

Fiscal Neglect in a Monetary Union*

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The Duchy of Grand Fenwick, having satisfied all requirements of Eurozone accession, recently became its newest member. As the small dukedom has discontinued its use of the Fenwick Pound, its independent central bank has had its tasks relegated to the monitoring of the twelve banks that exist there, and no longer the exercising of monetary policy. Before joining the Eurozone, the Duchy's central bank had a hierarchical mandate, targeting low inflation, and subject to that the stability of unemployment. With a recent groundswell of popular opinion against the ruler, Duchess Gloriana XII, her government has sought to placate its subjects with free dental care, an increased state pension and subsidised wine. It can do this, now, in relatively safe knowledge the European Central Bank will not punish the Duchy's fiscal recklessness with higher interest rates – unlike the Duchy's independent central bank in the past.

Keywords: fiscal-monetary policy interaction, monetary union, commitment.

1. Introduction

It is true that governments, from time to time, may not behave in their own countries' best long-term interests; Greece is the common caricature – quite like The Mouse that Roared's fictional Fenwick. "From time to time" is here the useful expression. As Hicks (1981) wrote: "We are trying to detect general patterns amid the mass of absorbing detail; shapes that repeat among the details that do not repeat." It is the view of this short paper that a shape which is likely to repeat can be found in the debt crisis of Greece and the rest of the "PIIGS".⁴

The fact that the political pressures may lead to excessive fiscal policy has been examined in a large body of literature initiated by Nordhaus (1975). We show, using a simple game theoretic model, that a membership in a monetary union exacerbates these natural political tendencies and, hence, the magnitude of the fiscal repercussions. This is due to a moral hazard problem – that is of a different sort from the standard "reliance on a bailout" moral hazard problem. The moral hazard we highlight is linked to free riding of the small monetary union members.

Intuitively, we show that in a country with its own autonomous and "credible" central bank, the government pre-empts how the central bank will react to the fiscal setting, given the forecast of how it will affect the output gap and prices. The sheer prospect of interest rate offsetting rises,

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i.e. a costly tug-of-war between the central bank and the government, can be sufficient to dissuade an excessive fiscal setting over the cycle.

In a monetary union, too, a government formulates its best response function to how it perceives the common central bank will react to its fiscal setting. The difference is, however, the following. If the member country forms only a small part of the union, the expected monetary reaction – tailored to the needs of the monetary union as a whole – will be of a much smaller magnitude than of the national central bank before joining the union. Therefore, it will be of far less consequence to the fiscally irresponsible country. Such incentives create a moral hazard problem: after joining the union, small countries are more likely to engage in fiscal neglect due to them not facing the full monetary “punishment” for their fiscal excesses. The problem is made worse by the fact that becoming a part of a monetary union commonly leads to an outward shift in the small government’s inter-temporal budget constraint (due to a lower borrowing cost, which is a consequence of lower exchange rate risk and the anti-inflation credibility of the common central bank). This means that not only the willingness of the small new union member to spend excessively increases, but also (up to a point) its ability to do so.

Nevertheless, the news is not all bad, as there seem to be some good lessons for the future. We discuss, building on the literature and using real world examples, how these problems can be at least partly alleviated. In particular, this can be done through a range of transparency measures that enhance policy accountability. Interestingly, we argue that these measures relate not only to the institutional design of fiscal policy, but also to that of monetary policy. This is because strengthening the commitment of monetary policy may give the central bank more ammunition to “fight” the government(s) more effectively, and hence better align (through a credible threat of policy conflict) its incentives with the nations’ long-term best-interests.

Clearly, not all governments suffer from the type of problems described above (with Australia being one such exception over the past fifteen years). The issue is, however, that even a small probability that unsustainable fiscal policies may be adopted in the future imposes a significant cost to the economy in terms of higher uncertainty. Therefore, the payoffs from “institutionalising” good policy may still be large.⁵

2. Related Literature

There are two main strands of the literature on which this paper builds. The first is the fiscal-monetary interactions literature, and the second is the research done in political business cycles. The fiscal-monetary interactions literature as modelled by game theory essentially started with Tabellini (1986), and was improved by, among others, Nordhaus (1994) and Dixit and Lambertini (2001). The political business cycle research useful to this paper includes the original paper by Nordhaus (1975), Shi and Svensson (2003) and Gonzalez (2002).

