Dollarization: The Link between Devaluation and Default Risk

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I. Introduction

Recent instability in international financial markets has triggered renewed interest in monetary agreements in which a country would resign its domestic currency in favor of using a foreign currency from which it could borrow credibility. While there are many cases of unilateral relinquishment of monetary sovereignty, the recent launch of the Euro in Europe has brought the issue to the forefront of monetary policy discussion for many emerging economies.[2] As a result both Argentina and El Salvador have seriously considered the use of the US dollar as local currency and Ecuador is attempting dollarization as a way of reducing its rampant economic instability[3]

Introducing the dollar unilaterally has many implications for monetary policy and economic welfare, which have been extensively discussed in the other chapters of this volume. Among these, three important considerations are the loss of seigniorage, the weakening of the ability of the central bank for operating as lender of last resort, and its effects on the government´s intertemporal budget constraint.

Related to these issues, this paper addresses a very precise, yet fundamental issue for the dollarization debate. The question is what would happen to interest rates in the economy in the event of dollarization. On the one hand, it is obviously true that local currency rates will disappear together with the local currency. However, this apparent interest rate reduction should have a negative welfare effect, as the economy losses instruments for financial diversification (Neumeyer, 1998). Yet, the most relevant question is what would be the effect on interest rates at large, once all debt becomes foreign denominated. Once all debt is foreign denominated this is equivalent to asking what would happen to dollar debt interest rates or, equivalently, what would happen to country risk.

The relevance of this question can easily be illustrated by a simple calculation. If the capital output ratio equals 4 and the rate of return of this capital equals 10%, the impact of a 1% reduction in the interest rate is equivalent to an increase in the value of the domestic capital stock of about 10% of GDP. As long as intertemporal consumption is related to initial wealth levels, the impact on

[2] Historically there have been a number of countries which have given up or shared their monetary independence. Some consider the development of the FED (see Frieden, 199x) as a process by which local central banks gave up their power to issue money. Today several ministates use the currency of an important neighbor. More important experiences include the scandinavian monetary union, that of Belguim and Luxembourg, the CFA, the CCA and the Caribbean dolar zone (see Cohen, 1999). Stan Fischer (1982) mentions the British Currency Board system which did not require the use of sterling as domestic currency but which required 100% backing of the local currency. This system is still in use in Hong-Kong the Falklands and other British colonies. In this paper we will refer to monetary integration as "dollarization", however, this does not imply that monetary integration could not be done with other currencies.

[3] There has also been discussion on this issue in Mexico. Panama and Liberia have used the dollar since xx and xx.

feasible consumption may be significant, and overshadows any potential welfare loss associated to seigniorage or lender of last resort considerations.[4]

Therefore, understanding the channels by which currency risk affects country risk becomes an essential if not the most important issue in the dollarization debate. This paper tries to evaluate, empirically, if there is any relation between the elimination of the local currency on country risk.

The paper proceeds as follows. Section II outlines briefly the theoretical reasons why country risk can be associated to currency risk. Section III discuss the event methodology. Section IV applies the event study methodology to the European data. Here we look at events associated to the risks and/or consolidation to the process of monetary integration, and we evaluate their impact on sovereign spreads. In Section V we take the exercise to Latin American Economies, where we find a fairly different pattern. Section VI concludes by discussing the reasons for this difference.

II. The relation of currency and country risk in the theory

Several issues have been identified in the literature as being most relevant when assessing the impact of the elimination of the domestic currency risk on country risk. Yet, there is no consensus on this issue. Some of the arguments suggest that country risk should increase upon dollarization, while others suggest that country risk would decrease. In what follows we will consider as a measure of country (or sovereign) risk the spread embedded in the yield of government bonds denominated in foreign currency. This, in fact, will be the empirical counterpart we will use later on.[5]

Arguments for an increase in country risk

There are several arguments which could explain why dollarization may increase country risk. First, both fixed exchange rate regimes as well as a dollarized economies carry the risk of an abrupt reversal in monetary policy as the possibility of a devaluation or of a reversal of dollarization is always latent.[6] In the case of a country with local currency, and therefore where a devaluation is feasible, local currency denominated bonds will contain a risk premium to take into account the possibility of a reversion in monetary policy, with foreign currency denominated bonds somewhat isolated. This assumes that there may be scenario in which the government may opt for

[4] These numbers seem to overshadow whatever cost dollarization may have in terms of seignorage revenues. See Fischer (1982). Levy Yeyati and Sturzenegger (2000) estimate that seigniorage costs can amount to half a percent of GDP in a high segniorage cost scenario with a 5% rate of growth, a 5% inflation rate in the US and the currency output ration converging to the US value of about 5% of GDP.

[5] As will be clear later on, it is not absolutely transparent to associate the spread on local currency bonds uniquely to devaluation risk.

[6] Cohen (19xx) presents a description of monetary union dissociation.

defaulting on the domestically denominated debt instruments but not on the foreign denominated ones. In other words, this is equivalent to saying that foreign bonds are "senior" to domestic currency denominated bonds if a devaluation occurs. However, if the economy is "dollarized", once local currency denominated bonds disappear, foreign currency denominated bonds will price in the risk associated to monetary disruption, thus increasing sovereign risk.[7]

Dollarization entails relinquishing (or restricting availability to) the use of the inflation tax or devaluation as a way of financing government spending. As a result, the intertemporal budget constraint of the government, and thus its ability to pay back its foreign denominated bonds is weakened. In other words, as above, dollarization increases the default risk of foreign denominated bonds, increasing their spreads.

