Creditor Discrimination During Sovereign Debt Restructurings*

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Abstract
This paper explores patterns of discrimination between residents and foreign creditors during sovereign debt restructurings. We frame the analysis using a simple model of a government’s strategic decision to differentiate between the servicing of its domestic and its external debt. In the model, the basic trade-off facing the authorities is to default on external debt and in so doing restricting private access to international capital markets or to default on domestic debt, thereby curtailing the banking sector’s capacity to lend. We test the conclusions of the model by analyzing 10 recent sovereign restructurings. We distinguish neutral cases in which the sovereign treated creditors equitably and instances of discrimination against residents and non-residents. We find evidence in support of the model’s predictions. We show that the patterns of discrimination can be partly explained by the origin of liquidity pressures, the robustness and depth of the banking system and the extent of the corporate sector’s reliance on foreign capital vis-a-vis domestic credit markets.

Keywords: Sovereign default, discrimination, domestic credit, foreign capital.

JEL Codes: F34, E65

Introduction
In the spirit of Bulow and Rogoff (1989), early models on sovereign risk and default overlooked the role played by domestic creditors during debt crises. Much of that literature tried to explain why, in the absence of effective contract enforcement mechanisms in the sovereign context, sovereigns honour their external debt and why foreign creditors lend to them\(^1\). Domestic debt was seldom con-

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\(^1\) For a comprehensive review of this early literature see Eaton and Fernández (1995).
templated in these models either because the literature focused on developing
countries assumed to rely mostly on external sources of finance or because the
lack of a commitment technology was assumed to affect primarily cross-border
loans. More recent papers, however, have begun to pay attention to the im-
portance of domestic creditors as potentially significant sources of funding also
for developing and emerging economies. A case in point is Reinhart and Rogoff
(2008) whose historical database challenges some pre-conceptions about the im-
portance of domestic debt. They show that, on average, residents held almost
two thirds of total public debt for the 64 countries that they cover during the
period 1914-2007. In that paper, they argue that this fact may help explain-
ing why some countries have defaulted at relatively low levels of external debt,
and call for a better understanding of the way in which the relative seniority of
domestic vs. foreign debt contributes to explain how crises unfold. This paper
does precisely pull in that direction.

We analyze patterns of discrimination between resident and non-resident
creditors during sovereign debt restructurings both theoretically and empirically.
We are certainly not the first ones to note that residents and non-residents have
been treated differently in past debt restructurings. Zettelmeyer and Sturzeneg-
ger (2007) analyze six sovereign debt restructurings calculating haircuts instru-
ment by instrument and showing wide variations in the losses undergone by
different creditors. Enderlein et al. (2007), in turn, construct a coerciveness
index showing that in a number of episodes, domestic creditors were given a
harsher treatment than foreign ones. Neither of these contributions, however,
provides an explanation for these difference in treatment. In this paper we go
beyond this descriptive approach and explore the reasons that may push sov-
enegals to discriminate in one or the other direction.

On the theoretical side, with the aim of framing the empirical analysis, we
construct a very stylized model of endogenous debt servicing. The model is a
variation of Caballero and Krishnamurthy (2001). These authors considered an
economy facing two types of collateral constraints limiting its borrowing capac-
ity from both foreign and domestic creditors. While their focus was on how
the two constraints interact and affect both prices and assets sales, we mod-
ify the model to introduce public borrowing and repayment. The framework is
also similar to that presented in Sandleris (2008), who argues that Governments
have incentives to avoid sovereign defaults given that these may send the wrong
signal regarding the state of the economy to the markets, thereby curtailing
market access to private agents. In our framework we disregard informational
asymmetries but the government can endogenously differentiate repayments to
foreign and domestic creditors. In the model, for a given debt structure, the
key decision faced by the government is whether to honour payments due to
domestic banks and to foreign creditors. When it defaults on its domestic oblig-
atios it affects banks' balance sheets, which may impair their ability to lend to
the private sector. On the other hand, when it defaults on external creditors,
the government is negatively affecting the availability of foreign financing for

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2See Holmstrom and Tirole (2002) for a similar framework.
resident firms. We show that, in this setup, the government has incentives to discriminate in one or the other direction depending on factors such as the sources of the debt pressure, the substitutability of domestic and foreign capital, the impact of the sovereign default on private external borrowing and the strength and depth of the banking sector.

We then move on to the empirical part, where we test the main conclusions of the model. We begin by conducting a case study analysis on ten recent sovereign debt restructurings in Argentina, Belize, Dominica, the Dominican Republic, Ecuador, Grenada, Pakistan, Russia, Ukraine and Uruguay. We classify all events in our sample within three different scenarios: instances of discrimination against non-resident creditors; neutral cases in which similar losses were undergone by residents and non-residents; situations in which the sovereign discriminated against resident financiers. The classification is based on a number of indicators such as amounts involved, the haircuts suffered, and the timing of their involvement. As it is literally impossible to find a unique source with all the information required, we resorted to a large number of sources, mostly supranational and national agencies.

Once we have classified the episodes, we study the relevance of the various channels that might affect repayment decisions as identified in the theoretical model. To varying degrees we find that indeed, the health of the banking sector, the relative importance of foreign capital vis-a-vis domestic credit and the sources of the liquidity pressures, all seem to relate to the decision to discriminate as predicted by our model. First of all, the origin of liquidity pressures mattered. It tended to be the case that instances of discrimination against foreign creditors coincided with situations in which the sovereign was struggling primarily to roll-over external debt, and vice versa. However, we find exceptions to that pattern which we attribute to idiosyncratic factors such as the currency denomination of domestic debt, the degree of central bank independence or the extent of financial dollarization. Second, as financial institutions hold significant amounts of domestic debt, the ex ante strength of the banking system constitutes an important determinant of governments’ decision to discriminate. We find that, when the debt crisis was preceded by a banking crisis, governments were more reluctant to involve residents in the restructuring. Instead, discrimination against residents was more common where the banking system was perceived to be sound and when financial intermediation was relatively low. Third, we find evidence supporting the argument that under tight domestic financial constraints or when foreign financing was of prime importance for resident firms, governments were more reluctant to discriminate against non-residents in order to preserve their corporate sector’s access to external sources of finance.

Summarizing, in this paper we study the existence of discrimination, based on residence, during sovereign debt restructurings. We identified three key

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4 We add three recent episodes to the cases covered in Díaz-Cassou et al. (2008b).
mechanisms contributing to shape governments’ strategy vis-à-vis resident and non-resident creditors. First, the origin of the liquidity pressures. Countries where domestic debt is relatively bigger are more likely to press on their domestic sources of finance. Similarly, countries which had healthier and/or less active banks seemed to be more willing to engage resident creditors within the restructuring strategy. Finally, countries which less dependent on foreign capital might prefer placing the weight of the adjustment on their foreign financiers. To our knowledge there is no other paper studying residence-based inter-creditor equity during debt restructurings and its dependence on macroeconomic factors. Our explanation for the existence of discrimination among creditors is in contrast with that presented in Kohlscheen (2009) and Van Rijckeghem and Weder (2004) who, using simple dummy indicators, argue that the difference in involvement is related to the political situation of the country.\(^5\)

Furthermore, the scenarios in which residents appear to have shoulder most of the restructuring effort provide evidence against an assumption commonly held in the recent theoretical literature on sovereign debt restructurings: that in the presence of foreign and domestic debt obligations the sovereign will either give preferential treatment to residents or will not discriminate.\(^6\) In Broner et al. (2010) it is assumed that a government has incentives to enforce debt contracts between residents: in their paper the existence of secondary markets in which debt instruments can be traded explains foreigners’ willingness to lend to residents. Gennaioli et al. (2009) and Brutti (2008) study frameworks in which the sovereign owes money both to residents and to foreigners and focus on the implications of sovereign defaults on private borrowing. Again, in these models the absence of discrimination, which is responsible for most of their results, is taken as given. The main take away of these two papers is that the existence of complementarities between private and public borrowing has the potential to limit the risk of sovereign defaults. Similarly, in Kremer and Mehta (2007) or in Jeanne and Bolton (2008) seniority among creditors is taken as given. Contrary to these widely used assumptions, we present evidence that implicit seniority is state dependent, and arises as the result of balancing the costs and benefits of defaulting on different types of investors. Furthermore we present a framework where this trade-off can be meaningfully analyzed.

Next section introduces a model where a Government endogenously determines the pattern of debt repayment for both foreign and resident financiers. Section 3 summarizes the evidence on selectiveness and discrimination collected from the 10 episodes of sovereign debt restructurings that we cover. Section 4 tests the predictions of the model for our sample economies. Finally, Section 5 concludes and presents directions for future research. Some tables and figures are included in the Appendix.

\(^5\)In Diaz-Cassou and Erce (2010) we study the role of the IMF in shaping this and other strategic dimensions of the restructurings.

A model of selective defaults

The environment

There are four types of agents: a Government, domestic entrepreneurs, resident banks, and foreign investors, who interact during three time periods, $t = 0, 1, 2$.

In period 0, the Government must honour outstanding debt $B_h^g$ with domestic banks, which at the time hold $s_0$ units of liquidity (or one-period safe bonds), and $B_f^g$ with foreign creditors. In so doing it uses incoming resources $T$.

