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FISCAL ADJUSTMENTS AND SOVEREIGN DEFAULT IN DIFFERENT GOVERNMENT SYSTEMS

LUÍS PEDRO ERMIDA VINHA FONSECA

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Professor José Tavares

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Fiscal Adjustments and Sovereign Default in Different Government Systems

Luís Fonseca*

Abstract

This paper extends the model of Spolaore (2004) about adjustments in different government systems for the context of fiscal adjustments and sovereign default. We introduce asymmetry between groups in income and preferences towards fiscal reforms. Default affects differently each group and becomes a possibility if reforms are not enacted after public finance solvency shocks, influencing the political game according to its likelihood. With the extensions, new situations which were not possible with the previous framework arise. After the exposition of the model, the Argentine default in 2001 provides an example of the political conflicts addressed by the model.

Keywords: fiscal adjustments; sovereign default; war of attrition; Argentina

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1 Introduction

Fiscal discipline has been a challenge for many governments. In 2007, before the global recession, the public debt of seven of the 13 members of the Eurozone exceeded 60% of GDP, the limit set in the Maastricht Treaty. In 2010, 12 out of 16 were above the threshold.[1] Other large economies, such as Japan, the United States or the United Kingdom also face problems and are discussing how to proceed with the adjustments. Reforms are necessary, but it is not always easy to enact them. Even if the electorate does not punish reforming politicians, the power of certain groups or the risk aversion of politicians may be enough to create inaction (Alesina et al., 1998). When countries fail repeatedly to enact fiscal reforms, their creditworthiness is questioned and the possibility of a sovereign default or restructuring emerges. The threat of default does not affect every individual equally, which implies that the political conflict is affected by how likely this threat becomes.

Reinhart and Rogoff (2009) showed that across time, "serial default[2] on external debts is the norm throughout every region in the world". Despite this, until recently, default was not seen as a threat for developed economies. Since the aftermath of World War II until the the recent European sovereign debt crisis, no government of an advanced economy defaulted or restructured its debt. These events were concentrated mostly in Africa, Asia, Eastern Europe and often in Latin America (Reinhart and Rogoff, 2009). The sudden shock of the global financial crisis and then the sovereign debt crisis opened the way for serial default to occur in vulnerable high-income countries. Many countries are facing austerity programs. Greece has restructured its debt. Several others are having troubles refinancing their debt.

The political conflicts about the decisions over austerity and default have been very visible. In Greece, protests and strikes have been frequent and large. All the European countries with a major crisis have seen a change in government in 2011.

[1] Malta, Cyprus and Slokavia joined the Eurozone during this period. Estonia became the 17th member in 2011. Data retrieved from Eurostat. General government consolidated gross debt.

[2] Repeated sovereign default

While it is still too early to analyse the struggle within these societies, an interesting case study is provided by Argentina. The default by its government in 2001 was the largest in history and came after a decade of apparently successful macroeconomic policies. Despite or because of the good performance, politicians delayed addressing fundamental problems with the economy. When these could not be avoided any longer, a very interesting conflict arose, leading to the eventual default.

This paper will extend an existing framework to analyse the decisions of adjustment in the context of conflict among interest groups. Spolaore (2004) proposes a model for a generic adjustment with symmetric groups. We introduce asymmetry between the groups through income and preferences towards fiscal reforms. We also introduce the possibility of default, which, by affecting differently the groups, will change the political game. With the extensions, we are able to find new situations which were not possible with the previous framework. We also highlight the concept of the war of attrition as key to the delays that eventually lead to sovereign default. At the end, the analysis of the Argentine default at the turn of the century will provide an example of the conflicts addressed by the model. With these additions to existing frameworks, this paper hopes to contribute to the growing literature about the political economy of sovereign debt and default.

2 Literature review

Many sovereign debt crises occur after unsustainable policies and due to the lack of good reforms. This is why the political economy of stabilization measures and fiscal adjustments is crucial to our work. Alesina et al. (1998) and Alesina et al. (2011) conclude empirically that governments that enact fiscal adjustments are not systematically punished by the electorate. This suggests that it is not the lack of popularity of reforms that leads to inaction, but the interactions between different interest groups

and the political economy behind the adjustments.[3] Alesina and Drazen (1991) is the seminal article about timing of stabilization reforms with political conflict. In their work, they show how even in a situation where everybody benefits and agrees with a reform, it may still be delayed in a context of uncertainty about relative costs. That occurs because the groups try to shift the costs of the reform to others, creating a war of attrition. This effect also occurs in Spolaore (2004), on which we will base our approach. In that model, n groups care about the evolution of a certain variable and there are n policy reform instruments that set the variable to their common desired value. A reform has a common cost to all groups and a specific cost to a single group depending on instrument chosen. The framework is used to evaluate how different government systems enact policy reforms. The ideas presented in these papers regarding the interaction between different groups will be a major influence in this work. Both in the cases of Alesina and Drazen (1991) and the consensus system in the work by Spolaore (2004), a higher level of political polarization will lead to a later and costlier adjustment, which underlines the influence of the political process in economic decisions.[4]

Regarding sovereign debt, the literature focuses on explaining the conditions in which countries respect or default on their obligations. Implicit in the research is fundamental question of why there is private lending to sovereign entities. When dealing with private entities, creditors have enforceable legal rights and a well-defined claim to the assets in case of insolvency. Those rights are considerably weaker in the case of a default by a sovereign entity since there are no institutions that can enforce payments or asset transfers to creditors. This suggests that in this context, the willingness to repay is just as important as the ability (Reinhart and Rogoff, 2009). Without a cost to defaulting, countries would be too willing to do so but

[3] E.g. Tavares (2004) shows that the success of different fiscal adjustments depends on which ideological group is behind the adjustment.

