The Politics of Devaluations:
Modelling Motives for Giving Up a Peg

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Abstract

Planned "surprise" devaluations are often spurred by non-economic circumstances: a rent-seeking government; political instability; or the opportunity to put the blame on a predecessor government. In this paper, these aspects are incorporated in a monetary and fiscal policy framework first suggested by Alesina and Tabellini (1987). It is shown that reneging on a fixed exchange rate promise unambiguously produces short term benefits, but long run losses. This leads to a non-straightforward trade-off between greediness (propensity for expropriation) and a low time preference (for instance, fostered by political stability). The findings are empirically relevant and theoretically robust to extensions.

JEL classification: E42, F41, H29

Keywords: grand corruption, political instability, exchange rate regime, monetary policy, fiscal policy, political economy.

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1 Introduction

An exchange rate peg can be abandoned for two reasons. First, a country may be forced by the financial markets to give up its fixed exchange rate regime. Such market-driven devaluations are the focus of the currency crisis and contagion literature. Second, a country may deliberately devalue its currency without being forced to do so. The traditional argument is that a planned devaluation is employed in order to gain an economic advantage by improving one’s competitiveness vis-a-vis one’s trading partners.\(^1\) As a response to such a beggar-thy-neighbour strategy, the other countries might engage in a so-called currency war. The recent (limited) devaluation of the Chinese yuan vis-a-vis the US dollar may have been done to limit the appreciation of the yuan relative to the weaker euro (Davis and Wei, The Wall Street Journal, 2012). Nonetheless, it left the US angry with its exports becoming yet more expensive in China.

At the same time, there are plenty of cases of planned devaluations which were spurred by political motivations or non-economic circumstances: a rent-seeking government; political instability; or the possibility to put the blame on somebody else. First, consider blaming. Malawi, for instance, had originally resisted pressure by the IMF to devalue its currency. On 7 May 2012, shortly after Joyce Banda was elected president, the Malawi kwacha was, however, devalued to facilitate an agreement with the IMF. Whenever a government can keep the political cost down, for instance by blaming the devaluation on a predecessor, a devaluation seems attractive.\(^2\) Second, there is political instability. In an empirical study, Edwards (1996) finds that “more unstable countries have a lower probability of selecting a

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\(^1\) It is, however, by no means clear, if an advantage can actually be gained. See, for instance, the discussion between Eichengreen and Sachs (1985) and Campa (1990).

\(^2\) A similar situation occurred in Mexico in 1994 when Ernesto Zedillo became the new president. Zedillo hoped to ease the pressure on the peso without being made responsible for reneging on a fixed exchange rate promise. Notwithstanding enormous economic risks and public declarations to the contrary, it should even be politically appealing to the Greek government under Antonis Samaras to leave the euro zone in 2012 (which would imply a devaluation), because it can put the blame on its European partners, especially on Germany.
pegged-exchange-rate system.” If there is political instability, the government’s perspective is more myopic and it may want to go for short term gains, possibly produced by monetary (or fiscal) stimulation. A resulting inflation would force the government to devalue the currency, if a currency crisis situation is to be avoided. This may have been the reason why the Italian government chose to conduct less stability-oriented policies than other European countries during the early 1980s; the Italian lira had to be devalued several times within the Exchange Rate Mechanism of the European Monetary System (EMS). There was a lot of political instability during the 1980s; on average, the Italian government changed more than once a year. Third, consider rent-seeking. Such behaviour by the government may have been another or contributing reason for accepting several orchestrated devaluations in Italy in the early 1980s. The web of grand corruption was only unveiled during the ”Mani Pulite” (Clean Hands) investigations beginning in 1992. Expansionary policies had facilitated corrupt activities by the major political parties hitherto forming the government.

The role of corruption becomes conspicuous when comparing countries in which political instability plays no role. Mexico and Chile in the mid-1970s are a suitable case for such a comparison. Despite economic turbulences Mexico was politically very stable; the Institutional Revolutionary Party made sure it regained power for a period of 71 years until the mid-1990s. In a different way, Chile was also politically stable during Pinochet’s dictatorship. However, there is a huge difference in the level of corruption in both countries.

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3 As in Bohn (2012), the following definitions are used: ”Corruption can be defined as the individual’s (illegal) attempt to reap private benefits from public office. ... [This paper] does not make a distinction on legal grounds with corruption being illegal and rent-seeking being the overarching concept including both legal and illegal activities. ... Petty corruption or bribery refers to government employees. Grand corruption means that the leadership uses its policy setting power for obtaining some personal advantage. This can take very different forms, for instance directly expropriating government funds [as in this paper], ... “

4 A similar argument could be made for Greece. Ignoring the huge economic risks, it should be attractive for the political elites in Greece to leave the euro zone in 2012 because it would allow them to preserve a corrupt and tax-evading system. This is how Greece is described, for instance, by Mitsopoulos and Pelagidis (2012); or by historian Heinz Richter in an interview (Sgries, 2012). In the Transparency International (2011) Corruption Perceptions Index 2011 Greece ranks 80th of all countries with a score of 3.4 on a scale from 1 to 10 with 10 representing a clean government. (As of the 1980s, there is no data on Italy, but in the first Transparency International report as of 1995 Italy scored 2.99.)
with governance being poor in Mexico, but markedly better in Chile (Gleditsch, 2008). In fact, Mexico conducted very expansionary fiscal policies. As a result, Mexico should be more likely to devalue than Chile. In 1976 Mexico did devalue, whereas Chile preserved a crawling peg regime.

Alesina and Wagner (2006) include political stability and governance as indicators of institutional quality and find that “typically ... better institutions are associated with more pegged [exchange rate] regimes”.\(^5\) Their paper can, however, not explain what happens\(^6\) when bad governance or grand corruption do not coincide with political instability – as in Mexico. We could also think of Indonesia’s 20-year-long period of fixed exchange rates until 1997. During that period, Indonesia was haunted by (grand) corruption and defective governance, which according to Alesina and Wagner would point towards floating exchange rates. Yet, the high level of political stability with Suharto in power for 32 years could be taken as support for Indonesia’s long period of fixed exchange rates.

