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THE TWIN RISKS IN THE DOLLARIZATION DEBATE: COUNTRY AND DEVALUATION RISKS

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ABSTRACT

The recent debate over dollarization has been more focused on the motives of the idea than in analyzing the proposal more formally. Here we attempt to prove a very simple point that should be considered as the hardest lesson ever learnt by emergent economies: no stability is achieved without fiscal sustainability. The purpose of devaluation has been usually to find a way to finance a deficit. Obviously within a dollarized economy that avenue is closed.

Under the assumption that there is a deficit that needs to be financed out, investors will expect some reaction from the government: either lose reserves, increase its debt or print money. Another way to accomplish the objective when all these scapegoats are banned is to confiscate somebody devaluing the domestic currency or defaulting on its external obligations. The paper shows that the risk posed by the presence of an unexpected deficit would get transferred from one sector to another. This paper stress the idea that dollarization is at the very end a fiscal issue, and the results over the economy depends on the existence of the balance sheet effect. These results are: i) when the economy does not face a balance sheet effect, as the devaluation risk disappears, the country risk goes up, and ii) when the economy face a balance sheet effect, a dollarization could reduce the country risk. A caveat of the second result is that, the higher the balance sheet effect, the higher the reduction in the country risk.

JEL Codes:

Keywords: dollarization, exchange rate regimes

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MOTIVATION

One of the many criticisms that the dollarization proposals have received is that there are no observations in the sample to infer what will happen if an economy adopts a fully dollarized monetary system. The announcement of former President Mahuad to attempt a dollarization of Ecuador has heated up the debate and will also provide another observation to a very narrow sample. Instead of waiting for more events we present a very simple framework in which the basic issues can be analyzed.

In the context of the dollarization debate, Fernandez-Arias and Talvi (1999) discuss the different policies that governments could implement to minimize the impact of a real exchange rate shock. Calvo (1999b) and Hausmann, Gavin, Pagés-Serra and Stein (1999) address the question of which is the optimal currency arrangement for emergent economies. In addition, Hausmann, Panizza and Stein (1999) and Levy-Yeyati and Sturzenegger (1999) discuss the characteristics of these currency regimes. In this context, we discuss the rather unexplored relationship between country risk and devaluation risk.¹

The bottom line of the paper is to stress the idea that dollarization is at the very end a fiscal issue and it has costs as the country risk may go up while the devaluation risk disappears. A successfully dollarized economy will be one in which there are no obstacles to finance contingent fiscal deficits. In this respect, the recent decision of Ecuador might prove that dollarizing is not enough in itself. It has to come with a comprehensive program aimed to satisfy the current and future fiscal constraints. If the government cannot finance this unexpected deficit it could choose to satisfy these constraints by confiscating the domestic agents by devaluing its currency or defaulting on its external obligations. Institutional investors will have a perception of the real intention of the government and this will drive the country risk up or the devaluation risk up depending on their priors on who is more likely to get confiscated by the government.

One of the main issues on this debate is if the sacrifice that a country has to endure if it dollarizes its economy outweighs the potential benefit of lower interest rates. This is due to the fact that they are giving up an instrument (the exchange rate) that enables an economy to face an external shock. A dollarized economy ties his hands and therefore it is seen as less able to react to different shocks.

We also find theoretical support to the idea of implementing a dollarization strategy with a contingent credit facility. We put special emphasis on the fact that this insurance scheme should be at a not-distorted price. If there is some implicit subsidy, it will reproduce the same credibility issues that alternative stabilization policies face.

¹ See Powell and Sturzenegger (2000) and Neumeier and Nicolini (2000) for additional but preliminary work on this subject.

In addition, this paper supports the stylized fact presented by Hausmann, Panizza and Stein (1999) where they show that emerging countries float differently from the way developed countries do. The reason of this difference is that floating emergent countries need a substantial amount of foreign reserves as collateral to avoid a higher country risk. Floaters are forced –by the market- to float with lots of reserves compared to M2 or debt obligations. On the other hand, developed economies can endure huge fluctuations in the exchange rate (domestic confiscation) because nobody questions the possibility of an external default.

As Fischer (1982) puts it “the rule of success of a monetary regime is survival”. If emergent economies adopt dollarized monetary systems we want them to survive. We present some simple propositions regarding the possible costs and benefits of adopting that alternative.

A SIMPLE MODEL OF CONFISCATION RISKS

In order to think about the relevant issues in the decision of dollarizing an economy we consider the following simple setup. We assume a one-good, one-period open economy with the following agents.²

The Government

The government’s basic decision is how to face the uncertainty of having good and bad times. The economy is an endowment economy subject to an aggregate shock that will force the government to decide between confiscate the domestic agents through devaluation or confiscate the institutional investor defaulting on its external obligations. We impose the uncertainty in such a way that when bad times hit the economy the government will not have other choice but to confiscate one of the two or both. This is due to the assumption that there are no other sources of funding available to tap in case of need.

The expected budget constraint of the government is:

$$E(y) - \frac{g}{E_0} - (1 + i^L)b = 0 \quad (1.)$$

The output of the economy is stochastic and follow a simple rule. The realized output in good times is y_0 and that happens with probability $(1 - p_1)$. The realized output in bad times is y_1 and that happens with probability p_1 . Obviously, $y_0 > y_1$. The fiscal revenues available contingent on the state of the world are represented by y .³

² The model is quite similar to the one presented in chapter 6 of Obstfeld and Rogoff (1996).

³ Emerging economies tend to be subject with large swings of their terms of trade and/or fluctuations in the cost of borrowing funds from abroad. As suggested by Fernandez-Arias and Talvi (1999) these changes may require large real exchange rate depreciations.

With those resources the government has to meet both its domestic outlays (\mathbf{g}/\mathbf{E}_0) and its external obligations $(1+i^L)\mathbf{b}$. The economy exchange rate regime is a fixed peg.⁴ \mathbf{E}_0 is the current exchange rate and \mathbf{g} is the nominal expenditure of the government.⁵ The government issues external bonds (\mathbf{b}) in dollars that pay i^L interest.

When the good times hit the economy the realized government budget constraint is:

$$y_0 - \frac{g}{E_0} - (1+i^L)b > 0 \quad (2.)$$

In that case, the government has no problem to satisfy its internal and external obligations and life goes on. However, in bad times the realized government budget constraint is:

$$y_1 - \frac{g}{E_0} - (1+i^L)b < 0 \quad (3.)$$

Therefore, the government will have to either devalue or default. The amount that the government needs to obtain from these alternatives is:

$$y_1 - \frac{g}{E_0} - (1+i^L)b = -(a+i^L)b \quad (4.)$$

The government of that emergent country might default on the due interests and on a share (\mathbf{a}) of the principal. For the sake of simplicity we assume for the rest of the paper that the government will always start a default with the interest payments and it will not compromise a default on the principal ($\mathbf{a}=\mathbf{0}$). The government will confiscate a fraction α of this amount to the foreign investors by means of an external debt default, and a fraction $(1-\alpha)$ to the domestic agents using a devaluation.

However, the depreciation in itself potentially creates another cost. Once the government choose to devalue the households and/or the firms with dollar liabilities may have to endure a negative wealth effect. Therefore, banks will face the possibility of a partial default on loans and they will turn to the government to rescue them. If we define the currency risk, $\Delta E = (E^e - E_0)/E_0$, the function $h(\Delta E)$ tries to capture the balance sheet effect of depreciations.⁶ We will assume that $h'(\Delta E) > 0$, as the cost of the bailout increases with the size of the devaluation.

⁴ We have not analyzed the case of flexible exchange rate regimes.

⁵ Here we do not discuss which type of exchange rate regime a particular country has.

⁶ The importance of this effect in liability dollarized economies has been recently stressed by Calvo (1998), Calvo (1999) and Krugman (1999).

