

# The Political Economy of Government Debt\*

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## Abstract

This paper critically reviews the literature which explains why and under which circumstances governments accumulate more debt than it would be consistent with the prescriptions of optimal fiscal policy. Departures from optimality are linked to various political mechanisms which make real world governments depart from what a social planner should do. We also discuss numerical rules or institutional designs which might lead to a moderation of these distortions.

## 1 Introduction

Fiscal policy is the area of macroeconomic policy most directly intertwined with politics. The reason is that fiscal policy is mostly about redistribution across individuals, regions and generations: the core of political conflict. The redistributive role of governments has been increasing over time. The secular increase of the size of welfare state starting with the initial programs introduced during the Great Depression and the additional jump in the sixties and seventies are well known. But even recently the increase in the redistributive role of the state has not stop. The size of social spending (as defined by the OECD<sup>1</sup>)

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<sup>1</sup>OECD defines Social Expenditure as the provision by public (and private) institutions of benefits to, and financial contributions targeted at, households and individuals in order to provide support during

in 18 OECD countries increased from 18 per cent of GDP in 1980 to 26 per cent in 2014.<sup>2</sup> In addition, even the provision of public goods, which is therefore not classified as redistributive directly, has a redistributive component to the extent that public goods are used more or less intensively by individuals in different income brackets. Needless to say the structure of taxation, such as the progressivity of the income tax brackets, also implies redistributions. Alesina and Giuliano (2012) review the vast literature which has investigated to political and social determinants for the demand of redistribution.

To be sure, politics matter for other macro policy areas, such as monetary policy and financial regulation. The recent financial crisis, for example, has reopened issues regarding the desirable conduct of monetary policy. The dramatic appearance of the Chairman of the Fed Ben Bernanke and the Secretary of the treasury Paul Polson in front of Congress at the outset of the financial crisis is symbolic of questions regarding the separation between monetary and fiscal policy. The ECB is at the center stage of the political discussion about institutional building in the Euro area. Political squabbling over the ECB role in purchasing government debt have delayed the Bank's intervention. Alesina and Stella (2011) address old and new issue regarding the politics of monetary policy. In the present paper we focus exclusively on fiscal policy.

Even this restriction, however would be insufficient to draw the line of a manageable paper. The politics of fiscal policy could cover issues as diverse as the level of centralization versus decentralization, the structure of taxation, pension systems and their sustainability, the design of insurance programs like health care and unemployment subsidies, issues in optimal taxation of capital, just to name a few topics.

Thus, we focus on deficit management. In particular we ask two broad questions. First, is there a tendency in democracies to pursue sub optimal fiscal policies which lead to the accumulation of excessive debt, where "excessive" is in reference of what a benevolent social 

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circumstances which adversely affect their welfare, provided that the provision of the benefits and financial contributions constitutes neither a direct payment for a particular good or service nor an individual contract or transfer. Such benefits can be cash transfers, or can be the direct ("in-kind") provision of goods and services.

<sup>2</sup>Source: OECD.StatExtracts [http://stats.oecd.org/Index.aspx?DataSetCode=SOCX\\_AGG](http://stats.oecd.org/Index.aspx?DataSetCode=SOCX_AGG).

The list of countries is: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, UK, USA.

planner would do? In other words, how far are the observed pattern of debt accumulation and fluctuations in line with normative prescription of the literature on debt management like Barro (1979), Lucas and Stokey (1983) and Aiyagari et al (2002)? If there are, as we will see substantial departure from optimality, what explains them? This is the first question.<sup>3</sup> Second, are fiscal rules (and which ones) a possible solution to limit the extent of the problem of excessive deficits? The balanced budget rule is the most famous one, but may other have been proposed, especially in the Euro area. Two are the key issues in this debate. The trade off between the rigidity of a rule and the lack of flexibility which these rules create. More flexible rules may be superior but harder to enforce because they have too many escape clauses. Finally, assuming that a rule would work, would a country adopt it? Or would political distortions prevent it?

The first issue, namely the origin of excessive deficit, was at the core of the “public choice” approach, by Buchanan and associates.<sup>4</sup> They argued that a combination of “fiscal illusion” and Keynesian policies were the reason of permanently excessive deficits. Fiscal illusion implies that voters do not understand the notion of the intertemporal budget constraint and overestimate the benefit of current spending relative to the costs of future taxation. In addition, according to this view, Keynesian policies prescribed spending and deficits during recessions, but the political process did not permit countervailing surpluses and cuts during expansion creating a ratchet effect on the size of government and persistent deficits. Given the extensive discussion of deficit, the pros and cons of austerity policies in the US and Europe, it is hard to believe that today’s voters are unaware of the potential cost of deficits because of fiscal illusion, even though there may be disagreement on what policies to follow to respond to deficits. We will argue that the fiscal illusion argument is overly simplistic although it does raise important warning bells on the conduct of fiscal policies in democracies.

The present paper will focus on more modern research based upon generally speaking, rational actors, voters, lobbyist, politicians, and bureaucrats. We shall begin with a brief sketch of the prescriptions of the optimal debt management to identify the normative implication against which to confront actual policies. We will exclusively focus on models with distortionary taxation and we will not enter the discussion of the Ricardian equiv-

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<sup>3</sup>For a review of an early literature on this point see Alesina and Perotti (1995).

<sup>4</sup>See in particular Buchanan and Wagner (1977).

alence. We will uncover substantial deviations from optimality especially in the last few decades and we will focus almost exclusively on OECD economies. We will then examine the combination of procedures, institutional rules, political conflicts and voting procedures which may lead to the accumulation of public debt.

This chapter is organized as follows. In section 2 we briefly review the theories of optimal deficit management and the related empirical evidence. In section 3 to 8 we address the first question, namely whether or not there is a deficit bias in modern economies, and what explains it. In sections 9 to 11 we cover the question of fiscal rules and of which institutional arrangement would be more suitable to limit sub-optimal conduct of fiscal policy. The last section concludes.

## 2 Optimal debt policies: a brief review

### 2.1 Tax smoothing

The theory of tax smoothing is due to Barro (1979) in a model where debt is not contingent and risk-free, spending needs are exogenously given and known, taxes have convex costs.

The public debt takes the form of one-period, single-coupon bond and the rate of return on public and private debt is constant over time. The government raises in each period tax revenues  $\tau_t$ . Government spending is indicated with  $G_t$  and debt with  $b_t$  and the interest rate on debt with  $r$ . Thus the government budget constraint in each period is given by:

$$G_t + rb_{t-1} = \tau_t + (b_t - b_{t-1}) \quad (1)$$

The lifetime government budget constraint is given by:

$$\sum_{t=1}^{\infty} \left[ \frac{G_t}{(1+r)^t} \right] + b_0 = \sum_{t=1}^{\infty} \left[ \frac{\tau_t}{(1+r)^t} \right] \quad (2)$$

Raising taxes generates some extra costs which can be interpreted as collection costs, or more in general deadweight losses or excess burden of taxes and the timing in which taxes are collected. Let  $Z_t$  be this cost which depends on the taxes of that period  $\tau_t$  and negatively on the pool of taxable income/resources  $Y_t$ . In particular, let  $Z_t$  be defined as:

$$Z_t = F(\tau_t, Y_t) = \tau_t f\left(\frac{\tau_t}{Y_t}\right) \quad (3)$$

with  $f'(\cdot) > 0$  and  $f''(\cdot) < 0$ . With a recursive argument similar to the previous one, one can define the present discounted value of the costs as

$$Z = \sum_{t=1}^{\infty} \tau_t \frac{f(\frac{\tau_t}{Y_t})}{(1+r)^t} \quad (4)$$

The social planner chooses  $\tau_t$  in order to minimize (4) subject to the budget constraint (2). From the first order conditions one can find that tax-income ratio  $\frac{\tau}{Y}$  is equal in all periods. Given that, the level of taxes in each period is determined from the values of income  $(Y_1, Y_2, \dots)$ , Government expenditure  $(G_1, G_2, \dots)$ , interest rate  $r$  and initial debt stock  $b_0$ . The properties of the solution are considered under different assumptions about the time paths of income  $Y$  and government expenditure  $G$ . With Constant Income and Government Expenditure (i.e.  $Y_t = Y_{t+1} = \dots = Y$  and  $G_t = G_{t+1} = \dots = G$ ) since the tax-income ratio is constant, this implies that  $\tau$  is also constant and the government budget is always balanced. With transitory income and government expenditure (e.g. transitory expenditure during wartime or during depression). Deficits are larger the longer and the larger is the transitory shock. The debt-income ratio would be expected to be constant on average, but would rise in periods of abnormally high government spending or abnormally low aggregate income.

## 2.2 Keynesian stabilization

This is not the place to discuss the potential benefits of discretionary countercyclical fiscal policy actions, say increases in discretionary spending during recessions and reductions during booms. The point, however, is that even such Keynesian policies, at least in principle, should not lead to a secular increase of the debt over GDP ratio since discretionary spending increases during recessions should be compensated by discretionary spending cut during booms. We only note that the “long and variable lags” argument raised by Milton Friedman regarding monetary stabilization policy applies even more to fiscal policy were the lags are even longer and less predictable than for monetary policy. The recent Great recession and the lower bound issue for monetary point has made popular the view that in this scenario aggressive discretionary fiscal policies (especially increases in discretionary spending) are necessary even though in “normal” times with normal cycles automatic stabilizers are enough. We do not enter in this debate in the present paper.

## 2.3 Contingent Debt

Lucas and Stokey (1983) build on Ramsey (1927) and show that Barro's intuition does not fully apply. The main difference with Barro (1979) is in the assumptions made about the markets. Lucas and Stokey (1983) assumes complete markets, i.e. they do not restrict the choice only to state non-contingent debt. In particular, they consider a model with complete markets, no capital, exogenous Markov government expenditures, and state-contingent taxes and government debt. In this environment they break Barro's intuition by finding that optimal tax rates and government debt are not random walks, and that the serial correlations of optimal taxes are tied closely to those for government expenditures. Moreover, they find that taxes should be smooth, not by being random walks, but in having a smaller variance than a balanced budget would imply. Thus, to some extent, the idea of tax smoothing holds but not in the extreme version as in Barro (1979).

## 2.4 Accumulation of government assets

Aiyagari et al (2002) reconsider the optimal taxation problem in an incomplete markets setting. They start from the same environment as in Lucas and Stokey (1983), but allow only risk-free government borrowing. Under some restrictions on preferences and the quantities of risk-free claims that the government can issue and own, it is possible to obtain back Barro's random walk characterization of optimal taxation. However, by dropping the restriction on government asset holdings (or modifying preferences) generates differences from Barro (1979).

