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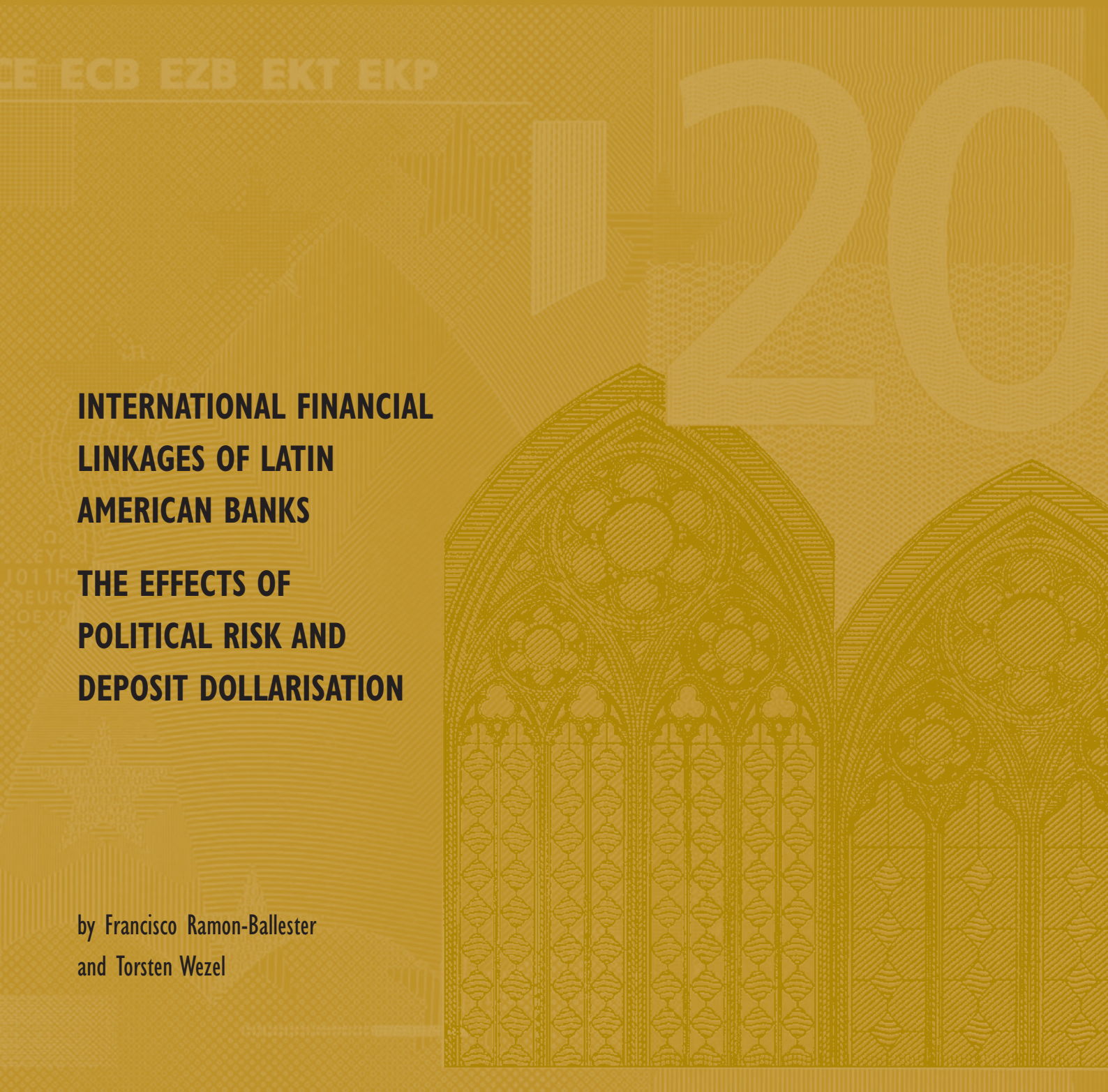

INTERNATIONAL FINANCIAL LINKAGES OF LATIN AMERICAN BANKS

THE EFFECTS OF POLITICAL RISK AND DEPOSIT DOLLARISATION

by Francisco Ramon-Ballester
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THE EFFECTS OF POLITICAL RISK AND DEPOSIT DOLLARISATION [1]

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In 2007 all ECB publications feature a motif taken from the €20 banknote.

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Abstract

This paper empirically investigates the extent to which the financial linkages of Latin American banks with the exterior are influenced by political risk and deposit dollarisation. We find that the sum of banks' foreign assets and liabilities is a function of risk-return considerations and excess domestic credit demand. An increase in political risk is shown to be associated with a build-up of foreign positions by the banking sector, but this adverse effect on the banking system is mitigated in economies with a high share of dollarised deposits. These relationships largely hold when the determinants of foreign assets and liabilities are estimated separately, with risk-induced capital flight being moderated by a high degree of deposit dollarisation. While changes in overall country risk including the risk of macro collapse drive official capital outflows, for a wider measure of capital flight including informal flows only changes in political risk matter. In each case, deposit dollarisation is shown to possess a risk-mitigating property. The results suggest caution with active de-dollarisation strategies in highly dollarised economies where political instability remains an issue.

JEL No: E42, F36, G21

Keywords: dollarisation, political risk, banking systems, financial integration, Latin America

Non-technical summary

Financial dollarisation, i.e. residents' holdings of assets or liabilities in foreign currency, has increased or remained stubbornly high in many Latin American economies since the 1990s, in spite of the generally successful implementation of macroeconomic stabilisation policies over the same period. The presence and persistence of financial dollarisation has been broadly explained by a number of factors in economic literature, including lack of monetary credibility, hedging against macroeconomic volatility, transaction costs and dollar network externalities, financial market incompleteness and moral hazard. While these determinants of financial dollarisation are firmly established in the literature, the effects of financial dollarisation are relatively less well researched in comparison. There is broad consensus among academics and policymakers that the co-existence of different currencies in the balance sheets of financial institutions exacerbates the vulnerability of banking systems and hampers the smooth operation of the monetary transmission mechanism, yet there are fewer studies which try to explore the specific channels through which these vulnerabilities may come to light or the circumstances under which they may apply. Honohan and Shi (2003) provide mixed evidence on the effect of dollarisation on bank interest rate margins and the exchange rate passthrough, as well as on the propensity of banks and non-bank residents to place dollarised deposits offshore. De Nicoló et al. (2003) find that dollarisation of the banking system is likely to promote financial deepening albeit only within relatively high inflation environments.

Our paper aims to contribute to this strand of the financial dollarisation literature by exploring the mechanisms driving financial linkages of Latin American banking sectors with the exterior and some specific factors which may affect them. We combine an empirical exploration of the determinants of the foreign positions of Latin American banking sectors, i.e. the sum of banks' foreign liabilities and foreign assets, with the impact that dollarisation and political risk may have on these positions. We find that the sum of banks' foreign assets and liabilities is a function of risk-return considerations and excess domestic credit demand. We also find that an increase in political risk propels capital outflows (including informal ones), and that high deposit dollarisation mitigates the incidence of capital flight that is otherwise caused by a worsening of the political environment. These relationships largely hold when the determinants of foreign assets and liabilities are estimated separately. The results suggest caution with the implementation of active de-dollarisation strategies in highly dollarised economies where political instability remains an issue.

1 Introduction

Financial dollarisation, i.e. residents' holdings of assets or liabilities in foreign currency, has increased or remained stubbornly high in many Latin American economies since the 1990s, notwithstanding the generally successful implementation of macroeconomic stabilisation policies over the same period. In economic literature, the presence and persistence of financial dollarisation[1] has been broadly explained in terms of (i) lack of monetary credibility and memory of hyperinflationary periods, or hedging against macroeconomic volatility; (ii) high costs of switching from foreign to domestic currency, or externalities associated with a large network of dollar users; (iii) financial market incompleteness and (iv) moral hazard due to explicit or implicit government guarantees. While these determinants of financial dollarisation are firmly established in the literature, the effects of financial dollarisation are relatively less well researched in comparison. There exists a broad consensus among academics and policymakers that the co-existence of different currencies in the balance sheets of financial institutions and other economic agents exacerbates the vulnerability of banking systems and hampers the smooth operation of the monetary transmission mechanism. However, there are fewer studies which try to explore the specific channels through which these vulnerabilities may come to light or the circumstances under which they may apply. Honohan and Shi (2003) provide mixed evidence on the effect of dollarisation on bank interest rate margins and the exchange rate passthrough, as well as on the propensity of banks and non-bank residents to place dollarised deposits offshore. De Nicoló et al. (2003) find that dollarisation of the banking system is likely to promote financial deepening albeit only within relatively high inflation environments.