This paper offers a stylised theoretical framework for capturing the trade-off between political instability and grand corruption. This is useful for two reasons. First, many of the empirical phenomena are not well described by existing empirical studies. Second, theoretical research either focuses on currency crises (Obstfeld, 1994 and 1996, and Wu (2008) or, as far as non-economic circumstances go, exclusively on institutional quality, which could be interpreted as petty corruption (Huang and Wei, 2006, Wu, 2008, and Hefeker, 2010). This paper (just like the latter papers) is based on a fiscal and monetary policy framework

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\(^5\) More precisely, Alesina and Wagner’s (2006) results suggest a “U-shaped relationship” according to which “countries that float tend to be either very low ... or very high in the institutional quality scale”. Hossain (2009) argues that the relevance of institutions for the choice of the exchange rate regime depends on the level of financial development. Edwards (1996) emphasises the role of political instability. Other reasons for the choice of the exchange rate regime are surveyed by Husain, Mody and Rogoff (2005), Carmignani, Colombo and Tirelli (2008), and Levy-Yeyati, Sturzenegger and Reggio (2010); for the choice of anchor currencies by Meissner and Oomes (2009).

\(^6\) And this applies more generally, not just for institutional variables. There is limited understanding in the choice of exchange rate regimes. "Perhaps the greatest disappointment is in the empirical modeling of causes of exchange rate regimes" is how Rose (2011, p. 655) puts it in his summary of Klein and Shambaugh’s (2010) book *Exchange Rate Regimes in the Modern Era.*
first suggested by Alesina and Tabellini (1987). How this paper is related to all aforementioned papers is discussed in the next section. Essentially, the model of this paper captures a government which strives for low inflation and high output, but also, explicitly, for grand corruption (greed). The more politically unstable, the more will a government try to exploit an output-enhancing inflationary surprise in the short run. This will have to be weighed against the loss from higher inflation in the long run. If the government is more corrupt, it will treasure the benefits more. It turns out that grand corruption and political instability both contribute to a government’s desire to devalue. However, this also means that two countries with a similar degree of political stability (like Mexico and Chile) could pursue different exchange rate policies.

The main purpose of this paper is to expose this intuition, an insight which has largely been neglected in previous discussions of motives for planned devaluations. The model captures the government’s optimal choice between flexible and fixed exchange rates while acknowledging that the economic costs produced by political instability on the one hand and grand corruption on the other hand may affect this choice in different ways. Grand corruption (greed) is seen as an explicit government objective. Political instability (impatience) can be incorporated by accounting for the intertemporal structure of the problem: reneging on a fixed exchange rate promise produces initial gains, but losses thereafter. The model is formulated in the most parsimonious way possible. However, the political cost of devaluation will be considered as an extension. Of course, reducing these costs (for instance, because somebody else can be blamed for the devaluation) makes a devaluation more likely.

The model is also stylised in two other respects. First, the model ignores any currency crisis dynamics. It is assumed that a currency crisis can be avoided because there are sufficient reserves and/or expectations do not support self-fulfilling prophecies leading to a currency crisis. In Mexico in 1994 or during the EMS period, market participants expected a devaluation with some degree (so-called Peso Problem). Asset prices were discounted; yet
there was no currency crisis which would force a devaluation. In fact, it may be the other way round. In Mexico in 1994, the devaluation "surprise" by the new government actually triggered a currency crisis in its aftermath and produced a new exchange rate much below the one that had already been priced in. During the era of the Exchange Rate Mechanism of the EMS, there were several "surprise" devaluations, especially of the Italian Lira. In the model, it is assumed that a devaluation always carries an element of surprise. What is more, the exchange rate is considered to be fully credible, a simplification which makes a devaluation appear overly beneficial, but does not change the qualitative results.

Planned "surprise" devaluations as we find them in reality have not yet been explained in rational expectations models. Wu (2008), for instance, studies devaluations under varying degrees of institutional quality and, basically, confirms Obstfeld’s (1994, 1996) multiple equilibria result. If a devaluation were planned, it would be rationally expected by agents and, therefore, lead to a currency crisis in those models. Rational agents can only be surprised, if they face an information asymmetry – as implicitly assumed in this paper. Alternatively, the aforementioned authors suggest to include a fixed reputational cost in the loss function in order to account for the reneging on a "credible" promise – as modelled explicitly here in an extension. This paper uses both of these avenues for achieving its objective of emphasising the motives for planned devaluations and their trade-offs. Nonetheless, the conclusion does suggest a strategy for future research which could lead to a model incorporating both planned "surprise" devaluations and currency crises.

Second, the model is also stylised because it focuses on a once and for all choice by the government between keeping the exchange rate fixed and giving it up. This is the cleanest way of studying the government’s intertemporal choice problem when the economic structure of each period is the same. If the government wanted to give up the peg in the future, it would prefer to do so now. If it wanted to go back to a fixed exchange rate, why should it give it up beforehand knowing that regaining credibility will be costly. The paper is, thus,
not about the optimal dynamic path or conditions for regaining credibility. It is about the government’s motives for giving up more stability-oriented monetary policies in favour of more inflationary policies. In the real world, this could reflect a switch from a peg to a crawling peg; or from a peg, a crawling peg or even a stable exchange rate preserved by dirty floating to fully flexible rates.⁷

The remainder of the paper is organised as follows. Section 2 presents the parsimonious model framework and embeds it in the literature. Section 3 discusses the time line and the alternative government strategies of keeping or giving up the fixed rate. Section 4 obtains the conditions for the government’s choice of a devaluation, presents them graphically, and interprets the results. Section 5 discusses two extensions. Taking account of the seigniorage effect of inflation makes a devaluation more likely; including the political cost makes it less likely. They do not change the key insights which are brought out more easily in the parsimonious setup of the original model. Section 6 concludes.

2 Political Economy Model

The model is based on the monetary and fiscal policy framework originally developed by Alesina and Tabellini (1987).⁸ More specifically, it combines elements of model versions used by Huang and Wei (2006), Wu (2008), Hefeker (2010) and Bohn (2012). In the model here, monetary policy is linked to alternative exchange rate regimes as in Wu (2008) and Hefeker (2010). In addition to the standard inflation and output objectives, government

⁷ Edwards (2000) argues that ”countries should opt either for floating or for super-fixity (currency boards or dollarization).” However, Calvo and Reinhart (2002) maintain that intermediate exchange rate regimes do matter. Reinhart and Rogoff (2004) support this view with their new classification of exchange rate systems. They also emphasise that a quarter of all exchange rates are crawling pegs.

