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SOVEREIGN DEFAULTERS: DO INTERNATIONAL CAPITAL MARKETS PUNISH THEM?

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Resumen

En este trabajo estudiamos desde un punto de vista empírico si los países que realizan *default* en su deuda externa soberana ven reducidos los flujos de capitales que reciben tal como ha sugerido la literatura. Los datos que utilizamos contienen información de (i) la identidad del país que realiza *default* y sus acreedores y (ii) los flujos de inversión extranjera directa (IED). Con esto podemos analizar cómo los flujos de IED son afectados por el *default* soberano pues podemos distinguir los flujos que provienen de los países acreedores y no acreedores. De acuerdo a nuestras estimaciones esta distinción es muy relevante pues la disminución de los flujos de IED se concentra marcadamente en aquellos provenientes de los países acreedores del país que ha cometido *default*. La caída de la IED es mayor en los años más próximos a la fecha de *default* y más pronunciada en aquellos países que han cometido *default* en más oportunidades. No encontramos evidencia respecto a que los países que declaran *default* vean reducidas sus opciones de invertir ellos mismos en el exterior, otro de los mecanismos de castigo potenciales sugeridos por en la literatura.

Abstract

We study empirically if countries that default on their debt experience a reduction in their capital inflows as suggested by the literature. Our data contains information on (i) the defaulter countries and their creditors and (ii) bilateral foreign direct investment (FDI) flows. With this we can study how FDI flows are affected by sovereign default distinguishing among those coming from defaulters' creditor countries and others. According to our estimations, this distinction is crucial since the decline of FDI inflows after default is markedly concentrated on those flows originating in defaulters' creditor countries. The decay in FDI flows is higher in the years closer to the default date and for countries that have defaulted more times. We do not find evidence that countries shut their doors to defaulters' investment abroad, which is also a cost of default suggested in the literature.

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1 Introduction and Motivation

From time to time some countries restructure or default on their sovereign foreign debt. The fact that in sovereign markets there are no analogues to bankruptcy laws and procedures as those that exist in domestic debt markets raises a number of interesting issues. One of them is the well known question of why countries ever repay their debts given that their creditors don't have expedite tools to recoup the defaulted amount and impose a penalty on the defaulter. Since cross-border lending to sovereign entities is actually observed, it seems obvious that default is deterred through some mechanism. Our goal in this paper is to provide empirical evidence on one of the potential costs that defaulter countries might suffer: a decrease of capital inflows. This channel might serve as a punishment to deter future defaults and help then explain why cross-border sovereign debt markets actually exists.

Several works in the theoretical literature have identified the reduction in capital flows, permanent or temporary, as a possible punishment from default (see Eaton and Fernandez (1995) for a survey of the literature). In some of these papers default is a possible equilibrium outcome whether in others the threat of exclusion from capital markets prevents observing voluntary defaults and punishment in equilibrium. The seminal paper of Eaton and Gersovitz (1981) and its followers (e.g. Arellano (2008)) could be included in the first group. In these models markets are incomplete and countries may prefer to default and be excluded from access to capital markets under some circumstances (e.g. bad shocks). The second group of works uses the exclusion from capital markets to derive, in a complete market setting, constrained efficient contracts where the threat of exclusion from capital markets prevent debtor countries from voluntary defaulting on their debts. Thus, voluntary default and punishment are not actually observed in equilibrium (e.g. Grossman and Van Huyck (1988) and Aguiar, Amador, and Gopinath (2007)). However, in these settings it is possible to observe defaults that are associated with justified contingencies (e.g. bad shocks). These are "excusable default" using Grossman and Van Huyck (1988) words and would not be punished since they are contingencies considered in the contract. Consequently, these models predict that punishment would not be actually observed.

In the real world defaults are actually observed and it remains an open empirical question to see if they are followed by a punishment through less capital flows to the defaulter country. The goal of this paper is not to elucidate if these defaults are excusable or voluntary but simply to see if there is exclusion from capital markets as a consequence of default. However, if there were a correctly identified reduction in capital flows as a consequence of a default, it could be interpreted

as evidence in favor of non-excusable default.[1]

We study if exclusion from capital markets is a relevant channel considering different characteristics of the debtor-creditor relationship, of the default and of defaulting countries that may affect their access to international capital markets. To conduct the analysis, we use data on FDI flows and defaults which are both of bilateral nature. The data on FDI allows us to identify which country is the source and which country is the host or recipient of FDI flows. Also, as Rose (2005), Martinez and Sandleris (2006) and Arteta and Hale (2008), to date default episodes we use data on debt restructured at the Paris Club. This source gives information on the countries that restructured their debts and the specific creditors that were involved in the renegotiation process. Combining these two data sources we are able to distinguish if the reduction (if any) of capital inflows to defaulter countries comes from those countries directly affected by the default or from every country that could be a supplier of foreign capital.

In addition to allowing us to study issues that have not been analyzed in previous work, this structure of the data is useful to deal with some identification concerns that could be present in other papers that have studied the existence of a punishment mechanism through capital flows. Typically the literature has measured sovereign default with a dummy variable indicating the years during which the country has ceased to comply with its debt obligations. This method to measure default has a number of potential identification problems. One of the main concerns is that the default dummy is really measuring a generalized economic disruption.

From this perspective, it is not clear whether a negative coefficient of a default dummy on *total* capital inflows is really capturing a punishment imposed by disgruntled creditors or a worsening of defaulters' economic outlook that could drive a fall in investment and the default. Thus, there could be a missing variable problem, e.g. the technological state of the country, that is driving default, output and investment.[2] In contrast to this, our data allows us to distinguish if the decline in capital (FDI) inflows is from those countries which debts were defaulted upon or, in addition, from other countries. A general decline in capital inflows might be related to a worsening in the economic situation of the defaulter while a decline from those countries directly involved in the default would be more related to a punishment to the defaulter.

Defaults may increase political or institutional instability or the risk of future expropriation and the reduction in capital inflows could be the consequence of these factors rather than the

[1]Some of the theoretical works where non-excusable defaults are not observed in equilibrium are motivated by empirical works that do not find evidence of punishment after default.

[2]For example Aguiar, Amador, and Gopinath (2007) present a model where, when a participation constraint binds, capital is lower after bad shocks than after good ones. This suggests that the reduction in FDI could be assigned to a default when it is really a consequence of a bad shock.

consequence of default.[3] We think that our approach helps identification of default punishments in these cases. We would expect a reduction from all sources if the cause of this reduction were an increase in debtor's political or institutional stability or its appetite for expropriation. In addition, if defaults lead to a fear of future expropriation and an equilibrium fall in foreign investment, this could be a significant threat that could sustain sovereign lending.

The other advantage of the data assembled in this paper in comparison to previous work in the literature is that it reduces the problem of reverse causality that might hamper the identification of a punishment through capital inflows to defaulter countries. Since countries to which the debtor country defaults upon were "selected" when the debt contracts were signed, the composition of this group of countries is already defined at the moment of default. This feature of the data indicates that our default measure is unlikely to be affected by current FDI flows. Thus, we believe, that a valuable contribution of this paper is to use bilateral information on FDI and default to alleviate the problems of identification just mentioned.

The experience of Russia provides an interesting case study for the dynamics of FDI observed after sovereign default and it is illustrative of the motivation of this work. As is well known the Russian default of 1997 is one of the largest in recent memory. Germany and Japan were two of the creditors of the Russian government and among the biggest sources of FDI in the first part of the 1990s. After the default Germany's stock of FDI in Russia declined 10% in spite of the fact that the total FDI stock of German ownership in the world increase by 20%. On the other hand, the value of Japan's investment in Russia stood in 1999 at 18 millions of dollars, in sharp contrast to the stock of 940 millions of dollars at the end of 1997. This contrasts with the case of Korea that was not a creditor of Russia and whose FDI investment in Russia increased in the year following the default. The purpose of this paper is to uncover if this pattern that suggests a punishment to the defaulter is observed in a broader sample.

The evidence we present in this paper suggests indeed that countries directly involved in the default reduce their capital flows to the defaulter country. On the contrary, there is no evidence that capital flows from those countries to which the debtor does not default diminish in the aftermath of sovereign default. This seems to indicate the existence of a punishment to defaulting countries imposed by their creditors.

We also analyze if the amount of debt defaulted is important for the punishment. The premise is that higher defaults would harm more the international financial community and therefore would be more heavily punished. Along with this one can expect that creditors would like to make the

[3]See Aguiar, Amador, and Gopinath (2007) and Thomas and Worrall (1994) for models where the risk of expropriation affects investment in a country.

penalty to defaulters contingent on the amount defaulted to provide incentives that lead to minimize the amount defaulted if countries choose to renege on its external obligations. We find some evidence that higher amounts defaulted lead to lower levels of capital inflows. However, this result should be taken with caution since we only have data on the amount renegotiated at the Paris Club but not data on the actual haircut or losses that creditors suffer.

Next we analyze if capital *outflows* from defaulting countries are reduced after an event of default since a possible punishment is that countries close their doors to defaulters' investment abroad. This empirical exercise is inspired by the work of Bulow and Rogoff (1989) and Wright (2002). Bulow and Rogoff (1989) showed that exclusion from capital markets as default punishment would not be relevant if defaulters have access to an investment technology abroad and Wright (2002) showed that this punishment is still relevant if international creditors collude to punish the defaulter preventing it from investing abroad. Our empirical findings do not support this conjecture since we do not find evidence that defaulter countries' investment abroad is reduced after a default.[4]

If there are costs derived from default it is likely that they last only for a limited number of periods as suggested by anecdotal and empirical evidence discussed below. In this respect we find that the longer the time elapsed since a default, the larger the capital inflows to the defaulter country. We also study if the history of a country as a defaulter affect the capital flows of the country after the default. Here the premise is that countries with a higher number of defaults would have a worse reputation than countries with a lower number of defaults. The results we obtain confirm this: countries with a large track record on defaults receive lower capital flows.