[4] Alesina et al. (2006) give empirical backing to the war of attrition model to explain the timing of reforms. Fabrizio and Mody (2010) also give empirical support to both Alesina and Drazen (1991) and Spolaore (2004).

lenders would not be interested in providing credit (Borensztein and Panizza, 2008). Researchers have been exploring the sources of these costs. Most of the literature in the field has its roots on two works: Eaton and Gersovitz (1981) and Bulow and Rogoff (1989). Eaton and Gersovitz (1981) present a model in which countries are subject to income shocks and can smooth their consumption by lending and borrowing in financial markets in good and bad years. They argue that defaulting countries pay reputational costs by being excluded from future borrowing. The threat induces countries to repay. Bulow and Rogoff (1989) argue that reputational costs are not enough to deter defaults, because countries can invest the money destined for repayment, obtaining interest and achieving a strictly higher level of consumption in future periods. They reason that sanctions, such as trade embargoes, are the mechanism which leads countries to respect their commitments.[5]

After the initial developments in the field, many researchers started focusing on the political aspects of sovereign debt repayment,[6] with two main insights.[7] The first is that in many instances defaulting countries have the economic capacity to pay their entire debt, but the political costs of introducing the necessary measures are too high.[8] The second is that reputational costs and sanctions are not necessary to explain sovereign debt, for even in their absence there may be political equilibriums that lead to repayment. Guembel and Sussman (2009) present a framework in which debt is owned both by foreign and domestic agents. Even in the absence of penalties for defaulting, a country may prefer not to, because while all domestic individuals

[5]Borensztein and Panizza (2008) discuss additional channels that incentivise repayment. When a large portion of the holders of government debt are domestic lenders, a sovereign default can damage the domestic economy and banking sector. They also find evidence of a political cost, as defaults seem to lead to a higher rate of change in governments.

[6]Shapiro (1985) is among the first to mention the idea of a default motivated by political aspects. Brewer and Rivoli (1990) studied countries' perceived creditworthiness and found a significant impact of measures of political stability, which were absent from previous studies.

[7]Readers looking for a detailed literature review can find one in Hatchondo and Martinez (2010).

[8]Andreasen et al. (2011) present a political economy model that distinguishes three types of defaults: one in which governments are economically unable to pay their debt, other in which the government is able to to pay but does not find enough political support to implement the necessary measures and other in which the government is both able to pay and has enough political support, but decides not to pay because default maximizes the aggregate welfare.

will have to share the cost of repayment, the wealthier of them will hold bonds and so share some of the benefits with the foreign creditors. If there are enough of them, political support for repayment may emerge. The influence of the income differences between domestic agents will be an important aspect of our work too.

3 Model

3.1 The basic setup

We will develop an extension of the model in Spolaore (2004). Consider an economy with two groups of risk-neutral agents, the rich and the poor. At times, this economy is subject to public finance solvency shocks. These shocks can be caused by internal or external economic events such as recessions or loss of competitiveness and call into question the ability of the government to service its debt.[9] A shocks costs $z > 0$ to both groups. Each time one occurs, groups must decide whether to do nothing and bear the cost, or to set $z = 0$ through a reform. In the case of public finance, reforms (or adjustments) are programs of fiscal austerity. Such programs entail a general adjustment cost for each group, c_i, $i = \{R, P\}$ as well as a specific cost to one of the groups, depending on the instrument used for the reform. We will assume there are two available instruments: additional austerity measures on the poor or expropriation measures on the rich, with the latter causing large deadweight losses. As in Spolaore (2004), the existence of a political conflict of interest is key to the final results. This reflects the fact that the final decision of whether to reform depends on the government system. We too will analyse the decisions under three types: a cabinet system, a consensus system and a checks-and-balances system.

[9] De Grauwe (2011) presents a model based on a similar idea of shocks.

3.2 Model without default

Since we are interested in analysing what is the impact of having groups consider the possibility of default when making their decisions, it will be useful to study a basic setup when this is not yet a possibility. We will be making some assumptions regarding the costs of reform for each group:

1. $c_R < c_P$, i.e. austerity is relatively more costly to the poor and so the rich are more willing to use that instrument. This should not be controversial. If there is decreasing marginal utility of income, we should expect that austerity will be costlier in terms of utility for people with lower income.[10]

2. As mentioned, beyond the general cost of the reform, there is an additional cost which is related to the choice between two instruments. These are additional austerity measures on the poor and expropriation measures on the rich. The use of additional austerity measures on the poor will cost them γ. The use of additional measures on the rich will cost them 2γ. The asymmetry occurs because we assume that the instrument of reform affecting the rich includes damaging measures such as expropriation, with large deadweight costs and to which they are very resistant. For the poor however, specific measures on them represent just additional austerity, which is not relatively much more painful than their general adjustment cost from a fiscal reform.

3. We will also assume that $c_P + \gamma < c_R + 2\gamma$, i.e. the cost to the rich of a reform through the use of additional measures on them is higher than the cost to the poor of additional austerity measures on them.

