Chapter 11

Government Size and Economic Growth: An Overview

By Livio Di Matteo

Increases in output per worker over time reflect increases in the amount of complementary inputs such as natural resources, labour, and capital, as well as more productive use of all inputs. Indeed, economic growth and improvements in the standard of living hinge on increasing output per input and ultimately output per capita. As Paul Krugman noted, "Productivity isn't everything, but in the long run it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker" (1997: 11).

The institution of government has become a key factor affecting productivity and growth with government tax and expenditure policies affecting saving, capital formation, and labour supply (Solow, 1956; Swan, 1956), as well as innovation and technological change (Romer, 1986; Barro, 1990). Government provides institutions such a rule of law and property rights that facilitate productivity and economic growth along with economic freedom, trust, low levels of corruption, and functioning bureaucracies (North, 1987,1990; Strum and De Haan, 2001).

Government in the twenty-first century has become the dominant institution of modern life affecting economic activity via spending, taxation, and regulation. The COVID-19 pandemic in particular has resulted in a ramping up of government spending activities the world over. Indeed, many countries have introduced substantial fiscal packages encompassing assorted direct household income supports, loans, guarantees, tax deferrals, and other supports along with increased pandemic spending (OECD, 2020). With a collapse in tax revenues, the spending is being financed by an expansion of government borrowing and ultimately public debt, which raises the spectre of future inflation and higher taxes.

While government spending on programs is important, it remains that notwithstanding the current need for pandemic spending, more and larger government is not always associated with better outcomes. Moreover, the current resurgence in government spending does not auger well for future global economic growth prospects given the international evidence that has documented slower growth rates with larger public sectors over the course of the last 150 years.

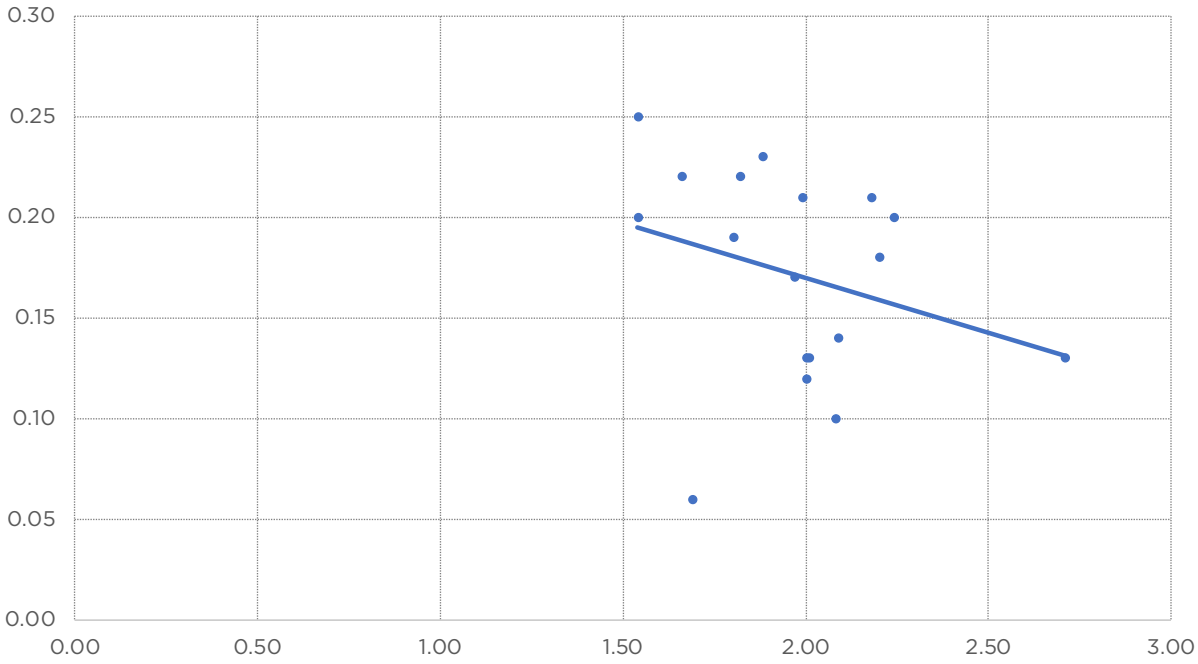
While good government promotes growth, poor government or excessively large government can reduce productivity and thereby harm economic growth. Large government can harm productivity growth in a variety of ways including by taxing and reducing the return to entrepreneurship and innovation, by discouraging capital investment and creating disincentives to work, by excessive regulation that increases costs of economic transacting, and by fueling inflation or otherwise distorting the price mechanism. Unlike the private sector, government spending decisions are not made in response to market incentives based on the highest productive return to investment. Therefore, more government spending can sometimes lead to worse social and economic outcomes (Di Matteo, 2013).