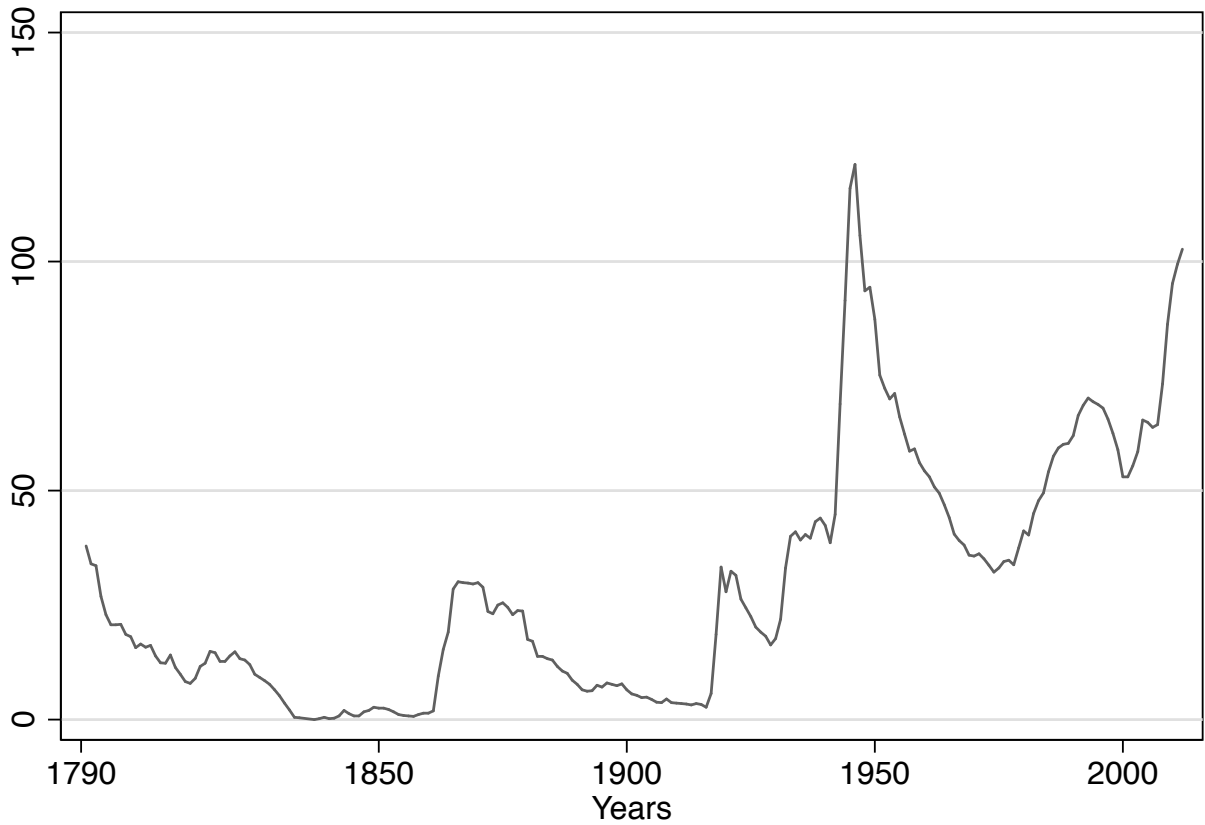
Under the special case with utility linear in consumption and concave in leisure, and with some restrictions on the government expenditure process and the government debt, and if the government's asset level is not restricted, the Ramsey solution implies an accumulation of assets to the point in which the tax rate is set to zero and all expenditures from a transitory shocks (like a war) are financed by the revenues of the accumulated assets. This is the so called "war chest of the government". Instead, if one set a binding upper bound on the government asset level ("Ad Hoc Asset Limit"), the Ramsey solution for taxes and government debt will resemble the results stated in Barro (1979). By imposing a time-invariant ad hoc limit on debt, the distribution of government debt will have a non-trivial distribution with randomness that does not disappear even in the limit.

In particular, rather than converging surely to a unique distribution, it may continue to fluctuate randomly if randomness on government expenditures persists sufficiently.

## 2.5 Evidence on Optimal Policy

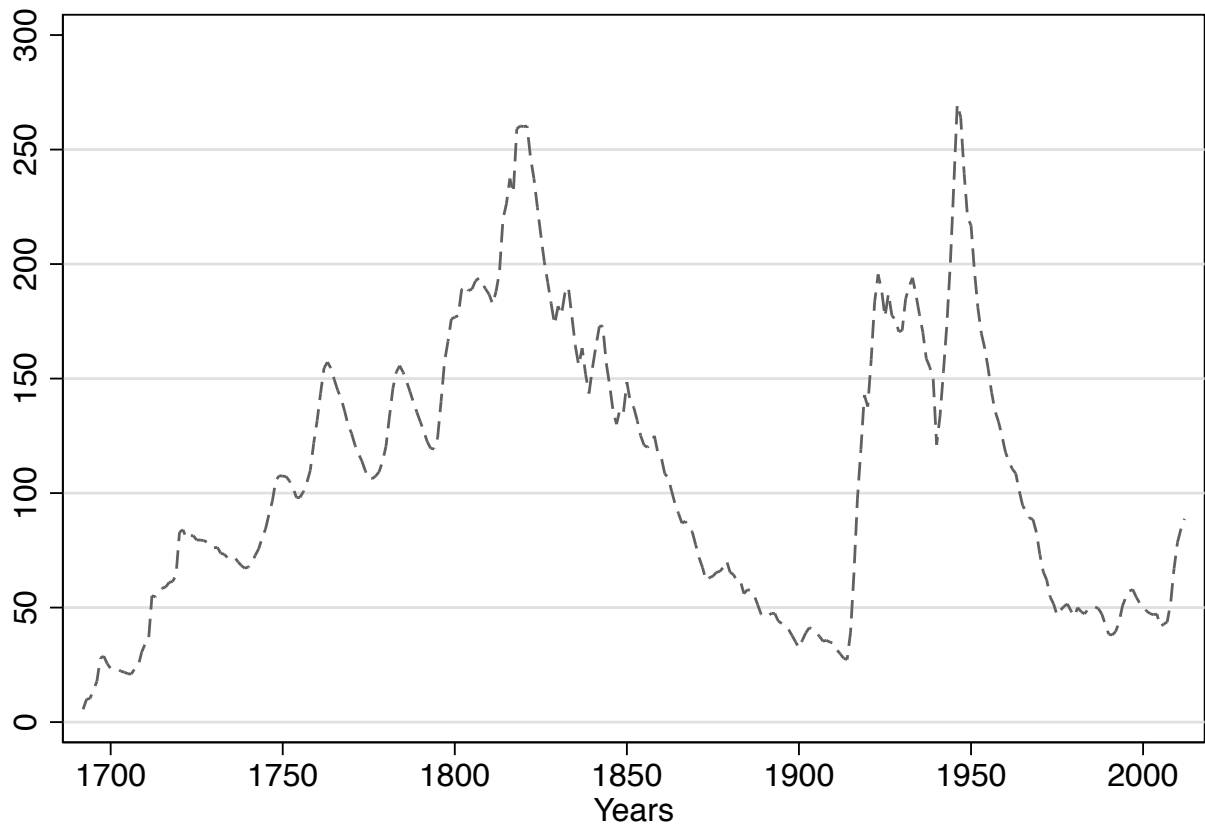
The very basic principles of optimal debt policies are generally not satisfied by the data. Government debts do go up during war and major recessions. Figure 1 and 2 clearly show this pattern.

Figure 1: Ratio of Public Debt to trend real GDP,  
USA, 1790-2012



Source: Abbas et al. (2010)

Figure 2: Ratio of Public Debt to trend real GDP,  
United Kingdom, 1692-2012

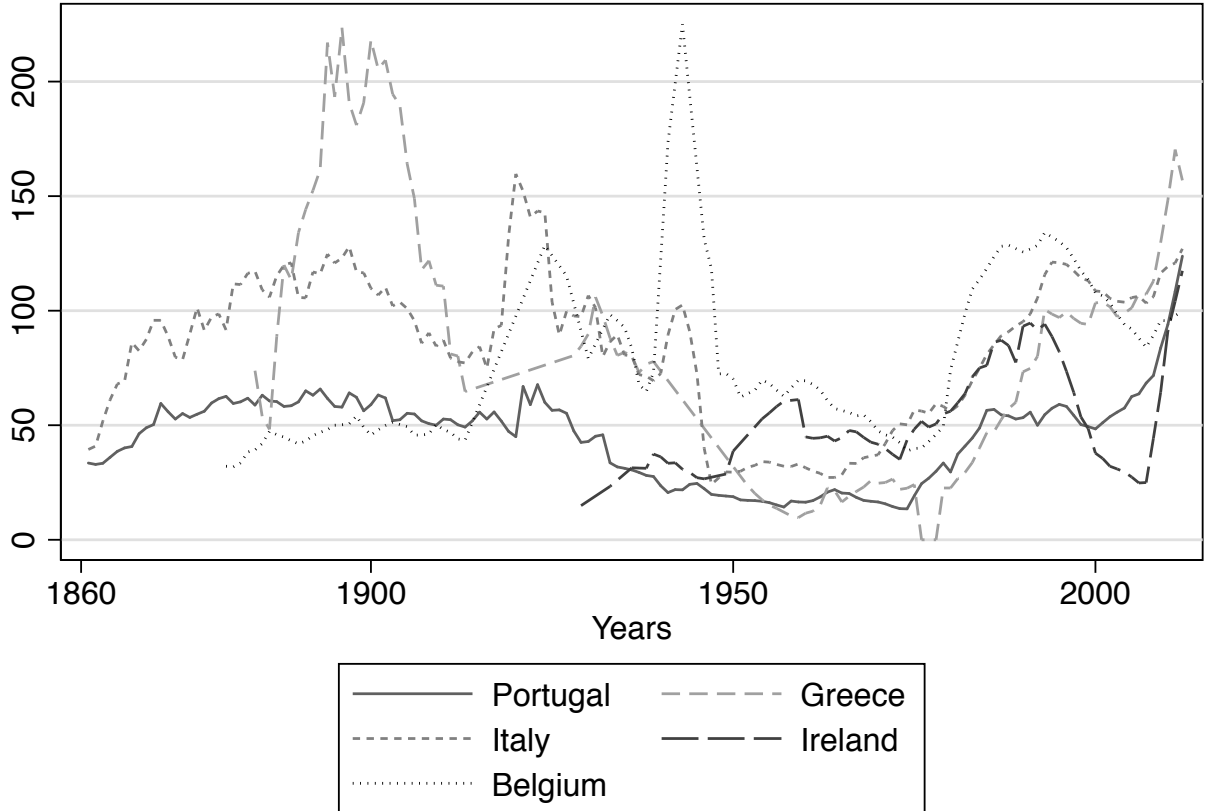


Source: Abbas et al. (2010)

The UK and US historical data on public debt show patterns roughly consistent with debt ratios going up during wars and recessions. However even the US shows interesting departures like the accumulation of debt in the eighties a period of peace, an episode (the so called Reagan deficits) which inspired a few papers reviewed below and that at the time generated a major policy debate about the political “game” behind these deficits. Whether the current accumulation of government debt in the US is excessive and its costs not fully accounted for by the policymakers is a debate we do not engage in this paper. Other



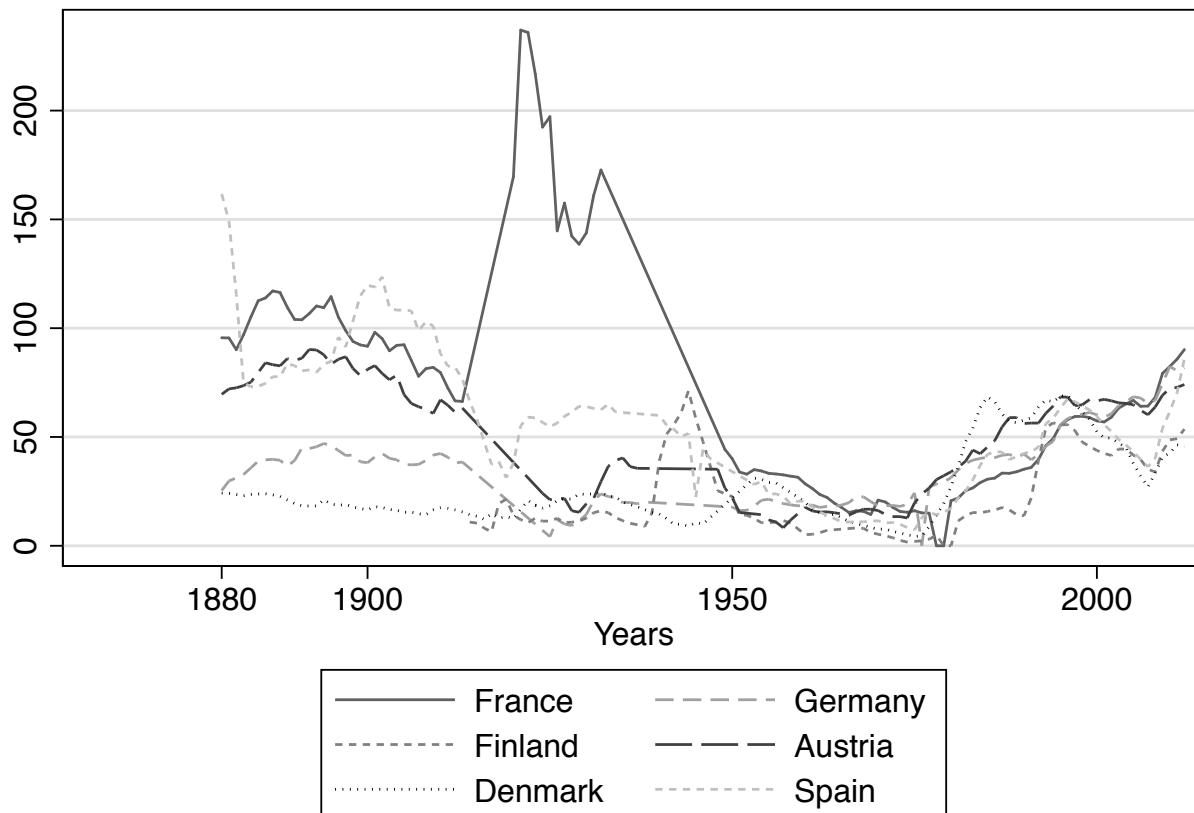
Figure 3: High Debt Countries, Ratio of Public Debt to trend real GDP