Since Paris Club debt includes only official debt we are considering only *sovereign* defaults in our analysis.[5] On the other hand, there are many kinds of cross-border capital flows and we focus our study in one of them, FDI flows, which have become the main source of capital flows to developing countries. FDI flows are mainly transactions among private parties so it might not be immediately apparent why a sovereign default might affect them. Nevertheless, the use of FDI flows can be justified on several grounds. There is a literature on the benefits of FDI to a country that would make a relevant punishment its reduction as a consequence of default and it is an open empirical question if sovereign default has an effect on FDI (and capital flows in general). Also, although the theoretical literature on the exclusion of capital markets does not distinguish in general between types of capital flows, from many works it can be inferred from their modeling that the capital flow has FDI characteristics. Lastly, and very importantly from the prospective of this work,

[4] In Wright (2002) repudiation is not observed in equilibrium and thus the model predicts that the punishment of the collusion of foreign creditors would not be observed in equilibrium. However, we think that is a relevant empirical exercise to see if this punishment is actually observed.

[5] As noted below there are many definitions of defaults and one of them has to be chosen in order to conduct the analysis.

the use of FDI data is useful because it is one of the few cross-border capital flows for which there exists *bilateral* data that identifies both countries included in each deal for an extended period of time. As explained earlier this feature of the data is crucial to our identification strategy of a punishment for sovereign default.

There are several mechanisms through which default among sovereign governments might affect FDI which is an economic transaction mostly between private sector entities. First, sovereign governments might exert pressure to domestic firms to stop doing business with defaulter countries. An example of this is provided by Chile's chief negotiator during the debt crisis of the 1980s. He mentions that the main Chilean mining public company (which provides a significant share of government revenues) had problems doing business with Japanese counterparts while the Chilean debt was in default due to the pressure exerted by Japanese government on those firms.[6] This example reveals that governments can impose costs on defaulter countries. Apart from this informal mechanism, there are two additional channels that might explain the decline in FDI after sovereign default documented in our paper.

First, governments sometimes provide insurance contracts to FDI activities undertaken by firms of their countries abroad. A default on sovereign debt triggers a retaliation of the sovereign government through denial of this insurance which in turns hinders FDI in the defaulter. This mechanism has been highlighted in the aftermath of the Argentinean default of 2001. The collapse of FDI inflows has been attributed in several press reports to the lack of FDI insurance that has ceased to be provided by disgruntled source-country governments.[7] The second mechanism through which sovereign default could be followed by a decline of FDI concerns the role of export-promotion agencies of developed countries. These agencies provide subsidized credit for firms willing to establish foreign subsidiaries and export back to their home countries. Governments that have been defaulted upon tend to freeze this type of financing which naturally leads to a decline of FDI in the defaulter country.[8]

The rest of the paper is organized as follows: Section 2 presents a review of the related empirical literature, Section 3 describes the data on FDI flows and on defaults that we use in the paper, Section 4 discusses the empirical methodology and some econometric issues that arise. Section 5 presents the results while section 6 concludes the paper.

[6] See Somerville (1990)

[7] This information appeared in *La Nacion*, an Argentinean newspaper on August 17 and 22 of 2007.

[8] This mechanism is highlighted by Abram, de la Balze, González, Krause, and Rodríguez (2007) in the aftermath of Argentina's default of 2001.

2 Literature Review

Now lets turn our attention to the literature that has studied, from an empirical point of view, the reasons why sovereign countries repay their foreign debts and the related question of the sanctions that fall upon defaulting countries. We will review the evidence on each of the punishment channels that have been mentioned in the theoretical literature. First we will consider the extent to which defaulter countries experience a greater difficulties to borrow from international capital markets. These difficulties can take two forms: exclusion from new funds and/or an increase in the cost of the funds borrowed.

An important body of evidence on this issue originates in the work that followed the Debt Crises of the 1980s, when developing countries -especially in Latin America- defaulted on their foreign debt obligations. Regarding the eventual costs of defaulting both Eichengreen (1989) and Lindert and Morton (1989) found no evidence that defaulters were punished by creditors through higher interest rates on new loans. Moreover, those authors show that defaulters and non-defaulters were both excluded from international capital markets. This finding might be in part due to the fact, acknowledged by the authors, that they use post-Debt Crisis data where capital flows to all developing countries came to a complete stop. In a related paper Ozler (1993) finds that past defaulters did have to pay a premium on the interest rate for sovereign debt issued in the 1970s. She finds that defaults previous to 1930 do not affect the premium paid but defaults after that year do affect it. However, the premium is quantitatively small and does not constitute a punishment that appears likely to deter future defaults.

After a long hiatus the empirical literature on the costs of default revived again in recent years after the sovereign defaults of Russia in 1997 and Argentina in 2001.[9] Eichengreen and Portes (2000) revisit the historical evidence on the costs of default focusing on access to international capital markets and the premium on the interest rate paid by each country. Regarding the first of these, they find no clear evidence that previous default hinders access to international capital markets when analyzing post World War II data. Along with this, there is no robust evidence that countries that have defaulted on their sovereign obligations end up paying a higher premium on subsequent debt issues.[10] This result is also corroborated by Obstfeld and Taylor (2004) who find a "surprisingly small" effect of past default on the interest rate spread of sovereign debt. Eichengreen and Portes (2000) also look at the more recent evidence of debt issues of the 1990s and

[9] One of the central themes of this more recent work is to design optimal institutions to deal with sovereign default, especially the role of the Bretton Woods institutions in the aftermath of default. This topic is beyond the scope of this paper, see Eichengreen and Portes (1995) and Eichengreen and Portes (2000) for a thorough discussion of this issue.

[10] This evidence is reported in Tables 3 and 4 of Eichengreen and Portes (2000)

also find no evidence that previous debt rescheduling limits access to international capital markets. Nevertheless, countries that have failed to meet the original terms of their foreign obligations face a interest rate spread which, although significant, does not appear to forbid these countries access to new international credit.

Apart from these traditional punishment mechanisms of access to international capital markets some recent papers have explored other channels that the theoretical literature has identified as potential deterrents for sovereign default. One of these is the work of Mitchener and Weidenmeir (2005) that finds, using early 20th century data, that *super-sanctions* appear to be an effective mechanism to deter new defaulters. These *super-sanctions* include military aggressions by creditor countries and the forceful seizure of foreign currency-generating assets (e.g. the national customs administration) of defaulting countries. Even though Mitchener and Weidenmeir (2005) is one of the first papers to identify empirically an effective punishment for defaulters, these sanctions might be difficult to implement nowadays. [11]

Finally, Rose (2005) studies another possible punishment mechanism: the reduction in bilateral trade that might follow after a sovereign default. As reviewed earlier, this is one of the channels that the theoretical literature has identified as a potential cost of default. One of the most interesting features of Rose (2005) is that his data identifies both the defaulter and the creditor countries involved in each default episode. Combining this information with bilateral trade data he finds that trade between a defaulting country and its creditors declines following a default. His estimations indicates that the reduction in bilateral trade is equal to 8% per year and lasts for up to 15 years. In a related paper, Martinez and Sandleris (2006) argue that, even though countries' international trade declines after declaring sovereign default, the decay is not concentrated in the bilateral trade with creditor countries.

Similarly to Rose (2005) and Martinez and Sandleris (2006), we will use bilateral data to test for the existence of punishment to defaulters. Nevertheless, we will focus on bilateral capital flows instead of goods and services' trade and study a more ample set of punishment mechanisms. As will be explained later, the use of bilateral capital flows data allows to identify with greater accuracy the existence of an *access-to-international-capital-markets* punishment mechanism. In particular, we are able to distinguish between a "general" and "creditor specific" punishment, similar to what Martinez and Sandleris (2006) analyze for trade flows. Since we are able to distinguish among *North-to-South* and *South-to-North* capital flows, another contribution of the paper is that we can test if defaulters are also limited in their investment options abroad. As explained earlier this is also a punishment mechanism suggested by the literature and we will test its empirical relevance here.

[11] Wright (2002) illustrates the difficulties of imposing direct sanctions to sovereign defaulters with an eloquent narrative of the failed attempts of one of Russia's creditors to seize that country's assets.

From this perspective, our paper will complement previous efforts that have analyzed if capital inflows to defaulting countries decline in the aftermath of default. The details of the database that will allow us to implement this test are given in the next section.

3 Bilateral Capital Flows and Defaults Database

In order to test if defaulter countries are punished by their disgruntled creditors we need two pieces of information: (1) the identity of the creditor countries to which the country defaulted and (2) information on some economic interaction between the creditor and defaulter countries that allow to judge if the latter punish defaulting countries. The information on defaulter and creditor country pairs comes from the Paris Club renegotiations and debt restructuring database. With regard to the economic interaction among the creditor and the defaulter, in this paper we use FDI flows among them to gauge the existence of punishment for defaulting countries. As explained in Section 1 the eventual reduction of bilateral FDI flows could be a relevant punishment mechanism and its analysis is the main contribution of the paper. We will obtain the data on bilateral FDI flows from the OECD (see OECD (2004)). Let's now provide a brief description of each of these data sources.

3.1 The Paris Club

The Paris Club is an organization of official creditors that meet several times a year to agree on restructuring deals of sovereign obligations of countries undergoing repayment difficulties. The debts subject to rescheduling are those subscribed by sovereign governments or that have an explicit guarantee of the public sector. Countries undergoing payment difficulties can apply to the Paris Club in order to obtain debt relief by the creditor countries. The negotiations take place under the following four principles:[12]

1. *Imminent Default*: there must be an agreement that the debtor country is not going to be able to meet its foreign obligations under the current conditions. For this agreement to be reached, the IMF issues a report indicating that the country is headed towards sovereign default. In practice when countries apply for a Paris Club rescheduling they usually have already failed to meet some of their sovereign debt payments.[13]

2. *IMF Plan*: the debtor country must have agreed to an *Appropriate Conditionality* IMF plan.

[12] This information appears in Eichengreen and Portes (1995) and Rose (2005)

[13] This seems to have been the regular practice during the debt crisis of the 1980s according to Somerville (1990).

This requirement aims to assure that the debtor country is committed to a set of economic policies consistent with macroeconomic order and an increased probability of debt repayment.

3. *Equitable Burden Sharing*: all creditors must participate in the debt relief operation. An important exception to this principle are the debts owed to the IMF who in turn is expected to provide fresh financing for the debtor in distress. Moreover, the debtor agrees to refuse debt relief from other creditors (i.e. outside the Paris Club) that offer them worse conditions than those agreed with the Paris Club.