Our paper aims to contribute to this strand of the financial dollarisation literature by exploring the mechanisms driving financial linkages of Latin American banking sectors with the exterior and some specific factors which may affect them. We combine an empirical exploration of the determinants of the foreign positions of Latin American banking sectors, i.e. the sum of banks' foreign liabilities and foreign assets, with the impact that dollarisation and political risk may have on these positions. First, we seek to verify that banks' foreign liabilities (e.g. borrowing from abroad) depend on excess domestic credit demand and the availability of domestic deposits, while banks' foreign assets (e.g. deposits of residents

[1] Financial dollarisation needs to be distinguished from payments dollarisation (use of foreign currency for transaction purposes) and real dollarisation (de facto or de jure indexation of prices and wages to foreign currency). Other commonly used terms in economic literature are full or official dollarisation (adopting a foreign currency as unique legal tender), and partial dollarisation (denoting economies with a high degree of payments and/or real dollarisation, but short of full dollarisation). In this paper, we focus on a specific aspect of financial dollarisation, namely the dollarisation of domestic (onshore) bank deposits.

abroad) rise with the degree of country (political) risk – an effect which may be regarded as "capital flight". Second, we investigate whether highly dollarised economies exhibit a differentiated behaviour in terms of the adverse effects of rising political instability on banking systems. Third, after testing the determinants of the composite foreign position, we also examine the determinants of the foreign asset and liability sides separately in order to disentangle these differential effects and verify the individual hypotheses, in addition also accounting for informal capital flows. Our sample consists of 14 Latin American countries in the period of 1992-2001, and we use panel estimation techniques throughout the analysis.

Anticipating some of our results, we find that the sum of banks' foreign assets and liabilities is a function of risk-return considerations and excess domestic credit demand. In addition, an increase in political risk propels capital outflows (including informal ones), and high deposit dollarisation mitigates the incidence of capital flight that is otherwise caused by a worsening of the economic and political environment. These relationships largely hold when the determinants of foreign assets and liabilities are estimated separately, with political risk-induced capital flight (in the form of higher foreign assets of banks) moderated by a high degree of deposit dollarisation.

The remainder of the paper is organized as follows. Section two provides a brief summary of the recent literature on the determinants and effects of financial dollarisation. Section three presents the empirical framework, describes sample properties and data sources underlying the empirical tests, and provides some stylised facts on recent evolution of foreign assets and liabilities and deposit dollarisation in Latin American banking systems. The results of our econometric analysis are detailed in section four. Section five concludes and discusses policy implications.

2 Financial Dollarisation in the Literature

Economic literature offers several explanations for the presence and persistence of financial dollarisation. A first set of arguments stress a lack of monetary credibility and how this may influence the actions of economic agents. In this context, Calvo and Guidotti (1990) show that the absence of a policy pre-commitment is associated with a strong incentive to monetise the debt stock by public authorities, leading to the establishment of indexed (or foreign currency denominated) securities. Jeanne (2003) includes both public and private debt to show that as the probability of an exchange rate devaluation rises, agents are rationally induced to borrow in foreign currency so as to minimise the probability of default. Savastano (1996) relates

deposit dollarisation specifically with macroeconomic or financial instability, possibly due to a history of monetary mismanagement which hampers the credibility of stabilisation policies. This legacy of inflationary memory, in turn, helps to account for the continued presence of dollarised deposits in the economy even in a context of price stability (also referred to as "dollarisation hysteresis" or "ratchet" effect); Ize and Levy-Yeyati (2003) suggest that high variability of inflation in relation to that of the real exchange rate may account for persistent dollarisation (see below). Persistence of dollarisation has also been explained by depositors' reluctance to incur in additional currency-switching or set-up costs (Uribe, 1997). Network effects, once a sufficiently large pool of foreign currency (dollar) users has been formed, may also help to account for this trend.

A second strand of the literature portrays financial dollarisation as a necessity resulting from financial market development or incompleteness. Caballero and Krishnamurthy (2003) suggest that domestic financial rigidities result in an undervaluation of the interest premium between borrowing in home and foreign currency, pushing agents to borrow in the latter. Hausmann et al. (2001) suggest that the drive to borrow in foreign currency is associated with "original sin", or agents' inability to borrow externally in their own currency (or domestically at long maturities). A number of models frame financial dollarisation in the wider context of an optimal financial equilibrium under a portfolio model for banking intermediation. Catão and Terrones (2000) apply risk-return considerations and market segmentation to account for discrepancies between banks' dollarised assets and liabilities, finding that dollarisation tends to depend on initial conditions (i.e. credit market structure, marginal costs of intermediation and the share of performing loans). Ize and Levy-Yeyati (2003) put forward the concept of a 'natural' degree of dollarised deposits determined by the volatility of inflation and the real exchange rate; deviations from this optimal share of dollarisation are explained by the willingness of depositors to hold domestic currency deposits on account of higher interest rates.

A third set of arguments depicts financial dollarisation as derived from "socially excessive dollarisation" in the economy resulting from moral hazard considerations, including implicit public insurances associated to operating under a fixed exchange rate peg, or related to troubled domestic financial institutions and bailout expectations (Dooley, 2000). These implicit public guarantees encourage larger risk-taking than would otherwise be the case.

Barajas and Morales (2003) empirically test many of theoretical determinants detailed above, referred to as "the usual suspects" of financial dollarisation (i.e. history of unsound

macroeconomic policies, development and institutional factors, moral hazard opportunities related to government guarantees). The authors find that less common explanations - including ongoing central bank intervention in the foreign exchange market, relative market power of borrowers, and financial penetration – are at least as important as the traditional factors in accounting for financial dollarisation. Rennhack and Nozaki (2006) empirically corroborate that a minimum variance portfolio as well as currency depreciation and uncertainty about inflation determine the degree of financial dollarisation.

By contrast, the *effects* of financial dollarisation are relatively less well researched in the literature. There exists a broad consensus among academics and policymakers that financially dollarised economies tend to be more vulnerable than non-financially dollarised ones, as the co-existence of different currencies in the balance sheets of financial institutions and other economic agents exacerbates the vulnerability of banking systems. Gulde et al. (2004) support this conclusion on the basis of estimates of non-performing loans and probabilities of firms' insolvencies. Systemic liquidity risk in dollarised economies is associated with a "perceived increase in country risk, or banking risk, prompting depositors to convert their deposits into cash dollars or transfer them abroad".[2] The experience of central banks operating in highly dollarised economies also suggests that the effective conduct of monetary policy is much more complex than would otherwise be the case. The main challenges in this context are associated with a reduced effectiveness of monetary transmission channels (notably, interest rates) as well as a very unstable nature of monetary aggregates (Morales, 2003).

There are fewer studies which try to explore the specific channels through which these vulnerabilities may come to light or the circumstances under which they may apply. In this context, Honohan and Shi (2003) provide evidence that bank interest margins, exchange rate pass-through, and offshore deposits by non-bank residents are positively associated with (increasing) dollarisation; the authors also find that banks tend to place offshore up to half of dollar deposits received. However, as the authors acknowledge, the evidence that real deposit interest rates increase with dollarisation is weak, as it cannot be shown that higher dollarisation is associated with a widening of spreads between local and foreign currency rates. Arteta (2003) finds that the probability of banking crisis is not affected by a high degree

[2] This seems to be supported by country-specific experiences with runs on dollar liabilities, as has been the case in Bolivia. See Gulde et al. (2004), p. 5.

of either deposit or credit dollarisation. Finally, De Nicoló et al. (2003) suggest that deposit dollarisation has a positive impact on financial deepening in inflationary environments[3].

3 Empirical Framework and Data

3.1 Baseline specification

We depict international financial linkages of banks as being caused by the interaction of macroeconomic dynamics, as expressed by excess domestic credit demand affecting foreign liabilities (*FL*), and risk-return considerations, as denoted by external deposit spreads and country risk scores determining foreign asset positions (*FA*). As dependent variable denoting international financial linkages of banks, we use a measure proposed by Lane and Milesi-Ferretti (2003), i.e. the sum of foreign liabilities and foreign assets relative to GDP (irrespective of the actual offshore location and limited in our case to foreign positions of the banking system)[4].

