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Local Currency Bond Markets

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This paper analyzes the development of 49 local bond markets. The main finding is that policies and laws matter: countries with stable inflation rates and strong creditor rights have more developed local bond markets and rely less on foreign-currency-denominated bonds. The results suggest that "original sin" is a misnomer. Emerging economies are not inherently dependent on foreign currency debt. Rather, by improving policy performance and strengthening institutions, they may develop local currency bond markets, reduce their currency mismatch, and lessen the likelihood of future crises. [JEL F30, G11, G15, O16]

The currency crisis literature has recently focused on the importance of developing local currency bond markets in order to avoid the financial fragility associated with a currency mismatch. Such a mismatch arises, for example, if a firm's assets are in the local currency but it borrows in a foreign currency. Absent a currency mismatch, a negative shock in, for example, Brazil that caused investors to sell Brazilian assets would naturally correct itself; the Brazilian real would

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plummet and, in the normal course of events, the depreciation would be expansionary and would improve Brazil's external balances (as its products became more competitive and foreign goods became expensive). But if Brazil had borrowed heavily in foreign-currency-denominated debt—perhaps because it did not have a local currency bond market—the depreciation would immediately and severely worsen government and private balance sheets and greatly increase debt repayment burdens. Firms would in turn reduce investment and push the country into a recession, generating pressure for further currency depreciation. The link between this downward spiral of a currency crisis and the initial currency mismatch has been emphasized in the theoretical and empirical literature (Goldstein and Turner, 2004).[1]

If underdeveloped local currency markets are linked to financial instability, we should aim to determine the source of this emerging market affliction. The extant literature does not provide an unambiguous prescription, because bond market development is at the heart of a current debate in academic and policy circles. Eichengreen and Hausmann (1999) describe emerging economies as suffering from "original sin," defined as a situation in which the domestic currency cannot be used to borrow abroad or to borrow long term, even domestically. The phrase "original sin" itself suggests that emerging markets cannot overcome this problem on their own. In support of this notion, Eichengreen, Hausmann, and Panizza (2002; henceforth EHP) find that original sin is exogenous to conditions in developing countries (such as rule of law and past inflation performance). In contrast, La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997; henceforth LLSV) find that debt markets (bank debt plus nonfinancial bonds) are larger in countries with better rule of law and creditor rights.

Are policymakers in emerging markets truly blameless for their fallen state, as the EHP findings suggest, or, as the LLSV results imply, are there ways emerging markets can improve their financial systems? This question is important in academic circles, because some papers follow EHP's lead and assume that original sin is exogenous.[2] But it is more than an academic curiosity. If original sin is exogenous, as EHP suggest, international organizations may have an important role in the relief effort.[3] In contrast, the LLSV results imply that original sin is endogenous (and a misnomer) and that a supranational solution is only second best; the first-best solution would address the source of the problem.

We weigh in on this debate using data that are more complete than those of either LLSV or EHP. Specifically, we present data on the characteristics of bond markets around the world and analyze factors associated with local currency bond market development. Compiling data from a number of sources, we first present information on the size and currency composition of bond markets in 49 countries. We then analyze factors associated with local bond market development.

[1]See also Krugman (1999), Jeanne and Zettelmeyer (2002), Schneider and Tornell (2004), and Aghion, Bacchetta and Banerjee (2004). The literature on currency mismatches, and by extension our work, also has a link to the vast literature on dollarization. For example, Goldstein and Turner (2004) note that a currency mismatch could ultimately force an emerging economy to dollarize.

[2]For example, Jeanne and Zettelmeyer (2002) start from a situation of original sin and examine solutions that involve international lending.

[3]For the particular global solution proposed by EHP, see Eichengreen and Hausmann (2002).

Our analysis reveals roles for both creditor-friendly policies and creditor-friendly laws. Countries with better historical inflation performance (an outcome of creditor-friendly policies) have more developed local bond markets, both private and government, and rely less on foreign-currency-denominated bonds. Creditor-friendly laws matter, too; strong rule of law is associated with deeper local bond markets, whereas countries with better creditor rights are able to issue a higher share of bonds in their local currency.

