

THE OPTIMAL SIZE OF GOVERNMENT IN AUSTRALIA

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Abstract

In the extensive literature on the role of government in the economy scant attention has been paid to the influence of the relative size of government on an economy's rate of growth. This paper canvasses perspectives on why the size of government has grown, how this affects the wider economy, and why a trade-off exists between increased government size and economic growth beyond some optimal level, as conveyed by the so-called BARS curve. The paper next examines in-depth trends in government spending in Australia which has grown to a historically high level of 37 per cent of national income post GFC before econometrically estimating the optimal size of government on Australia's BARS curve using the ARMAX approach. The results suggest the share of government spending in Australia consistent with maximising economic growth is 31 per cent of national income, significantly below the current level of 37 per cent.

JEL: H6 E62

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THE OPTIMAL SIZE OF GOVERNMENT IN AUSTRALIA

1. Introduction

Before the First World War, government spending in industrial economies was under or near ten per cent of national income. This reflected the *laissez faire zeitgeist* of the late eighteenth and early nineteenth centuries, and accorded with the precepts of classical economics which prescribed limiting government's role to correcting market failure, and to providing essential public services, including national defence, the justice system, law enforcement and basic education.

Through the twentieth century, the relative size of the government sector in industrial economies began to grow significantly and, although public spending growth occurred in all Western economies, it grew faster in Europe than in North America. WWI increased the relative size of government, due largely to military and other war-related spending, while the Great Depression sparked anti-*laissez faire* sentiment and led to the introduction of rudimentary social welfare for the unemployed in particular.

The spending share continued to grow during the inter-war period and WW2, but accelerated most in the 1960's and 1970s, due largely to increased spending on education, health, age pensions, and extension of welfare benefits beyond the 'deserving poor'.¹ Increased government size since the 1960s also reflected the asymmetric use of Keynesian stabilisation policy, whereby discretionary spending increases during downturns are not fully reversed subsequently.

¹ Tanzi and Schuknecht (2000) elaborates.

A resurgence of classical liberal ideas in the 1980s, most notably in the United States under President Reagan, and in the United Kingdom under Prime Minister Thatcher, temporarily slowed the growth of government spending in the 1990s.

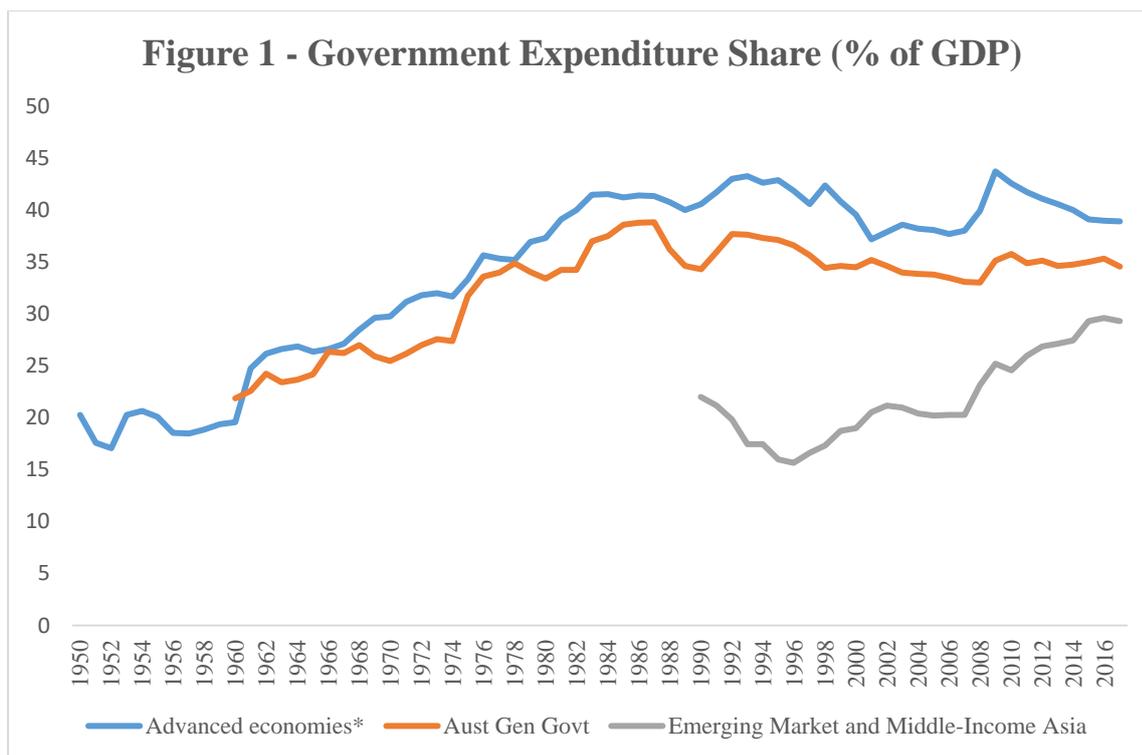
From the 1970s the industrial economies (hereafter advanced economies) expanded to include Asian economies, notably South Korea, Japan, Singapore, Hong Kong SAR, and Chinese Taipei, whose average size of government is significantly lower than in advanced European economies. See Figure 1. The size of government in France for instance is around 57 percent of national income compared to 19 per cent in Singapore.