4. *Consensus*: all members of the Club must agree to the debt relief plan granted to the debtor. Even though this clause could potentially delay agreements it has not been the case in practice as negotiations are fully finished in most cases in less than a year.[14]

The Paris Club's website provides information on all the restructuring deals that have been reached including:

- The countries participating in each restructuring deal identifying in particular all the creditor countries involved in each deal.
- The amounts of sovereign debt restructured.
- Other details of the renegotiation such as type of deal and time allowed for repayment.

For the purpose of this paper, the most useful information is that contained in the first two elements just listed. We collected the information on all the Paris Club deals since this organization started functioning in 1956 until 2003. In Table 1 we present the complete list of all the countries that have renegotiated their debt at the Paris Club since 1980.[15]

It should be noted that the Paris Club data is, up to our knowledge, the only source that identifies the countries to which each defaulter fails to meet the contractual obligations. The information of the individual creditors to which a country defaulted is a key element of our identification strategy of a capital-flows punishment mechanism since it allows us to distinguish among two different phenomena:

[14] See Eichengreen and Portes (1995) and Rose (2005)

[15] The reader will notice that the default of Argentina in 2001 is not included in the list. Our data on FDI flows spans only through 2003 and Argentina started negotiating with the Paris Club after that year but at the time of this writing no agreement between the two parties had been reached. The omission of Argentina's most recent default episodes does not appear to affect our results: as a consistency check we ran all the regressions presented in Section 5 up to the year 2000 and the results don't change.

- A *generalized* sanction which corresponds to a decrease in capital inflows from all countries that can potentially invest in the defaulting country.
- A *creditor-specific* mechanism that is related to the decline of FDI inflows originating in the creditor countries to which the recipient country defaulted.

The ability to sort between these two effects is one of the main contributions of this paper. As we explain in Section 4 below, previous work on the effect of default on capital flows assumes that defaulter countries are punished *uniformly* by all countries and this might explain why there is no conclusive evidence that foreign capital inflows are reduced in the aftermath of a sovereign default.

The possibility to identify both the defaulter and the creditors of each default is the key characteristic of the Paris Club data. The other indicators of default that are available, notably Standard and Poor's, only indicate the identity of the defaulter. Nevertheless both sources for default information tend to coincide. In Appendix A we provide a detailed comparison of both data sources.

It is important to note that Paris Club agreements are best characterized as a restructuring of sovereign obligations that involves a "haircut" of varying intensity in the amount the defaulting country will repay to its creditors. In this sense, Paris Club deals do not represent a complete cease of payments of sovereign debt. Hence, the expression "sovereign default" should be interpreted really as a "sovereign restructuring" and we will use the terms interchangeably. This feature is by no means a limitation of our data since the complete renege by a country of its foreign debts is an extremely rare event: most "defaults" are really restructuring of previously agreed payment schedules. [16]

The Paris Club restructuring deals can be classified in four different categories: "Classic", "Houston", "Naples" and "Cologne". The last three types of agreements are reserved for Highly-Indebted countries and contemplate explicit reductions of the debtor's obligations. Nevertheless, these agreements exist only since 1994 and have been used mainly by poor countries that have also qualified for other debt relief programs (e.g. the HIPC initiative). Indeed, the majority of the debt rescheduling agreements in our database correspond to the so called "Classic" rescheduling deals. In these negotiations, the creditors concessions consist in an extension of the period over which debts must be repayed and an interest rate that assures reduction of the present value of the obligations.

[16] See Rose (2005) for a discussion of this issue. The interchangeable use of the terms "default" and "restructuring" is also common in many other papers that study sovereign default as exemplified by Reinhart, Rogoff, and Savastano (2003).

Nevertheless this does not imply that creditors do not grant some amount of debt relief: Roubini and Setser (2004) indicate that when the new schedule of payments is discounted at the market discount rates, the result is a significant reduction in the net present value of the creditors' claims. In synthesis then, the "Classic" agreements of the Paris Club most likely include a "haircut" to the value of the defaulting country's debt but we don't have detailed information on the exact amount of it.[17]

3.2 Foreign Direct Investment Data

As we have explained, we will analyze the cost of sovereign default looking at the behavior of FDI activity. This type of capital flow is almost always a transaction among private entities. Our default measure on the other hand corresponds to default by sovereign nations which are public entities. Even though these facts might be a concern, in the real world there are channels through which sovereign defaults affect investments in those countries, for example, the ability of insurance and funds to finance such investments is reduced (see our discussion of the mechanisms in Section 1). In the end, the effects of sovereign defaults on private capital flows, like FDI, remains a question to be answered through empirical analysis and one of the main goals of this paper is to provide more systematic evidence on the empirical relevance of these issues.[18]

The data on FDI bilateral flows comes from the OECD's "International Direct Investment Statistics Yearbook" (see OECD (2004)) which contains information for the years 1980 to 2003. This publication contains information on both FDI bilateral flows and stocks between reporting OECD countries and between those same countries and a selected group of non-OECD countries.[19] The whole set of countries is listed in Table 2. As can be seen we have further divided OECD in two groups: *Industrial OECD* and *Developing OECD* where the latter group comprises countries who have become members of the OECD in the last ten years or whose income levels are significantly below those of the Industrial OECD. The reason for this classification is that the data coverage between these two groups is very different so this classification allows us to increase the total number of country-pairs observations available. [20]

[17]The losses suffered by creditors varies significantly in different renegotiation processes. Sturzenegger and Zettelmeyer (2005) and Jorgensen and Sachs (1989) looking at various rescheduling episodes across a wide historical period report that the size of the debt relief granted to defaulters varies between 15% and 70%.

[18]Other work that has tried to look at cost of sovereign default have also analyzed the effect on outcomes on the private sector. See for example Eichengreen and Mody (1998), Eichengreen and Mody (1999) and Arteta and Hale (2008).

[19]This data set has been widely used in the study of FDI. See for instance Levy-Yeyati, Stein, and Daude (2004) and Daude and Stein (2006)

[20]See Data Appendix for details on the data coverage of the FDI database.

The basic features of the Paris Club rescheduling agreements and the FDI flows are presented in Tables 3 and 4. There are 21,475 valid bilateral FDI flows observations the majority of which is concentrated among the Industrial OECD countries as column 4 of Table 3 shows. This is in part due to the fact that reporting countries are precisely those in the OECD but also reflects a well known feature of international capital markets: the bulk of cross-border capital flows takes place between rich countries. Nevertheless, rich-country to poor-country capital flows are significant amounting to 13% of all the capital flows in the sample and in per capita terms represent a number in the order of magnitude of those observed within rich-countries. One potential drawback of this data is that it contains very little information on FDI flows originating in Non-OECD countries. This small-sample problem might be a concern in order to test another of the potential punishment mechanisms identified by the theoretical literature: the prohibition for defaulting countries to buy foreign assets.

The characteristics of our bilateral default data are summarized in Table 4. It should be noted that this statistics were computed for the period 1980-2003, the same for which FDI bilateral flows are available. As can be seen in the Table, there are 749 bilateral default observations during this period which are related to 52 renegotiation processes. [21] As expected all the defaulter countries are located outside the Industrial OECD where the vast majority of creditor countries belong to. Table 4 also reveals that Paris Club deals involve significant amounts of country's debts so they represent genuine episodes of conflict between creditors and debtors.

Finally the gross (i.e. not distinguishing by type of country pair) descriptive statistics of the FDI and the default variables are presented in Table 5. As can be seen there are negative flows in the data. Since the data we have measures *gross* flows, the occurrence of negative FDI flows is not surprising since rational investors can decide to decrease the stock of investment in certain countries. Moreover, this feature of the data suggests that the eventual punishment might occur not only through a reduction in inflows but also through an increase in outflows.

[21] The first Paris Club agreement was in 1956 and there were several renegotiating deals in the 1970s. It should be noted though that the *Reputation* and *Punishment* dummies are calculated from 1956 on. See Section 4 for details.

4 Empirical Methodology

4.1 Econometric Specification

The methodology we will use in this paper to study the punishment mechanism to defaulting countries using bilateral FDI flows is based on the econometric specifications used more frequently in the literature. The empirical determinants of FDI have been studied in several papers and we will draw on them for our estimation equation.[22] Since at this time there is no consensus in the literature regarding which is the "correct" econometric model, the regression we use captures elements from the ones most commonly used in previous work on the field. The specific model we use is the following panel regression:

$$\begin{aligned} Y_{ijt} &= \beta\,\text{Paris}_{ijt} + \gamma\,\text{Unilateral}_{jt} + \delta\,\text{Amount}_{jt} + \theta\,\text{Exclude}_{ijt} + \Omega Z_{ijt} + \\ &\quad \Pi X_{ijt} + \alpha_{ij} + \epsilon_{ijt} \end{aligned} \tag{1}$$

Where:

1. Y_{ijt} corresponds to the FDI flows from country i to country j in year t normalized by country's j GDP in year t.[23]

2. Paris_{ijt} is an indicator variable that takes the value 1 if country j restructured its sovereign obligations to country i in year t through a Paris Club deal and 0 otherwise.

3. Unilateral_{jt} is an indicator variable that is equal to 1 if country j start a restructuring of its foreign sovereign debts in year t through the Paris Club and 0 otherwise.

4. Amount_{jt} corresponds to the total value of the debts that the defaulter country (j) asks its creditors to be rescheduled in the Paris Club deal taking place in t. This variable is also normalized by country's j GDP in period t. We should make two important caveats here. First, the Paris Club database does not contain information on the amount the defaulter country wants to reschedule with each one of its creditors, only the aggregated amount.

[22] See for example Blonigen (2005), Blonigen, Davies, and Head (2003), Daude and Stein (2006), Razin, Sadka, and Tong (2005), Razin, Rubinstein, and Sadka (2004) and Levy-Yeyati, Panizza, and Stein (2002).

[23] There is a slight difference in the definition of the Y variable between the Capital Flows and the International Trade literatures. The latter includes in Y the *total volume of trade* between country i and j in year t while the Capital Flows only uses the the unidirectional flow from i to j. Our definition of the Y variable follows then the common definition of the Capital Flows literature in order to make our results comparable to previous work.

Hence, the data on the amount defaulted will only allow us to test for an aggregate effect and not a bilateral-specific punishment. Furthermore, the *Amount* variable measures only the amount brought by the defaulter country to the negotiating table, it does indicate the capital loss agreed upon by the creditors after the deal is finalized. In this sense, *Amount* does not measure the true amount of default and is only a proxy of the true losses (if any) that the defaulting country imposes on its creditors. In spite of this we will use Amount_{jt} to gauge if the size of default influences the extent of the reputation loss for the country.