We also show that the necessary conditions for bond market development are very similar to those that foster development of the banking system. Countries in which people are not willing to become creditors—at one extreme this is an unwillingness to deposit money in banks—will have undeveloped banking systems and underdeveloped bond markets. This has implications for the literature on financial development and growth (see, for example, Levine, 2002; and Beck and Levine, 2004); when that literature brings bonds into the analysis, the debate may well shift from the relative merits of bank-based and (equity) market-based financial systems to debt (that is, banking and bonds) versus equity.

I. Bond Markets Around the World

Unlike equity markets, about which information is readily available, comprehensive information on the size of the global bond market is not available from any one source. LLSV present data on debt finance, but their measure is of private bank debt and nonfinancial bonds. In this section we present information on the size and currency composition of bond markets in 49 countries.[4]

Our estimates of the size of each country's bond market are derived primarily from unpublished data from the Bank for International Settlements (BIS). For *international bonds* (that is, those in foreign currencies or placed abroad), we use the unpublished security-level data underlying *BIS Quarterly Review* Table 14B. To form the security-level international bonds database, the BIS combines information from Capital DATA (Bondware), Thomson Financial Securities Data (Platinum), and Euroclear; identifies and removes duplicates; corrects mistakes; ensures a consistent classification of issuers across the different sources; and performs general quality control. The BIS data on international bonds are likely the most comprehensive available, but they do not include information on Brady bonds, which we obtain from Merrill Lynch (2002). For *domestic bonds,* we rely again on unpublished data from the BIS, but here we must augment BIS data with data retrieved from Bloomberg. *BIS Quarterly Review* Table 16A publishes data on outstanding domestic debt securities, but combines both short- and long-term securities. In our study we focus on long-term debt securities—those with an original maturity of more than one year—and so utilize instead the unpublished *long-term* component of the domestic debt data. Augmentation is necessary, because for seven countries in our study—Brazil, India, Ireland, New Zealand,

[4]Another source of information on the size of bond markets across countries had been Merrill Lynch's *Size & Structure of the World Bond Market,* but it was recently discontinued. Other recent discussions of bond market development include IMF (2002) and Mihaljek, Scatigna, and Villar (2002).

Poland, Russia, and Turkey—BIS data indicate no domestic long-term debt issued by private entities. However, a Bloomberg search uncovered private bonds outstanding as of end-2001 for all but Turkey; amounts, which are not large, were added to our data after a cross-check that ensured the bonds were not placed abroad (which would be double counting because such bonds are in our international debt data).

The global bond market totaled $31.2 trillion in 2001 (Table 1). The bulk of outstanding bonds were issued by developed countries (93 percent), in particular the United States (46 percent), the euro area (22 percent), and Japan (16 percent). Emerging market issuance comprised the other 7 percent of the global bond market, with issuance much greater in emerging Asia (3.6 percent of the global market) than in Latin America (1.9 percent). Developed country bond markets not only comprised a large portion of the global bond market, but they were also large relative to the size of their economies: most developed countries have outstanding bonds that are about equal in magnitude to the size of annual GDP (third column). For example, the bonds-to-GDP ratio is 105 percent for Germany, 116 percent in Japan, and 141 percent in the United States. Bond markets in developing countries are much smaller, averaging just 38 percent of annual GDP.

Table 1 also provides data on the extent of local currency bond market development in 49 countries. Local currency bonds are those issued by residents of a particular country (for example, Chile) in that country's currency (Chilean pesos), regardless of whether they were placed in the domestic market or offshore. Local currency bond markets make up the bulk of the global bond market (right panel of Table 1), totaling $28.7 trillion, or 92 percent of all bonds; the other 8 percent of outstanding bonds were issued in foreign currencies, primarily the dollar, euro, and British pound.