This setup, while similar to Spolaore (2004) with two groups, introduces the element of asymmetry, as we do not assume neither equal c nor equal additional

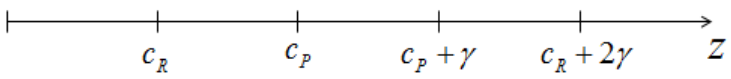
[10] Júlio (2007) presents a model in which there is income inequality, taxation is proportional to income and government expenditures are a public good. In such a case, poorer individuals will be more resistant to a fiscal reform, as they benefit from the public good without having to contribute as much as the richer members of society.

Table 1: Summary of the costs for each group of the use of the two possible instruments

		Perceived cost	
		Poor	Rich
Additional measures	Poor	$c_P + \gamma$	c_R
	Rich	c_P	$c_R + 2\gamma$

costs for all groups. We will now analyse the decisions for reform in each government system. There are four thresholds: c_R, c_P, $c_P + \gamma$ and $c_R + 2\gamma$; these generate five regions on which the value of z can fall.

Figure 3.1: Thresholds for reform



3.2.1 Cabinet system

In a cabinet system, one of the groups has full control over the adjustment policy. If the group in power decides to reform, it will always choose the other to bear the larger cost. The important thresholds are c_i, $i = \{R, P\}$, as each group will decide on a reform when the shock is larger than its general cost of adjustment. When the rich are in power, they will enact a reform costlier to the poor when $z > c_R$ and will not adjust otherwise. On their turn in power, the poor will enact a reform costly to the rich when $z > c_P$ and none otherwise.

Figure 3.2: Adjustments in a cabinet system led by the Rich without default

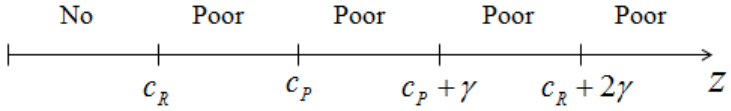
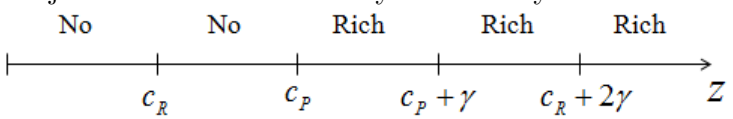


Figure 3.3: Adjustments in a cabinet system led by the Poor without default



3.2.2 Checks-and-balances system

In this system, one of the groups is the leader and chooses when to reform and what instrument will be used. However, the other group retains the right to veto the use of the instrument, which introduces a weak form of consensus. Both groups will veto a reform if the shock is smaller than the lowest total adjustment cost, i.e. $z < c_P + \gamma$. When $c_P + \gamma < z < c_R + 2\gamma$, only the poor will accept bearing the larger cost of reform; the rich will only accept a reform if they do not endure the additional measures. This means that, independently of who is in power, a reform with additional measures on the poor will be enacted. When $z > c_R + 2\gamma$, both groups are willing to bear the cost of the reform in order to nullify the shock; whichever group is in power will choose the other to bear the additional cost. The other group will not veto that reform, as it will be less costly than enduring the shock.

Figure 3.4: Adjustments in a C&B system led by the Rich without default

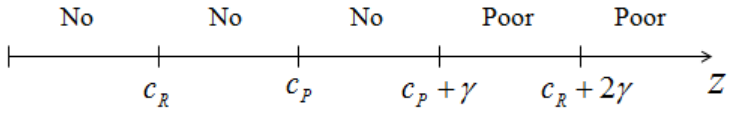
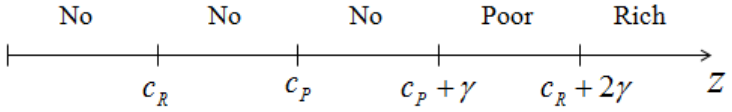


Figure 3.5: Adjustments in a C&B system led by the Poor without default



3.2.3 Consensus system

In this system, both groups have to be in full agreement on which instrument to use. For all shocks except the largest, the outcome will be equal to the checks-and-balances system. No adjustment will occur when $z < c_P + \gamma$, since neither group will accept being the one bearing the larger burden of the adjustment. When $c_P + \gamma < z < c_R + 2\gamma$, the poor are willing to bear a larger cost of adjustment, while the rich agree to a reform if they do not suffer the additional measures. In this situation, a reform will occur with extra measures on the poor. If the shock

is very large, i.e. $z > c_R + 2\gamma$, both groups are willing to adjust and would prefer bearing the larger cost than not reforming. However, they would still prefer to have the other group concede to endure the additional cost. This will lead to a war of attrition: each group will try to wait and see if the other concedes first. This is an interesting result: very large shocks can actually induce delay in a setting in which a smaller shock would trigger quick action.[11]

Figure 3.6: Adjustments in a Consensus system without default

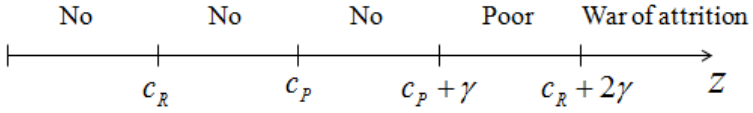


Table 2: Adjustments in different government systems without default

Shock/Govt. System	Rich Cab	Poor Cab	Rich C&B	Poor C&B	Consensus
$z <$ c_R	No	No	No	No	No
c_R $< z <$ c_P	Poor	No	No	No	No
c_P $< z <$ $c_P + \gamma$	Poor	Rich	No	No	No
$c_P + \gamma$ $< z <$ $c_R + 2\gamma$	Poor	Rich	Poor	Poor	Poor
$c_R + 2\gamma$ $< z$	Poor	Rich	Poor	Rich	War-of-att