During the 2008-09 Global Financial Crisis the share of government spending rose when governments embraced Keynesian fiscal policies in an attempt to stabilise aggregate demand.² For the advanced economies on average this share has since fallen to 39 per cent, some five percent of GDP below the peak reached during the GFC.

Emerging Asian economies³, including many of Australia's major trading partners, have experienced higher government spending although this has stabilised below 30 per cent of GDP on average in recent years. Australia's share for all levels of general government is presently over 37 per cent.

² Taylor (2009) and Tanzi (2013) discuss the role of government leading up to the GFC.

³ This country grouping includes, among other nations, China, India, Indonesia, Malaysia, Thailand, the Philippines, and Sri Lanka (source data.imf.org).



Source: IMF data.imf.org

The paper next canvasses perspectives on why the size of government has grown, how it can negatively affect economic performance and what determines its optimal level. It then analyses historical trends in Australia’s government spending relative to other advanced economies in greater depth, before empirically examining what size of government optimises Australia’s growth rate.

2. Perspectives on Government Size and Growth

A number of theoretical perspectives explain why the size of government expands as economies become more developed and on its macroeconomic impact.

Why Government Grows

In the nineteenth century, the German economist Adolph Wagner proposed, in what has become known as Wagner's Law⁴, that the size of government expands as economies develop and become more complex. For instance, urbanisation and the need to address associated externalities requires increased government spending, at the same time as the demand for education and health care welfare grows. While there is evidence of a correlation between government size and national income at lower levels of development, this is not generally the case for advanced economies for reasons discussed shortly.

The so-called 'ratchet effect' advanced by Peacock and Wiseman (1961) suggests that the size of government expands following major wars and economic crises, yet is not subsequently fully reversed. Baumol (1966) argued that the cost of government services increases over time because productivity growth in the public sector lags private sector productivity and through wages this biases upward the value of government services, resulting in a rise in the government share of nominal GDP via prices rather than the quantity.

In the public choice literature, rational choice and median voter models interpret government growth as being driven by electorate's demand for increased public provision of government services and greater redistribution of income. This is aided by special interest groups lobbying governments for additional benefits⁵, self-interested government bureaucracy seeking expansion,⁶ as well as by 'fiscal illusion', the notion that the cost of providing government goods and services is not fully recognised by the electorate who tend to neglect that taxpayers eventually have to pay for extra government spending either through current or future taxes. In today's environment, special interest groups can use online media and social media at low

⁴ See Bird (1971).

⁵ See Olsen (1971).

⁶ See Niskanen (1977)

cost to lobby for increases in spending as they will benefit materially, whereas the additional cost is borne by all taxpayers, none have whom have sufficient incentive to lobby against the extra spending.

Together, these perspectives explain the phenomenon of the growth of government as a share of national income, but what of the economic effects of the growth of government on national income itself?

How Government Spending Affects Growth

If the government spending is financed by debt, there are several macroeconomic channels through which government spending can influence economic growth. First, according to the classic loanable funds approach, government spending increases the demand for funds which, other things equal, pushes up domestic interest rates. This crowds out private investment which limits expansion of the economy's capital stock, a key driver of economic growth.

In an open economy, budget deficits are also funded from abroad which increases both foreign and public debt. Servicing this debt implies a drain on national income as interest paid abroad has to be subtracted from net national product to derive net national income. In addition, to the extent that foreign lenders react negatively to economies rising public debt, an interest risk premium arises. This raises domestic interest rates further, increases the sum of interest paid abroad and exacerbates investment crowding out.

Moreover, to the extent the foreign capital inflow funding budget deficits appreciates the borrower country's real exchange rate, there is a loss of international competitiveness and crowding out of net exports which could also stymie economic growth. On the other hand, public investment in the form of productive infrastructure that builds human capital, augments

the capital stock and positively affects growth, as for debt-funded government spending on education and health that improves workers' human capital.

High public debt fuelled by unproductive deficit spending can also harm business and household confidence and create uncertainty about how public debt will be paid down via fiscal repair, which is inimical to private investment and durable economic growth.⁷ Meanwhile, the Ricardian Equivalence proposition implies crowding out of private consumption as households save to meet future tax obligations to repay public debt.⁸

If government spending is funded from taxes, then higher levels of spending requires higher taxes on labour and/or capital. Short of a poll tax, these taxes will reduce the incentive for work or to invest in additional productive capital. Both of these outcomes lower the rate of growth of the economy. Similarly, at some point, higher levels of welfare payments reduce incentives to work and to save, which also reduce economic growth.

The Optimal Level of Government Spending

Theory also suggests there is an optimal level of government spending. If government spending is too low, the supply of 'public goods' (national defence, legal institutions guaranteeing property rights, the rule of law, basic education and healthcare, the correction of other forms of genuine market failure, public infrastructure spending, as well as income redistribution to assist the deserving poor) is less than it needs to be to maximise economic growth. Hence, under these circumstances government spending can be sub-optimal.

⁷ See Baker et al (2016) for related discussion.

⁸ See Barro (1974) and Elmendorf and Mankiw (1999).