Previous studies focused on international bonds (EHP) or bank debt and nonfinancial bonds (LLSV). Our more complete bond market data—which include both private and public issuance placed both at home and abroad—allow a more comprehensive study of bond market development. To illustrate some nuances revealed by the data, Table 2 provides a comparison of bond market development in Argentina, Chile, and the United Kingdom. EHP focus on the currency composition of a country's *external* bonds (that is, bonds placed in external markets); the second column displays the inverse of an EHP measure of original sin, namely the fraction of each country's external bonds that is denominated in local currency. An expanded measure would also include information on the domestic bond market; column 4 shows the local currency share once domestic bond markets are included. Note that focusing strictly on external bonds would ignore the fact that Chile has a more extensive domestic bond market than Argentina. Even this expanded currency share measure can be a bit deceiving, because it places Chile and the United Kingdom on equal footing. More informative than the local currency *share* of a country's bond market is the actual development of the local currency bond market, which we display in the final column, as the size of a nation's local-currency-denominated bond market divided by GDP. We believe this last measure gets to the heart of the issue: It takes a sizable local currency bond market to be free from original sin.

Table 1. The World Bond Market

	Total Bonds Outstanding			Local Currency Bonds Outstanding			
	(Billions of U.S. dollars)	(Percent in world bond market)	(Percent of country's GDP)	(Billions of U.S. dollars)	(Percent in world bond market)	(Percent of country's GDP)	(Percent of country's total bonds)
Developed countries	**28,985**	**93.0**	**122**	**27,059**	**86.8**	**114**	**93**
Euro area	**6,861**	**22.0**	**112**	**6,075**	**19.5**	**99**	**89**
Austria	252	0.8	133	190	0.6	100	75
Belgium	313	1.0	136	303	1.0	132	97
Finland	81	0.3	67	58	0.2	48	72
France	1,254	4.0	96	1,132	3.6	86	90
Germany	1,951	6.3	105	1,791	5.7	97	92
Greece	117	0.4	100	103	0.3	88	88
Ireland	83	0.3	81	54	0.2	53	65
Italy	1,379	4.4	127	1,317	4.2	121	95
Luxembourg	80	0.3	423	56	0.2	292	69
Netherlands	880	2.8	229	642	2.1	167	73
Portugal	85	0.3	78	77	0.2	70	90
Spain	385	1.2	66	355	1.1	61	92
Other Europe	**2,049**	**6.6**	**92**	**1,548**	**5.0**	**70**	**76**
Denmark	273	0.9	169	243	0.8	151	89
Iceland	11	0.0	141	7	0.0	94	66
Norway	86	0.3	51	47	0.1	28	54
Sweden	204	0.7	97	125	0.4	60	61
Switzerland	162	0.5	66	154	0.5	63	95
United Kingdom	1,313	4.2	92	973	3.1	68	74
Other developed	**20,075**	**64.4**	**130**	**19,435**	**62.4**	**126**	**97**
Australia	206	0.7	58	114	0.4	32	55
Canada	640	2.1	91	451	1.4	64	71
Japan	4,825	15.5	116	4,760	15.3	114	99
New Zealand	19	0.1	39	13	0.0	26	67
United States	14,385	46.2	141	14,096	45.2	138	98
Emerging markets	**2,183**	**7.0**	**38**	**1,652**	**5.3**	**28**	**76**
Latin America	**596**	**1.9**	**34**	**314**	**1.0**	**18**	**53**
Argentina	130	0.4	48	37	0.1	14	28
Brazil	189	0.6	38	112	0.4	22	59