⁸ A weakness of the original model as well as all successor models is that international linkages are neglected. Effects of the real exchange rate on trade are ignored since aggregate demand is not modelled. Nor are any financial market transactions captured by those models. As long as currency crises and competitive devaluations are not at their focus, this should not be a problem. However, when a currency crisis is modelled as in Wu (2008), using this approach is more problematic.
behaviour is also determined by an expropriation revenue objective which could be interpreted as grand corruption. This is similar to Bohn (2012). Here, however, expropriation cannot be financed by borrowing from the future as in Bohn (2012); instead, the budget must be balanced in each period as in Huang and Wei (2006), Wu (2000) and Hefeker (2010). This paper differs from those three papers in another respect though. To focus on grand corruption, budget revenues are only used for rent-seeking purposes, not for financing ordinary government spending or public goods.\textsuperscript{9} Corruption is costly in all aforementioned papers, but the government’s attitude towards corruption is different. In Wu (2008) and in the "basic set-up" of Huang and Wei (2006) corruption is exogenously given, whereas Hefeker (2010) and an extension of Huang and Wei (2006) give the government an instrument for fighting corruption. In Bohn (2012) and this paper, the government does not fight corruption; instead the government causes grand corruption.

The government’s linear quadratic loss function in period $t$ is thus assumed to comprise three components, deviation from desired inflation, deviation from hypothetical trend output, and expropriation revenue:

$$L_t = \frac{1}{2} \left[(\varepsilon_t)^2 + \theta(\bar{y} - y_t)^2 - \delta(\tau_t y_t)\right], \quad \theta, \delta > 0. \tag{1}$$

The government cares for inflation, for instance because inflation produces a deadweight loss and public discontent. The loss rises over-proportionately with increased inflation. The government is also concerned about output, for instance because a reduction in output causes unemployment, which, again, results in public discontent. The problem increases over-proportionately with more and more unemployment. Theoretically, equation (1) also implies a loss, if $y_t$ exceeds hypothetical trend output $\bar{y}$. However, due to the expropriation objective the government’s choice of $y_t$ will not lead to $y_t > \bar{y}$.\textsuperscript{10} The inflation objective (unit

\textsuperscript{9} Unlike this paper, Huang and Wei (2006), Wu (2008) or Hefeker (2010) focus on the inefficiencies in the government finance process created by petty corruption. For them, it is, therefore, crucial to model the government budget constraint more explicitly.

\textsuperscript{10} To model the government’s desire for higher output more explicitly, $k\bar{y}$ with $k > 1$ could be used. But
weight) and the output objective (exogenous weight $\theta$) capture the standard socio-economic objectives, here the government’s interest in the economy as a whole.

The third term in equation (1) reflects the government’s intention to exploit society. The government is assumed to desire as much as possible expropriation revenue which depends on government instrument $\tau_t$, the tax rate, times tax base $y_t$, the actual output. Expropriation revenue $\tau_t y_t$ is a gain, i.e. it enters negatively in the loss function. The exogenous weight $\delta$ the government puts on expropriation will be called greed. Three comments must be made. First, I abstract from the government’s choice on what else it could spend its revenue on. By simplifying the model I focus on the government’s choice between economic conditions (inflation and output) on the one hand and rent-seeking on the other hand while ignoring more complex public finance decisions.\(^{11}\) Second, seigniorage does not augment the expropriation revenue. This is a more serious caveat than the previous one, because one of the effects of one of the government’s instruments, inflation (as a shortcut for money growth), is ignored. This will be discussed in a model extension in Section 5. Third, the gain from expropriation enters the loss function linearly.\(^{12}\) This makes sense because the marginal benefit of rent-seeking should not increase in the amount of rent-seeking. In fact, one might think about a less than linear increase in marginal benefit. However, this is not necessary because what matters, qualitatively, is the difference in exponent between that is not necessary because expropriation entails the use of distortionary taxation which pushes output below its trend level. There is, therefore, still room for an output-enhancing monetary surprise, depicted as an inflation surprise in equation (2) or as a devaluation surprise in equation (4), respectively. Hence the qualitative results do not change.

\(^{11}\) One could think of, for instance, public investment versus public consumption; or public goods versus transfers; or corporate versus consumer taxation. Depending on the purpose of the paper, we find various approaches in this literature, in particular the following: (i), public finance decisions are ignored in, for instance, Barro and Gordon (1983) or Obstfeld (1996); (ii), they are modelled in terms of public goods only in, for instance, Alesina and Tabellini (1987) or Huang and Wei (2006); or (iii) they are captured in terms of expansionary fiscal policies in, for instance, Dixit and Lambertini (2003), Demertzis, Hughes Hallett and Viegi (2004), or Bohn (2012).

\(^{12}\) Although not very common, linear terms have been used in the loss function before, for instance in Barro and Gordon (1983), Walsh (2002), Dixit and Lambertini (2003) or Hughes Hallett and Weymark (2004). Often the quadratic specification is more convenient, but it depends on the justification. There is no a priori reason why quadratic terms should be superior.
the effects in the loss function of rent-seeking (linear and negative) and those of the social objectives (quadratic and positive). Essentially, the amount of rent-seeking is limited by the more and more disastrous effects of inflation and output losses.