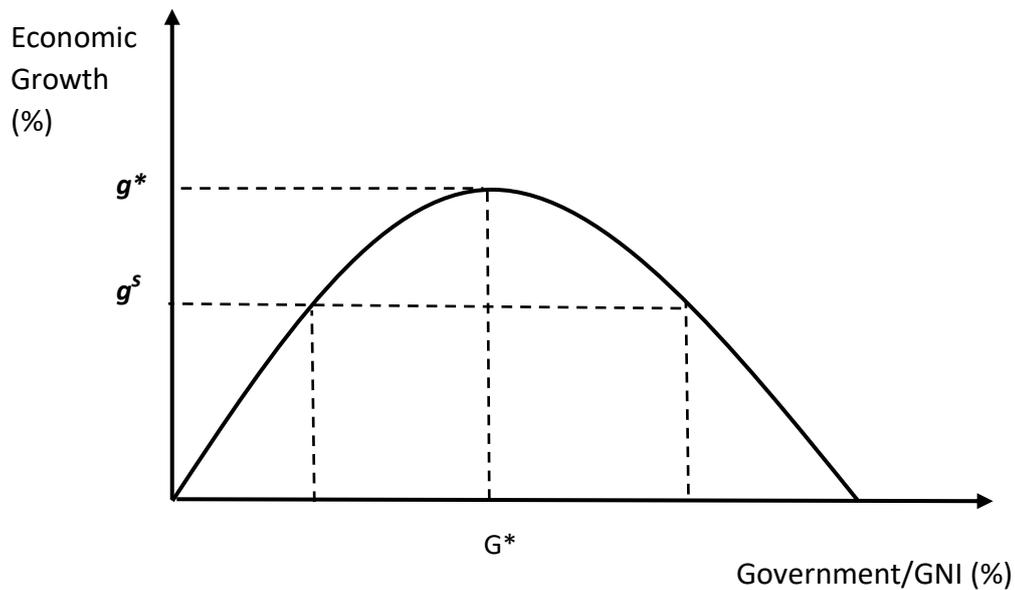
However, beyond a certain level of spending as a share of national income, the size of government starts to negatively affect economic growth due to increased inefficiencies, work and investment disincentives due to the higher income taxes needed, crowding out of private investment and net exports, and increased uncertainty affecting business and household confidence.

When government expenditure exceeds a certain percentage of GDP, diminishing returns set in. This suggests a trade-off between government size and economic growth beyond some optimal level that can be depicted in what is called the BARS curve, named after previous work by Barro (1990), Armev (1995), Rahn (1996) and Scully (2003).

As shown in the stylised BARS curve in Figure 2, as the share of government spending, measured on the horizontal axis, rises, the rate of economic growth accelerates because extra spending improves legal institutions, property rights, security and the rule of law, as well as providing other basic public goods, infrastructure and welfare. Higher government expenditure in these areas, aggregated on the horizontal axis, continues to raise the economic growth rate until it reaches G^* , the share associated with maximum growth of g^* , shown on the vertical axis.

Beyond this point, government spending becomes too high because it affects work and investment incentives via higher income taxes and welfare payments, while crowding out private investment and net exports. Moreover, if higher public spending leads to a large public debt this creates additional uncertainty for business, further weakening private investment and economic growth. Figure 2 also illustrates that if an economy is experiencing sub-optimal economic growth (g^s) this could reflect either government size that is too small (as likely in developing countries), or too high (as in some advanced economies).

Figure 2- The BARS Curve



3. The Growth of Government in Australia

In the post war years, the most significant rise in Australia's government spending occurred in the mid-1970s following the election of the Whitlam government. Providing universal welfare assistance through schemes such as Australia's Medicare health system, and having no or limited means testing on Medicare and other forms of government assistance, amplified the growth in government outlays from then.

Spending to GDP peaked in 1987, then fell significantly during the Hawke/Keating governments, rose again with the recession of the early 1990s, then fell during the Howard/Costello government. However, there was strong growth in commodity prices during this period which boosted the terms of trade (the ratio of prices received for exports relative to prices received for imports) that enhanced GDP, the denominator in the G/GDP ratio. Abstracting from this effect on GDP by holding the terms of trade constant, there was no change in the government spending share in the Howard/ Costello era, with an initial fall entirely reversed in the three years to 2006/7.