3.3 Model with default

We will now extend to the model to consider the impact of a possibility of default. Let us assume each country has a structure that determines its vulnerability to defaulting after a solvency shock. It is defined by probability of default $p(s) \in [0, 1]$. The variable s captures the factors that make states face higher probabilities of default. These can include economic factors (level of debt, share of external debt, weak growth prospects) and factors of other nature (e.g. reputation as discussed

[11] The occurrence of war of attrition in the consensus system in cases where a checks-and-balances system would reform efficiently leads Spolaore (2004) to state that the latter system dominates the former in terms of welfare. In this work we will focus only on the decisions to reform and will not analyse the impacts of each system on welfare.

in Eaton and Gersovitz (1981), political instability[12], income inequality[13]). If after a shock, a country decides to reform, $p(s)$ is set to equal 0 just as z is and there is a reform and no default; otherwise there remains a possibility of a default. The structural variable cannot be changed before a decision is made.

Each group perceives default differently. We argue that it is relatively more costly for the rich, because it has a direct impact on the value of financial assets, which are more likely to be owned by them. This makes this option seem unattractive when compared to austerity, an effect which should be smaller for the poor.[14] The introduction of this possibility should have an impact on the thresholds for reform in the economy. Richer individuals who consider the possibility of default should be more receptive to fiscal austerity than otherwise. To develop this idea, let us assume that now each shock costs z plus an additional term related to the possibility of default in case no reform is done. For simplicity we will assume that the cost of a default affects only the rich group. Before, to find the thresholds for reform for the rich we compared z to c_R. Now we have to consider the expected cost of a default, which includes the probability term $p(s)$ and the cost of a default to the rich, δ.

$$z + \delta\, p(s) \tag{3.1}$$

We will not assume a specific form for $p(s)$. The rich will now start to prefer an adjustment costly to the poor when:

$$\begin{aligned} z + \delta p(s) &> c_R \\ z &> c_R - \delta p(s) \equiv c_{RD} \end{aligned} \tag{3.2}$$

[12]Cuadra and Sapriza (2008) find empirical evidence supporting the thesis that politically instability and polarization are linked with higher default rates and higher and more volatile sovereign interest rate spreads.

[13]Yong Kyun (2009) finds empirically that the probability of default increases with intermediate levels of income inequality and decreases with low or high levels.

[14]Tabellini (1991), Guembel and Sussman (2009) and Andreasen et al. (2011) find theoretical basis for having wealthier individuals prefer repayment more often than the poor when default is a possibility.

Since both δ and $p(s)$ are non-negative, $c_{RD} \leq c_R$. With the new threshold for reform c_{RD}, the higher is the expected cost of a default, the lower is the perceived cost of reforming. The model presented in section 3.2 is now a particular case of this more general model and one in which either $\delta = 0$ or $p(s) = 0$, i.e. a default is either not possible or not costly.

Table 3: New summary of the costs for each group and instrument

		Perceived cost	
		Poor	Rich
Additional measures	Poor	$c_P + \gamma$	c_{RD}
	Rich	c_P	$c_{RD} + 2\gamma$

The introduction of a variable c_{RD} will have impact on the ordering of the thresholds for reform. In section 3.2, $c_R < c_P < c_P + \gamma < c_R + 2\gamma$. In this general model $c_{RD} \leq c_R$, so we can conclude that $c_{RD} < c_P$. With regards to the higher thresholds we will see an important change. Before, $c_R + 2\gamma > c_P + \gamma$, i.e. the cost of reform with additional measures for the rich was higher than the cost to the poor of a reform with additional austerity measures on them. Since that was a particular case, this is equivalent to stating $c_{RD} + 2\gamma > c_P + \gamma$ when $\delta = 0$ or $p(s) = 0$. We set c_P and γ as fixed, but with c_{RD} will decrease as $\delta\, p(s)$ increases. This means that from a certain probability of default on, the cost of reform for the rich with additional measures will decrease enough that they will start to prefer adjustments more often than the poor even if with the very punitive measures. With the adjustment thresholds for the poor fixed at c_P and $c_P + \gamma$, a decreasing $c_{RD} + 2\gamma$ will eventually cross both of them, affecting the decisions of reform. Three regions will be generated: $c_{RD} + 2\gamma > c_P + \gamma$, $c_P + \gamma > c_{RD} + 2\gamma > c_P$ and $c_P > c_{RD} + 2\gamma$. We can find the two thresholds that form the three regions through the possible

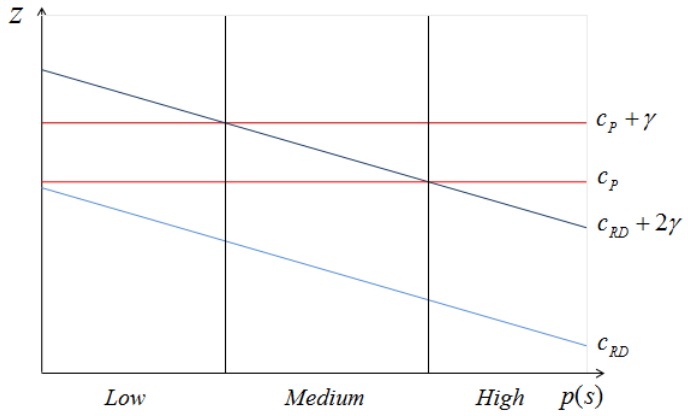
values of $p(s)$ which fit the intermediate region:

$$\begin{aligned} c_P + \gamma > \quad & c_{RD} + 2\gamma \quad > c_P \\ c_P + \gamma > c_R - \delta p(s) + 2\gamma > \; & c_P \\ \frac{c_R - c_P + \gamma}{\delta} < \quad & p(s) \quad < \frac{c_R - c_P + 2\gamma}{\delta} \end{aligned} \tag{3.3}$$