Table 1 *(concluded)*

	Total Bonds Outstanding			Local Currency Bonds Outstanding			
	(Billions of U.S. dollars)	(Percent in world bond market)	(Percent of country's GDP)	(Billions of U.S. dollars)	(Percent in world bond market)	(Percent of country's GDP)	(Percent of country's total bonds)
Chile	44	0.1	66	35	0.1	52	79
Colombia	28	0.1	34	16	0.1	20	58
Mexico	166	0.5	27	99	0.3	16	60
Peru	6	0.0	12	2	0.0	4	36
Venezuela	27	0.1	22	11	0.0	9	40
Uruguay	4	0.0	21	1	0.0	4	21
Emerging Asia	**1,124**	**3.6**	**40**	**1,013**	**3.3**	**36**	**90**
China	329	1.1	28	316	1.0	27	96
India	141	0.5	29	137	0.4	28	97
Indonesia	50	0.2	34	48	0.2	33	97
Korea	325	1.0	77	281	0.9	66	86
Malaysia	89	0.3	101	73	0.2	82	82
Pakistan	27	0.1	44	27	0.1	44	100
Philippines	32	0.1	45	16	0.1	22	50
Thailand	43	0.1	37	35	0.1	30	81
Taiwan	89	0.3	32	82	0.3	29	92
Financial centers	**91**	**0.3**	**36**	**55**	**0.2**	**22**	**61**
Hong Kong SAR	44	0.1	27	23	0.1	14	53
Singapore	46	0.1	54	32	0.1	37	69
Emerging Europe	**227**	**0.7**	**31**	**138**	**0.4**	**19**	**61**
Czech Republic	11	0.0	20	10	0.0	17	86
Hungary	26	0.1	50	16	0.1	31	61
Poland	42	0.1	24	36	0.1	20	84
Russia	56	0.2	18	6	0.0	2	10
Turkey	91	0.3	61	71	0.2	48	78
Other emerging	**146**	**0.5**	**56**	**132**	**0.4**	**51**	**90**
Israel	88	0.3	79	81	0.3	72	91
Morocco	14	0.0	40	13	0.0	39	98
South Africa	44	0.1	39	38	0.1	33	86
World	**31,168**	**100**	**105**	**28,711**	**92**	**97**	**92**

Notes: All data are as of end-2001. Data are from security-level data underlying *BIS Quarterly Review* Table 14B (International Bonds and Notes by Country of Residence) and the unpublished long-term debt component of *BIS Quarterly Review* Table 16A (Domestic Debt Securities). Local-currency-denominated debt is the sum of domestic long-term debt (from Table 16A) and the local currency portion of Table 14B. Domestic long-term debt for countries not available on Table 16A and data for Brady bonds are from Merrill Lynch (2002). Included in the total is $2.5 trillion in foreign currency bonds, denominated primarily in dollars, euros, and British pounds.

Table 2. Measures of Local Currency Bond Market Development

	International Bonds		Total Bonds Outstanding		
				Local-currency-denominated	
		Percent denominated in local currency	Total	Percent of total	Percent of GDP
Argentina	$89 billion	3	$113 billion	16	7
Chile	$9 billion	0	$41 billion	73	38
United Kingdom	$677 billion	50	$1.3 trillion	74	68

Source: Authors' calculations based on data from Table 1.

Notes: International bonds are those that are placed abroad or issued in a foreign currency. Domestic bonds are those that are in the local currency and placed initially in the local market.

II. The Determinants of Local Bond Market Development

In this section we present our primary regression results, address concerns about endogeneity, and discuss the similarities of factors that are associated with the development of banking systems and bond markets.

Primary Regression Results

In Table 3, we examine the determinants of two general measures of local bond market development: the ratio of the size of the local bond market to GDP (Local Bond Market Development) and the share of a country's outstanding bonds that are denominated in the local currency (Local Currency Share). To ascertain whether private and government bond markets differ materially, we will also (in Table 4) separate our Local Bond Market Development variable into its private and government components. In both tables, we examine the influence of rule of law, creditor rights, fiscal balance (calculated as a percentage of GDP and averaged over a 20-year period), country size (as measured by the log of GDP in 2001), and growth rates (annual GDP growth over the preceding 10 years).[5] Creditor rights measures whether the *laws* of a country are creditor friendly; we also include another variable, inflation variance (the variance of the inflation rate over the past 10 years), as a measure of whether *policies* have been creditor friendly. In both tables, odd-numbered columns present results from parsimonious regressions of 49 countries

[5]The rule of law variable is, as reported in LLSV, an average over 1982–95 of the *International Country Risk Guide* assessment of law and order tradition. We supplement this source with 2000 data from Gwartney, Lawson, and Emerick (2003) for five other countries: China, Czech Republic, Hungary, Iceland, and Poland. Creditor rights, also from LLSV, aggregates the various rights that secured creditors have in liquidation and reorganization. Fiscal balance data are from the World Bank's World Development Indicators database, with data from Hong Kong SAR and Taiwan Province of China obtained from Organization for Economic Cooperation and Development data and the IMF's *International Financial Statistics.*