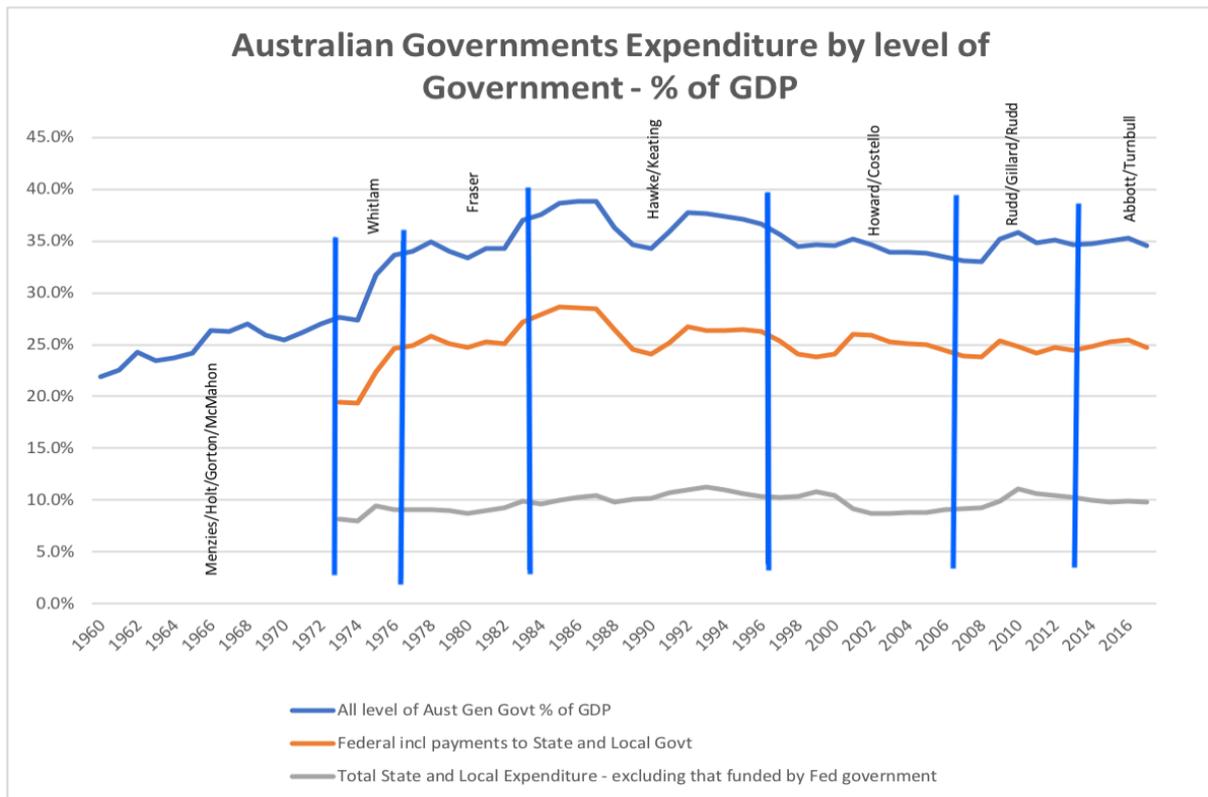
Government spending then spiked reflecting the Rudd/Swan government's response to the 2008-09 GFC although remains close to the GFC peak despite the attempted fiscal consolidation efforts of the Abbott/Hockey and Turnbull/Morrison governments. This contrasts with other advanced countries where the government share on average is well below the GFC peak.

Nature of Government Spending

Total government spending in Australia includes both federal and state/local level shares. As Figure 3 shows the rise in this total, particularly in the 1970s and early 1980s and its subsequent variation, has been mostly attributable to the federal government.⁹ The federal government influences these trends predominantly via its own spending, but also via its payments to the states, territories and local governments..

⁹ The federal spending share includes payments to state/local governments while the state/local share excludes their federally funded spending.

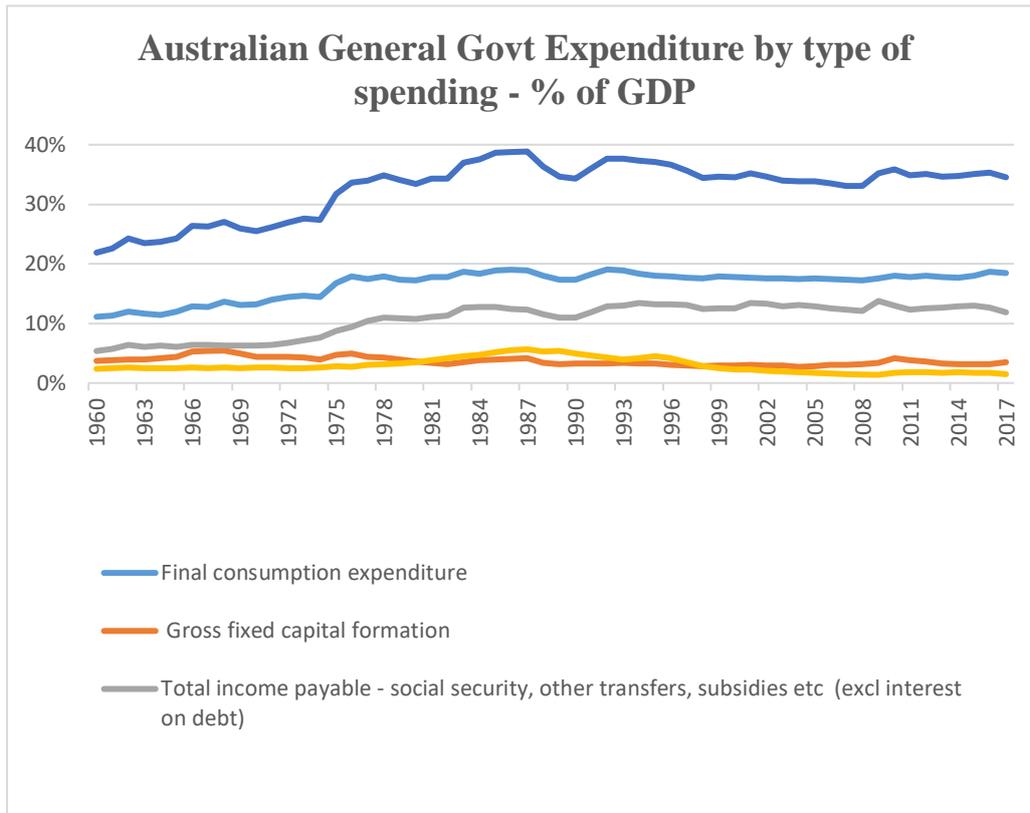
Figure 3 – Federal, State/Local Government Spending



Source: Australian Bureau of Statistics, 5206.0 - Australian National Accounts: National Income, Expenditure and Product, Dec 2017

As shown in Figure 4, the growth in government spending since the 1970s has been driven by large increases in government consumption expenditure and in income payable (mainly social assistance payments, subsidies and other transfer payments but excluding interest payable on government debt). Capital expenditure has been broadly stable except for a peak after the GFC in 2010 (notably after the worst of the financial pressures had subsided).