Table 4: Regions of default probability

Low	$p(s) < \frac{c_R - c_P + \gamma}{\delta}$
Medium	$\frac{c_R - c_P + \gamma}{\delta} < p(s) < \frac{c_R - c_P + 2\gamma}{\delta}$
High	$\frac{c_R - c_P + 2\gamma}{\delta} < p(s)$

Figure 3.7: Thresholds and the possible combinations of shocks and structural probabilities of default



3.3.1 Cabinet system

In the cabinet system, the group $i = \{RD, P\}$ in control of the adjustment policy will choose the reform with additional costs on the other as soon as $z > c_i$. With c_P constant even as $p(s)$ increases, the decision of a cabinet led by the poor will not be changed and they will force an adjustment by the rich when $z > c_P$. The rich will adjust with additional measures on the poor when $z > c_{RD}$; with c_{RD} decreasing as $p(s)$ increases, this implies that with an increase in the probability of a default, smaller shocks are enough to trigger reform.

Figure 3.8: Adjustments in a cabinet system led by the Rich

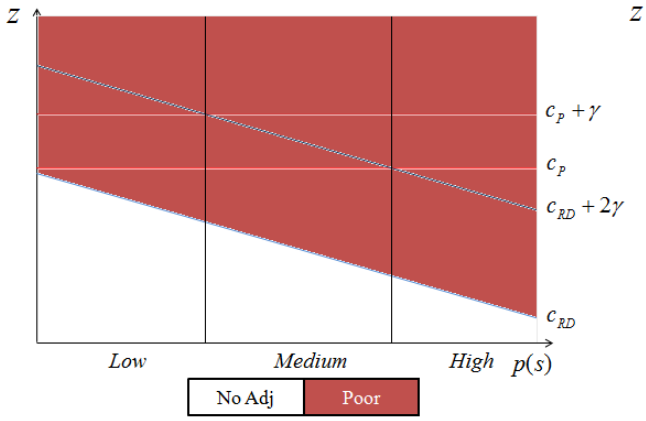
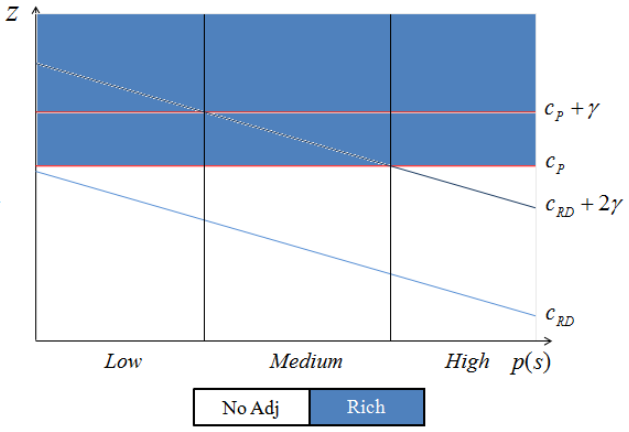


Figure 3.9: Adjustments in a cabinet system led by the Poor



3.3.2 Checks-and-balances system

In the system led by the rich in section 3.2, they never chose themselves to pay more for the reform, since the cost to the poor was lower than to them, i.e. $c_P + \gamma < c_R + 2\gamma$. Now the decrease in their threshold as the probability of default increases makes them willing to reform for lower shocks than the poor. This means that with medium and high probability of default, they will choose themselves to pay for the reform when the shock is not large enough for the poor to accept doing so ($c_P + \gamma > z > c_{RD} + 2\gamma$), mirroring the previous situation. However, we have seen that with a high probability of default, $c_P > c_{RD} + 2\gamma$. In that case, there is an intermediate level of shock in which the rich want to reform but the poor will veto any reform, even if the rich choose themselves to bear the cost of additional measures.

When the poor led in section 3.2, they were willing to pay for the reform themselves when the rich were not yet willing to do so, because their cost of reform with additional measures was lower than that of the rich ($c_P + \gamma < c_R + 2\gamma$). Now, the gradual decrease in the rich's threshold with the increase the expected cost of default makes the rich more willing to reform for smaller shocks. From the region with medium probability on, the poor will never choose themselves to bear the higher cost, because the rich will not veto if chosen. From that point on, the poor will force

a reform paid mostly by the rich when the shocks are both large enough for them to want to reform ($z > c_P$) and for the rich not to veto ($z > c_R + 2\gamma$).