Source: Abbas et al. (2010)

OECD countries show remarkable deviation from optimality. We showed two pictures for a group of relatively high and low debt countries. Several observations are in order. First, the decline in the debt ratios after the second world war in both group of countries stopped in the seventies. In both group of countries it increased for several decades in peace time, obviously much more in the high debt group. For instance In Italy and Greece the debt to GDP ratio skyrocketed in the eighties and nineties in a period of relatively rapid growth for these countries. Belgium and Ireland as well entered the nineties with debt level normally typical of post war periods. Second, several countries (i.e. Ireland, Belgium, Denmark had

Figure 4: Low Debt Countries, Ratio of Public Debt to trend real GDP



Source: Abbas et al. (2010)

massive variations up and down of their debt ratios in peacetime. Third very few countries when they adopted the Euro satisfied the requirement of a less than 60 per cent debt over GDP ratio. Fourth no country comes even close to a policy a la Aiyagari et al (2002) which would imply the accumulation of assets to build a “war chest”. Fifth the Great Recession has lead to very large accumulation of government debts and this is, at least in large part, consistent with the tax smoothing hypothesis. However countries which had already accumulated large debts for no obvious reason before the crisis were constrained in how much they could accumulate more. Some additional accumulation crated market

panics; Greece had a partial default. Fifth a few countries like Ireland and Spain entered the great recession with relatively low debt/GDP ratio but their fiscal position looked better than they really were due to extraordinarily and temporary tax revenues due to the housing boom. In summary, there are reasons to worry about a debt crisis in Europe. Simply put, if markets believed that fiscal policy in Europe was “optimal” they would not worry. Many countries in Europe (e.g. Italy) will suffer from a debt burden for decades.<sup>5</sup>

A table in Wyplosz (2014) shows that out of 20 OECD countries only 4 had a deficit for less than 50 per cent of the time since 1960, and 11 countries had a deficit for more than 80 per cent of the years. Italy and Portugal achieved a “perfect” 100 per cent! These data do not distinguish between primary and total deficit, do not account for the cycle but nevertheless raise a significant flag about government profligacy. After the first oil shock of 1973-74, surpluses close to disappeared. Easterly (2013) suggests that at that time (early seventies) many countries did not internalize a secular downturn of their growth process which would have required a reduction in the growth of government spending to keep the size of government constant. This led to an accumulation of debt. Whether this misperception was an “honest mistake” or it was due to political distortions remains to be seen. As we discuss below it is in fact pretty common for governments to justify large spending programs with very optimistic growth forecasts.

### 3 Deficits and elections

#### 3.1 Fiscal illusion

The idea of fiscal illusion is due to the public choice school (see in particular Buchanan and Wagner (1977)). According to this argument voters do not understand the notion of intertemporal budget constraint for the government, therefore when (especially close to elections) offered spending hikes or tax cuts (the public choice schools was especially concerned with the former) they reward the incumbent remaining unaware of the consequences of such policies on the accumulation of debt and the future costs of taxation needed to service it. The problem is aggravated by the “Keynesian” policy stand. Politicians are eager to follow the Keynesian rule of increasing spending during recessions, but than they

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<sup>5</sup>Reinhart and Rogoff (2010) emphasize the problems of larger debt burdens on growth.

Table 1: Percent Years of Deficit over 1960-2011

	Australia	Austria	Belgium	Canada	Germany
Percent	80	82	96	76	78
Last Surplus	2008	1974	2006	2007	2008
	Denmark	Spain	Finland	France	UK
Percent	48	78	20	90	84
Last Surplus	2008	2007	2008	1974	2001
	Greece	Ireland	Italy	Japan	Netherlands
Percent	80	80	100	68	88
Last Surplus	1972	2007		1992	2008
	Norway	New Zealand	Portugal	Sweden	USA
Percent	4	46	100	42	92
Last Surplus	2011	2008		2008	2000

*Source:* Wyplosz (2014).

do not counterbalance it with cuts during booms. Thus, the result of keynesianism and fiscal illusion leads to persistent deficits and debts.

The view that the best way to please the voters is to spend more and tax less is so pervasive that it is assumed to be an obvious fact. As we show below, the evidence is much more nuanced than it would appear.

### 3.2 Political budget cycles

The traditional fiscal illusion argument rely on some form of irrationality or ignorance on the part of the voters. However political budget cycles can be derived also in models where voters are fully rational but imperfectly informed as in Rogoff (1990) and Rogoff and Sibert (1988). What leads to these cycles is a combination of delays in the acquisition of information on the part of the voters regarding the realization of certain policy variables and different degrees of “competence” of policymakers.

In Rogoff and Sibert (1988) more competent governments can tax less to provide public goods, because they introduce less wastage in the process. The combination of income

taxes, spending, seigniorage and government competence is learned with one period delay by the voters. A higher level of competence imply that the government can provide public goods with lower taxes (or seigniorage). Suppose that before an election the voters see a tax cut. They cannot distinguish whether the cut is due to a high realization of competence (which is unobservable by them immediately) or transitory deficit which they do not fully observe. After the election a less competent government would have to increase seigniorage generating also an inflation cycle. With a finite time horizon the only equilibrium that exists is a separating equilibrium, i.e. the one in which voters are able to infer exactly the incumbent's level of competency from the tax he selects in order to signal his competence. The competent policymaker cut taxes before election to a level that cannot be matched by the less competent one.<sup>6</sup>

Rogoff (1990) add a distinction between two types of public goods, those that are clearly visible before an election, say fixing the holes in the street, and those less immediately visible, like increasing the quality of the training of teachers. In this model the politicians have an interest in overspending in more visible but not necessarily the most productive public goods close to election time. While, in principle, the implication of rationally based modern theories of political business cycles may be similar to the traditional one, they differ in two ways. First, the rationality of voters output a limit on the extent of these policies. Second, and this will be revealed by the empirical evidence, the more the voters are informed and understand the incentive of policymakers, the less they reward them for their behavior; thus more instance more freedom of the press in established democracies would be a constraint on this behavior.

### 3.3 Evidence on political budget cycles

Do we have political budget cycles? Persson and Tabellini (2000) argue that the answer depends upon the nature of the political institution of the country. In particular they argue that political budget cycles are less likely to occur in majoritarian systems versus proportional representation systems. Brender and Drazen (2005) challenges these results.

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<sup>6</sup>A somewhat unpleasant feature of these models is that it is the more competent policymakers. who engage in engage budget cycles by cutting taxes before elections to signal their competence and distinguish themselves form the less competent ones who cannot afford such a large tax cut.

They find that the existence of political budget does not depend on voting rules. Political budget cycles exist only in “new democracies,” where fiscal manipulation may work because voters are inexperienced with electoral politics or may simply lack information, which may be one of the main factors generating the political budget cycle, as implied by the models reviewed above. Brender (2003) tests this idea on local elections in Israel. Peltzman (1992), and Drazen and Eslava (2010) perform an analogous analysis in the United States and Colombia, respectively. Gonzàles (2002) and Shi and Svensson (2006) test the importance of transparency, which ultimately means the probability that voters at no costs learn the incumbent’s characteristics. They find that the higher the degree of transparency, the smaller the political budget cycle. Moreover, while the proportion of uninformed voters may be initially large, it is likely to decrease over time, thus decreasing the magnitude of the budget cycle. Akhmedov and Zhuravskaya (2004) find that measures of the freedom of the regional media and the transparency of the regional governments are important predictors of the magnitude of the cycle. Alt and Lassen (2003) find that, in the sample of OECD countries, higher fiscal transparency eliminates the electoral cycle. Alesina and Paradisi (2014) show evidence of political budget cycles in Italian cities.<sup>7</sup> Alesina, Troiano and Traviss (2015) show how career concerns of politicians in Italian cities influence their choice of budget cycles.

The other side of the story is whether or not government which generated political budget cycles are more easily reelected. Brender and Drazen (2008) consider the effect of deficits and growth on the probability of reelection. The results show that voters are (weakly) likely to punish rather than reward budget deficits over the leader’s term in office. They find that these results are robust by considering different subsamples: (i)

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<sup>7</sup>A recent paper by Foremny et al (2015) provide evidence on political budget cycles by considering changes in expenditure for elections in the legislative and the executive. In particular, using municipal data coming from two German regions, they identify the cycles independently for the two different political institutions, evaluate the effects of random overlaps, and separate the effects from general year effects. They find a sizable and significant increase in expenditures in pre-elections years for the legislative branch. Moreover, they find that the cycles induced by legislative elections are unaffected by the timing of executive elections. Finally, they show that there is a significant effect of overlapping cycles conditional on the incumbents decision to re-run for office. In particular, aggregate expenditures increase in joint pre-election and election years if the incumbent executive seeks re-election and increase in joint post-election years if she did not re-run.

developed countries and less developed countries; (ii) new and old democracies; (iii) countries with presidential or parliamentary government systems; (iv) countries with proportional or majoritarian electoral systems; (v) countries with different levels of democracy. A related literature directly tests the political consequences of fiscal adjustments, i.e. whether large reduction of budget deficit have important negative political consequences. Alesina, Perotti and Tavares (1998) consider a sample of OECD countries and they find that fiscal austerity has a weakly positive, rather than negative, electoral effects. However, they focus on cabinet changes and opinion polls, rather than on election results. Alesina, Carloni and Lecce (2012) fill this gap, by looking directly at the election results. They find no evidence of a negative effect on the election results due to a fiscal adjustment, and actually they find that “loose governments” tend to lose elections more often than the average. Buti et al. (2010) find that the probability of reelection for the incumbent politicians are not affected by their efforts in implementing pro-market reforms. This literature however suffers from a potential sort of reverse causality problem. namely governments which are especially popular for whatever reasons, manage to get reelected despite their deficit reduction policies, not because of them. While the authors are aware of this issue and try to assess it, measuring the “popularity” of a government is not always straightforward.

The bottom line is that political budget cycles may explain relative small departure from optimal policy around election times, especially in new democracies. However they cannot be the main explanation for large and long lasting accumulation of public debt as we documented above.

## 4 Delayed stabilization

This type of models does not explain “why” a deficit occurs, but it generates a departure from optimality because while the optimal policy would imply an immediate elimination of the deficit political impediments delay the adjustment leading to an accumulation of debt beyond what would be optimal.

## 4.1 A Model of War of attrition

This model (Alesina and Drazen, 1991) focuses on the case of a country that for whatever reason, due a permanent shock on revenues, is on a “non sustainable” path of government external debt growth.<sup>8</sup> The longer the country waits to raise taxes rates to stop the growth of debt the more the interest burden accumulates and the more expensive will be the stabilization, defined as a situation in which the total deficit is zero and the debt stops growing.

The key feature of the model is that there are two equally sized groups of equal (exogenous) income which can’t agree on how to share the costs of the stabilization.<sup>9</sup> Suppose the two groups shared in half the burden of stabilization, (which would be the “fair” division since the groups have the same income and have the same size) the latter would occur immediately since delays only create inefficient costs, namely higher interests on the accumulated foreign debt. The critical feature of the model is that political polarization leads to an uneven distribution of the costs of the stabilization, one group has to pay more than 1/2 of the taxes needed after the stabilization occurs. When the groups perceive the possibility of shifting this burden elsewhere, each group may attempt to wait the others out.

There has to be some uncertainty about the strength of each group to wait the other out, namely how long a group can bear the costs of delaying the stabilization. The latter are modeled as the economic costs of living in the distorted pre-stabilization economy or the political cost of “blocking” attempt of the opponent to impose an undesired stabilization plan. This war of attrition ends, and a stabilization is enacted, when a group concede and allow its political opponents to be the winner and pay less than half of the costs of the stabilization. Technically the condition which determines the concession time is the one which equals the marginal cost living an extra moment in the unstable economy to the probability than in the next moment the opponent group will concede multiplied by the differences the costs of being the winner rather than the loser. Thus, the more unequal are the divisions of the cost of the stabilization, which can be interpreted as a

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<sup>8</sup>The debt is held by foreigners for simplicity and the small open economy assumption allows a constant and exogenous interest rate on the debt. Default is excluded.