5. Exclude_{ijt} is a dummy variable that is equal to 1 if country **i** defaulted on its external obligations to country **j** in year t. A negative coefficient θ will provide support to the hypothesis that defaulters are punished through a reduced menu of investment options.

6. Z is a matrix of controls that measure different features of the previous history of defaults. With these variables we will try to study dynamic aspects of the the punishment that creditors might impose on defaulters. These variables are:

   - *Periods elapsed since last default.* With this variable we intend to measure how quickly creditors "forgive" default.
   - *Number of defaults in last* **k** *years.* This variable will capture if creditors forget defaults that have taken place in the past and the extent to which they remember (and punish) more when defaults have been more frequent. We use two values for **k**, 5 and 10.
   - *A default in the last* **k** *years.* We also use 5 and 10 as possible values of **k**. These are dummy variables that are equal, respectively, to one when country j defaulted to country i in any of the k years before t.

   It is important to clarify that all the variables in Z are computed since 1956 and 2003 that corresponds to the whole period of operation of the Paris Club. Since the FDI data begins in 1980 this implies that the inclusion of the reputational variables included in Z in equation (1) does not change the sample on which we tested our other specifications. Hence, we can assess that any eventual changes in our results among the different regressions will not be the result of changes in the sample.

The structure of Equation (1) allows us to distinguish between two different effects of defaults on FDI inflows to defaulting countries as discussed in Section 3:

- A *generalized* decline from the international community measured by coefficient γ.
- A *specific* decrease of FDI from the creditor countries to which the recipient country defaulted upon. This effect is measured by our estimate of β.

The identification of these two different effects is due to the way in which the variables *Paris* and *Unilateral* are defined. If country j defaults on its sovereign debt in period t, FDI to it from the typical country in the world would decline in γ units. In addition to this there will an incremental decline in FDI_{ijt} flows to country j if country i is a creditor of j.

It should also be noted that our variable *Unilateral* is also a proxy of the fact that the defaulting country (j) is undergoing a period of macroeconomic distress in period t. Therefore the coefficient γ can also be interpreted as the effect on FDI inflows of the economic crisis that the recipient country is experimenting whereas β captures the additional decline from the creditor countries.

The ability to distinguish among these channels is an important difference with previous studies that have tried to gauge if defaulter countries lose access to international capital markets. The econometric specification used in those papers (reviewed in Section 2) assumes that capital flows to the defaulter fall uniformly from all countries no matter if they were directly involved in the default. The impossibility to use a more flexible specification might be the reason why previous studies don't find strong evidence that countries suffer the cost of smaller capital inflows after defaulting on their foreign debts.

In matrix X_{ijt} we include a number of controls variables that should influence bilateral FDI flows from a theoretical standpoint and are commonly included in empirical models used to analyze bilateral FDI. [24] The variables included in X and their expected effect on the amount of bilateral FDI observed between countries i and j are the following:

- GDP per capita of country j in year t. As is well known, most FDI is received by developed countries so controlling for this variable is important. This variable will also capture institutional characteristics which are not picked up by the institutions variables detailed below.
- An indicator variable if country i and j have a trade agreement in year t. This variable is expected to influence the flow of FDI between a pair of countries but the direction is not clear. If, on the one hand, FDI is driven by an incentive to "jump tariffs" and other barriers to trade, then a trade agreement between a pair of countries will lead to a smaller amount of FDI. On the other hand, if FDI is motivated by a desire to locate the different stages of the production process in the optimal location, then a trade agreement might increase the amount of FDI. This because lower trade barriers will make it more convenient for multinational firms to ship

[24] See for example Alfaro, Kalemli-Ozcan, and Volosovych (2005b) and Alfaro, Kalemli-Ozcan, and Volosovych (2005a) who study the determinants of unilateral capital flows and Levy-Yeyati, Stein, and Daude (2004) and Daude and Stein (2006) that use a model similar to ours for bilateral FDI stocks.

unfinished goods across national borders and hence increase the incentives to build factories in different locations.[25]

- A measure of the level of financial development in country j. For this we compute the ratio of credit to the private sector to GDP using data from the IFS as suggested by Beck, Levine, and Loayza (1999). The sign on this variable can be either negative or positive. On the one hand, this variable can have negative coefficient since if, all else constant, the receiving country's capital markets are more developed there is relatively less need of foreign capital because domestic savings can be efficiently channeled to profitable projects. On the other hand, Alfaro, Chanda, Kalemli-Ozcan, and Sayek (2004a) show that FDI has a bigger impact in the receiving country's economic growth when financial markets are more developed. Hence, one can expect that countries with more developed financial markets will receive more FDI inflows. It will be an empirical question then to see which of these effects dominates.

- Difference in the education attainments of countries i and j taken from the Barro and Lee data set. This is computed as the difference in the average years of secondary schooling in the total population of country j and that of country i. This variable is expected to reflect differences in the long-run level of income per capita and hence in the marginal product of capital in the framework of Solow's growth model as explained in Lucas (1990). According to this logic, the lower the educational attainment in country j with respect to that of country i the smaller the amount of capital that country j will invest in country i. This variable has been found to be an important determinant of cross border FDI flows in the studies that are inspired by the *CMM* model as explained by Blonigen (2005) and Carr, Markusen, and Maskus (2001).

- The ratio of country's j total trade to GDP as a measure of openness to trade. This is calculated using data from the World Development Indicators (WDI) database. This variable been found to be an important determinant of the amount of FDI received by a country (see Alfaro, Kalemli-Ozcan, and Volosovych (2005b)) since it proxies for the general outward orientation of the economy and the its level of income. The expected sign of the coefficient on this variable is therefore positive.

- Inflation volatility in country j. This variable proxies for the quality of macroeconomic policies in the receiving country and is expect to exert a negative influence in the amount of FDI flows received from country i.

- A measure of the degree of openness of the capital account in country j. This series corresponds to the one constructed in Chinn and Ito (2002) and higher values of it indicate greater degree of openness to cross-border capital flows. In light of this we expect a positive coefficient on

[25] See Carr, Markusen, and Maskus (2001) for a discussion of these issues.

this variable.[26]

- Variables that measure the quality of institutions in country j, the one at the the receiving end of the FDI flow. We use a measure an index of Government Stability and one of Corruption from the "International Country Risk Guide" by the PRS Group and an indicator for the degree of constraints on the executive branch of government compiled in the Polity database. As highlighted by Alfaro, Kalemli-Ozcan, and Volosovych (2005a) and Alfaro, Kalemli-Ozcan, and Volosovych (2005b) the quality of the receiving country's institutions is a key determinant of its capital inflows. They operate through the same channels that stimulate investment in general. Given that increases in all these indexes correspond to better institutions we expect a positive coefficient on each of them.

- An indicator variable that takes the value one in the case that the country has a program with the IMF. This variable is in the spirit of the literature on the Role of the IMF as catalyzer of capital flows (see for example Mody and Saravia (2006)). In our case this variable is also important because, as explained above, renegotiations in the Club of Paris generally "requires" an IMF program. Consequently, variables referring to IMF programs and variables indicating Paris Club renegotiations are likely to be correlated. Thus, in order to disentangle the effects of default the inclusion of this variable is guaranteed.

- And indicator variable that takes the value 1 when country j is suffering a Balance of Payment crisis in year t. To compute this variable we use the criteria outlined by Kaminsky and Reinhart (1999). We include this control to discard the concern that our default variables **Paris** and **Unilateral** are capturing a generalized macroeconomic disruption in country j and not a punishment from its creditors as we hypothesize.

- GDP gaps for both countries i and j in year t. The purpose of these variables is to control for the stage of the business cycle in which both countries are since Levy-Yeyati, Panizza, and Stein (2002)'s results suggest that FDI exhibit a significant cyclical component. Along with this, the inclusion of GDP gaps in the regression will reduce the likelihood that the variable *Paris* is capturing a macroeconomic shock common to countries i and j in year t that could also affect FDI flows instead of the effect of sovereign default.

- The interaction between GDP gaps of both countries i and j in year t. The inclusion of this variable is to capture the relation that countries' business cycles may have. It is likely that countries that are involved in debt and investment relationships have some coordination in their business cycles. This control variable would be useful to reduce the possibility that our results concerning the effect of bilateral default on bilateral FDI flows are driven by common shocks between creditor and debtor countries.

[26]This indicator of capital account openness synthesizes the restrictions to various types of capital flows. Therefore, considering that there might be some degree of substitution among different types of capital flows, an increase in this index might not necessarily imply a bigger volume of FDI flows.

Finally, α_{ij} is a fixed effect that will capture all the non-time variant characteristics of the dyad of countries i and j. The inclusion of this fixed effect implies that variables like distance between i and j, common language among the countries and common colonizer will not be included in the regression equation (1). We prefer to use fixed effects since this allows to control for all the unobserved time-invariant country pair characteristics and not only those that can be measured directly. The last term in regression 1 ϵ_{ijt} is the random error.[27]

The summary statistics of all the variables included in X are presented in Table 6. The sources used to collect all the data used in this paper are described in Appendix B. It should be noted that after the inclusion of all the control variables, we end with approximately 162 dyads of countries that renegotiated at the Paris Club. These dyads are related to 25 different events of defaults.

4.2 Some Considerations on the FDI Data

As we mentioned above, all the data used in the estimations are of yearly frequency. This is especially important in the case of the dependent variable since our approach is different to what has been done in most previous FDI studies.[28] We opt to use yearly data, which are likely to be much more volatile than stocks and three-year averages in order to identify appropriately the timing of the punishment.

A possible shortcoming of the data is the presence of a significant amount of missing values for the FDI flows. This issue has been tackled in different ways by the literature yet we will deal with it in a different manner. The key issue to ponder is that it is not possible to know if a reported missing value (of which there are a significant amount in the data) in a given year-country-pair cell really corresponds to :

1. A non reported observation of either a positive or negative value of FDI.
2. The absence of FDI flows between those particular countries in that year.