Table 3. Multivariate Tests of Bond Market Development

	Local Bond Market Development		Local Share	
	(1)	(2)	(3)	(4)
Inflation variance	–3.485	–4.496	–2.434	–2.029
	(0.004)	(0.000)	(0.000)	(0.000)
Rule of law	0.116	0.074	0.009	0.006
	(0.000)	(0.001)	(0.457)	(0.504)
Fiscal balance	–0.028	–0.045	–0.016	–0.021
	(0.194)	(0.000)	(0.014)	(0.002)
ln (GDP)	–0.007	0.102	0.045	0.061
	(0.921)	(0.003)	(0.003)	(0.002)
GDP growth		–2.929		2.234
		(0.381)		(0.208)
Creditor rights		0.059		0.058
		(0.065)		(0.001)
Number of observations	49	41	49	41
Adjusted R^2	0.224	0.442	0.152	0.370

Notes: Ordinary least squares regression estimates of local bond market development (the size of the total local currency bond market over GDP) and local share (the ratio of local currency bonds to total bonds). Inflation variance = the variance of the past 10 years of inflation. Rule of law and creditor rights are from La Porta and others (1997). For rule of law, we supplement with 2000 data from Gwartney, Lawson, and Emerick (2003) for five other countries: China, Czech Republic, Hungary, Iceland, and Poland. Fiscal balance = fiscal balance over GDP averaged over a 20-year period. Fiscal balance data are from the World Bank's World Development Indicators database, with data from Hong Kong SAR and Taiwan Province of China obtained from Organization for Economic Cooperation and Development data and the IMF's *International Financial Statistics.* GDP growth = the past 10 years' average annual growth rate. Inflation and GDP data are from IMF's *International Financial Statistics.* The *p*-value, based on robust standard errors, of the two-tailed *t*-test of equality with zero is reported in parentheses.

(42 countries in Table 4); even-numbered columns include other variables that have less coverage and reduce the sample to 41 countries (37 countries in Table 4).[6]

All regressions in Table 3 provide strong evidence that countries with better inflation performance (the result, perhaps, of more stable monetary and fiscal policies) have larger local currency bond markets and rely less on foreign currency bonds. The robustness of the inflation result is supported by two additional tests: Excluding outliers by omitting the four countries with greatest inflation variance, or replacing inflation variance with the mean of inflation, does not materially impact the results reported in Table 3.[7] In addition to the role of inflation, our results suggest countries with stronger institutions (high score on rule of law) have broader local currency bond markets, and those with stronger creditor rights rely less on for-

[6]In even-numbered columns, we lose one country that does not have 10 years of historical GDP (Czech Republic) and seven that do not have data on creditor rights (China, Hungary, Iceland, Luxembourg, Morocco, Poland, and Venezuela).

[7]Tables with these robustness checks are available from the authors upon request.

eign currency bonds. The importance of institutional and policy settings suggests that even emerging economies have the ability to develop local currency bond markets. Emerging market economies are not predestined to suffer from original sin.

More specifically, our results suggest that countries such as Australia (with a low score on creditor rights), Indonesia (poor inflation performance), or Peru (poor rule of law) might increase the breadth of their local currency bond market and rely less on foreign currency borrowing if they address their deficient creditor laws and policies. To gauge the importance of various factors, our estimates in column 1 of Table 3 imply that (other things being equal) if Brazil had Denmark's rule of law, its bond market as a share of GDP would be 43 percentage points higher. If Brazil had Denmark's inflation history, its bond market would be 42 percentage points (of GDP) larger. These amounts are both economically significant—Brazil's local currency bond market is currently only 22 percent of GDP—and suggest an important role for creditor-friendly policies in emerging markets.