As explanatory variables we use a host of standard determinants common in the financial dollarisation literature to account for the dynamics of banks' foreign assets and liabilities (e.g. De Nicoló et al (2003), Ize and Levy-Yeyati (2003)) and subsequently apply this framework to test whether highly dollarised economies behave differently to less dollarised ones in the face of political risk. Insofar as foreign assets of banks *(FA)* are concerned, the share of offshore deposits is conjectured to be determined by the variance of political risk *(POLR)* that is not compensated for by the spread between interest rates on onshore and offshore foreign currency deposits *(SPR)*. This implies that banks' foreign assets are a positive function of total deposits *(DEP)* and the variance of political risk *(POLR)* [5], and a negative function of the external deposit rate spread *(SPR)* multiplied by total deposits *(DEP)*. Insofar as foreign liabilities (*FL*, the stock of past and current bank borrowing from abroad) are concerned, these are conjectured to depend on credit to the private sector *(CPS)* and negatively on the availability of total onshore deposits *(DEP)*. This implies that a given demand for domestic

[3] Estimates are based on the ratio of onshore foreign currency deposits to total domestic bank deposits, with financial deepening proxied by the ratio of M2 to GDP. The differentiated effect of dollarised economies in the light of inflation is captured by an inflation-dollarisation interaction term. We use a similar interaction term in our empirical analysis (section 4).

[4] While it may be suboptimal to relate stock variables to a flow variable, this type of normalisation avoids endogeneity problems that would occur if foreign bank positions were related to the size of the banking sector, for example. This would occur as the right hand side variables *CPS* and *DEP* are each an integral part of total assets (liabilities), causing correlation between the two sides of the regression equation.

[5] In section 4.2.2, we test for a broader measure of country risk, accounting for macroeconomic risk, which together with political risk comprises country risk, and for a subcomponent of political risk, expropriation risk.

bank credit (*CPS*) cannot entirely be satisfied by the available pool of domestic deposits *(DEP)*, and domestic financial institutions can only close this financing gap by incurring liabilities abroad (*FL*)[6].

As a result, the baseline empirical model has the following basic specification:

$$FLA_{it} = \beta_{0i} + \beta_1 CPS_{it} + \beta_2 DEP_{it} + \beta_3 (DEP*SPR)_{it} + \beta_4 POLR_{it} + \varepsilon_{it} ,$$
$$\qquad\qquad (+) \qquad (?) \qquad (-) \qquad (+)$$

There are a number of caveats to this set-up. First, in order to avoid unwarranted endogeneity in the regression equation, foreign assets (*FA*) are related only to the pool of onshore deposits, (*DEP)* that can be shifted abroad if the interest rate spread narrows (i.e. irrespective of the share of offshore deposits that should be accounted for as well). As a growing pool of domestic deposits would increase the volume of offshore deposits (assuming the cross-border share to be constant) but would also diminish the need for foreign borrowing, there could be offsetting effects of total deposits on the dependent variable (positive for *FA*, negative for *FL*) and the expected sign (and significance) of the *DEP* variable is uncertain.

Second, as interest rate data on onshore foreign currency deposits is not systematically available in many Latin American economies (as also noted by Honohan and Shi, 2003), the spread between U.S. deposit rates (in dollars) and onshore deposit rates (in home currency) is used as a proxy for SPR. This means that in the empirical investigation the real interest rate spread adjusted for exchange rate movements is measured as:

$$SPR = \frac{(1 + i_D) - ((1 + i_{US}) * (1 + \Delta NER))}{1 + \pi_D} ,$$

where i_D is the domestic deposit rate in home currency,[7] i_{US} is the dollar deposit rate in the U.S., ΔNER is the annual change in the average nominal bilateral exchange rate (with a positive value denoting a depreciation), and π_D is the domestic inflation rate. Some margin for measurement error remains in this variable, since idiosyncratic country risk may skew the spread upward beyond what would otherwise be required to compensate for exchange rate

[6] Banks' lending operations are assumed to be confined to the domestic economy.
[7] The IMF's *International Financial Statistics* from which we take the deposit rates do not detail whether the figures are period averages or year-end.

depreciation vis-á-vis the US-dollar[8]. Third, the effect of a change in the domestic political environment is measured by the levels of the risk rating[9] and not by the variance of country risk. This is done because using the second moments (i.e. volatility) of country (political) risk is arguably counterintuitive in cases where a successful stabilisation policy that helps to gradually reduce macroeconomic (political) variability is being pursued, as has been the case of some of the Andean or Central American economies under examination.

3.2 Sample Properties and Data Sources

The sample comprises data on 14 South and Central American economies[10] for 1992-2001. Outside of this period, data on deposit dollarisation are scant and thus unsuitable for panel estimation. Some countries were omitted from the sample altogether due to lack of data (Belize, Guatemala, Guyana) or because of not allowing dollarised deposits in the first place (Brazil). Some Caribbean economies were left out due to their status as offshore financial centres.

As regards data sources, the IMF's International Financial Statistics (IFS) was used for annual data on foreign liabilities and assets of domestic banks, total onshore deposits (i.e. domestic deposits in home and foreign currency, *DEP*), domestic lending (i.e. banks' claims on the domestic private sector, *CPS*), and deposit interest rates at home and in the US. All variables of assets and liabilities are scaled by GDP in order to eliminate pure size effects. The political risk rating used is a measure contained in the PRS Group's *International Country Risk Guide* (ICRG), an index widely applied in empirical studies. The PRS Group supplies risk estimates based on information collected by its own staff which results in the publication of 22 variables in three subcategories (economic, financial, political) for 140 countries on a monthly basis. The political risk rating is aimed at measuring the probability of adverse domestic political events[11] that would threaten property rights or depositor's access to their funds,

[8] However, correlation analysis between the calculated and the actual real interest rate spreads of those (seven) countries that did publish data on onshore foreign currency deposits rates for at least five consecutive years (i.e. half of the sample period) reveals an average correlation coefficient of +0.55. This suggests that it is a rough but reasonable approximation. The overall correlation coefficient rises to +0.68 if Uruguay is omitted from the sample, the difference perhaps being due to the country's status as a financial centre with the overall lowest foreign currency deposit rates during the sample period.

[9] In alternative regressions (not reported), the variance of the political risk rating (*POLR*) resulted to be insignificant throughout.

[10] Argentina, Bolivia, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Honduras, Mexico, Nicaragua, Paraguay, Peru, Uruguay and Venezuela.

[11] The subcategories of the political risk measure are: government stability, socioeconomic conditions, the investment profile, internal and external conflict, corruption, military and religion in politics, law and order, ethnic tensions, democratic accountability, and the quality of the bureaucracy. We annualized the ICRG's monthly observations by taking the arithmetic mean.

promoting "capital flight" in line with the model specifications. The variable *POLR* has been rebased to indicate increased risk of locations rather than safety by subtracting the original rating score from 100 (the theoretically maximum value). Data on dollarisation of onshore deposits was obtained from previous compilations assembled by other authors from the IFS and various central bank publications.[12] A summary of the definitions and sources of the variables is provided in the Appendix (Table 11).

3.3 Descriptive Statistics

The development of cross-border financial linkages, while generally on the rise, has been quite heterogeneous across the sample countries (Table 1). Mexico's total asset and liability position rose steadily over the period, but other economies such as Ecuador and Venezuela saw a decline in this context. Chile's financial linkages with the exterior levelled off over the period due to a larger domestic deposit base (+ 16 percentage points of GDP) enabling the country to meet rising credit demand. Uruguay represents a special case, as the country serves as a financial hub for part of the region.

Table 1. Foreign liabilities and foreign assets as a percentage of national GDP

	1992			2001		
	FLA	FL	FA	**FLA**	FL	FA
Argentina	**5.82**	4.22	1.60	**8.85**	6.16	2.69
Bolivia	**3.30**	1.83	1.47	**10.95**	1.00	9.95
Chile	**9.09**	7.73	1.37	**8.15**	1.78	6.37
Colombia	**3.76**	2.84	0.92	**2.12**	1.43	0.69
Costa Rica	**2.60**	0.26	2.34	**5.90**	3.65	2.25
Ecuador	**1.00**	0.31	0.69	**0.34**	0.11	0.22
El Salvador	**0.21**	0.06	0.15	**1.31**	0.63	0.68
Honduras	**2.47**	0.33	2.14	**8.63**	0.81	7.82
Mexico	**0.62**	0.07	0.55	**11.58**	4.06	7.52
Nicaragua	**3.91**	1.36	2.55	**8.31**	4.85	3.45
Paraguay	**4.37**	0.68	3.69	**7.40**	0.99	6.41
Peru	**4.01**	1.22	2.79	**4.77**	2.24	2.53
Uruguay	**37.83**	8.58	29.25	**89.73**	43.85	45.88
Venezuela	**2.81**	0.46	2.35	**1.11**	0.33	0.78

Source: International Financial Statistics (IFS)

Deposit dollarisation shares have also varied considerably across the sample of countries (see Charts 1 and 2). We classify countries as highly dollarised if at some point during the sample period the share of dollarised deposits was 50% or higher. This means, for example, that El Salvador is classified as a high dollarisation economy even if dollar deposits were not the

[12] We use dollarisation data compiled separately by Patrick Honohan, Carlos Arteta, and Adam Honig. The primary dataset is that of Honohan on account of its more updated coverage. Sporadic data gaps were filled by resorting to the other two datasets, whose numbers are broadly comparable to those contained in Honohan's set.

norm prior to 2001, while Costa Rica falls into the low dollarisation category in spite of moderate deposit dollarisation (with a share of between 30% and 45% of the total).