The innovation in Tabellini (1986) was to use a dynamic game to describe the interactions between a government and central bank in a country with its own autonomous monetary authority. Like Nordhaus (1994) and Dixit and Lambertini (2001), Tabellini shows what perhaps is common-sense: that the greater the difference in the goals of the central bank and the government, the greater the likelihood that the non-cooperative equilibrium is different from the socially optimal one. The refinement made by Dixit and Lambertini is that so long as the central bank and government of a country can agree on the target rates of output and inflation, the socially optimal outcome can be reached regardless of whether they disagree about the weights on each variable.

The political business cycle literature begins with Nordhaus (1975) who observed a tendency for incumbent parties to engage in pre-election political spending. Larger cross-sectional studies by Shi and Svensson (2003) and Gonzalez (2002) have improved the insight to show some

⁵Senator Andrew Murray (2008) expressed the need for grounding good policy in the country’s legal framework as follows: “If you want high standards, accountability and good governance, you cannot rely on particular individuals in a particular role at a particular time – you have to institutionalise and legislate those standards, so they are there whoever is in charge.”

determinants of pre-election spending. Shi and Svensson show that places that are more “politically naïve” are more likely to see purely political fiscal policy. The implication is that voters in such places are less likely to link the pre-election economic boom (and the post-election consequences of such fiscal policy) to the preceding increase in government spending and debt. Gonzalez shows that new democracies are more likely to see political spending, as are countries where the margin between the incumbent and opposition is narrow. These conclusions are useful in comparing the outcomes of different Eurozone members during the 2010 crisis.

This paper diverges from the stream of the fiscal-monetary interactions literature that lets monetary and fiscal actors agree on what the main variables (inflation and output) should look like. Arguably, such an approach is suitable for modelling a country in which government and the central bank are both benevolent. However, the experience of many Eurozone member governments selecting a long-term fiscal position far from what could be called a cooperative sustainable outcome challenges the notion that governments and central banks necessarily share the same preferences and behave in tandem. Therefore, the next section models the policy interaction as a non-cooperative game.

3. The Policy Interaction

To formalise our argument, let us adopt the following simple setting. There exists a monetary policy-maker, \mathcal{M} and N independent fiscal policy-makers, denoted by \mathcal{F}_n , where $n \in \{1, 2, \dots, N\}$. In a single country setting we have $N = 1$, whereas in a monetary union setting we have $N > 1$. While we focus on the latter, we will do so from the perspective of one small recently joined member country – such as the Duchy of Grand Fenwick. The payoff of each independent government is assumed to be directly determined by its own actions and those of the common central bank. Indirectly, however, the actions of other governments will also have an impact since they determine the action of the central bank and, hence, the equilibrium outcomes.

The relative weights of the union members (expressing their economic influence) will be denoted by w_1, w_2, \dots, w_N , such that $\sum_{n=1}^N w_n = 1$. Then the overall payoff of the \mathcal{M} policy-maker should be interpreted as a weighted average of the payoffs obtained from interactions with each individual \mathcal{F}_n , using the member’s weight w_n .

3.1 A Game Theoretic Representation

While the common central bank is formally independent from the government(s), the actions of fiscal and monetary policy are inter-related due to the spillovers of macroeconomic outcomes onto the other policy. For example, excessive fiscal spending leads to inflationary pressures that threaten the achievement of the low inflation target and may hence require a response from the central bank to counteract them.

To present the strategic policy interactions clearly, let us consider a 2×2 game summarised in the following payoff matrix. It focuses on the interaction between the common central bank \mathcal{M} and one individual government \mathcal{F}_n .

		\mathcal{F}_n	
		l	h
\mathcal{M}	L	2, 1	0, x
	H	0, 0	y , z

We can interpret the “low” levels L and l as *discipline*, and the “high” levels H and h as *indiscipline*. In a reduced form model, the reader can think of L and H as achieving versus over-shooting the optimal level of inflation, and l and h as a balanced budget versus a deficit respectively. Let us

however stress that we are interested in medium/long-term outcomes of the interaction, not short-term stabilisation issues. Therefore, these decisions are considered at a (representative) point in time in which the economy is operating efficiently at the optimal levels (assumed to be L and l), not in a cyclical upturn or downturn.