Depending on available resources, the Government may fail to honour part of its obligations. The repayment decision is collected by the pair $(d_h, d_f)$, with $d_f \in (0, 1)$ reflecting the proportion of outstanding debt with foreigners being honoured. A value 1 indicates full repayment. The variable $d_h$ reflects domestic debt repayment and behaves analogously.

Afterwards, in period 1, entrepreneurs receive an investment opportunity which requires foreign and domestic capital.

With probability $p$ the investment is successful and with probability $(1-p)$ it fails and produces nothing. We assume that both domestic and foreign borrowing must be collateralized and that entrepreneurs have a limited amount of collateral. More specifically, entrepreneurs have an amount $C_d$ of domestic collateral and $C_f$ units of foreign collateral.

On top of that, given collateral, we assume that a fraction $\gamma_d$ of the output can also be pledged as collateral with domestic banks and a fraction $\gamma_f$ is pledgeable in foreign capital markets.

At the time, domestic banks have available resources of size $D$, which include both the cash brought in the balance sheet from the previous period and those domestic public obligations actually honoured. Banks use these resources to form a portfolio including loans to domestic entrepreneurs, $b_c$, and holdings of the safe asset, $s_1$. In this way Government’s repayment can affect private domestic borrowing through its impact on banks’ balance sheet. In turn, foreign capital must be obtained on international capital markets populated by deep-pocket, risk neutral investors. In line with recent empirical evidence, we further assume that the valuation that foreign creditors make of collateral $C_f$ depends on the Government’s repayment decision, $C_f(d_f)$. Private collateral losses value as the proportion of sovereign foreign debt in default increases, $\frac{\partial C_f(d_f)}{d_f} > 0$.

Through this channel Government actions vis-a-vis non-residents can affect the

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7 We take $B_h^g, B_f^g$ as given. An interesting extension would endogenize these quantities.

8 The need for both types of resources represent the fact that most production opportunities require foreign machinery, intermediate goods or know-how.

9 While the framework is similar to Caballero and Krishnamurthy (2001), it has two important differences. First, our modeling of domestic credit provisioning does not allow for a credit chain. This has implications for the domestic interest rate. Second, while in Caballero and Krishnamurthy (2001) there is just one type of collateral, we assume the existence of capital-specific collateral.

10 We further assume that $\gamma_f + \gamma_h < 1$.

11 There is extensive empirical evidence (Trebesch, 2009 or Arteta and Hale, 2008) showing that external sovereign defaults reduce private sector’s ability to self-fund via international capital markets. This modelling device is a shortcut to introduce this effect into our setup.
amount of foreign funds available to domestic entrepreneurs.

Finally, in period 2, payoffs are realized.

**Optimization**

The problem is solved backwards. We begin by introducing both banks and foreign creditors’ behavior as their behavior determines the financing constraints faced by entrepreneurs.

**Foreign creditors**

Foreign creditors sign collateralized agreements with entrepreneurs,

\[ p(1 + r_f)b_f^e + (1 - p)C_f = b_e^f, \]

where \( b_f^e \) is the amount of lending extended by foreign creditors and \( r_f \) represents the interest rate on foreign capital. The equation states that a bank will charge an interest rate such that it breaks even. In order to make the agreement incentive compatible to entrepreneurs

\[ (1 + r_f)b_f^e \leq C_f + \gamma_f f(k_h, k_f) \]

**Domestic banking sector**

In period 1, the domestic financial sector has resources \( D \) given by

\[ D = d_hB_g^h + s_0, \]

where \( s_0 \) stands for the liquidity carried by the banks from period 0, and \( d_hB_g^h \) is the amount of public debt honoured and available for private lending.\(^{12}\) For simplicity, the gross safe rate is set equal to one. Banks’ assets, \( D \), will be used to acquire either the safe bond, \( s_1 \), or to finance private investments, \( b_e \),

\[ s_1 + b_e = D. \]

When dealing with private borrowers, banks require adequate collateral, and set the interest rate to break even,

\[ p(1 + r_d)b_e + (1 - p)C_h = b_e, \]

where \( r_h \) stands for the domestic interest rate. Banks have to set the loan contract in such a way that it is incentive compatible for entrepreneurs to fulfill the contract and so

\[ (1 + r_d)b_e \leq C_h + \gamma_d f(k_h, k_f) \]

\(^{12}\)We are assuming that the domestic banking sector cannot access international markets to finance domestic entrepreneurs. This simplifies the exposition without qualitatively affecting the results.
Moreover, given that domestic banks have a limited amount of resources, the following must hold

\[ b_c \leq D. \]  

(5)

This equation indicates that domestic credit can be limited by either a shortage of liquidity within the financial sector or by a lack of adequate collateral.

**Entrepreneurs: Domestic and foreign credit**

Entrepreneurs receive an investment opportunity \( f(k_h, k_f) \) and solve the following problem:

\[
\text{Max } \Pi = pf(k_h, k_f) - (1 + r_h)k_h - (1 + r_f)k_f \\
\text{s.t. } \quad [1] - [5]
\]

As a first step, we characterize the equilibrium allocation in the absence of credit frictions.

**Proposition 1** In a non-binding equilibrium, entrepreneurs would set their demand of foreign and domestic capital to fulfill the following condition

\[ f_{k_f}(k_h, k_f) - r_h = f_{k_h}(k_h, k_f) - r_f = 0. \]

For future reference we define the unconstrained optimum as \((k_{opt}^h, k_{opt}^f)\).

In general, however, equilibrium allocations might be constrained and depend not only on the technology available but also on \( D, C_f \) and \( C_d \). Thereby, liquidity within the banking sector and international collateral in entrepreneurial hands are main determinants of equilibrium output.

**Government behavior**

In period 0 the Government receives revenues \( T \) and chooses the repayment profile that maximizes domestic welfare,

\[
\text{Max } W_{d_h, d_f} \\
\text{s.t. } \quad W = \Pi - d_h B_h^q - d_f B_f^q + D + T \\
D = s_0 + d_h B_h^q \\
C_f = C_f(d_f) \\
d_h B_h^q + d_f B_f^q \leq T \\
d_h \leq 1 \\
d_f \leq 1
\]
If $T > B^g_h + B^g_f$, the government has enough resources to honour all its obligations and we are in the classical situation in which if an external default arise is due to unwillingness to repay. However, when $T$ is low, the government is forced to choose what type of agents will face a default. This situation represents the ability to repay problem.

**Definition 2** Taking $s_0, C_f(\cdot), T, B^g_h$ and $B^g_f$ as given, an equilibrium is composed by a set $(d_h, d_f)$ of time $0$ decisions, and a set of time $1$ choices $(b^f_c, b_c, k_h, k_f)$ and prices $(r_h, r_f)$, such that:

(i) All agents maximize their expected utility, and

(ii) credit markets are in equilibrium: $b_c = k_h$ and $b^f_c = k_f$

**When and on whom do Governments default?**

In what follows, we solve the model under a set of simplifying assumptions to clarify the mechanisms at work:

(i) No uncertainty $\rightarrow p = 1$

(ii) $f(k_h, k_f) = ak_h^\alpha + bk_f^\beta$, with $\alpha < 1$ and $\beta < 1$.

(iii) No pledgeability of future output: $\gamma_f = \gamma_h = 0 \rightarrow r_h = r_f = 0$.

(iv) $C_f(d_f) = C + d_f \bar{c}_f$.

(v) $C_d > B^h_g + s_0$.

Assumption (ii) implies both no complementarities between domestic and foreign capital and decreasing returns to scale. This guarantees the existence of an unconstrained interior solution. In turn, by using assumption (iii) we focus the analysis on quantities.\(^{13}\) The functional form in assumption (iv) could be interpreted as a borrowing ceiling equal to $C + \bar{c}_f$. The ceiling is available as long as the Government fully honours its obligations. In the event of a full external default, the ceiling would fall to $C$. Finally, assumption (v) implies that any domestic liquidity shortage is due to a lack of liquidity within the banking sector.

Using this assumptions the entrepeneurs problem simplifies to

\[
\begin{align*}
\text{Max} & \quad ak_h^\alpha + bk_f^\beta - (k_h + k_f) \\
\text{s.t.} & \quad k_h \leq D \quad (6) \\
& \quad k_f \leq C_f \quad (7)
\end{align*}
\]

Define the lagrange mutipliers associated with constrains on $D$ and $C_f$ as $\lambda_1$ and $\lambda_2$ respectively. The impact on entrepreneurs of constrained domestic liquidity is collected by $\lambda_1$, the shadow value of the domestic capital constraint.\(^{13}\)

\(^{13}\)While allowing for risky private borrowing could affect the impact on quantities by introducing a price effect, the mechanism presented here would remain active.
Analogously, the importance of further availability of foreign credit is collected by $\lambda_2$. Depending on the parameter space, the entrepreneurs problem can have four different types of equilibria. In what follows we present them and discuss what are Government incentives for repayment in each of them.

**Unconstrained optimum** In this case entrepreneurs attain their first best. The FOCs are

$$a\alpha k_h^{\alpha-1} - 1 = 0$$

and

$$b\beta k_f^{\beta-1} - 1 = 0.$$ \hfill (2)

Simple manipulations show that the optimum is

$$k_h = k_h^{opt} = (a\alpha)^{\frac{1}{1+\alpha}}$$

$$k_f = k_f^{opt} = (b\beta)^{\frac{1}{1+\beta}}$$

with

$$\lambda_1 = \lambda_2 = 0.$$ \hfill (3)

In this situation, entrepreneurs will not profit from increased access to foreign capital. This leaves the government with no incentive to make foreign debt repayments.