Figure 3.10: Adjustments in a C&B system led by the Rich

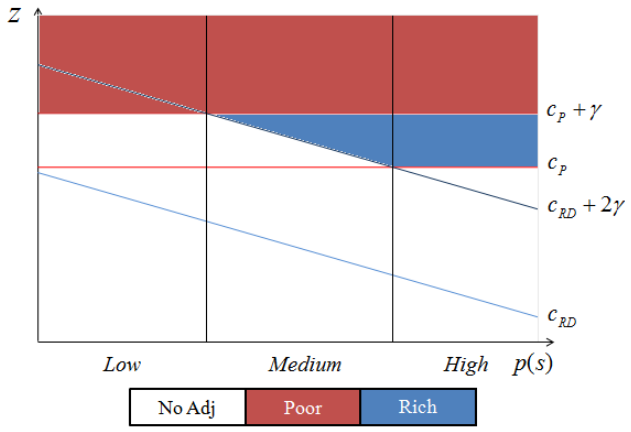
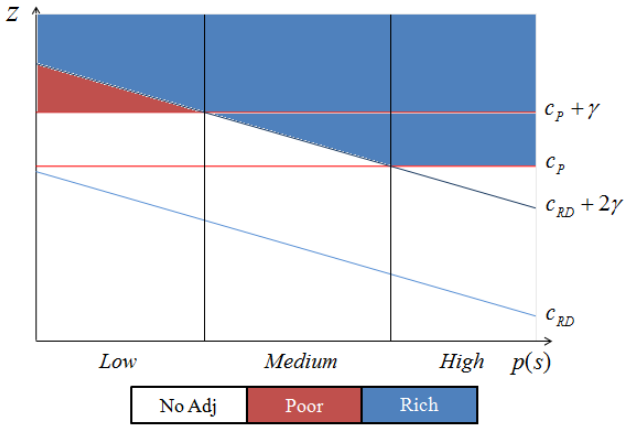


Figure 3.11: Adjustments in a C&B system led by the Poor

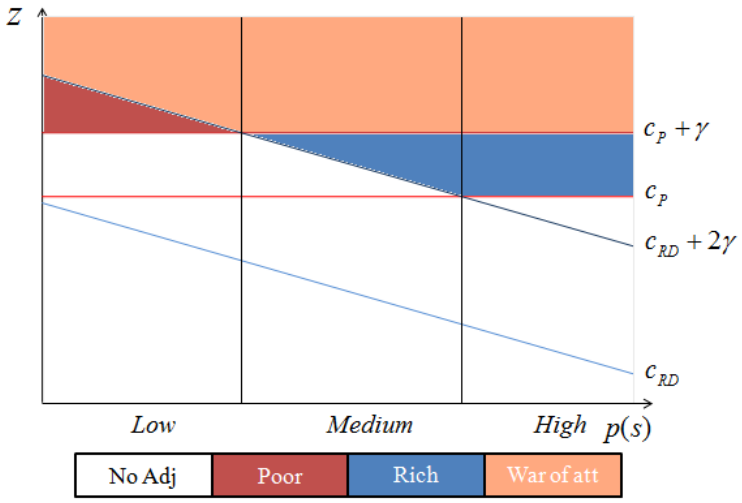


3.3.3 Consensus system

In the consensus system, none of the groups leads and there must be full agreement on whether to reform and which instrument to use. No reform will occur when the shocks are small ($z < c_P$). As seen in section 3.2, for low $p(s)$, there is agreement to adjust with additional measures on the poor when the shocks are large, but not very large ($c_P + \gamma < z < c_R + 2\gamma$). Again, the decrease in the perceived cost of reform for the rich makes them willing to reform for smaller shocks as the probability of default goes higher. We have seen that starting from the medium region of probability, the thresholds change their order and $c_P + \gamma > c_{RD} + 2\gamma$. This creates a similar situation to the one in the checks-and-balances system: for large but not too large shocks, the rich will start to volunteer themselves to pay more for the adjustment when the probability of a default is medium or high. The difference with the consensus system is that immediate adjustment occurs only when just one of the groups is willing to bear the cost of the additional measures; that group will concede to adjustment as they know that the other will not do so in such circumstances. In the case when

both would be willing to adjust, a war of attrition occurs as each group will want to wait and see if the other concedes first. Again, we find an interesting situation in which very large shocks that should provoke immediate action because they are damaging to both groups actually induce delay when a smaller shock would have induced action that would be beneficial to all. This war of attrition should be the main cause of a sovereign default: all agents know there should be an adjustment, but delay action in face of a large shock. This delay is dangerous and can make a default inevitable.

Figure 3.12: Adjustments in a Consensus system



3.3.4 Analysis[15]

The introduction of cost asymmetry between groups and of an additional impact of non-reforming with asymmetrical impact makes the model account for a larger set of possibilities than the one by Spolaore (2004). We will now proceed to interpret and discuss some of the new possibilities created by the extension of that framework.

In the cabinet system, the main impact of the extensions is in the case where the rich lead. With an increase in the threat of default (cost and/or probability),

[15]Tables with the summary of the adjustments with possibility of default are provided in the appendix. During this section it will be helpful for the reader to revisit the coloured figures with the adjustments in the different government systems.

they decide to reform for even very small shocks. The poor however, do not feel that threat and so do not change their willingness to reform based on a higher structural probability of default; this suggests that in countries whose systems delegate strong powers on the government, leaders representing poorer segments are more likely to default by neglecting fiscal reforms.

