Regaining Market Access: What Determines the Duration of Exclusion?*

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Abstract

This paper examines why some countries are able to regain access to international capital markets immediately after resolving a default, whereas other countries appear to be punished for longer periods. We first develop a methodology to determine when market access occurs after default settlement. Our main findings from examining the duration of exclusion from international capital markets between 1980-2005 in Latin American countries are the following: i) countries regain partial market access after 1.8 years on average (median of 1.0 year) while it takes 4.8 years on average (median of 4.0 years) to regain full market access; ii) partial market access depends mostly on short-term domestic and external conditions; iii) full market access depends primarily on investors' perceived outlook for a country; and iv) size matters, with large economies regaining market access twice as fast as small countries.

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1 Introduction

Why are some countries able to access international capital markets immediately after resolving a default, while others seem to be punished and are forced to remain on market sidelines? Looking at two countries in Latin America, we can contrast their market experiences, despite both being recent defaulters. Argentina has defaulted four times on foreign currency bond debt and twice on foreign currency bank debt during the last 183 years (Beers and Chambers, 2006). The most recent default, in December 2001 on USD79.7bn in foreign debt, excluding past due interest, took until May 2005 to be resolved when the majority of bondholders finally accepted the government's terms (Dhillon et al., 2006). Despite being in default for 3.5 years and forcing investors to realize large haircuts on their positions, once the restructured bonds began trading in the grey market Argentina appeared to have immediately regained access to international capital markets. Ecuador, however, has faced a very different experience with international capital markets and has largely been cut off from markets since its default in 1999 on USD6.5bn in foreign debt (which was settled in 2000).

While some recent research has begun to examine the question of when a country will have market access (IMF, 2001, 2003, and 2005), the question of how long a country will be excluded from international capital markets once a period of default is settled has yet to be examined. This line of research is different from earlier work as we look explicitly at periods of sovereign default during the modern financial period (1980-2005) in an effort to determine the duration of market exclusion, rather than solely identifying characteristics of market access. We also examine whether the type of default - bank debt or bond debt - can generate different durations of market exclusion.

The remainder of the paper proceeds as follows. In section 2 we present a review of relevant literature. In section 3 we define the empirical strategy of the paper, presenting the variables that we believe could drive the outcomes, and present the results, while section 4 concludes.

2 Related Literature

Much of the literature on sovereign debt focuses on why governments wish to repay their obligations and has largely ignored the issue of how long countries have been excluded from international capital markets after emerging from default. Eaton and Gersovitz (1981) argue that sovereigns repay debt because future lending depends on reputation. Countries are unlikely to be one-time borrowers and are likely to experience periods of high and low income relative to trend and would like to be able to smooth their income stream. The borrower may or may not want to borrow up to their credit ceiling (which is defined by lenders), thus a country borrows the minimum of the amount it wishes to borrow and the amount it can borrow. The benefits of default grow with the size of the outstanding debt, but these costs are determined endogenously by the variability and growth rate of the country's income and other factors influencing the future demand for debt. Should the country default, the authors assume that a country faces a permanent embargo on future loans by private sector lenders.

Cole et al. (1995) looks to fill a gap in the literature regarding how countries can regain access to international credit markets once they have defaulted by developing a model where governments signal their willingness to repay future loans by settling old debts. The authors find that the model is consistent with historical evidence from the 19th century market for Latin American and US debt when defaulting countries returned to the international loan markets shortly after settlement, but after "varying periods of time". A shortcoming of the paper is that it fails to take into consideration external economic conditions, which may have contributed to a country's default in the first place. The paper also assumes that countries only contract short-term debt, however, we observe that countries typically borrow long-term instruments and look to keep the proportion of short-term debt as low as possible in order to limit rollover risk. Despite the aforementioned shortcomings of the paper, this is one of the few theoretical papers on this subject that has empirically testable implications. In particular, it establishes

a link between the time of exclusion and the size of the haircut on debt. However, in order to test this idea it requires having information on the size of the haircuts which does not exist, at least for the majority of the cases, and also it is not easy to compute.¹

Lensink and Van Bergeijk (1991) present one of the first papers tackling the determinants of a country's ability to access international capital markets. In the study the authors explicitly consider flows of funds between creditors and debtors and investigate the determinants of developing countries' access to international capital markets between 1985-1987. The study sets itself apart from earlier empirical studies by using the observation of whether a country has access to international capital markets or not as the dependent variable. Lensink and Van Bergeijk start from the assumption that countries are credit constrained and creditors determine a country's access to international capital markets. If a country raises funds, it is assumed that the country has market access, but if no borrowing occurs, capital markets are assumed to be closed. However, by utilizing this definition the data sample is contaminated because it groups countries that do not need to borrow with those that do not have access to markets, thereby inflating the number of countries observed to have no market access. The results of the study find that the basic determinants of market access are all highly significant (GDP per capita, net external debt as % of GDP, gross external debt as % of GDP, and debt-service ratio), whereas other creditworthiness indicators are insignificant (short-term debt to export ratio, international reserves to gross external debt ratio, and gross domestic investment as % of GDP).

El-Erian (1991) reviews the nature, magnitude, and terms of the market reentry process and analyzes the factors that facilitate it by looking at Latin American country experiences during the 1980s/early 1990s. El-Erian identifies four major factors contributing to market reentry:

¹See Sturzenegger and Zettelmeyer (2007) for estimates of debt haircuts of seven sovereign defaults between 1998 and 2005.

- Successful implementation of economic adjustment policies. There has been a reduction in domestic fiscal imbalances due to improved budgetary performance and prudent monetary policies, promotion of competitiveness of the tradable sector, and improved economic efficiency through fundamental structural reform.
- 2. Restructuring of existing indebtedness. Despite the implementation of sound policies, some Latin American countries have been undermined by continued high risk aversion by the private sector due to the effect of "debt overhang". Thus, debt overhang may require addressing through contractual debt and debt service reduction operations rather than via refinancing/ rescheduling operations.
- 3. Reduced transaction costs for accessing capital markets. Regulatory changes in industrial country capital markets and increased market-credible information regarding borrowers' creditworthiness have lowered transaction costs. Most importantly, regulatory changes in the US market in 1990 with the approval of "Regulation S" and "Rule 144A" reduced transaction costs and liquidity concerns that were faced by developing countries when they issued in US capital markets.
- 4. Customizing financial instruments to market conditions. Market reentrants have attempted to differentiate debt instruments by providing explicit credit enhancements, for example, collateralization and options.