**Underprovision of domestic liquidity and insufficiency of international collateral.** The banking sector is unable to provide as much credit as entrepreneurs want. At the same time, entrepreneurs would be willing to acquire more foreign capital but fall short of international collateral. Equilibrium allocations are

$$k_h = D < k_h^{opt}$$

and

$$k_f = C_f < k_f^{opt},$$

with shadow values

$$\lambda_1 = a\alpha D^{\alpha-1} - 1 > 0 \quad \text{(8)}$$

and

$$\lambda_2 = b\beta C_f^{\beta-1} - 1 > 0.$$ \hfill (9)

Now, both domestic and foreign debt repayment increase entrepreneurs welfare. After considering also the impact on its own wealth and that of the banks, the Government has to decide whether aggregate welfare is higher from paying domestic or foreign obligations.
Underprovision of domestic liquidity and unconstrained external borrowing. Firms would like to borrow more domestically but a lack of domestic credit prevents them from doing so. Conversely, international collateral is enough to guarantee the optimal amount of foreign capital. The FOCs deliver

\[ a\alpha D^{\alpha -1} - 1 = \lambda_1 > 0 \]

and

\[ b\beta k_f^{\beta -1} = 1. \]

Equilibrium allocations are

\[ k_h = D \]
\[ k_f = (b\beta)^{\frac{1}{1-\beta}} = k_f^{opt} \]

In such situation, the government would repay domestic debt obligations.

Sufficient domestic liquidity and constrained external borrowing. Firms are able to borrow domestically as much as needed, \( \lambda_1 = 0 \). They would like, however, to increase the scale of production by acquiring more foreign capital, \( \lambda_2 > 0 \). FOCs and equilibrium allocations are:

\[ a\alpha k_d^{\alpha -1} = 1 \]

and

\[ b\beta C_f^{\beta -1} - 1 = \lambda_2 \]

with

\[ k_h = (a\alpha)^{\frac{1}{1-\alpha}} = k_h^{opt} \]
\[ k_f = C_f \]

In this case domestic debt repayment has no impact on welfare. Governments will honour foreign obligations only as long as the gain for the private sector more than compensates the reduction in public cash balances.

On the incidence of default

Recall the Government’s problem:

\[
\begin{align*}
\max_{d_h, d_f} & \quad \Pi[k_h(s_0, C, d_h, d_f), k_f(s_0, C, d_h, d_f)] - d_f B_f^g + s_0 + T \\
\text{s.t.} & \quad d_h B_h^g + d_f B_f^g \leq T
\end{align*}
\]
where $\Pi[.]$ represents the profits from entrepreneurial activities. In what follows we focus on some of the different equilibria that may arise in this setting.$^{14}$

Note that the dependence of $C_f$ and $D$ on $d_h$ and $d_f$, summarizes how government repayment affects entrepreneurs optimal decisions and welfare. This dependence is one manifestation of the Governments’ incentives to discriminate in one or another direction. Besides, it implies that government impact on entrepreneurial welfare can be measured as a transformation of the Lagrange multipliers. Using $\frac{\partial \Pi}{\partial D} = \lambda_1$ and $\frac{\partial \Pi}{\partial C_f} = \lambda_2$, and the fact that $\frac{\partial D}{\partial q} = B_h^q$ and $\frac{\partial C_f}{\partial d_f} = \bar{c}_f$ we arrive to

$$\frac{\partial \Pi}{\partial d_h} = \frac{\partial \Pi}{\partial D} \frac{\partial D}{\partial d_h} = \lambda_1 B_h^q$$

and

$$\frac{\partial \Pi}{\partial d_f} = \frac{\partial \Pi}{\partial C_f} \frac{\partial C_f}{\partial d_f} = \lambda_2 \bar{c}_f.$$  

Willingness to repay

Suppose that $T > B_h^g + B_f^g$. Now the government problem is one of willingness to repay and reduces to

$$\max_{d_h,d_f} \Pi[k_h(s_0, C_f, d_h, d_f), k_f(s_0, C_f, d_h, d_f)] - d_f B_f^g + s_0 + T.$$  

The corresponding FOCs are:

$$\frac{\partial \Pi}{\partial d_h} - \lambda_1 B_h^q + \lambda_2 \bar{c}_f = 0$$

and

$$\frac{\partial \Pi}{\partial d_f} - \lambda_2 \bar{c}_f = 0$$

Using (10) and (11), these conditions can be rewritten as:

$$\lambda_1 = 0$$

and

$$\lambda_2 \bar{c}_f = B_f^g.$$  

Domestic debt repayment

Use (12) to obtain

$$d_h = \frac{(aa)^{\frac{1}{\alpha}} - s_0}{B_h^g}.$$  

The government sets $d_h$ to guarantee that the entrepreneurial sector has access to as much domestic capital as required. In this situation further domestic debt repayment would not further increase output. Note, however, that repayment beyond that point simply amounts to a within country redistribution of wealth. As a result $d_h = 1$ not detrimental for aggregate welfare.

$^{14}$A full characterization of the Kuhn-Tucker conditions is available upon request.
Foreign debt repayment

Foreign debt will be serviced as long as the increase in entrepreneurial profits, \( \lambda_2 \epsilon f \), is at least as big as the amount of resources leaving the public co\( f \)rs, \( B_f^p \). Using (13), foreigners will face a partial default if

\[
\lambda_2(d_f^*) = \tau^{-1} \text{ for } d_f^* < 1,
\]

where \( \tau = \frac{\beta}{B_f} \) could be interpreted as the catalytic effect of sovereign debt repayment. The country’s private external borrowing ceiling increases by \( \tau \) units for every unit repaid by the sovereign. Further manipulation of (13) leads to

\[
d_f^* = \frac{(\tau \beta b)^{1-\frac{1}{\gamma}} - C}{\epsilon f}
\]

Note is that, as long as \( C < k_{opt}^f = (b/b)^{1-\frac{1}{\gamma}} \), entrepreneurs will not be able to borrow their optimum. While entrepreneurs are only concerned with their private benefits, the Government also considers the impact of repayment on its own wealth. This creates a wedge between the desired level foreign capital for entrepreneurs and the optimal level of foreign capital from an aggregate perspective.

It is immediate, notice that \( \frac{\partial \pi}{\partial B_f} < 0 \), that the higher the external exposure, \( B_f^p \), the easier will be that foreigners will suffer a haircut, \( d_f^* < 1 \).

Similarly, the lower the productivity (defined by either \( b \) or \( \beta \)) of foreign capital the less it will be demanded. As a result, the likelier will be that the government partly defaults on its external obligations.

Finally, it is immediate that, the lower is \( \epsilon f \), the punishment suffered by private agents when the government defaults, the more likely it is that the Government will choose to at least partly default in it’s foreign debt.

Creditor discrimination and ability to repay

In case \( T < T^* \), the government must decide how to divide available cash between residents and foreigners. We shown first how an interior solution would look like and then move to show the two extreme cases in which all available resources go to just one specific type of investor.

In an interior solution,

\[
\frac{\partial T}{\partial B_h} = \frac{\partial T}{\partial B_f} - \left( \frac{B_f^p}{B_f^p} \right)
\]

Rearranging terms

\[
\lambda_1(d_h) = \tau \lambda_2(d_f) - 1
\]

Equation (14) states that, in the margin, the welfare increase per unit of repayment to foreigners (RHS) must be equal to the effect on welfare of a marginal
increase per unit of repayment to residents (LHS). That is, an additional unit of repayment provides identical aggregate welfare regardless the creditor involved.

Together with \( d_h B_h^0 + d_f B_f^0 = T \), equation (8) completely determines the sovereign repayment behavior. Using equations (8), (9) and the budget constraint, (14) can be expressed as

\[
\frac{\alpha a}{[s_0 + T - d_f B_f^0]^{1-\alpha}} = \frac{\tau \beta b}{[C + d_f c_f]^{1-\beta}} - \tau. \tag{15}
\]

From (15) it is immediate to perform comparative statics. First, note that as \( \frac{\alpha a}{\tau \beta b} \) increases the relative productivity of domestic capital increases. As a result, the optimal strategy for the Government would be to reduce \( d_f \) while increasing \( d_h \).

It is also clear that, as \( s_0 \) increases, so that the banking sector ability to provide domestic credit even in the absence of public repayment is larger, the Government has stronger incentives to increase repayment to foreigners at the expense of the domestic banks.

Finally, as the amount of public debt on domestic hands increases, the proportion that needs to be repaid to attain the desired level of domestic capital is smaller, leading to an increase in repayment of foreign debts at the expense of domestic creditors.

**Domestic defaults**

When will a sovereign place all the adjustment effort on its domestic financiers? We show below that if banks are healthy enough and foreign financing is either very necessary or very sensitive to external repayment problems, the Government will decide to cancel debt payments to residents in order to fulfill its obligations with external creditors.

According to our model, \( d_h = 0 \) and \( d_f = \frac{T}{B_f^0} \) will be an equilibrium outcome whenever

\[
\lambda_1(0) < \tau \lambda_2(\frac{T}{B_f^0}) - 1.
\]

Available resources will be fully used to repay foreign creditors whenever the gain of deviating a marginal unit of funds to domestic banks (LHS) is smaller than the gain from using such funds for external repayment (RHS).