A simple plot of average real per capita GDP growth rates against public sector sizes for 17 highly developed countries[45] over the period from 1870 to 2016 shows an inverse linear relationship between economic growth and public sector size (see figure 1). From 1870 to 2016, central government expenditures as a share of GDP averaged 17 percent with an average growth rate of real per capita GDP of 2 percent. However, the average public sector size was highest in the United Kingdom at 25 percent (with an associated growth rate of 1.5 percent) and lowest in Switzerland at 6 percent (with growth at 1.7 percent). There is of course considerable variation around this linear trend, but the figure serves as an illustration of a basic inverse relationship between real economic growth and public sector size.

The manner in which government affects economic growth is complex, as government activities can also affect economic production positively, in part by providing societal benefits such as public goods and the rule of law, as well as by public investments in physical and social capital. However, when examined more carefully, this relationship is not linear but has been documented as hump shaped. As the state first develops and grows, its infrastructure and institutional spending complements private-sector growth, contributing to a positive relationship between public sector size and growth. However, as spending rises, along with taxes required

[45] Australia, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK, and USA.

Figure 1: Government Size (G/GDP) versus Real Per Capita GDP Growth (%), Selected Countries, Average, 1870 to 2016, With Linear Trend



Data source: Di Matteo and Summerfield (2020), Table 1: The Shifting Scully Curve: International Evidence from 1871 to 2016.

Original data source: Jordà, Schularick, and Taylor (2017). Y is the one-year percentage change in real GDP, per-capita and ppp adjusted. G is the central government expenditure share of GDP. Missing values occur for various countries at the start of the panel and during the world wars.

to finance the spending, there are adverse productivity effects on the economy and a slowing of growth rates.

One particular formulation of this relationship is known as the Scully Curve (sometimes also called the Barro, Armey, Rahn and Scully (BARS) Curve), which defines the optimal economic growth-maximizing size of government as the peak of a hump-shaped curve (Scully 1989, 1991, 1994, 2000). Scully (1991), using a cross-section of 103 countries in 1980, found that a government size of about 19 percent of GDP, measured as the tax-to-GDP ratio expressed as a percentage, maximized economic growth rates. Di Matteo (2013), using data for over 180 countries from 2000 to 2011, identified that the maximum annual real per capita GDP growth rate of 3 percent corresponded to a government expenditure-to-GDP ratio of 26 percent. Beyond this relative size of government, the rate of economic growth declined.

While government expenditure-to-GDP ratios were well below 10 percent in the nineteenth century, government spending in some countries came to account for well over 40 percent of GDP by the late twentieth century (Tanzi, 2011; Tanzi and Shukenecht, 1997). After growing for much of the twentieth century, particularly after World War II, public sectors began to decline in size after 1980. However, the first decade of the twenty-first century saw a resumption of growth in public sector size fueled by the spending response to 9-11 and the 2008-09 recession (Di Matteo, 2013).

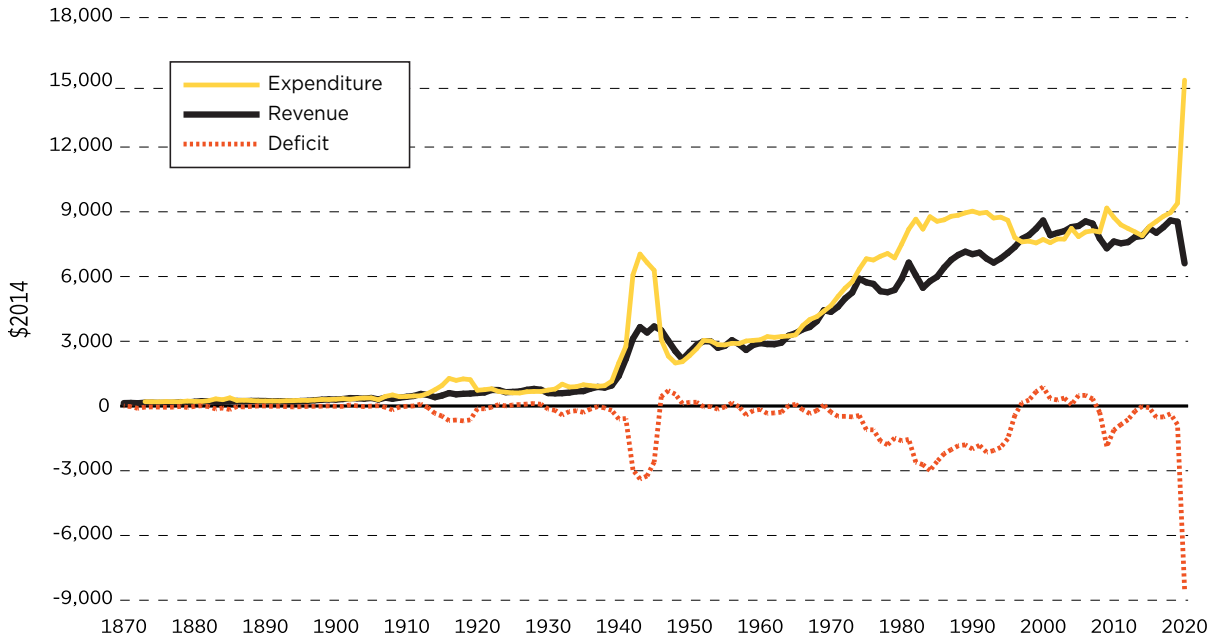
For example, in Canada's case, the total government expenditure-to-GDP ratio at the dawn of Confederation was 4.9 percent rising to 7 percent by 1913. It remained under 10 percent until World War II when it rose dramatically as a result of military spending and reached 43 percent in 1945. It subsequently declined and by 1960 reached 15 percent. It then began to grow again reaching a peak of 52 percent by 1993 and then declined from there.[46] By 2007, total consolidated government spending in Canada as a share of GDP was down to 37 percent, but it increased to 42 percent in 2009 and by 2018 was at 40 percent (Whalen, 2020). With increased government spending associated with the COVID-19 pandemic, the ratio can be expected to rise dramatically in 2020 and, perhaps, beyond.