While the article is useful from the point of view that it sheds light on the short-term prospects for countries that have succeeded in restoring market access, it is limited by the fact that there is no quantitative analysis on the impact of these variables on market reentry, while the roles that the external environment and investor demand can play on market reaccess are not stressed.

Gelos et al. (2004) looks at developing countries during the period 1982-2000 and determines that traditional measures of a country's links to the rest of the world and traditional liquidity and macroeconomic variables are not good at explaining market

access. Instead, the authors find that vulnerability to shocks, perceived quality of policies, and institutions are important measures. The authors conclude that there is no evidence for the hypothesis that credit markets strongly punish defaulting countries given that on average defaulters during the 1980s reaccessed markets in 4.7 years on average, while defaulting countries during the 1990s regained market access in 0.3 years on average. The authors define market access as "public or publicly guaranteed bond issuances or public or publicly guaranteed borrowing through a private syndicated bank loan that results in an increase in the country's indebtedness", however, this definition limits access to actual borrowing, not the ability to do so but choosing not to. A further concern stems from the fact that the authors look at gross issuance rather than net issuance and do not take into account the proportion of GDP that borrowing accounts for in order to determine market access. Finally, by combining these qualifications, occasional access is defined as a country having partial market access less than 14 years (out of 20) and consistent access if it accesses markets more than 14 years over the sample period.

Fostel and Kaminsky (2007) examine the question of whether volatile international capital markets are the main reason for the boom-bust pattern of Latin America capital market participation. The authors choose to focus their analysis on international primary gross issuance (bond, equity, and syndicated loans) rather than net capital flows by arguing that zero net capital flows may either reflect no international financial integration or complete integration. Attention is focused on the six largest Latin American economies (Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela) with 1990-2005 being the primary period of interest. The authors find that during the 1990s, domestic factors (macroeconomic policies, economic activity, political risk, real exchange rate volatility, and openness) were important for international capital market access by Argentina, Brazil, and Chile, whereas external factors (global liquidity, world economic activity, and terms of trade) were important for Colombia, Mexico, and Venezuela.

However, during the period of 2002-2005, external factors were most important for market access by all of the countries analyzed. While the authors note that there may be a country size effect, that is, a minimum required liquidity to attract international investors, there is no discussion by the authors as to why domestic factors played more of a role for market access by Argentina, Brazil, and Chile during the 1990s while external factors were more important for Colombia, Mexico, and Venezuela.

This paper looks to add to the literature by applying a more precise measure of market access, specifically taking into account the quantity of new borrowing, and identifies characteristics of sovereign defaulters to measure their duration of market exclusion.

3 Empirical Strategy

3.1 Definitions

As a starting point for our analysis, we define two terms: default and market access. We use Standard & Poor's standard definition of default: "...the failure to meet a principal or interest payment on the due date (or within the specified grace period) contained in the original terms of a debt issue ... or tenders an exchange offer of new debt with less-favorable terms than the original issue" (Beers and Cavanaugh, 2006). Further, Standard & Poor's considers a country to have emerged from default when the agency has concluded that "...no further near-term resolution of creditors' claims is likely" (Beers and Cavanaugh, 2006).

We define market access to be the first of either of the following events occurring post default exit: (i) a net increase in private creditor debt flows in the form of bonds, commercial bank loans, or other private creditor sources to the public or publicly guaranteed sector; or (ii) a net increase in private creditor debt flows to the private sector. By looking at these measures we can say whether or not a country has access to international capital markets even if they do not borrow because we may assume that for a

private firm to borrow from abroad, the country must be in good financial standing.² We choose to restrict our attention to net debt flows rather than gross flows in order to distinguish between a country merely rolling over its debt and contracting new debt. This limits the problem faced during the 1980s when commercial banks rolled over loans to developing countries rather than writing them down and prevents us from considering these funds as a country having market access.

We consider bond and bank debt instruments to be close substitutes as sources of external financing. Bonded debt is a contract with covenants and loan-granting decisions dependent on only public information, while a bank loan uses the public information as well as additional information gathered via costly monitoring of the borrower's actions. A key implication of this result is that once a country establishes a positive reputation, the need for close monitoring is reduced.³

We also consider a country as being able to gain market access even if there is outstanding litigation with holdout creditors. While in earlier times it may have been more difficult to access markets if a country was facing legal challenges and the possibility of assets being attached, today the global bond market has developed sufficiently so that debt can be issued in different legal jurisdictions, i.e., the Eurobond market, which allows US-based firms to purchase government securities from countries with outstanding litigation. Further, the advent of special purpose vehicles (SPVs) has created loopholes in existing legislation, which makes it easier for countries to issue debt and avoid the attachment of assets.⁴

We next distinguish between partial and full market reaccess. We consider partial reaccess as the first year in which there are positive net private creditor debt flows to

²Typically the ratings of private firms are constrained by the country rating. This is especially evident in the case of developing countries. For a discussion on emerging markets' private sector access to international debt markets during sovereign debt crises, see Arteta and Hale (2006).

³See, for example, Diamond (1991).

⁴One can consider the case of EM Ltd. v. Russia, which was unsuccessful in its many attempts to attach assets. In the past, government and central bank assets have been placed in the Bank of International Settlements (BIS) in Switzerland to utilize the legal protection afforded to the BIS against the attachment of assets. See, for example, Sturzeneger and Zettelmeyer (2006b).

the public or private sector, whereas full market reaccess is defined as the first year of positive net private creditor debt flows to the private or public sector greater than 1.5% of GDP. This threshold is chosen as this is, on average, one-half of the annual central government borrowing requirement over the entire sample. If a country exits default and regains market access in the same year, we consider the duration of market exclusion to be one year. The rationale for this is that we know the duration of the event is greater than zero, but by using discrete data our first observation of the change is in the following period.