Figure 4 – Forms of Government Spending



Source: Australian Bureau of Statistics, 5206.0 - Australian National Accounts: National Income, Expenditure and Product, Dec 2017

An important constraining influence on the government spending share has been a fall in interest payable on government debt from a peak of 5.7 per cent in 1987 to 1.5 per cent in 2017. This is the result of lower interest rates and the repayment of debt up to 2007 by the federal government. These influences reducing the share of government spending is not expected to continue as interest rates on long term government debt have started to rise and net debt of the general government sector as share of GDP continues to increase until 2018/19¹⁰.

¹⁰ Net debt projections are based on Parliamentary Budget Office (2017), p11, and 2017/18 budgets for the federal government and states/territories.

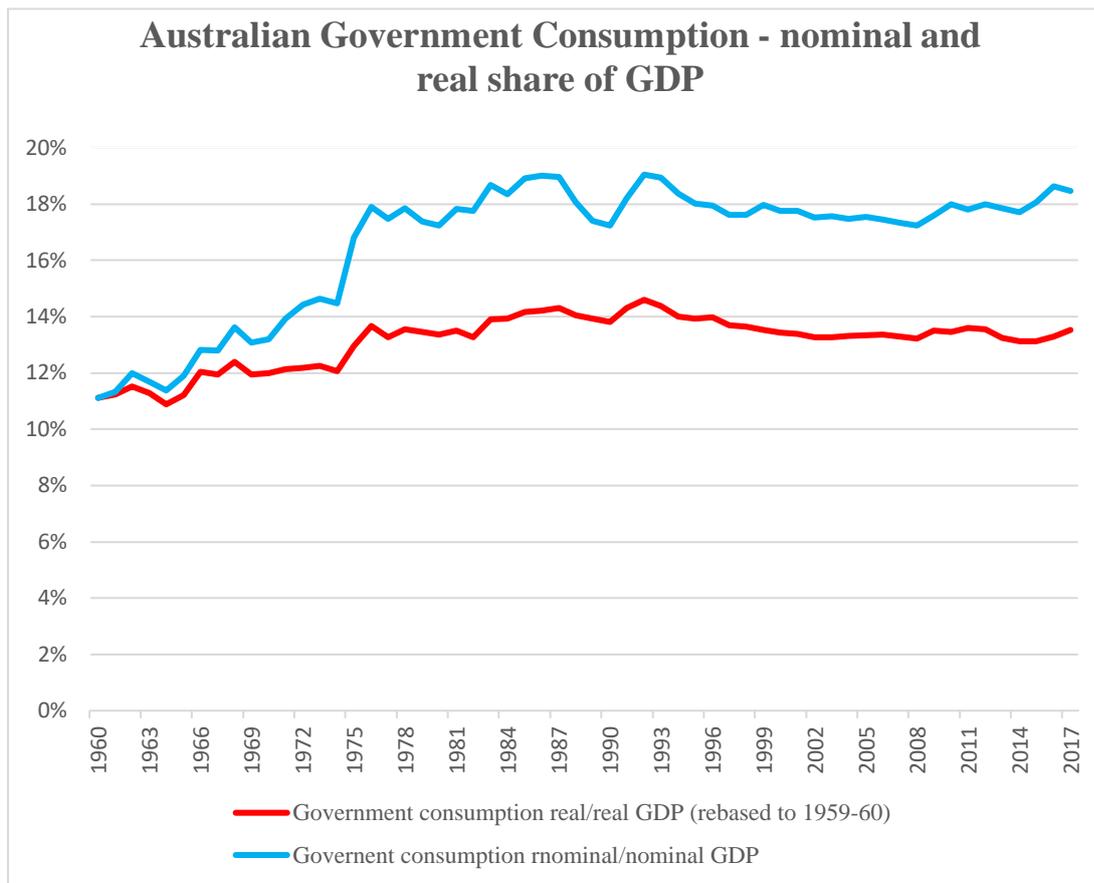
The Baumol Effect

The Baumol effect referred to above relates to direct government consumption spending rather than transfer payments, and suggests the share of government spending rises because government services public sector wages and salaries grow in line with wages in the private sector (reflecting private sector productivity gains) but the public sector has not been able to achieve the same productivity gains as in the private sector. A way of measuring this is to compare the change in the ratios of nominal direct government consumption spending to nominal GDP and real government spending to real GDP.

In Australia's case, the government consumption share in real terms (measured by constant price consumption and constant price GDP) increased from 1960 to 2017 by 2.4 percentage points, whereas in nominal terms the share increased by 7.4 percentage points (see Figure 5 below), consistent with Baumol's hypothesis. This reflects the price of government consumption services growing 34 per cent faster than the GDP deflator over the period and 5 per cent faster over the past 10 years alone¹¹.