The payoffs x , y and z , as well as all the other payoffs that we normalised for parsimony, are functions of the policy-makers' preferences and the deep parameters of the underlying macroeconomic model. To focus on the intuition, we will not use a specific model but depict several relevant types of policy interaction that can be captured in the matrix and that can each arise from a range of macroeconomic models.

3.2 Scenarios

Naturally, the payoff values will differ across countries, and so will the outcomes of the policy interaction. Let us first consider the case in which the government's payoffs from h are below a certain threshold; that is, $x < 1$ and $z < 1$. If also $y < 0$, then we have a "*monetary-fiscal symbiosis*" scenario in the terminology of Dixit and Lambertini (2003). This is because the game has a unique Nash equilibrium, (L, l) , which is the most preferred outcome for both policies. In such a situation, the policy interaction is "tedious" in the sense that there exists no long-term problem, and the socially optimal outcomes will be achieved on average.

If, in addition to $x < 1$, it is true that $z \in (0, 1)$ and $y \in (0, 2)$, then we have a "*pure coordination game*" scenario. The game has two pure Nash equilibria, (L, l) and (H, h) , and one in mixed strategies. As both players prefer the former pure Nash, the focal point argument can be used to select it. Therefore, while there exists a coordination problem (explored in a large body of literature; e.g. Persson *et al.*, 2006 or Benhabib and Eusepi, 2005, it is not a major reason for concern in terms of long-term outcomes.

Undoubtedly, there exist countries that are well described by these scenarios. Australia has arguably been an example of the monetary-fiscal symbiosis scenario since the mid-1990s. Nevertheless, our focus in this paper is on situations in which socially suboptimal outcomes H and/or h can result. Therefore, let us from now on assume

$$z > 1 \quad \text{and} \quad y < 2, \quad (1)$$

which expresses that the government's preferred outcome is for there to be a positive output gap in their country, even if this is had by running budget deficits, and that the central bank's monetary policy is loose; i.e. the government prefers (H, h) to (L, l) – unlike the central bank.

Under (1), we have two main cases of interest. If $x \geq 1$, action h is (strictly or weakly) dominant over l , and hence it is always played by the government regardless of the value of y . If also $y < 0$, we have a "*tug-of-war*" between the policies, because each policy-maker has a different dominant strategy with the unique Nash equilibrium being (L, h) . The problem is that this socially undesirable non-cooperative outcome is neither policy-maker's preferred situation. Note that in this scenario the central bank is able to resist the political pressure and ensure monetary discipline L – unlike in the $y \geq 0$ case in which it cannot do so and (H, h) is the unique Nash. Nevertheless, in both cases we have fiscal indiscipline h in equilibrium, regardless of whether or not the central bank attempts to offset the government's excessive actions by higher interest rates.

Alternatively, under $x < 1$ and $y \in (0, 2)$ we have the "*Battle of the sexes*" scenario. The game has two pure Nash equilibria, (L, l) and (H, h) (with one in mixed strategies), but each player prefers a different pure Nash. This scenario is a combination of the pure coordination game and tug-of-war scenarios as it features both a coordination problem and a policy conflict. Specifically, both policies would like to play the same action level and avoid the off-diagonal mis-coordination outcomes or the mixed Nash, but each of them would like to coordinate on a different pure Nash. A large body of research points to this type of policy interaction; see, for instance, Alesina and Tabellini (1987), Leeper (1991), Adam and Billi (2008), or the unpleasant monetary arithmetic of Sargent and Wallace (1981) and all the subsequent literature.

As the two pure Nash equilibria are symmetric, neither standard nor evolutionary game theoretic methods can select between them. Therefore, Stackelberg leadership – the *pre-commitment* (also called dominance) of one policy – is often used to determine who “wins” the Battle. If the central bank can pre-commit (the case of monetary dominance), then its preferred outcome (L, l) is uniquely obtained. On the other hand, if the government can do so (fiscal dominance), then (H, h) results. Put differently, the ability to pre-commit is an advantage in such games as it allows the leader to impose its preferred outcome onto the opponent. Note that this conclusion holds for any $x < 1$. The important implication is that monetary pre-commitment can have a *disciplining effect* on fiscal policy – through a credible threat of a policy conflict it can alter the incentives of the government and discourage it from pursuing excessive policies.⁶