Using S&P's definition of default, during the period 1980-2005, we have identified 164 episodes of sovereign default on foreign currency bank debt, foreign currency bonds, and local currency debts (Beers and Chambers, 2006), with an average default of 6.9 years. The average length of default on foreign currency bank debt was 8.6 years and 4.2 years for local currency debt, while for default on foreign currency bonds the duration of default is only 2.5 years. We next restrict the data sample to separately consider the Latin America and Caribbean region. Within this region, we find that there are 37 episodes of default that have been settled on foreign currency instruments, 26 on bank debt and 11 on bonded debt, and 12 settled default episodes on local currency instruments. The average duration of default on foreign currency bank debt is 7.3 years, 5.0 years on local currency debt, and 3.0 years on foreign currency bonds. It is worth stressing that while a country is not classified as entering into default until the expiration of the grace period, a country may in fact be in default. Thus the reported durations of default should be recognized as having a downward bias, which could be up to one year.

For the Latin America and Caribbean region, by our definition we find that defaulters on foreign currency bank debt regain partial market access after an average of 1.6 years, defaulters on foreign currency bonded debt regain partial market access 2.2 years after settling defaults, and defaulters on local currency debts regain partial market access

after 2.0 years. The time to regain full market access is notably longer: for commercial bank debt defaulters, full market access is regained after an average of 5.1 years, for foreign currency bond defaulters full market access is regained within 4.9 years, while it takes 4.0 years on average for defaulters on local currency debt to regain full market access. All of these results are summarized in Table 1.

Table 1 around here

3.2 Determining Factors of Market Access

In this section we consider the important variables that may influence the duration of market exclusion.

The debt sustainability literature (see, Reinhart, Rogoff, and Savastano (2003)) requires forming a view of how a country's outstanding stock of liabilities is likely to evolve over time. These views, however, are influenced by both domestic and external economic conditions. The higher a country's debt ratios, the slower it will likely regain market access as countries with high debt ratios are forced to divert significant resources to debt servicing, which increases the probability of encountering financing difficulties. A consequence of higher debt ratios are higher average interest rates as the interest rate is a function of the debt stock. In turn, this increases a country's debt servicing requirements and mounts pressure to borrow additional funds, which may lead to slower market access. For our purposes we choose to look at a one period lag in the debt ratio in order to control for possible endogeneity problems arising from our measure of market access, as the year in which a country regains market access, net external borrowing is positive, which will raise debt ratios.

Overall macroeconomic stability as suggested by manageable fiscal deficits, strong growth, and low inflation all may contribute to faster market reaccess. The government's fiscal balance, which may be considered a measure of policy quality, may lead to faster market reaccess if there is a smaller deficit. The fiscal balance may be driven by the

revenue side, which can indicate the degree to which the economy is operating in the formal sector and the ability to impose taxes, or expenditure side, which captures debt servicing costs and public sector wages. Higher real GDP growth signals better future repayment ability and may indicate that previous policy adjustments are beginning to payoff in terms of economic productivity. Higher inflation rates may lead to slower market access as inflation can erode the value of a country's currency, leading to greater external debt servicing costs.

To measure external financial market conditions that may be drivers of international capital market access and demand for sovereign debt, we focus our attention on the interest rate spread between risk free assets (proxied by US Treasury rates) and riskier assets. The rationale is quite straight forward: the spread between risk free assets and higher yielding assets, including emerging market sovereign debt, captures investor demand for riskier assets, with tighter spreads indicating higher investor demand and greater overall market liquidity. Widening spreads may also indicate countries facing higher interest rates, which makes borrowing more costly in international capital markets.

In measuring links to the rest of the world, we focus our attention on the trade balance, exports, current account balance, openness, and reserve-import coverage. While the reserve-import coverage level serves as a measure of liquidity, the other variables can serve as an indicator of vulnerability to external shocks which could serve to slow market reaccess.

Important policy measures include creditworthiness, government stability, and the existence of an IMF program. Market perceptions as reflected in the credit rating by Institutional Investor, which is in part a function of the above mentioned variables, involves both a qualitative and quantitative assessment to adequately capture country developments, with a higher rating expected to result in faster market reaccess. Greater government stability (low political risk) as captured by the International Country Risk Guide index, may be associated with faster access. While the existence of an IMF

program should play a positive role in leading to faster market reaccess, the existence of a program may be interpreted by some as indicating significant economic challenges that require international oversight in order to be resolved, thus resulting in slower reaccess.

Finally, we consider the size of the country, in terms of nominal GDP.⁵ We would predict that large countries regain market access more quickly than small countries due to their relative importance in providing significant investment opportunities for investors. Large countries tend to have larger nominal debt stocks, which allows for more liquid debt instruments and leads to higher weightings in asset class indices.

In the table below we summarize the variables to be considered in our analysis and note the expected sight of each variable ("+" indicates a positive impact on the duration of market exclusion, that is, generating faster market access, while "-" indicates a negative impact on the duration of market exclusion; "+/-" indicates that the variable has an ambiguous contribution towards the duration of market exclusion).

Table 2 around here

3.3 Measuring the Duration of Market Exclusion

In this section we will start by looking at the unconditional survival and hazard functions for the duration of market exclusion and then we will proceed with our analysis by estimating a discrete time duration model with time varying regressors in order to analyze the impact of some of the variables previously identified in section 3.2.

3.3.1 Preliminary Analysis

As a preliminary analysis of the data on market exclusion we start by presenting the empirical survival and hazard functions for the duration of market exclusion.⁶ In order to

⁵Large countries in our sample are: Argentina, Brazil, Chile, Mexico, Peru, and Venezuela. All other countries are classified as being small.

⁶The survival function is defined as S(t) = 1 - F(t), where F(t) is the cumulative distribution function. This function tells us what percentage of the population is still in the state after t periods, in our case, it tells us the percentage of countries that have not regained market access after t periods.

estimate the survival functions we use a non-parametric estimator that is very popular in this type of literature, the Kaplan-Meier estimator. This estimator is defined as follows:

$$\widehat{S}_{KM}\left(t\right) = \prod_{j=1}^{t} \left(1 - \frac{d_j}{n_j}\right),\tag{1}$$

where d_j denotes the number of exits in the j-th period and n_j denotes the total number of possible exits in the j-th period. The estimator for the hazard function follows immediately from the survival function estimator and it simply uses a fundamental relationship between the hazard and the survival functions

$$\widehat{\lambda}_{KM}(t) = \frac{\widehat{S}_{KM}(t-1) - \widehat{S}_{KM}(t)}{\widehat{S}_{KM}(t-1)} = \frac{d_t}{n_t},$$
(2)

where d_t and n_t have the same interpretations as before. The results for the survival function can be seen in Figure 1.