**Proposition 3** A stronger banking sector balance sheet and limited productivity of domestic capital make more likely that the government will choose domestic banks as the objective of the debt default.

**Proof.** Substituting equations (8) and (9) into the inequality above and rearranging leads to

\[
s_0 > \left( \frac{\alpha a}{\tau \beta b} \right)^{1-\alpha} [C + \frac{T}{B_f^0 c_f}]^{1-\beta}.
\]

It is immediate that increases in \( s_0 \) and decreases in \( \frac{\alpha}{\beta} \) make it likelier that the above inequality will hold. \( \blacksquare \)
External defaults

Beginning from a situation where all available resources are used to repay domestic obligations, reducing domestic repayment to increases foreign repayment would lead to a reduction in welfare of size \( \lambda_1 \left( \frac{T}{B_h} \right) \), due to reduced lending by domestic banks, while producing an increase in welfare, \( \tau \lambda_2(0) - 1 \), resulting from subtracting from the welfare increase obtained from the expanded borrowing capacity the direct cost for the public coffers from servicing the debt. The Government will devote all its resources to honour domestic debt obligations whenever,

\[
\lambda_1 \left( \frac{T}{B_h} \right) > \tau \lambda_2(0) - 1.
\]

**Proposition 4** Countries where foreign capital is relatively less productive or whose supply of foreign capital is relatively inelastic to sovereign defaults are more likely to discriminate against domestic creditors if the need arises.

**Proof.** Use equations (2) and (3) along with the budget constraint and the specified behavior of the Government to get

\[
\frac{a\alpha}{[s_0 + T]^{1-\alpha}} > \frac{\tau \beta b}{C^{1-\beta}} - \tau.
\]

Again, it is clear that as \( \beta \) (or \( b \)) falls relative to \( \alpha \) (or \( a \)) the RHS increases relative to the LHS, making a full external default more likely. Similarly, as \( C \) increases the RHS decreases, raising the potential for using all resources to cover domestic debt obligations. ■

After having presented the main implications of our framework we move now to study its relevance using a sample of recent sovereign debt restructurings. We begin by briefly describing each of the cases and arguing if they are to be considered as discriminatory and, if so, in what direction. Once we have catalogued the countries, we move to explore if the main conclusions of the paper are backed by the data. To do so we analyze information on the countries debt structure (domestic versus external), on the health and importance of the domestic financial sector and on the relative importance of external financing for the corporate sector.

**Evidence on selectiveness: a case-study approach**

This section identifies instances of discrimination between domestic and external creditors in 10 recent episodes of sovereign debt restructuring. We cover the following cases: Argentina, Belize, Dominica, the Dominican Republic, Ecuador, Grenada, Pakistan, Russia, Ukraine and Uruguay. Some of the key features of these debt restructurings are summarized in Table 1.

The table provides information on the various actors and instruments involved in the debt restructurings. It shows that restructurings have been very
heterogeneous, and involved different types of instruments. In this section we grouped the cases in three categories: countries in which the sovereign discriminated against external creditors; countries in which the sovereign adopted a ‘neutral’ approach; countries in which the sovereign discriminated against domestic creditors.

The classification is based on a number of indicators such as amounts involved, the haircuts suffered, and the timing of their involvement. This last point is of particular interest, as we focus primarily on the early stages of the debt crises during which the sovereign still retained some room for manoeuvre to adopt the type of strategic behavior studied in this paper. In our view, a relevant contribution of this analysis is to put together detailed data on the various restructurings. It is literally impossible to find a unique source with all the information required. Therefore we had to resort to a large number of sources. We used mostly reports from multilateral organizations and national agencies. Coming from the IMF we found especially useful were Article IV Consultations, various program reviews whenever these were in place around the time of the restructuring and a few publications where the Fund made cross-country analysis of reprevious restructurings. To double check, and whenever we could not find relevant information from those sources, we used information coming from Ministries of Economics and Finance and Central Banks of the countries involved. Finally, S&P prepares annual reports on sovereign debt. The 2007 report was especially useful as it provides detailed evidence for most of the cases we cover here, including estimates on haircuts and amounts involved.\footnote{Indeed they cover a few more episodes. They summarize the domestic restructuring in Venezuela in 1998, the debt restructuring in Moldova in 2002, Peru’s brief default in 2000 and that on Ivory Coast in 2000. In Peru and Venezuela arrears were minor and unrelated to issues of sustainability. For Moldova and Ivory Coast the lack of information prevented us from using them in the analysis.}

**Discrimination against external creditors**

The cases in which the sovereign did more clearly try to spare resident creditors from the direct impact of the debt workout were Belize, the Dominican Republic, Ecuador and Pakistan. On February 2007, the government of Belize completed the preemptive restructuring of 6 international bonds with maturities ranging from 2008 to 2015 and a combined face value of US$571 million (about 44% of total debt). The vast majority of holders of these instruments were non-residents, and the government did not try to restructure other domestic instruments, which represented about 13% of total sovereign debt. In turn, the Dominican preemptive debt restructuring carried out in between April 2004 and October 2005 focused on bilateral official debt (Paris Club), two series of international bonds with a total face value of US$1.100 million, and commercial debt (London Club). Overall, this represented about 18% of total sovereign debt. Again, in this case no purely domestic debt instruments were restructured, although some residents may have held part of the international bonds that were exchanged.
The case of Ecuador is more complex. Initially, the authorities tried to ring-fence the 1999 default to very specific instruments: Past-Due Interest and Discount Brady bonds. Eventually, however, the authorities were forced to launch a comprehensive debt restructuring which included bilateral official debt, the entire stock of Brady bonds, Eurobonds, and commercial debt. Overall, and excluding official debt, total private claims in default surpassed US$7 billion (about 45% of total debt). Although domestic debt was included in the restructuring, residents were granted a preferential treatment. Indeed, the unilateral rescheduling of domestic bonds maturing between September 1999 and end-2000 was carried out at a 9% cost in NPV terms, which contrasts with the 19 to 47% haircut undergone by the holders of Eurobonds and Brady bonds (Sturzenegger and Zettelmeyer, 2007).

Finally, Pakistan’s main concern was to restructure bilateral official debt and address a severe balance of payments crisis: three Paris Club treatments were signed in January 1999, January 2001 and December of that same year for a total amount of close to US$17.5 billion. As a result of the ‘Comparability of Treatment Clause’ imposed by the Paris Club, private obligations were also rescheduled by the government of Pakistan: Eurobonds for an amount of US$610 million were restructured by the end of 1999, and an agreement was reached with the London Club in July 1999 involving commercial loans with a face value of US$929 million. Eventually, the overall amount of restructured obligations constituted about 37% of total debt. Although domestic debt amounted to almost 50% of total debt in the case of Pakistan, resident creditors were entirely spared from the restructuring. As explained below in more detail, this was facilitated by the fact that the government could rely on the monetization of fiscal deficits in order to remain current on domestic debt denominated in local currency.

Table 1 in the Appendix suggests that discriminating against external creditors had little influence on outcomes such as the duration of the debt restructurings, the losses ultimately borne by investors or the degree of coerciveness with which creditors were involved in the debt workout. This is largely due to the substantial variation observed in each of these dimensions among the four countries that form this sub-sample. On the one hand, both the Belizean and the Dominican restructurings were completed in only 6 months, carrying a mild haircut and, according to the index developed by Enderlein et al. (2007), in a relatively non-coercive manner. On the other hand, the Ecuadorian and Pakistani restructurings took much longer to be completed (14 and 11 months respectively), carried a substantial haircut and were more coercive in nature. It would seem that rather than the direction of discrimination between resident and non-resident creditors, what mattered to explain these outcomes was whether the restructurings were preemptive or not. Indeed, while the Dominican and Belizean restructurings were entirely preemptive and entailed only minor and punctual arrears on sovereign obligations, Ecuador defaulted rather comprehensively on both external and domestic debt and Pakistan accumulated substantial arrears with bilateral official creditors. There is some ground to argue, therefore, that the smoothest restructurings in terms of duration, haircut
Neutral cases

Within our sample of countries, Uruguay, Grenada and Dominica come close to having adopted a ‘neutral’ restructuring approach. The preemptive restructuring announced by the Uruguayan government in March 2003 involved its entire stock of tradable government securities: debt worth US$5.3 billion (equivalent to 42% of total debt), 44% of which was held by residents. Although the government tried to accommodate investors’ specific demands, the same exact conditions (a ‘maturity extension’ option and a ‘benchmark bond’ option) were offered to all the holders of these securities irrespective of their nationality. However, participation in the exchange was significantly higher among residents: 99% against a participation of 89% among non-residents. This could be partly attributed to moral suasion on the part of the government or to regulatory incentives. Nevertheless, the Uruguayan debt restructuring is broadly viewed as being of a non-discriminatory nature, reflecting the market-friendly and cooperative strategy adopted by the authorities.

In the case of Grenada, a total debt amounting to approximately US$ 237 million in principal (40% of total public debt) was exchanged for new US$ and Eastern Caribbean dollar-denominated bonds after the devastating effect of Hurricane Ivan forced the government to suspend payments on most classes of its outstanding obligations. Given concerns over the restructuring’s impact on the financial system, the positions of domestic banks were taken on board to design the debt restructuring strategy launched in October 2004. In addition, the authorities committed to continue servicing the obligations traded in the Regional Government Securities Market (RGSM), which was partly aimed at maintaining access to a source of short-term financing and liquidity management. Overall, however, the burden absorbed by residents and non-residents was of a comparable magnitude: about 40-45% in NPV terms. The Grenadian debt restructuring, therefore, can be considered neutral.