Chart 1. Countries with a Low Dollarization of Domestic Deposits

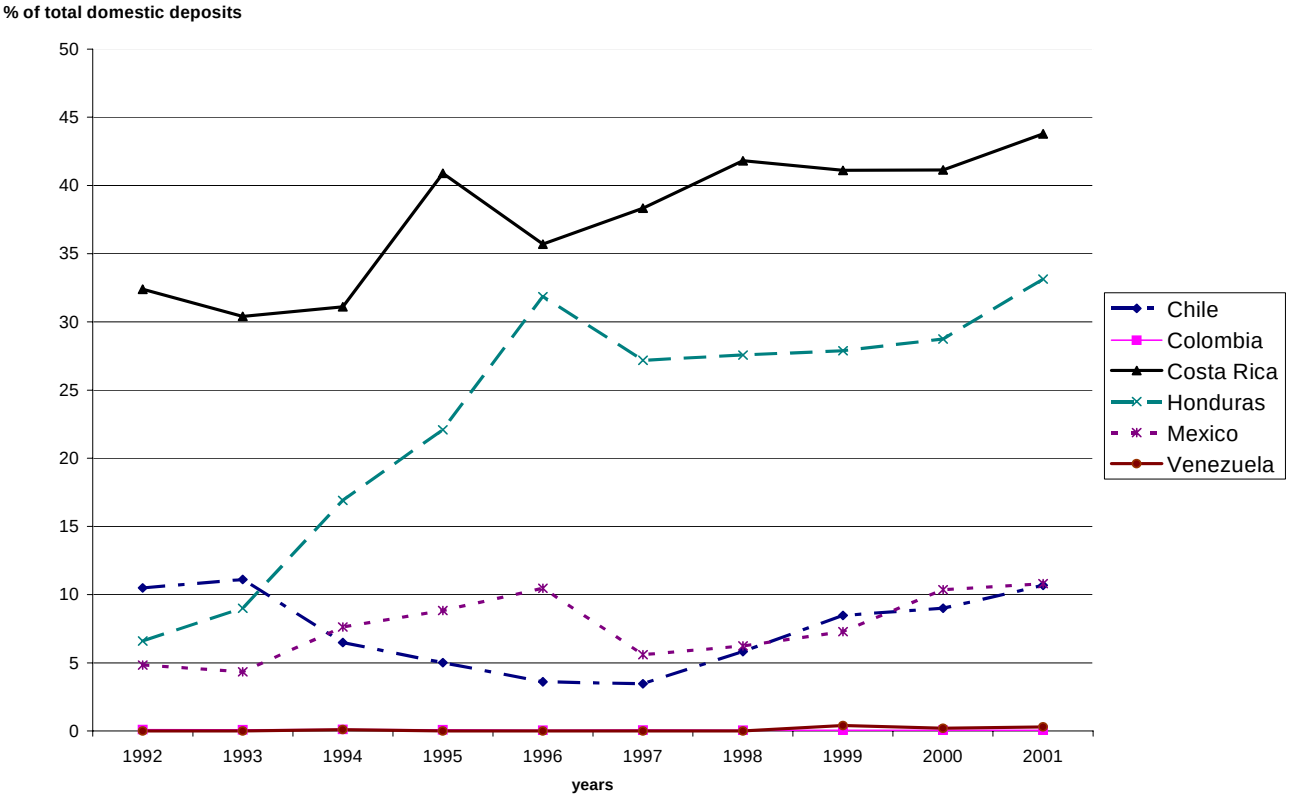
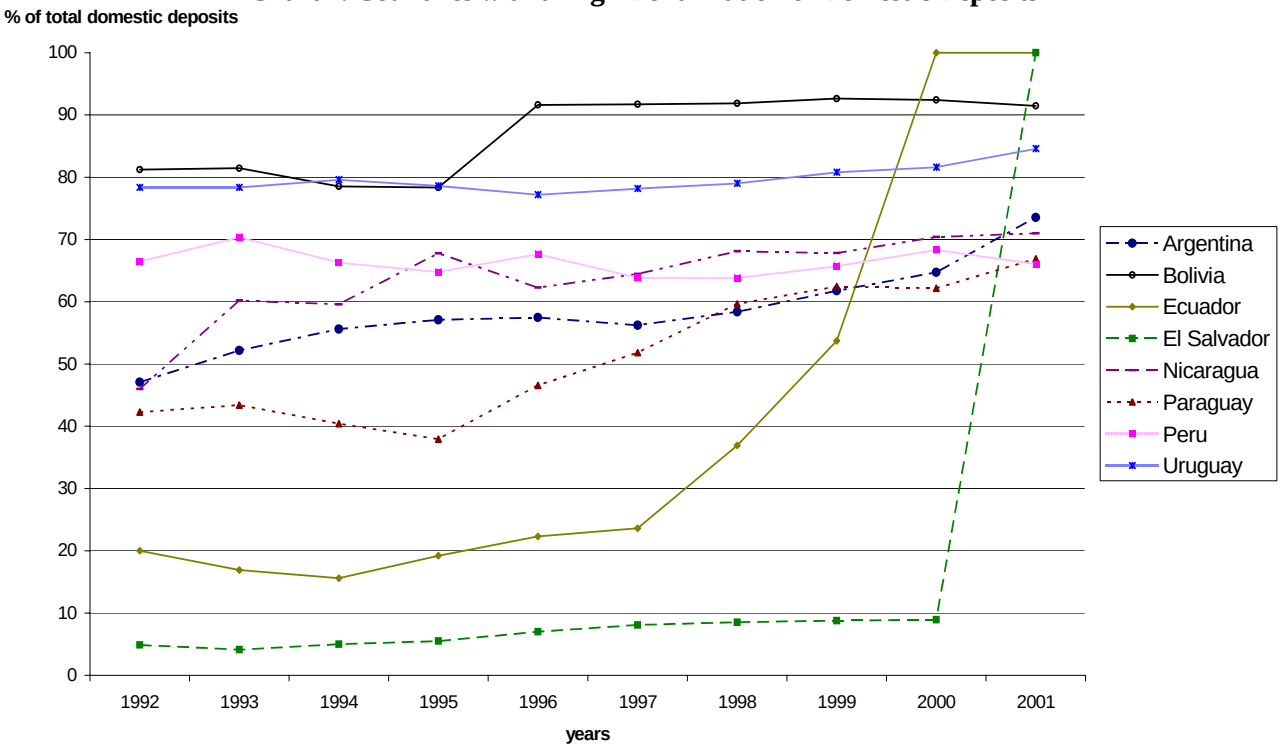


Chart 2. Countries with a High Dollarization of Domestic Deposits



The fact that the share of dollarised onshore deposits trended up over time in many cases (or remained broadly unchanged in others) points to the possible presence of hysteresis. The literature (e.g. Oomes, 2003) has advanced three main arguments for the persistence of high dollarisation ratios even after instances of successful stabilisation of the domestic economy. First, "inflationary memory" may lead agents to question whether the achievements of the stabilisation in terms of lower inflation and more stable exchange rates will indeed be permanent. Only after a certain period of successful politics will they then even consider switching out of foreign currency assets. Second, there may be 'switching' costs or, more generally, 'transaction' costs such as taxes on purchases of foreign currency. Therefore, a certain expected change in inflation or depreciation is required to induce holders of dollar instruments to convert them into local currency ones. Finally, there may be positive externalities associated with having a large network of dollar users in the sense that agents learn how to use foreign-currency instruments efficiently (Uribe, 1997).[13]

It should also be noted that restrictions on the holding of foreign currency deposits domestically were in place in some locations (Colombia, Mexico, and Venezuela; to be captured empirically by the country-specific intercept).