The exchange rate of the next period (E_1) that will be necessary to accrue this amount of resources is given by the :

$$\frac{g}{E_0} - \frac{g}{E_1} = (i^L + h(\Delta E)) b(1-a) \quad p_1 \quad (5.)$$

$$E_0 \quad 1-p_1$$

Therefore, the expected exchange rate rate will be $E^e = (1-p_1)E_0 + p_1E_1$.⁷ From this we can derive the following expression for the currency risk:

$$\Delta E = \frac{b(1-a)p_1E_0(i^L + h(\Delta E))}{g - (i^L + h(\Delta E))b(1-a)E_0} \quad (6.)$$

From this formula one can infer the relationship between the country and the devaluation risk as i^L shows up. However, we need to explain what is behind the interest rate i^L . In order to do so we need to introduce an institutional investor and derive an expression for the country risk.

An Institutional Investor

An institutional investor may take position on safe bonds (t-bills) with no default risk (B) that pays an interest rate of i . The other asset is a risky bond from an emergent market (a Brady bond), which we denote by (b), and pays i^L . As expected the benefits from this operations might be less due to the possibility of default from the emergent economy. The probability attached to that event is denoted by p_1 .

The amount of default is $\alpha(i^L + h(\Delta E))b$. We should understand α as the *perceived* willingness to pay of the government on its external obligations. As the 1980s debt default showed, governments instead of raising more taxes to repay their external obligations preferred to default. Eaton and Gersovitz (1981) make this point. Clearly $\alpha \in [0,1]$. The institutional investors bear the cost of a potential bailout.⁸ The total cost of the potential bailout is given by $h(\Delta E)b$.

Therefore, the expected profits of the institutional investor is:⁹

⁷ Actually, one may think that under the positive shock the government chooses the option to keep the peg and increase the forex reserves. While, under the negative shock the government chooses the option to let the exchange rate depreciate while the forex reserves are not affected. However, we are not including a role for forex reserves accumulation.

⁸ As the model does not include banks or private firms there are no more options for the government than imposing that extra cost to the institutional investor. This is just a simplifying assumption.

⁹ When the good shock hit the economy the institutional investor is not subject to the possibility of a confiscation.

$$\Pi = (1 + i^L)b + (1 + i)B - p_1 \mathbf{a} (i^L + h(\Delta E))b \quad (7.)$$

This investor has a total net worth of:

$$\text{NW} = b + B \quad (8.)$$

Plugging (8) in (7) and deriving the expected profits with respect to \mathbf{b} , we obtain the optimal decision on how much to invest in emerging market bonds. From the FOC we can obtain the following expression:

$$i^L = \frac{i + p_1 \mathbf{a} h(\Delta E)}{1 - p_1 \mathbf{a}} \quad (9.)$$

A first result so far is that when there is no probability of default ($p_1=0$), the $i^L=i$ and when there is no potential bailout cost ($h(\cdot)=0$), $i^L = i / (1 - p_1 \alpha)$.

In addition, we define country risk in this model as:

$$i^L - i = \frac{p_1 \mathbf{a} (i + h(\Delta E))}{1 - p_1 \mathbf{a}} \quad (10.)$$

From this, the rate of return in domestic currency terms is:

$$i_{DC}^L = i + \frac{p_1 \mathbf{a} (i + h(\Delta E))}{1 - p_1 \mathbf{a}} + \Delta E \quad (11.)$$

Where the exchange rate risk could be expressed in terms of the fundamental parameters of the model as:

$$\Delta E = \frac{b(1 - \mathbf{a})p_1 (i + h(\Delta E))E_0}{g(1 - p_1 \mathbf{a}) - b(1 - \mathbf{a})E_0 (i + h(\Delta E))} \quad (12.)$$

SIMULATIONS FROM THE MODEL

In this section we consider two possible scenarios. In the first one, the economy does not have balance sheet effects. Depreciations are neutral to wealth for all agents. In a second case, we discuss the scenario in which the monetary authorities have a bias against allowing large depreciations of their domestic currency.

Case I: No Balance Sheet Effect

First we explore the option to dollarize an economy that does not suffer from balance sheet effects. Therefore, $\mathbf{h}(\Delta E) = \mathbf{0}$, as all agents in the economy are able to hedge against the risk of a devaluation. Simulating the model we obtained the following propositions:

Proposition 1: The country risk and the devaluation risk are negatively correlated.

Graph 1 shows the negative relationship between country risk and devaluation risk for different values of α . It shows that the cost of reducing one type of risk is the increase of the other type of risk. Graph 2 shows this result explicitly, recall that the value of α represents the degree of confiscation from international investors; a higher α means a higher country risk and a lower devaluation risk. Then, $\alpha=1$ means that the devaluation risk is zero and the country risk reaches its highest value. In other words, α equal to one can be interpreted as the economy being totally dollarized. In this case, the country will have a zero devaluation risk but the highest country risk. The model suggests that when a non-dollarized economy decides for full dollarization will face a higher country risk.

Proposition 2: For low (high) values of α an increase in the foreign interest rate has a stronger effect on the devaluation risk (country risk) compared to the effect on the country risk (devaluation risk).

Graphs 3 to 5 show the behavior of both devaluation risk and country risk when the free risk interest rate increases after controlling for different α 's. We use three values of α to illustrate the differences (0.05, 0.5 and 0.95).

These graphs show that both risks increase when the free risk interest rate increases, but its effect on both risks will depend on the value of α . For low values of α , for example in Graph 3 when α takes the value 0.05, not only the devaluation risk is more important than the country risk, but also the effect of an increase of the free risk interest rate is stronger in this devaluation risk.

On the other hand, for high values of α , as an example you can see Graph 5 ($\alpha=0.95$), this result is reversed where the stronger effect is on the country risk.

Proposition 3: An economy that faces foreign interest rate shocks will present a high correlation between the country risk and the devaluation risk.

Graph 6 shows the scatter diagram for country risk and devaluation risk when the free risk interest rate increases given that α is equal to 0.95. This graph shows that although the effect of an increase in the free risk interest rate affect both risks, these two risks are highly correlated. This high correlation hold for different values of α .

Note that while in Proposition 1 we allow α to change, in this case we allow the foreign interest rate to change holding α constant.

Proposition 4: An economy that suffers a dollarization process will face a higher country risk and a lower devaluation risk.

Graph 7 and 8 show a summary of the country risk and devaluation risk for different values of α 's. These graphs shows that while the economy is dollarizing (higher α mean that the government cannot or is not willing to confiscate through a devaluation), the country risk would be increasing and the devaluation risk decreasing. Then, a prediction of this model should be that during the process of dollarizing an economy, the importance of the country risk should be increasing and the importance of the devaluation risk should be decreasing.

Proposition 5: A contagion effect (an increase in the probability of a bad shock) will drive up both the country risk and the devaluation risk.

Graph 9 and 10 show that an increase in the probability of default increases both devaluation risk and country risk. The intuition of this statement is that a contagion effect will increase the probability of a bad shock.

Proposition 6: An economy that suffers a dollarization process will have higher interest rates in domestic currency and in dollars if has a high contingent fiscal liability. While an economy with low contingent fiscal liability will show a lower interest rate in domestic currency but a higher interest rate in dollars.

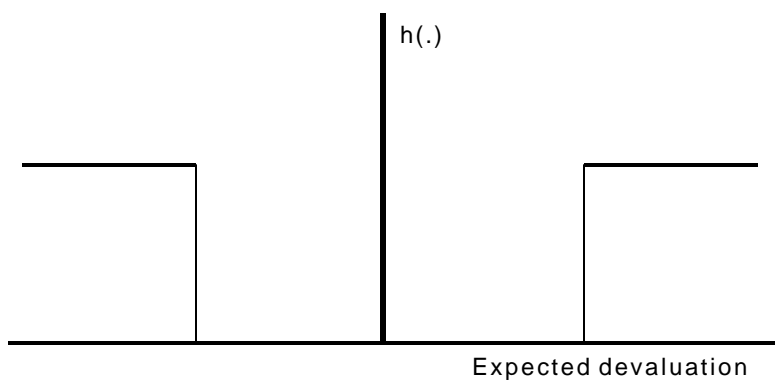
Contrary to the current belief that a dollarization will decrease the interest rate, Graphs 11 and 12 show that this result depends on how much the country risk goes up after a dollarization. Depending on the level of the contingent fiscal liability the interest rates will go up or down.