¹¹ Further analysis suggests this is due to state/local government consumption expenditure, presumably due to challenges in achieving productivity growth in some sectors of education and health as well as wages growth in the public sector which has been higher than private sector wages (source: Australian Bureau of Statistics, 6345.0 - Wage Price Index, Australia, Mar 2018).

Figure 5 – Evidence of the Baumol Effect



Source: Australian Bureau of Statistics, 5206.0 - Australian National Accounts: National Income, Expenditure and Product, Dec 2017

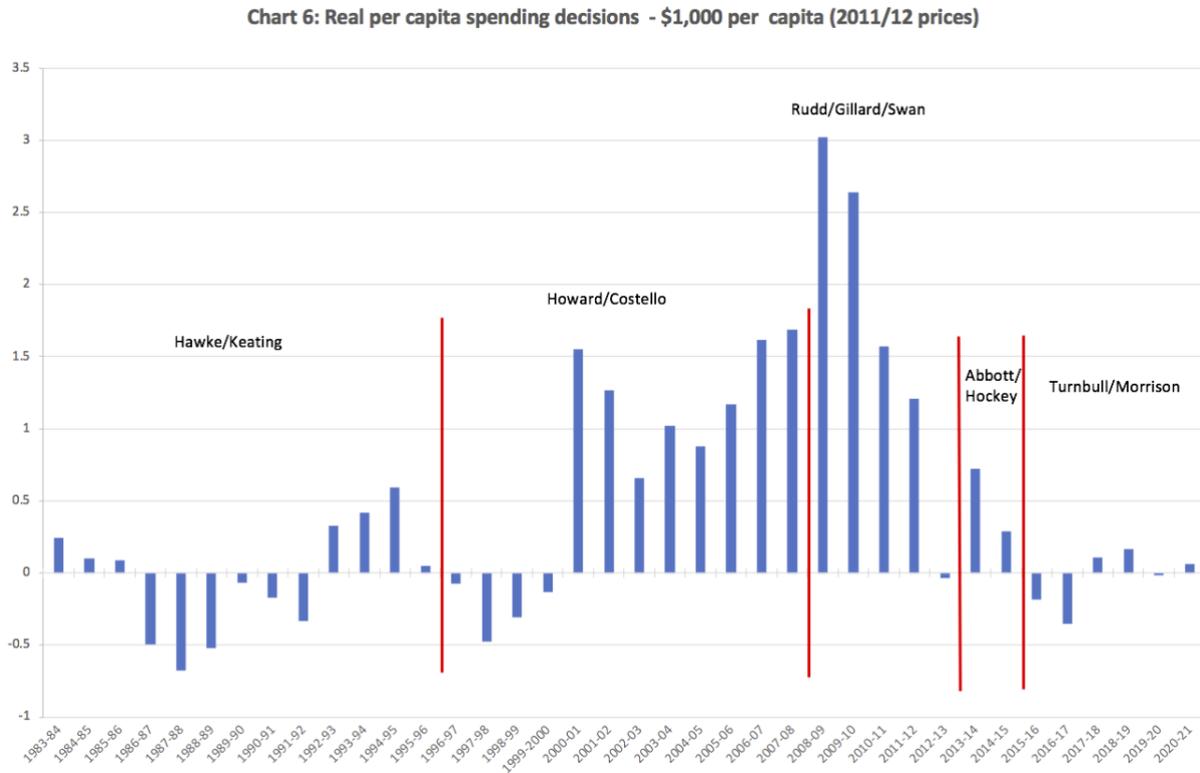
Expenditure Control by Previous Governments

Data compiled from past budgets shows that federal government expenditure decisions have added to per capita spending by more than \$500 per capita (in 2016/17 prices) in virtually every year from 2000/01 to 2013/14.¹² As Figure shows, the only periods when there were sustained reductions in per capita spending were midway through the Hawke/Keating era and the first three years of the Howard/Costello government. The first two years of the Abbott/Hockey budget involved net increases

¹² This information was derived from Parliamentary Budget Office (2016) and from annual federal budget documents from 1983/84.

in per capita spending decisions followed by reduced spending in the subsequent years under Turnbull/Morrison, though these falls were of an order less than achieved in the Hawke/Keating era.

Figure 6 - Real per Capita Spending



Source: Parliamentary Budget Office (2016); Budget Papers No 1, from 1983/84; ABS 6401.0 - Consumer Price Index, Australia, Dec 2017; ABS 3101.0 - Australian Demographic Statistics, Sep 2017

4. Estimating Optimal Government Size for Australia

A large GFC-inspired international literature has addressed the impact of government spending on economic activity by gauging Keynesian multipliers, that is, the extent to which a given increment in government spending increases aggregate expenditure in the economy. This

literature largely focuses on the short run, and has yielded mixed results.¹³ Other studies have estimated the link between public debt and economic growth, most finding a negative effect.¹⁴ To our knowledge no previous studies have empirically examined the linkage between the size of Australia's government and economic growth using the straightforward approach to follow.

Econometric Approach

Specifically, we estimated the relationship between public expenditure and economic growth for Australia consistent with the above discussion of the BARS curve over the period 1970Q1 to 2017Q3. Quarterly Australian Bureau of Statistics national accounts and public finance data was used to estimate the relationship using the time series ARMAX (Autoregressive Moving Average with Exogenous variable framework), a straightforward econometric approach for analysing dynamic macroeconomic aggregates. ARMAX is a version of Box-Jenkins model that uses past time series for forecasting (Box and Jenkins 1970).