Due to scarce information the case of Dominica is more difficult to assess. There is some ground to argue that the authorities did consider the idea of ring-fencing domestic financial institutions from the effects of the restructuring given that the government did initially express its intention to exclude domestic creditors from the restructuring announced in December 2003. However, the authorities were eventually forced to include residents in the debt workout. Although the government tried to reach a separate agreement with each of the main domestic banks depending on their specific exposure and vulnerabilities, this debt exchange was eventually conducted on the principle that a certain level of inter-creditor equity should be maintained. Nevertheless, the most sizable domestic restructuring operation was carried out with a public entity: the Dominica Social Security Agency. This implies that a substantial portion of Dominica’s domestic restructuring simply equated to an intra-public sector transfer of resources not really affecting obligations held by the private sector.

Table 1 shows that, if compared with the other sub-samples corresponding
to the countries that discriminated in favour of specific categories of creditors, the neutral cases tend to be associated with a lower coerciveness index. In fact, a possibility which is explored later in more detail is that one of the factors shaping countries’ decision to be neutral is a willingness to signal their goodwill vis-à-vis their creditors. This seems to be particularly clear for the case of Uruguay, which was characterized by the collaborative approach adopted by the authorities, evidence of which was the mild haircut attached to the government’s offer (on the range of 5-20% in NPV terms). In Grenada and Dominica the government did also adopt a market-friendly debt restructuring approach, which is consistent with the hypothesis that being neutral does partially constitute a signalling device. However, and maybe due to the extent of the fiscal problems undergone by these two countries (debt to GDP ratios of 130%), the haircut associated with these debt restructurings were much higher. If the duration of debt restructurings is understood as an indication of their smoothness, it would seem that the strategy of being neutral, collaborative and market friendly paid off for the countries of this sub-sample. Indeed, Uruguay’s was the shortest debt restructuring among the countries of our sample (only two months), and Dominica’s and Grenada’s debt restructurings were also relatively short (about half a year).

**Discrimination against residents**

Three cases fall in this scenario: Argentina, Russia, and to a lesser extent Ukraine. The Argentine debt restructuring was the most contentious case among the countries of our sample, reflecting the complexity of the restructured debt and the non-collaborative stance adopted by the authorities after the December 2001 default. However, what is more relevant to our analysis is that prior to defaulting in December 2001, the Argentine government went at great length to mobilize domestic sources of finance in order to substitute for a loss of access to international financial markets. This was done through the exertion of moral suasion on firms to absorb ‘patriotic’ bonds, through financial engineering operations like the June 2001 ‘mega-swap’, and through the semi-coerced exchange of bonds for ‘guaranteed loans’. All these pre-default measures constituted an incremental and increasingly desperate attempt to avoid an international default and to save the convertibility regime. Ultimately, it is well known that this strategy failed, substantially increasing the exposure of the domestic financial sector to public debt and thereby exacerbating the long-term economic dislocation caused by the crisis.

The bulk of the liquidity pressures undergone by the Russian government in 1998 were originated in the domestic government securities market. Because investors thought a devaluation of the ruble more likely than a sovereign default, a widening of the yield-differential between ruble denominated securities and Eu-

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16The main types of bonds traded in the Russian market for government securities were the so-called GKOs and OFZs. This market was opened to non-resident investors in 1996. Interest payment on these securities absorbed over 70% of total interest payments in the months leading to the default.
robands made it increasingly difficult to roll-over domestic instruments. In this
case, when the Duma failed to ratify an IMF-endorsed package of stabilization
measures, the government defaulted on GKOs and OFZs while committing
to remain current on post-soviet external debt obligations. This amounted to
a default on a debt worth approximately US$30 billion at pre-default exchange
rates. It is unclear which proportion of that debt was in the hands of residents,
and estimates range between 35% and 80% (Owen and Robinson, 2003). The
Russian debt restructuring, therefore had a domestic bias both in terms of the
jurisdiction in which the restructured instruments were issued and in terms of
the nationality of the holders of these instruments. However, it is worth noting
that on top of the haircut associated with the ‘Novation’ scheme, foreign hold-
ers of ruble-denominated instruments faced capital controls, as a result of which
they underwent larger losses than resident bondholders.17

Ukraine’s debt restructuring was carried out in two distinct stages. In years
1998 and 1999, a succession of selective restructurings with specific creditors was
completed in order to bridge mounting liquidity needs. These selective restruc-
turings did simply postpone the resolution of the underlying debt problem, and
by year 2000 the government was forced to carry out a comprehensive restruc-
turing of its entire stock of international bonds. We consider this a case of early
discrimination against residents because the first deal closed by the Ukrainian
authorities during the wave of selective restructurings was reached precisely with
domestic banks. This was completed in September 1998, affecting a variety of
treasury bills with a total face value of HrV800 million, equivalent to close to
US$130 million or one third of domestic banks’ total holdings of T-bills. This
debt exchange carried a relatively mild haircut ranging in between 5% and 9%
in NPV terms. The following debt restructuring actions, instead, tended to
affect primarily international creditors. Overall, therefore, the Ukrainian debt
restructuring was not one in which residents suffered larger losses than non res-
idents. However, what matters for our analysis is that residents were the first
category of creditors to be involved in the Ukrainian debt restructuring.

An examination of the indicators provided in Table 1 suggests that, among
the countries of our sample, debt restructurings tended to be more complex
for the countries that discriminated against residents. This is illustrated in
the much longer duration of these restructurings: 46 months in Argentina, 35
months in Ukraine and 24 months in Russia. In addition, the Argentine and
Russian debt restructurings were the most coercive among the countries of our
sample, reflecting the non-collaborative approach adopted by the authorities in
these two episodes. The Ukrainian debt restructuring, in turn, was compara-
tively less coercive. Again, this suggests that the degree of coerciveness tended
to be associated with whether a restructuring was preemptive or not.

17 Foreign creditors were forced to place all cash proceeds in a non-interest bearing ‘transit
account’ for one year.
Explaining the patterns of discrimination

In this section we study to what extent the factors uncovered by our simple model contribute to explain the patterns of discrimination between residents and non residents observed in our case studies. More specifically, we explore whether the origin of liquidity pressures, specific features of domestic financial systems and the reliance of the domestic private sector on international capital markets contributed to create incentives for the sovereign to discriminate in one or the other direction.

The origin of liquidity pressures

A first hypothesis derived from the model is that the decision to discriminate depends on the origins of the liquidity pressures undergone by the authorities. If a government is primarily struggling to meet external obligations it may opt to spare resident creditors from a restructuring, or to offer them more lenient terms. Indeed, under such circumstances the liquidity relief potentially extracted from resident creditors may be considered insufficient for the government to assume the political liability of failing to honour its domestic contractual obligations or of putting the stability of the financial system at risk (see below). Conversely, if struggling primarily to roll-over domestic debt, the government may opt to discriminate against residents. In this scenario, the potential liquidity relief to be extracted from non-residents may be deemed insufficient to compensate for the effects of the loss of access to international financial markets that is likely to be associated with the restructuring of external debt both for the government itself and for the domestic corporate sector (see below). Summing up this first hypothesis, if the sovereign is struggling to roll-over external (domestic) obligations we would expect to observe discrimination against non-residents (residents).

This hypothesis needs to be qualified for at least two reasons. First of all, the currency denomination of domestic debt obligations is likely to play a relevant role in the decision to discriminate in one or the other direction. If a substantial part of that debt is denominated in local currency and the central bank lacks independence, the government may resort to seigniorage and inflation in order to reduce the burden of domestic debt servicing without explicitly restructuring its contractual obligations. This link between domestic debt and government’s incentives to inflate has been recently emphasized by Reinhart and Rogoff (2008). The bottom line for this paper is that we would expect discrimination against resident creditors to be less likely under scenarios of fiscal dominance and in countries with a large stock of domestic currency debt. This does not mean that residents will not bear the burden of the crisis in such setups. Far from it, inflation may wipe out the real value of the debt instruments they hold. However, this type of losses falls outside of the scope of this paper, which sticks to a “narrow” definition of discrimination centred on the direct participation of residents and non residents in the restructuring.

Second, there may be situations in which the government tries to squeeze
residents in order to remain current on external obligations. This could be done in various ways. For instance, a domestic restructuring of dollar-denominated debt could be instrumental to free up resources later used to honour obligations owed to non-residents. Alternatively, the government could coerce residents into absorbing further volumes of foreign currency debt. We would expect this form of discrimination against resident creditors to be more likely if the domestic financial system is highly dollarized, giving room for the government to extract domestically the currency that is needed to honour external obligations. Instead, if there are few dollars in circulation domestically, soaking liquidity from residents in order to remain current externally would not avoid the depletion of the central bank’s stock of foreign exchange reserves. This may turn out to be counterproductive if the debt crisis is compounded by a currency crisis, as is often the case in emerging markets.