The cabinet system is in both this work and in Spolaore's the one in which reform is more common and thus where default should be less common. Both the consensus and the check-and-balances system should be more likely to lead to default, because of increased blocking of reforms and in the the latter because of delays even when there is no gridlock. In both systems, the extensions presented here create an interesting situation. In the consensus system in Spolaore (2004), no reform would occur until the shock was larger than the cost of reform with additional measures; then a war of attrition would take place. Reform is thus very hard in the consensus system and even large shocks may not bring quick action. With the introduction of reforms with asymmetric costs, the group with lower cost of reforming may sometimes actually decide to reform as it will be advantageous to them and because they know that the group with higher cost would not concede to bearing the additional cost. However, a shock so large that both groups want to reform even at their own cost may lead to inaction. It would be expected that the higher is the cost of non-reforming, the more immediate the action would be, but that is not the case in this example, as a smaller shock leads to immediate action in a case where a larger one causes delay. A similar situation occurs if there is an increase in the probability of default. With a very low probability of default, there are shocks high enough to lead to reform by the poor but not large enough to create a war of attrition. An increase in the probability of default will lead the rich to start worrying more about that threat and so to agree more about the need of reforming; this however delays the reform as both groups now agree to reform and enter into a war of attrition. This makes the low probability region in the consensus system the only one in which an increase in the

threat of default may lead to a decrease in the range of shocks which trigger reform. In the other regions of the consensus systems, as well as in all other systems, an increase in the probability of default either increases or leaves unchanged the interval of shocks which lead to an immediate adjustment. The same forces behind this situation also create an interesting case in the checks-and-balances system. Without cost asymmetry, no leading group would volunteer itself to bear the higher cost of the reform. In this model however, if the leading group has a lower cost of reform than the other group and the shock is not large enough, the other group will veto the possibility of bearing the higher cost of reform. In that case, it may still be beneficial for the leading group to volunteer itself to pay more for the reform. Being the leading group is still the best position, but it does not mean that you will avoid having to reform without paying extra. In this situation, the leading group would actually prefer having the country being subject to a higher shock if it is enough to pin the additional costs on the other group and pay only c_i, $i = \{RD, P\}$.[16] Also interesting is that at high probabilities of default, the rich will want to reform in case of intermediate shocks ($c_P > z > c_{RD} + 2\gamma$) and will not mind bearing the additional cost; however, as the shock is smaller than the poor's general cost of adjustment, there will be no agreement.

4 A case study: Argentina

There is some literature establishing links between political systems and budget policies. Grilli et al. (1991) find evidence for OECD countries between 1965 and 1990 that representational democracies, with highly proportional electoral systems, are very strongly associated with unsustainable fiscal policies when compared to majoritarian and presidential democracies, because of the shorter duration of governments and the higher level of consensus required to enact legislation. Roubini and Sachs

[16] This may be one of the reasons why occasionally politicians speak dramatically about certain issues. Changing the perception of the shock may not only influence the willingness of other groups to reform but also help leaders to attach the higher costs of reforming to others.

(1988) also link the increased deficits between 1975 and 1985 with governments of many parties in coalition, because of the veto power of small partners over changes. Alesina et al. (2006) too find that "stronger" governments (i.e. unified governments, presidential systems) are more able to do drastic adjustments in crisis. All of these works are consistent with the impacts of the different systems in our model discussed in section 3.3.4, since the higher is the level of consensus necessary, the smaller is the reforming nature of governments.

The case of the Argentine default at the turn of the century is reviewed by most of the recent literature about sovereign debt. In 1991, after chronic spells of hyperinflation, Argentina pegged its currency, the peso, to the US dollar at parity and introduced full convertibility between the currencies. The plan achieved quick success: inflation decreased from over 2300% in 1990 to just 4.2% in 1994, paving the way for an average of growth in GDP of 6% between 1991 and 1998.[17] Despite the monetary straitjacket, the country pursued unsustainable fiscal policies during the 1990s: public debt increased from 35% of GDP in 1994 to 64% at the end of 2001. Then, external events threatened the new-found economic stability of the country: at first, the default by the Russian government in 1998, which affected its financing and then the devaluation of the Brazilian real in early 1999, which affected its competitiveness.[18] With a fixed exchange rate to the dollar, but in need of a quick competitive boost, recession and deflation took over in 1999. With its revenues in pesos decreasing, but the debts denominated in US dollars, doubts increased on the government's ability to repay. In December of 2001, after years of economic problems and social unrest, Argentina defaulted on bonds worth 81 billion USD, which was about 30% of GDP. It was the largest sovereign debt default in history.[19]

[17] Data retrieved from International Monetary Fund, World Economic Outlook Database. Argentina - Inflation, average consumer prices (percent change) and Gross domestic product, constant prices (percent change).

[18] These events could be interpreted respectively as a sudden increase in the probability of default by emerging markets, affecting Argentina too, and as a large shock caused by loss of competitiveness, as mentioned in section 3.1.

[19] *The Economist*, "Flirting with anarchy", January 5, 2002. A restructuring was eventually agreed with a majority of the debt holders in 2005, with a reduction of 65% in the value of the obligations.

The story of the Argentine default has several of the elements of the model we developed earlier. It was an economy vulnerable to default because of its structural characteristics and policies, but delayed action until external shocks forced decisions on how to adjust. Faucher and Armijo (2004) discuss the political context of these events: in Argentina there was a high number of "players" whose support was necessary for the successful application of policy measures. They included provinces, the two houses of congress, parties, banks and citizen groups. This makes the government system in Argentina similar to a consensus system in our model, which is the one more likely to lead to a default through a prolonged war of attrition. During the boom years, credit was easy for Argentina, and so action on the unsustainable fiscal policies was delayed.[20] However, after international credit became scarcer with the external events, delays could still occur, but not without consequences anymore. Pastor and Wise (2004) and della Paolera and Taylor (2003) argue that a fiscal war of attrition between the federal and the provincial levels of government emerged and was the cause for the chronic delays in adjusting policy. According to the latter, the central government was committed to follow the rules of convertibility, while the "traditional political class" wanted soft money to pursue their desired fiscal policies. This was a reflection of the 1999 presidential campaign which elected Fernando de la Rúa. According an article from that period by *The Economist*, "While Eduardo Duhalde[21], his Peronist opponent, has made rash public-spending promises, and suggested that Argentina should default on its foreign debt, it has been Mr de la Rúa who has responsibly promised to maintain the main thrust of current economic policies, including convertibility".[22] Eventually the provincial governments were allowed to issue scrip, which circulated like money and was expected to be convertible to pesos. This added on the unsustainable pressure on the convertibility,

See *The Economist*, "A Victory by Default", March 3, 2005.