Government spending comprised general government final consumption expenditure, government investment expenditure and government transfers in current prices, expressed as a share of Gross National Income (GNI), also in current prices. GNI provides a better approximation of the size of national income than Gross Domestic Product as it adjusts national income for net income paid abroad, which is significant for Australia as a major international debtor economy. Expressing the value of current price government spending as a proportion of current price GNI yields the share of government spending variable (G), effectively

¹³ See, inter alia, Auerbach et al (2010), Cogan et al (2010), Ramey (2011), Woodford (2011), Clemens and Miran (2012) and Ilzetli et al (2013).

¹⁴ See for instance Ardagna, Caselli, & Lane (2007), Checherita-Westphal and Rother (2012), Baum et al (2013) and Eberhardt & Presbitero (2015).

measured in real terms. Seasonally adjusted series were used to avoid often sizeable seasonal effects in unadjusted quarterly data.

Results

Real GNI is regressed against G using autoregressive adjustment in a model in the form

$$y_t = \beta_0 + \beta_1 G_t + \beta_2 G_t^2 + \sum_{j=1}^q y_{t-j} + \varepsilon_t.$$

where y_t is the rate of growth Real GNI and G is the government expenditure share. The series were first tested for stationarity and all three series are $I(0)$ with either intercept and/ or trend included. The ADF test statistics at levels were as follows. $y_t = -12.67$ (-4.007, 3.433), $G_t = -3.180$ (-3.465, -2.876) and $G_t^2 = -2.923$ (-3.465, -2.876) where figures within parenthesis show the critical test values at 1% and 5% significance levels.

The equation was then estimated in levels using the ARMA maximum likelihood method. The linear coefficient β_1 was expected to have a positive sign while the nonlinear term, β_2 was expected to take a negative sign, consistent with BARS curve that shows G initially improves but eventually retards economic growth. The share of government expenditure that maximizes economic growth (G^*) is calculated using the estimated coefficient from the following formula.

$$G^* = \beta_1 / 2\beta_2.^{15}$$

A priori we estimated the restricted version of the above equation, that is, without including the squared term, to gauge how Australian public expenditure influences its economic growth. The results of this model (Model I) and the unrestricted model, the BARS curve estimation (Model II) are presented below. The public expenditure variable in these models include government transfers which accounted for 13 per cent of GNI (in 2017 Q3).

¹⁵ This is the first derivative of the estimated quadratic equation after solving for G^* at maximum growth point.

In the third model (Model III) government transfers are excluded to estimate an optimum for the direct government expenditure share (public consumption and investment only) that maximizes economic growth. The results presented in Table 1 show the models with autoregressive adjustment AR (1) process. We also included a time trend and a dummy variable representing the Global Financial Crisis (GFC) in the estimation. However, these variables do not show a significant influence within our ARMA modelling framework.

Almost all coefficients in the models above were statistically significant and have expected signs, albeit the R^2 term is low. The results of the Model I suggest that an increase in the public expenditure share significantly and negatively influences Australian economic growth. More specifically, a 10% increase in G corresponds to potential growth slowdown of around 1%.

Table 1 Estimating Australia's Optimal Government Share

Variable	Model I		Model II		Model III	
	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
G	-0.113	-2.577***	1.265	1.820**	4.250	1.709**
GSQ			-2.051	-2.027**	-10.543	-1.791**
C	0.054	3.424***	-0.174	-1.475	-0.411	-1.566
Yt-1	-0.473	-4.777***	-0.495	-5.345***	-0.453	-4.334***
Yt-2	-0.352	-4.236***	-0.378	-4.503***	-0.335	-4.303***
AR(1)	0.582	5.934***	0.605	6.759***	0.544	5.136***
SIGMASQ	0.000	12.043***	0.000	11.451***	0.000	11.396***
R^2		0.07		0.08		0.08
N		189		189		189

Using the estimated β coefficients from the BARS curve (Model II), we then estimated the government expenditure share that yields the highest economic growth rate in Australia). This share which is given by $1.265/2$ (2.051) is approximately 31 per cent over the study period compared to the current 37 per cent share. Excluding government transfer payments (Model III), the optimal size of government spending is $[4.250/2$ (10.543)] = 20 per cent compared to 23% per cent currently.

Human Development and the Size of Government

Since increased spending on education, health, pensions and social welfare has contributed most to the expansion of public spending in advanced economies in the post war era, it is reasonable to assume that advanced economies with higher shares of government are more likely to enjoy higher levels of economic wellbeing. Yet reference to broad socio-economic indicators such as the Human Development Index (HDI) published by the United Nations Development Program does not support this.