3.3 Policy Outcomes

Let us focus on the latter two scenarios assuming (1) holds. As our main interest lies in fiscal policy outcomes, we will treat the central bank’s y payoff as exogenous, determined by the political realities and the institutional design of central banking discussed in Section 4. Instead, we will consider the determinants of the payoff x and, in particular, whether/how it may change after a country’s joining a monetary union.⁷

The above discussion implies that the payoff x can be interpreted as the political benefit from fiscal excesses, $b > 0$, net of the costly punishment by the central bank through higher interest rates, $c > 0$, that is:

$$x = b - c. \quad (2)$$

The benefit b seems largely unaffected by a country’s joining a monetary union.⁸ In contrast, the punishment cost c to an individual member country is arguably smaller than before joining the union – for two main reasons. First, as the country only constitutes a (small) part of the union, its fiscal policy will have a relatively small effect on average inflation and output forecasts in the union as a whole that determine the response of the common central bank. Therefore, interest rates will only be increased marginally. Furthermore, the punishment in the form of an ensuing monetary contraction is spread across the union as a whole, i.e. even disciplined governments are penalised.

To formalise this argument, denote the *degree of free riding*; that is, the extent to which a member country does not internalise the negative impact of its fiscal excesses onto the rest of the union members by $m \in [0, 1]$. It follows that the cost c is a decreasing function of m and an increasing function of the country’s weight w , i.e.

$$\frac{\partial c(m, w)}{\partial m} < 0 \quad \text{and} \quad \frac{\partial c(m, w)}{\partial w} > 0.$$

Let us contrast the outcomes before and after joining the monetary union, denoted by B and A in the superscript respectively. The case before joining the union is naturally $m^B = 0$ and $w^B = 1$. After joining, we have some $m^A \geq 0$ and $w^A < 1$. It is obviously possible that we have the tug-of-war scenario even before joining, that is $b > c^B + 1$, which implies $x^B > 1$ and always leads to the h outcome.

⁶Libich *et al.* (2007) and Libich and Stehlík (2010) model this type of interaction in a more general game theoretic setting. Their frameworks allow for revisions of the policy actions (the former paper deterministic and the latter paper stochastic ones). This leads to asynchronous timing of policy actions, which generalises the alternating move setting of Lagunoff and Matsui (1997) and Maskin and Tirole (1988). Nevertheless, while the frameworks refine the standard conclusions made under Stackelberg leadership in several ways, the intuition that commitment is an advantage in coordination and anti-coordination games remains intact.

⁷The exact value of the payoff z will not have an effect on the outcomes below.

⁸There could be some small reduction due to more integrated trade (and some of the spending flowing onto the trade partners) and also a small increase due to more integrated financial markets and loosening of the borrowing constraint of the government.

Nevertheless, focus on the case in which $b < c^B + 1$, which implies $x^B < 1$ before joining. As mentioned above, under monetary commitment (dominance) the l outcome occurs before joining the union (for any assumed $y < 2$). But after joining, if the degree of free riding is above a certain threshold

$$m > \bar{m}(w, b), \text{ where } \frac{\partial \bar{m}(w, b)}{\partial w} > 0 \text{ and } \frac{\partial \bar{m}(w, b)}{\partial b} < 0, \quad (3)$$

then fiscal outcomes deteriorate, i.e. change from l to h – irrespective of the timing of the moves (the leadership). To demonstrate, consider the following functional form:

$$c = w(1 - m),$$

and set $b = \frac{11}{10}$. Before joining, we have $c^B = 1$ and hence $x = \frac{1}{10}$ from (2), leading to the l outcome under monetary commitment. In contrast, after joining, if

$$m + \frac{1}{10w} > 1, \quad (4)$$

then we will see a deterioration in the fiscal stance towards structural deficits, and the h outcome. This is true even under monetary commitment (leadership): the threat of punishment by the central bank is no longer sufficient to discipline the government, i.e. discourage it from fiscal neglect. For example, if the country forms 20% of the union, then for l to occur under monetary commitment it is required that the degree of free riding is less than 50%, $m < \frac{1}{2}$.⁹

Such socially undesirable outcomes will obviously have an effect on the ability of the government to borrow, as well as the public opinion. They are therefore likely to change (improve) the government's incentives towards fiscal sustainability – the current situation in Greece is a good example.¹⁰ Nevertheless, this may be too late, and more importantly, such change is not robust in the sense that once the situation improves the government's incentives may return back to the $x > 1$ situation.