Case II: Fear of Floating

A more interesting case is when $h(\Delta E)$ reflects the cost of allowing the exchange rate to depreciate in a partially dollarized economy. As Calvo and Reinhart (2000) showed there are economies with floating regimes that do not allow the exchange rate to move further away from a narrow band. The reason behind this fear is that a sizeable depreciation could bring havoc in a banking system that is partially dollarized. The evidence of Calvo and Reinhart (2000) suggest that a reasonable way to model this characteristic is using a step function:

$$\begin{aligned} h(\Delta E) &= 0 && \text{if } \Delta E \in [\text{lower limit}, \text{upper limit}] \\ h(\Delta E) &= \eta && \text{otherwise} \end{aligned}$$

Figure 1: The bailout cost as a function of expected devaluation



We performed a simulation study and the following propositions arise:¹⁰

Proposition 7: The presence of a significant bailout cost will generate a non-linear relationship between the currency risk and the default risk

In Graph 13 we can see that once we assume a step function, the trade-off between the currency and the exchange risk will show a discontinuity. For small values of the devaluation risk, the potential bailout cost will disappear and therefore both risks will reduce. For values of the devaluation risk higher than a certain threshold a higher α , a greater commitment with the exchange rate will decrease the exchange rate risk while the country risk increases.

¹⁰ Even though we do not report the simulations using a continuously increasing function for $h(\cdot)$ the results are robust to that specification. The only caveat will be pointed out below.

If we use a continuous function the trade-off between both risk will remain except for a region in which both risks will move together. There will be a line connecting the two segments of Graph 13.

Proposition 8: A more vulnerable economy will face both a higher country and devaluation risks.

In Graphs 13 and 14 we plot two different situations, one economy with a higher bailout (Graph 14) cost than other (Graph (13)). The vulnerability of the economy could come from a higher degree of liability dollarization or the lack of a regulatory system that requires liquidity provisions for the banking system. Basically, an economy in which balance sheet effects are sizeable will face a higher combination of exchange rate risk and country risk compared to another economy with lower balance sheet effects.

Proposition 9: A fully dollarized economy might obtain -under some conditions- a lower country risk and a zero devaluation risk.

In Graph 15 we present the case for adopting a full dollarized economy. An economy could either choose to be in point B with a low exchange rate commitment ($\alpha < 1$) and with a given level of country risk or in point A with the same level of country risk but as the economy is fully dollarized with zero devaluation risk. If you fear, why don't you fix it for your life?¹¹

The same can be analyzed in Graph 16. At a level of $\alpha = 0.4$ the devaluation risk is still high enough to allow the existence of a potential bailout cost in both country and devaluation risk expressions. Associated with this value of alpha we have a country risk of 0.054 and a devaluation risk of 0.48. Under the absence of balance sheet effects there is no way to switch to a better point in both directions. If we allow for balance sheet effects, this same country risk would be attained with a full dollarization and therefore no devaluation risk.

Proposition 10: Under the presence of balance sheet effects, a full dollarization of the economy will reduce the local interest rate in dollars.

If our starting point is of an $\alpha < 1$ (see Graph 17) the option to fully dollarize the economy will reduce the local interest rate on dollars. This should not be a surprise as a higher α reduces the devaluation risk and the spread between the interest rate on dollars and the interest rate on domestic currency. The discrete jump of both series as we move alpha closer to one is just another way to analyze Proposition 9.

The Role of a Contingent Credit Line

¹¹ See Calvo and Reinhart (2000b).

Using equation (1), the theoretical models claims that if a country can lend and borrow whatever it wants, this country will never face a fiscal problem because it can lend the resources left over after a good shock and can borrow in case of a bad shock. This result means that the probability of default (p_1) is zero, therefore, this country will have neither devaluation nor country risk. In other words, the domestic interest rate on domestic currency and foreign currency is equal to the free risk interest rate.

On the other hand, if the country has limited access to the capital market, the result explained early arises where the possibility of having an unexpected deficit that could not be financed either by raising taxes domestically or via a foreign flow of funds. So, this credit constraint generates an increase in both devaluation and country risks depending on the government's decision concerning the sector that will be confiscated in case the bad shock materializes. Therefore, the role of the contingent credit line is to substitute the incompleteness of the capital market for emergent countries.

FINAL REMARKS AND FURTHER RESEARCH

We learned the relevance of the intertemporal fiscal sustainability enduring costly hyperinflation episodes. This paper teach us again about the relevance of this fiscal sustainability in the dollarization debate. Under the assumption that there is a deficit that needs to be financed out, investors will expect some reaction from the government: either lose reserves, increase its debt or print money. Another way to accomplish the objective when all these avenues are banned is to confiscate somebody devaluating the domestic currency or defaulting on its external obligations. In addition, a dollarization closes one of the last two sources of confiscation, the devaluation; in this sense, the dollarization transfers the cost of confiscation from one sector to another.

Concerning the effects over the economy, the paper describe two cases, with and without balance sheet effect. The results are: i) when the economy does not face a balance sheet effect, as devaluation risk disappears, the country risk goes up, and ii) when the economy face a balance sheet effect, a dollarization could reduce the country risk. A caveat of the second result is that, the higher the balance sheet effect, the higher the reduction in the country risk.

Further research: The end point of the discussion set in this paper is not the effect of dollarization on the dynamic and level of country risk and devaluation risk, but its effects on the welfare. So, we are planning to introduce this setting in a framework used by Calvo-Vegh where a representative individual maximize its utility function subject to its wealth constraint. In the general equilibrium setting, the interest rate paid by the representative individual (e.a. emerging market) will be determined by the international investor maximization. This setting will allow us to make welfare implications concerning the dollarization process, our intuition is that the result will depend on the balance sheet effect. Let us give you one example to illustrate this point. Graph 18 shows the relation of country risk and investment for Argentina from 1994 to 1999, if the Argentinean

economy has an important balance sheet effect a dollarization could reduce country risk and increase the long run investment.