4 Econometric Analysis

The econometric setup consists of pooled OLS estimation with country fixed effects and White heteroskedasticity consistent covariances, including a degrees of freedom correction throughout. Whenever necessary, serial correlation in the error terms is controlled for by including a common AR(1) coefficient, in which case random effect estimation ceases to be an alternative specification.

4.1 Baseline Regressions

The results of the baseline regression in Table 2 are broadly in line with the conceptual framework. The domestic lending variable, *CPS,* has the expected sign and is highly significant, suggesting that there is indeed a positive linkage between domestic lending to the private sector and the foreign positions of the banking sector. The domestic deposit variable,

[13] The emergence of such a network can be considered a financial innovation which provides lower (marginal) user costs through economies of scale, irrespective of rate-of-return considerations. In highly dollarised economies deposits are not readily shifted to the exterior when there is a marked deterioration in the domestic political environment. Generally speaking, for such hysteresis to occur the utility of having ready access to foreign currency assets for 'store-of-value' or transaction purposes despite infringement risks must exceed the utility of storing assets in a safer but rather impractical location elsewhere.

DEP, is insignificant as might have been expected. In spite of the possible measurement error, the term of domestic deposits multiplied by the external deposit spread, *DEP*SPR,* has high statistical significance. This suggests that a sufficiently high external interest rate spread combined with an ample deposit base is associated with a relatively large share of deposits being held domestically rather than abroad. Surprisingly, when being measured in levels, high political risk (*POLR*) cannot be statistically associated with a high volume of offshore positions by banks.

A common AR(1) coefficient corrects for strong serial correlation in the error terms. Without both country fixed effects and correction for serial correlation, the adjusted R-squared falls to below 0.3. This finding remains largely unchanged if Uruguay is omitted, which is a clear outlier in the sample as shown in Table 1 (see alternative regression results in the Appendix, Table 12). The bias that the inclusion of Uruguay otherwise introduces in the sample is reduced such that the AR(1) coefficient halves in value. It should also be noted that the significance of the deposit-spread term drops to the 10%-level.

In order to test whether highly dollarised economies exhibit a differentiated behaviour relative to less dollarised ones, we construct an interaction term, *POLR*DOLLAR*, to test whether dollarisation (as expressed by the share of dollarised deposits in total onshore deposits) can act as a buffer against political risk. This is done in the vein of De Nicoló et al. (2003), who interact inflation with deposit dollarisation and find that "dollarisation has the effect of moderating the adverse effect of inflation on financial depth" (p. 21). As the estimates in column B illustrate, the interaction term carries the opposite sign of *POLR* and narrowly misses statistical significance at the 10%-level. This result already points weakly to the risk-mitigating property of deposit dollarisation, and is accentuated when the baseline regressions are re-estimated using variables' first differences (i.e. changes measured in percent of the previous year's level). This is done to test whether (i) between-group or within-group effects drive the individual results, and (ii) the outcome is robust when taking into account the large autocorrelation of the errors.

To retain the levels information of the time series, a cointegration framework should be employed. However, the traditional panel cointegration framework requires a sufficient number of time periods as the asymptotic theory assumes that N and T tends to infinity (e.g. Phillips and Moon 1999, 2000). If the number of time series observations is small (here: T=10), the cointegration parameters cannot be estimated reliably. Furthermore, the estimated

AR(1) parameter of the error is even larger than unity (see Table 2). This result suggests that there is no long-run relationship between the variables.[14]

Table 2. Latin America; Estimation in *Levels*

	(A)		(B)	
Variable	Coefficient	T-statistic	Coefficient	T-statistic
CPS	0.282	(2.84)	0.281	(2.87)
DEP	-0.049	(-0.44)	-0.049	(-0.45)
*(DEP*SPR)*	-0.001	(-2.82)	-0.001	(-2.96)
POLR	0.026	(0.59)	0.058	(1.20)
*(POLR*DOLLAR)*			-0.079	(-1.54)
AR(1)	1.291	(12.08)	1.291	(12.16)
Adjusted R-squared	0.959		0.959	
Durbin-Watson stat.	1.861		1.860	
Prob(F-statistic)	0.000		0.000	

Dependent variable: *FLA*; number of observations: 126 (all countries included)
Estimates incorporate fixed effects and White heteroskedasticity consistent covariances

As shown in Table 3, estimating first differences instead of levels presents some remarkable differences as regards the impact of political risk. With pure level or between-group effects eliminated, the new risk variable denoting the change in the political risk rating ($\Delta POLR$) is significant at the 10%-level. If Uruguay is omitted, this risk variable reaches the 5%-level (its t-statistic rises to 2.00; see Table 13 in the Appendix). This suggests that it is not the absolute level of political risk but rather an increase (decrease) over time that is associated with the build-up (drawdown) of foreign positions by the banking system.

Table 3. Latin America; Estimation in *First Differences*

	(C)		(D)	
Variable	Coefficient	T-statistic	Coefficient	T-statistic
ΔCPS	0.886	(2.06)	0.809	(1.93)
ΔDEP	0.258	(0.75)	0.275	(0.88)
$\Delta DEP*\Delta SPR$	3.05E-05	(0.13)	4.19E-05	(0.19)
$\Delta POLR$	0.645	(1.81)	1.788	(5.02)
$\Delta POLR*DOLLAR$			-0.037	(-4.09)
AR(1)	-0.224	(-1.99)	-0.309	(-2.53)
Adjusted R-squared	0.218		0.294	
Durbin-Watson stat.	2.120		2.244	
Prob(F-statistic)	0.001		0.000	

Dependent variable: ΔFLA; number of observations: 112 (all countries included)
Estimates incorporate fixed effects and White heteroskedasticity consistent covariances

[14] The small number of time periods does not allow to test the hypothesis that there is no cointegration relationship, as these tests (Pedroni 1999, Kao 1999) assume large N and T.

Adding the risk-dollarisation interaction term in first differences (*ΔPOL*DOLLAR)* causes the political risk variable *ΔPOL* and the interaction term itself to become significant at the 1%-level. Multicollinearity of Δ*POLR* and Δ*POLR*DOLLAR* is not a concern because the T-statistic rises (from 1.81 in (C) to 5.02 in (D)) with the inclusion of this interaction term, instead of decreasing (which would indicate collinearity). The coefficient attached to Δ*POLR* is a linear function of the form: $1.788 - 0.037 * \text{DOLLAR}_{it}$, meaning that the positive coefficient of Δ*POLR* (1.788) is diminished by the factor 0.037 relative to each additional percentage point of deposit dollarisation. The insignificant coefficient of the spread interaction term might reflect the fact that a widening of interest rate spreads could lead to extreme changes when measured in percentages of the initial level. It should also be noted that serial correlation is close to being eliminated. In this instance, even when including fixed effects and a much less dominant AR(1) term, the adjusted R-squared declines to more normal levels (0.22 and 0.29).

These outcomes suggest that significant deposit dollarisation moderates the adverse effect of an increase in political risk on the build-up of foreign positions by the banking system. Without prejudice to other well-known vulnerabilities of dollarised financial systems (e.g. currency mismatches in bank balance sheets), this points to a 'positive' side effect of deposit dollarisation on financial systems under certain political environments. In order to double-check these results, we re-ran regression (D) with the sample split into countries with low and high dollarisation of deposits respectively (according to the classification in Charts 1 and 2), thereby making the additional interaction term obsolete. As reported in Table 14 of the Appendix, the significantly positive relationship between incremental political risk and the build-up of foreign positions by the banking system holds in the six less dollarised economies. In contrast, shifts in political risk do not cause foreign holdings to vary in highly dollarised economies, as was the case in regression (D)[15].

We also tested a number of other exogenous variables not covered by the baseline specification that could potentially have explanatory power: GDP per capita (proxying the state of economic development), different measures of capital account restrictions

[15] In a similar set of regressions the sample was split into years broadly preceding and following the Asian crisis (not reported separately). Again, Δ*POLR* is highly significant in both samples. However, the risk-dollarisation interaction term turns out to be insignificant in the 1992-1997 period, while it is highly significant and negative estimate for 1998-2001 sample.

(representing obstacles to a free choice of location of positions),[16] and the nominal bilateral exchange rate (possibly influencing the value of the holdings). However, none of these additional determinants reached statistical significance.

4.2 Disaggregation into Liabilities and Assets

It is instructive to scrutinise the individual components of the aggregate integration variable. To verify whether the theoretical relationships prescribed by the model in equations (2) and (3) hold, we regress banks' foreign assets (*FA*) and foreign liabilities (*FL*) separately on their respective determinants.

