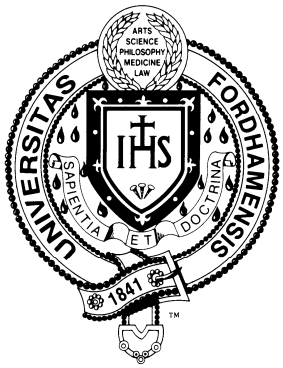

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Deposit Dollarization and Its Impact on Financial Deepening in the Developing World[☆]

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Abstract

One of the main reasons for dollarization is the erosion of money's function as a store of value as the Currency Substitution view suggests. It has not been uncommon for countries with high inflationary processes to have high dollarization ratios and banking system that faces important challenges and risks that significantly affect their ability to provide capital to the overall economy (financial intermediation). In these economies, dollarization played a dual role: in one hand, the role of a hedging instrument protecting the value of money and, in the other hand, contributing to generate the so-called currency mismatch and default risks. This paper investigates the role of dollarization on the development of financial intermediation in developing economies. Our empirical findings suggest that dollarization has a negative impact on financial deepening, except on high-inflation economies.

Keywords: Dollarization, Financial Development, Financial Deepening
JEL: F31, G21, 024

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1. Introduction

It is recognized that one of the main reasons for the appearance of dollarization is the erosion of money's function as a store of value (the Currency Substitution hypothesis),[1] i.e., it has not been uncommon for countries with high inflation rates to also have high dollarization ratios. Dollarization gives consumers a shelter from domestic inflation and enables savers to retain the value of their savings. In this sense, dollarization does not only serve as a hedging instrument but also provides an incentive for savings which are very much needed in developing financial systems. As Feige (2003) points out, by offering an alternative investment mechanism, one also helps to stop capital flight from these economies.

Following the Currency Substitution hypothesis, it is expected that the dollarization ratios of an economy should decrease with the decrease of the inflationary processes of the economies. However, in many developing countries this is not the case, i.e. even though inflation has been effectively controlled, dollarization has not declined significantly (at least not as much as it is expected by the Currency Substitution hypothesis).

Recent literature has tried to explain the persistent dollarization of financial assets following price level stabilization. There is more than one accepted explanation to the phenomenon. One of these explanations is provided by the Minimum Variance Portfolio (MVP) hypothesis set forth by Ize and Levy-Yeyati (2003) and Levy-Yeyati (2006). Another view examines the quality of the institutions as the catalyst for dollarization Levy-Yeyati (2006). This last approach is known as the Institutional view and suggests that government's credibility in fighting inflation or the country's institutional quality determines dollarization ratios. As argued by Calvo and Guidotti (1990), governments may not be able to persuade debt holders that it will not inflate away the debt leading to persistent dollarization in the economy.

Besides cultural and institutional variables, macroeconomic stability, especially low inflation rate, is closely linked with strengthening of financial systems. In general, in an inflationary environment banks lend and allocate less capital, stock markets become smaller and less liquid and, savers save less preferring physical assets than financial ones. There is a large literature that shows the adverse effects of inflation on financial deepening. For example,

[1]For more on Currency Substitution hypothesis, see the surveys by Calvo and Vegh (1997), Savastano (1996) and by Giovannini and Turtelboom (1994).

Moore (1986) and Boyd et al. (2001) show that high inflation has a negative impact on financial deepening and according to Boyd et al. (2001), financial depth[2] decreases by half a percentage point for every percentage point rise in the medium-term inflation rate. Macroeconomic uncertainty, financial instability and weak institutions, which are usually commonplace in economies that suffer from high inflation rates, also contribute to the shallowness of financial systems as they raise banks' screening and monitoring costs, make the estimation of the discount rates used for project evaluation difficult (if not impossible) limiting financing of good investment projects not just risky or non profitable ones.

In economies where inflation is controlled and dollarization ratios stay at high levels, dollarization could play a not necessarily good role: as dollarization increases, the more vulnerable a country's banking system becomes to sudden exchange rate movements. This is explained by considering two types of risks that any banking system faces: Banks' currency mismatch and loan default risks. The former occurs when banks receive deposits in foreign currency and lend in local currency. In this case, if there is a sudden drop in the value of the local currency, banks' liabilities increase in local currency terms, while their assets remain the same. In such cases, banks might need extra local currency in their reserves to cover their liabilities. The latter type of risk, i.e. the default risk, appears when banks receive foreign currency deposits and lend in foreign currency to offset the possibility of the first type risk (natural hedge). In this case if a sudden devaluation (or depreciation) occurs, banks are not faced with a mismatch on their balance sheets. However, the sudden devaluation (or depreciation) will have a direct impact on debtors' ability to repay their loans, i.e. debtors face -directly- the currency risk increasing the banks' clients' default risk.In a recent paper Kutan et al. (2010) provide supporting evidence to this effect and show that deposit dollarization has a negative and persistent impact on bank profitability in dollarized economies.