Do our case studies provide some evidence in support of the liquidity pressures hypothesis? Our preferred indicators to track the origin of liquidity pressures would be the ratio of domestic short-term debt to total short-term debt or the ratio of domestic debt service to total debt service. Unfortunately, information on the maturity profile of domestic debt or the decomposition of debt servicing is scant for the countries of our sample. We are therefore constrained to use two alternative indicators: the ratio of domestic to total debt (see Figure 1) and the proportion of domestic debt to total restructured debt (see Figure 2). With the caveat that it does not take the servicing profile of domestic vs. external debt into account, higher values of the former indicator should be associated with more intense domestic liquidity pressures. In turn, the second indicator gives us an idea of the extent to which it would have been possible for governments to restructure the total amount of debt that was ultimately restructured involving only domestic creditors. Therefore, the higher that ratio, the more likely the government discriminated against residents. In order to find out whether the two special scenarios mentioned above applied to any of our case studies, we also compare the ratio of financial dollarization (reported in Figure 1 as the percentage of deposits denominated in foreign currency) and the degree of fiscal dominance at the time of their respective debt restructurings (reported in Figure 2 as the Cukierman index of central bank independence).18,19

Sources for Figures 1 and 2: CLYPS database; Art. IV reports; Owen & Robinson (2003); Polillo and Guillen (2005), Carstens and Jácome (2005), Jácome and Vázquez (2005), Díaz-Cassou, Erce-Domínguez and Vázquez-Zamora (2008), Moody’s (2007) national sources (Secretaría de Estado de Hacienda, Republica Dominicana); authors’ calculations.

18 The ratios reported in Figure 2 correspond to period t, with the exception of Russia, where we report data for t-1. This is justified by the fact that after the August 1998 Russian default, this ratio becomes distorted due to the strong fluctuations of the rouble. Such an exchange rate effect is not so acute in the other cases either because the debt restructuring was launched closer to the end of the corresponding year, because domestic debt was not denominated in domestic currency or because the exchange rate was more stable. No CBI available for Belize. The CBI reported for Uruguay corresponds to year t-3. Because Dominica and Grenada are members of the ECCU, we assume their CBI to be one (maximum degree of central bank independence).
Consistent with our model on the role of liquidity pressures, Figure 1 shows that the countries of our sample with a lower proportion of domestic to total debt are Ecuador, the Dominican Republic and Belize, the three of which discriminated against non-residents in their respective debt restructurings. In addition, and as we would expect, Figure 2 shows that these countries did also display low ratios of domestic debt to restructured debt. Surprisingly, however, the proportion of domestic to total debt and the ratio of domestic to restructured debt were the highest in Pakistan, which is the fourth case in which residents were either spared or treated preferentially in the debt workout. The currency denomination of its domestic debt together with the lack of independence of its central bank may provide an explanation for the Pakistani exception. Indeed, Figure 2 shows that Pakistan had the least independent central bank among the countries of our sample. It may well be, therefore, that the government monetized a substantial part of its deficit, diluting the burden of domestic debt and partly overcoming the liquidity pressures stemming from local currency claims in the hands of residents. Agha and Khan (2006) provide an empirical account on the significance of fiscal dominance in Pakistan which supports this hypothesis. Although this practice has become less common in recent years, they argue that a substantial portion of fiscal deficits was still financed through the State Bank of Pakistan in the late 90s. This could only have eased domestic liquidity pressures, thereby shaping the outcome of this debt restructuring.
In line with other models, Russia, the only country of our sample that managed to stick to a discriminatory approach against residents all through its debt restructuring, had a relatively high proportion of domestic to total debt. In fact, as mentioned above, it is well known that in this case liquidity pressures were mostly generated by rouble denominated treasury bills issued domestically (Owen and Robinson, 2003). Especially in light of the aforementioned Pakistani experience and given the relative lack of independence of its central bank (see Figure 2), an interesting question is why the Russian authorities did seemingly restrain from resorting to inflation to honour and dilute such domestic debt instruments. A possible explanation for these divergent experiences is that by the late 90s Russia had recently completed a painful process of monetary stabilization, overcoming years of hyperinflation and fast economic decline. Under such circumstances, the Russian government is likely to have been more cautious when deciding on whether to involve the central bank in the resolution of its debt crisis. A similar explanation may apply to the case of Ukraine, where a comparable stabilization process was undergone prior to the first wave of selective restructurings of domestic debt obligations in 1998.

The Argentine experience of early discrimination against resident creditors differs from Russia’s in that the pressure to alleviate domestic liquidity pressures was less intense. In fact, Figure 1 shows that, among the countries of our sample, Argentina did not have a particularly high proportion of domestic to total debt. Rather, there is ground to argue that in this case the observed pattern of early discrimination against residents was mostly aimed at substituting external
sources of finance, from which the Argentine government had been effectively cut out in the months leading to the default, for domestic sources of finance. As mentioned above, this was done initially by exerting moral suasion on residents (firms, banks and pension funds) to increase their exposure to the sovereign, and later by coercing them into restructuring specific instruments. Given that the domestic financial system was highly dollarized, there was a relatively large pool of privately held foreign currency in the hands of residents which the government tried to soak in order to remain current externally. After the sovereign default was consummated in December 2001, this motivation disappeared and the discriminatory measures adopted by the authorities were mostly aimed at softening the impact of the crisis on resident creditors.

According to the liquidity pressures hypothesis, the countries that adopted a neutral approach should be expected to have obtained a non-negligible liquidity relief from the inclusion of resident creditors in the restructuring. In fact, in Dominica, Grenada and Uruguay domestic obligations amounted to about 30% of total obligations. However, other motivations may also explain these countries’ restructuring approach. Most notably, some governments may avoid discrimination in order to signal their goodwill and cooperative disposition towards their external creditors. This motivation is likely to have been particularly relevant in the case of Uruguay. Indeed, Uruguay’s emphasis on inter-creditor equity (as well as the low haircut that was eventually attached to this restructuring) is best explained by the government’s intention to differentiate this crisis resolution package from the contentious Argentine experience. Probably, the adoption of such a market-friendly stance was also encouraged by the IMF, whose leverage on the authorities was particularly strong given that its Uruguayan financial program was the largest in history if measured against the size of the recipient economy (Díaz-Cassou et al, 2008). Uruguay’s struggle to present its restructuring as the antithesis of Argentina’s uncooperative stance towards bondholders may therefore explain why, in spite of having a similar debt structure and comparable levels of financial dollarization, both countries adopted such different strategies vis-à-vis their domestic and external creditors.

In fact, this same line of reasoning may explain why the mechanisms that are explored below as determinants of the patterns of discrimination observed in our case studies appear to have played a somewhat weaker role in the case of Uruguay.

The domestic financial system

The most important domestic holders of sovereign debt in emerging and developing countries are usually resident financial institutions. As a result, it is often the case that domestic banks are highly exposed to government paper in such economies. The countries of our sample were no exception in that respect: as shown in Figure 3, in period t-1, public debt constituted about 30% of total banks’ assets in Pakistan and Russia, 17% in Argentina and close to 10% in Belize, Dominica, Dominican Republic, Ecuador, Ukraine and Uruguay. Given such levels of exposure to the public sector, a risk associated with the restruc-
turing of domestic debt in emerging economies is its potential impact on the stability of the banking system. On the asset side, the ‘haircut’ associated with the restructuring constitutes a direct loss for financial institutions to the extent that they hold restructured debt instruments. Perhaps even more importantly, on the liability side the restructuring can feed a loss of confidence on domestic banks, potentially large scale deposit withdrawals and an interruption of interbank credit lines. In this context, restructuring sovereign debt in emerging markets poses the risk of triggering or aggravating a banking crises and a credit crunch.

One argument defended in this paper is that, as a result of certain features of their banking systems, some governments tend to be more vigilant than others over the risks induced by a debt restructuring on domestic financial stability, which may contribute to explain certain patterns of discrimination between residents and foreign creditors. Firstly, there is a wide variation in the importance of financial intermediation in emerging markets. This is illustrated in the differences observed in the stock of credit to the private sector among the countries of our sample which, at the outset of the crises, ranged from almost 80 per cent of GDP in Grenada or Uruguay to less than 10 per cent of GDP in Ukraine (see Figure 3). Interestingly, the countries in which we have observed instances of early discrimination against resident creditors are precisely those with the lowest ratios of credit to the private sector: Argentina, Russia and Ukraine.

This may reflect the fact that the authorities from countries with a low level of financial intermediation can expect debt restructurings to have a more limited impact on the overall performance of their non-financial private sectors. Such sovereigns, therefore, may have less to fear about discriminating against domestic creditors if so is needed to address a debt crisis. This seems to apply especially to the cases of Russia and Ukraine, where the disconnection between the banking system and the non-financial corporate sector was particularly acute prior to the 1998 crisis (Huang et al., 2004). Instead, in countries with high levels of financial intermediation, the authorities may be more concerned about potential spillovers from the financial sector to the real sector. Indeed, where the savings investment process relies more strongly on financial intermediation, weakening the banking system as a result of the debt restructuring can be expected to be more costly in terms of foregone future economic growth (Dell’Ariccia et al., 2005). As a result, such countries may be more reluctant to involve residents in the debt workout.
In addition to financial intermediation, according to the model, the ex ante robustness of the financial system was a factor contributing to shape the government’s decision to discriminate. When the government perceives the financial system to be sound ex ante, the risks associated with the restructuring for domestic banks may be considered manageable. In such a context it may pay off for the government to try to extract liquidity domestically (i.e. to discriminate against resident creditors) in order to avoid an external default and/or to preserve some degree of access to international financial markets. Conversely, when the debt crisis is compounded by severe banking vulnerabilities, involving domestic creditors in a debt restructuring may seem counterproductive from the outset. Indeed, governments engulfed in a banking crisis are probably facing the need to re-capitalise domestic banks, as a result of which they may be more reluctant to imposing further losses onto financial institutions through a debt restructuring (i.e. to discriminate against foreign creditors). Summing up, we argue that the ex ante robustness of the banking system should be negatively correlated with governments’ propensity to discriminate against external creditors.