This issue is further complicated by the fact that FDI flows can be negative, zero or positive as are indeed observed in the OECD's database. In econometric terms, our sample suffers a problem

[27]The inclusion of year effects does not change our results related to default issues but shows some collinearity with other control variables

[28]For instance Daude and Stein (2006) uses FDI stocks and Razin, Rubinstein, and Sadka (2004) use three-year averages of flows.

that is best described as missing data rather than censored or truncated observations.

In light of these considerations, we will depart from the approach taken by Razin, Rubinstein, and Sadka (2004) who treat the missing values as zero FDI flows in order to implement Heckman's sample selection procedure. We do so since, as we just discussed, it is not obvious that reported missing values correspond indeed to no FDI flows between countries. Moreover, taking into account that a non trivial number of the flows in the data set are negative, (and thus there is no truncation in the data) if one adopts the Heckman model all this information would be lost.[29]

Another approach to deal with the missing values in the FDI flow is to use the information of the bilateral stocks of FDI and set a rule to put zeroes or missing values as Daude and Stein (2006) do. In particular these authors, who are interested in studying the determinants of FDI stocks, use the following rule:

- Change the missing value to zero if all the FDI flows between the two countries are either zero or missing.
- Leave the reported missing value of the stock data if there is some non-zero FDI flow between the corresponding country pair.

As can be seen from this discussion it is difficult to implement a similar rule to distinguish the truly zero FDI flows among the missing values since the existence of a flow implies a stock (at least in the short run) but the existence of a stock does not imply a flow in a future period. Consequently, we will leave the missing data as it is reported in the original source and treat this as a missing data problem.

5 Empirical Evidence

5.1 Effects of Defaults on FDI

In this section we present and discuss the results of the empirical strategy described in the preceding section. The evidence suggests that after a country defaults on its foreign sovereign debt, FDI flows from its creditors declines and there is some evidence that the size of default would be important

[29] The OECD data reports 3,055 negative bilateral FDI flows from a total of 22,553 observations.

to determine this reduction. The data does not suggest that defaulter countries face higher hurdles to invest abroad after default episodes.

Table 7 presents the first set of results of equation (1). In the first column the coefficient of the variable *Unilateral* indicates that a country defaulting on its debt sees its FDI inflows reduced in around 0.05 percent points of its GDP. This effect looks significant from an economic point of view if we compare it with the mean value of bilateral FDI flows to GDP which is 0.07 percentage points or with its median value of 0.001 percentage points. Our next step is to exploit the characteristics of our data and examine if this decline in FDI flows to defaulting countries is more pronounced for their creditors. This will help us to gauge the existence of a *punishment* mechanism from the creditors to defaulters. We do this adding the variable *Paris* to the regression and the results appear in the second column of Table 7. The coefficient of *Paris* can be interpreted as a punishment that creditors impose to defaulter countries as it indicates the marginal reduction in FDI coming from countries involved in the renegotiation, while the change in FDI flows coming from the representative country is captured in the variable *Unilateral*.

As can be seen, the coefficient of *Paris* is negative and significantly different from zero while the coefficient of *Unilateral* turns out to be positive. The data suggests then that it is important to separate the decline in FDI flows between both types of countries since it seems to be the case that the default punishment comes from countries directly involved and not from everywhere.

A natural question that follows is the economic significance of this effect. Inspecting Table 7 one can appreciate that the point estimate of the bilateral default is of a similar order of magnitude to the one of a trade treaty. In other words, the decline in FDI that follows a bilateral default is comparable to the positive effect that a trade treaty has on this type of capital flow. Next we quantify the effect on economic growth of the decline on FDI that follows after sovereign default. The marginal effect of default on economic growth would be:

$$\frac{\partial \text{ Growth}}{\partial \text{ Default}} = \frac{\partial \text{ Growth}}{\partial \text{ FDI}} \times \frac{\partial \text{ FDI}}{\partial \text{ Default}} \tag{2}$$

The second term of the right hand side of (2) corresponds to the sum of our coefficients *Paris* and *Unilateral*. To gauge the effect of FDI on economic growth we take the results from Alfaro, Chanda, Kalemli-Ozcan, and Sayek (2004b) which indicate that the effect of FDI on growth depends on the level of financial development of the host country. From (2) we conclude that growth will diminish approximately 0.4 percentage points in the year of default as a consequence

of the decline in FDI that we estimate.[30] This effect is bigger in magnitude to what Berthelon (2004) reports would be the benefit for a country of signing a free trade agreement with a country of the size of Canada. This quantitative evidence suggests then that the cost of default in terms of economic growth is comparable to the benefits associated with policy actions like higher trade openness through bilateral trade agreements. [31]

It is important to discuss some interpretations that could arise from empirical exercises studying the effects of defaults and that our approach would be helpful to deal with. First, it could be the case that a default triggers the fear of future expropriation, say, for example, that political instability or uncertainty is revealed in a default. In our case, we think that this would be captured in the *Unilateral* variable rather than in the *Paris* variable since we expect to see a reduction from every possible source of FDI and not mainly from the countries that are involved in the renegotiation. A possibility that we cannot deal with given data availability, is that the change in the fear of expropriation is more important for countries which debt was defaulted upon. However, it could be argued that if a default leads to a fear of future expropriation and a fall in FDI, this could be a significant threat that could sustain sovereign lending.[32] In any case, anecdotal evidence about the relationship between defaults and expropriation risk is not conclusive. Tomz and Wright (2008) provide historical evidence that expropriation and defaults have not coincided over time while Aguiar, Amador, and Gopinath (2007) mention that after Argentinean default in 2001 measures of expropriation risk as calculated by the Heritage Foundation and Fraser Institute deteriorated sharply. Also, in an attempt to ameliorate the probability that our coefficient is contaminated by

[30] We use the coefficients reported in Table 4 of Alfaro, Chanda, Kalemli-Ozcan, and Sayek (2004b) and evaluate the marginal effect in the mean value of financial development reported in that paper. Those authors run this regression:

$$\text{Growth} = \beta_1 \cdot \text{FDI} + \beta_2 \cdot (\text{Financial Development} \times \text{FDI}) + \Pi \cdot Z$$

Specifically we use the following approximation:

$$\Delta \text{ Growth} = \frac{\partial \text{ Growth}}{\partial \text{ FDI}} \times \Delta \text{FDI}$$

Following the estimates of β_1, β_2 reported in Table 4 of Alfaro, Chanda, Kalemli-Ozcan, and Sayek (2004b) for each of the six different measures of financial development to calculate

$$\frac{\partial \text{ Growth}}{\partial \text{ FDI}} = \beta_1 + \beta_2 \times \text{Mean (Financial Development)}$$

Finally we multiply this by ΔFDI after the default which corresponds to the sum of the coefficients of *Paris* and *Unilateral* and add this number 10 times which is the average number of creditors with which each defaulter renegotiates.

[31] Anecdotal evidence and several papers that use micro data find that FDI has positive effect in an economy through different channels like for instance spillover effects (see Javorcik (2004)). However, the evidence on the effects of FDI on growth has been ambiguous and some works find a small effect (Carkovic and Levine (2002). Thus, it is possible that the real costs of defaults derived from a reduction on FDI were higher than the suggested by the effects on growth. The nature of our exercises and data does not allow to make sensible quantitative comparisons to the literature using micro data.

[32] We owe this interpretation to a referee.

these considerations we do use institutional and political variables in our regressions.

Another possibility could be that the results were driven by the existence of shocks in the countries involved in capital transactions. Countries that default on sovereign debt are likely to be in a situation of economic distress that would affect negatively its FDI inflows (e.g. negative shock to productivity). The variable *Unilateral* is more likely to capture these circumstances than the *Paris* variable. In case of economic distress, the reduction in FDI would come from all countries and not only from disgruntled creditors.[33] Our identification strategy relies on the fact that there are countries which debts were not defaulted upon and are a source of FDI. This reduces the probability that our result showing that the reduction in FDI flows is mainly from countries involved in the renegotiation is coming from the lack of FDI flows from countries which debt was not defaulted.

The estimation of the punishment to defaulters through the coefficient β is not likely to be affected by a problem of reverse causality. This is due to the fact that countries involved in renegotiations at the Paris Club are exogenously determined at the time of default since the loan contracts were signed before the default takes place. Therefore countries that sit at the Paris Club to renegotiate sovereign payments are not selected on the basis of current FDI flows. On the other hand, one should also consider that renegotiation with sovereign creditors at the Paris Club takes place after the country has ceased to meet its debt obligations. Then, from this perspective, our variable *Paris* measures default with some lag. Therefore the reverse causality concern is diminished by this consideration that makes unlikely that current FDI flows affect the decision to default taken previously.

We analyze next if the size of debt under renegotiation plays any role in the punishment. Capital markets may punish more those countries defaulting on a large amount of debt than countries defaulting on a small amount. Our database has information on the amount involved in the renegotiation process in the Paris Club and we take this as a measure of the size of default. As explained earlier, we only have data on the total amount of debt renegotiated by each defaulter with all its creditors. In other words, there is no information on the amount of debt renegotiated by the defaulter with each of its creditors. [34] This feature of the data impedes the inclusion of an interaction term between the *Paris* variable and the amount defaulted to each creditor, that would had told us how the punishment of each creditor varies with the size of his losses. This lack of information in our data is a limitation to the analysis and consequently the results on this matter should be taken with caution. In spite of this limitation there is some evidence that the size of the punishment is indeed increasing in the amount of debt defaulted.

[33] As noted we use several variables referring to the existence of crisis and the business cycles of the source and host countries (and the interaction between them).

[34] Also, as explained before, we do not have data on the size of the effective creditors' losses ("haircuts") in the renegotiation process.

In column 3 of Table 7 we add then to the regression the variable *Amount* constructed as the amount renegotiated as a share of defaulter countries' GDP. The coefficient of this variable has a negative sign but it is not significantly different from zero at conventional levels. In column 4 of Table 7 we drop from the regression the variable *Paris* and we see that the amount over GDP's coefficient becomes significantly less than zero. This, in part, is consequence of the correlation existing with *Paris* given the nature of our data, which makes difficult to separate both effects. However, note that the size of the coefficient of the amount variable has not changed from column 3 to column 4. To evaluate the economic significance of this coefficient we will use a procedure analogous to the one explained above for the case of default.[35] Using this procedure we estimate than if the country increases the amount defaulted in 12% of GDP (one standard deviation of the observed distribution of the amount defaulted), economic growth would decline 0.3 percentage points in the year of default.