Figure 1 around here

Figure 2 around here

From the initial analysis of the empirical survival functions, Figure 1, we see that 50% of the countries regain partial market access within one year, while it takes 4 years for 50% of the countries to regain full market access. Regaining partial access occurs very quickly; in less than 3 years 90% of the countries were able to borrow from abroad again. This result suggests that, with some exceptions, after a default a country is basically able to access debt markets for small quantities whenever it wants. On the other hand, in order for 90% of countries to regain full market access it takes 9 years which suggests that, although countries are able to borrow small amounts very quickly

The hazard function is defined as $\lambda(t) = \frac{f(t)}{S(t)}$, where f(t) is the density function. This function tells us the instantaneous probability of exiting a state at time t conditional on not having exited after t periods. In this case it states that the probability of a country regaining market access after t years conditional on not having got access until then.

after a exiting default, obtaining larger quantities of external funds, as it is measured by our definition of full market access, is not so easy. The question that this duality raises for us, but that we are not able to answer with the data that we are analyzing, is to know whether the fact of a country not being able to borrow large amounts of money from abroad for a fairly long period of time is a sufficient punishment for the default or if, since the country is able to get smaller amounts of money almost immediately after the default is settled, the country barely feels the cost of being financially constrained with respect to large amounts of money.

In Figure 2 we present the empirical hazard functions. What we learn from this graph is that the speed at which countries that have not yet regained market access regain market access is non-decreasing over time. This means that, over time for those countries that have not regained market access, the probability of being able to access the market again does not decrease (in some cases it actually increases) from period to period. In the case of partial market access, in each of the first 3 or 4 years, around 60% of the countries that are excluded from the market are able to access it again. After the initial 5 years, this probability increases substantially until all countries regain access. In the case of full market access, we see a similar pattern but at a slower speed, that is, the speed of access is fairly constant during the initial 4 or 5 years, around 20% per year, and then it increases substantially.

From the analysis of the hazard functions, the result that should be seen as the most concerning one from an incentives point of view is the fact that a country can simply wait and the odds of being able to regain market access are in its favor. That is, as time passes, it becomes more likely that a country will be able to again have access to international capital markets. The analysis thus far has been unconditional and this does not tell us anything about the sources of differences between the different events.

⁷Besides the economic interpretation inherent to this feature, there is also an important statistical interpretation that this result signals, which is the fact that there aren't any signals of major sources of unobserved heterogeneity which is something we use in the next subsection of our econometric approach. For a detailed discussion of this topic see Lancaster (1990).

In the next subsection we will extend our analysis of the duration of market exclusion to the estimation of a conditional discrete time duration model in order to be able to better understand how the different domestic and external factors can influence the time of market exclusion.

3.3.2 Econometric Analysis

After the preliminary analysis of the unconditional hazard and survival functions, we proceed with our analysis by specifying and estimating a discrete time duration model with time varying covariates, for both partial and full market access, in order to understand the quantitative impact of different factors affecting the duration of market exclusion. The benefits to this approach are the fact that it allows us to incorporate episodes in which market access has not yet occurred (censored observations) and for the interaction between the duration of exclusion and the evolution of the variables previously identified that can potentially impact the length of market exclusion. The parametric specification we consider here is a proportional hazard model with time varying covariates. This means that, in our model, the hazard function is the product of two elements: the baseline hazard function, λ_0 (t), and some factor of proportionality that varies with the covariates, $g(x_{it}, \beta)$. In our model we will use a constant baseline hazard:

$$\lambda_0(t) = \lambda \forall t > 0. \tag{3}$$

⁸Note that the approach that we are following here is, to some extent, similar to the one adopted in Gelos et al. (2004). These authors use a probit model to analyze the same phenomena, but they do not give it an hazard interpretation nor use direct measures for the length of market exclusion.

⁹Notice that in the specification of this model, t denotes elapsed time and not historical time, that is, it represents the amount of time during which a country did not have market access after settling its default and not the chronological time of market exclusion.

¹⁰During the preparation of this paper we actually tested this hypothesis against the alternative of a piece-wise constant specification and in all our models we could not reject the hypothesis of constant baseline hazard. For simplicity of exposition, we opted to not present these results, nevertheless they are available from the authors upon request.

As it is common in most non-linear models, we assume that

$$g(x_{it}, \beta) = \exp(x_{it}\beta). \tag{4}$$

Because the data we are using is discrete, that is, we only observe market access in intervals of one year, we must transform the likelihood function in order to account for this fact. Under the assumptions we have made thus far, it would be easy to show that this corresponds to the model proposed by Prentice and Glockler (1978) for grouped data. In this case, it corresponds to estimating a binary model where the link function is the so-called complementary-log-log function. If we define d_{it} as being equal to 1 if country i gets market access after t periods and 0 otherwise, then, the log-likelihood function can be written as follows:

$$l(\beta|x) = \sum_{i=1}^{N} \sum_{t=1}^{T_i} \left\{ d_{it} \ln\left(1 - \exp\left(-\exp\left(x_{it}\beta\right)\right)\right) - (1 - d_{it}) \exp\left(x_{it}\beta\right) \right\}.$$
 (5)

We now present the estimation results for both partial market access and full market access. The approach that we follow here is what is usually called a "general to specific" (GTS) approach. That is, first we estimate a model with a larger set of variables and we then iterate the model by excluding those variables that are not significant until we reach a final model in which all variables are statistically significant. The reason why we opted for this approach has to do with the small size of the samples under analysis. By excluding the non-significant variables we will able to estimate with more precision the other ones.