Output is determined by a modified Lucas supply curve which incorporates the effect of distortionary taxation\(^{13}\):

\[
y_t = \bar{y} + \phi(\varepsilon_t - \hat{w}_t) - \psi\tau_t, \quad \phi, \psi > 0. \tag{2}
\]

Output \(y_t\) deviates from hypothetical trend output \(\bar{y}\) for two reasons: (i) wage inflation \(\hat{w}_t\) can differ from price inflation \(\varepsilon_t\); and (ii) there is a burden from tax rate \(\tau_t\) because taxes are distortionary. Wages are assumed to be based on expected price inflation:

\[
\hat{w}_t = \varepsilon^e_t. \tag{3}
\]

Hence the aggregate supply function looks as follows:

\[
y_t = \bar{y} + \phi(\varepsilon_t - \varepsilon^e_t) - \psi\tau_t. \tag{4}
\]

As in Obstfeld (1994 and 1996) and Wu (2008) I assume relative purchasing power parity to hold and normalise the foreign inflation to zero. We could interpret this as stability-oriented monetary policy in the big foreign (anchor) country leading to a zero inflation rate abroad. Hence expansionary monetary policies at home produce a rate of devaluation which corresponds to domestic inflation, both of them being denoted \(\varepsilon\). The monetary component

\[\text{\textsuperscript{13} The function is similar to the one used in Huang and Wei (2006). Such supply functions are typically derived from the maximisation problem of a competitive firm. The fiscal burden could be interpreted as distortionary tax on corporate income. See, for instance, Alesina and Tabellini (1987, appendix) or Wu (2008, pages 4 and 5). Equation (4) does not include random shocks which would be useful for explaining self-fulfilling prophecies and currency crisis dynamics. Since this is not the focus of this paper, there are no random shocks – as in the original Alesina and Tabellini (1987) model. Here, the government’s rational choice of monetary (or fiscal) policy – as outlined in the next paragraph – would not be affected qualitatively, if shocks were considered.}\]
in the supply function now captures any deviation of changes in the exchange rate from \textit{expected} changes in the exchange rate. Output cannot be boosted by a devaluation, if it is fully anticipated.

A consolidated loss function for period $t$ is obtained by inserting the constraint, i.e. supply function (4), into equation (1):

$$L_t = \frac{1}{2} \left[ (\varepsilon_t)^2 + \theta(-\phi(\varepsilon_t - \varepsilon^\phi_t) + \psi \tau_t)^2 - \delta(\tau_t(y + \phi(\varepsilon_t - \varepsilon^\phi_t) - \psi \tau_t)) \right].$$

(5)

The equation contains the exogenous parameters $\theta$, $\delta$, $\phi$ and $\psi$ and constant $\bar{y}$. For minimising its loss, the government must consider two trade-offs while using its monetary policy instrument $\varepsilon$ and its fiscal policy instrument $\tau$.\textsuperscript{14} By choosing a tax rate $\tau > 0$ the government can enrich itself. But higher taxes negatively affect output. So the first trade-off is between expropriation and output in every period. Note, however, that raising the tax rate also has a negative effect on the tax base $y_t$. As for monetary policy, it is assumed that the government can determine inflation, respectively the loss of the value of its currency. Creating a surprise inflation (i.e. private agents believe in a lower rate of inflation beforehand) can stimulate output because real wages and, thereby, production costs decrease. But it only works for one period because expectations will adjust. Thereafter, the government will be stuck with higher inflation rates, which imply continued devaluations. Thus, the second trade-off refers to output stimulation now versus higher inflation now \textit{and} in the future. Depending on the government strategy of complying or reneging in period T only one or both policy instruments can be employed. Fiscal policy is always possible, but monetary policy can only be used, if the government does not honour its peg; or if the exchange rate

\textsuperscript{14} It is implicitly assumed here that (i) the central bank is controlled by the government (as, for instance, in Agell, Calmfors and Jonsson, 1996); or (ii) the central bank is independent, but shares the government’s objective function. In any case, devaluation decisions are typically taken by the government, even if the central bank is independent. Furthermore, the qualitative results should not be affected, even if a conflict between independent monetary and fiscal authorities were modelled as, for instance, in Demertzis, Hughes Hallett and Viegi (2004). Consequently, a Rogoff (1985) conservative central banker should not matter for the results.
is flexible anyway. The intertemporal setup of the government’s problem and the formation of expectations of the rate of devaluation, \( \varepsilon_t \), will be discussed in the next section.

### 3 Two Intertemporal Government Strategies

The policy game played in period T is linked to the policy game in period T+1, etc. In that respect, the paper goes beyond the scope of most of the aforementioned papers.\(^\text{15}\) The periods are linked because the government’s decision to comply or to renege affects private agents’ devaluation expectations. In the following, it is assumed that, initially, the government in question made a credible commitment to keep exchange rates fixed. As already discussed, we abstract from the Peso Problem. Market participants do not expect a devaluation with some degree or even trigger a currency crisis. The government optimises on the basis of loss function (5). To determine whether to comply with or renege on its promise the government compares the losses in both cases (for both strategies) and calculates its net loss for each period. By introducing an effective discount factor \( \rho \) (in the next section) I can then consolidate the net losses of all periods and determine the overall gain from reneging (which may be positive or negative).\(^\text{16}\)

If the country commits to fixed exchange rates in period T monetary policies are necessarily stability-oriented. Expansionary monetary policies are not possible as they would only result in pressure on the exchange rate which would require foreign exchange market interventions, thus offsetting the expansionary policies. In a stylised setting with zero inflation abroad, this

\[^{15}\] Alesina and Tabellini (1987), Huang and Wei (2006), Wu (2008), Hefeker (2010) and Bohn (2012) all present single period analyses. As in Méon and Rizzo (2002), however, the budget must be balanced each period and output changes in one period do not have capacity effects for the following period.

\[^{16}\] Formally, one could also calculate the overall gain by solving the following minimisation problem for both government strategies \( s \), the complying strategy \( c \) and the reneging strategy \( r \):

\[
\min L^s = \sum_{t=T}^{\infty} \rho^{t-T} L_t^s \quad \text{with} \quad s = c, r.
\] (6)
means there will be no inflation at home either. Therefore, private agents will not demand wage rises. Once wage bargaining is complete, however, the government can decide, if it will go along with its promise or renege on it. If it reneses, there will be short-term effects (compared to complying), because real wage costs decrease and output expands. Raising output above its optimal level will prompt the government to make adjustments in its optimal choice of policy, in particular it will be able to increase the tax rate in period $T$, $\tau_T$, which, in turn, has a negative impact on output.

The time line of events looks as follows. In period $T$, there is wage bargaining first, then the government’s decision to comply (thus defining the complying strategy) or renege (reneging strategy). The outcome of the wage bargaining in $T+1$ and all following periods is determined by the agents’ devaluation expectations which, in turn, are based on the government’s period $T$ decision. In period $T+1$ and thereafter, the government will minimise its loss while taking the wage bargaining process as a given.