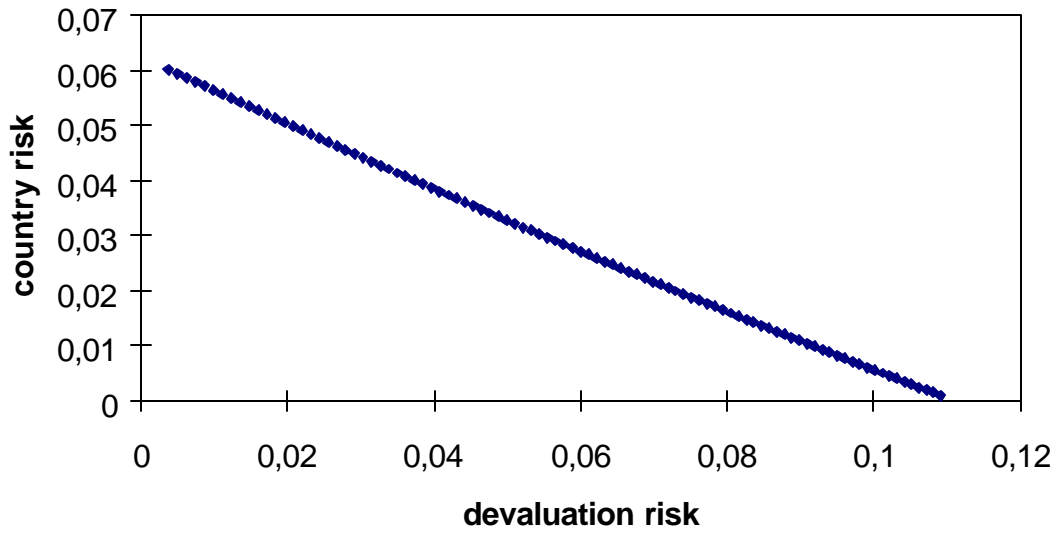
REFERENCES

- Calvo, Guillermo (1999a), "On Dollarization", mimeo, University of Maryland at College Park.
- Calvo, Guillermo (1999b), "Flexible versus Fixed Exchange Rate Regimes", mimeo, University of Maryland at College Park.
- Calvo, Guillermo (1999c), "Capital Markets and the Exchange Rate, with Special Reference to the Dollarization Debate in Latin America", mimeo, University of Maryland at College Park.
- Calvo, Guillermo and Carmen Reinhart (2000a), "Fear of Floating", mimeo, University of Maryland at College Park.
- Calvo, Guillermo and Carmen Reinhart (2000b), "Fixing for Your Life", mimeo, University of Maryland at College Park.
- Eaton, Jonathan and Mark Gersovitz (1986), "Debt with Potential Repudiation: Theory and Estimation", *Review of Economic Studies* 48 (April): 289-309.
- Fernández-Arias, Eduardo and Ernesto Talvi (1999), "Devaluation of Deflation? Adjustment Under Liability Dollarization", mimeo, Inter-American Development Bank.
- Hausmann, Ricardo (1999), "Should There Be Five Currencies or One Hundred and Five?", *International Affairs*, 116: 65-79.
- Hausmann, Ricardo, Michael Gavin, Carmen Pagés-Serra and Ernesto Stein (1999), "Financial Turmoil and the Choice of the Exchange Rate Regime", mimeo, Inter-American Development Bank".
- Hausmann, Ricardo, Ugo Panizza and Ernesto Stein (1999), "Why do Countries Float the Way They Float?", mimeo, Inter-American Development Bank.
- Levy-Yeyati, Eduardo and Federico Sturzenegger (1999), "Classifying Exchange Rate Regimes: Deeds vs. Words", mimeo, Universidad Torcuato Di Tella.
- Neumeyer, Pablo Andres and Juan Pablo Nicolini (2000), "Using Balance Sheet Data to Identify Sovereign Default and Devaluation Risk", mimeo, Universidad Torcuato Di Tella.
- Obstfeld, Maurice and Kenneth Rogoff (1996), *Foundations of International Macroeconomics*, MIT Press.

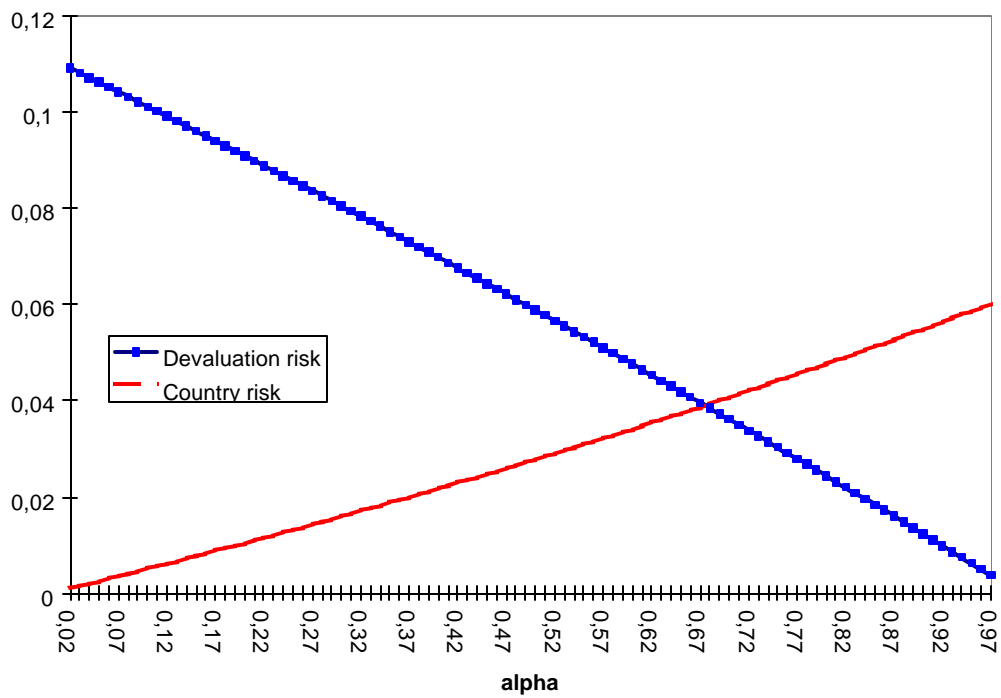
Powell, Andrew and Federico Sturzenegger (2000) “Dollarization: The Link between Devaluation and Default Risk”, mimeo UTDT.

Stein, Ernesto, Ernesto Talvi, Ugo Panizza, and Gustavo Marquez (1999), “Evaluando la Dolarización: Una Aplicación a Países de América Central y del Caribe”, mimeo, Inter-American Development Bank.

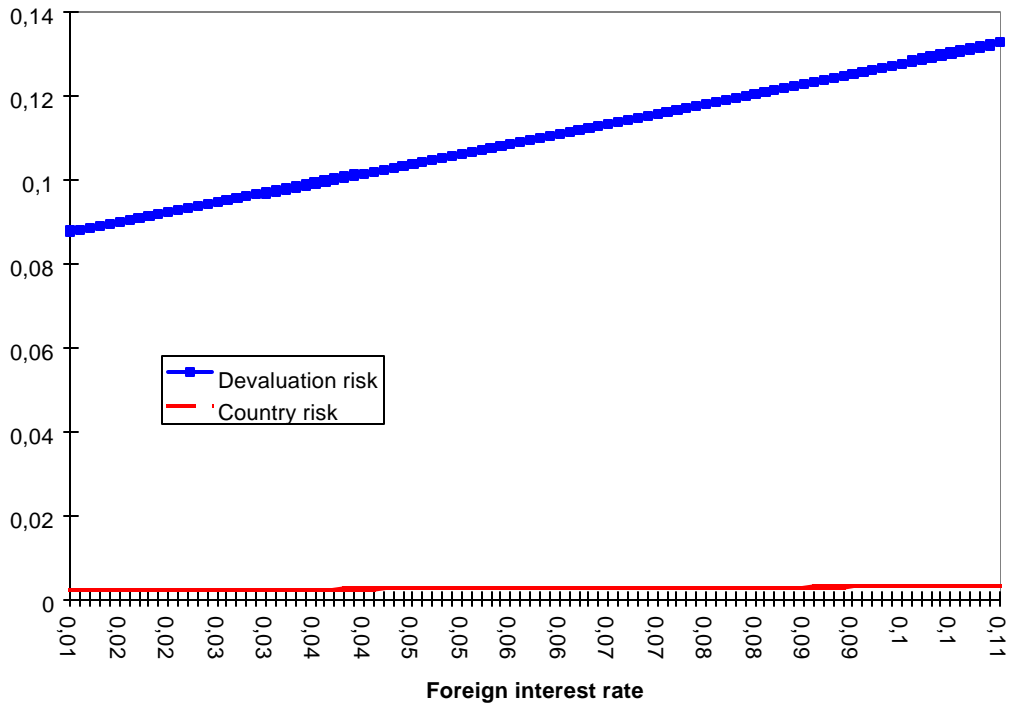
Graph 1: Trade-off between Country Risk and Devaluation Risk