4.2.1 Changes in Foreign Liabilities

First, we examine the determinants of banks' foreign liabilities. The empirical outcome reported in Table 4 substantiates the results found previously for the aggregate measure, with coefficient estimates for *FL* shown both in levels (regressions (E) and (F)) and then in first differences (in (G) and (H)). As it turns out, the insignificant result for the domestic lending variable (*CPS)* in column (E) is caused by the counterintuitive positive association that, when regressed separately, the domestic deposit variable (*DEP*) surprisingly has with foreign liabilities (β=0.124, t-stat.=1.86; not reported separately). When total domestic deposits are omitted, *CPS* becomes significant at the 5%-level, and this remains the case when estimated in first differences (columns (G) and (H)).

We also consider an alternative, narrower measure of domestic banking liabilities, namely longer-term deposits or "quasi money", as defined by the IMF (i.e. the sum of time, savings and foreign currency deposits, excluding demand deposits). Using first differences, this longer-term deposit variable Δ*LTDEP* exhibits a negative sign and is moderately significant (column (H)). This result might reflect the banks' desire to avoid a maturity mismatch between assets and liabilities, using mostly longer-term deposits to lend on to corporate borrowers.

[16] One of these was the widely-used measure AREAER, representing the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions. AREAER classifies all sample countries as "unrestricted" by 1997, with only 4 of 14 country having imposed restrictions until then. Hence, there is no much variation, neither across countries nor years. Nevertheless, we did detect some significance of capital restrictions for the change in foreign liabilities when added to equation (H), with AREAER being moderately significant (t-stat=1.79), but the variable has a counterintuitive positive sign. The measure was insignificant for the change in foreign assets (section 4.2.2, t-stat=0.54; when added to equation (M)) and for the composite outflow variable including informal flows in section 4.3 (equation (T), with t-stat=0.89), which is unsurprising since capital restrictions should not play a role when simultaneously accounting for informal outflows.

Table 4. Latin America; Foreign Liabilities

	(E)		(F)		(G)		(H)		(I)	
Variable	Coeff.	T-stat.	Coeff.	T-stat.	Coeff.	T-stat.	Coeff.	T-stat.	Coeff.	T-stat.
CPS	0.031	(0.66)	0.105	(2.36)						
DEP	0.109	(1.34)								
Δ*CPS*					2.035	(2.15)	3.467	(2.23)		
Δ*INV*									1.400	(2.71)
Δ*LTDEP*							-2.082	(-1.86)	0.364	(0.56)
AR(1)	1.178	(13.70)	1.158	(13.03)	-0.160	(-1.68)	-0.188	(-1.56)	-0.164	(-1.32)
Adjusted R-Squared	0.935		0.931		0.093		0.120		0.058	
Durbin-Watson stat.	2.165		2.175		2.183		2.143		2.181	
Prob(F-statistic)	0.000		0.000		0.052		0.025		0.145	
Dependent Variable	*FL*		*FL*		Δ*FL*		Δ*FL*		Δ*FL*	

Number of observations: 126 (E+F) / 112 (all countries included)

Estimates incorporate fixed effects and White heteroskedasticity consistent covariances

Finally, to control for the possibility that *CPS* is endogenous to banks' foreign liabilities due to scale effects we use gross fixed domestic investment (INV) as an instrument for domestic credit. The proxy turns out to be even more significant than CPS in column (H) with ß=0.099 and t-stat.=3.98. Column (I) shows the results for the preferred equation encompassing changes in domestic demand and long-term deposits, this time using Δ*INV* instead. Again, the instrument is highly significant, although the deposit measure is now insignificant. In sum, we are able to shed light on the validity of this part of the empirical model.

4.2.2 Changes in Foreign Assets

Turning to the determinants of banks' foreign assets, the estimation outcome in Table 5, column (J), shows that all explanatory variables are entirely insignificant when measured in levels and the result displays strong correlation in the residuals despite incorporating an AR(1) correction term.

Sizeably different results emerge if first differences are used. As depicted in column (K), all exogenous variables are correctly signed, if partly insignificant, and the AR(1) coefficient is also rendered insignificant. The coefficient of the deposit-spread interaction term is unexpectedly positive. This is probably due to the influence of *ΔDEP* because when estimating the spread variable *SPR* exclusive of the interactive component in column (L), we observe a negative sign. At any rate, both regressions (K) and (L) are fraught with omitted

variable bias as the adjusted R-squared is very low at 0.04 and the F-statistic denoting the probability of joint variable misspecification far above statistically acceptable levels.

Table 5. Latin America; Foreign Assets

	(J)		(K)		(L)		(M)	
Variable	Coeff.	T-stat.	Coeff.	T-stat.	Coeff.	T-stat.	Coeff.	T-stat.
DEP	-0.045	(-1.33)						
*DEP*SPR*	3.1E-04	(-1.16)						
POL	0.033	(0.71)						
Δ*DEP*			0.137	(0.56)	0.152	(0.60)	0.111	(0.22)
Δ*SPR*					-0.006	(-1.33)		
Δ*DEP*ΔSPR*			4.1E-04	(2.00)			4.3E-04	(2.06)
Δ*POLR*			0.980	(2.42)	0.993	(2.42)	2.557	(5.32)
Δ*POLR*DOLLAR*							-0.050	(-3.72)
AR(1)	1.102	(6.82)	0.011	(0.09)	0.010	(0.09)	-0.097	(-0.80)
Adjusted R-squared	0.940		0.052		0.043		0.148	
Durbin-Watson stat.	1.094		2.047		2.044		2.087	
Prob(F-stat.)	0.000		0.174		0.213		0.014	
Dependent Variable	*FA*		Δ*FA*		Δ*FA*		Δ*FA*	

Number of observations: 126 (J) / 112 (all countries included)

Estimates incorporate fixed effects and White heteroskedasticity consistent covariances

Regarding the unexpected results for *ΔDEP* and *ΔDEP*ΔSPR*, it should be recalled – as already explained in the previous section – that ideally the sum of total onshore *and* offshore deposits should be used as an explanatory variable. Unfortunately, in order to forestall endogeneity bias, which the inclusion of offshore deposits on the right hand side would cause, we are forced to adopt the narrower measure of total onshore deposits. This means that while we are unable to prove the hypothesised effect of the deposit base, we cannot rule out either that the relationship would hold if these variables were defined more properly. Consequently, the results found for *DEP* and *DEP*SPR* should not be over-emphasised.

The highly significant estimation outcome for political risk and the risk-dollarisation interaction term in the last regression (M) reflects the results found for the composite measure of total foreign banking positions. This suggests a more unstable political environment indeed induces capital flight in the form of increased foreign assets. In contrast, a high degree of

deposit dollarisation, as depicted by the risk-dollarisation interaction term, is shown to have a risk-mitigating property[17].

In order to ascertain whether it is indeed a change in political risk – and not other types of country risk – that is associated with movements in foreign balances, we re-estimate regressions (K) and (M), now using the macroeconomic risk measure (*MACROR*), which together with political risk signifies overall country risk, and, separately, a sub-component of political risk, the so-called investment profile, essentially depicting expropriation risk (*EXPROPR*). As columns (N) through (P) in Table 6 illustrate, the measure of macroeconomic risk is highly significant, both in isolation and when estimated jointly with the risk-dollarisation term, supporting the previous empirical findings. By contrast, the expropriation measure is not significant in isolation, and judging by the F-statistics we cannot rule out the possibility that the coefficients are jointly not different from zero. Overall, the power of the three estimations, depicted by adjusted R-squared, is quite weak – in all cases below 0.08 – which is lower than the R-squared=0.15 found in equation (M). Hence, we cannot rule out the possibility that macro collapses by themselves cause the transfer of assets abroad. Nonetheless, macroeconomic risk and headline political risk appear to be strongly correlated, which begs the question whether we should rather look at headline country risk. Using the first differences of ICRG's rebased country risk index (Δ*COUNTRYR*) we find that it is indeed the interplay between macro and political risk that is relevant for changes in foreign assets, see columns (Q) and (R). The variable shows the highest coefficient and significance of all risk measures in (Q), and even the dollarisation interaction term reaches the 1%-level of significance in (R).

We conclude that political risk is able to explain cross-border capital transfers but that the effect is magnified by also accounting for macroeconomic instability. In the following section we will show, however, that it is only political risk that matters when additionally including informal capital movements.

[17] Importantly, when the interaction term ΔPOLR*DOLLAR is included in the final specification, the fit of the estimation improves considerably, evidenced by R-squared almost tripling in value.