<sup>9</sup>The model can be extended to n groups but we do not investigate this case here.



degree of polarization of society, the longer the war of attrition and the higher the level of debt accumulated. Thus the war of attrition imply that individually (group level) rational strategies lead to a suboptimal accumulation of debt. The group which will end up being the loser is the one with the highest cost of prolonging the war of attrition. This is why uncertainty about these cost are critical. If it were common knowledge which was the weaker groups, the latter would capitulate immediately, since waiting adds to the costs and this group would lose anyway. Therefore anything that eliminate this uncertainty ends the war of attrition.

## 4.2 Empirical evidence

The models has several empirical implications. The first one is that the passage of time may lead a country to stabilize even if nothing observable happens, simply because one group has reached the condition of “conceding”. Second, an electoral or legislative victory of one of the groups may signal its superior political strength and my lead the opponent to concede. Third, longer delays and higher debt should occur in polarized societies which can’t reach a “fair” and acceptable distribution of costs. In addition, delays are longer when many groups have a “veto power” to block policy decisions which they do not like. Fourth, a worsening of the economic crisis may lead to a resolution of the war of attrition. When the costs of delay increase for one of the group the latter may concede sooner. Drazen and Grilli (1993) show that in their case a “crisis” can be beneficial, since it worsen the utility level of one of the groups in the short rune but it may be welfare improving for all in the long run since the war of attrition ends sooner. Fourth, for the opposite reason foreign aid can be counterproductive (Casella and Eichengreen, 1996). If foreign aid makes life easier before the stabilization delays are longer and in the long run welfare is lower. The result however depend on how aid is disbursed; for instance foreign aid that implicitly “picks” a winner would end the war of attrition sooner. Finally, an external commitment, say an IMF conditionality agreement, may accelerate the resolution of the war of attrition making it more costly to “fight it.”

Several authors have suggested empirical observations consistent with the implications of the war of attrition model. Alesina and Drazen (1991) discuss a few historical examples of cases in which the same government first fails to stabilize because it encounters political

opposition then it succeeds because the opposition is defeated, A particularly famous one was the Irish stabilization in the eighties. In the later seventies early eighties Ireland was in a deep crisis with high unemployment and exploding debt over GDP ratio; a country in deep decline. A stabilization package based upon spending cuts and liberalization of market was proposed in the early eighties and blocked by various political pressure. In the late eighties when the country was on the verge of collapse, essentially the same policy package passed without any opposition. Nothing, except the passage of time was different. The idea that multiple veto players delay the elimination of deficits is consistent with the evidence by Grilli, Masciandaro and Tabellini (1991) and Kontopoulos and Perotti (1999). The former argue that in the eighties debt accumulated more in parliamentary democracies with multiparty systems. The latter argues that the number of spending minister is associated with looser fiscal controls, an issue upon which we return later. Persson and Tabellini (2000) review and add to this line of research with additional evidence. These authors and Milesi Ferretti, Perotti and Rostagno (2001) also show that coalition governments spend more on welfare, a point analyzed also by Alesina and Glaeser (2005) in a comparison of US versus Europe. As we discussed above, Easterly (2014) noted that countries accumulated debt because they did not adjust their spending programs to the secular reduction of growth which started in the late seventies. This delays in adjusting to a somewhat permanent shock is consistent with the general message of the war of attrition. Various constituencies objected to reducing the growth of their favorite spending programs.

A second line of inquiry has focused on the idea the point that “crises generates reforms”, as in Drazen and Easterly (2001). Needless to say the evidence suffers from problems of causality if not of tautology: why would you need a reforms if you did not have a problem to begin with? Similar issues arises on the huge literature on foreign aid, which we cant even begin to survey here. Those who argue that foreign aid often reduces welfare (as the war of attrition model might imply) have to overcome the obvious causality problems that aid has to go to troubled countries.

Alesina, Ardagna and Galasso (2010) combine these institutional hypothesis with the crises hypothesis making a step closer toward testing the war of attrition model. In particular they test whether certain institutions are more likely and rapid to resolve crises.<sup>10</sup>

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<sup>10</sup>See an early and not sufficiently appreciated paper by Spolaore (2004) for theoretical work consistent

These authors focus both on the stabilization of inflation and of growing debts, here we focus on the latter variable. They define a country as being in a “crisis” if at time  $t$  the country is in the “worst” 25 per cent of the countries in the (large)sample in terms of budget deficits. They find support for the view that “stronger governments” stabilize more in time of crisis, i.e. when a crisis comes, strong governments adjust more and exit more quickly from the state of “crisis.” Strong governments are presidential systems and amongst parliamentary systems those in which the majority has a greater share advantage over the minority. They also find that stabilization (i.e. exit form crises) are more likely to occur at the beginning of a new term of office of a new government. These results are consistent with the war of attrition model in the sense that in an unstable situations (a crisis) stabilization occurs sooner with fewer veto players or with a clear political winner. Results on the effect of IMF programs are inconclusive but as discussed above causality problems are especially serious in this case.

### 4.3 Endogenous institutions

The literature which we have reviewed thus far (and some of what will follow) uses certain political institutions (type of government, electoral rules, presidential versus parliamentary systems) as exogenous or at least predetermined in explaining an economic variables. In this paper we focus on debt and deficits but a vast literature also considers other related variable like the size of government and the level of redistribution for instance.

The assumption of exogenous of predetermined institutions as “causes” of deficits can however be called into question. The same historical, sociological, cultural variables which may have lead to the choice of certain institutions may also be correlated with fiscal policies.<sup>11</sup> For instance, suppose that a parliamentary proportional system (generating a multiparty system with many veto players) was adopted because it was the only way to guarantee representation to very polarized and divided societies (across income, ideological, religious or ethnic lines). Those same characteristics of society might lead to certain choices of fiscal policies (spending, deficits, debt). Thus proportional representation and deficits would correlate but causality is called into question. Along those lines Alesina and

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with these empirical results.

<sup>11</sup>See Alesina and Giuliano (2015) for a discussion of the relationship between culture and institutions.

Glaeser (2005) review the literature showing that in many European countries proportional representation was introduced after the First or Second World War under pressure from Socialist and Communist parties. The presence of the latter clearly is not exogenous to fiscal policy decisions.

Aghion et al (2005) discuss how certain types of voting rules would be chosen optimally or not (i.e. with or without a veil of ignorance) in divided societies. Empirically they show how ethnic fractionalization is correlated with various institutional variables. On the other hand a vast literature on ethnic fractionalization (see the survey by Alesina and La Ferrara (2004)) show how the latter variable is correlated with several economic variables which may be directly or indirectly correlated with deficits and debt. Thus ethnic fractionalization may “cause” both institutions and fiscal outcomes. The correlation between the latter two does not imply causality, strictly speaking.

Persson and Tabellini (2000) in their work on institutional determinants of fiscal policies are aware of this limitation and make some progress in addressing causality, but this remains an open question. The literature on fiscal policy which appeal to institutional variables a causal explanation for deviations from optimality (especially when thinking of long run horizons) needs to make the extra step. At this point the correlation seem clear. Identification of causality next. This issue will reappear when below we will consider budget institutions rather than electoral institutions, namely those fiscal rules and arraignments which leads to the formation and implementation of the budget.

## **5 Debt as a strategic state variable**

The government debt is a state variable which “links” several successive governments. Different governments may have different preferences over fiscal policy, say the level and/or composition of public spending. If the current government is not sure of its reappointment, it may want to choose a level of deficit while in office (thus a level of debt) in order to influence the fiscal choices of future governments. In these models the deficits does not affect the probability of reelection since the voters are fully rational fully informed and forward looking but deficit serve the purpose of insuring that future governments follow policies closer to the preference of the current government by constraining future governments’ actions. The asymmetry of information that would lead to political business cycles, as we

discussed above, are assumed away here, and the strategic manipulation of the debt by the current government or majority in office is fully in the interest of those who supported the current legislators.

In Alesina and Tabellini (1990) two parties with exogenously given preferences stochastically alternate in office. They care about the level of income of the representative individual and care about two different public goods, say military spending versus domestic spending (more generally they place different weights on these two goods). To be precise, in the model there is a representative voter/citizen in terms of his/her choices of labor and leisure but with a distribution of preferences about the type of public goods that they prefer, so they would vote for different parties depending on the parties' choice of public goods. Private and public goods enter separately in the utility function. If a party is unsure of being reappointed, it will issue debt. By doing so it "forces" the following government (possibly of a different party) to spend less on the public good the current government does not care as much. In other words the current government chooses to distort the path of income taxation in order to spend more on the public goods that it prefers leaving the future governments with the task of reducing the debt since default is ruled out by assumption.. The future government will do so at least in part by cutting spending on the public good the current government does not care much about.<sup>12</sup> The lower is the probability of reappointment of the current government the higher the level of debt chosen. Only a government sure of reappointment would issue no debt. The social planner would issue no debt since there is no reason to do so and would choose a stable combination of the two public goods in order to satisfy say utilitarian social preferences.

Tabellini and Alesina (1990) provide analogous results in a more general model in which decisions are taken by a median voter. The current median voter is uncertain about the preferences of future median voters. Today's' median voter choose to issue debt for this political incentives of creating "facts" for future majorities. By doing so the current majority can influence future policies by affecting a state variable, namely public debt. Political polarization and uncertain electoral outcome lead to higher public debts. Alesina and Tabellini (1989) extend this type of model to a small open economy and show a

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<sup>12</sup>When both parties care (with different weights) about the two public goods the result about excessive deficit require a condition on the third derivative of the utility function on the public goods.

connection between excessive public debts and private capital flights.

Persson and Svensson (1989) provide a related model which however does not imply a deficit bias but non obvious implications about which government would lead a deficit and which would run a surplus. In their model literature two parties, one of the Left who likes large amount of public goods even at the cost of high taxes, and a party of the right which on the contrary dislikes public spending and taxation. The public debts links the two alternating parties in office. When the left is in office it chooses to leave a surplus taxing more in order to generate an incentive for the right when in office to spend more on public goods. The right when in office it will cut taxes creating a deficit in order to prevent easy spending when the left comes in to office. In a similar vein Aghion and Bolton (1989) consider the commitment effect of debt in two ways: first, by limiting future expenditure on public goods; second in forcing to raise higher tax revenues to repay the debt. Lizzeri (1999) use similar insight, linking excessive debt accumulation and redistributive policies. In his model two candidates are motivated purely by the desire of winning elections can redistribute to some citizens and cannot make promises on future redistribution. In the first period by running deficits they can target with “excessive” redistribution of transfer skewed in favor of a majority and against a minority.

The empirical implication of this line of work was to make a general and a more specific point. The former one is that debt is a state variable which links many “generations” of policy motivated governments and the probability of survival of the current government must influence its choices. More specifically, an example of this would be the observation of large deficits with conservative governments (like the Reagan deficits).

## **6 The common pool problem**

In these types of models agents do not fully internalize the tax burden of spending decisions leading to “excessive” spending. The most widely studied “common pool problem” is that of legislators (a natural example being the US Congress) which would like to approve spending programs for their districts without internalizing fully the cost of taxation which are spread on all (or many other) districts. As we discuss below, similar political distortions arise in different institutional settings.

## 6.1 Bargaining and spending in legislatures

Weingast, Shepsle, and Johnsen (1981) argue that representatives with a geographically based constituency overestimate the benefits of public projects in their districts relative to the financing costs, which are distributed nationwide. The aggregate effect of rational representatives facing these incentives is an oversupply of geographically based public projects. Specifically, the size of the budget is larger with  $N$  legislators elected in  $N$  districts than with a single legislator elected nationwide, and the budget size is increasing in  $N$ , the number of districts. The voters of district  $i$  receive benefits equal to  $B_i$  for a project, but have to pay  $1/N$  of the total costs if taxes are equally distributed among districts. Thus, a geographically based representative does not internalize the effect of his proposals on the tax burden of the nation.