Table 3 around here

Based on the results presented in Table 3 several conclusions can be drawn: i) the factors that explain partial market access are not the same that explain full market access. In the case of partial market access the short term domestic and external factors

matter the most, whereas in the case of full market access the most important factor is the country credit rating which, in our opinion, can be viewed as a long-term/structural domestic factor; ii) the fact that partial market access is driven by short term factors should not come as a surprise because, given our definition of partial market access, what we are capturing is mostly short-term financing. In this case what is important for investors is the short-term indicators of a country; iii) for full market access it may be somewhat more surprising that short term indicators of the domestic conditions do not matter for accessing the market but still, one must see these results as plausible and sensible. If full market access is capturing situations in which the country is borrowing large amounts of money (according to our definition of full market access) then, from the lender's perspective, what is relevant is not the current economic situation but the future prospects; iv) the degree of openness has a negative impact on the duration of market exclusion. Our interpretation here is that a country that is more open to the exterior has easier access to foreign currency revenue sources and therefore will not need to borrow money from abroad for short term financing purposes. In this case, one should view this as evidence of a situation in which the country itself chooses to not borrow from abroad, that is, debt market self-exclusion. This variable is no longer relevant for our definition of full market access, which is consistent with the idea that full market access represents mostly long term investment and therefore the foreign currency that a country has access to through its external sector is not applicable for these types of operations; v) the presence of the IMF does not have any impact on the duration of market exclusion, both for partial and full market access; vi) there is no link between government stability and the amount of time a country is excluded from the debt capital markets. This result is to some extent surprising but, from a lender's point of view, what matters is not who is in power but whether they get repaid or not. More, as we show in Appendix 1, the II rating variable incorporates the idea of government stability

¹¹In Appendix 1 we analyze in detail the Institutional Investors rating variable in order to have a better understanding of how it relates to the individual country's economic conditions.

and therefore it is normal that this variable does not show to be significant; and vii) size matters when it comes to regaining market access. Not very surprisingly we see that a bigger country can reaccess the market twice as fast, *ceteris paribus*, as a small country. Our interpretation here is that investors facing a finite number of countries to invest in cannot exclude themselves from large markets for long periods of time, particularly those that are heavily weighted in asset class indices.¹² Overall, these results are sensible and economically logical.

The fact that a certain variable has a positive or a negative impact on the hazard function (or on the average duration) is not very informative because it is not easy to translate the value of an estimated coefficient into more tangible information, like an average or an elasticity. For this reason we decided to construct the following experiment. Suppose that during the periods of market exclusion, instead of having an average deviation from trend GDP of -0.8%, the average deviation from trend GDP was 1.5% or -2%, what would be the implied average market exclusion duration? Based on this idea we estimated the average duration of market exclusion that is implied by the econometric model assuming that the observed average of the variable being analyzed is higher/lower by a fraction of its standard deviation, $\bar{x} \pm \alpha\% \cdot stdev(x)$. The results of this experiment are summarized in Figure 3 for partial market access, and in Figure 4 for full market access.¹³

Figure 3 around here

Figure 4 around here

From our experiments, we reach the following conclusions regarding partial market access: i) although the average duration of exclusion is fairly low (roughly 2 years), there can be a lot of variability depending on where the country is in the business

¹²This makes particular sense when one considers that most institutional investors' performace is compared to benchmark index returns.

¹³Please see Table A.2 in Appendix 2 for the summary statistics of the different variables during the periods of market exclusion.

cycle. Countries that are far below GDP trend can experience a substantial increase in the duration of market exclusion; ii) regaining market access depends strongly on the external market conditions - as measured by the risk premium. A country that tries to regain market access when the risk premium is 1 standard deviation higher than the average, will need, on average, 1.75 more years than when the risk premium is 1 standard deviation below average; iii) a country whose degree of openness is 1 standard deviation above the average may reaccess the market 1.3 years later than a country that is 1 standard deviation below the average; iv) despite statistical significant, the inflation rate did not induce much variability in the results.

Regarding full market access we conclude the following: i) a small country will take, on average, approximately twice as long as a big country to regain market access; ii) the way investors view a country as a credit is extremely important. A big country with a credit rating 1 standard deviation below the average rating takes 6 more years than a country that is 1 standard deviation above the average rating (8.3 years versus 2.3 years). In the case of small country, this difference becomes 12.3 years (16.6 years versus 4.3 years). This result tells us that if a country wants to regain market access faster, then it should take actions that give investors a better opinion of the country's credit risk. The range of actions that a country can adopt is very broad and taking one specific action appears to be less relevant than undertaking a group of consistent policies.¹⁴

3.3.3 Robustness check

As a robustness check of our results, we run several experiments in order to strengthen our findings. First, we separately consider how the type of debt instrument defaulted on, bank or bond debt, can impact the duration of market exclusion. By separating events by the type of default, we raise the issue of creditors knowledge of debtors: bank debt

¹⁴We evaluate this claim in the following section and in Appendix 1 we analyze the relationship between the II rating variable and several macroeconomic variables.

creditors typically monitor debtors more closely, at a cost, than bonded debt creditors do, which may contribute to the relative importance placed on the different variables. To do this, we estimate our previously defined final models for partial and full market access with all of the earlier identified statistically significant variables to see whether the same drivers of market exclusion apply.

Table 4 around here

We acknowledge that our results are limited by small sample sizes, however almost all estimates produce coefficients with the anticipated sign. The only case where this is not true is in the case of partial market access and the risk premium, which comes positive in the bank default model.

Second, in order to show the importance of the Institutional Investor rating as a composite measure of a country's overall economic situation, we estimate the model for full market access without the II variable using the GTS approach.

Table 5 around here

From Table 5 what see is that, the only variable that is now significant is the government stability index. This result should not come as a surprise since the correlation between the II rating and the government stability index is approximately 0.7, and therefore the two variables are fairly good proxies for each other. The obvious question now is whether the II rating or the government stability index is the important variable. From a statistical point of view, we can say that the model with the II rating is a better one since its Schwarz B.I.C. is smaller. From an economic point of view, since the II rating comprises more information than simply the degree of government stability, we prefer the model with the II rating because it encompasses, in our opinion, the model that only includes the government stability index.

Finally, we reestimated our models without Argentina and Ecuador to see what our model would predict for the timing of market access by countries with similar characteristics to Argentina and Ecuador upon emerging from default.

Figure 5 around here

Figure 6 around here

Figures 5 and 6 show the conditional survival functions for Argentina and Ecuador. ¹⁵ In the case of partial market access, around 99% of countries in a similar economic position to Argentina upon exiting default would have regained partial market access after 1 year, while countries with economic conditions consistent with Ecuador's would have taken 6 years to achieve a 96% probability of partial market reaccess. For full market access, we find that after 1 year around 30% of countries with similar economic conditions to Argentina would regain market access, whereas it would take countries similar to Ecuador 4 years to achieve a 31% probability of regaining market access. Finally, we consider the speed of full market reaccess if a country with similar characteristics to Ecuador was classified as a big country. In this case, the length of time to achieve a 32% probability of regaining market access would be only 2 years, thus highlighting the importance of country size on market reaccess.