Even though there have been studies done on the effects of full dollarization on real economic variables such as growth and employment[3] there has

[2]usually defined as ratio of a broad measure of money stock (M2 or M3 mostly) to the level of nominal GDP

[3]Dornbusch (2001) shows that full dollarization positively affects growth by resulting in lower interest rates, higher investment and faster growth. Rose (2000) emphasizes the effect of dollarization on economic growth through increased trade due to the use of a

been limited literature on the effects of partial dollarization on the development of financial systems. De Nicolo et al. (2005) are the first to empirically assess the effect of dollarization of bank deposits on the financial deepening of a country.[4] Their findings suggest that mainly for higher inflation economies, dollarization strengthens the financial system through the moderating effect of dollarization on the adverse effects of inflation on monetary depth and that "*...dollarization may have little impact on monetary depth where risk factors summarized by inflation are low...*" (De Nicolo et al, pp 1712). Furthermore, they recognize that the more the dollarized the system, the riskier it is.

We extend their work using a more comprehensive dataset with country specific information, for an extended period of time and introducing the use of two new regressors to control for creditor rights and consumer information[5] that has been used recently by Galindo and Micco (2005), Djankov et al. (2005) and Dehesa et al. (2007).[6] In order to make our results comparable to the ones of De Nicolo et al. (2005), we follow their methodology and also use the same institutional, regulatory and macroeconomic variables.[7]

Using a sample of 44 developing countries with high dollar denominated deposits and different levels of inflation, we study the effect of deposit dollarization (measured as the ratio dollar deposits to M2 money base) on financial deepening of these countries (measured as the ratio of domestic credit extended by the banking system to the private sector to the GDP). De Nicolo et al. (2005) found that dollarization exerts little influence in the financial deepening once inflation has been controlled, however, our findings suggest that deposit dollarization consistently and significantly exerts a negative impact on financial deepening in the countries under study, even in countries

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common currency.

[4]De Nicolo et al. (2005) also point out the lack of a theoretical framework or empirical literature on this issue

[5]This information comes from a new World Bank dataset of creditor rights and a consumer information index.

[6]These authors showed in cross country studies that financial deepening and development can be explained to a great extent by the protection of creditors.

[7]The set of regressors used by De Nicolo et al. (2005) come from a governance indicators index compiled by Kaufmann et al. (2003) in a World Bank policy paper.This is a dataset of governance indicators that includes calculated indexes of voice and accountability, political stability, government effectiveness, political voice, regulatory quality, rule of law and control of corruption which can be used as a good set of different proxy measures of institutional and regulatory strength in the countries they cover.

with moderate inflationary processes. In hand with the results of De Nicolo et al. (2005), our findings also support that dollarization has a moderating effect on the adverse effects of inflation on financial depth in high inflation economies.

We performed different robustness checks to verify whether our results are consistent. We analyze the results by regions (Asia, Transition Economies and Latin America).[8] and introduce the use of a different coefficient of the Minimum Variance Portfolio as suggested by Neanidis and Savva (2009). The advantage of this coefficient is that it is computed using the nominal inflation rate (as opposed to the real effective inflation rate) that is available for more countries, i.e. using this coefficient increases considerably our sample size. The results of our robustness checks verify that our results are consistent and that indeed deposit dollarization has a negative impact on financial deepening and that moderates the effects of inflation on financial deepening.

The plan of the paper is as follows: In the following section we describe the methodology followed in the paper. In Section 3 we present and describe the data used; Section 4 shows the results of our paper and Section 5 concludes. Additional information and tables are presented in the appendix.

2. Methodology

In this section we present the methodology used in this paper. Driven by our results we divide the empirical section of the paper in two parts. Our goal in the first part is to determine what is the role of dollarization on financial deepening. In summary, the results from this part show that in general dollarization has a negative influence on financial depth of an economy independently of the inflationary situation of the country. In order to be sure about this result, we develop the second part following De Nicolo et al. (2005) with the main goal of performing a robustness check on our previous findings.