Baron and Ferejohn (1989) abandon unanimity and study decisions with majority rule. There are  $n$  members<sup>13</sup> in the legislature and a “recognition rule” defines who, at each session is the agenda setter with the task of making a proposal. The task of the legislature is to choose the distribution of one unit of benefits among the  $n$  districts, with no side payments outside the legislatures. The recognition rule determines that at each session, member  $i$  is chosen with probability  $p_i$ . Member  $i$  then puts forward a bargaining proposal  $x^i$  to allocate resources of total size 1. A proposal is of the form  $x^i = (x_1^i, x_2^i, \dots, x_n^i)$  such that  $\sum_j^n x_j^i \leq 1$ . If no proposal is approved, each member of the legislature gets zero benefits, the status quo. Members of the legislature have a common discount factor  $\delta$ . These authors distinguish between a “close amendment rule” and an “open amendment rule”. In the first case, the proposal on the floor is voted upon against the status quo, with no amendments. If the proposition is approved, then the benefits are distributed and the legislature adjourns. If the proposition is rejected the benefits are not distributed and the legislature moves to the next turn. In this case the process starts over, but the benefits are discounted by the factor  $\delta$ . With a, “open amendment rule”, after the member is randomly chosen to make the proposal, another member can be recognized at random and may either offer an amendment (i.e. an alternative allocation) or move to vote. If the proposal is seconded, the legislature votes as previously. If the proposal is amended, a runoff election is held to determine which proposal will be on the floor. The process is

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<sup>13</sup>Members can be interpreted as people, districts, or States of a Confederation.

repeated until a recognized member moves the previous question and a yes vote is reached.

In the case of closed rule the subgame perfect equilibrium which has the following characteristics: (i) the equilibrium distributions of benefits is majoritarian, i.e. only a minimum majority gets something; (ii) the agenda setter can get a strictly greater allocation, and (iii) the legislature completes its task in the first session.

In the case of Open Rule, the agenda-setting power of the first proposer is diminished. Indeed, each member must consider the fact that her proposal may be pitted against an amendment. Thus, she has to take this into account when making the proposal. In particular, the proposing member must make a proposal acceptable for at least  $m$  out of  $n - 1$  other members in the legislature. By choosing  $m$ , the original proposer determines the likelihood of acceptance. The higher is  $m$  the higher the probability of acceptance of the proposal, but also the lower the benefits that the agenda setter can keep for himself.

## 6.2 Bargaining in legislatures and government debt

Battaglini and Coate (2008) discuss how a common pool problem on government spending modeled a la Baron and Ferejohn, (1989) lead to deviations from the optimal path of debt, namely the path of debt which would be consistent with an Aiyagari et al (2002) model. They link the Baron and Ferejohn (1989) model of bargaining in a legislature with the insight of the previous literature on strategic debt which we have reviewed above, especially the model by Tabellini and Alesina (1990). In fact, current majorities in the legislature will bargain over spending with uncertainty about the nature of future majorities and the debt becomes, as above, a strategic tool.

Battaglini and Coate (2008) model a continuum of infinitely lived citizens located in  $n$  identical districts. A single (non-storable) consumption good  $z$  and a public good  $g$  are produced using labor. Citizens maximize their lifetime utility which depends on consumption, labor supply, and also on the parameter  $A_t$  which is the realization at time  $t$  of a random variable which represents the value of the public good for the citizens at time  $t$ . If for instance the public good is defense spending, we value it a lot more during a war. The legislature provides the public good  $g$  and it can finance targeted-district specific transfers  $s_i$ , “pork-barrel” spending. To finance its activities, the legislature can either set a proportional tax on labor or issue one-period risk free bonds  $x$ . The legislature faces three



different constraints. A feasibility constraint, which imposes the government revenues to be high enough to cover the expenditures. The District Transfer Constraint, which imposes that the district-specific transfers must be non-negative.<sup>14</sup> Finally, the government has to satisfy the Borrowing Constraint, which implies setting an upper and lower bound on the amount of bonds that can be issued or bought back each period. An upper bound is necessary to avoid the government to issue an amount of debt which is unable to pay back the next period. A lower bound is defined by the level according to which it is possible to finance the optimal level of public good just with the interests on the assets the government has accumulated.<sup>15</sup> The legislature consisting of a representative from each of the  $n$  districts make decisions, with closed rules regarding amendments. The legislature meets at the beginning of each period knowing both  $b_t$  and  $A_t$ . One representative is randomly selected to make the government policy proposal which consists of the tax rate on labor  $r_t$ , the level of public good  $g_t$ , the level of bonds  $x_t$  and the district-specific transfers  $(s_1, \dots, s_n)$ . The proposal requires consensus of a minimum winning coalition of  $q < n$  legislators to be accepted and implemented. If the proposal is rejected another legislator is randomly chosen to make a new proposal. If, after  $\tau$  rounds, all the proposals are rejected, then the government implements the “Default Policy”, which has to satisfy the feasibility constraint and has to treat all the districts equally, i.e.  $s_1 = \dots = s_n$ .

In this model a social planner would choose the optimal debt path described by Aiyagari et al (2002). The social planner takes as given  $(b, A)$  and chooses a policy  $\{r, g, x, s_1, \dots, s_n\}$  which maximizes the utility of citizens in all district. Given  $(b, A)$  there are two cases, with or without transfers to the districts. In the first case, with positive pork-barrel transfers, the optimal tax rate on labor is set to zero and the optimal level of public good is set to  $g_S(A)$ , i.e. the level that satisfies the Samuelson’s Rule. The reason is straightforward. Suppose that the tax rate is positive. Then, the Social planner finds strictly dominant to reduce the pork-barrel transfers and to reduce the (distortionary) tax. If the Social Planner does not make any pork-barrel transfer, it must be the case that the tax rate is positive, the level of public good provided is less than  $g_S(A)$  and the level public debt

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<sup>14</sup>This constraint has mainly the role of avoiding that the legislature uses the non-distortionary negative transfers (taxes) to finance its activity.

<sup>15</sup>The optimal level of public good is the one which satisfies the Samuelson Rule, i.e. the level at which the sum of marginal benefits is equal to the sum of marginal costs.

exceeds the one with transfers. Thus pork-barrel transfers depend upon the realization of the value for the public good,  $A$ . In particular, for high enough values of  $A$ , the optimal policy has no transfers:  $g$  is high and no room is left for pork barrel. In this case then the level of debt must satisfy the standard optimal condition.<sup>16</sup> Instead, if the government has resources left to provide pork-barrel transfers, then the level of debt must be the lowest possible, i.e. the lower bound  $\underline{x}$ .<sup>17</sup> Intuitively, if the planner is willing to give revenues back to citizens through district transfers  $(s_1, \dots, s_n)$ , then it must expect not to be imposing taxes in the next period; otherwise, he would be better off reducing transfers and acquiring more bonds. This suggests that the optimal debt level must be such that future taxes are equal to zero, implying that it to be equal to  $\underline{x}$ .

Consider now the political equilibrium given by bargaining in the legislature. The agenda setter has to find  $q - 1$  supporters for his proposal to pass. The equilibrium policies are driven by the realization of the value of the public good,  $A$ , and the value of the public debt left from the previous period. For high enough values of  $A$  and/or  $b$ , the proposer will find it impossible to find resources left that can be transferred to the  $q$  districts composing the minimum winning coalition. Thus, the equilibrium policy consists of the outcome as the proposer maximize the utility of all representatives. In other words, we are back to the Social Planner solution with no transfer. For low level of  $b$  and/or  $A$ , there may be resources left that can be transferred to the  $q$  districts. This implies there exists a cutoff value  $A^*$  which divides the space into two different regimes. For  $A > A^*$  the economy is in the “Responsible Policy Making” regime (RPM). In this case the optimal level of the tax rate, the public good and the debt to issue are defined by the Social Planner’s optimal conditions with no pork-barrel. For  $A < A^*$  the economy is in the “Business-As-Usual” regime (BAU). In this case the proposer defines  $(r^*, g^*(A), x^*)$  by maximizing the utility for the  $q$  districts included in the Minimum Winning Coalition”. This equilibrium includes also transfers  $(s_1, \dots, s_q)$  high enough to induce the member coalition to accept the proposal. The same optimal conditions can be defined in terms of the public debt. In particular, the equilibrium debt distribution converges to a unique invariant distribution whose support is a subset  $[x^*, \bar{x}]$ . When the debt level is  $x^*$ , then the optimal conditions for the tax rate,

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<sup>16</sup>In other words, the optimal level of debt is defined by maximizing the Social Planner’s objective function with respect to debt.

<sup>17</sup>Remember that the lower bound implies accumulation of assets.

the public good are those defined by the BAU, with the proposer who makes pork-barrel transfers to the  $q$  districts. If instead the debt level exceeds  $x^*$ , then the economy is in the RPM regime where the tax rate is higher than the one defined in BAU, the provision of public good is lower, and no districts receive transfers.

In the long-run, the economy oscillates between BAU and RPM regimes depending on the realization of the value of the public good of  $A$ . For instance pork barrel would disappear during a war when  $A$  is large.

In summary, the political distortions which make the social planner solution differs from the political equilibrium arises for two specific reasons. The first one, which can be related to the “Common Pool problem” discussed in the previous section. The minimum winning coalition does not fully internalize the costs of raising taxes or reducing the public good but it fully enjoy the benefit of receiving the pork-barrel transfers. The other distortion comes from the uncertainty suffered by the legislators. They do not know *ex-ante* whether they are going to be included in the minimum winning coalition next period. Thus, they do not fully internalize costs and benefits across periods. In particular, they compare  $\frac{1}{q}$  benefit today by belonging to the coalition, versus  $\frac{1}{n}$  expected costs tomorrow. This intuition is similar to the strategic model of debt of Tabellini and Alesina (1990) reviewed above.

### 6.3 The common pool problems in other institutional settings

The general ideas of the common pool problem with strategic debt is relevant for other institutional settings beyond the US Congress.<sup>18</sup> For instance, consider a very different political environment in which the budget is crafted by a government (possibly formed by more than one party), it is presented in the legislature and approved, if the parties of the government have a majority with or without amendments. We may have a common pool problem with the spending ministers in the government. Each spending minister would generally like to obtain more spending for its own ministry, often pushed by the bureaucracy of the latter. A wining coalition of spending ministers may lead to the approval of a budget which, like in the BAU regime of Battaglini and Coate lead to sort of “pork barrel” transfers to a minimum winning coalition of spending ministers. These pork barrel spending may be geographically or functionally defined and the bargaining may get especially

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<sup>18</sup>See also Battaglini (2014) for an extension of that model which includes twp p[arty competition.

complicated when different spending ministers belong to different competing parties. In this institutional setting normally the Treasury Minister has the task of preventing spending ministers to overspend but he may be overruled by a minimum winning coalition of spending ministers. In fact as we shall discuss below, different institutional settings attribute different levels of prerogatives to spending ministers versus the Treasury, making the problem arising in the BAU regime more or less serious. In addition, even in parliamentary democracies, legislatures have the ability of proposing and voting upon amendments on the budget presented by the government. In this case the similarity with the Baron and Ferejohn, Battaglini and Coate set up is even more obvious.<sup>19</sup>

Often budget deficits at the national levels originate at subnational level of governments. Some famous examples are both from Latin America (i.e. Argentina) and European countries (Italy and Spain for instance). This is related to suboptimal allocation of spending and review decisions amongst various level of governments. Suppose that spending is decided by local governments and revenue are collected by the national government and allocated to localities on the basis of their spending decisions. Obviously in this extreme case localities do not internalize the full cost of taxation of their spending decisions since taxes are levied nationally. Most countries have arrangement which attempt to put a limit those these incentives, such as having some local taxes required to finance some type of spending, or having budget rules on local governments (as we will discuss below). In general however a common poll problem remains. This of course is related to the fundamental issues of fiscal federalism (see Oates (2011) for the classic work). The trade off is well known. On the one hand one wants to allow in federal countries some freedom of choice to localities. On the other hand such freedom should not imply a deficit bias at the national level. More on this below.

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<sup>19</sup>Tornell and Lane (1998) develop a model of a sort of common problem applicable more directly to developing countries with poorly developed institutions and large informal sectors. They develop a dynamic model of the economic growth process that contains two common characteristics of those developing countries that have grown slowly in the last decades, namely (i) the absence of strong legal and political institutions; (ii) the presence of multiple powerful groups in society. The focus is on the fiscal process as it is the mechanism through which powerful groups interact with the society (which is characterized by weak legal and political institutions) and where they can enforce discretionary fiscal redistribution - a kind of pork-barrel transfer - as a way to appropriate national resources for themselves.