Table 6. Latin America; Change in Foreign Assets – Alternative Risk Measures

	(N)		(O)		(P)		(Q)		(R)	
Variable	Coeff.	T-stat.	Coeff.	T-stat.	Coeff.	T-stat.	Coeff.	T-stat.	Coeff.	T-stat.
Δ*DEP*	0.158	(0.61)	0.159	(0.61)	0.145	(0.55)	0.177	(0.68)	0.175	(0.71)
Δ*DEP**Δ*SPR*	3.9E-04	(1.74)	3.7E-04	(1.79)	3.6E-04	(1.96)	3.9E-04	(1.58)	3.6E-04	(1.61)
Δ*MACROR*	0.932	(3.07)	1.427	(3.56)						
Δ*MACROR*DOLLAR*			-0.014	(-2.04)						
Δ*EXPROPR*					0.164	(0.864)				
Δ*COUNTRYR*							1.478	(3.51)	2.791	(6.53)
Δ*COUNTRYR*DOLLAR*									-0.039	(-3.71)
AR(1)	-0.030	(-0.25)	-0.048	(-0.40)	0.039	(0.31)	-0.027	(-0.23)	-0.101	(-0.84)
Adjusted R-squared	0.069		0.079		0.016		0.092		0.151	
Durbin-Watson stat.	1.992		1.968		2.055		2.011		2.002	
Prob(F-stat.)	0.117		0.098		0.357		0.065		0.012	
Dependent Variable	Δ*FA*		Δ*FA*		Δ*FA*		Δ*FA*		Δ*FA*	

Number of observations: 112 (all countries)

Estimates incorporate fixed effects and White heteroskedasticity consistent covariances

4.3 Accounting for Informal Capital Flows

The preceding estimations have considered official capital positions only. In reality, a significant part of cross-border capital flows is carried out through informal channels. It is also evident that domestic investors when faced with expropriation of deposits at local banks are likely to choose informal channels for transferring their funds to offshore locations. Such – possibly unlawful – capital flight adds to official private sector capital outflows already accounted for in the change in banks' foreign assets. Unsurprisingly, it is difficult to measure such covert transactions not registered in official statistics. Thus, researchers have resorted to including the position "errors and omissions" (E&O) of the balance of payments to proxy informal capital flows. Cuddington (1986) aims to measure capital flight, or "hot money", by adding the errors and omissions to selected short-term capital outflows – a composite measure also considered by Cumby and Levich (1987), Antzoulatos and Sampaniotis (2001) as well as Schneider (2003).

By definition, the errors and omissions partly depict the difference between changes in a country's actual reserves and those officially registered in the external statistics (the "omissions" part). Apart from the influence of statistical errors and wilful misinvoicing of trade flows, which may both be substantial in some cases, this difference in reserve changes can be thought to represent informal cross-border flows. Referring to Table 7, we find that for most countries the sum of official and informal outflows has a similar magnitude as official outflows only (Argentina, Chile, Colombia, Costa Rica, Honduras, Paraguay, Peru, Uruguay);

in some cases there were noticeable, yet economically plausible differences in some years which are to be attributed to capital flight (Bolivia, Ecuador, Mexico and Nicaragua in the first half of the past decade, and Ecuador and Venezuela more recently).

Table 7. Deviations of official *and* informal flows from changes in official foreign assets only (expressed in percentage points)

	Arithmetric average	Largest deviation,*	occurred during year
Argentina	14.5	37.8	1995
Bolivia	102.6	395.1	1994
Chile	6.7	74.4	1994
Colombia	12.2	-84.0	1994
Costa Rica	-76.2	-158.3	1994
Ecuador	256.0	1204.0	2001
El Salvador	**956.0**	**4782.5**	1998
Honduras	-54.7	-137.6	1994
Mexico	50.8	267.8	1995
Nicaragua	-99.2	-302.8	1996
Paraguay	6.9	-118.1	1994
Peru	-39.2	-123.0	1993
Uruguay	-6.5	-13.9	1994
Venezuela	118.6	294.3	2001

* a positive number denotes additional informal flows adding to official flows

Nevertheless, we posit that in one sample country, El Salvador, the statistical errors most likely dominate the picture. In spite of El Salvador's successful stabilization policy, the entries for errors and omissions in the BoP dwarf the official change in foreign assets in the latter part of the sample period, which in all likelihood reflects systematic measurement errors. As El Salvador thus constitutes a statistical outlier, we exclude the country from the following set of estimations[18].

Notwithstanding obvious measurement problems we decided to use this measure to depict unregistered capital movements. Furthermore, it is methodologically difficult to measure stocks of unofficial capital invested abroad, as it is not clear whether or not flight capital depicted in the E&O over the years has returned to the source country in the interim. We therefore restrict our analysis to adding the E&O to the respective changes in foreign assets (ΔFA) and re-estimate equations (F) and (H), now using the composite measure. Table 8

[18] The justification for treating El Salvador as an outliner in the sample is also based on the fact that all explanatory variables turned out to be insignificant when El Salvador was included in the estimations, contrasting the significant results for risk and risk-dollarisation terms when omitting the country (in Table 8).

reports the estimations outcomes for the composite capital flow measure ("capital flight", termed *CF*).

Table 8. Latin America; Change in Foreign Assets plus Unofficial Outflows

	(S)		(T)		(U)	
Variable	Coeff.	T-stat.	Coeff.	T-stat.	Coeff.	T-stat.
Δ*DEP*	0.269	(0.41)	0.269	(0.41)	0.274	(0.42)
Δ*DEP**Δ*SPR*	0.002	(0.84)	0.002	(0.84)	0.002	(0.81)
Δ*POLR*	1.985	(1.79)	5.700	(3.37)		
Δ*POLR***DOLLAR*			-0.129	(-2.19)		
Δ*MACROR*					-1.681	(-0.82)
AR(1)	-0.264	(-1.32)	-0.110	(-0.83)	-0.148	(-1.05)
Adjusted R-squared	0.313		0.357		0.314	
Durbin-Watson stat.	1.636		1.647		1.721	
Prob(F-stat.)	0.000		0.000		0.000	
Dependent Variable	*CF*		*CF*		*CF*	

Number of observations: 104 (all countries except El Salvador)

Estimates incorporate fixed effects and White heteroskedasticity consistent covariances

As estimations (S) and (T) illustrate, political risk is still a driving force even for the composite measure, with the point estimate doubling in magnitude, albeit now only at the 10%-level of significance. Adjusted R-squared jumps from 0.05 to above 0.30. A similar picture emerges for the estimation with the risk-dollarisation term. Again both political risk and the interaction term have the right signs and are significant at least at the 5%-level. We also try the change in macroeconomic risk (Δ*MACROR*), which is the complement to political risk in overall country risk. Interestingly, while the point estimate is almost as high as for Δ*POLR*, macroeconomic risk comes out insignificant in equation (U) and carries the wrong sign.

These results have us conclude that it is indeed exclusively political risk and not genuine economic risk that drives capital outflows, both official and unofficial. We interpret the results as follows: As long as the political environment is sufficiently stable capital leaves the country in reaction to an economic downturn through the banking channel, whereas informal channels outside the financial system are utilised for capital transfers whenever political risk increases.

4.4 Are Southeast Asian Economies Different?

Aiming to cross-check the empirical results, we also run a different set of regressions for nine Southeast Asian economies[19]. Unfortunately, two countries known for their high degree of dollarisation (Cambodia and Lao P.D.R.) had to be excluded from the sample due to lack of available data. Hong Kong was omitted due to its role as a global financial centre, which would have created substantial bias in the sample (strong residual serial correlation even when incorporating an AR(1) term).

The levels estimation reported Table 9 partly corroborates the results of the Latin American sample as lending to the private sector is significantly positive (albeit only at or near the 5%-level) while the deposit variable remains non-significant. The deposit-spread interaction term and the political risk variable are not found to have explanatory power. The estimate for the separately included risk-dollarisation variable (column W) should thus be interpreted with caution, notwithstanding its level of significance. We also conduct a first differences estimation, which in the Latin American sample brought to light that increasing political risk is associated with higher foreign positions of the banking sector unless the economy is highly dollarised. However, as the results in Table 10 illustrate, this relationship does not appear in the sample of Asian economies. These results might be influenced by the consistently low levels of political risk observed in most of the Asian economies under examination over the sample period[20].