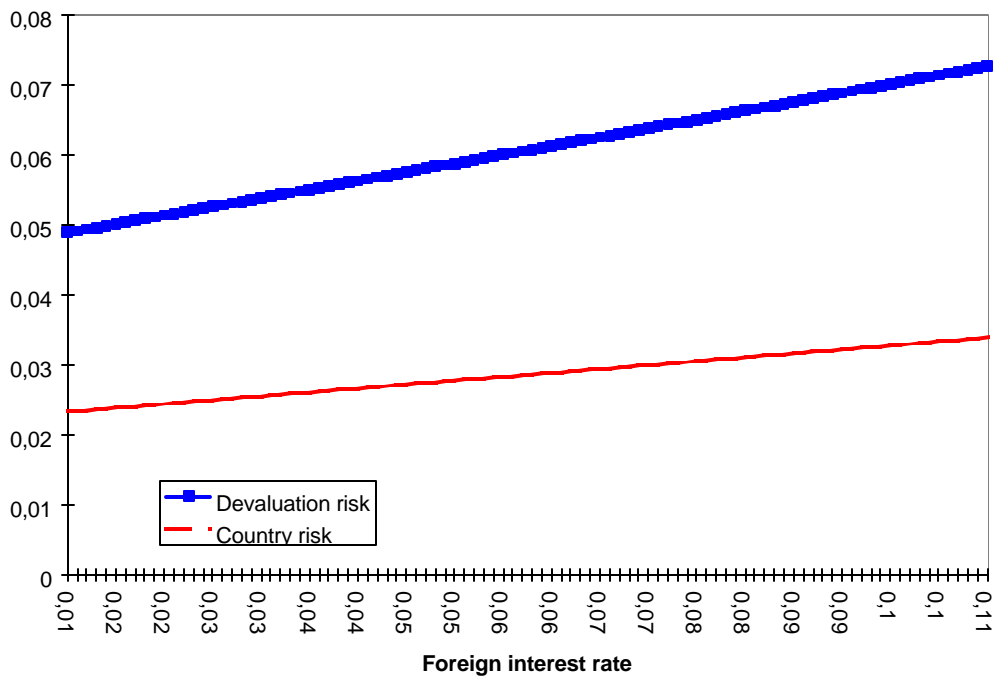
Graph 2: Country and devaluation risks for different values of alpha



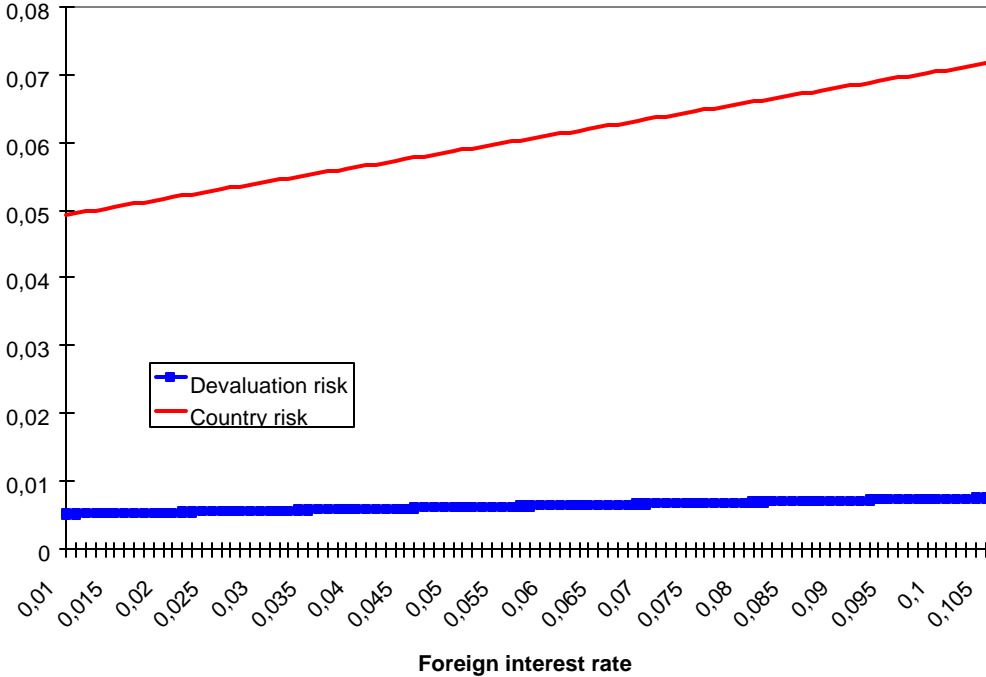
Graph 3: Country and devaluation risks with small alpha=0.05



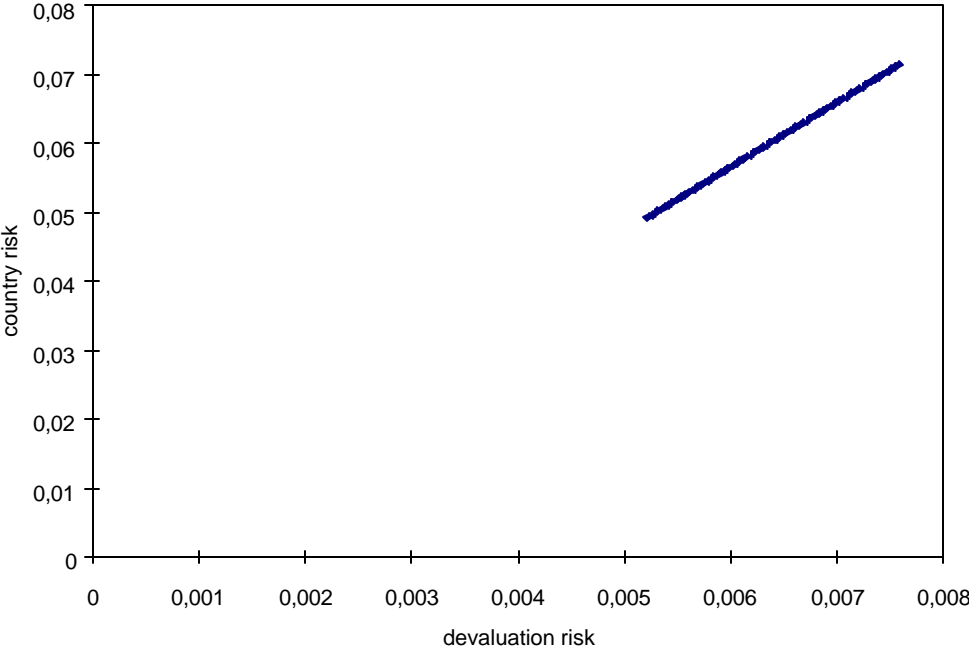
Graph 4: Country and Devaluation risks for alpha=0.5