[20] According to Eichengreen (2001), countries without a centralized fiscal policy are in higher risk when they "dollarize" their economies, since the elimination of the inflation tax may not lead to fiscal discipline but default instead. This seems to be what happened in Argentina.

[21] Who was at the time Governor of the Province of Buenos Aires.

[22] *The Economist*, "Argentina's next steps", October 23, 1999.

and represented a delaying of the solution to the conflict, increasing costs for both groups until the definite resolution of the war. In a later analysis, *The Economist* wrote "Long before the event itself, it was clear that Argentina had to default on someone. As the last year of dollar-peso convertibility wore on, everyone jockeyed to make sure that someone would not be them".[23] Comparing the outcomes of contemporary crises in Argentina and Brazil, Faucher and Armijo (2004) specifically mention the impact of wars of attrition between the different groups in the country as one of the main reasons Argentina suffered a deeper crisis. These occurred because groups were more willing to accept a continued recession to try to minimize losses.[24]

The war of attrition between the various groups of society culminated with a change in power when Fernando de la Rúa resigned in December 2001. To replace him, the assembly elected Adolfo Rodríguez Saá, Governor of the Province of San Luis and member of the opposition. He declared the default, despite serving for only nine days until resigning.[25] Eduardo Duhalde, of the same party as Saá, was elected by the assembly in the beginning of 2002 to serve the time left on de la Rúa's term. Immediately, the peg was broken, deposits and loans in dollars were converted and sovereign debt contracts were opened for renegotiation. The war of attrition ended with political turnover, as the change in power and the pressure of the crisis reduced the need for consensus and gave a clearer mandate to one of the groups.

5 Conclusion

This paper uses the framework of Spolaore (2004) and introduces asymmetry between groups in their preferences for adjustment and the additional consequence of default in cases of non-reform. The extensions allow us to see a larger range of conflicts about reform. We now highlight the most illustrative examples of how the asymmetry

[23] *The Economist*, "A Victory by Default", March 3, 2005.

[24] They also mention the larger presence of foreign investors in Argentina. These investors have additional resources out of the dispute in the war of attrition and so are more willing to engage.

[25] *The Economist*, "Flirting with anarchy", January 5, 2002.

between groups and the threat of default can affect the outcome of the game. In the consensus system of Spolaore (2004), a shock would either trigger no reform or start a war of attrition, in which larger shocks lead to quicker action. In our model, there is a range of shocks (large but not very large) which trigger immediate action. This occurs when just one of the groups is willing to pay the larger cost. A larger shock, affecting both groups, should not lead to slower action, but that is what occurs as it creates the conditions for a war of attrition. Now both groups want the other to concede to the higher cost, creating the conditions for a delay. There is also a range of larger shocks after which, for a small probability of default, the poor accept bearing the larger cost. An increase in the probability of default does not directly affect the poor but it makes the rich more afraid. Starting from a medium level of probability, the poor know that the rich become affected by the threat enough that now they may accept bearing the higher cost. The situation, which was of quick resolution for a small probability of default, now becomes one in which a war of attrition and a delay occurs. We believe this is a good illustration of the often complex dynamics of political conflicts and how small changes in circumstances can trigger dramatically different outcomes.

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A Summary of the adjustments with possibility of default

Table 5: Adjustments with low probability of default

Shock / Govt. System	Rich Cab	Poor Cab	Rich C&B	Poor C&B	Consensus
$z < c_{RD}$	No	No	No	No	No
$c_{RD} < z < c_P$	Poor	No	No	No	No
$c_P < z < c_P + \gamma$	Poor	Rich	No	No	No
$c_P + \gamma < z < c_{RD} + 2\gamma$	Poor	Rich	Poor	Poor	Poor
$c_{RD} + 2\gamma < z$	Poor	Rich	Poor	Rich	War-of-att

Table 6: Adjustments with medium probability of default

Shock / Govt. System	Rich Cab	Poor Cab	Rich C&B	Poor C&B	Consensus
$z < c_{RD}$	No	No	No	No	No
$c_{RD} < z < c_P$	Poor	No	No	No	No
$c_P < z < c_{RD} + 2\gamma$	Poor	Rich	No	No	No
$c_{RD} + 2\gamma < z < c_P + \gamma$	Poor	Rich	Rich	Rich	Rich
$c_P + \gamma < z$	Poor	Rich	Poor	Rich	War-of-att

Table 7: Adjustments with high probability of default

Shock / Govt. System	Rich Cab	Poor Cab	Rich C&B	Poor C&B	Consensus
$z < c_{RD}$	No	No	No	No	No
$c_{RD} < z < c_{RD} + 2\gamma$	Poor	No	No	No	No
$c_{RD} + 2\gamma < z < c_P$	Poor	No	No	No	No
$c_P < z < c_P + \gamma$	Poor	Rich	Rich	Rich	Rich
$c_P + \gamma < z$	Poor	Rich	Poor	Rich	War-of-att