A third channel is the weakening of the government´s budget constraint as a result of the loss of seigniorage revenues. This should also entail an increase in sovereign risk.

A fourth channel is that in a world with imperfect substitutability, investors may want to hold a diversified portfolio of domestic and foreign currency denominated bonds. If that is the case, a shift of the entire portfolio to foreign currency liabilities may induce a higher risk premium on those instruments.

Finally, dollarization may imply greater price rigidity (prices cannot adjust through changes in the exchange rate). This to some observers can be considered a source of larger output volatility, therefore inducing larger risk premia on that country's assets.

Arguments for a decrease in country risk

Similarly there are several arguments which suggest the notion that a reduction in currency risk should induce a reduction in country risk.

The basic argument relates to what is known as the "*balance sheet effect*". A country exhibits a balance sheet problem when there is a substantial currency mismatch in its external liabilities. If that is the case, the economy is subject to default risk caused by the existence of currency risk, as a devaluation would render the borrower (country or government) insolvent.

Table 1 exhibits a simplified computation of the balance sheet mismatch for Argentina. As observed, the government is seriously exposed to a dollar devaluation, suggesting the potential for higher default risk in the event of a devaluation.

[7] It is not clear in this case, that this is an appropriate measure of total country risk, as total risk of monetary disruption is probably reduced by a change to the use of dollar instruments. Yet it will be reflected in foreign currency instruments.

An alternative argument which explains a positive relation between country and currency risk relates to the fact that while a country maintains its own currency it may be subject to speculative attacks. This effect may be particularly strong for countries which have a fixed exchange rate. The European experience during the early 90´s, and that of emerging economies since 95, are witness to the potential for these speculative attacks. These attacks may force the Central Bank to raise interest rates in order to defend the peg, inducing output decreases and interest rate hikes which will most likely weaken the budget constraint of the government or increase its contingent liabilities. Eliminating the risk of currency collapses may reduce this instability which is the cause of a higher risk premium. The potential for these speculative attacks increases in a world with substantial contagion. [8]

A third argument is that the elimination of the local currency accelerates financial integration allowing for a reduction in interest rates through increased efficiency of local financial intermediaries. This process has been an important factor during the path to the launch of the Euro in Europe.[9] In a similar vein, the use of a common currency has been suggested as potentially increasing significantly the amount of trade among the geographical regions using the same currency (see Rose, 1999). This increased economic efficiency is likely to reduce risk across the board and thus reduce sovereign risk.

Finally, dollarization may decrease interest rates through an increase in the credibility of policymakers, as it imposes a straightjacket for monetary and fiscal policy with higher reversion costs. For a country like Ecuador, this appears to have been an essential part of the motivation for pursuing dollarization.

III. The Event Study methodology

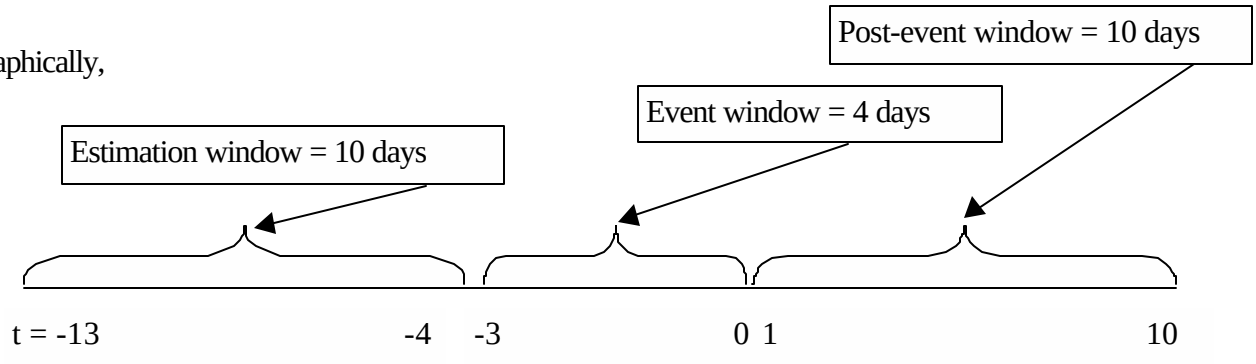
Our methodology is to look at "events" that we can associate to changes in currency risk. We then study the evolution of sovereign risk in response to these currency events. The use of the event study ensures on the one hand that the currency shock is exogenous, thus allowing to solve the usual endogeneity problem present when studying the relationship between country and currency risk. On the other, it allows to keep all other variables constant, providing a natural experiment for the analysis and allowing to isolate the impact of currency shocks.

Figures 1 and 2 show the evolution of country risk and currency risk for Argentina and Mexico. As can easily be seen, there is an obvious positive correlation between the two. However, it is well known that such a correlation does not imply causation, nor does it allow to conclude that the elimination of currency risk will entail a reduction in country risk. Thus, solving the causality problem provides the most important motivation for undertaking an event study of the phenomena.

[8] Along these lines, some authors have argued that the currency crisis of 92 in Europe has been the main trigger factor for monetary union.
[9] See Levy Yeyati and Sturzenegger (2000b).