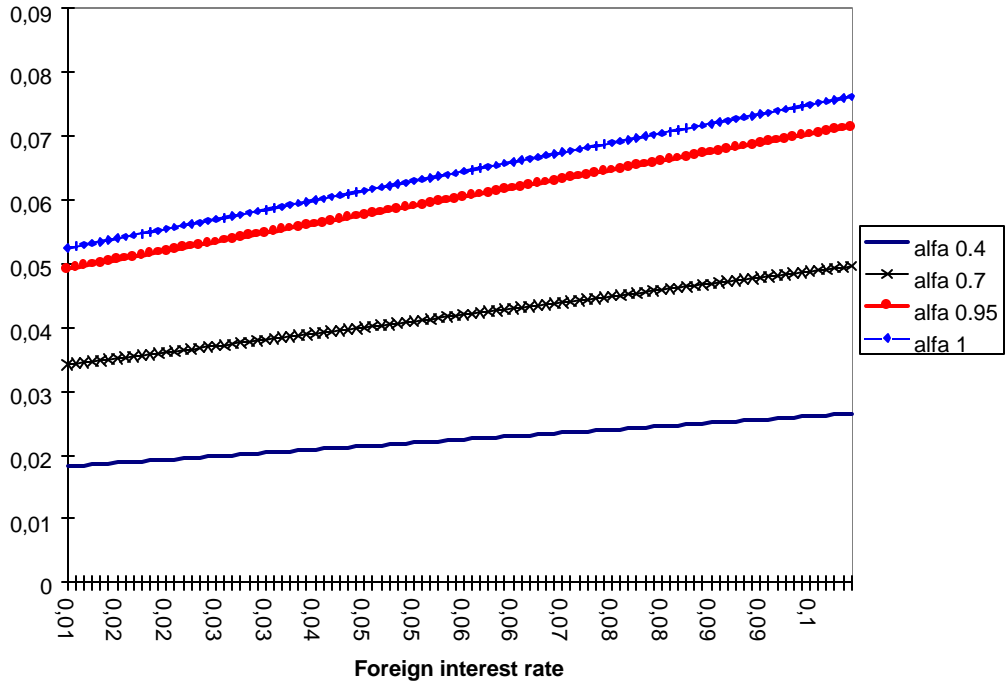
Graph 5: Country and Devaluation risks with high alpha=0.95



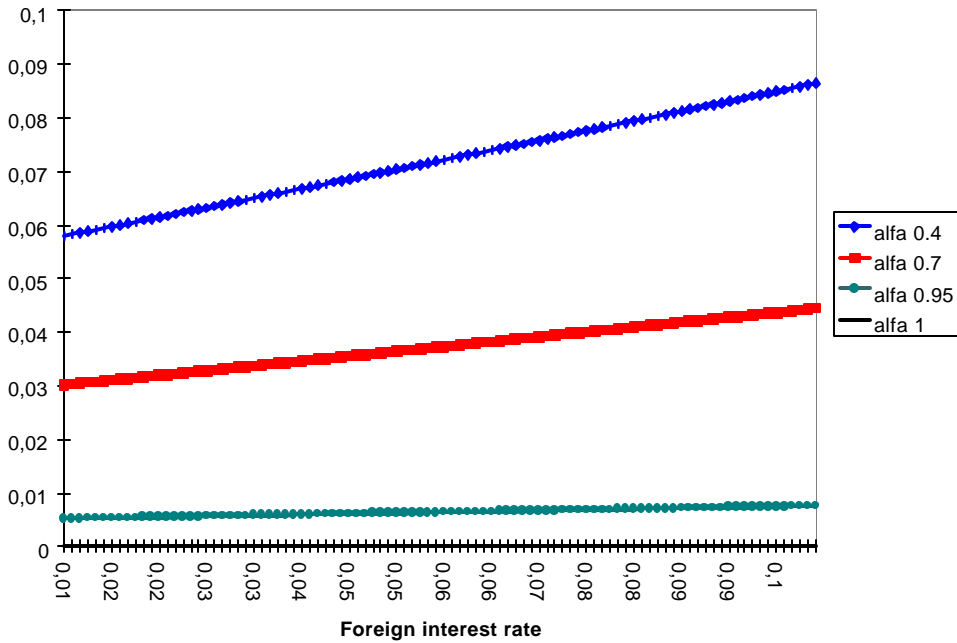
Graph 6: Correlation between Country and Devaluation Risk high alpha=0.95



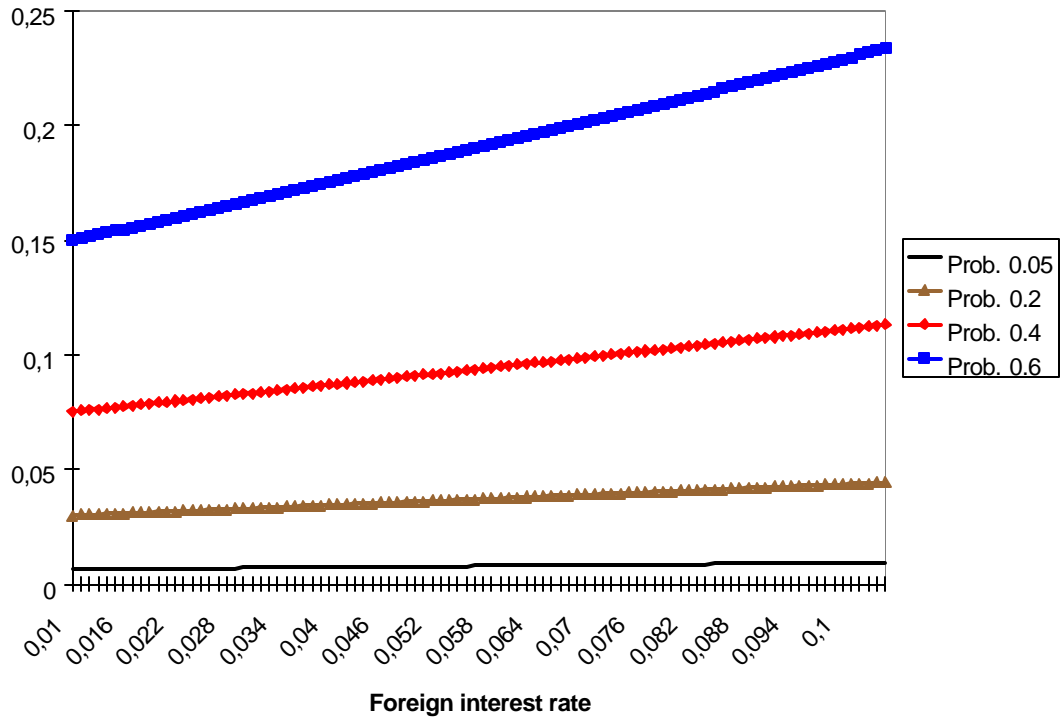
**Graph 7: Country risk for different values of alpha
(dollarized economy alpha=1)**



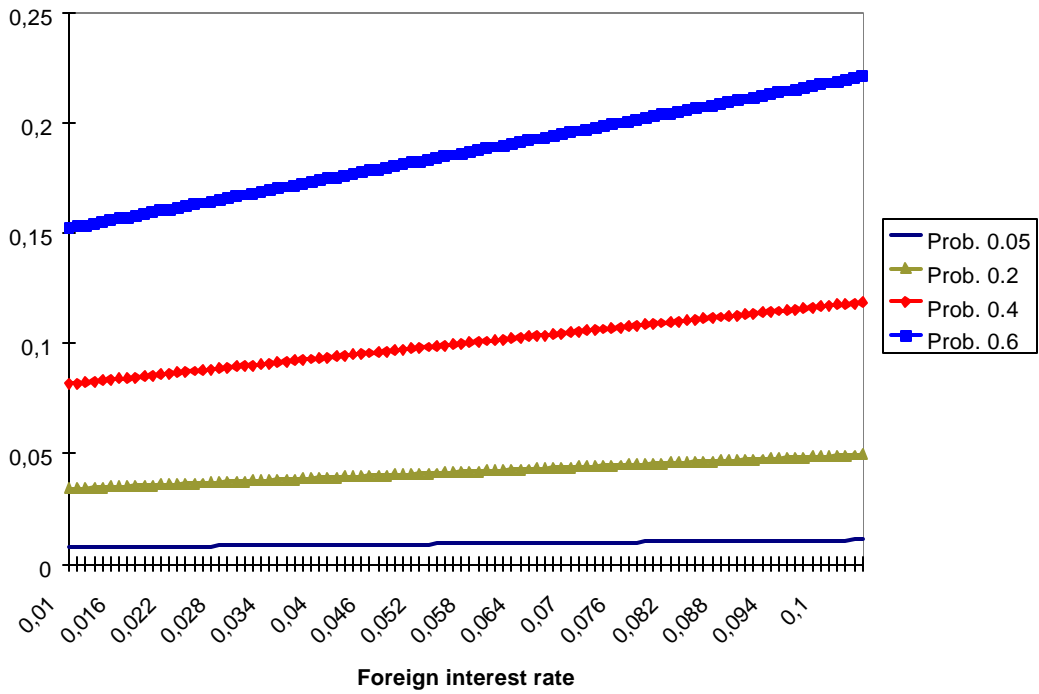
**Graph 8: Devaluation Risk for different values of alpha
(dollarized economy alpha=1)**