Table 9. Southeast Asia; Estimation in *Levels*

	(V)		(W)	
Variable	Coefficient	T-statistic	Coefficient	T-Statistic
CPS	0.198	(1.98)	0.193	(1.89)
DEP	-0.084	(-0.80)	-0.112	(-1.14)
*DEP*SPR*	-0.003	(-0.37)	2.79E-04	(-0.09)
POLR	0.012	(0.08)	-0.083	(-0.52)
*POLR*DOLLAR*			0.004	(2.24)
AR(1)	0.523	(5.24)	0.519	(4.85)
Adjusted R-squared	0.811		0.815	
Durbin-Watson stat.	1.935		1.976	
Prob(F-statistic)	0.000		0.000	

Dependent variable: *FLA*; number of observations: 81

Estimates incorporate fixed effects and White heteroskedasticity consistent covariances

[19] Bangladesh, China (Mainland), Indonesia, Republic of Korea, Malaysia, Mongolia, the Philippines, Thailand, Vietnam.

[20] Note that the equations are clearly misspecified since the hypothesis of an F-test that the regressors are jointly zero cannot be rejected at conventional statistical levels. This should be kept in mind when evaluating the counterintuitive signs and significance levels of the credit and deposit variables.

Table 10. Southeast Asia; Estimation in *First Differences*

	(X)		(Y)	
Variable	Coefficient	T-statistic	Coefficient	T-statistic
Δ*CPS*	-0.075	(-1.05)	-0.085	(-1.22)
Δ*DEP*	1.051	(3.50)	1.130	(3.68)
Δ*DEP**Δ*SPR*	-0.007	(-2.79)	-0.008	(-2.97)
Δ*POLR*	0.173	(0.34)	1.116	(1.23)
Δ*POLR***DOLLAR*			-0.052	(-1.33)
AR(1)	0.271	(2.73)	0.280	(2.88)
Adjusted R-squared	0.109		0.110	
Durbin-Watson stat.	1.904		1.863	
Prob(F-statistic)	0.092		0.099	

Dependent variable: Δ*FLA*; number of observations: 72

Estimates incorporate fixed effects and White heteroskedasticity consistent covariances

5 Conclusion

This paper has explored the mechanisms driving financial linkages of Latin American banking sectors with the exterior and some specific factors which may affect them. It has combined an empirical testing of the determinants of the foreign positions of Latin American banking sectors - the sum of banks' foreign liabilities and foreign assets - with the incidence that dollarisation and political risk may have on these positions.

First, we have empirically explored the determinants of the composite measure of foreign banking assets and liabilities. Second, we have explored whether highly dollarised economies exhibit a differentiated behaviour in terms of the adverse effects of increased political instability on banking systems. Third, after testing the determinants of the composite foreign position of banks, we have also examined the determinants of the foreign assets and liabilities separately in order to disentangle these differential effects and verify the individual hypotheses.

The empirical findings broadly establish that the sum of banks' foreign assets and liabilities is a function of risk-return considerations and excess domestic credit demand. An increase in country risk (both macroeconomic and political uncertainty) is shown to be associated with a build-up of foreign positions by the banking sector, but this adverse effect on the banking system is mitigated in economies with a high share of dollarised deposits. This finding is robust to estimating the determinants of foreign assets and liabilities separately, with risk-induced outflows (in the form of higher foreign assets) being moderated by a high deposit dollarisation. These results hold even when augmenting the capital outflow measure by

including informal outflows which we proxy by the position "errors and omissions" of the balance of payments. Interestingly, for this combined measure, which can be termed overall capital flight, only the change in headline political risk matters whereas macroeconomic risk does not. This result suggests that the official banking channel is used for transfers to offshore locations when overall country risk rises, whereas informal channels outside the financial system are resorted to specifically in cases of increased political risk.

Our results contribute to the discussion about the effects of deposit dollarisation on financial systems. There is widespread consensus amongst academics and policymakers that financially dollarised systems are particularly vulnerable, primarily due to the currency mismatches in banks' balance sheets and the associated challenges for supervisory and regulatory authorities. However, the findings of this and other studies before it (e.g. De Nicolo et al, 2003) suggest that, under certain environments, a high degree of deposit dollarisation may have positive side effects (in this case, a more stable bank deposit base amid political instability). This suggests caution with the implementation of active de-dollarisation strategies in highly dollarised economies where political instability remains an issue.

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Appendix

Table 11. Definitions and Sources of Variables

Variable name empirical model	Definition	Source
FL	Foreign liabilities of deposit money banks and other banking institutions, scaled by GDP	International Financial Statistics (IFS) published by the International Monetary Fund
FA	Foreign assets of deposit money banks and other banking institutions, scaled by GDP	IFS
FLA	Sum of foreign assets and foreign liabilities (as defined above)	IFS
CPS	Claims on private sector of deposit money banks and other banking institutions, scaled by GDP	IFS
DEP	Domestic deposits (checking, time, savings and foreign currency deposits) of deposit money banks and other banking institutions, scaled by GDP	IFS
SPR	Spread between deposits rates on domestic local currency deposits and US dollar deposits in the U.S., corrected for the annual change in the nominal bilateral exchange rate (same year) and domestic inflation	IFS
POLR	Political risk rating assessing government stability, socioeconomic conditions, the investment profile, internal/external conflict, corruption, military/religion in politics, law & order, ethnic tensions, democratic accountability, and the quality of the bureaucracy; rebased to: *POLR*=100–original score	International Country Risk Guide (ICRG) of the Political Risk Services Group (PRS)
EXPROPR	Subcategory *investment profile* in POLR	PRS-ICRG
MACROR	Macroeconomic risk rating accounting for financial and economic risk categories	PRS-ICRG
COUNTRYR	Sum of *POLR* and *MACROR*	PRS-ICRG
DOLLAR	Share of foreign currency deposits in total domestic deposits	Databases by P. Honohan, as well as C. Arteta, and A. Honig
LTDEP	Domestic time, savings and foreign currency deposits (i.e. excluding checking deposits ➔ "quasi money")	IFS, as reported by the World Bank's World Development Indicators
INV	Gross fixed investment, scaled by GDP	IFS
CF	"Capital flight", ΔFA plus "errors and omissions" from the balance of payments	IFS

Table 12. Latin America without Uruguay; Estimation in *Levels*

Variable	Coefficient	T-statistic	Coefficient	T-statistic
CPS	0.230	(2.85)	0.226	(2.71)
DEP	-0.068	(-1.06)	-0.068	(-1.07)
*DEP*SPR*	-0.001	(-1.59)	-0.001	(-1.61)
POLR	0.024	(0.46)	0.043	(0.82)
*POLR*DOLLAR*			-0.036	(-1.09)
AR(1)	0.640	(5.39)	0.655	(5.56)
Adjusted R-squared	0.837		0.836	
Durbin-Watson stat.	2.030		2.045	
Prob(F-statistic)	0.000		0.000	

Dependent variable: *FLA*; number of observations: 104

Estimates incorporate fixed effects and White heteroskedasticity consistent covariances

Table 13. Latin America without Uruguay; Estimation in *First Differences*

Variable	Coefficient	T-statistic	Coefficient	T-statistic
Δ*CPS*	0.845	(1.89)	0.773	(1.79)
Δ*DEP*	0.259	(0.67)	0.308	(0.86)
Δ*DEP*ΔSPR*	5.39-05	(0.22)	4.16E-05	(0.19)
Δ*POLR*	0.721	(2.00)	1.827	(5.05)
Δ*POLR*DOLLAR*			-3.877	(-3,80)
AR(1)	-0.234	(-2.07)	-0.315	(-2.53)
Adjusted R-squared	0.217		0.289	
Durbin-Watson stat.	2.131		2.249	
Prob(F-statistic)	0.001		0.000	

Dependent variable: Δ*FLA*; number of observations: 104

Estimates incorporate fixed effects and White heteroskedasticity consistent covariances

Table 14. Latin America; Estimation in *First Differences*
(Sample Split According to Degree of Dollarization)

	(Dollarisation *Low*)		(Dollarisation *High*)	
Variable	Coefficient	T-statistic	Coefficient	T-statistic
Δ*CPS*	0.068	(0.43)	1.359	(2.17)
Δ*DEP*	0.891	(2.24)	0.276	(-0.24)
Δ*DEP*ΔSPR*	0.002	(1.97)	4.16E-05	(-0.42)
Δ*POLR*	1.357	(4.59)	1.792	(-0.12)
AR(1)	-0.303	(-2.15)	-0.309	(-0.98)
Adjusted R-squared	0.504		0.072	
Durbin-Watson stat.	2.544		1.999	
Prob(F-statistic)	0.000		0.193	

Dependent variable: Δ*FLA*; number of observations: 48 (E), 64 (F)

Estimates incorporate fixed effects and White heteroskedasticity consistent covariances

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