Once the events are identified, we have to establish an estimation window prior to the event window, which will determine the benchmark against which sovereign spreads after the event should be compared. In general we take the ten days prior to the event window as our estimation window (that is, the previous two weeks) and we consider the event date and the three days before it as our event window. Finally, the ten days after the event date will constitute the post-event window.

Graphically,



The constant mean model.

After the events have been identified and the time frame for the experiment determined, it is necessary to define how the abnormal returns after the event will be defined. Following Campbell, Lo and MacKinlay (1997) we start with the simplest model which assumes that the normal return is constant. Call *Xt* the sovereign spread of any country at moment *t*. We assume that the model which describes this spread is

$$X_t = m + e_t$$

where μ indicates the normal return and ε indicates the "abnormal" return. We assume that

$$e_t = N(0, s^2)$$

The estimated abnormal return follows:

$$\hat{e}_t = X_t - \hat{m}$$

Where the hat indicates an estimated value. Our estimator will be

$$\bar{e}^* = \frac{\sum_t \hat{e}_t^*}{N} = \frac{\sum_t (X_t^* - \hat{m})}{N}$$

the average estimated abnormal return in the post-event window (the * indicates belonging to the post-estimation window). Our null hypothesis is ε*(bar) is different or not from zero. If it is, it will indicate that there is an impact of currency risk on country risk. If we do not reject the null hypothesis we conclude that there is no evidence that currency risk affects country risk.

In order to construct the test we need to estimate the variance covariance matrix of ε*(bar). Notice that ε*(hat) can be considered a forecast error of the return, and thus its covariance matrix will have two parts. The first is the variance of the disturbances, the second is the additional variance due to sampling error in the estimation of the normal return. This sampling error, which is common for all the abnormal returns estimated in the post event window, will lead to serial correlation despite the fact that the true disturbances are independent through time. This will imply a non diagonal variance covariance matrix which has to be taken into account when estimating the variance of average estimated abnormal return.

To start we need to estimate the variance of the estimated abnormal return in the post-event window. More precisely:

$$
\begin{aligned}
&V(\hat{e}^*) = E\left[\hat{e}^*\hat{e}^{*\prime}\middle| X^*\right] = \\
&= E\left[(e^* - i(\hat{m}-m))(e^* - i(\hat{m}-m))'\middle| X^*\right] = \\
&= E\left[e^*e^{*\prime} + i(\hat{m}-m)(\hat{m}-m)'i'\middle| X^*\right] = \\
&= E\left[e^*e^{*\prime}\middle| X^*\right] + is_e^2(i'i)^{-1}i' = \\
&= \begin{pmatrix}
s_e^2(1+\frac{1}{n}) & s_e^2/n & \cdots & \cdots & s_e^2/n \\
s_e^2/n & s_e^2(1+\frac{1}{n}) & & & \\
\vdots & & \ddots & & \\
\vdots & & & \ddots & \\
s_e^2/n & & & & s_e^2(1+\frac{1}{n})
\end{pmatrix}
\end{aligned}
$$

where ι indicates a vector of ones. Having estimated the variance covariance matrix of each individual forecast error we compute the variance of our statistic:

$$
V(\bar{e}^*) = V\left(\frac{\sum_t e_t^*}{N}\right) = \frac{1}{N^2}\left[N(1+\frac{1}{N})s_e^2 + N(N-1)\frac{s_e^2}{N}\right] = \frac{2s_e^2}{N}
$$

Substituting the estimate for the variance by its unbiased sample estimate we can construct the statistic:

$$t_{N-1} = \frac{\bar{e}^*}{\sqrt{\frac{2s_e^2}{N}}}$$

This is the statistic we use to estimate if currency risk has any impact on country risk.
This test however, corresponds to a test of abnormal returns only for the case of one event. In order to gain more degrees of freedom, and assuming independence across events, the tests can easily be aggregated to:

$$t_{n^*N-1} = \frac{\sum_n \bar{e}^*}{\sqrt{\sum_n \frac{2s_e^2}{N}}}$$

where *n* indicates the number of events considered for each country. In the specification below we distinguish between positive and negative shocks which are tested as separately.

The Market Model

To be written

III: The European Experience

In order to assess the relationship between country and currency risk we start by looking at the European experience during the 90´s. We believe Europe is a perfect example for testing this relationship because during the decade the continent was subject to several shocks which were exclusively related to the consolidation or weakening of the process of monetary integration, and changes in the prospect for monetary unification affect directly the currency risk of the countries involved. For example, the result of a referendum on monetary union in another country of the continent is an almost perfect case of an exogenous shock which affects directly the degree of currency risk in all other countries of the sample.

In order to pursue our analysis we proceed as follows. We first compute the sovereign risk for some selected European countries. Our sample includes: Austria, Belgium, Denmark, Finland, Ireland, Spain and Sweden. The reason for choosing these countries is that they had outstanding DM debt which allows, when comparing their yield with that of German bonds, provide an

estimate of sovereign spreads. Table 2, gives the characteristics of the DM bonds used for each country. The yield of these bonds was compared to a daily estimate provided by DATASTREAM of Germany´s yield curve. In order to match the maturities, an essential requirement as many of the bonds were approaching expiration towards the end of the sample, the yield was compared to the point on Germany´s yield curve, (approximated by a third order polinomial), corresponding to the maturity of the bond. Figure 3 shows the evolution of the sovereign spreads for these economies during the period for which we found the DM denominated bond yields. It can be readily observed that sovereign spreads are relatively small, always safely within the 1 percent (100 basis points) range from DM bonds. Table 3 summarizes the characteristics of these spreads. As can be seen, with the exception of Austria, the average for each country is in the 20 basis point range, with the range including countries on average between 10 and 30 basis points higher than Germany.