4 Concluding Remarks

This paper examines why some countries are able to regain access to international capital markets immediately after resolving a default, whereas other countries appear to be punished for long periods. Our main findings from examining the duration of exclusion from international capital markets between 1980-2005 in Latin American countries are:

i) countries regain partial market access after 1.8 years on average (median of 1.0 year)

 $^{^{15}}$ Because it only took Argentina 1 year to regain both partial and full market access, we used the values of 2005 for all years.

while it takes 4.8 years on average (median of 4.0 years) to regain full market access; ii) partial market access depends mostly on short-term domestic and external conditions; iii) full market access depends primarily on investors' perceived outlook for a country (captured by the credit rating); and iv) size matters, with large economies regaining market access twice as fast as small countries.

Our results complement earlier findings by Gelos et al. (2004) in that we find that the existence of IMF programs do not improve market access and that the quality of policies and institutions perceived by the market matter substantially as captured by the Institutional Investor rating. We also find in our analysis of the Institutional Investor rating variable that standard liquidity measures and country links to the rest of the world do matter for market access, albeit indirectly, in contrast to Gelos et al.'s conclusions. Our findings also support the recent work of Fostel and Kaminsky (2007) in that global liquidity and country size are important drivers of market access.

There are many interesting extensions of this initial work that can be undertaken. First, we would like to compare our results to those generated by other regions, including Asia, Africa and the Middle East, and Europe to see if there is a regional component to regaining market access or whether all regions face similar access conditions. Second, we would like to utilize our resulting stylized facts to establish a theoretical model of market access. Third, we would extend our analysis of post default market reaccess to consider periods of market exclusion resulting from financial crises and financial contagion. By understanding the loss of market access under various circumstances we would like to be able to formulate specific policies to assist countries in the market reaccess process. Finally, we believe that our findings can be incorporated into recent work on sovereign debt, which assumes that once a default is settled a country reaccesses capital markets in each period with a random probability. The addition of this friction may lead to different results, particularly with regards to the emerging market business cycles literature and explanations of interest rate spreads.

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Tables

	FC Bank Debt	FC Bond Debt	LC Debt	Total Debt
Length of Default (yrs)				
Average	7.3	3.0	5.0	5.7
Median	6.5	2.0	2.0	3.0
Duration Partial Access (yrs)				
Average	1.6	2.2	2.0	1.8
Median	1.0	1.0	1.0	1.0
Duration Full Access (yrs)				
Average	5.1	4.9	4.0	4.8
Median	4.0	4.0	4.0	4.0
# Observations	26	11	12	49

Table 1 - Latin America and Caribbean Summary Statistics

Variable	Expected Contribution
Revenue	+
Expenditure	_
Fiscal balance	+
GDP growth	+
Average interest rate	_
Trade balance	+/-
Exports	+/- +/-
Openness	+/-
Import reserve coverage	+
Current account balance	+
Debt to GDP	_
Inflation	_
UST-HY interest rate spread	+/-
Credit rating	+
Government stability	+
Existence of IMF program	+/-
Country size	+

Table 2 - Summary of Variables

	Partial Market Access		Full Market Access	
	Baseline model	Final model	Baseline model	Final model
Constant	3.6149 (1.586)	2.6725*** (3.119)	$-6.2830^{***} \atop (-3.276)$	$-4.5809^{***} $ (-5.623)
Big^{16}	_	_	$0.7926 \atop \scriptscriptstyle{(1.421)}$	$0.7222^{**}_{(2.076)}$
% Deviation GDP trend	0.2125*** (3.145)	0.1949*** (3.498)	-0.0539 $_{(-1.071)}$	_
Central Gov. fiscal balance	0.0387 (0.739)	_	-0.0115 (-0.195)	_
Current Account balance	-0.0344 (-0.668)	_	-0.0536 (-1.182)	_
Debt to GDP ratio (lagged)	-0.0112 (-1.286)	_	0.0076 (0.908)	_
Inflation rate	-0.0007 (-1.394)	-0.0009^* (-1.735)	-0.0005 (-0.792)	_
Openness	$-0.0162^* \atop (-1.646)$	$-0.0171^* \atop (-1.901)$	-0.0571 (-0.560)	_
Institutional Investors rating	$0.0007 \atop (-0.015)$	_	0.1123*** (3.504)	$0.1051^{***} $ (4.111)
Gov. stability index	-0.0024 (-0.082)	_	$0.0153 \atop (0.553)$	_
IMF program	0.0335 (0.067)	_	-0.1292 (-0.329)	_
Risk premium	$-0.9461^{**} \atop (-2.400)$	$-0.8794^{**} \atop (-2.543)$	0.2589 (0.850)	_
Log-likelihood	-33.535	-35.466	-71.826	-74.5205
Schwarz B.I.C.	57.426	46.325	102.388	82.161
RESET test	-0.0392 $_{(0.233)}$	-0.0406 (-0.207)	$-0.4672^{*} \atop (-1.744)$	0.0897 (0.486)
# Observations	77	77	163	163

- 1) T-statistics in parenthesis; 2) *, **, *** denote significance at 10%, 5%, and 1% respectively;
- 3) The p-values from testing the final model against the baseline model are 0.696 for partial access and 0.389 for full access.

Table 3 - Duration model results

¹⁶Due to the measurement unit, annual, our data for partial access does not have enough variability to allows us to distinguish the effect of big and small countries. The inclusion of any of these variables causes the econometric model estimation algorithm to not converge. For this reason we were forced to exclude this variable from our partial market access model.

