventies will be rather higher than for the fifties and sixties', even if only due to 'the treasures of our geology'.⁵⁶ He hoped forecasts could be improved with more use of computer-based mathematical modelling.⁵⁷

He aimed at introducing forward estimates over a period of years ahead.⁵⁸ In March 1971 he wrote to ministers asking for estimates for existing activities and new proposals.⁵⁹

Foreign investment

Bury was a supporter of foreign investment arguing 'it is not just capital as such which the technically advanced economies of the world have provided to us, but access to new techniques and superior managerial talent'.⁶⁰

When McEwen pushed for what became the Australian Industries Development Corporation, Bury strongly opposed it but Gorton was sceptical of Treasury's objections and his own permanent secretary Lenox Hewitt was a strong supporter of the idea.

Other

Inflationary pressures were an increasing concern in early 1970 as trade unions were pursuing wage claims more aggressively, international reserves were expanding and

52 Aitchison (1991, p 251). One protestor had a placard 'we come to seize Bury, not to praise him'.

53 Whitehead (1970, p 410) and Ryan & Junor (1970, p 416).

54 Whitehead (1970, p 410).

55 Bury (1970, p 502).

56 Bury (1970, p 502).

57 Bury (1970, p 503).

58 Bury (1970, p 503).

59 Wanna, Kelly and Forster (2000, pp 58-59).

60 Bury (1970, p 505).

inflation was on the rise around the world.⁶¹ The Government responded with tighter fiscal and monetary policy. Treasury were increasingly concerned about the acceleration of wages and prices. The OECD view was that 'the recent troubles on the domestic front may be said to have begun with a marked acceleration in the rate of price and wage inflation during the fiscal year 1969/70', which they attributed to increasing overseas inflation and demand pressures in the labour market.⁶²

Bury warned the trade unions that 'excessive demand for increases in money wages...could jeopardise prospects of balanced growth'.⁶³ Part of Bury's concern about inflation was that he observed 'those who lose because of inflation are those who are least able to protect themselves from the consequences'.⁶⁴

Bury was ahead of his time in talking about the need for aiming at broader measures of economic wellbeing, including clean air, the physical environment, an equitable distribution of income and the needs of the disadvantaged: '...we must not fall too readily to exclusive worship at the altar of GNP...our prime concern should always be the social welfare of the community as a whole'.⁶⁵ Bury looked forward to making more use of 'benefit-cost analysis' including applying it to environmental issues.⁶⁶

Bury developed a new revenue sharing plan with the states. He saw the need for the states to have a tax whose revenue would grow but opposed them reimposing their own income tax. Bury was an early advocate of a broad-based consumption tax. His budget had taken a step in this direction.⁶⁷

An embarrassment arose when Bury answered a parliamentary question by assuring that rural credits lending rates would be exempted from a general interest rate rise.⁶⁸ But the Reserve Bank had responsibility for setting this rate and had not agreed to any such exemption. After discussion the Bank Board agreed to grant the exemption to avoid a showdown with the treasurer, but made it clear it was the Government's decision.⁶⁹

61 A shared concern about inflation even brought together bitter rivals McEwen and McMahon, Peter Howson's diary entry for 9 April 1970, in Howson (1984, p 617).

62 OECD (1972, p 42).

63 *Hansard*, 18 August 1970, p 20.

64 *Hansard*, 12 March 1970, p 376.

65 Bury (1969, pp 7-8).

66 Bury (1970, p 503).

67 He later commented from the backbench that indirect taxes are 'the only kind of tax that I can see at the moment which would offer the kind of potential to meet the wishes of those people who want to spend on greatly expanding activities'; *Hansard*, 25 August 1971, p 700.

68 *Hansard*, 10 March 1970, p 199.

69 Schedvin (1992, p 452).

Subsequent career

Bury was moved to minister for foreign affairs by McMahon soon after he displaced Gorton as prime minister in March 1971.⁷⁰ McMahon indicated a few months later that Bury was retiring from cabinet due to ill health but Bury publicly announced that he had been sacked.⁷¹ He participated in economic debates from the backbench, including continuing his calls for forward estimates.⁷²

After losing preselection, he retired from parliament at the 1974 election. He was appointed CMG in 1979.

Survived by his wife and their sons, Bury died on 7 September 1986. Soon after, another economist, John Hewson, held the seat of Wentworth and Dr Hewson compared himself to Bury.⁷³

70 McMahon initially considered being both prime minister and treasurer but felt 'it is a pretty difficult if not impossible task'; Press conference, 10 March 1971.

71 Hancock (2002, p 345). It has been suggested that McMahon was after Bury's seat of Wentworth, in which McMahon lived and which was safer than McMahon's own seat of Lowe; Hughes (1976, p 195).

72 *Hansard*, 25 August 1971, p 700.

73 *Hansard*, 22 September 1987, p 503.

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