



# A modern history of fiscal prudence and profligacy<sup>☆</sup>



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## ABSTRACT

Drawing on a newly collected historical dataset of fiscal stocks and flows, we analyze the determinants of variation, both across countries and over time, in how fiscal policy responds to increases in the government debt-to-GDP ratio. The fiscal data comprise revenues, primary expenditures, interest bill, and government debt for 55 countries for up to two hundred years. The policy response (increase in the primary fiscal balance in response to debt increases) is found to be significantly weaker when sovereign borrowing costs are low, inflation is high, and potential economic growth worsens unexpectedly. These results are robust to political factors.

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## 1. Introduction

Do governments respond to an increase in public debt by improving their primary fiscal surplus? To what extent does their response depend on economic and political factors? And are these behaviors indicative of fiscal “prudence” or “profligacy”? Analyzing these questions may help to gain further understanding in the four following areas: (1) the methods whereby countries stabilize or reduce their debts over time; (2) the determinants of fiscal policy actions; (3) the “fiscal policy rule” that is needed to close general equilibrium models on the effects of fiscal policy; and (4) assessments of whether fiscal policies are sustainable (i.e., whether the government’s intertemporal budget constraint is met, with the expected present discounted value of all future fiscal surpluses matching the existing stock of government debt).

To address these questions, the present paper draws on a newly collected historical dataset of fiscal variables for a large panel of countries—to our knowledge, the most comprehensive database currently available and the first large cross country historical data set encompassing both fiscal flows and stocks.<sup>1</sup> Our data consist of long time series for fiscal revenues, primary expenditures, the interest bill (and thus both the primary and the overall fiscal balance), the government debt, and gross domestic product, for 55 countries. (Specifically, the data cover between 120–212 years for 13 countries, 90–119 years for 11 countries, 50–89 years for 14 countries, 40–49 years for 8 countries, and 21–39 years for 9 countries.) The availability

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<sup>1</sup> At a general level, the present study seeks to draw lessons from long-run historical data on panels of countries, in a similar vein as Reinhart and Rogoff (2009, 2011) and Schularick and Taylor (2012).

of data on the primary fiscal balance makes it possible to study its determinants and patterns of behavior, as well as to apply modern tests of fiscal sustainability.

Although the economics profession has not yet developed a universally accepted indicator of fiscal sustainability, some are gaining broader acceptance, such as an approach based upon a time series regression of the primary fiscal surplus on the government debt and other controls (Bohn, 1998, 2007, 2008). Yet, empirical application has hitherto been constrained by data limitations. Bohn's own work analyzed long run historical time series data for the United States. Mendoza and Ostry (2008) applied the framework to international panel data for 22 advanced economies over 1970–2005 and 34 emerging markets over 1990–2005. In view of the relatively short time-series coverage, most of their analysis constrained the estimated fiscal policy response coefficient to be the same across the advanced economies and across the emerging markets—a null hypothesis rejected by the data. Our data collection effort makes it possible to apply this approach to individual countries, for a large number of countries over long historical periods and, importantly, sub-periods.

Moreover, the availability of long run historical time series data for many countries allows us to explore variation in the fiscal policy response function not only across countries but also over time within individual countries. In several specifications, we relax the assumption of a constant long term fiscal policy response, through methods such as structural break tests or iterations of the standard regression over rolling subsamples.

The picture that emerges is one in which a given country's fiscal policy response to changes in debt is by no means constant throughout its history. On the contrary, we document significant variation in such response, not only across countries, but also over time within a given country. Given this, the next step is to analyze the determinants of such variation. We do so through panel regressions of the primary fiscal balance on the debt interacted with economic variables such as changes in long-run economic growth and in the cost of borrowing, as well as inflation, and political variables such as the right-wing or left-wing orientation of the government.

Our main findings are the following. For most advanced countries, particularly prior to the global economic and financial crisis that began in 2008, there is evidence that the response of the primary fiscal surplus to variation in government debt is consistent with meeting the intertemporal budget constraint, as well as stationarity of the debt. However, for some countries, including some of the largest advanced economies, tests that include sample periods that extend beyond 2008 fail to find evidence consistent with countries meeting their intertemporal budget constraint.

The sign, magnitude, and statistical significance of the fiscal response coefficient (we'll use the shorthand "fiscal prudence" to refer to it) vary considerably over time and across countries. For example, while cross-country panel regressions estimate a constant fiscal response coefficient of around 0.02 for the postwar era (indicating that a 10 percentage point increase in the debt-to-GDP ratio is associated with a 0.2 percent of GDP increase in the annual primary fiscal surplus), the first and third quartile fiscal responses for individual advanced economies range from 0 to above 0.05. Investigating across time, the estimates point to widespread fiscal prudence in most advanced economies during the mid-1990s until at least the mid-2000s; for the emerging economies, prudence becomes more widespread after the year 2000. Strong prudence is evident in the United States in the late 1990s (recalling contemporary discussion of a possible disappearance of the government debt); in Canada since the mid-1990s (beginning with an ambitious and successful fiscal adjustment plan); in several Euro area countries during the mid-1990s (coinciding with the Maastricht Euro entry process); in Ireland in the late 1980s and early 1990s (a well-known fiscal adjustment episode); in Japan in the mid-1980s to early 1990s (as it sought to stabilize the debt); and in Turkey in the mid-1990s and at several points in the 2000s (as it improved its primary balance significantly). Conversely, notable episodes of fiscal stimulus are also evident, including the United States in 2009–11 and Spain in 2010. France and Japan are found not to improve their primary balances despite rising debts for several years starting in the late 1990s (Japan) and early 2000s (France).

We identify several significant factors that underlie variation in the fiscal policy response to a given debt increase. A stronger response of the primary fiscal balance to changes in government debt is significantly associated with changes in long-run real GDP growth rates and long-term sovereign borrowing costs (measured by secondary market interest rates on long-term government debt). Declines in "potential" (or long-run) economic growth may not be fully apparent in real time to contemporary policymakers, who therefore often fail to respond to such declines through sufficient improvements in the primary balance. Conversely, increases in the cost of sovereign borrowing prompt policymakers to tighten fiscal policy more forcefully to a given increase in debt. Plausible fluctuations in growth surprises and sovereign borrowing costs can generate a sizable variation (again, ranging approximately from 0 to 0.05) of fiscal policy responses. Indeed, the interaction between the debt and these economic factors is large enough to make sense of a good portion of the variation in the fiscal policy response coefficient over time and across countries. Moreover, higher inflation is significantly associated with a lower primary fiscal surplus, probably because the erosion of the real value of the debt reduces the incentives to improve the state of the public finances through expenditure cuts or tax increases.<sup>2</sup> Finally, in view of a long literature that has sought to link fiscal policies to political factors (e.g., Roubini and Sachs, 1989) we establish that our key results are robust to controlling for political variables.

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<sup>2</sup> Although Hilscher et al. (2014) estimate limited scope for reducing the real value of government debt in the United States today (in view of its structure by maturity, indexation, etc...), inflation has historically helped to reduce debt-to-GDP ratios around the world, including those of advanced economies in the decades following World War II, especially when combined with financial repression (Reinhart and Sbrancia, 2015).

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