Indeed, times of crisis seem to generate demands for government spending which, once in place, are difficult to dislodge after the crisis passes. Indeed, one theory of public expenditure growth targets precisely this tendency. Peacock and Wiseman (1961) argued that the rate of growth of public expenditures was driven by taxpayer perception of tolerable levels of taxation, and that this tolerance is greater during times of national or social crisis.[47] Thus, the public sector has grown in a step-like fashion of abrupt jumps and long plateaus driven by crises such as war. The onset of the COVID-19 pandemic might therefore be expected to promote a sustained increase in public sector size barring changes in government policies. Indeed, as figure 2 illustrates for Canada, there have been spikes in real per capita government spending during times of social crisis such as world wars, but even those spikes are dwarfed by the current estimated impact of COVID-19 on the federal public finances.

[46] Data source: IMF, Public Finances in Modern History (https://www.imf.org/external/datamapper/datasets/FPP) as of August 24, 2020.

[47] The other traditional explanation is Wagner's Law, which states that government spending grows faster than output in industrializing countries because government expenditures are highly income elastic—that is, the ratio of the percentage responsiveness of government expenditures to a given percentage change in income is greater than one (Wagner, 1883, 1892-94).

Figure 2: Real Per-capita Revenue, Expenditure, and Deficit/Surplus ($2014) of Canada's Federal Government, 1870 to 2020



Note: 2019 and 2020 are forecasts.

Source: Livio Di Matteo (2017). Updates to 2020 provided by the author. Reprinted with permission. **Sources for revenue and expenditure:** 1867-2018: *Historical Statistics of Canada*, HSC-H1-18, HSC-H19-34; 1966–2018: *Federal Fiscal Reference Tables*. **Sources for population:** 1867–1977: v742019 Canada; Estimated population; 1971–2019: v52154496 Canada, Total marital status. Population 2020 is April 1st Statistics Canada estimate. **Sources for GDP deflator:** 1870–1985: Urquhart, 1988; 1981–2018: v62788999; Federal Economic and Fiscal Snapshot 2020 assumes for 2019 and 2020 GDP inflation at 1.9% and 0.5%.

The concept of an "optimal" size of government creates the temptation for the Scully Curve to be viewed as a sort of policy menu whereby policymakers might try to exploit a potential trade-off between government spending and economic growth rates. However, this is likely misplaced given evidence that Scully Curves appear to have shifted over time, and that as a result, the growth optimizing size of government has varied over time. Indeed, Di Matteo and Summerfield (2020) estimate Scully Curves using panel data covering 17 industrialized nations from 1870 to 2016 for the entire period and for sub-periods. The results suggest that over the period 1870 to 2016, a range of government expenditure-to-GDP ratios between 24 and 32 percent were historically growth maximizing. Given that since the 1970s the total size of government in Canada has generally ranged between 35 and 53 percent of GDP, it stands that Can-

ada's public sector size over the last half-century has been larger than that empirically documented to maximize economic growth.