Financial deepening is usually measured as the ratio of either M2 or M3 to the level of nominal GDP (World Bank (1998), King and Levine (1993)). However, the ratio of M1 to GDP or bank deposit liabilities plus currency to GDP have also been used. Another proxy for measuring the level of financial deepening is the development of credit markets. This proxy was used in

[8]We were not able to consider Africa due to the small number of countries in our dataset.

recent literature by De Nicolo et al. (2005) and Dehesa et al. (2007) and it is measured by taking the ratio of domestic credit to the nominal GDP. In this paper we follow these authors and employ this ratio as the main indicator of financial deepening.

In the first part of the analysis we follow a similar methodology to the one used by Dehesa et al. (2007) in determining the effect of dollarization on the development of the financial sector. According to these authors financial deepening can be explained by a set of institutional and regulatory variables in the following way:

$$\frac{CREDIT_{it}}{GDP_{it}} = \alpha + \beta_1 CRI_{it} + \beta_2 PB_{it} + \beta_3 INST_{it} + \beta_4 logCGDP_{it} + \beta_5 DDOLL_{it} + \beta_6 D_{it} * DDOLL_{it} + \beta_7 D_{it} + \varepsilon_{it} \quad (1)$$

where $CREDIT_{it}$ is the domestic credit as reported by the banking survey of the IMF IFS Database for country i in year t, GDP_{it} represents the nominal GDP in country i in year t; CRI is the creditor rights index as reported by the World Bank and which ranges from 0 (low protection) to 4 (high protection). This index (CRI) shows the relative easiness of seizing collateral by creditor if the debt obligation is not fulfilled.[9] The variable PB equals 1 if a private credit bureau operates in the country, 0 otherwise. A private bureau is defined as a private commercial firm or non profit organization that maintains a database on the standing of borrowers in the financial system, and its primary role is to facilitate exchange of information amongst banks and

[9]Simeon Djankov and Shleifer (2007) describe their rubric as follows:

> Countries receive a score of one when each of the following rights of secured lenders are defined in laws and regulations: First, there are restrictions, such as creditor consent or minimum dividends, for a debtor to file for reorganization. Second, secured creditors are able to seize their collateral after the reorganization petition is approved, i.e. there is no "automatic stay" or "asset freeze." Third, secured creditors are paid first out of the proceeds of liquidating a bankrupt firm, as opposed to other creditors such as government or workers. Finally, if management does not retain administration of its property pending the resolution of the reorganization. The index ranges from 0 (weak creditor rights) to 4 (strong creditor rights) and is constructed as at January for every year.

financial institutions.[10] The variable $INST$ is an equally-weighted average of the six institutional quality variables compiled by Kaufmann et al. (2009): Government Efficiency, Political Stability, Regulatory Quality, Rule of Law, Voice, and Corruption. The six governance indicators are measured in units ranging from about -2.5 to 2.5, with higher values corresponding to better governance outcomes. Finally, $logCGDP_{it}$ is the logarithm of per capita income in country i in year t; $DDOLL_{it}$ is the ratio of the dollar deposits in country i in year t to the overall deposits in the banking system. D_{it} is a dummy variable that takes the value of 1 if the inflation rate in country i in year t is over 20% and 0 otherwise and, ε is the error term. The econometric technique used in this first part is the OLS.

In the second part of our analysis, we follow the methodology of De Nicolo et al. (2005) to check the robustness of our findings from the above estimation. Equation (2) present their main equation:

$$\frac{CREDIT_{it}}{GDP_{it}} = \alpha + \beta_1 DDOLL_{it} + \beta_2 DDOLL_{it} * INF_{it} + \beta_3 INF_{it} + \beta_4 logCGDP_{it} + \varepsilon_{it} \tag{2}$$

where $CREDIT_{it}$ is the domestic credit for country i in year t, GDP_{it} represents the nominal GDP in country i in year t, INF is the natural logarithm of the inflation and $CGDP$ is the logarithm of per capita income. As mentioned by De Nicolo et al. (2005), this specification has potential endogeneity problems as some factors influencing financial deepening can also be influencing deposit dollarization. That is why to correctly estimate Equation (2), we use an instrumental variable method (the 2SLS) and use as instruments macroeconomic, institutional and regulatory variables that cause deposit dollarization and that are uncorrelated with the errors. In this paper we use the same set of instrumental variables as in De Nicolo et al. (2005), including $INST$, that stands for institutional quality, MVP the Minimum Variance Portfolio coefficient, which has been shown in literature to play a significant

[10] PCB which equals 1 if a public credit registry operates in the country, 0 otherwise. A public registry is defined as a database owned by public authorities (usually the Central Bank or Banking Supervisory Authority), that collects information on the standing of borrowers in the financial system and makes it available to financial institutions. However, Our initial estimations show that PB_{it} is a better regressor in the model in terms of explanatory power, leading to more consistent results with a higher R squared.

role in determination of financial dollarization;[11] $RESTRIC$ which is an index of restrictions on the holdings of foreign currency deposits and $logCGDP$ which is the natural log of the real GDP per capita. We refer the readers to see Table 4 in the appendix for a description of the variables and the way they are calculated.