Our next empirical exercise is to test for another plausible punishment for default highlighted in the theoretical literature; that is, limits to the purchase of foreign assets for the defaulter. We test this hypothesis including in regression (1) the dummy variable *Exclude* as explained in Section 4. If defaulter countries are precluded from investment opportunities abroad as a cost of defaulting we would find a negative sign on this variable. The results of this estimation appear column 5 of Table 7 and do not support this hypothesis: the coefficient of this variable turns out to be positive suggesting that FDI outflows from countries that default increase in those periods.

Summarizing the findings of this section, we show that defaulting countries do see reduced their FDI flows which constitutes evidence in favor of capital markets punishing countries that do not repay their debts. The evidence suggests that not all countries punish the defaulter but only the ones directly affected by the default which, we think, is evidence in favor that the effect comes as a consequence of the default and not from other possible channels. In spite of the limitations of our data, there is some evidence suggesting that bigger amounts renegotiated affect negatively the inflows of FDI to a country. We do not find evidence indicating that closing defaulters investment opportunities abroad is a relevant default punishment.

5.2 Effects of Reputation

In this section we will complement the previous analysis looking at how a country's default record in the past affects the amount of FDI flows it receives. We will look then at the extent to which the country's reputation as a bad (or good) payer affects the amount of capital flows it receives.

[35] Now the formula is $\frac{\partial \text{ Growth}}{\partial \text{ Amount}} = \frac{\partial \text{ Growth}}{\partial \text{ FDI}} \times \frac{\partial \text{ FDI}}{\partial \text{ Amount}}$.

This exercise can shed light on several interesting issues related to international capital flows and defaults. First, it is natural to think that countries with large records of defaults have a worse reputation as good payers than countries that have a short record and, consequently, receive less capital flows. Also, the default punishment is likely to be temporary in nature. Countries that default would not be permanently excluded from capital markets and condemned to permanent autarky; rather it is likely that after some time the capital flows return to previous levels.[36] Our analysis will help to quantify the strength and relevance of these features of international capital markets.

We test these hypothesis using the variables in matrix Z that we add to regression (1). The first regression, presented in column one of Table 8, adds to the basic specification a variable that measures the amount of time (measured in years) elapsed from a country's last default. The coefficient of this variable would indicate the rate at which countries are forgiven by their creditors. Since we observe that countries are not kept out of the international financial community permanently, we expect a positive sign for this coefficient: the longer the time elapsed from the last default the higher capital flows to the country should be. The regression indicates that this coefficient is indeed positive, although it is not significantly different from zero at usual confidence levels. The point estimate we obtain (0.003) says that around 17 years would be needed to neutralize the negative contemporaneous effect of a default.[37] Interestingly, Rose (2005) finds that the effect of defaults on trade last for approximately 15 years.[38]

In column 2 of Table 8 we incorporate to the regression a variable that corresponds to the number of bilateral defaults in the previous five years. The coefficient of this last variable is negative suggesting that countries are not only punished contemporaneously for defaulting (measured by *Paris*) but also for their misdeeds in recent years. This finding indicates then that the track record of a country is important in determining its capital flows. This is consistent with the hypothesis that international capital markets care about countries reputation as good payers. The higher the number of defaults in the past the lower the reputation and, consequently, the lower the flows to that country.

In similar spirit to the previous exercises we include in column 3 of Table 8 a new variable with the number of bilateral defaults incurred by a country during the period before the previous ten years.[39] Using this variable allows us to check if the negative effect of default's record decreases

[36] Casual observation indicates that countries that have defaulted recently have done so in the past which suggests that exclusion from capital markets would be temporary and that the record of defaults may be important to determine capital flows to a country.

[37] This number comes from $-\frac{\beta+\gamma}{\Omega} = -\frac{-0.103+0.052}{0.003} = 17$

[38] He calculates that number using the default variable lagged in his regressions.

[39] In other words we test if bilateral FDI flows in year t are affected by the total number of defaults observed before

over time. If this were the case we would observe that the number of defaults incurred in the last five years have a higher effect than the number of defaults incurred before the last ten years. This is what we find as can be seen in column 3 of table 8. The coefficient of the number of defaults incurred before the previous ten years is smaller than that of the number of defaults in the last 5 years and it is not significantly different from zero. We do not use the number of defaults incurred between the previous five and ten years because of the high correlation between this variable and the ones referring to the number of defaults in the last five years and older than ten years used in the regression.

Our final specification aims to test if a default in the past implies a reduction of current FDI inflows for the country and if this effect persist or declines over time. For this we construct two dummy variables. The first one takes the value 1 if the country has made one or more defaults in any of the previous five years and the second one takes the value 1 if the country committed one or more defaults in any year between $t-6$ and $t-10$. These variables differ with the previous ones because they do not control by the intensity of default as measured by the total number of default in each window of time. In this sense we are measuring here if the eventual *stigma* of sovereign defaulters is worsened or not by more episodes of default. On the other hand, countries undergoing payment difficulties might conduct more than one round of negotiations with the Paris Club over a period of, for example, three years. In our data each of these negotiations will be recorded as a different default episode.[40] Therefore, this specification will also serve as a robustness check of our previous results.

The results of these regressions appear in column 4 of Table 8. The sign of the contemporaneous default variable (Paris) is negative as always. The dummy variable that considers if a default existed in the last five years has a negative sign while the other dummy variable enters with a positive sign and it is not significantly different from zero. The coefficient of this last variable is lower than (the absolute value) of the dummy indicating if there was a default in the previous five years. This result suggests that the effects of default last for some years but the punishment decreases over time. It should be noted that the size of the coefficient of the dummy variable for at least one default during the previous five years (-0.09) is comparable magnitude as the one of contemporaneous default (i.e the coefficient of *Paris*).[41]

We recognize that we may have used somewhat rigid structures in our estimations. For example, there is no particular motive to split the lag variables in the way we have or there is no

year $t-10$.

[40] As can be seen in Table 1 there are several cases where countries renegotiated their sovereign debts with the Paris Club more than once on a span of three years.

[41] According to the numbers calculated earlier, economic growth would decline in total in 0.2 (2×0.1) percentage points if it defaults in the current year and at least one other time during the previous five.

reason a priori to split the variable for the number of defaults in the way we have split it. However, we have tried alternative specifications and the results are similar pointing to the same direction.

Summarizing, the evidence suggests that the penalty imposed by capital markets is temporary rather than permanent and that countries' default record is important. This suggests that countries reputation as good payers is important for capital flows.

6 Conclusions

Sometimes countries have financial difficulties and they restructure or default on their debts. Since sovereign default is by no means the norm in international capital markets, the unilateral interruption of debt payments probably carries some cost to the defaulter country. Several possible default costs have been identified by commentators and the literature. Of these, the *exclusion* from capital markets is arguably the most cited one. This is the default punishment we have tried to test empirically in this paper. We extend previous research in this area by focusing on the borrower-lender relationship, characteristics of defaults and the analysis of some characteristics that would influence countries' reputation as good payers.

In our study we focused on FDI flows, which has become a very important source of capital to developing countries. The data on FDI flows and Sovereign Debt renegotiation that we used identifies the FDI source and recipient countries as well as the countries involved in the renegotiation (i.e. debtor and creditors seeing their claims renegotiated). This is a key feature of the data and allows the identification of a punishment to defaulters since we distinguished the impact of default on FDI flows coming from those countries directly involved in the default renegotiation from those not directly affected by the default.

Our findings indicate that the reduction in FDI inflows does not originate from every country that could be a potential source of funds but only from those directly involved in the renegotiation. This evidence suggests that the punishment that follows a sovereign default is not universal since it appears to be confined to those countries whose debt claims were defaulted on. We think that this finding is in favor of the hypothesis that the reduction is indeed the consequence of a default and not driven by other forces like for example, a bad shock to the economy. In turn this would be evidence that this decline in FDI inflows constitutes a punishment to the defaulter.

We found that the contemporaneous effect of a default is equivalent to not signing a trade treaty. We also estimate, using other findings in the literature, that the contemporaneous effect of

default is a reduction of 0.4 percentage points of the growth rate of GDP (duplicated if there was another default in the previous years). Concluding if this magnitude is big enough to constitute a relevant punishment is an interesting avenue for future research.

We analyzed if the size of the debts renegotiated affects the punishment and we found that the answer seems to be that this is the case. Next, with the objective of identifying another element of the nature of the punishment, we test if defaulter's investment abroad are reduced after a default as suggested by some theoretical contributions. We did not find any evidence in favor of that hypothesis.

We also identified some defaulters' characteristics that are likely to affect their reputation to see if they are indeed important determinants of countries' capital inflows. First, we inquire to what extent countries with a large default record have a worse reputation than countries with relatively better repayment performance and thus receive less capital flows. Then we studied some dynamic aspects of punishments to defaulter like if they have a temporary component and the speed to which defaulters are forgiven by their creditors.[42] Our empirical findings point in the same direction: the higher the number of defaults the lower the capital flows to that country and default punishment vanishes as time goes by.

Overall, our findings support the existence of a punishment for defaulting countries. We leave for future research the related question if this cost of default effectively influences the decision to default.