Do our case studies bring some support to this hypothesis? To proxy for the ex ante soundness of the financial system we analyze the evolution of two variables in the quarters surrounding the beginning of the debt restructuring process. The first variable captures the evolution of total deposits in local currency and in US$ measured as an index. The second variable captures the evolution of the liquidity support extended to the banking sector by the mon-
etary authority. As in Laeven and Valencia (2008), we proxy this liquidity support with claims of the monetary authority on the banking sector, expressed as a percentage of total deposits and foreign liabilities in the banking system. Figure 4 in the Appendix shows the evolution of these two variables for the ten countries of our sample.

Consistent with our hypothesis, the three countries that discriminated against residents appeared to have relatively sound banking systems prior to the debt restructuring. As shown in Figure 4, in Argentina the total deposit base remained stable up until the quarter of the June 2001 mega-swap, which we identify as the beginning of the debt restructuring. Another manifestation of the relative stability of the Argentine financial system was the low volume of liquidity injected by the central bank, which remained well below 1 per cent of total deposits and foreign liabilities until the mega-swap. In this context, the government had some reason to be confident about the capacity of the banking sector to absorb larger volumes of public debt, or even the losses imposed by a selective restructuring. However, right after the mega-swap was completed, the banking system began to experience severe problems. In fact, the run on deposits of November-December 2001 was largely due to an increasing public concern over the future solvency of Argentine banks given their high exposure to a sovereign on the brink of default. This illustrates the fact that placing an excessive burden on domestic banks at the early stages of a debt crisis poses substantial risks to financial stability even when these institutions seem resilient ex ante.

As suggested by the growing deposit base exhibited in both countries, the banking systems of Russia and Ukraine also appeared to be in a relatively stable situation in the quarters leading to the beginning of their respective debt restructurings. Added to the aforementioned low level of financial intermediation both in Russia and Ukraine, this probably contributes to explain why the government discriminated against residents at the early stages of these debt restructurings. As suggested by the observed surge in liquidity support extended to domestic financial institutions by the monetary authority in Russia, severe banking problems emerged following the August 1998 default. However, and further illustrating the disconnection between the domestic financial system and the real economy, this banking crisis did only constrain moderately the recovery of Russia’s real output, which was quite pronounced in 1999 and thereafter (Owen and Robinson, 2003). In the case of Ukraine, instead, we do not observe any clear indication of the presence of post-restructuring banking problems. In part, this may be due to the fact that during the later stages of this debt crisis, the bulk of the restructuring’s burden was borne by external creditors and not by resident institutions.

In contrast, the Dominican Republic, Ecuador and, to a lesser extent, Pakistan, three of the countries that discriminated against non-resident creditors, experienced substantial banking problems prior to the launching of their respective debt restructurings. In the Dominican Republic, this materialized in massive injections of liquidity: although in slight decline, the central bank’s claims on the banking sector still constituted about 40 per cent of total deposits and liabilities in the quarters leading to the launching of the debt restructuring.
Indeed, to a large extent the Dominican debt restructuring was the result of the mishandling of this banking crisis and the ensuing surge in public debt required for recapitalization purposes. In Ecuador, both a collapse in deposits and a surge in liquidity injections are apparent a few months before the 1999 default. Although Pakistan was not going through a full-blown banking crisis, the large and rising central bank’s claims on the banking sector suggests the existence of significant fragilities in the financial system. In line with our hypothesis on the role of the domestic banking system, it is highly likely that fears about the impact of the restructuring on its already troubled financial institutions did constrain the choices ultimately made by the Dominican Republic, Ecuador and Pakistan as regards the treatment of its resident creditors.

Another country where the debt restructuring was preceded by a banking crisis was Uruguay. In that case, a sustained fall in dollar-denominated deposits can be observed in the quarters leading to the restructuring. This was largely due to a contagion from the Argentine crisis which materialized in massive deposit withdrawals on the part of cash-strapped Argentine nationals caught in the Corralito. Given the extent of its banking problems, the fact that the Uruguayan authorities opted to apply a neutral approach instead of granting a preferential treatment to domestic financial institutions contrasts with the experiences of the Dominican Republic, Ecuador and Pakistan. To some extent, this may be due to the fact that by the time of the launching of the debt restructuring the worse of the banking crisis had already passed, as suggested by the evolution of the central banks’ claims on the banking sector, which were already close to zero in 2003. As mentioned above, another factor which we consider important to explain this exception is Uruguay’s struggle to present its restructuring as the antithesis of Argentina’s crisis resolution approach.

The domestic private sector’s reliance on international financial markets

Our last hypothesis regarding governments’ strategic behavior vis-à-vis their creditors relates to the importance of external funding for the private sector. Various recent contributions such as Arteta and Hale (2008) have emphasized that sovereign debt crises have a negative impact on the corporate sector’s access to international financial markets in emerging economies. Similarly, Trebesch (2009) finds that the extent of this loss of access is partly determined by the coerciveness with which the government treats its external creditors during a debt restructuring. Along these lines, we argue that country authorities are likely to take their corporate sector’s reliance on international financial markets into account when deciding whether to discriminate between resident and non residents. If keeping access to external finance is deemed important for the functioning of the corporate sector, the government may decide to act more coercively on its domestic financiers while trying to fully or partially spare its foreign creditors from the effects of the debt workout. Such a strategic stance would be adopted in the hope of preserving some level of corporate sector’s access to international financial markets and, in so doing, reduce the impact of
the crisis on the real economy. Instead, according to this line of reasoning, a small reliance on international financial markets on the part of the corporate sector should tend to reinforce the sovereign’s incentives to discriminate against non residents when conducting a debt restructuring.

This section proposes various indicators to compare the private sector’s reliance on international financial markets among our sample countries. Because we argue that access to external sources of finance is all the more important for the corporate sector when credit is constrained domestically, these indicators are presented as ratios against the stock of domestic credit to the private sector.\textsuperscript{20} In the first place, we compare the average weight of the various types of capital inflows considered in the balance of payments statistics over the five years that preceded the crises. As shown in Figure 5, according to this metric the countries that discriminated against domestic creditors at an early stage of their debt restructuring appear to be those that exhibited a greater dependency on international sources of finance. This was particularly clear in Ukraine, where foreign banks’ loans to the non-financial private sector averaged over 80% of domestic credit prior to the crisis.\textsuperscript{21} This reflects the fact that in Ukraine and to a lesser extent in Russia, the underdevelopment of the financial system was such that recently privatized firms had a very limited access to domestic credit during most of the 1990s. In such a scenario, retaining some degree of access to international financial markets for the corporate sector may have been prioritized over the objective of mitigating the impact of the restructuring of domestic obligations on financial stability. In the case of Argentina, on top of FDI, activity in international financial markets was dominated by debt portfolio investment, which averaged 12% of domestic credit, second only to Ukraine among the countries of our sample. However, IFS data does not allow us to disaggregate between debt portfolio flows directed to the private or to the public sector, as a result of which this can only be considered a partial indicator of domestic firms’ reliance on international financial markets.

\textsuperscript{20}The IMF’s 2009 Global Financial Stability Report uses this same approach to analyze whether domestic credit could be used as a substitute for external financing in a number of emerging economies (GFSR, 2009).

\textsuperscript{21}For the cases of Dominica and Grenada IFS data does not allow to disentangle between debt and equity portfolio investment and private financial, private non financial and public other investment. That’s why Figure 5 does not provide the distinction.
Apart from FDI, which tends to behave in its own idiosyncratic way during emerging market crises (Gopinath and Aguiar, 2005), the only three categories of capital flows reported by IFS that are unambiguously directed to the private sector are equity portfolio flows, other investment towards the private non-financial sector (mostly foreign bank loans to domestic firms), and other investment towards the private financial system (mostly interbank loans involving a foreign bank). Figure 6, that can be found in the Appendix, compares the weight of these three flows for our sample countries during the years leading to the crises. Consistent with our hypothesis, Figure 6 shows that the average for each of these flows in the three countries that discriminated against residents (Argentina, Russia and Ukraine) was significantly higher than that for the other countries of our sample. Again, the Russian and Ukrainian private sectors’ reliance on international sources of finance was largely explained by domestic credit constraints. Two years prior to the launching of the restructuring, private equity flows amounted to 7% of domestic credit in Russia and 20% in Ukraine, while foreign bank loans to the private non financial sector reached as much as 11% and 91% of domestic credit respectively. These figures are much higher than those of any of the countries that did not discriminate against resident creditors. In Argentina, instead, net outflows both of equity and bank loans to the corporate sector were registered in the years that preceded the default, suggesting that by that time private investors were already quite concerned about the sustainability of the Convertibility regime. However, back in the mid 1990s, Argentina was one of the most important recipient of equity and international loans both among the countries of our sample and among
emerging markets as a whole. Indeed, in between 1993 and 1998 the combined net amount of these three categories of capital inflows averaged as much as 12% of domestic credit.\footnote{IFS, WDI and authors’ calculations.}

![Figure 7: Corporate activity in international financial markets](image)

Figure 7: Corporate activity in international financial markets

Finally, in order to compare corporate activity in international financial markets we use data from DCM Analytic to track cross-border financial operations involving our sample countries’ private sectors during the three years that preceded the launching of the restructuring. More precisely, we look for bonds and equity issuances in foreign jurisdictions, and for syndicated loans operations with international banks. As shown in Figure 7, according to this database Argentina and Russia were by far the most active players in international financial markets among the countries of our sample. Syndicated credit appears to have been the most important source of external credit both for the Argentine and for the Russian corporate sectors. However, Argentine firms were also able to issue bonds externally on a substantial scale (for an average amount of close to 3% of domestic credit) while Russian firms did participate in foreign equity markets (for an average amount of about 2% of domestic credit). Again, this experience is consistent with the idea that the largest the reliance of domestic firms on external finance, the likelier will the government be to discriminate against resident creditors. On the other hand, the fact that Pakistan did discriminate against external creditors in spite of displaying a relatively substantial corporate activity in international financial markets (syndicated loans averaged about 10% of domestic credit prior to the crisis) does not square well with this hypothesis. To some extent, this may be due to the fact that, as emphasized above, Pakistan resorted to inflation in order to cope with domestic liquidity.
pressures. Furthermore, given its relatively low level of financial dollarization, Pakistan had little room to extract domestically the volume of foreign currency required to remain current on external debt.