The main drawback of using the MVP coefficient as estimated by De Nicolo et al. (2005) is that it considerably reduces the number of observations in our sample. This is due to the fact that in order to compute the MVP we need to use the real effective exchange rate, which may not be available from the IMF IFS database for all of the countries in our sample.

To overcome this problem, we use a new specification of our instrumental variable MVP to estimate Equation (2). We follow the recent work of Neanidis and Savva (2009) who estimate the MVP as the ratio of the conditional variance of inflation to the conditional covariance between inflation and depreciation of the nominal exchange rate. We call this instrument MVP2.[12] This variable enables us to increase our data size significantly (from 23 countries and only 105 observations in Table 8 to 40 countries and to 170 observations as reported in Table 12).

Finally, it is important to note that all our analysis is done at the aggregate level (considering all the countries in our sample) and also at the regional level (Asia, Latin America and Transition Economies). Even though our dataset included 10 African and Middle Eastern countries, we could not perform regional estimations for these groups of countries due to the low number of observations available.

3. Data

The panel dataset used in the empirical estimation covers twelve years (1990-2002) and 56 countries. However, a full dataset is only available for a six year period between 1996 and 2002 that corresponds to 44 countries when we use DDOLL as our dollarization measure. The credit-to-GDP ratios are calculated using the domestic credit and nominal GDP figures reported

[11] See Levy-Yeyati (2006) and Ize and Levy-Yeyati (2003) for an explanation of how MVP plays an important role in financial dollarization.

[12] To compute this variable we follow the methodology and econometric techniques employed by these authors. For a detailed procedure read Neanidis et.al. pp 1862.

by the IMF in its IFS database. Inflation data is also obtained from the IMF-IFS and is calculated as the change in CPI.

In measuring dollarization ratios we use two different estimations, $DDOLL$ which is the ratio of foreign currency deposits to the overall level of deposits in the banking system and $FXDEP$ which measures the ratio of foreign currency deposits in the banking system to the M2 money supply as reported by the IMF IFS excluding the national definitions. We use $FXDEP$ as an additional robustness check.Results are available upon request. The amount of foreign exchange deposits in the banking system is obtained from Central Bank bulletins. For countries and for years for which the data is not available from the CB bulletins, the foreign currency deposit database compiled by Levy-Yeyati (2006) is used.

Regarding our instrumental variables used, two of them, Creditor Rights Index (CRI) and Private Credit Bureau Availability Dummy (PB) are obtained from Simeon Djankov and Shleifer (2007) and available by the authors on World Bank's Doing Business website. The other variable, $INST$ is obtained from Kaufmann et al. (2009). A complete list of data definitions and sources can be found in Table 4 in the appendix; descriptive statistics of the sample can be found in table 1.

4. Estimation Results

Results of our estimations for our first model (Eq. 1) are listed in Table 2. In all the cases, CRI, PB and INST have a positive and significant effect on financial deepening. Consistently, the influence of PB is the largest one, followed by INST. This points out to the importance of private credit bureaus and of strong institutions in the development of financial systems. The existence of a private credit bureau in the country along with strong institutional quality is highly correlated with a more established credit market. In general, our finding reaffirms those of Dehesa et al. (2007). Finally, the per capita income (CGDP), which can be thought of an economic development proxy, has almost no effect once we control for the other variables.

Looking at the last column of Table 2, we can observe that the effect of deposit dollarization (DDOLL) is statistically significative and negative (-0.514). This result partially contradicts the conclusions of De Nicolo et al. (2005) who found that dollarization exerts little influence in financial deepening. However, our results are consistent with the previous authors in the