For simplicity, I assume that the government has only got one chance of reneging in period $T$. If it does, it is stuck with a flexible exchange rate in the future. The government can no longer exploit the private agents’ trust. From $T+1$ onwards, agents correctly expect the inflationary policies of the government and demand wage increases accordingly. Going back to fixed exchange rates is not possible, because the presence of inflationary wages means that the government’s stability-oriented policies would only cause real wage increases and output losses. Thus it is optimal for the government to stick to the high inflation (devaluation) strategy. I also assume that complying in period $T$ means complying in all future periods. The argument is that, if it were optimal for the government to comply in period $T$, there would be no reason why it should not be optimal in $T+1$ or thereafter.

Consider what happens in the complying strategy. There are no demands for wage increases and the government sticks to monetary commitment throughout. In period $T$ as well as in periods $T+1$, $T+2$, ... it optimises with respect to the tax rate only. This way the
government can gain from expropriation, although an increase in the tax rate also has a counterveiling output-reducing effect, thus lowering the tax base. Overall, the government trades off the negative output effect for the positive expropriation revenue effect. The government’s optimisation problem, the optimal tax rate, and the resulting loss in each period, which actually is a gain, is outlined in appendix A.

Next, let us look at the reneging strategy. The government reneges on its monetary commitment in period T which leads to a permanent switch to flexible exchange rates. In period T agents do not ask for a wage increase because they still believe in the government’s promise. Once wage bargaining is complete, the government (re-)optimises with respect to tax and inflation rates (see appendix C – sufficient conditions are given in appendix B). The government can boost output by increasing inflation above the expected level. While doing so, it is optimal to increase the tax rate which, in turn, damages output. Overall, there is an increase in output in period T though. In period T+1 agents do not trust the government and demand a wage increase in accordance with the government’s optimal ex post decision irrespective of any ex ante promises of future monetary policy. Therefore, the government optimises while validating private agents’ expectations (see appendix D). Inflation is higher now, but there is no beneficial effect on output. Hence the tax rate is set optimally at the same level as for the complying strategy.

The loss for the reneging strategy is different in T compared to the subsequent periods. In period T, there is – compared to the complying strategy – an additional inflation loss, but it is more than offset by inflation expectation induced gains in output (which also affect the expropriation revenue). At the same time, the increased tax rate means a stronger disincentive effect for output. Nonetheless, the combination of inflation surprise and improved expropriation possibilities guarantees that there is no loss, but an unambiguous gain in period T. In period T+1 and all other future periods, taxes are back to ”normal” (complying strategy level) even though inflation has increased (with inflation correctly being
anticipated). Therefore, inflation expectation induced gains and additional tax induced disincentive effects are gone after period $T$. As a result, the gain in $T+1$, $T+2$, etc. is smaller, maybe even turns into a loss.

We can now compare the two strategies quantitatively in each period. Concerning any future period ($T+1$, $T+2$, etc.) the loss for the complying strategy is smaller than the loss for the reneging strategy. Permanently switching to flexible exchange rates produces a higher loss because of the additional loss from inflation. There are no offsetting positive effects. It would, therefore, be advantageous to keep the monetary commitment. The gain in each future period $G_t$ ($t = T+1, T+2, ...$) from reneging is negative. It can be defined as the difference of the losses from complying and reneging (equations (A.3) and (D.4) from the appendix):

$$G_t = L_t^c - L_t^r = -\frac{A}{B^2} < 0 \quad t = T+1, T+2, ... .$$

(7)

with

$$A = \frac{1}{2} (\frac{1}{2} \delta \bar{y})^2 \psi^2 (\theta \psi + \frac{1}{2} \delta)^2 > 0,$$

$$B = \psi (\theta \psi + \delta) > 0.$$ 

The situation is very different when comparing the complying and the reneging strategies in period $T$. Effects are countervailing. The reneging strategy, again, bears the additional inflation loss. However, there are also the aforementioned positive and negative induced output and revenue effects: positive effect of surprise inflation; positive effect of increased tax; (negative) disincentive effect of the tax increase on output and revenue. Nonetheless, the comparison for period $T$ turns out to be unambiguous as well. The gain in period $T$ from reneging is positive (given that $B - C$ must be positive; see derivation and discussion in appendix B). It can be defined as the difference of the losses from complying and reneging
(equations (A.3) and (C.4) from the appendix):

\[ G_T = L^e_T - L^r_T = \frac{A}{B(B - C)} > 0 \]  \hspace{1cm}\text{(8)}

with

\[ C = \phi^2 \left( \frac{1}{2} \right)^2 \delta^2 > 0, \]

\[ B - C > 0 \quad \text{according to appendix B.} \]

Reneging on the monetary commitment is advantageous in period T because the gain from increases in terms of output and expropriation revenue dominate the additional inflation loss. Intuitively, an optimising government would not be willing to incur a loss in future periods T+1, T+2, etc., if it could not gain from reneging in current period T.

4 Greed, Impatience and Overall Gain

So far, we know that reneging produces a net gain in period T and a net loss in all future periods – compared to the complying strategy. To determine which strategy is more advantageous for a government overall (and hence chosen by it) we must make assumptions about how the government discounts its future. It is straightforward to assume a constant time preference rate. However, the effective discount factor \( \rho \) (0 < \( \rho \) < 1) will also be influenced by the government’s chances to stay in power. This may depend on more or less rigged elections (as during Mubarak’s 30-year rule in Egypt until 2011; or under the 71-year rule of the Institutional Revolutionary Party in Mexico) or on the chances for a revolution or a coup d’état (as, for instance, in many Latin American countries in the 1970s or 1980s). In any case, modelling the chance to stay in power as a response to the government’s behaviour is difficult and somewhat arbitrary. Even in democracies election outcomes are often strongly influenced by random events like foreign policy incidents, terror attacks (e.g.
Madrid bombings in Spain in 2004) or natural disasters (e.g. flooding of the river Oder in Germany in 2002). A simpler alternative is to assume a constant (or variable) exogenous chance of losing power in each period. Even more simplistically, one could model the chance of losing power just once. No matter how this is modelled, incorporating political instability into the analysis has only one effect: the effective discount factor $\rho$ is reduced.\footnote{Méon and Rizzo (2002) discuss the effects of political instability on a government’s choice of the exchange rate regime; Bohn (2007) on a government’s public finance decision.} Following Edwards (1996) I assume, therefore, that the effective discount factor is a function of political instability. So, effective discount factor $\rho$ subsumes (i) normal time preference; and (ii) political instability. Henceforth, the terms effective discount factor, impatience and political instability will be used interchangeably.