Table 4, shows, in turn, the 19 currency events that we identified during this period.[10] We divide the events into "*Good News*" events and "*Bad News*" events. *Good News* are associated with a reduction in currency risk, whereas *Bad News* are associated to an increase in currency risk. The devaluation of the pound sterling, for example, was considered to increases the currency risk for all other countries, whereas the approval of the Maastricht treaty in France was assumed to reduce currency risk.

We also identified two types of shocks. Institutional shocks (identified in the table with a star), correspond to events in which the institutional-legal framework of the EMU process is affected. The other correspond to shocks which are the result of a devaluation of one of the currencies involved. While we believe the latter, in the case of Europe, remain an appropriate example of a currency shock on the other countries (and on itself), we accept that it is more debatable whether these non-institutional shocks could be correlated with a general deterioration of economic conditions which through trade channels or expectations on the capital markets should affect the sovereign spreads of the other countries simultaneously. Thus, in what follows we conduct the tests both ways: for all the shocks considered in Table 4 and only for the institutional shocks.

Table 5 shows the results for Europe of this t-statistic and the corresponding values for the null hypothesis that there are no abnormal returns after the currency events.[11] As can be seen, the table shows mixed evidence but nevertheless there are several cases of a significant impact of currency risk on sovereign spreads. Moreover, good news on currency risk appears to be associated with an increase in sovereign spreads. However, we also find several cases where there is an insignificant impact.

[10] For selection of these dates see Ungerer (1997) and Obstfeld (19xx).

[11] In some cases there are shocks which overlap within the event window. In this case we either grouped the event extending it in time (shock #9 is an example). In other cases, if the shocks were to close and of opposite sign we disregarded the least important of the shocks. For example, in shock #5 we disregardes the approval of the Maastricht treaty in France, which happens the day after the devaluation of the british pound. As a result of these specific problems the exact degrees of freedom may differ slightly from n*10.

IV. Emerging Economies

The experience of European economies may be indicating that the channels of transmission we discussed above may not be very relevant for the European countries. Balance sheet effects are known to be less significant when most debt issues are in local denominated currency, and as a result currency crises apparently have been reflected strongly in currency spreads with no impact on country risk. In other words, each country´s fundamentals were seen as unrelated to the evolution of the process of monetary integration and also unrelated to the existence of currency crises within the region.

In the case of emerging economies (in this section we study Latin American countries, LAC hereafter) the results may differ. The degree of dollarized liabilities may be more significant and thus balance sheet effects more significant. Unfortunately for LAC there are no institutional events, as those considered for Europe. Thus, our events do not apply to all countries but to the countries where the event occurs. Additionally, we feel we need to work a bit harder in order to justify that the events considered are true events which affected currency risk as suggested.

We want to underscore that we are interested not so much in having many events as having good events, i.e. events which can clearly be identified as those in which, on impact, what changes is exchange rate risk. Thus, it is important to identify shocks which are truly exogenous and which represent a pure change in currency risk. For emerging economies most of the shocks one can find will not be as pure as shocks to the process of monetary integration in Europe. Thus we have chosen to look at events related to changes in exchange rate policy. While the market usually discounts changes in exchange rate policy, once an event occurs (a devaluation, the change in exchange rate bands, etc), there is new information about future exchange rate behavior, and as a result an impact on currency risk.

Table 6 indicated the events that have been considered. Table 7 replicates our event study for sovereign risk to currency risk. The data corresponds to forward contracts.[12] The idea of the table is to verify if the events chosen can truly be considered as such, by evaluating their impact on currency risk. While our database does not allow to test this effect in all cases, the table is persuasive enough in showing that the events considered had a significant effect on currency risk, which in all but one cases moved in the expected direction.

The strict criteria for selecting events restricted us to very few events. While there is lots of variation in risk premia for these countries (see Figure 4), we have only 17 events for Latin America. The results, presented in Table 8, indicate a relatively strong relation between currency

[12] We than Deutsche Bank for providing the data.

risk and sovereign risk in Latin America. Looking back at the Table 8 we see that the relation is in general statistically significant, and in the direction expected. Two exceptions correspond to the move to a float in both Chile and Colombia. In both those cases, currency risk increased substantially in the aftermath of the float, but in both cases country risk fell. A similar anomalous result is found in the case of the second monetary tightening of monetary policy in Mexico which decreases currency risk but increases country risk. These cases may be indicating the existence of some "endogeneity" in the change in monetary policy in these events.

Conclusion

To be written

References

To be written.

Table 1.

Argentine Balance Sheet Effects			
US$ Mismatches (in Bn. November 1999)			
	Assets	**Liabilities**	**Position**
Public Sector	2,7	111,0	-108,3
Central Bank, 1	25,8	8,9	16,9
Non-Financial Private Sector, 2	191,9	144,2	47,7
Financial Sector	119,1	98,9	20,2
Total	339,5	363,0	-23,5
(1) Assets include international reserves + Argentine US$ Government Bonds.			
(2) Assets include external assets + dollar denominated deposits in the financial system + AFJP assets + holdings of US$ cash. Liabilities include external liabilities + dollar denominated loans of the financial system.			