Table 1: Descriptive Statistics For Variables

All Countries - (44 Ctries)							
	CREDIT/GDP	CGDP	CRI	INST	PB	DDOLL	INFLATION
Mean	0.437	5813	1.787	-0.246	0.248	0.378	10.655
Median	0.336	4508	2.000	-0.310	0.000	0.326	7.330
Maximum	2.489	48489	4.000	1.552	1.000	0.957	85.74
Minimum	-0.193	594	0.000	-1.696	0.000	0.000	-9.616
Std.Dev.	0.370	5335	1.145	0.663	0.432	0.245	11.565
Skewness	1.802	2.513	0.022	0.428	1.163	0.480	2.138
Kurtosis	7.262	13.63	2.075	2.662	2.354	2.407	9.69
Latin America Sample - (9 Ctries)							
	CREDIT/GDP	CGDP	CRI	INST	PB	DDOLL	INFLATION
Mean	0.469	5985	1.745	-0.131	0.576	0.492	11.046
Median	0.426	6463	2.000	-0.203	1.000	0.623	8.632
Maximum	0.972	11417	4.000	0.726	1.000	0.926	48.786
Minimum	0.093	1708	0.000	-0.732	0.000	0.000	-1.167
Std.Dev.	0.242	3239	1.253	0.372	0.498	0.314	9.990
Skewness	0.712	0.207	0.119	0.960	-0.308	-0.196	1.541
Kurtosis	2.671	1.583	2.307	3.291	1.095	1.560	5.639
Asia Sample - (8 Ctries)							
	CREDIT/GDP	CGDP	CRI	INST	PB	DDOLL	INFLATION
Mean	0.585	3826	1.361	-0.379	0.340	0.395	6.446
Median	0.520	2516	1.000	-0.529	0.000	0.315	4.008
Maximum	1.633	12323	3.000	0.540	1.000	0.946	44.964
Minimum	0.059	1236	0.000	-1.018	0.000	0.009	-1.710
Std.Dev.	0.472	3194	0.870	0.472	0.478	0.298	8.100
Skewness	0.895	1.673	0.631	0.347	0.673	0.722	2.941
Kurtosis	2.894	4.37	2.685	1.772	1.453	2.350	13.128
Transition Economies Sample - (17 Ctries)							
	CREDIT/GDP	CGDP	CRI	INST	PB	DDOLL	INFLATION
Mean	0.321	7034	2.321	0.013	0.073	0.401	13.047
Median	0.278	5870	2.000	-0.044	0.000	0.381	8.700
Maximum	0.724	18740	3.000	1.062	1.000	0.812	85.742
Minimum	0.073	2017	1.000	1.060	0.000	0.071	-1.279
Std.Dev.	0.175	3969	0.718	0.599	0.261	0.183	14.184
Skewness	0.467	0.856	-0.559	0.211	3.271	0.373	2.153
Kurtosis	1.953	3.033	2.103	1.615	11.704	2.362	9.130

Descriptive statistics for the financial development and dollarization estimations. Inflation rate is in percentages. GDP per capita(CGDP) is in US Dollars.

Table 2: Determinants of Domestic Private Credit- All Countries- using DDOLL

Dependent Variable:	Domestic Private Credit to GDP				
Method	$OLS(1)$	$OLS(2)$	$OLS(3)$	$OLS(4)$	$OLS(5)$
Time Period	$1990-2002$	$1990-2002$	1990-2002	1990-2002	1996-2002
C	0.248^{***}	0.190^{***}	0.250^{***}	0.259^{***}	0.469^{***}
	(0.024)	(0.024)	(0.033)	(0.044)	(0.066)
CRI	0.102^{***}	0.109^{***}	0.093^{***}	0.095^{***}	0.106^{***}
	(0.011)	(0.011)	(0.013)	(0.014)	(0.017)
PB		0.255^{***}	0.258^{***}	0.258^{***}	0.358^{***}
		(0.033)	(0.041)	(0.041)	(0.042)
INST			0.140^{***}	0.149^{***}	0.136^{***}
			(0.025)	(0.038)	(0.045)
logCGDP				0.000	-0.000^{**}
				(0.000)	(0.000)
DDOLL					-0.514^{***}
					(0.067)
D*DDOLL					0.487^{***}
					(0.219)
D					-0.294^{***}
					(0.086)
$Adj.R^2$	0.105	0.178	0.274	0.273	0.397
$Numberofcountries$	56	56	54	54	44
$Numberofobservations$	637	637	377	377	274

Estimation results of the first model (Eq. (1)). CRI is the creditor rights index which ranges from 0 (low protection) to 10 (high protection), PB is a dummy variable that takes the value of 1 if there is a private credit bureau in the country, $INST$ stands for institutional quality, $logCGDP$ is the logarithm of per capita GDP; $DDOLL$ is the ratio of the dollar deposits to the overall deposits in the banking system and D is a dummy variable that takes the value of 1 if the inflation rate is over 20%. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

sense that we also observe that the influence of dollarization on high inflationary countries ($D * DDOLL$) has a moderating effect on the adverse effects of inflation on financial depth (0.487). The high inflation dummy(D), as expected, is negative and its effect is significant meaning that the higher the inflation the shallower the financial system is.