Assuming a constant effective discount factor $\rho$, it is straightforward to obtain the overall gain $G^O$ from a permanent switch to flexible exchange rates. It is the net gain in $T$ minus the discounted net losses (negative gains) in all future periods $(T+1, T+2, \text{etc.})$:

$$G^O = G_T + \sum_{t=T+1}^{\infty} \rho^{t-T} G_t = \frac{A[(1 - 2\rho)B + \rho C]}{B^2[B - C](1 - \rho)}$$

with

$$A = \frac{1}{2} \left( \frac{1}{2} \bar{y} \right)^2 \phi^2 (\theta \psi + \frac{1}{2} \delta)^2 > 0,$$

$$B = \psi (\theta \psi + \delta) > 0,$$

$$C = \phi^2 \left( \frac{1}{2} \right)^2 \delta^2 > 0,$$

$$B - C > 0 \quad \text{according to appendix B.}$$

The exogenous parameters $\theta$, $\delta$, $\phi$ and $\psi$ as well as exogenous discount factor $\rho$ determine, if the overall gain of switching is positive or negative. Hypothetical trend $\bar{y}$ only matters for the
magnitude of the overall gain or loss. If the overall gain is positive the government chooses to switch to flexible exchange rates in period T and sticks with flexible rates thereafter. If there is a negative gain, the government chooses to uphold its fixed exchange rate commitment indefinitely.

Since the effective discount factor (including political instability) is constrained \((0 \leq \rho < 1)\) the denominator must be positive. The numerator is positive for \(\rho \leq \frac{1}{2}\), but may or may not be positive otherwise:

\[
G^O > 0 \iff \rho < \frac{1}{2} + \frac{C}{2(2B - C)} \quad (10)
\]

with \(0 \leq \frac{C}{2(2B - C)} < \frac{1}{2}\) since \(B > C\) according to appendix B.

For given exogenous parameters \(\theta, \phi\) and \(\psi\), equation (10) establishes a relationship between \(\rho, \delta\) and \(G^O\) which is sketched in Figure 1 below. As the government becomes more and more greedy, i.e. \(\delta\) goes up, it expropriates the economy more and more by increasing tax rate \(\tau_t\), thereby choking back output. \(\delta\) approaches its Supremum \(\delta^{\text{max}}\) for \(B \rightarrow C\). The limiting case \(B = C\) defines a quadratic equation in \(\delta\) which has only one positive root, \(\delta^{\text{max}}\). It can be shown that \(\delta\) must be smaller than \(\delta^{\text{max}}\). The overall gain \(G^O\) goes to infinity for \(\delta\) approaching \(\delta^{\text{max}}\), but decreases for smaller values of \(\delta\). Realistically, we cannot be close to \(\delta^{\text{max}}\), however, because there would be a lasting effect on output capacity and hence output in the following periods. This is not envisaged in this model. We should also assume that the effective discount factor is below, say, .95, even if there is no political instability at all (due to normal time preference considerations).

Figure 1 shows the region of positive overall gain in a \(\rho - \delta\) diagram. As long as \(\rho \leq \frac{1}{2}\) (extreme discounting), the overall gain will always be positive. This means that a fixed exchange rate regime can never be an option for a rational government in a very unstable environment. For \(\rho > \frac{1}{2}\), the overall gain will turn negative at some stage for decreasing
values of δ. A smooth and slightly concave curve connecting the points \((\frac{1}{2}, 0)\) and \((1, \delta_{\text{max}})\) defines the border between positive (above) and negative overall gains (below). This implies that even a very greedy government would want to stick to fixed exchange rates, as long as there is very little political instability. It would also be rational to keep fixed exchange rates, if greed is low, even though there is quite a lot of political instability (but \(\rho > \frac{1}{2}\)). Between those two extremes, political stability can be traded off for greed.

Figure 1: Greed and Impatience

![Figure 1: Greed and Impatience](image)

5 Extension: Seigniorage and Devaluation Cost

There are two natural extensions to make the model more realistic; the inclusion of (i) seigniorage as a government revenue; and of (ii) a political cost of devaluation. Not only does expansionary monetary policy produce inflation and, possibly, an inflation surprise, but it also has a revenue effect (seigniorage) and means a loss of reputation for previously promised stability of the money supply and the exchange rate (political cost). As for seigniorage, this is, clearly, an additional advantage of switching to flexible exchange rates.
Future expansionary policies (resulting in continuous devaluations) raise, in every period, an inflation tax which can then be expropriated by the government. To get an idea of the effect of seigniorage on our model predictions we follow the modelling strategy first employed by Canzoneri (1985, p. 1059). It allows us to express (real) seigniorage $S$ as \( S = \varepsilon Y \).\(^{18}\) 

The political cost of devaluation is modelled as an extra cost $C(\varepsilon_t)$ in the loss function as in Obstfeld (1994, 1996) or Wu (2008). However, it does not have to be a fixed cost as in their papers; instead, the cost may differ depending on the magnitude of the devaluation. In the Wu (2008) paper the political cost is necessary to ensure that complying may at all be advantageous for the government. The intertemporal structure of this paper highlights the fundamental trade-offs between complying and reneging. It may be optimal for the government to comply, even if the political cost is not considered. This is a strength of this paper. As for the results, including the political cost only changes them quantitatively.

Both model extensions are included in the new objective function (replacing equation 1):

\[
L_t = \frac{1}{2} \left[ (\varepsilon_t)^2 + \theta (\bar{y}_t - y_t)^2 - \delta (\varepsilon_t + \tau_t) y_t \right] + I \ C(\varepsilon_t), \quad t = T, T + 1, \ldots, \quad (11)
\]

\[
I = \begin{cases} 
1 & \text{if } \varepsilon_t > \varepsilon^*; \\
0 & \text{otherwise.}
\end{cases}
\]

$I$ is an indicator function which takes the unit value in the year the government reneges on its fixed exchange rate promise.