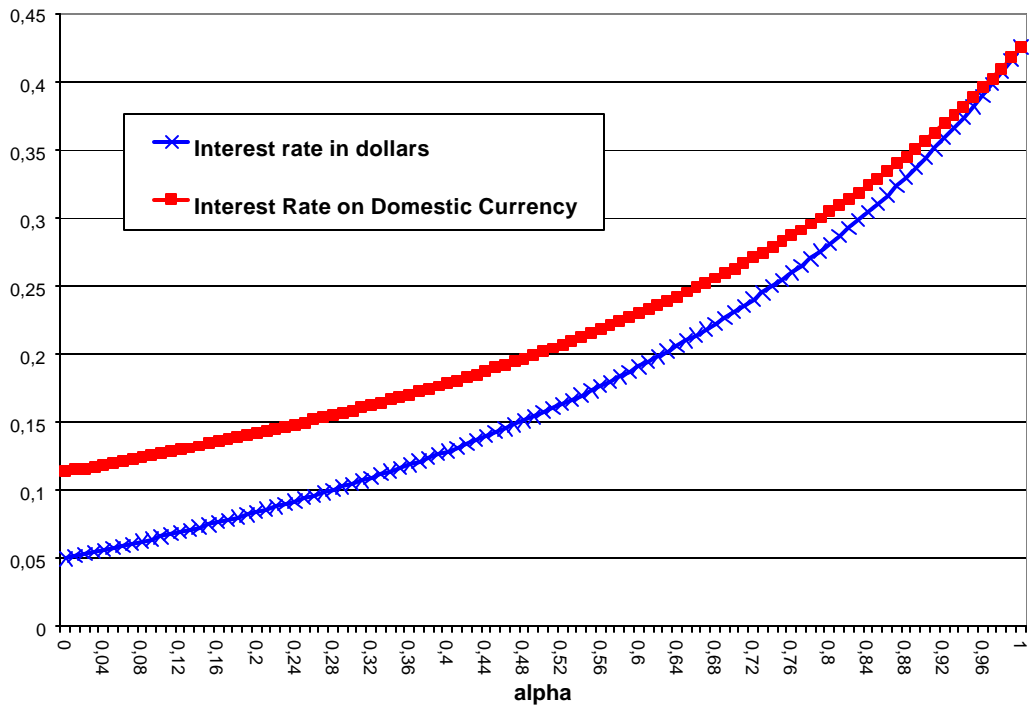
Graph 9: Devaluation Risk under Contagion Effects
Sudden increase in the probability of adverse shock



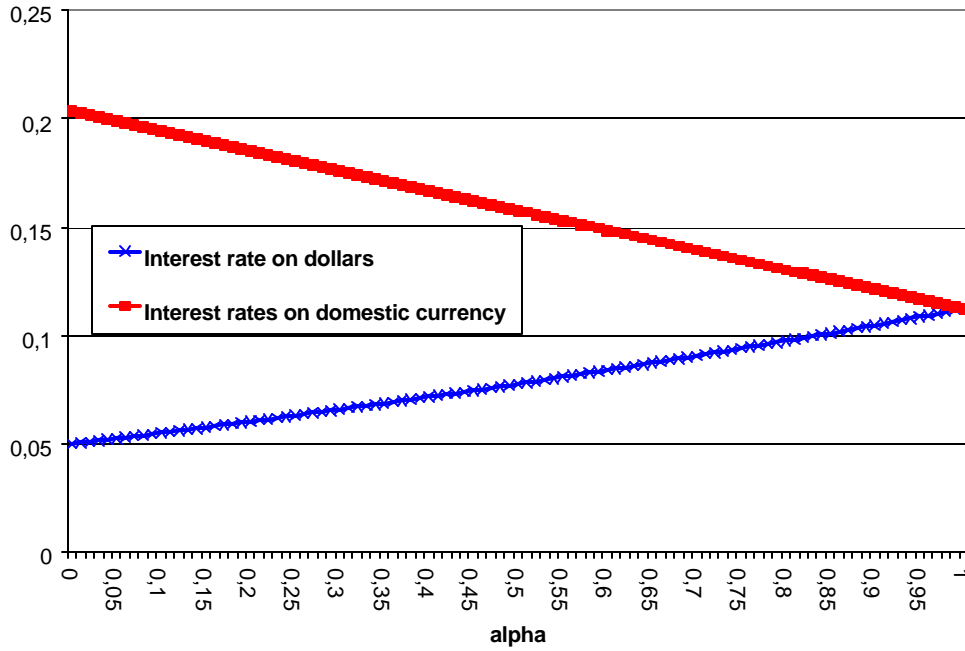
Graph 10: Country Risk with Contagion Effects
Sudden increase in the probability of an adverse shock



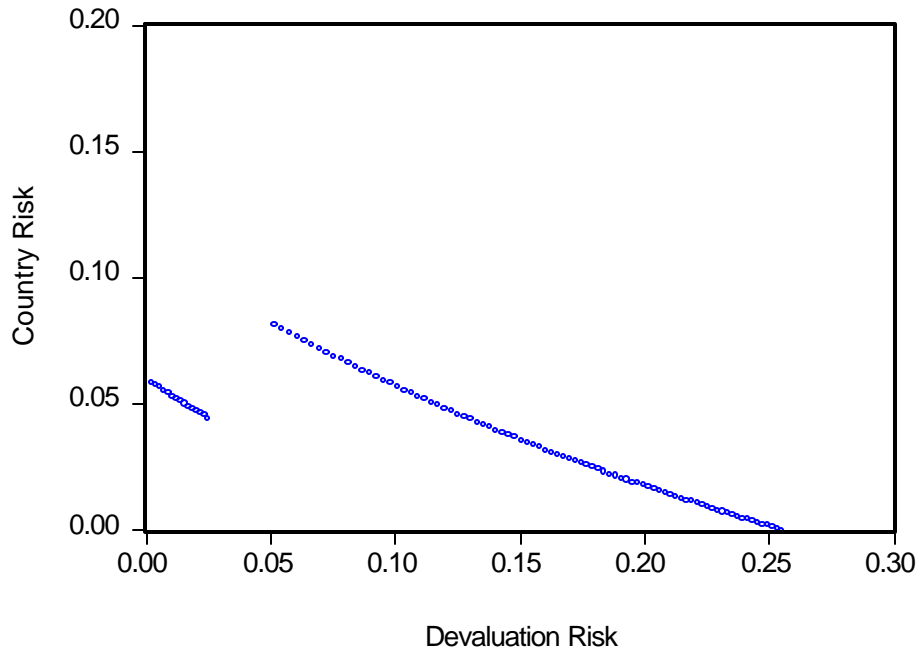
Graph 11: Dollarization under High Contingent Fiscal Liability
(g=100)