## 7 Rent Seeking

Acemoglu, Golosov and Tsyvinski in a series of papers<sup>20</sup> study the dynamic taxation in a standard neoclassical model under the assumption that taxes and public good provision are decided by a self-interested politician who cannot commit to policies. Citizens can discipline politicians by means of election in the same fashion as in Barro (1973) and Ferejohn (1986) in a dynamic game. The self-interested politician creates distortions he wants to extract rents from being in office. This adds an additional constraint in the economy, the political economy constraint. It implies that politicians in power compare the lifetime utility from extracting rents in each period versus the one-time shot of extracting all the resources available in the economy in one period and being thrown out of office. Distortions are generated by the fact that citizens have to provide incentives to politician to stay in office. These distortions may or may not disappear in the long-run. In particular, if politicians are as patient or more patient than citizens, they value more staying in office and thus they set a tax rate equal to zero. If politicians are less patient than citizens, it may be optimal to set positive taxation. The idea is that, starting from a situation with no distortions as before, an increase in taxation has a second-order effect on the welfare of the citizens holding politician rents constant, but reduces the resources available in the economy and thus the rents that should be provided to politicians by a first-order amount.<sup>21</sup> Thus, it is less costly to reduce the potential output in the economy, than to provide a higher rents to politician to stay in office. These type of models therefore focus on the role of taxation as a tool to govern the interaction between citizens and self-interested politicians. There is no role for government deficit.

Yared (2010) develops a model which has implications on the accumulation of public debt using a Lucas and Stokey (1983) model. Yared considers a closed economy with no capital, with shocks to the productivity and value of public spending, and with complete markets. The self-interested politician has a utility function is increasing in rents, (namely tax revenues not used for productive public goods, i.e. spending with no social value). A

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<sup>20</sup>AcemogluGolsov and Tsyvinski (2008, 2010, 2011).

<sup>21</sup>Specifically, The marginal cost of additional savings for the citizens is higher in equilibrium than in the undistorted allocation, because a greater level of the resources in the economy increases the politician's temptation to deviate and thus necessitates greater rents to the politician to satisfy the political sustainability constraint.

politician cannot commit to policies once in office and citizens cannot commit to keeping the incumbent in power in the future. Therefore in an infinitely repeated game, reputation sustains equilibrium policies. The focus is on “Efficient Sustainable Equilibria” in which a politician who pursues rent seeking extractive policies is voted out of office, and a politician who pursues the policies expected by citizens is rewarded with future office.<sup>22</sup> Therefore, the incumbent politician follows equilibrium policies as long as rents are sufficiently high, since this raises the value of cooperation, and as long as government debt is sufficiently high, since this limits what he can acquire through maximally extractive policies prior to removal from office. There is no default. Citizens reward a well-behaved incumbent by not replacing him as long as equilibrium taxes are sufficiently low and productive public spending is sufficiently high. Note that given the fact that citizens are all identical, there is no conflict in the political decision. Efficient sustainable policies thus solve the standard program of the benevolent government subject to incentive compatibility constraints for the politician and an the representative citizen.

A benevolent social planner would set the rent to zero and would choose constant tax rates. Consider now the rent seeking politicians. Given the lack of commitment, there are two set of incentives that have to be satisfied, the politician’s and the citizens’ incentives. The incumbent politician knows that citizens will remove him from office at the beginning of the following period if he misbehaves. In particular, a politician who is removed after period  $t$  receives period  $t$  rents and a punishment which is a function of  $\chi^p$  which is an exogenous parameter representing the strength of political institutions, namely the institutional constraints on politicians. The optimal policy for the citizens has to satisfy the constraint that the politician does not want to extract maximal rents and removed from office. Maximal rents implies getting revenue as possible today, take out as much debt as possible today, deliver zero public goods, and repay current debt. Therefore, the

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<sup>22</sup>The equilibrium refinement used is the sustainable equilibrium as in Chari and Kehoe (1993). In particular, individual households are anonymous and non-strategic in their private market behavior (i.e. buying government debt), while the representative citizen is strategic in the replacement decision. The politician in office is strategic in his decision regarding the policies, which have to satisfy the government dynamic budget constraint. The set of sustainable equilibrium are those in which citizens solve their optimal decision with respect to consumption, labor supply and bonds’ decision given their individual budget constraints. Within the set of sustainable equilibrium, the focus is on the efficient ones, i.e. the ones that maximize citizens’ utility.

incumbent politician is less likely to deviate from the equilibrium policies if: (i) he is receiving a high level of equilibrium rents because in this case the value of cooperation is high; (ii) if government debt is high because there is little space for him to expropriate resources through increasing his rents. This conditions imply lower bound on the size of taxes and upper bounds on the size of public spending. This is because there has to be a limit on the size of resources owed to the government in each period. Indeed, if these resources are too large, there is a high incentive for the politician to deviate and appropriate them as rents. This implies that resources cannot be too large, and government activity must be financed mostly with current and future taxes, instead of past taxes.

The second set of incentive to take into account are those for the citizens. In this model citizens may have an incentive to replace an incumbent politician even if he is well behaving. In this sense, citizens cannot commit to a plan where they keep an incumbent in power no matter what. Therefore, the incumbent politician has to set fiscal policies such that they define a sufficiently low level of taxation and/or a sufficiently high level of public expenditure in order to have some chances to stay in office the subsequent period. In this framework, replacing an incumbent politician provides a benefit for the citizens which is a function of the exogenous parameter  $\chi^c$ . Here,  $\chi^c$  represents the lack of popularity of the incumbent.<sup>23</sup> These conditions provide upper bounds on revenues and lower bounds on public spending.

Summing up, satisfying the incentives of politicians requires sufficiently high revenues and sufficiently low levels of public spending. In contrast, satisfying the incentives of citizens requires sufficiently low level of taxes and sufficiently high level of public spending. The best policy is therefore found to be the one that maximizes citizens' lifetime utility subject to the two set of incentive compatible constraints. This political distortion lead to several departures from the social planner policies. In particular, taxes are not constant but *volatile*. This is because the constant revenue policy characterizing the benevolent government is associated with too much rent-seeking by politicians. This is a direct consequence of the fact that the government is limited in its ability to smooth revenue raising distortions. In fact consider the case of a temporary (stochastic) war and suppose taxes

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<sup>23</sup>Or another interpretation may be the gains for the citizens from having a new incumbent, reflected in the policies that are promoted during the electoral campaign. The author interprets it as a general "social benefit of political turnover".

were constant and the government received insurance payments from the private sector in the event of war. Every single unit of insurance that the politician can appropriate during the war must be matched by one unit of equilibrium rents during or after the war. If this is not satisfied, the politician would find better it off to pursue extractive policies and be thrown out of office. In other words, the insurance payments finance equilibrium rents as opposed to the war. But this situation is inefficient from the citizen's point of view who would prefer to cut taxes under peace. The second results regards the *persistence* of policy responses to shocks. In particular, the politician is strictly better off smoothing taxes over a long period instead of spiking them only at the time of the shock. In other words, in the event of a temporary exceptional increase in the government expenditure - like in the case of a war - the government may it find better off to issue debt during the war which it repays with a persistent increase in taxes afterwards. This has two main purposes. First, since taxes are distortionary, it is strictly better off avoiding huge temporary spikes and instead smooth them into future periods after the end of the war.<sup>24</sup> Second, the increase in debt reduces the potential rents that the politician can appropriate and thus make it easier for citizens to provide the incentives to politicians.<sup>25</sup> However, there is a limit to the extend to which the rise in taxes during war can be made entirely persistent. In particular, citizens are less likely to support high taxes after the war, since the value of the public good is low. Therefore they may find optimal to replace the incumbent. This implies that the politician in order not to be thrown out of office is induced to decrease them after the war, accumulating debt. Finally note that even though the short run behavior of taxes resembles the one under exogenous incomplete markets, the long-run behavior of taxes is very different. In Yared (2010) there is no reason for the accumulation of assets. With rent-seeking politicians, the accumulation of assets is not politically sustainable since it ignores the incentives of politicians to extract rents.

## 8 Intergenerational redistributions

Intergenerational redistributions may also be a cause of government debt in excess of the one which would emerge from a model with perfect intergenerational altruism and perfect

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<sup>24</sup>This is a standard result of optimal taxation with distortionary taxes.

<sup>25</sup>This is a new effect characterizing this specific environment with rent-seeking politicians.



capital markets as in Barro (1974). Cukierman and Meltzer (1986) consider the standard framework with overlapping generation model, lump-sum taxes and intergenerational transfers from parent to child, and no uncertainty. Individuals differ in their abilities, (and therefore in wage earnings) and in their nonhuman wealth. Some of them desire to leave positive bequests, and others would prefer to borrow resources from future generations. Individuals who would choose to leave negative bequests are “bequest-constrained” individuals. These individuals favor any fiscal policy that increases their lifetime income at the expense of future generations. Individuals who are not bequest-constrained who are indifferent to an intergenerational reallocation of taxes. By majority rule if the decisive voter is bequest constrained, he will choose lower current taxes financed by additional debt, which cannot be defaulted. If instead the decisive voter is not bequest constrained, he is indifferent to a reallocation of taxes and social security over time that maintains present value. Thus in this model by majority rule we will easily have an accumulation of debt. The likelihood to have deficits increases with an extension of the franchise to low wealth individuals who are likely to be bequest-constrained.

Tabellini (1991) explores a different argument, that is the redistribution consequences of debt repudiation. The main idea is that issuing debt creates a constituency in support of repaying it. Thus, issuing debt creates a non-reversal situation which force a coalition of voters to vote for repaying it in order to avoid intragenerational redistributive consequences of the debt repudiation. In particular, parents have a first-mover advantage since they can vote on how much debt they want to be issued (i.e. how much resources they want to extract from future, yet-unborn generation), without the future generation to have a word. Issuing government debt results in intergenerational redistribution to be tight to intragenerational consequences of choosing how much debt to repay. In particular, debt reputation harms the old, but it harms the wealthy more that the poor. Young voters (specifically the children of the wealthiest debt holder parents) want to avoid intragenerational redistribution (i.e. repudiation would result in redistributing wealth from rich to poor families) and for this reason they are willing to accept to repay some debt (i.e. transferring resources to the parents), an action that would have been opposed by them *ex-ante*.<sup>26</sup> Therefore, there is

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<sup>26</sup>This is because, *ex-ante* issuing debt has only intergenerational, but not intragenerational effect. Given that agents would prefer not to redistribute resources, they would vote against this policy *ex-ante*. However, *ex-post* the policy has also intragenerational effect and the young generation would prefer to transfer

a coalition that includes both old and young voters (the wealthiest) who vote in favor of debt repayment.

Song et al (2012) develop a dynamic general equilibrium model of small open economies where voters each period choose domestic public provision and its financing through taxes and debt. Within each country, old agents support high spending on public goods, high labor taxes and large debt. Instead, the young dislike debt, since it crowds out public good provision within their lifetime. Specifically, the model economy consists of a set of small open economies populated by overlapping generations of two-period-lived agents who work in the first period and live off savings in the second period. In each country  $j$  there two types of goods: a private good  $c$  and a domestic public good  $g$  provided by each economy's government. There are two types of agents, the young and old, each with a different preference towards the public good, which are represented respectively by the parameters  $\theta_j$  and  $\lambda\theta_j$ . There are cross-country differences in  $\theta$  which may reflect cultural diversity or differences in the efficiency and quality of public good provision, related to the technology and organization of the public sector. This heterogeneity in the preferences for public good, both across agents and across countries, is the key element for the results of the model. Capital is perfectly mobile across countries and it fully depreciates after one period. The private good is producing by using both capital and labor as inputs in the production function.

The domestic fiscal policy is determined through repeated elections. In particular, government debt is traded on worldwide markets. Given an inherited debt  $b_j$ , the elected government chooses the labor tax rate  $\tau_j$ , public expenditure  $g_j$  and debt accumulation  $b'_j$ , subject to a standard dynamic government budget constraint. There is no default by assumption. The political economy framework is modeled by using a probabilistic voting model in which the equilibrium fiscal policy maximizes a weighted sum of young and old voters' utility. The critical elements are the weights assigned to each group which represents the relative political influence of each group, which derives from both its relative size and exogenous group-specific characteristics, such as the voting turnout or the salience of the fiscal policy for that group relative to other issues. In each country, fiscal policy is determined by the dynamic games between successive generations of voters.

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resources to their parents rather than to the fraction of poor people in the same cohort.