Taken together, the evidence suggests there are important implications for productivity and economic growth associated with the size of government. Government spending, taxation, and regulation can affect the efficiency of production and by extension the rate of economic growth. Moreover, there is an optimal size for the government sector when it comes to economic growth, although the optimal size is not a constant and has varied throughout history. Nonetheless, Canada's public sector size over the last 50 years has generally been well above the growth optimizing range of values.

Government is indeed very important, and its programs are important to our quality of life. At the same time, more and larger government is not always associated with improved outcomes. The recent expansion of government spending and deficits during COVID-19 should be treated as a temporary measure and not an opportunity for a "transformative" expansion of government's role in the economy. The entrenchment of new spending that increases the long-run size of government implies higher future tax rates and slower productivity growth, which will reduce future rates of economic growth when growth will be sorely needed.

References

Barro, Robert J. (1990). Government Spending in a Simple Model of Endogenous Growth. *Journal of Political Economy* 98, 5: 103–25.

Di Matteo, Livio (2013). *Measuring Government in the Twenty-first Century: An International Overview of the Size and Efficiency of Public Spending*. Fraser Institute. <https://www.fraserinstitute.org/sites/default/files/measuring-government-in-the-21st-century.pdf>, as of October 6, 2020.

Di Matteo, Livio (2017). *A Federal Fiscal History:Canada, 1867-2017*. Fraser Institute. <https://www.fraserinstitute.org/sites/default/files/federal-fiscal-history-canada-1867-2017.pdf>, as of October 6, 2020.

Di Matteo, Livio, and Fraser Summerfield (2020). The Shifting Scully Curve: International Evidence from 1871 to 2016. *Applied Economics* 52, 39: 4263-4283. <https://doi.org/10.1080/00036846.2020.1733479>, as of October 6, 2020 [paywall].

Jordà, Òscar, Moritz Schularick, and Alan M. Taylor (2017). Macrofinancial History and the New Business Cycle Facts. In Martin Eichenbaum and

Jonathan A. Parker (eds.), *NBER Macroeconomics Annual 2016*, volume 31 (University of Chicago Press).

Krugman, Paul (1997). *The Age of Diminished Expectations*, 3rd edition. MIT Press.

North, Douglass C. (1987). Institutions, Transaction Costs and Economic Growth. *Economic Inquiry* 25, 3: 419–28.

North, Douglass C. (1990). *Institutions, Institutional Change, and Economic Performance.* Cambridge University Press.

OECD (2020). *Tax and Fiscal Policy in Response to the Coronavirus Crisis: Strengthening Confidence and Resilience*. Organisation for Cooperation and Development. <https://www.oecd.org/coronavirus/policy-responses/tax-and-fiscal-policy-in-response-to-the-coronavirus-crisis-strengthening-confidence-and-resilience-60f640a8/>, as of October 6, 2020.

Peacock, Alan T., and Jack Wiseman (1961). *The Growth of Public Expenditures in the United Kingdom*. Princeton University Press.

Romer, Paul M. (1986). Increasing Returns and Long-Run Growth. *Journal of Political Economy* 94, 5: 1002–37.

Scully, Gerald (1989). The Size of the State, Economic Growth and the Efficient Utilization of National Resources. *Public Choice* 63, 2: 149–164.

Scully, Gerald (1991). *Tax Rates, Tax Revenues and Economic Growth*. Policy Report 98. National Center for Policy Analysis.

Scully, Gerald (1994). *What Is the Optimal Size of Government in the US?* Policy Report 188. National Center for Policy Analysis.

Scully, Gerald (2000). The Growth-maximizing Tax-rate. *Pacific Economic Review* 5: 93–96.

Solow, Robert M. (1956). A Contribution to the Theory of Economic Growth. *Quarterly Journal of Economics* 70, 1: 65-94.

Sturm, Jan-Egbert, and and Jakob De Haan (2001). How Robust is the Relationship Between Economic Freedom and Economic Growth? *Applied Economics* 33, 7: 839–44.

Swan, Trevor W. (1956). Economic Growth and Capital Accumulation. *Economic Record* 32, 2: 334-61.

Tanzi, Vito (2011). *Government Versus Markets: The Changing Economic Role of the State.* Cambridge University Press.

Tanzi, Vito and Ludger Schuknecht (1997). Reconsidering the Fiscal Role of Government: The International Perspective. *American Economic Review* 87, 2: 164–68.

Wagner, Adolph (1883). *Finanzwissenschaft,* 3rd ed. Winter.

Wagner, Adolph (1892-94). *Grundlegung der politischen Okonomie,* 3rd ed. Winter.

Whalen, Alex, and Steven Globerman (2020). *The Changing Size of Government in Canada*. Fraser Institute. <https://www.fraserinstitute.org/sites/default/files/changing-size-of-government-in-canada-2007-2018.pdf>, as of October 6, 2020.

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