We perform different robustness checks to verify whether these results are consistent regionally. Tables 5, 6 and 7 in the appendix 6.2 present these results. As can be seen from these tables, the main results presented at the aggregated level (Table 2) also hold here. Focusing our attention to the effect of dollarization on the financial deepening of a country (DDOLL), we observe that its effect is always significative and negative.

This finding (negative relationship between dollarization and financial deepening) motivated us to perform additional robustness checks of this finding. We decided to use as a benchmark model the one proposed and developed by De Nicolo et al. (2005). The results of these estimations can be found in Table 8 for the whole sample and in Tables 9, 10 and 11 for the regional categories in our sample (presented in the appendix 6.3).

As mentioned before and as an additional robustness check we also use a different way of computing the Minimum Variance Portfolio proposed by Neanidis and Savva (2009). Tables 12, 13, 14 and 15 show the results of

estimations using MVP2 instead of MVP as an instrument. These tables are found in the appendix 6.4.[13]

Our main objective now is to see if, under different models, using two different sets of instruments and introducing the use of MVP2, the negative relationship between dollarization and financial deepening holds. In this Section we describe the results of these models using the summary results presented in Table 3. This table presents the results that correspond to two equations of De Nicolo et al. (2005) (Eqs. (2.12) and (2.13)). We concentrate in these two equations because they contain all the variables of interest and because they are computed using the 2SLS to control for endogeneity.

Observing the information presented in table 3, where we find the results of using all the countries in our sample, we can see that consistently dollarization (DDOLL) has a negative and significant coefficient. Moreover, the value of this coefficient is also similar for all models and whether we use MVP or MVP2. These results support our previous findings and allow us to state that dollarization (measured as the ratio of dollar deposits to total deposits) has a negative, significant and strong effect on financial deepening of the countries, once inflation has been controlled. In the event that inflation is present ($DDOLL*INF$), our results suggests that dollarization plays has moderating effect on the adverse effects of inflation on financial depth. Note however, that the coefficient values in this case are smaller than those of DDOLL. Again, these results are consistent with our previous results presented in table 2. Finally and as expected, inflation (INF) has a negative and significant coefficient and the variable that accounts for institutional quality (INST) has a positive and significant coefficient. The results at the region level mostly support this view with some exceptions in Latin America and transition economies, where the coefficient is not significant. These results are summarized in the appendix 6.5.

In economies with controlled inflation appears that dollarization of deposits in a banking system, slows financial development by limiting domestic credit. The cause of such restriction of credit in a dollarized economy we believe can be attributed to the currency mismatch and loan default risks that banking systems face in a dollarized environment. The more foreign currency depositors want to keep in their bank accounts, the higher risk banks face

[13]Note that the equation numbers correspond to the equation numbers of table 2c in De Nicolo et al. (2005), pp 1710-1711.

Table 3: Summary Results from Tables 8, and 12

All countries	(2.12) and MVP	(2.13) and MVP	(2.12) and MVP2	(2.13) and MVP2
DDOLL	-0.637^{***}	-0.677^{***}	-0.789^{***}	-0.798^{***}
DDOLL*INF	0.308^{***}	0.343^{***}	0.262^{***}	0.265^{***}
INF	-0.201^{***}	-0.210^{***}	-0.163^{***}	-0.174^{***}
INST	0.128^{***}		0.136^{***}	
logCGDP		0.064		0.079^{***}
Period	1999-2004	1999-2004	1999-2004	1999-2004
No. of countries	23	23	40	40
No. of Observations	105	105	170	170

This table summarizes the results presented in tables 8 and 12. The results corresponds to Equations (2.12) and (2.13) of De Nicolo et al. (2005). Equation (2.12) is estimated using a 2SLS to control for endogeniety. The regressors are the constant, Deposit dolarization (DDOLL), and interaction term between inflation and dollarization (DDOLL*INF), the natural logarithm of inflation (INF), the institutions index (INST) and the natural logarithm of the per capita GDP (logCGDP). For Equation (2.12) the instruments used are: INST, MVP, RESTRIC. Where $INST$ stands for institutional quality, MVP the Minimum Variance Portfolio coefficient, $RESTRIC$ the index of restrictions on the holdings of foreign currency deposits. For Equation (2.13) the instruments used are the same as before plus CGDP. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent

in terms of currency mismatch or loan defaults. In an effort to minimize their exposure to such risks, the banking system may find in its interest to be more careful in selecting its loan portfolio. Banks may scrutinize their credit applications more vigorously to make sure their borrowers have the ability to repay their loans independent of fluctuations in the value of the local currency and sometimes will not be willing to provide capital to good projects based on this exchange rate exposition. This effect is reduced (but not completely eliminated) when an economy has high inflation.