In Table 4, we separately analyze the government and private bonds markets. The results suggest that the determinants of the size of government and private bond markets are quite similar: Countries with better inflation performance and

Table 4. Multivariate Tests of Bond Market Development: Government and Corporate Bonds

	Local Bond Market Development					
	Government		Private		Private using instrumental variables	
	(1)	(2)	(3)	(4)	(5)	(6)
Inflation	–2.743	–2.637	–1.596	–1.698	–1.108	–1.232
	(0.000)	(0.000)	(0.000)	(0.000)	(0.082)	(0.048)
Rule of law	0.036	0.041	0.066	0.050	0.061	0.045
	(0.000)	(0.000)	(0.001)	(0.007)	(0.003)	(0.022)
Fiscal balance	–0.047	–0.051	–0.001	0.003		
	(0.002)	(0.000)	(0.934)	(0.744)		
ln (GDP)	0.027	0.017	0.037	0.078	0.035	0.077
	(0.172)	(0.496)	(0.380)	(0.033)	(0.390)	(0.034)
GDP growth		–3.148		–0.177		–0.351
		(0.073)		(0.948)		(0.894)
Creditor rights		0.030		0.020		0.021
		(0.138)		(0.477)		(0.442)
Number of observations	42	37	42	37	41	37
Adjusted R^2	0.508	0.519	0.232	0.221	0.263	0.247

Notes: Ordinary least squares regression estimates of local bond market development for the components government and private (i.e., the size of the government and private local currency bond markets over GDP). See Table 3 for explanation of variables. In columns 5 and 6, we instrument for inflation using central bank independence, fiscal balance, and an interaction of fiscal balance and an emerging market dummy variable; the instruments explain roughly 40 percent of the variation in inflation across countries, but are not related to private bond market development. The *p*-value, based on robust standard errors, of the two-tailed *t*-test of equality with zero is reported in parentheses.

stronger rule of law have larger sovereign and corporate bond markets. The main difference is the influence of fiscal policy. Not surprisingly, a tendency to run fiscal deficits is associated with larger government bond markets, where much of the deficit financing occurs.

Our results are consistent with the model of Jeanne (2003), which shows an important role for monetary policy credibility in explaining the currency composition of a country's debt. Our results are also largely consistent with those of LLSV, but contrast sharply with those of EHP, who find that the only determinant of bond market development is country size.[8] The most likely reason that our results contrast with EHP is because their study includes only bonds that were initially placed abroad or denominated in a foreign currency. As we demonstrated previously, focusing only on so-called international bonds results in vastly different country rankings.

Addressing Endogeneity Concerns

We take seriously the notion that inflation could plausibly be considered endogenous. For example, there may be virtuous interactions between the development of the bond market and future inflation performance. Eichengreen and Hausmann (1999) suggest that a well-developed domestic bond market may generate a political constituency opposed to inflationary policies.

We address concerns about endogeneity in two ways. First, we note that in our regressions, inflation is already lagged; we examine the influence of inflation over a 10-year period on the subsequent size of the bond market. If we lag inflation even further to, for example, the 5-year period ending 10 years before our bond market development data, inflation is still significant.[9]

The second method we utilize to address the potential endogeneity of inflation is an instrumental variables approach. The best instruments will be highly correlated with inflation, but not with bond market development. Finding such instruments for inflation variance proved difficult. But there are reasonable instruments for the average mean of inflation, especially if we limit our focus to *private* bond markets. Specifically, with respect to private bond markets, we can instrument for mean inflation using a measure of central bank independence and fiscal balance.[10] Although fiscal balance is clearly endogenous to the development of government bond markets—larger deficits directly result in more government bonds outstanding—fiscal balance should impact private bond market development only to the extent it

[8]Our results are also consistent with the contemporaneous Claessens, Klingebiel, and Schmukler (2003) study of 36 government bond markets, as well as the more recent work by Eichengreen and Luengnaruemitchai (2004).

[9]These results are available from the authors upon request. A direct test of whether larger bond markets lead to better inflation performance would involve lagged bond market development. However, data on bond market development across a range of countries are available only from 1994. We found no evidence (regression results available upon request) that 1994 bond market development is associated with subsequent inflation performance.