Table 2.

Characteristics of the bonds used in the event study					
Country	**Issue date**	**Expiring date**	**Coupon**	**Amortization**	**Currency**
Austria	13-03-1987	13-03-2002	Fixed: 6 ¼ %	Bullet	Deutsche Mark
Belgium	22-01-1992	25-02-2002	Fixed: 7 ¾ %	Bullet	Deutsche Mark
Finland	18-05-1992	25-06-2002	Fixed: 8 ¼ %	Bullet	Deutsche Mark
Iceland	22-01-1992	18-02-2002	Fixed: 8 ½ %	Bullet	Deutsche Mark
Ireland	01-10-1992	22-10-2002	Fixed: 7 ¾ %	Bullet	Deutsche Mark
Spain	04-02-1993	04-03-2003	Fixed: 7 ¼ %	Bullet	Deutsche Mark
Sweden	23-08-1995	12-09-2000	Fixed: 6 %	Bullet	Deutsche Mark
Greece	15-07-1994	15-07-1997	Fixed: 6.95 %	Bullet	Deutsche Mark
Denmark	13-06-1995	06-07-2000	Fixed: 6 1/8 %	Bullet	Deutsche Mark

Source: Datastream

Table 3.

	Sovereign Risk Characteristics						
	Austria	**Belgium**	**Denmark**	**Finland**	**Ireland**	**Spain**	**Sweden**
Average (1992-2000)	-3.19	19.76	19.29	27.58	24.14	20.21	13.99
Std. Devation	26.02	9.63	11.20	12.72	9.30	6.55	9.08

Source: Datastream

Table 4. Events for Europe

1. **6-4-92:** Portugal joins the EMS.
2. **5-5-92:** Key interest rate is reduce half a %.
3. **2-6-92:** Danish voters reject the Maastricht treaty.
4. **16-7-92:** The Bundesbank increases its discount window from 8% to 8.75%.
5. **14-9-92:** During the weekend of 12 - 13 it is decided that on the 14th the Italian Lira will be devalued. Small reduction in German and the Lombardo interest rates. Followed but similar reductions in the interest rate in Belgium and Holland. The British pound remains untouched.

   16-9-92: "Black Wednesday", strong speculation against the pound. Strong hike in key interest rate.

   17-9-92: The UK and Italy exit from the EMS. Devaluation of the Spanish peseta. In the following months additional devaluation of the Spanish peseta, the Portuguese escudo and of the Irish pound.

   18-9-92: Referendum on Maastricht on the 20th which is approved proval by a slight margin.
6. **29-1-93:** 10% devaluation of the irish pound on the 30th.
7. **2-4-93:** The new government of Edouard Balladur, (formed April 2), states a continuation of a strong franc policy.
8. **14-5-93:** Devaluation of the Spanish pesesta and the Portuguese escudo.

   18-5-93: Second referendum in Denmark. This time Maastricht is approved.
9. **29-7-93:** BB lowers the lombard rate half a percent and doesn´t touch the discount rate. Analysts describe the change as smaller than expected.

30 **30-7-93:** Strong pressure on the French franc.

2-8-93: After sustained unrest in financial markets the Monetary Committee decides the 31st to widen the bands “temporarily” to +-15%.

1-11-93: El Tratado de Maastricht entra en vigencia.

10. **31-12-93:** The second stage for EMU begins January 1st , 1994. Beginning of the European Monetary Institute.

11. **30-12-94:** January 1st , Austria, Finland and Sweden become members of the UE. Norway rejects joining in a referendum and stays out.

    6-1-95: Austria joins the EMS.

13. **6-3-95:** Devaluation of the Spanish peseta and the Portuguese escudo.
14. **15-12-95:** (15 – 16), The European Council in Madrid adopts changeover scenario, based on EMI scenario"; the common currency will be called the "euro".
15. **21-6-96:** (21-22), The "European Council" agrees on an "outline" for the transition to the Euro. (EMS II).
16. **14-10-96:** Finland joins the EMS.
17. **25-11-96:** Italy re-joins the EMS.
18. **13-12-96:** (13 – 14), The "E.C." agrees in Dublin on the EMS II and the Pact for Stability and Growth.
19. **1-1-99:** The euro becomes the common currency of the EU.

Table 5

		Austria	**Belgium**	**Denmark**	**Finland**	**Greece**	**Ireland**	**Spain**	**Sweden**
All events									
Good news	*t statistic*	8.522	5.105	2.329	1.177	-1.777	7.498	5.905	-0.963
	Degrees of freedom	108	108	54	90	54	90	90	54
	P value	0.00	0.00	0.02	0.24	0.08	0.00	0.00	0.34
Bad news	*t statistic*	0.751	4.911	-	0.597	-	1.470	0.316	-
	Degrees of freedom	63	63	-	54	-	45	36	-
	P value	0.46	0.00		0.55		0.15	0.75	
Institutional events only									
Good news	*t statistic*	7.745	3.041	2.329	-0.569	-1.777	4.719	1.405	-0.963
	Degrees of freedom	90	90	54	81	54	81	81	54
	P value	0.00	0.00	0.02	0.57	0.08	0.00	0.16	0.34
Bad news	*t statistic*	-5.369	-0.401	-	-	-	-	-	-
	Degrees of freedom	9	9	-	-	-	-	-	-
	P value	0.00	0.70		-				

Table 6. Events for Latin America

Argentina

- **26-7-96:** Domingo Cavallo is ousted.
- **19-5-99:** Domingo Cavallo interviews the Financial Times and states that Argentina has to find a more flexible exchange rate arrangement.