The model yields a trade-off between the marginal costs of taxation, due to the reduction in private consumption  $c$  suffered by the young, and the marginal benefit of public good provision. Such a trade-off reveals a conflict of interest between young and old voters. The old want higher taxes and current spending on public goods. Thus, the more power held by the old, the greater the reduction in private consumption. The preference for public good provision affects this trade-off: a higher  $\theta$  or a higher  $\lambda$  reduces private consumption  $c$ . Moreover, there exists a sort of “disciplining effect” exercised by the young voters. In particular, they anticipate that increasing debt will prompt a fiscal adjustment reducing their future public good consumption. They anticipate that high debt today will crowd out public good provision within their lifetime since tax revenues will be used to repay the interest rate to foreign lenders. The cross-country differences in the taste for the public good, i.e.  $\theta$ , generates the fact that in all countries except those with the highest  $\theta$ , private and public consumption are crowded out by debt repayment to foreign lenders. The fiscally disciplined countries (i.e. those with high  $\theta$ ) hold the entire world wealth and are the only ones that provide public goods.

Song et. al (2014) extend their model by assuming that there are two types of voters, left-wing ( $l$ -type) and right-wing ( $r$ -type), who differ in their trade-off between private consumption and public good consumption:  $l$ -type voters like government expenditure and public good provision more than do  $r$ -type voters. Exogenous shocks change the ability of the two voter groups to influence the political outcome. The result is that left-wing- and right-wing governments alternate in power, the former being more concerned with present and future public good provision than the latter. The political shocks are evaluated in a dynamic overlapping generation model with repeated probabilistic voting as in Song et al (2012). In particular, voters choose sequentially fiscal policy which includes labor taxation, government expenditure on public goods, and debt policy, subject to the government’s dynamic budget constraint. The novelty of this model compared to Song et al (2012) is that here there are political shocks which can be interpreted as shocks over time to the preference for public goods. In particular, during a left-wing wave the government increases taxation and public expenditure while reducing debt. Instead, during a right-wing wave the opposite occurs. The intuition for this result is the following. First, in line with Song et al (2012), the driver of fiscal discipline of the young is based on their preferences for public

good when old - that is how much the young expect that they will appreciate public good provision as they become old. During left-wing waves, the demand for fiscal discipline is stronger because the young left-wing voters - who are more concerned for future public good provision than right-wing voters of the same age - detain more political influence. This is because  $r$ -type voters have less appeal to public good and more for private consumption. Thus, when the right-wing party is in power is less concerned to the provision of public good in the future and instead it would push up current debt today in order to use the resources as subsidies for private consumption. Left-wing voters are instead concerned with future public good provision, and would oppose such fiscal policy. This result is reminiscent of the model by Persson and Svensson (1989) reviewed above, in a non overlapping generation framework.

Taking all together, the model develops sharp predictions. Changes in the ideology of governments lead to changes in fiscal policy. In particular, right-wing governments run larger deficits and accumulate more debt because increasing debt today can finance a current tax break at the cost of crowding out future public good provision. Such a cost is of little importance to right-wing voters. Moreover, conditional on the debt level, left wing governments set higher taxes and spend more in public good provision.

The idea that debt is a burden left for future generations is appealing. However evidence shows that often large accumulation of debts have been then reduced in various ways within the life span of a generation as result of policy or institutional changes or the introduction of new rules to correct for past mistakes (or to introduce different ones). These relatively short terms politico-institutional-fiscal evolutions are not well captured by models of intergenerational redistribution.

## 9 Budget Rules

Given that for so many reasons there are incentives for the government to run excessive deficits, is it feasible to devise rules and institutions that limit or eliminate those problems? By rules we defined numerical targets like a balanced budget rules, or a limit on the level of deficit, perhaps adjusted by the cycles, or excluding certain items like public investment.

## 9.1 Balanced Budget Rule for National Governments

The pros and cons of national balanced budget rules, namely rules which imply zero or negative deficits (namely surpluses) should be clear based upon our discussion thus far. A balanced budget rule does not allow to smooth out spending shocks (i.e. to run deficits when the need for spending are especially large) or fluctuations of tax revenues over the cycle for given tax rates. However, to the extent that political distortions are so large that governments are very far from following the optimal policy, then a balanced budget rule might be welfare improving since it is a second best solution to a political distortion. The political debate on this question is extensive, since the pros and cons are in principle straightforward but there are strong prior views about which costs or benefits are bigger and those views are not likely to be changed by available evidence.<sup>27</sup> Another issue relates to the enforceability of balanced budget rules, namely, whether governments restricted by this rule would engage in “creative accounting” to circumvent them.

Azzimonti, Battaglini and Coate (2010) present a quantitative evaluation of the net benefit of balanced budget rules for the US using the Battaglini and Coate (2008) model which we reviewed above.<sup>28</sup> They begin by calibrating a model to US data from 1940 to 2005. They can reasonably well calibrate the path of US fiscal policy using that model. They then impose a balanced budget rule, namely one rule which allows surpluses but not deficits.<sup>29</sup> One immediately wonders whether including the Second World War years in the exercise is appropriate given that during a major war probably the balanced budget rule could be easily abandoned. By including a major war period they, in a sense, may set the stage for a framework with high costs for balanced budget rules. The rule reduces the level of debt, “pushing” the model in the direction of the optimal policy. However in the short run citizens experience a loss in utility since the government has to cut spending and raise taxes to reduce the debt above and beyond what might be optimal. These authors find that the short run costs are too large to compensate for the steady state benefits of a lower debt. However, quite apart from the parametrization, which as always could be debatable, the model makes an interesting point. The balanced budget rule could be costly in the

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<sup>27</sup>See Sabato (2008) for a presentation of the policy debate.

<sup>28</sup>See also Stockman (2001) for calibrations of balanced budget rule in RBC models.

<sup>29</sup>They consider both an unchangeable rule and one which could be removed by a unanimous vote for the legislature. Here we focus only on the first case.

short run and beneficial in the long run. This result leads to interesting and immediate consequences on the political economy on voting upon a balanced budget rule in say, an overlapping generation model.

One could also think of balanced budget rule with escape clauses. An obvious one, mentioned above already would be a major world war. This (fortunately) rare event may be used as a relatively easy contingency to verify, but if the contingencies become too common than not only the stringency of the rule but even its enforceability is called into question. For instate how does one define a “major” war? Clearly the Second World War was major, but would the Iraq war be a major one? Also one might think of cyclically adjusted balanced budget rules to overcome some of the rigidity of the latter, but then debates about how to measure the cyclical adjustment might lead to strategic manipulation of the rule itself. With specific reference to the US, Primo (2007) discusses the pitfalls of balanced budget rules with complicated escape clauses.

An additional argument about budget rules is that markets should impose borrowing cost on government which move far away from optimal policy and accumulate large debts therefore leading to more discipline even without rules. However the recent experience of the Euro area and its fiscal crisis, casts very serious doubt on this argument. Until 2008 the interest rates spread on, say German government bonds and even Greek ones was virtually nil. In fact, as a result of this low spreads several countries accumulated large debts in the first decade of the monetary union even when these countries were growing at respectable rates, including Greece. The reason of this is that probably investors did not believe the no bail out case of European treaties and assumed (largely correctly) that in case of a debt crisis they would be protected. In fact, probably because market discipline was not considered sufficient the funding fathers of the monetary union introduced contingent budget rules, like the stability and growth pact. These rules have been changed repeatedly and generally implied a maximum level of deficit (3 per cent of GDP) with various escape clauses in case of major recessions. The discussion about the optimality of such rules in the Euro area is immense and we do not review it here (see Wyplosz (2014)). Three points however are we want to make. One is that the enforceability of these rules has been questionable. Even as early as 2002 Germany itself broke the rule and then many countries followed the example. The complexity and contingency of these rules did not help. The

second is that probably now some European countries are feeling the bite of such rules, binding during a long and deep recession. The third is that especially at the time of the introduction of the Euro much creative accounting was widely used to satisfy “on paper” the 3 per cent rule.

An important question is how to enforce a balanced budget rule for a national government. One possibility is to have the law in the constitution so that it would take a Constitutional revision to change it. An alternative would be to require a qualified majority. Such rules need to be stable namely they should not imply that the rule itself can be changed, as in Barbera and Jackson (2004). For some discussion of this issue see Primo (2007) which elaborates over the Baron and Ferejohn (1989) approach with specific reference to the US institutional setting. This is an excellent topic for future research. In fact more is needed on this topic especially for institutional setting not based strictly on the US case.

## **9.2 Balanced Budget Rules for Local Governments**

The pros and cons of balanced budget rules discussed above for national government apply also to sub national ones. However there are reasons to believe that balanced budget rules for local government may be more attractive than for national governments. First, as we discussed above, local governments add an additional political distortion: a common pool problem given by the fact that their local spending is at least in part financed by national transfers and therefore local governments do not fully internalize the taxation costs of their spending decisions. Second, some (or most) of the countercyclical fiscal stabilizers may be national not local; think of federal unemployment insurance in the US for instance. In fact balanced budget rules for local governments should be accompanied by nationally based automatic stabilizers, to avoid procyclical fiscal policy, unless as were discussed above a balanced budget rule is chosen also for the national government. Third, enforcement of local balanced budget rule may be easier since it may be done by the national governments. Fourth, a balanced budget rule for local government would avoid accumulation of unsustainable debts with the related uncertainty, disruption and costs associated with bail outs of excessively indebted localities.

Indeed, work by Alt and Lowry (1994), Poterba (1995), Bayoumi and Eichengreen

(1994) and Alesina and Bayoumi (1996) show that more strength budget rules in the US have been more effective at creating incentives to states more quickly responding to spending or revenue shocks.<sup>30</sup> To put it differently balanced budget rules for local government may be a tool of an optimal allocation of fiscal responsibilities between national and local governments.

### 9.3 Other types of budget rules

The policy discussion over balanced budget rules has also dealt with other type of budget restrictions. One of the most common one is the so called “golden rule”, namely a rule which allows budget deficits in order to finance public investments but not current expenditures. Bassetto and Sargent (2006) discuss the optimality of such rules. In principle this may be a “good” rule especially for developing countries in need of investment in infrastructures. The problem, however, is that this rule may lead to creative accounting, namely simply reporting as spending in infrastructures what is really current spending. For developed countries one may wonder whether the political incentives to spend in physical infrastructures which would be induced by this rule is really necessary. In Western Europe in particular the emphasis on infrastructures seem overplayed already relative to other problems in this continent, and a budget rule of this type may add to this misperception.

Another possible budget rule would impose limits on spending as some US states have. The issue here is that while we have a theory of optimal deficit management, reasonable people can disagree on the optimal amount of government spending because of different views about the role of the state and the size of redistributive policies, say. Thus, while pork barrel inefficient programs (like bridges to nowhere) might be constrained by spending limit the latter may interfere with desirable (by a majority) programs.

## 10 Budget Institutions

An alternative approach to budget rules, is one which does not impose any numerical rules but adopts certain types of budget institutions, namely procedures which lead to the definition of a budget. The question is: do such institutions matter for the outcome, or

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<sup>30</sup>See Inman (1997) and Poterba (1996) for a review of this literature.



they are just a veil, namely regardless of them, deeper variables (political conflict, electoral cycles, lobbies etc.) are the real determinants of fiscal outcomes? Moreover, to what extent such institutions are endogenous and therefore they cannot be taken as explanatory variables?

## 10.1 What are Budget Institutions?

The definition and approval of a budget in an advanced democracy is often a complex process, possibly kept strategically complex to achieve behind the scene deals or introduce in some corner of the budget provisions in a sufficiently obscure manner to escape detection of the voters. One can identify three phases in the budget process: (1) the formulation of a budget proposal within the executive; (2) the presentation and approval of the budget in the legislature; and (3) the implementation of the budget by the bureaucracy.

Two issues are crucial: the voting procedures leading to the formulation and approval of the budget, and the degree of transparency of the budget. We begin with the former.

We focus upon a key trade-off between two types of institutions. One type, which we label “hierarchical”, limits the democratic accountability of the budget process with a high degree of delegation. The second type, we label “collegial”, has the opposite features. Hierarchical institutions are those that, for instance, attribute strong prerogatives to the prime minister (or the Finance or Treasury minister) to overrule spending ministers within intergovernmental negotiations on the formulation of the budget. Hierarchical institutions also limit in a variety of ways the capacity of the legislature to amend the budget proposed by the government. Collegial institutions emphasize the democratic rule in every stage, like the prerogatives of spending ministers within the government, the prerogatives of the legislature vis-a-vis the government, and the rights of the minority opposition in the legislature. There is a trade-off between these two types of institutions: hierarchical institutions are more likely to enforce fiscal restraint, avoid large and persistent deficits, and implement fiscal adjustments more promptly. On the other hand, they are less respectful of the rights of the minority, and more likely to generate budgets heavily tilted in favor of the interests of the majority. Collegial institutions have the opposite features.