The next section discusses, using a number of real world examples, how this time-inconsistency/moral hazard problem can be alleviated. It points to the importance of various transparency measures that increase the accountability of the central bank and/or the government, and thus “institutionalising” the correct incentives.

4. Institutionalising Good Policy

Policies that can help prevent fiscal neglect must necessarily alter its political payoffs. Such policies can be divided into two broad categories, both related to the soundness of the institutional design, and specifically transparency and accountability of the two policies.

First, some arrangements directly affect the payoff of the government from fiscal indiscipline, i.e. reduce the values of x and z in our model. These are typically some requirements regarding fiscal transparency and numerical targets for fiscal policy and/or debt.

Second, some arrangements do so indirectly by affecting the incentives and payoffs of the central bank, the value of the payoff y and, hence, the aggressiveness and perseverance with which it counteracts fiscal actions. As such, they typically firm up the government's expectations over the likelihood of the central bank playing L . The degree of (*de jure* and *de facto*) central bank independence, as well as various arrangements increasing the commitment, transparency and

⁹In terms of monetary policy outcomes, they will depend on the value of y . If (3) and (4) are not satisfied then under $y < 0$ we have (L, h) , but under $y \geq 0$ the fiscal excesses spill over to monetary policy and we have (H, h) . It will be interesting to see which of these two cases the “Duchy of Fenwick situation” currently under way in the Eurozone will lead to.

¹⁰In fact, it can be argued that if the markets are efficient and realise the likely consequences of a country's joining a monetary union, the mere possibility of such undesirable outcomes can reduce rather than enhance the ability of a country to borrow – even before fiscal outcomes worsen. This is in line with the intuition of the Fiscal Theory of the Price Level of Cochrane (2001) and Sims (2001).

accountability of monetary policy such as a legislated numerical inflation target are obvious examples.

On both counts, New Zealand, Australia, Canada and most Nordic countries have legislated institutions worth imitating, and perhaps even improving on.

On the monetary front, the institutional setup of the central bank has been improved dramatically over the past two decades. Besides legislating central bank independence from the government, the countries have committed their central banks to pursue price stability much more explicitly than was the case in the past. This usually took the form of a sole or hierarchical mandate in which price stability is the only or the primary goal of monetary policy. Related to that, price stability has been quantified and communicated as a numerical inflation target (achievable over the business cycle to still allow for short-term flexibility). Monetary policy transparency has, however, been strengthened in many other respects – for example in terms of publishing data, policy models, and detailed inflation reports containing forecasts of inflation and output.¹¹

All these measures increase the central bank's incentives to play *L* on average by strengthening the policy-maker's accountability – effectively generating a severe punishment for playing *H*. Once clear to a government that the central bank will not yield to continued fiscal imprudence and counteract its effects vigorously, fiscal behaviour is likely to improve.

On the fiscal institutional front, New Zealand's Fiscal Responsibility Act (1994) and Australia's Charter of Budget Honesty Act (1998) both require periodic reports on the fiscal state to be published, with three-year spending and revenue forecasts with their assumptions to be stated. They also both require that periodic long-run reports are taken, with ten to fifty year projections made.

Importantly, both frameworks mandate that in cases where an expansionary fiscal setting is pursued (as in a recession), governments must state their medium-run objectives in complying with set norms of "sound" or "responsible" fiscal management. By requiring these reports, governments are better measured against their stated aims, imposing potential political costs on incumbents willing to engage in fiscal neglect. Put differently, greater transparency enhances the accountability of fiscal policy.

Sweden's set of fiscal transparency/accountability arrangements also seems worth emulating. In addition to budgets setting three-year ahead rolling expenditure caps, the Swedish National Financial Management Authority produces monthly government expenditure updates, the National Debt Office produces monthly expenditure forecasts, and all discrepancies from stated aims must be explicitly planned to be rectified.