Conclusions

Following Reinhart and Rogoff (2008) and other recent contributions, there is a growing awareness about the fact that a traditional disregard to the role played by domestic creditors may constitute a substantial gap in the literature on sovereign risk and debt restructurings. This paper contributes to fill that gap by analyzing the relative seniority of domestic and external debt both from an empirical and a theoretical perspective. The central idea that is to be extracted from this paper is that contrary to what is commonly assumed in the literature neither domestic nor external obligations can be considered intrinsically senior. Rather, we argue that the relative seniority between both types of obligations is state dependent. We introduced a highly stylized model of endogenous debt repayment where the Government could differentiate the servicing of its obligations to foreign creditors and foreign banks. The model shows that the decision to discriminate is determined by factors such as the structure of sovereign debt, the state of the financial system and the reliance of domestic firms on international capital markets.

We test these implications by studying 10 recent sovereign debt restructurings and analyzing the role that both domestic and external creditors played during these episodes. We provide evidence that governments may treat external and domestic creditors differently, with discrimination affecting the two groups in non homogenous ways. Indeed, while the Belizean, Dominican, the Pakistani and (to a lesser extent) the Ecuadorian governments spared resident creditors from the restructurings, in the Argentine, the Russian and (to a lesser extent) the Ukrainian cases, the authorities did initially try to put the weight of the restructuring on domestic financial institutions. Interestingly, this results go against a set assumptions regarding the involvement of residents and non-residents in recent models on sovereign risk.

We further argue that, to some extent, this was simply due to the origin of liquidity pressures: countries discriminate against foreigners if they are struggling primarily with external obligations, and viceversa. However we find significant exceptions to this pattern. First, if the Central Bank lacks independence and domestic debt is denominated in local currency, this debt may be monetized (as in Pakistan) in order to relieve the sovereign from domestic sources of liquidity pressure. Second, if the domestic financial sector is highly dollarized (as in Argentina) the government may opt to discriminate against resident creditors in order to extract liquidity domestically and alleviate external sources of liquidity pressure.

On top of this rather mechanic liquidity pressure hypothesis, we find that sovereigns’ discriminatory stance is likely to be influenced by certain features of their domestic financial systems. Through its impact on domestic banks’
balance sheets, a default on domestic debt is likely to depress domestic credit provisioning and, therefore, economic activity. However, the extent to which a domestic debt restructuring will spill over to the real sector will depend on the importance of bank intermediation. In other words, in countries with low levels of intermediation such as Russia and Ukraine, discriminating against residents was seen as a less costly option than in countries with high levels of intermediation such as the Caribbean nations of our sample. In addition, sovereigns do base their decision to discriminate on the ex ante health of their banking systems. When the debt crisis is preceded by a banking crisis, as in the Dominican Republic or Ecuador, defaulting on domestic obligations is likely to be perceived as a “last nail in the coffin” of domestic banks, which is why sovereigns tend to discriminate against non-residents. In turn, when the domestic financial system is perceived to be sound ex ante (as in Argentina), the government may be tempted to “gamble for redemption” by discriminating against residents as the debt crisis unfolds. The third mechanism that is identified in this paper is that played by international capital markets: external defaults have been shown to curtail foreign inflows to private agents. As a result, the potential impact of defaults on private capital flows and the relative importance of these flows for the domestic productive sector are likely to be taken into account by governments undergoing a debt crisis. Russia and Ukraine with tight domestic financial constraints and with local firms’ substantial reliance on international sources of finance may best fit this profile: keeping access to external financiers may have been seen as a less costly option than impairing domestic banks’ balance sheets.
References


[23] IMF Country Reports - various countries and issues

[24] IMF Reviews under the Stand-By-Arrangements - various countries and issues.


## Appendix

### Model’s Time Line

<table>
<thead>
<tr>
<th></th>
<th>$t = 0$</th>
<th>$t = 1$</th>
<th>$t = 2$</th>
<th>payoffs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Government</strong></td>
<td>Observes $(T, C_d, C_f, s_0)$</td>
<td>Inactive</td>
<td></td>
<td>payoffs</td>
</tr>
<tr>
<td></td>
<td>Repays $(d_h, d_f)$</td>
<td>Inactive</td>
<td></td>
<td>payoffs</td>
</tr>
<tr>
<td><strong>Entrepreneurs</strong></td>
<td>Inactive</td>
<td>Endowed with project Use $C_d$ and $C_f$ to acquire $k_f$ and $k_h$</td>
<td></td>
<td>payoffs</td>
</tr>
<tr>
<td><strong>Domestic Banks</strong></td>
<td>Inactive</td>
<td>Balance sheet affected $D = d_hB^h + s_0$</td>
<td>$Lend \ b_e$</td>
<td>payoffs</td>
</tr>
<tr>
<td><strong>Foreign Creditors</strong></td>
<td>Collateral valuation affected $C_f(d_f)$</td>
<td>$Lend \ b_e^f$</td>
<td></td>
<td>payoffs</td>
</tr>
</tbody>
</table>
Figure 4: Deposits, credit to the private sector and Central Bank liquidity support

Source: IFS and authors’ calculations.
<table>
<thead>
<tr>
<th>TABLE 1 - RESTRUCTURINGS: KEY FEATURES</th>
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</thead>
<tbody>
<tr>
<td>Russia</td>
</tr>
<tr>
<td>Debt to GDP (%)</td>
</tr>
<tr>
<td>Restructured debt (% GDP)</td>
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<tr>
<td>Rest. debt owed to the private sector (% GDP)</td>
</tr>
<tr>
<td>Paris Club reschedulings (USD bn)</td>
</tr>
<tr>
<td>Paris Club reschedulings (% GDP)</td>
</tr>
<tr>
<td>Duration (months)</td>
</tr>
<tr>
<td>Default on external private debt</td>
</tr>
<tr>
<td>Default on domestic private debt</td>
</tr>
<tr>
<td>Default on official debt</td>
</tr>
<tr>
<td>External debt restructuring</td>
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<tr>
<td>Domestic debt restructuring</td>
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<tr>
<td>Official debt restructuring</td>
</tr>
<tr>
<td>NPV loss (%)</td>
</tr>
<tr>
<td>Coerciveness index</td>
</tr>
<tr>
<td>Capital controls</td>
</tr>
<tr>
<td>Deposit freezes</td>
</tr>
<tr>
<td>Access to int'l capital markets</td>
</tr>
<tr>
<td>EMIB Global level below 1000 p.b.</td>
</tr>
<tr>
<td>Liquidity</td>
</tr>
<tr>
<td>TDS (% total reserves including gold, t-1)</td>
</tr>
</tbody>
</table>

1. We consider 2004 as the year of the restructuring even if the debt exchange offer was launched in December of the previous year.
2. Closest available data to the launch of the exchange.
3. Index of Government Coerciveness (Enderlein, Müller and Trebesch, 2007), ranging from 0 (cooperative restructuring without missed payments) to 9 (highest level of coerciveness).
4. No domestically issued debt instrument was restructured but one third of the bonds exchanged in late 1999 were held by residents.
5. The formal debt exchange offer was made in April 2004.
6. The exchange offer formally closed in June 2004, but the deal was not completed until 2007 due to discussions with hold out creditors.
7. Although this was a pre-emptive restructuring, 2 bonds were in legal dispute.
8. The offer was launched in September 2005.
9. Ukraine was in default for a short period.
10. Some minor bonds carried a higher haircut (Sturzenegger and Zettelmeyer, 2005).
11. This figure does not include 52 bn USD affected by 2002 pesification (of which 16.3 were redollarised in 2003).
12. The Paris Club agreement was not included.
13. Quarters after the announcement of the restructuring (except Argentina's int. bond issuance: quarters after December 2001 default)
14. Ratios computed using 2004 GDP.

Figure 6: Portfolio equity and other investment to the private sector

Net portfolio equity investment as a % of GDP (t-6, t-2)

Net other investment to banks as a % of GDP (t-6, t-2)

Net other investment to non-financial sector as a % of GDP (t-6, t-2)