Our findings seem contrary to some of the previous research on the issue (mainly by De Nicolo et al. (2005)) but reinforce the notion that the whole dollarization phenomenon has still many unknowns and should be the topic of future research. We believe the field will benefit from further studies on the topic especially regarding the mechanics of such relationship between the two variables (financial deepening and deposit dollarization).

5. Conclusions

Existing literature has shown that high inflation, weak institutions and financial instability contribute to shallowness of financial systems. It has also been shown that dollarization is common in economies that have the conditions mentioned above. By providing an alternative method for savings besides the local currency which is constantly eroding in value, foreign currency savings in an inflationary economy can actually promote financial deepening. However, proponents of the currency mismatch theory have argued that enabling foreign currency denominated or indexed accounts in the banking system could increase vulnerability of the baking system to outside

shocks by creating mismatches on balance sheets. In either case, dollarization should have an effect on financial deepening of an economy. Empirically there have been limited studies that investigate the link between the two: dollarization and currency mismatches and their effect on financial deepening. Our aim in this paper has been to contribute to the literature in that regard.

By using a sample of 44 dollarized banking systems, we have tested the effect of deposit dollarization on the financial deepening of these economies. Our findings suggest that dollarization has a consistent and significant negative effect on the financial deepening of economies in our sample, independently of their level of inflation. However, our results also suggest that in high inflationary economies dollarization has moderating effect on inflation. These findings are robust to different estimation procedures and consistent at the regional level.

There are important implications of our findings: they show that any evaluation of partial dollarization should take into account inflation. The benefits and costs of dollarization are more clearly understood with inflation in the background. While dollarization may have a positive effect on the financial depth of an economy with high inflation by providing an alternative avenue of savings for local agents and thus avoiding capital flight, it seems to undermine the extension of credit in an economy by increasing currency or default risks through currency mismatches when inflation has already been controlled. Policy makers in dollarized economies should consider these two separate effects of dollarization in setting up policy regarding foreign currency deposits in their banking systems.

Moreover, our findings show that the institutional variables that we use are crucial for financial deepening of an economy. The Creditors Rights Index (CRI), the Private Credit Bureaus (PB) and the variable that controls for institutions quality (INST) have all a positive and significant effect on financial deepening. Consistently across all our specifications, the influence of PB is the largest one, followed by INST and CRI. This points out to the importance of private credit bureaus and the need of strong institutions in the developing of the financial system of the countries. The existence of a private credit bureau in the country along with strong institutional quality and protection of creditors rights is highly correlated with a more established credit market. In general, our finding reaffirms those of Dehesa et al. (2007).

6. Appendix

This section presents additional tables that support our findings presented in the main text of this paper.

6.1. Data Description

Table 4: Data Definitions and Sources

Symbol	*Definition*	*Source*
CREDIT/GDP	*Ratio of Domestic Private Credit to nominal GDP*	*IMF-IFS*
CGDP	*Real Gross Domestic Product per Capita, current price PPP*	*Penn World Tables 6.3*
CRI	*Creditor Rights Index ranges between 0 and 4. A score of one is assigned when each of the following rights of secured lenders are defined in laws and regulations: First, there are restrictions, such as creditor consent or minimum dividends, for a debtor to file for reorganization. Second, secured creditors are able to seize their collateral after the reorganization petition is approved, i.e. there is no "automatic stay" or "asset freeze." Third, secured creditors are paid first out of the proceeds of liquidating a bankrupt firm, as opposed to other creditors such as government or workers. Finally, if management does not retain administration of its property pending the resolution of the reorganization. The index ranges from 0 (weak creditor rights) to 4 (strong creditor rights) and is constructed as at January for every year from 1978 to 2003.*	*Obtained from Simeon Djankov and Shleifer (2007) and published by World Bank*
INST	*Average of the 6 institutional quality variables published by Kaufmann et al. (2009);measured in units ranging from about -2.5 to 2.5, with higher values corresponding to better governance outcomes.*	Kaufmann et al. (2009)
DDOLL	*Foreign Exchange Deposits as a ratio of Total Deposits in the Banking System*	Levy-Yeyati (2006)
FXDEP	*Foreign Exchange Deposits as a ratio of M2*	*Levy-Yeyati (2006), Central Bank Bulletins, IMF-IFS*
MVP	*Minimum Variance Portfolio Coefficient. Calculated from historic variances and covariances of prices and exchange rates.For more info see Levy-Yeyati (2006) and Ize and Levy-Yeyati (2003).*	*Authors' calculations.*
MVP2	*Minimum Variance Portfolio Coefficient. Calculated as the ratio of the conditional variance of inflation to the conditional covariance between inflation and depreciation of the nominal exchange rate using the methodology of Neanidis and Savva (2009)*	*Authors' calculations.*
PB	*Private Credit Bureau Dummy: Equals 1 if there is a Private Credit Bureau in operation in the country in that year and O otherwise.*	*Simeon Djankov and Shleifer (2007)*