[10]The central bank independence measure is taken from Cukierman, Webb, and Neyapti (1992) and Cukierman, Miller, and Neyapti (2002).

impacts inflation performance. Similarly, the degree to which a central bank is independent should not directly affect private bond market development, but may well do so through its impact on past and prospective inflation. In addition, our instrument list includes an interaction term to allow for fiscal balance to have a larger effect on inflation in emerging markets, where budget deficits might be more likely to be monetized (and thus inflationary). The fiscal and central bank independence variables explain roughly 40 percent of the variation in inflation across countries.

In columns 5 and 6 of Table 4 we present the results of instrumental variables regressions. Instrumenting for inflation reduces the significance somewhat, but the message is still clear: Countries with poorer inflation performance have smaller local currency bond markets.

Banks and Bonds

The similarity of our results to LLSV, who include bank debt in their analysis, leads us to investigate the relationship between bond market and banking sector development. Column 1 of Table 5 reveals that the conditions necessary for bond market development, such as creditor-friendly policies and laws, are similar to those that foster development of the banking system (as measured by the private bank credit-to-GDP ratio of Beck, Demirgüc-Kunt, and Levine, 1999). Countries in which people are not willing to become creditors—at one extreme this is an

Table 5. The Relationship Among Bonds, Equities, and Banks

	Banking System (1)	Local Bond Market Development (2)
Equity development		–0.111
		(0.489)
Banking system		0.699
		(0.000)
Inflation variance	–2.606	
	(0.000)	
Rule of law	0.101	
	(0.000)	
ln (GDP)	–0.018	
	(0.579)	
GDP growth	2.611	
	(0.491)	
Creditor rights	0.076	
	(0.025)	
Number of observations	40	47
Adjusted R^2	0.472	0.218

Notes: Ordinary least squares regression estimates of local bond market development (the size of the local currency bond market over GDP) and banking system (the ratio of bank credit to the private sector to GDP). See Table 3 for explanation of variables. The *p*-value, based on robust standard errors, of the two-tailed *t*-test of equality with zero is reported in parentheses.

unwillingness to deposit money in banks—will have undeveloped banking systems and underdeveloped bond markets. Following this line of analysis, when the literature on the relative merits of bank-based versus market-based financial systems includes bonds, it could be that bonds and banks should be combined. Indeed, column 2 shows that countries with larger bond markets tend to have larger banking systems, but not larger equity markets. Because bond market and banking system development appear to be so closely related, the focus of the financial development literature might benefit from a shift in focus to debt versus equity rather than the current focus on bank-based versus market-based systems.[11]

III. Conclusions

This paper presents data on the characteristics of the 49 bond markets and analyzes factors associated with local currency bond market development. We find that countries with better historical inflation performance and stronger legal institutions have more developed local bond markets and rely less on foreign-currency-denominated bonds. The results suggest that "original sin" is a misnomer. Emerging economies are not inherently dependent on foreign currency debt. Rather, by improving policy performance and strengthening institutions, they may develop local currency bond markets, reduce their currency mismatch, and lessen the likelihood of future crises.

Our results also indicate that the necessary conditions for bond market development are very similar to those that foster development of the banking system. This, in turn, has implications for the literature on financial development and growth (see, for example, Levine, 2002; and Beck and Levine, 2004); when that literature brings bonds into the analysis, the debate may well shift from the relative merits of bank-based and (equity) market-based financial systems to debt (that is, banking and bonds) versus equity.

Finally, some limitations of our study should be noted. Some of the domestic bonds included in our analysis may be indexed to inflation or an exchange rate and thus behave a lot like foreign currency securities. Also, we have said nothing about the quality of bond market development. Historically, an important impetus for financial market development has been exceptional government financing needs; for example, to finance large budget deficits that were often incurred to fund a war effort (Rousseau and Sylla, 2003). We showed that fiscal deficits are related to the development of government bond markets, and, indeed, some of the recent bond market development may be financing large budget deficits. Impavido, Musalem, and Tressel (2003) examine a more benign driver of financial market development—the growth of local contractual savings institutions such as pension funds and life insurance companies. We leave for further work an analysis of the quality of bond market development.

[11]To be sure, the debate is moving in various directions. Levine (2002) discusses the financial services view that stresses not bank-based versus market-based systems, but the financial arrangements that arise in the economy, and a special case, the law and finance view of La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998).

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