[42] As noted in the literature review some previous contributions have tested if past defaults affect capital flows to a country, for example Ozler (1993) and Eichengreen and Portes (2000)

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Table 1: Paris Club Renegotiations

(Data since 1980)

Country	Years in which the Country started Negotiations with the Paris Club										
Albania	1993										
Algeria	1994	1995									
Angola	1989										
Argentina	1985	1987	1989	1991	1992						
Benin	1989	1991	1993	1996	2000	2003					
Bolivia	1986	1988	1990	1992	1995	1998	2001				
Brazil	1983	1987	1988	1992							
Bulgaria	1991	1992	1994								
Burkina Faso	1991	1993	1996	2000	2002						
Cambodia	1995										
Cameroon	1989	1992	1994	1995	1997	2001					
Central African Republic	1981	1983	1985	1988	1990	1994	1998				
Chad	1989	1995	1996	2001							
Chile	1985	1987									
Congo	1986	1990	1994	1996	2004						
DR of Congo	1981	1983	1985	1986	1987	1989	2002	2003			
Costa Rica	1983	1985	1989	1991	1993						
Cote D'Ivoire	1984	1985	1986	1987	1989	1991	1994	1998	2002		
Croatia	1995										
Dominican Republic	1985	1991	2004								
Ecuador	1983	1985	1988	1989	1992	1994	2000	2003			
Egypt	1987	1991									
El Salvador	1990										
Equatorial Guinea	1985	1989	1992	1994							
Ethiopia	1992	1997	2001	2002	2003						
Gabon	1987	1988	1989	1991	1994	1995	2000	2004			
Gambia	1986	2003									
Ghana	1996	2001	2002	2004							
Guatemala	1993										
Guinea	1986	1989	1992	1995	1997	2001					
Guinea-Bissau	1987	1989	1995	2001							
Guyana	1989	1990	1993	1996	1999	2004					
Haiti	1995										
Honduras	1990	1992	1996	1999	2004	2005					
Indonesia	1998	2000	2002	2005							
Jamaica	1984	1985	1987	1988	1990	1991	1993				
Jordan	1989	1992	1994	1997	1999	2002					
Kenya	1994	2000	2004								
Kyrgyz Republic	2002	2005									
Liberia	1980	1981	1983	1984							
Macedonia	1995	2000									
Madagascar	1981	1982	1984	1985	1986	1988	1990	1997	2000	2001	2004
Malawi	1982	1983	1988	2001							
Mali	1988	1989	1992	1996	2000	2003					
Mauritania	1985	1986	1987	1989	1993	1995	2000	2002			
Mexico	1983	1986	1989								
Morocco	1983	1985	1987	1988	1990	1992					
Mozambique	1984	1987	1990	1993	1996	1998	1999	2001			
Nicaragua	1991	1995	1998	2002	2004						
Niger	1983	1984	1985	1986	1988	1990	1994	1996	2001	2004	
Nigeria	1986	1989	1991	2000							
Pakistan	1981	1999	2001								
Panama	1985	1990									
Peru	1983	1984	1991	1993	1996						
Philippines	1984	1987	1989	1991	1994						
Poland	1981	1985	1987	1990	1991						
Romania	1982	1983									
Russia	1993	1994	1995	1996	1999						

Country	Years in which the Country started Negotiations with the Paris Club													
Rwanda	1998	2002	2005											
Sao Tome And Principe	2000													
Senegal	1981	1982	1983	1985	1986	1987	1989	1990	1991	1994	1995	1998	2000	2004
Sierra Leone	1980	1984	1986	1992	1994	1996	2001	2002						
Somalia	1985	1987												
Sri Lanka	2005													
Sudan	1982	1983	1984											
Tanzania	1986	1988	1990	1992	1997	2000	2002							
Togo	1981	1983	1984	1985	1988	1989	1990	1992	1995					
Trinidad And Tobago	1989	1990												
Turkey	1980													
Uganda	1981	1982	1987	1989	1992	1995	1998	2000						
Ukraine	2001													
Vietnam	1993													
Yemen	1996	1997	2001											
Yugoslavia	1984	1985	1986	1988	2001									
Zambia	1983	1984	1986	1990	1992	1996	1999	2002	2005					

Table 2: Countries in OECD FDI Database

(Sample Period: 1980-2003)

Industrial OECD	**Developing OECD**	**Non OECD**
Australia	Czech Republic	Bulgaria
Austria	Hungary	Romania
Belgium	Korea	Russia
Canada	Mexico	Slovak Republic
Denmark	Poland	Slovenia
Finland	Slovak Republic	Ukraine
France	Turkey	Algeria
Germany		Egypt
Greece		Libya
Iceland		Morocco
Ireland		South Africa
Italy		Argentina
Japan		Brazil
Netherlands		Chile
New Zealand		Colombia
Norway		Costa Rica
Portugal		Netherlands Antilles
Spain		Panama
Sweden		Venezuela
Switzerland		Kuwait
United Kingdom		Saudi Arabia
United States		United Arab Emirates
		Iran
		Israel
		China
		Taiwan
		Hong Kong
		India
		Indonesia
		Malaysia
		Philippines
		Singapore
		Thailand

Table 3: Descriptive Statistics of the Bilateral FDI Data

Source	Recipient	Observations	Fraction of total FDI Flows ,%	FDI Inflow to GDP , % (of Recipient)	FDI Inflow per Capita (of Recipient)
Industrial OECD	Industrial OECD	6368	80.4	0.10	23.12
Industrial OECD	Developing OECD	1661	4.6	0.12	4.62
Industrial OECD	No OECD	4913	13.0	0.12	15.08
Developing OECD	Industrial OECD	1593	0.4	0.00	0.14
Developing OECD	Developing OECD	343	0.0	0.01	0.56
Developing OECD	No OECD	855	0.2	0.01	0.56
No OECD	Industrial OECD	4391	1.1	0.00	0.45
No OECD	Developing OECD	1351	0.2	0.00	0.16
Total		21745	-	-	-

Table 4: Bilateral Defaults: Paris Club Data

(Descriptive Statistics)

Creditor	Defaulter	Number of Country-Pairs Renegotiation Observations	Average Amount Defaulted	
			Millions of dollars	% of Defaulter's GDP
Industrial OECD	Industrial OECD	0	-	-
Industrial OECD	Developing OECD	139	8148	12.1
Industrial OECD	No OECD	603	4762	5.8
Developing OECD	Industrial OECD	0	-	-
Developing OECD	Developing OECD	0	-	-
Developing OECD	No OECD	4	3800	3.4
No OECD	Industrial OECD	0	-	-
No OECD	Developing OECD	3	17200	24.1
Total		749	-	-

Table 5: FDI and Default Data

(Descriptive Statistics)

Variable Name	**Mean**	**Median**	**Standard Deviation**	**Min**	**Max**
FDI Inflow / GDP of Recipient, %	0.07	0.0005	0.40	-7.1	18.9
FDI Inflow per Capita[1]	10.8	0.0237	165.1	-3594.9	18161.5
Paris	0.03	0	0.18	0.0	1.0
Amount Defaulted[2]	1976.1	411	4758.3	1.0	40200.0

[1] In dollars of 2000

[2] In millions of dollars of 2000.

Table 6: Regressions Varibles Descriptive Statistics

Variable Name	**Mean**	**Standard Deviation**	**Max**	**Min**
Product GDPs per capita	13.06	7.82	37.79	1.05
Product GDPs	0.00	0.00	0.05	0.00
Regional Agreement	0.15	0.35	1.00	0.00
Capital Account Openess	1.11	1.51	2.68	-1.71
Financial Development	0.49	1.97	11.92	0.00
Inflation Volatility	0.25	1.87	30.80	-0.01
Openess	58.72	32.74	228.88	12.35
Difference in Years of Schooling	-0.26	1.83	4.36	-4.55
Government Stability	7.80	1.86	11.08	1.00
Non Corruption Index	4.31	1.35	6.00	0.00
Executive Constraints	6.44	1.14	7.00	1.00

Table 7: Regression Results 1

(Dependent Variable: FDI Inflow to Host's GDP in year t (%))

	(1)	(2)	(3)	(4)	(5)
Unilateral	-0.046	0.051	0.051	-0.026	0.051
	[0.027]*	[0.028]*	[0.028]*	[0.030]	[0.028]*
Paris		-0.121	-0.101		-0.121
		[0.045]***	[0.050]**		[0.045]***
Amount			-0.003	-0.003	
			[0.002]	[0.002]**	
Exclude					0.017
					[0.005]***
GDP per Capita Country j	0.009	0.009	0.009	0.009	0.009
	[0.003]***	[0.003]***	[0.003]***	[0.003]***	[0.003]***
Trade Treaty	0.102	0.102	0.102	0.102	0.102
	[0.050]**	[0.050]**	[0.050]**	[0.050]**	[0.050]**
Capital Account Openness	0.009	0.009	0.010	0.010	0.009
	[0.004]**	[0.004]**	[0.004]***	[0.004]***	[0.004]**
Financial Development	-0.014	-0.014	-0.014	-0.014	-0.014
	[0.007]*	[0.007]*	[0.007]*	[0.007]*	[0.007]*
Inflation Volatility	-0.003	-0.003	-0.003	-0.003	-0.003
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
Trade Openness	0.001	0.001	0.001	0.001	0.001
	[0.001]**	[0.001]**	[0.001]**	[0.001]**	[0.001]**
Difference in Years of Schooling	0.031	0.030	0.030	0.031	0.030
	[0.025]	[0.025]	[0.025]	[0.025]	[0.025]
Government Stability	0.004	0.004	0.004	0.004	0.004
	[0.002]**	[0.002]**	[0.002]**	[0.002]**	[0.002]**
Non Corruption Index	0.010	0.010	0.011	0.010	0.010
	[0.006]*	[0.006]*	[0.006]*	[0.006]*	[0.006]*
Executive Constraints	0.010	0.010	0.010	0.010	0.010
	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]
IMF Program	0.016	0.017	0.018	0.018	0.017
	[0.011]	[0.011]	[0.011]*	[0.011]*	[0.011]
Crisis	-0.005	-0.005	-0.004	-0.004	-0.005
	[0.011]	[0.011]	[0.011]	[0.011]	[0.011]
Output Gap Country j	0.002	0.002	0.002	0.002	0.002
	[0.001]**	[0.001]**	[0.001]**	[0.001]***	[0.001]**
Output Gap Country i	0.001	0.001	0.001	0.001	0.001
	[0.001]**	[0.001]**	[0.001]**	[0.001]**	[0.001]**
Output Gap Country j interacted	0.000	0.000	0.000	0.000	0.000
with Output Gap Country i	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Constant	-0.291	-0.293	-0.292	-0.290	-0.294
	[0.085]***	[0.084]***	[0.085]***	[0.085]***	[0.084]***
Observations	10441	10441	10441	10441	10441
R-squared	0.42	0.42	0.42	0.42	0.42

Standard errors clustered by dyads in brackets.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8: Regression Results 2

(Dependent Variable: FDI Inflow to Host's GDP in year t (%))