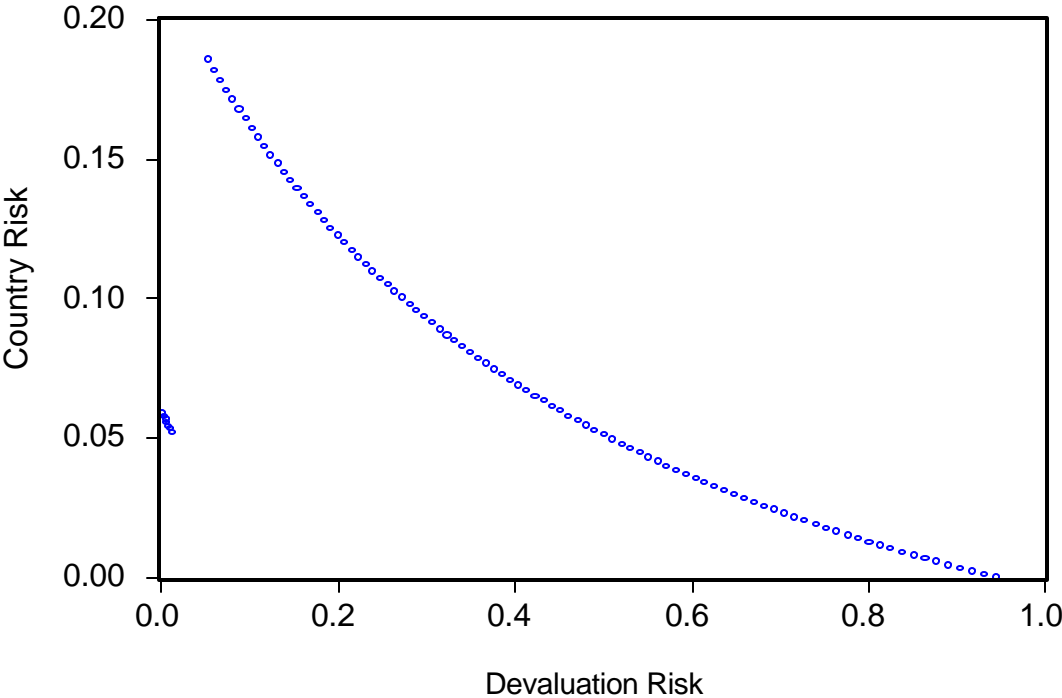
Graph 12: Dollarization under Low Contingent Fiscal Liability
($g=15$)



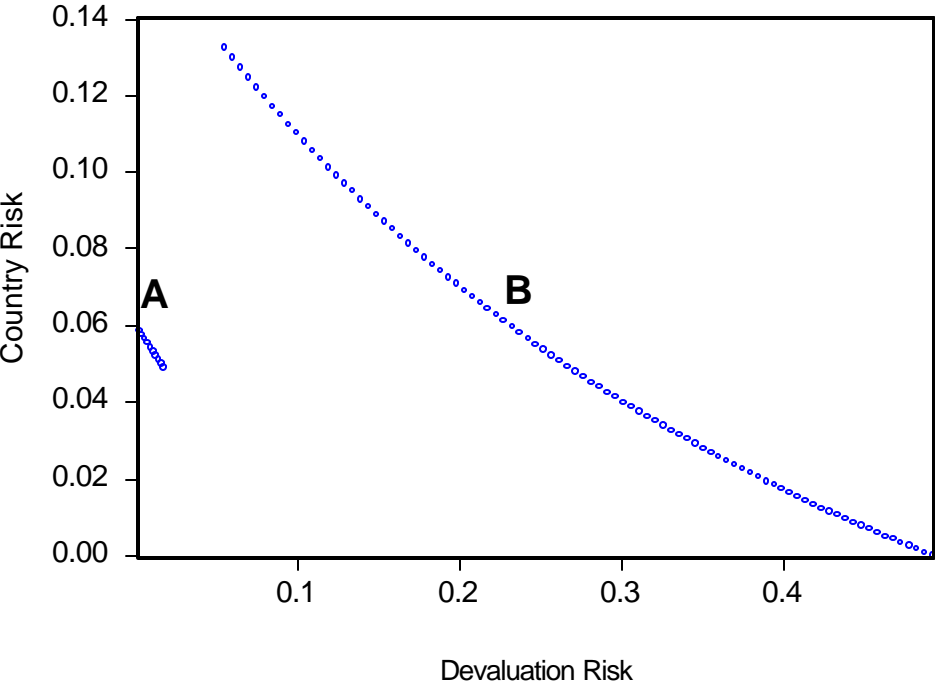
Graph 13: Trade-off between Country and Devaluation Risk
Low Bailout Cost



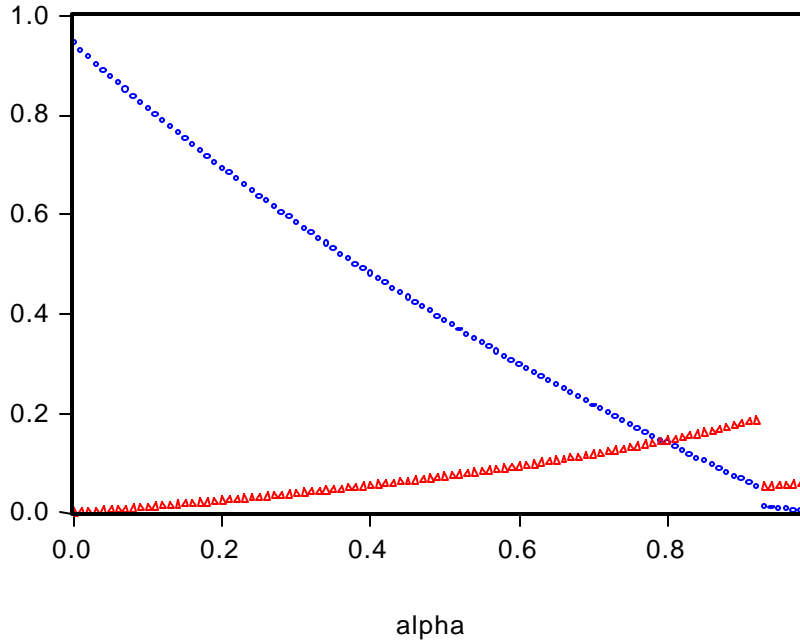
Graph 14: Higher Bailout Cost



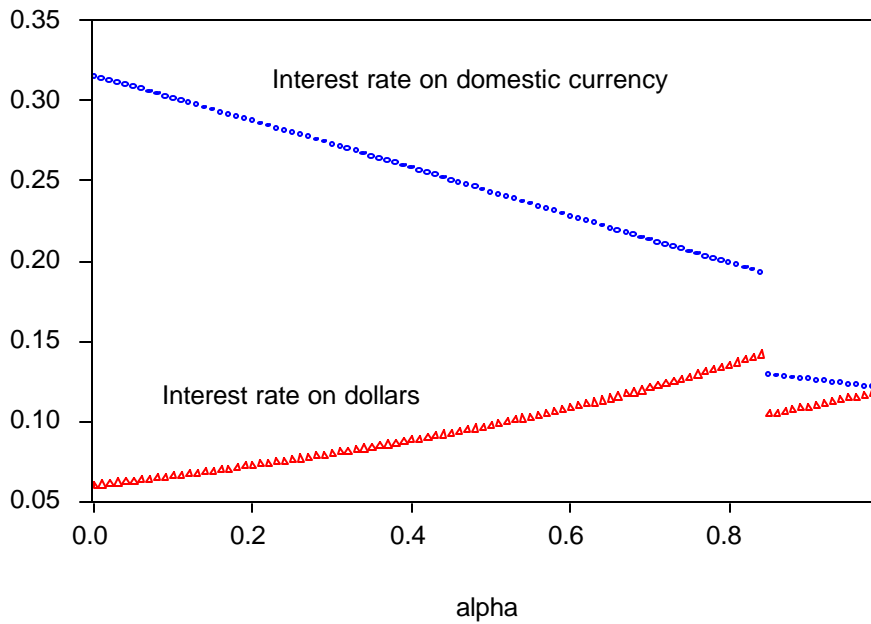
Graph 15: Fixing for your life or living with fear?



Graph 16: Country and Devaluation Risk for different values of alpha with balance sheet effects



Graph 17: The effect on interest rates



Graph 18: Fixed Investment Growth Rate and Country Risk. Argentina