\(^{18}\)In the model, $\varepsilon$ represents both the rate of devaluation and inflation. It depicts the inflation tax rate; real output $Y$ is the tax base. The seigniorage equation can be obtained by using the simplified quantity theory expression $M_t = Y_t P_t$ and some form of nominal neutrality approximation (for instance, $\varepsilon_t = \frac{M_t - M_{t-1}}{M_t P_t}$), where $M$ refers to the money supply and $P$ to the price level. From the definition of (real) seigniorage we can then obtain: $S_t \equiv \frac{M_t - M_{t-1}}{P_t} = \frac{M_t - M_{t-1}}{M_t} \frac{M_t}{P_t} = \varepsilon_t Y_t$. The same kind of approximation is used by Alesina and Tabellini (1987, p. 622, footnotes 6 and 7), Hughes Hallett and Weymark (2004), Huang and Wei (2006), Wu (2008), and Hefeker (2010). Nonetheless, it should be noted that the revenue effect of seigniorage decreases for higher rates of inflation (Cagan, 1956). This means that the effect favouring the reneging of the exchange rate peg is overstated.
Results for the two extensions will be discussed separately. Including seigniorage complicates the analysis significantly, but only for the reneging strategy. The solution of the complying strategy does not change, because (stylised) stability-oriented monetary policy produces zero inflation and, thus, no seigniorage. It is intuitively clear, that the reneging strategy should now be more advantageous compared to the original model because accounting for seigniorage implies an additional (positive) revenue effect. It can, therefore, be shown that the period $T$ gain from reneging becomes more positive ($>\times$) when seigniorage ($seig$) is included.\textsuperscript{19} Compared to the original model, the loss in all other periods ($t = T+1, T+2, ...$) is reduced ("<'") and could even turn into a gain (\textgreater) for specific parameter constellations.

\[ G_T^{seig} >\times 0, \quad G_t^{seig} \quad < \quad or \quad > \quad 0, \quad t = T + 1, T + 2, ... \quad (12) \]

By implication, the overall gain becomes more positive for given parameter values. The region of positive overall gain in Figure 1 expands; the demarcation line moves to the right. It is even possible that reneging becomes always optimal.

Including a political cost for giving up a peg means that the period $T$ gain from reneging is reduced. Depending on the magnitude of those costs the demarcation line would shift more or less far to the left. Both extensions produce countervailing effects, but the logic of the argument of the original model does not change. The results are only affected quantitatively.

6 Conclusion

In an extended Alesina and Tabellini (1987) model I have investigated a government’s rational choice of honouring or reneging on a fixed exchange rate peg. Ceteris paribus, higher levels of greed favour a devaluation, because the increase in taxes made possible by a surprise inflation is valued more. However, the results suggest that it can be rational for

\textsuperscript{19} The lengthy computations can be obtained from the author upon demand.
the government to stick to fixed exchange rates despite high levels of greed, if there is a lot of political stability (little impatience). Conversely, low levels of political instability (i.e. little impatience) tempt a government to forego the short run benefit in favour of the long run advantage of low inflation. In other words, the government would want to comply with the fixed exchange rate regime as, for instance, in the case of Chile in the 1980s. However, it can be rational for a government to renege despite high levels of political stability, if the government is very greedy. This would be the case, for instance, of Mexico during the same period.

Furthermore, one of the extensions in the paper suggests that the political cost of devaluation plays a role for the governments decision to renege or not on its given fixed exchange rate promise. If the blame can be put on the political opposition or a foreign institution, a devaluation becomes much more likely. If there were not such disastrous economic repercussions, the Greek government would be a prime candidate for wishing to step out of the euro zone: the political cost is small because the blame can be put on the troika or Germany. At the same time, the government is not willing to stop rent-seeking (tax evasion); and the political situation is not very stable.

The model and its results could also be understood in another way. We could reinterpret expropriation as the desired level of expenditure in big welfare states. Obviously, a fuller model would be required to capture the demand side including government spending. As the model stands, it may, nonetheless, point at bigger welfare states with an unstable political system finding it more difficult to maintain a fixed exchange rate regime. Again, Italy as of the early 1980s might serve as an example.

Model extensions could basically go in two directions: refining the existing model; or incorporating new aspects. First, there is plenty of scope for studying feedback effects. This could be between political stability and grand corruption on the one hand and economic performance on the other hand. This could also be between grand corruption and political
instability. Their impact on the government’s decision on reneging on the exchange rate peg may differ, but they are not necessarily two independent events. Arguably, a more corrupt government would also tend to be a more unstable one, unless other factors limit the possibility of a change of government (for instance because the government uses a lot of resources to control the opposition). If corruption and political instability are related, the choice facing the government might change considerably. It might be in the interest of a corrupt government to limit the amount of state capture/grand corruption through a fixed exchange rate policy, if this increased the probability of remaining in power. Or, on the contrary, a government that faces no risk of loosing power might not have any incentive to achieve macro economic stability, but simply aim at the maximum possible amount of state capture (Zimbabwe is the case in point). Modelling explicitly the political process and the political constraints faced by a corrupt government offers opportunities for future research.

As for the second direction, one could think of combining government motives for planned devaluations with market-driven devaluations. Wu (2008), for instance, studies devaluations under varying degrees of institutional quality and, basically, confirms Obstfeld’s (1994,1996) multiple equilibria result. In those cases, however, the set-up does not allow for planned “surprise” devaluations as we observe them in reality. If a devaluation were planned, it would be rationally expected by agents and, therefore, lead to a currency crisis in those models. The challenge is to model rational agents, but allow for surprise devaluations, nonetheless. The relevance of planned devaluations has been demonstrated in this paper. It has been shown that there are trade-offs between different reasons: political instability, grand corruption and low reputational costs.

How can we combine the real world feature of planned ”surprise” devaluations with rational agents? One way to model it would be to change the sequence of events. If private agents form their expectations before shocks are realised, the government may have a motive to surprise them. However, it is not very realistic to assume that the government can respond
to an output shock before private agents can adjust their expectations. Therefore, we should think in terms of a shock to the government’s behaviour, for instance its attitude towards grand corruption (for instance, the greed parameter in the model); or, differently, government competence. Such competence shocks were suggested by Rogoff and Sibert (1988) in the context of political business cycles. They could justify planned "surprise" devaluations and currency crises at the same time, even without the existence of output shocks.