Some recent proposals go even further in limits that should be placed on governments to avoid the time-inconsistency problem. They use the recent monetary policy reforms as a template for fiscal reforms highlighting the beneficial effects they have produced. For example, Carling and Kirchner (2009) argued for fiscal policy rules that give "operational substance" to the sound fiscal principles: a budget balance rule, a ceiling on net debt, and a rule limiting the revenue and expenditure shares of GDP. They suggest that a new independent body, the Fiscal Commission, should be established that would "enforce compliance with the fiscal policy rules". This is in line with Leeper (2009) who highlights the benefits of "anchoring fiscal expectations" such reforms would deliver.¹²

In contrast, many countries' reports containing finances and stated aims, if they do exist at all, seem not to encourage fiscal prudence over the cycle. For example, an unfortunately-worded General Budgetary Law in Spain from 2003 states that "budgetary stability shall henceforth be the permanent outlook for public finances in Spain for both the central state and the regions." Given the spread between German and Spanish government bonds was 1.5% at time of writing, Spain's General Budgetary Law seems not to have instilled confidence in bond-holders.

¹¹For a detailed discussion of these developments, see e.g. Bernanke *et al.* (1999) or Truman (2003).

¹²The observed diversity of (suggested/implemented) fiscal commitment solutions seems to suggest that there may not be a one-size-fits all solution. The cultural and political specifics of each country are likely to play an important role in determining the optimal fiscal solution.

As a point of contrast, compare the above fiscal transparency policies of New Zealand, Australia, and Sweden to the IMF's review of some of the PIIGS levels of fiscal policy transparency. For example:

“much still needs to be done on improving accounting and audit systems... Greece has not modernised its fiscal institutions and systems. As a result major reforms are still necessary in improving clarity of roles and responsibilities and advancing more open budget preparation, execution, and reporting.” (IMF, 2006). In the report on Portugal: ‘improvements are needed to enhance the quality of budget projections and the analysis of fiscal risks, and to strengthen budget execution, reporting, and accounting processes.’ (IMF, 2003). As for Italy: “the quality of the data falls short of the code standards. While information on fiscal operations of the state is plentiful, the timeliness and quality of the data on other parts of the public sector should be improved. ...Budget processes are relatively open, but their main focus is on legal compliance rather than the efficient allocation of resources.” (IMF, 2002)

As we indicated in the introduction, this paper attempted to “detect general patterns amid the mass of absorbing detail” in regards to fiscal neglect observed in some countries. We believe these examples point to some general patterns. The countries now staring into the abyss of sovereign insolvency have historically had poor reporting procedures surrounding their fiscal policy.¹³

Importantly, their accession to a monetary union seems to have worsened the situation due to a moral hazard problem we sketched in our model. The Maastricht criteria and other arrangements designed to alleviate this problem in the Eurozone have proven ineffective.

It should however be noted that while the discussed transparency and accountability measures for both policies are a crucial part of the remedy, they are unlikely to be either necessary or sufficient to achieve sustainable fiscal outcomes. They are only partial – not full – substitutes for a less myopic polity that does not discount the future so heavily. Without voters realising the importance of long-term fiscal sustainability, and their willingness to resist populist unaffordable policies, significant improvements are unlikely to occur.

5. Summary and Conclusions

Since Mundell (1961), and especially since the formation of the Eurozone, there has been no shortage of research on what does and what does not constitute an optimum currency area. This paper brings to the fore an important determinant to the suitability of a country's membership of a monetary union that has not been sufficiently considered – and protected against – prior to the creation of the Eurozone. It relates to a moral hazard and free riding problems of the member countries.

We show, using a simple game theoretic analysis, that the incentives faced by a government of a small country may change dramatically after joining the union. In particular, the cost of excessive fiscal actions is, at least temporarily, reduced since the common central bank's response via higher interest rates is much smaller than that of the national central bank before joining. As such, the monetary punishment to the government is much smaller.

We discuss various ways in which the problem can be reduced, drawing on the literature and real world examples. They suggest that transparency and accountability – of both fiscal and monetary policy – are essential. This is because they act as a commitment device.

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¹³There exists formal empirical evidence for such a claim. In their 2003 study, Alt and Lassen (2003) find that, at least within OECD countries, transparency – “that is, how far debt can be hidden from the public” – is a key determinant in sovereign debt levels. More transparent regimes simply tended to have lower debt levels.

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