	Partial Market Access		Full Market Access	
	Bank default	Bond default	Bank default	Bond default
Constant	0.2799 (0.243)	4.8435** (1.984)	-4.0299*** (-3.366)	$-5.9751^{***} (-3.130)$
Big	_	_	$0.7468 \atop \scriptscriptstyle{(1.445)}$	$\underset{(0.5070)}{0.5674}$
% Deviation GDP trend	0.1491** (1.945)	$0.2567^{*}_{(1.779)}$	_	_
Inflation rate	-0.0004 $_{(-0.788)}$	-0.0015 (-0.566)	_	_
Openness	-0.0102 $_{(-1.053)}$	-0.0350 $_{(-1.539)}$	_	-
Institutional Investors rating	_	_	0.0847** (2.142)	$\underset{(2.608)}{0.1624}$
Risk premium	$0.4836 \atop \scriptscriptstyle{(0.717)}$	$-1.5222^* \atop (-1.712)$	_	_
Log-likelihood	-19.748	-8.253	-44.855	-15.680
Schwarz B.I.C.	28.776	16.092	51.733	21.136
# Observations	37	23	98	38

¹⁾ T-statistics in parenthesis; 2) *, **, *** denote significance at 10%, 5%, and 1% respectively.

Table 4 - Robustness checks of final models

	Full Market Access		
	Baseline model	Final model	
Constant	$-5.4818^{***} \atop (-3.012)$	$-4.4785^{***} \atop (-3.049)$	
Big	1.4515** (2.456)	$0.8203 \atop (2.371)$	
% Deviation GDP trend	-0.0163 (-0.348)	_	
Central Gov. fiscal balance	-0.0436 (-0.867)	_	
Current Account balance	-0.0526 (-1.1062)	_	
Debt to GDP ratio (lagged)	-0.0026 (-0.349)		
Inflation rate	-0.0008 (-1.234)	_	
Openness	0.0039 (0.396)	_	
Gov. stability index	0.0450* (1.782)	$0.0450^{**} \atop (2.021)$	
IMF program	-0.1063 (-0.261)	_	
Risk premium	0.4293 (1.415)	_	
Log-likelihood	-77.668	-81.170	
Schwarz B.I.C.	105.684	88.811	
# Observations	163	163	

1) T-statistics in parenthesis; 2) *, **, *** denote significance at 10%, 5%, and 1% respectively; 3) The p-values from testing the final model against the baseline model are 0.326 for partial access and 0.740 for full access; 4) Eicker-White standard errors.

Table 5 - Full market access model excluding the II rating variable

Figures

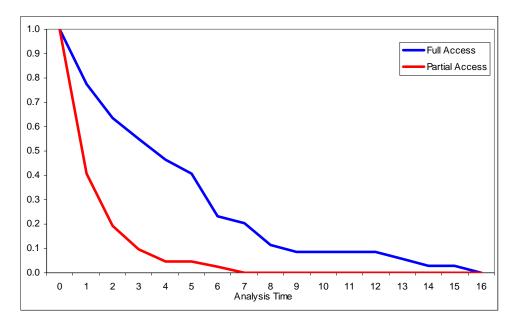


Figure 1 - Empirical survival functions estimates

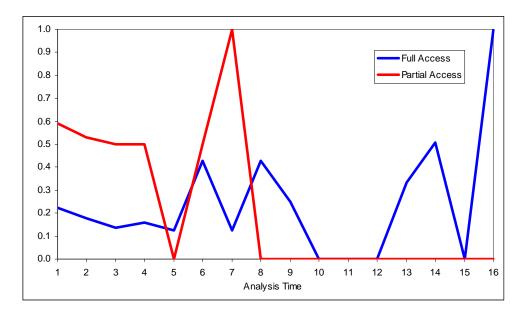


Figure 2 - Empirical hazard functions estimates

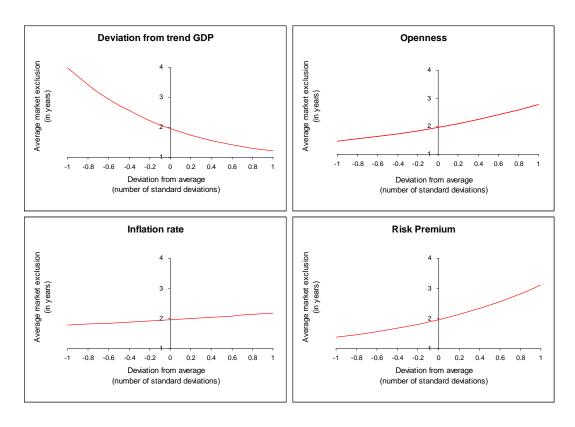


Figure 3 - Impact of different factors on the average duration of market exclusion, partial market access

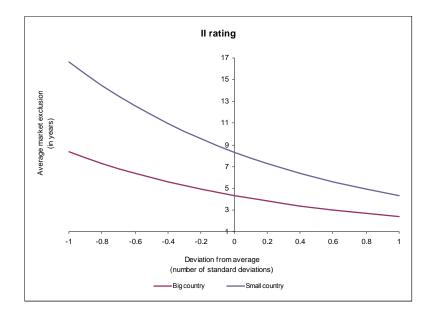


Figure 4 - Impact of different factors on the average duration of market exclusion, full $$\operatorname{market}$$ access

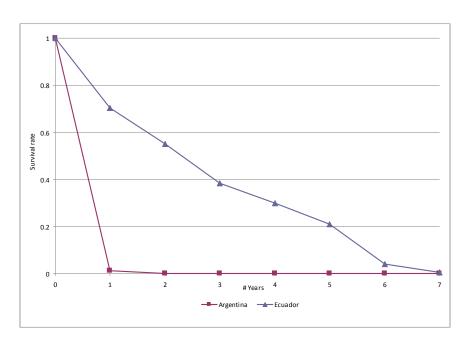


Figure 5 - Conditional survival rates of partial market access for Argentina and Ecuador

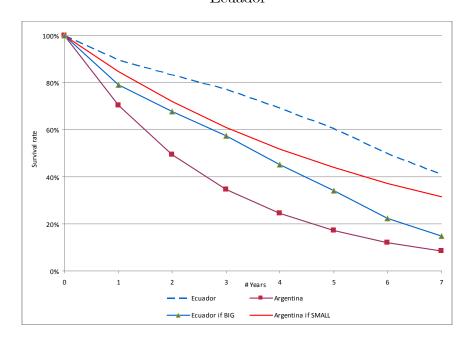


Figure 6 - Conditional survival rates of full market access for Argentina and Ecuador