Brasil

- **30-6-94:** The Plan Real is launched.
- **6-3-95:** The fixed exchange rate band is changed to a crawling peg band.
- **15-1-99:** The Real is devalued.
- **12-11-99:** The IMF provided the Central Bank with US$ 2 billion for use in stabilizing the exchange rate.

México

- **20-12-94:** Devaluation of the Mexican peso.
- **30-11-98:** "Ampliación del corto" (contractive monetary policy).
- **18-1-00:** "Ampliación del corto" (contractive monetary policy).

Ecuador

- **3-3-97:** Devaluation.
- **31-3-98:** Devaluation.
- **9-1-2000:** Presidente, Jamil Mahuad, announces the dollarization of the economy.
- **1-3-2000**: Congress approved the dollarization.

Colombia

- **28-6-1999**: Upward movement in the exchange rate band.
- **25-9-1999:** Elimination of the exchange rate band.

Chile

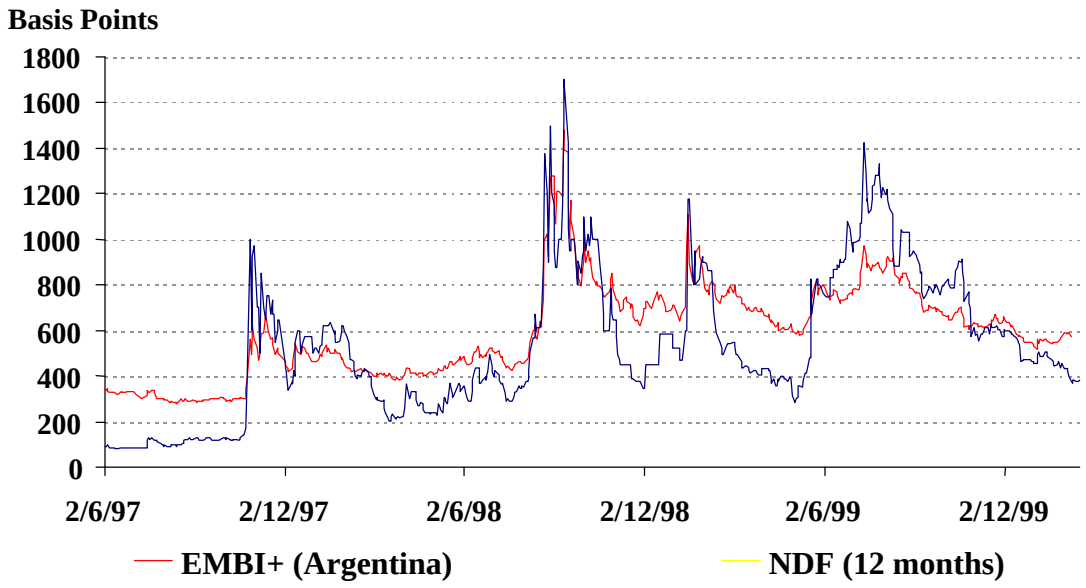
- **3-2-1998**: Interest rates is increased to 8.5%. Return to active interest rate management.
- **2-9-1999**: The exchange rate band is eliminated.

Table 8.

		Argentina	**Brazil**	**Ecuador**	**Chile**	**Colombia**	**Mexico**
Bad news	*t statistic*	20.889	15.538	7.05	-18.54	-1.94	79.24
	Degrees of freedom	18	18	18	18	18	9
	P value	0.00	0.00	0.00	0.00	0.07	0.00
Good news	*t statistic*	-	-1.623	-6.46	-9.05	-	2.50
	Degrees of freedom		18	18	9		18
	P value		0.12	0.00	0.00		0.02