References


Carmignani, Fabrizio, Emilio Colombo, and Patrizio Tirelli (2008), Exploring Different Views of Exchange Rate Regime Choice, Journal of International Money and Finance,


Hughes Hallett, Andrew, and Diana N. Weymark (2004), Independent monetary policies and social equity Economics Letters 85, 103-110.


Appendix

A Complying Strategy

The government’s minimisation problem is identical in all periods:

$$\max_{\tau_t} L_t \quad \text{s.t.} \quad \varepsilon_t = 0 \quad t = T, T + 1, T + 2, \ldots$$

$$\iff \max_{\tau_t} \frac{1}{2} \left[ \theta \psi^2 \tau_t^2 - \delta (\tau_t \bar{y} - \psi \tau_t^2) \right] \quad t = T, T + 1, T + 2, \ldots\quad (A.1)$$

The optimal tax rate in each period is:

$$\tau_t^* = \frac{\frac{1}{2} \delta \bar{y}}{B} \quad t = T, T + 1, T + 2, \ldots \quad (A.2)$$

with

$$B = \psi (\theta \psi + \delta) > 0,$$

For the complying strategy $c$, the loss in current period $T$ and each future period is the same:

$$L_t^c = L_T^c = -\frac{1}{2} \left( \frac{1}{2} \delta \bar{y} \right)^2 B \quad t = T + 1, T + 2, \ldots \quad (A.3)$$

B Sufficient Condition for Reneging Strategy, Period T

To ensure that our problem is a well-defined minimisation problem, we have to check the semi-definiteness condition. For instance, we have to verify for period $T$:

$$L_{\tau_T \tau_T} L_{\varepsilon_T \varepsilon_T} > (L_{\varepsilon_T \tau_T})^2$$

$$\iff \psi (\theta \psi + \delta) > \phi^2 \left( \frac{1}{2} \right)^2 \delta^2 \quad (B.1)$$
This condition will be imposed. It implies that the denominator \(B - C\) in equation (C.4) is positive:

\[
B = \psi(\theta\psi + \delta) > 0, \quad C = \phi^2(\frac{1}{2})^2\delta^2 > 0.
\]

The semi-definiteness condition guarantees that we do not end up in a saddle point instead of a minimum. This would happen, if \(B - C < 0\). As an example consider \(\psi\) small (at the limit, \(\psi \to 0\)). This means that the disincentive effect of taxation becomes so small, that taxation does basically not have any bounds. Our optimisation would produce the maximal value in the \(\varepsilon\) dimension, but the minimum value in the \(\tau\) dimension. Without exploiting the tax instrument we would end up with a negative gain in all periods, \(G_t, t = T + 1, T + 2, \ldots\) (see the end of section 3). Any increase in taxation would reduce the loss.

\section{Reneging Strategy in Period T}

The government’s minimisation problem in period \(T\) is:

\[
\max_{\tau_T, \varepsilon_T} L_T \quad \text{s.t.} \quad \varepsilon_T^e = 0
\]

\[
\iff \max_{\tau_T, \varepsilon_T} \frac{1}{2} \left[ (\varepsilon_T)^2 + \theta(-\phi\varepsilon_T + \psi\tau_T)^2 - \delta(\tau_T(\bar{y} + \phi\varepsilon_T - \psi\tau_T)) \right]
\]

The optimal tax and inflation rates in period \(T\) are:

\[
\tau_T^* = \frac{1}{2}\delta\bar{y}(1 + \theta\phi^2)\left( \frac{B}{B - C} \right)
\]

\[
\varepsilon_T^* = \frac{1}{2}\delta\bar{y}(1 + \theta\phi^2)\phi(\theta\psi + \frac{1}{2}\delta)\left( \frac{B}{B - C} \right)
\]

with

\[
B = \psi(\theta\psi + \delta) > 0,
\]

\[
C = \phi^2(\frac{1}{2})^2\delta^2 > 0.
\]

\[
B - C > 0 \quad \text{according to appendix B.}
\]
For the reneging strategy $r$, the loss in current period $T$ is:

$$L_T^r = -\frac{\frac{1}{2}(\frac{1}{2} \delta \bar{y})^2(1 + \theta \phi^2)}{B - C} \quad \text{(C.4)}$$

## D Reneging Strategy in the following periods

The government’s minimisation problem in the following periods is:

$$\max_{\tau_t, \varepsilon_t} L_t \quad \text{s.t.} \quad \varepsilon_t^c = \varepsilon_t \quad \text{for} \quad t = T + 1, T + 2, \ldots .$$

$$\iff \max_{\tau_t, \varepsilon_t} \frac{1}{2} \left[ (\varepsilon_t)^2 + \theta(\varepsilon_t^c - \varepsilon_t^c) + \psi \tau_t)^2 - \delta(\tau_t(\bar{y} + \phi(\varepsilon_t^c - \varepsilon_t^c) - \psi \tau_t)) \right]$$

$$\quad t = T + 1, T + 2, \ldots . \quad \text{(D.1)}$$

The optimal tax and inflation rates in each period are:

$$\tau_t^* = \frac{\frac{1}{2} \delta \bar{y}}{B} \quad \text{for} \quad t = T + 1, T + 2, \ldots . \quad \text{(D.2)}$$

$$\varepsilon_t^* = \frac{\frac{1}{2} \delta \bar{y} (\theta \psi) + \frac{1}{2} \delta}{B} \quad \text{for} \quad t = T + 1, T + 2, \ldots . \quad \text{(D.3)}$$

with

$$B = \psi(\theta \psi + \delta) > 0,$$

For the reneging strategy $r$, the loss in each future period is:

$$L_t^r = -\frac{\frac{1}{2}(\frac{1}{2} \delta \bar{y})^2}{B} + \frac{\frac{1}{2}(\frac{1}{2} \delta \bar{y})^2 \phi^2(\theta \psi + \frac{1}{2} \delta)^2}{B^2} \quad \text{for} \quad t = T + 1, T + 2, \ldots . \quad \text{(D.4)}$$