Appendix 1 - Understanding the Institutional Investors rating variable

A sovereign rating can be considered a forward-looking estimate of default probability of a national government on its obligations (Beers and Cavanaugh, 2006). The rating agencies outline the criteria utilized in creating the country ratings, however the relationship between this criteria and the actual ratings can be difficult to quantify due to the qualitative nature of some criteria. Cantor and Packer (1996) undertake a study of the quantitative indicators that weigh most heavily in the determination of ratings. Utilizing both Moody's and Standard and Poor's sovereign ratings, the analysis finds that a small number of well-defined criteria, similar across agencies, can explain the rating assignments. Cantor and Packer consider eight variables of interest: per capita income, GDP growth, inflation, fiscal balance, external balance, external debt, economic development, and default history in their effort to understand the drivers of sovereign credit ratings. By conducting a simple panel regression analysis, the authors find that per capita income, GDP growth, inflation, external debt, and indicator variables for economic development and default history have the anticipated signs and are statistically significant, while the coefficients on the fiscal and external balances are statistically insignificant and of the unexpected sign. The authors note that the lack of a clear relationship between ratings and fiscal and external balances may reflect endogeneity in both fiscal policy and international capital flows as countries attempting to improve their sovereign credit rating may adopt more conservative fiscal policies and the supply of international capital may be restricted for lower-rated countries.

We next proceed to verify these findings in our sample by running a panel regression of domestic macroeconomic variables on the Institutional Investors rating variable using country fixed effects. The results are broadly in line with Cantor and Packer's earlier findings. All explanatory variables produce the anticipated sign. Of the individual coefficients, inflation, debt to GDP, months of import coverage, government stability, the

existence of an IMF program, and being in a default period, are statistically significant. More, because the R^2 is fairly high (0.618) it leads us conclude that the II rating is a good summary of what is economically relevant for that country.

	Dependent Variable
Explanatory Variable	II Rating
% Deviation GDP trend	0.044 (0.77)
CenGov fiscal balance	$0.003 \atop (0.04)$
Inflation	$-0.001** \ (-2.63)$
Trade balance	$\underset{(0.87)}{0.156}$
Openness	0.085^{***} (3.26)
Current Account balance	-0.221 (-1.22)
Months import coverage	$0.831^{***}_{(4.15)}$
Debt to GDP ratio	$-0.071^{***} \atop (-4.10)$
Govt stability	$0.395^{***}_{(9.12)}$
Default period	$-6.297^{***} \atop (-8.31)$
IMF program	-2.315^{***} (-3.54)
Constant	6.556^{**} (2.36)
Number of Observations	396
R^2	0.618
F(10, 367)	80.11

T-statistics inside parentheses;

Table A.1 - Analysis of the II rating variable

The findings lead us to consider the sovereign credit rating to be a general measure of a country's domestic macroeconomic conditions, effectively summarizing the information

^{*, **} and *** denote significance at 10%, 5% and 1%, respectively

contained in macroeconomic indicators. Additionally, one may consider the credit rating to be a forward looking view of the country's macroeconomy and ability to service its debt in the future.

Appendix 2 - Summary statistics

In this appendix we present the average and standard deviation for all the variables used in our baseline models during the periods between default settlement and market access for both partial and full market access.

	Partial Market Access		Full Market Access	
Variables	Average	Std. Deviation	Average	Std. Deviation
% Deviation GDP trend	-0.809	4.613	0.022	3.977
Central Gov. fiscal balance	-2.095	5.576	-2.162	4.499
Current Account balance	-1.125	4.822	-2.140	4.114
Debt to GDP ratio (lagged)	66.434	29.730	53.010	28.996
Inflation rate	372.568	163.001	202.483	152.991
Openness	57.320	27.599	57.098	27.292
Gov. stability index	61.617	9.506	62.614	10.024
Institutional Investors rating	25.227	7.208	26.634	7.640
IMF program	0.701	0.461	0.589	0.493
Risk premium	1.748	0.691	1.616	0.574
Number of Observations	77		163	

Table A.2 - Summary statistics.

Appendix 3 - Default episodes in sample

	FC Bank Debt	FC Bond Debt	LC Debt
Argentina	1982-1993 2001-2005	1989 2001-2005	1982 1989-1990 2002-2005
Bolivia	1980-1984 1986-1993	1989-1997	
Brazil	1983-1994		1986-1987 1990
Chile	1983-1990		
Costa Rica	1981-1990	1984-1985	
Dominican Republic	1982-1994 2005	2005	1980-2001
Ecuador	1982-1995	1999-2000	1999
El Salvador			1981-1996
Grenada	2004-2005	2004-2005	2004-2005
Guatemala	1986	1989	
Honduras	1981-2005		
Jamaica	1981-1985 1987-1993		
Mexico	1982-1990		
Panama	1983-1996	1987-1994	
Paraguay	1986-1992	2003-2004	
Peru	1980 1983-1997		
Trinidad and Tobago	1988-1989		
Uruguay	1983-1985 1987 1990-1991	2003	
Venezuela	1983-1988 1990	2004-2005	1995-1997 1998

Appendix 4 - Data sources

Series	Data Sources	Sample Period
Market access	Authors' calculations	1980-2005
GDP deviation from trend	IIF, IFS, authors' calculations	1980-2005
CenGov revenues	IIF, IFS	1980-2005
CenGov expenditures	IIF, IFS	1980-2005
CenGov fiscal balance	IIF, IFS	1980-2005
Trade openness	IIF, IFS, authors' calculations	1980-2005
Average annual inflation	IIF, IFS	1980-2005
UST 10-yr constant maturity	Global Financial Data	1980-2005
Interest rate spread (HY bond-UST)	Global Financial Data	1980-2005
Sovereign credit rating	Institutional Investor	1980-2005
Months of import coverage	World Bank GDF	1980-2005
Government stability	International Country Risk Guide	1984-2005
Existence of IMF program	IMF	1980-2005
Net priv sector ext borrow, priv creditors	World Bank GDF	1980-2005
Net pub sector ext borrow, priv creditors	World Bank GDF	1980-2005
Default on foreign currency bank debt	Standard and Poor's Credit Week	1980-2005
Default on foreign currency bond debt	Standard and Poor's Credit Week	1980-2005
Default on local currency bond debt	Standard and Poor's Credit Week	1980-2005