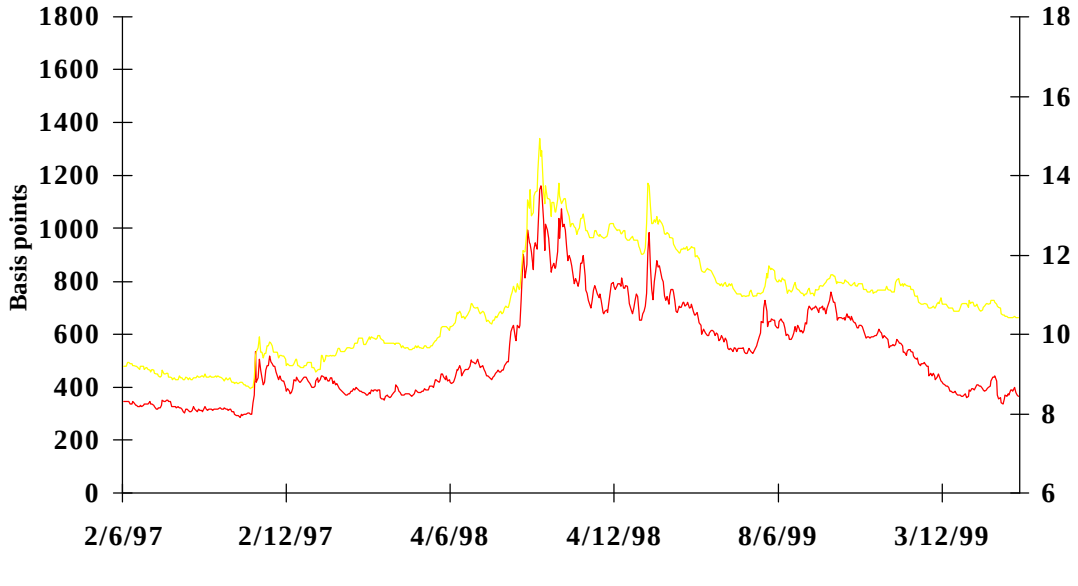
Table 7. Events for Latin America				
Country	*Event*		*t-statistic for the currency risk.*	*t-statistic for the sovereign risk.*
	Date	*Description*		
Argentina	26-07-96	Cavallo´s resignation	-	2.375 (0.04)
	19-05-99	Cavallo´s interview by the F.T.	46.970 (0.00)	30.148 (0.00)
Brazil	30-06-94	Plan Real´s launch	-	0.949 (0.37)
	06-03-95	Switch from band to crawling peg	-	25.001 (0.00)
	15-01-99	Devaluation of the real	406.936 (0.00)	8.345 (0.00)
	12-11-99	IMF´s US$ 2bln. disboursement	-1.733 (0.12)	-4.449 (0.00)
Mexico	20-12-94	Devaluation of the Mexican peso	-	79.24 (0.00)
	30-11-98	Tighter monetary policy	4.857 (0.00)	2.062 (0.07)
	18-01-00	Tighter monetary policy	-5.703 (0.00)	1.924 (0.09)
Ecuador	03-03-97	Devaluation	-	5.427 (0.00)
	31-03-98	Devaluation	-	4.744 (0.00)
	09-01-00	Announcement of dollarization	6.189 (0.00)	27.008 (0.00)
	01-03-00	The congress approves dollarization	-	-9.124 (0.00)
Colombia	28-06-99	The band is adjusted upwards	20.51 (0.00)	1.69 (0.13)
	25-09-00	Removal of the band	4.959 (0.00)	-3.723 (0.00)
Chile	03-02-98	Increase of key interest rates	-2.45 (0.01)	-9.05 (0.00)
	02-09-99	The band is abandoned	13.620 (0.00)	-18.539 (0.00)