The HDI was devised to assess economic wellbeing in a broader sense than simply with reference to national income per capita. It combines a health dimension based on life expectancy, an education dimension based on years of schooling, as well as conventional national income per head as a measure of the standard of living.¹⁶

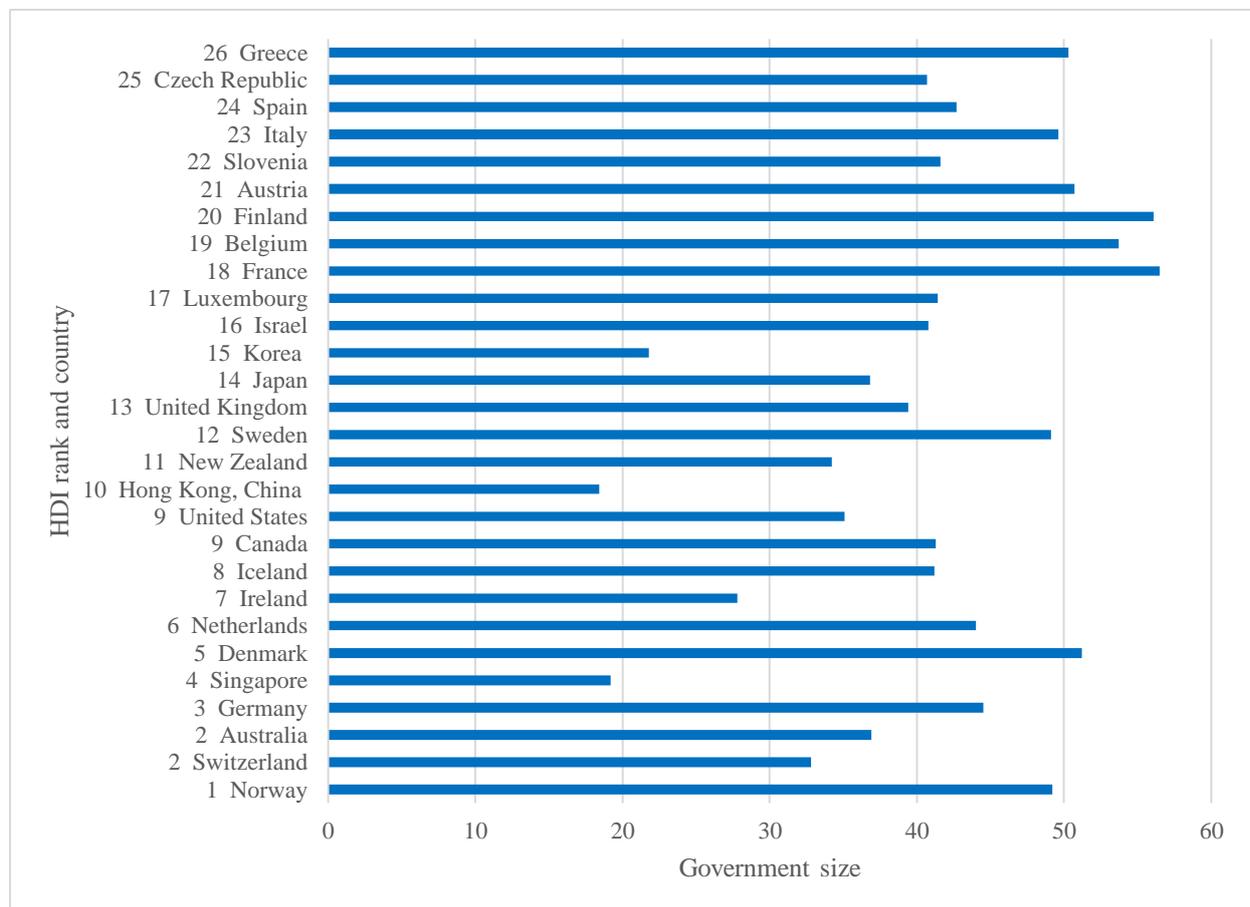
Interestingly, the most recent HDI data shows that higher levels of public spending do not correlate strongly to high HDI rankings. See Figure 7. Several countries ranked in the top twenty on this socio-economic measure, notably Switzerland, Singapore, Hong Kong, Korea and Ireland, have relatively low shares of government spending, yet they outperform many

¹⁶ See United Nations (2018).

European countries with higher shares of government spending, notably France, Belgium, Finland, Austria, Slovenia, Italy, Spain, Czech Republic and Greece.

Australia enjoys a very high HDI ranking presently, despite having a lower share of government than many European economies. This is consistent with a negative correlation between the HDI and size of government for the top 30 HDI ranked countries.¹⁷ The corollary is that further expanding the size of Australia’s government will not only reduce future economic growth, it will not guarantee any further improvement in the Australia’s HDI.

Figure 7 - HDI Rankings and Size of Government Spending



¹⁷ The correlation co-efficient estimated using the data underlying Figure 7 is -0.315.

5. Conclusion

Why government grows and how its size affects an economy's performance are fundamental questions for public policy. This paper has canvassed perspectives on the causes and consequences of growth in the share of government and examined recent Australian trends in depth. It has also analysed the trade-off between higher government spending in Australia and the rate of economic growth.

Straightforward econometric estimation of the this trade-off based on data from recent decades suggests the optimal level of government spending for Australia is 31 per cent compared to the current 37 per cent share. Excluding government transfer payments, the economic growth maximising size of government spending is 20 per cent compared to 23 per cent currently.

Although we have focused on the share of government spending in national income, it is important to note that this measure does not fully capture the impact of government activity on the economy. Growth of government is also measurable by legislative outputs, the number of Ministers, government departments, agencies and statutory bodies. In particular, laws and regulations related to the labour market, property development, rental controls, consumer protection and the environment, amongst others, can also significantly affect economic activity, the extent to which suggests itself as a topic for further empirical research.

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