Let’s begin with the definition of the budget within the government where we have a division of responsibilities between spending ministers and the Treasury minister, The

latter has the role of aggregating the spending proposals of other ministers and produce a budget document. Spending ministers prefer a larger fraction of the budget devoted to their department: more money means more favors to constituencies, but also, less cynically, every minister may overestimate the importance of spending in his/her department. Thus, more hierarchical institutions are those which attribute stronger prerogatives to the Treasury. In the legislature, as we discussed above, different amendment rules may aggravate or reduce the common pool problem. Much of this research is based, directly or indirectly, upon a view of the budget as the result of conflicting interests of representatives with geographically based constituencies. The literature on procedures has addressed three related questions: what procedural rules mitigate or aggravate the problem of oversupply of pork barrel projects? What procedural rules make the choice of projects, given a certain total budget, more or less efficient? How do different procedural rules influence the final allocation of net benefits among districts? Two issues are particularly interesting for our purposes: (a) the sequence of voting on the budget, and (b) the type of admissible amendments on the proposed budget. Intuitively, one may argue that by voting first on the maximum size of the budget (and eventually of the deficit) one would limit the excessive multiplication of budget proposal. Ferejohn and Krehbiel (1987) study theoretically the determination of the size of the budget under the two alternative voting procedures. They assume that the budget can be allocated to two projects and different legislators have different preferences for the relative benefits of these two projects. It is not always the case that the size of the budget is smaller when the legislatures vote first on the size and then on the composition, relative to the case in which the overall budget size is determined as a residual. While the size of the budget is in general not independent of the order of votes, the relative size of the budget with different orders of votes depends on the distribution of legislatures' preferences for budget composition.<sup>31</sup>

In parliamentary democracies the agenda setter in the budget process is the government. Thus, closed rules attribute more power to the government and less to the floor of the legislature. The result is that closed rules are more hierarchical as we discussed above. They give more influence to the government and lead to an immediate approval of the budget that the government poses. Open rules require more time for voting and with those

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<sup>31</sup>The same issue has been revisited by Hallerberg and Von Hagen (1997).

rules the government gets a lower surplus relative to the non governmental minority. With a closed rule you achieve quick approval of a proposal, at the cost of implementing “unfair” budgets. Budgets are unfair in the sense that they are tilted in favor of those who make the first proposal, and always distribute benefits to the smallest possible majority. Hierarchical procedures are obviously preferable when the key problem is the control of the size of the budget and the implied deficit.

Finally, the issue of transparency. The budgets of modern economies are very complex, sometimes unnecessarily so. This complexity, partly unavoidable, partly artificially created, helps in various practices to “hide” the real balance (current and future) of costs and benefits for the taxpayers. Politicians have incentives to hide taxes, overemphasize the benefits of spending, and hide government liabilities (the equivalent of future taxes). At least two theoretical arguments support this claim. The first is the theory of “fiscal illusion ” reviewed above; by adding to voters’ irrational confusion politicians can engage in strategic fiscal policy choices for reelection. The second argument does not rely on voters’ irrationality and confusion. Several papers, although in different contexts (e.g., Cukierman and Meltzer, 1986; Alesina and Cukierman 1990), highlight the benefit for policymakers of a certain amount of ambiguity even when they face a rational electorate. The idea is that by creating confusion and, in particular, by making it less clear how policies translate into outcomes, policymakers can retain a strategic advantage versus rational, but not fully informed, voters. This advantage would disappear with “transparent” procedures; therefore, the policymakers would often choose to adopt ambiguous procedures. As we discussed above, Rogoff and Sibert (1988) and Rogoff (1990) make a similar point in the context of political business cycle models. They show that if the voters cannot easily observe the composition of the budget (on the spending or on the financing side), then policymakers can follow loose fiscal policies before elections and increase their chances of reappointment.

How, in reality, do policymakers obfuscate the budget? and what to do about it? Milesi-Ferretti (1997) shows that politicians who want to run excessive deficits would choose non-transparent procedures, and the latter would help them to achieve their (distorted) goals. In practice, a variety of tricks can serve the purpose of strategically influencing the beliefs and information of taxpayers/voters. For instance: (1) Overestimate the expected growth of the economy, so as to overestimate tax revenues, and underestimate the level of interest

rates, so as to underestimate outlays. At the end of the fiscal year, the “unexpected” deficit can be attributed to unforeseen macroeconomic developments, for which the government can claim no responsibility. (2) Project overly optimistic forecasts of the effect on the budget of various policies, so that, for instance, a small new tax is forecast to have major revenue effects, thus postponing to the following budget the problem of a real adjustment. (3) Keep various items off budget. (4) Use budget projections strategically. For example, in all the discussions about future budgets, a key element is the “baseline.” By inflating the baseline, politicians can claim to be fiscally conservative without having to create real costs for the constituencies. In this way, they create an illusion: they appear conservative in the eyes of the taxpayers, worried about the size of the budget, but they do not really hurt key constituencies with spending cuts. Clearly, this illusion cannot last forever, since adjustment, rigorous only relative to inflated baseline, in the end will not stop the growth of the debt. However, this procedure creates confusion and, at the very least, delays the electorate’s realistic perception of the actual state of public finance.(5) Strategic use of multi-year budgeting. By announcing a, say, three-year adjustment plan in which all the hard policies occur in years two and three, politicians can look responsible and can buy time; then, they can revise the next three-year budget policies to further postpone the hard choices.<sup>32</sup>

We can think of three possibilities for increasing transparency. The first and most commonly followed is a “legalistic” approach. That is, more and more rules and regulations are imposed on how the budget should be prepared, organized, and executed. This approach is unlikely to be successful: complicated rules and regulations provide fertile ground for nontransparent budget procedures. A second alternative is to create legislative bodies in charge of evaluating the transparency, accuracy, and projections of the government budget. This approach is superior to the legalistic one, but it relies heavily on the political independence of this public body. This independence may be problematic, particularly in a parliamentary system where the government parties control a majority in the legislature. A third alternative, the most radical but the most effective, is to delegate to a respected private institution the task of verifying the accuracy and transparency of the budget process. In addition, the government budget should be based on an average of the economic

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<sup>32</sup>See Alesina, Favero and Giavazzi (2015) for a detailed study of multi-year fiscal adjustment plans

forecasts of and projections derived by international organizations or private institutions.

## 10.2 Empirical evidence

The empirical evidence on the relationship between rules and deficit is generally speaking supportive of the idea that hierarchical institutions are associated with lower deficits. Hallerberg et al (2009), in a book which also summarizes and consolidate previous works by the same authors, classify budget institutions for the EU countries in terms of delegation of prerogatives to the Treasury minister versus a contracting approach within ministers, the presence of targets, voting rules in parliament, relationship between central and local governments. They argue that institutions matter and delegation and targets (i.e. hierarchical institutions) are effective at containing deficits and debts. Alesina et al (1998) consider Latin America countries and construct an index of their budget institutions based upon surveys of local officials. In doing so they can distinguish up to a point between *de iure* and *de facto* procedures. These authors correlated positively an index of hierarchical of budget institutions and of transparency to lower levels of debt. Fabrizio and Mody (2006) obtain similar results for Center and Eastern European countries. These results should be taken very cautiously since they are based upon a handful of countries and often the classification of procedures is open to question. For instance, *de iure* and *de facto* procedures may differ substantially. Also comparing along those line very different countries might be challenging, think of a comparison of US versus parliamentary democracies budget institutions.

Recent work at IMF (Shaechter et al 2012) provide extensive data on budget institutions for many countries and examine how the recent financial and fiscal crises in many countries have led to reforms in budget institutions.

## 10.3 Endogenous institutions (again)

Different budget institutions may work very differently in different countries depending upon their interaction with other features of the country itself. Hallerberg et al (2009) argue that delegation to the Treasury minister does not work well in countries with sharp differences in the preferences of different parties for fiscal policy, a result which is consistent also with the model of political delegation by Aghion et al (2005). With a deep political conflict delegation to one decision maker is hard, undesirable by the minority and possibly

counterproductive.

These considerations lead us straight into a discussion of the endogeneity of budget institutions. Why do countries choose different budget institutions and therefore to what extent the latter can be used as right hand side variables in a regression with debt and deficits on the left hand side? Countries with lower polarization and more homogeneous governments may be more likely to choose more hierarchical fiscal institutions, since delegation is easier, as argued above. But then it may be that the lower political conflict that leads to more restrained fiscal policies; institutions are just an “intermediate” variable. In other words, paradoxically countries which needs stringent budget rules the least, since they have a lower tendency to run deficits, may be those which adopt more stringent budget rules. As noted by Hallerberg et al (2009) some institutional reforms in the direction of making them more hierarchical have followed deep crisis, like the case of Sweden in the nineties. But again, causality is an issue: perhaps the changes in attitudes due to the crisis might have lead to a political equilibrium with more fiscal restraint regardless of the institutions. It is virtually impossible to establish causality form budget institutions to fiscal outcomes, although the correlations are interesting.

A second line of argument relates to the time consistency of institutional rules. To what extent institutional choices would be time consistent and not reversed as a result of various shocks? Halac and Yared (2014) address precisely this issue in a model where a government (for whatever non modeled reasons) has an incentive to overspend. The government chooses a fiscal rule to trade off its desire to commit to not overspend against its desire to have flexibility to react to shocks. These authors show that in the case of persistent shocks the *ex ante* optimal rule is not sequentially optimal. The optimal rule in fact is time dependent with large fiscal shocks leading to an erosion of future fiscal discipline. It would be very useful to investigate the choice of budget rules under a Rawlsian veil of ignorance at the constitutional table or in a situation in which the veil of ignorance has holes, as in related work by Aghion et al (2005) on voting rules.

## 11 Conclusions

In this paper we have reviewed the literature which has discussed various reasons why countries may deviate form the optimal path of government debt generating excessive deficit

and whether certain rules may help overcome this problem. We conclude by highlighting what are in our view a few open issue in this literature.

The first is one which we briefly discussed already, namely the endogeneity of institutions. Several papers point to certain institutional features (say parliamentary versus majoritarian electoral rules) as determinants of public debt. More work is needed to understand whether institutions are simply an “intermediate” rather than a causal variable. As we discussed, the adoption of certain political institutions may be correlated with sociopolitical variables which are themselves associated with the accumulation of debt. The same applies to budget institutions. It is true that they are correlated with fiscal outcomes but both institutions and outcomes may be themselves generated by third variables. Additional research needs to make this observations much more central. Second, we may need more empirical work to disentangle more specifically alternative hypothesis. In addition to standard econometric analysis, case studies and historical analysis may be especially useful in this regard. Third, we need more econometric work to quantify the benefits of balanced budget rules. The political discussion on these type of rules is hot but measures of pros and cons are lacking. This holds both for national governments and subnational ones with the possible exception of vastly studied US states. Fourth, more communication between work in political science and in economics may be useful. Battaglini and Coate (2008) is a good example of a paper which combines the two with specific reference to the US. Additional work on other institutional settings may be especially useful. Fifth, the role of the bureaucracy in the implementation of the budget is hardly studied by economists.<sup>33</sup> Highly ranked bureaucrats may have an influence which goes well beyond the implementation of executive decisions. Finally virtually all of the models we have modeled the polity by means of voting. A different view about the political process sees voting in legislatures simply as a result of lobbying pressure and therefore modeling lobbies’ behavior is the fundamental step. While a rich literature on lobbies exist (see Grossman and Helpman (2008), especially with regard to trade issues, we are not aware of lobbying models related to optimal debt management.

Finally in this paper we did not investigate the relationship between monetary and

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<sup>33</sup>See Alesina and Tabellini (2007) (2008) for recent papers on the political economy of the bureaucracy but without an emphasis on government debt.

fiscal policy. The Great recessions has clearly highlighted the close connection between the two, in case one needed a reminder. Several observers have argued that in a situation of zero lower bound one need an aggressive discretionary fiscal policy. An interesting avenue of research from a political economy point of view would be how political interest may lead to the possibly less than optimal allocation of discretionary spending and what might the long run consequences of the latter.

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