The Asian, Russian and Brazilian Crises: Devaluation Risk and Default risk



Correlation Coefficient: 0.9

Mexican Expected Depreciation and Default Risk



Correlation Coefficient: 0.94

Figure 3

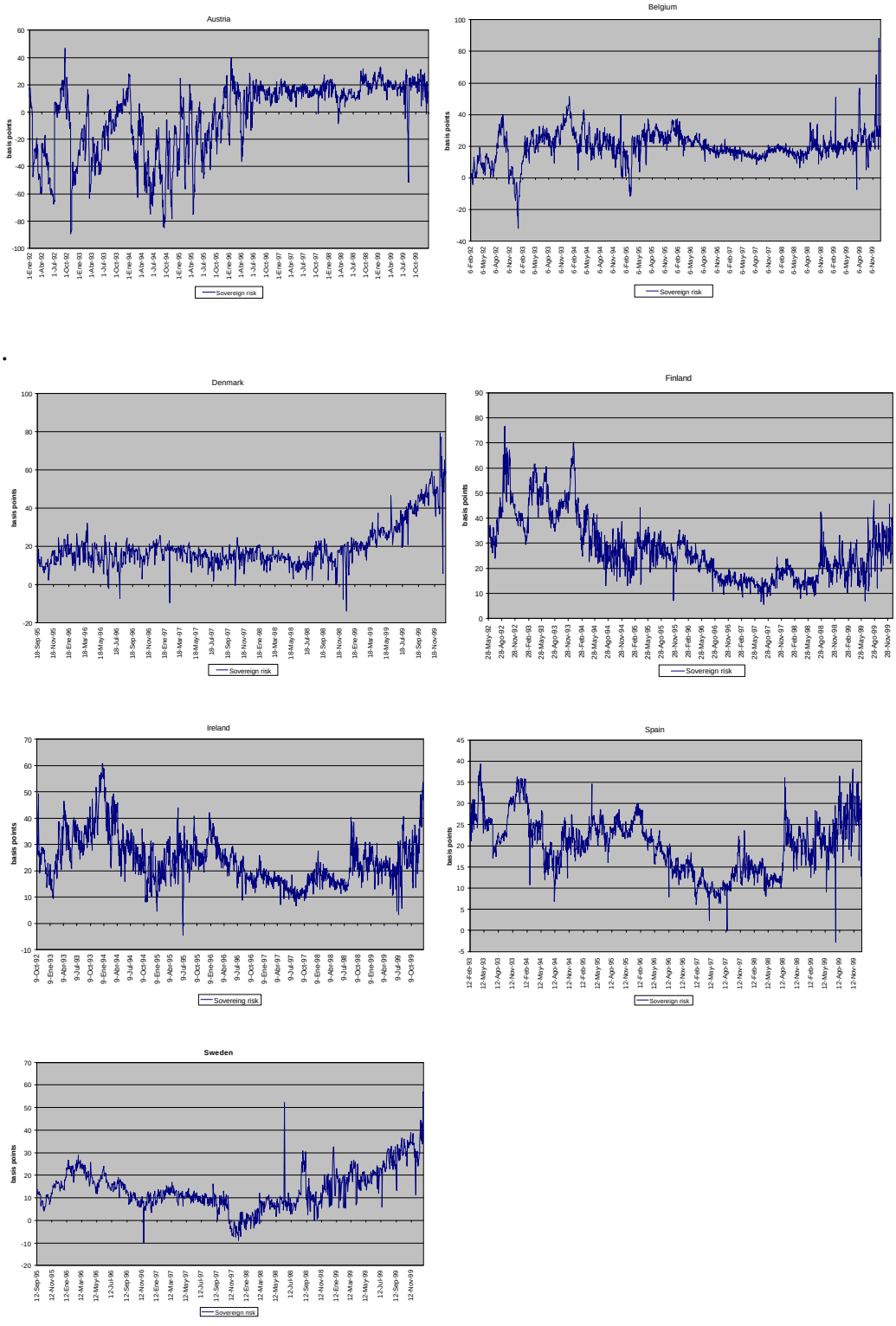
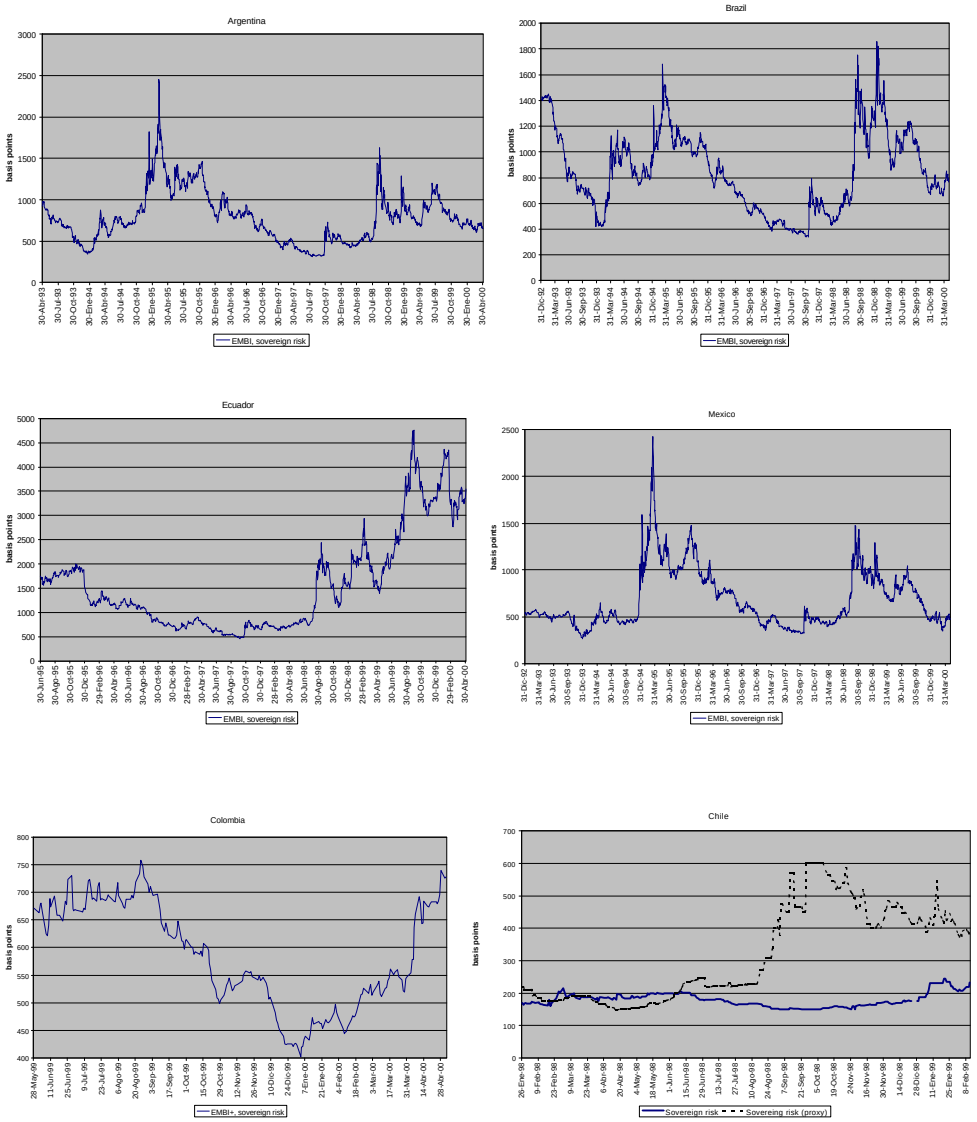

Austria
basis points
Sovereign risk
Belgium
basis points
Sovereign risk
Denmark
basis points
Sovereign risk
Finland
basis points
Sovereign risk
Ireland
basis points
Sovereing risk
Spain
basis points
Sovereign risk
Sweden
basis points
Sovereign risk

Figure 4


Argentina
basis points
EMBI, sovereign risk
Brazil
basis points
EMBI, sovereign risk
Ecuador
basis points
EMBI, sovereign risk
Mexico
basis points
EMBI, sovereign risk
Colombia
basis points
EMBI+, sovereign risk
Chile
basis points
Sovereign risk
Sovereeing risk (proxy)