	(1)	(2)	(3)	(4)
Unilateral	0.051	0.051	0.051	0.044
	[0.029]*	[0.028]*	[0.029]*	[0.028]
Paris	-0.103	-0.107	-0.107	-0.087
	[0.041]**	[0.040]***	[0.044]**	[0.035]**
Years elapsed since last bilateral default	0.003			
	[0.003]			
Number of Defaults between t-1 and t-5		-0.037	-0.038	
		[0.022]*	[0.014]***	
Number of Defaults before t-10			-0.001	
			[0.021]	
At least one Default between t-1 and t-5				-0.088
				[0.038]**
At least one Default between t-5 and t-10				0.050
				[0.037]
GDP per Capita Country j	0.009	0.010	0.010	0.010
	[0.003]***	[0.003]***	[0.003]***	[0.003]***
Trade Treaty	0.102	0.103	0.103	0.106
	[0.050]**	[0.050]**	[0.050]**	[0.050]**
Capital Account Openness	0.009	0.009	0.009	0.007
	[0.004]**	[0.004]**	[0.004]**	[0.004]*
Financial Development	-0.014	-0.014	-0.014	-0.014
	[0.007]*	[0.007]**	[0.007]**	[0.007]*
Inflation Volatility	-0.003	-0.002	-0.002	-0.001
	[0.002]	[0.001]	[0.001]	[0.002]
Trade Openness	0.001	0.001	0.001	0.001
	[0.001]**	[0.001]**	[0.001]**	[0.001]**
Difference in Years of Schooling	0.031	0.031	0.031	0.030
	[0.024]	[0.024]	[0.024]	[0.025]
Government Stability	0.004	0.003	0.003	0.003
	[0.002]**	[0.002]**	[0.002]**	[0.002]*
Non Corruption Index	0.010	0.012	0.012	0.012
	[0.006]*	[0.006]**	[0.006]**	[0.006]**
Executive Constraints	0.011	0.011	0.012	0.012
	[0.008]	[0.008]	[0.008]	[0.008]
IMF Program	0.018	0.023	0.024	0.024
	[0.011]*	[0.012]**	[0.011]**	[0.011]**
Crisis	-0.006	-0.007	-0.007	-0.007
	[0.011]	[0.011]	[0.011]	[0.011]
Output Gap Country j	0.002	0.002	0.002	0.002
	[0.001]**	[0.001]**	[0.001]**	[0.001]*
Output Gap Country i	0.001	0.001	0.001	0.001
	[0.001]**	[0.001]**	[0.001]**	[0.001]**
Output Gap Country j interacted	0.000	0.000	0.000	0.000
with Output Gap Country i	[0.000]	[0.000]	[0.000]	[0.000]
Constant	-0.300	-0.303	-0.303	-0.313
	[0.085]***	[0.085]***	[0.085]***	[0.085]***
Observations	10441	10441	10441	10441
R-squared	0.42	0.42	0.42	0.42

Standard errors clustered by dyads in brackets.

* significant at 10%; ** significant at 5%; *** significant at 1%.

A Comparing Different Measures of Sovereign Default

As we have explained, we say that a country is in sovereign default of its external debts if it renegotiates its official obligations through the Paris Club in a given year. Even though this measure of default has it own merits (most notably it identifies the individual creditors of the defaulter) it certainly is not the only measure of default available. Moreover it measures default only of official nature (i.e. government to government loans) which might not constitute the most significant foreign liability of the country. In light of these possible objections to our measure of default we compare the Paris Club indicator with the sovereign default information compiled by Standard and Poor's. This institution compiles a list that indicates the years during which a country's sovereign foreign debt, either bonds or bank loans, was in default.[43] This Standard and Poor's indicator of default has been used in several papers that have studied this topic before. In order to gauge how similar our Paris Club indicator is to the Standard and Poor's one we calculated the probability that Standard and Poor's considers that a country's foreign debt (bonds and bank loans) is in default in the year that that country renegotiates with its Paris Club creditors. We calculated this probability for various time spans during which Standard and Poor's might classify a country in default and the results appear in Table 9[44].

Table 9: Probability (%) of being in Sovereign Debt Default
if country renegotiated its Official Debt in Paris Club

Default in t	Default in t or $t-1$	Default in t, $t-1$ or $t-2$	Default in t, $t-1$, $t-2$ or $t-3$
64.1	64.6	71.0	73.0

As can be seen in Table 9 the likelihood that a country who is renegotiating at the Paris Club is also in default of its other external sovereign liabilities is substantial. Moreover, Table 1 suggests that Paris Club renegotiations tend to occur after the country has defaulted on its other debts: the probability increases if we allow for a larger time span during which Standard and Poor's might have considered the country in default.[45] This point has important implications for our identification strategy because the Paris Club captures to some extent default episodes that occur a few years before which lessens the likelihood of reverse causation going from capital flows to sovereign default.

[43] See Standard and Poor's (2004) for the complete list of defaults compiled by Standard and Poor's

[44] The numbers in the table correspond to the probability that a country is renegotiating its foreign debt at the Paris Club in year t given that it is classified as a sovereign defaulter by Standard and Poor's during in at least one of the years between t and $t-i$ for $i = 0, 1, 2, 3$.

[45] The assertion that default to banks and bond loans tends to precede Paris Club renegotiations is reinforced by the fact that the probability that a country classified as a defaulter by Standard and Poor's given that it is renegotiating at the Paris Club is only 25%, much lower than the values that appear in Table 9.

B Data Appendix

Foreign Direct Investment Flows The FDI flows are taken from the OECD's International Direct Investment Statistics Yearbook 1980-2003. Each bilateral flow is in millions of US dollars and is normalized by the host's country nominal GDP in dollars taken from the World Bank's World Development Indicators (WDI) database available in `http://sima-ext.worldbank.org/query/` and expressed in percentage points in the regressions.

Countries in the OECD report both outflows and inflows of FDI observed each year among them and all the countries detailed Table 2. Therefore, for the countries in the OECD there are two potential sources for the same bilateral FDI flow that country i sends to country j: (i) The outflow reported by country i to country j and (ii) the inflow reported by country j from country i. Theoretically both magnitudes should be identical but differences in each country's reporting standards will usually imply that they differ in practices. We assume that the inflow data is more likely to reflect the "true" identity of the source country. Given this, we will measure the FDI inflow from country i to country j as the one inflow reported by country j from country i whenever possible.

On the other hand, countries located in what we call in this paper *Developing OECD* are recent admits to that organization so they have not reported FDI data over an extended period of time. Therefore, in order to maximize the amount of observations, we will use the data reported by *Industrial OECD* countries when the FDI flows involves a *Developing OECD* country. Finally, the OECD data obviously does not collect information reported by countries that do not belong to that organization so we must rely on the data reported by OECD countries in this case. The details of the information used for each type of bilateral FDI flow are provided in Table 10.

Table 10: Details of OECD FDI Database

	Source		
Destination	Industrial OECD	Developing OECD	Non-OECD
Industrial OECD	Inflow reported by Destination	Inflow reported by Destination	Inflow reported by Destination
Developing OECD	Outflow reported by Source	Inflow reported by Destination	Inflow reported by Destination
Non-OECD	Outflow reported by Source	Outflow reported by Source	No data

Paris Club Data All the Paris Club data used in this paper is available at the institutions' website (`http://www.clubdeparis.org`). We completed the information for the period 1956-1997 that is available in Professor Andrew Rose's website (`http://haas.berkeley.edu/~arose`) with the data from the Paris Club's website. The amount of debt which the creditors bring to the negotiating table is in millions of US dollars and is normalized by the debtor's country nominal GDP in dollars from the WDI and expressed in percentage points.

GDP Data GDP per capita is calculated dividing the total GDP in constant year 2000 dollars and the total population of the country in each year. Both series are taken from the WDI database.

Regional Trade Agreements This data is compiled by the World Trade Organization (WTO) and we extended the information that is available in Andrew Rose's website up to year 1997 with the latest information available at: `http://www.wto.org/english/tratop_e/region_e/region_e.htm`.

Capital Account Openness To measure this we use the index constructed by Chinn and Ito (2002) which is available at Menzi Chinn's webpage `http://www.ssc.wisc.edu/~mchinn/research.html`. Higher values of this variable indicate that the economy is more open to cross-border capital flows.

Financial Development We use the ratio of credit to the private sector to nominal GDP suggested by Beck, Levine, and Loayza (1999) which is calculated as:

$$0.5 \times \frac{\left[\frac{F(t)}{P_e(t)} + \frac{F(t-1)}{P_e(t-1)}\right]}{\frac{GDP(t)}{P_a(t)}}$$

where t denotes the corresponding year and:

1. F is credit by deposit money banks (line 22d from the International Financial Statistics (IFS) of the IMF) and other financial institutions (line 42d from the IFS) to the private sector .
2. GDP is nominal GDP from the WDI.
3. P_e is end-of period CPI (line 64 from the IFS)
4. P_a is the average annual CPI.

Openness Correspond to the traditional measure of trade openness that measures the ratio of a country's total trade (exports plus imports) to its GDP. All the series are taken from the WDI database and the resulting index is measured in percentage points.

Inflation Volatility This is defined as the standard deviation of the monthly inflation rate (measured in percentage points) observed in the 12 months of each year. This is calculated with the with CPI data from the IFS.

Difference in Years of Schooling. This is computed as the difference in the average years of secondary schooling in the total population of country j and that of country i. The information is taken from the Barro and Lee database which contains the educational attainment data every five years. In order to obtain information for each year we used a linear interpolation procedure available in the statistical software Stata 8.0.

Government Stability According to the *International Country Risk* by PRS Group which produces these data this index measures the governments ability to carry out its declared program(s), and its ability to stay in office. The average yearly rating varies from 0 to 12, where a higher score means lower risk.

Non Corruption Index This is assessment of corruption within the political system. The average yearly rating ranges from 0 to 6, where a higher score means lower corruption risk. The source of this data is also the *International Country Risk* by PRS Group.

International Monetary Fund (IMF) Programs This data comes from the IMF and gives information on the type of IMF program under which the country and contains details on the starting and ending date of each agreement.

Balance of Payment Crisis This dummy variable is built following Kaminsky and Reinhart (1999), see their data appendix for the exact definition.

GDP_Gaps We calculate them as the difference between the current GDP and the trend GDP measured by the Hodrick and Prescott filter procedure in Stata 9.0.

Standard and Poor's default indicator The information appears in Standard and Poor's (2004) and a country was considered to be in default if it either its "Foreign Currency Bond Debt" or "Foreign Currency Bank Debt" was said to be in default by this financial institution.

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