6.2. Regional Results for Model 1

Table 5: Determinants of Domestic Private Credit in Asia - using DDOLL

Dependent Variable:	Domestic Private Credit to GDP				
Method	$OLS(1)$	$OLS(2)$	$OLS(3)$	$OLS(4)$	$OLS(5)$
Time Period	$1990-2002$	$1990-2002$	1990-2002	1990-2002	1996-2002
C	0.253^{***}	0.242^{***}	0.362^{***}	0.698^{***}	0.539^{***}
	(0.049)	(0.047)	(0.063)	(0.088)	(0.053)
CRI	0.208^{***}	0.182^{***}	0.178^{***}	0.258^{***}	-0.009
	(0.025)	(0.025)	(0.030)	(0.031)	(0.032)
PB		0.273^{**}	0.186^{**}	0.131^{*}	-0.025
		(0.072)	(0.082)	(0.073)	(0.040)
INST			0.212^{***}	0.671^{***}	0.296^{***}
			(0.055)	(0.105)	(0.056)
logCGDP				-0.000^{***}	0.000^{***}
				(0.000)	(0.000)
DDOLL					-0.368^{***}
					(0.087)
D*DDOLL					0.412
					(0.456)
D					-0.298
					(0.310)
$Adj.R^2$	0.316	0.370	0.484	0.594	0.963
$Numberofcountries$	12	12	12	12	8
$Numberofobservations$	143	143	89	89	47

Estimation results of the first model (Eq. (1)). CRI is the creditor rights index which ranges from 0 (low protection) to 10 (high protection), PB is a dummy variable that takes the value of 1 if there is a private credit bureau in the country, $INST$ stands for institutional quality, $logCGDP$ is the logarithm of per capita GDP; $DDOLL$ is the ratio of the dollar deposits to the overall deposits in the banking system and D is a dummy variable that takes the value of 1 if the inflation rate is over 20%. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table 6: Determinants of Domestic Private Credit in Latin America - using DDOLL

Dependent Variable:	Domestic Private Credit to GDP				
Method	$OLS(1)$	$OLS(2)$	$OLS(3)$	$OLS(4)$	$OLS(5)$
Time Period	$1990-2002$	$1990-2002$	1996-2002	1996-2002	1996-2002
C	0.163^{***}	0.050^{***}	0.047	0.305^{***}	0.314^{**}
	(0.049)	(0.077)	(0.099)	(0.128)	(0.141)
CRI	0.152^{***}	0.180^{***}	0.159^{***}	0.135^{***}	0.193^{***}
	(0.023)	(0.027)	(0.029)	(0.028)	(0.038)
PB		0.123^{**}	0.226^{***}	0.198^{***}	0.353^{***}
		(0.066)	(0.083)	(0.079)	(0.124)
INST			0.028	0.175^{**}	0.180^{*}
			(0.081)	(0.091)	(0.114)
logCGDP				-0.000^{***}	-0.000^{***}
				(0.000)	(0.000)
DDOLL					-0.281^{*}
					(0.175)
D*DDOLL					-0.262
					(0.286)
D					-0.047
					(0.102)
$Adj.R^2$	0.261	0.276	0.338	0.414	0.458
$Numberofcountries$	10	10	9	9	9
$Numberofobservations$	120	120	62	62	59

Estimation results of the first model (Eq. (1)). CRI is the creditor rights index which ranges from 0 (low protection) to 10 (high protection), PB is a dummy variable that takes the value of 1 if there is a private credit bureau in the country, $INST$ stands for institutional quality, $logCGDP$ is the logarithm of per capita GDP; $DDOLL$ is the ratio of the dollar deposits to the overall deposits in the banking system and D is a dummy variable that takes the value of 1 if the inflation rate is over 20%. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table 7: Determinants of Domestic Private Credit in Trans. Econ-DDOLL

Dependent Variable:	Domestic Private Credit to GDP				
Method	$OLS(1)$	$OLS(2)$	$OLS(3)$	$OLS(4)$	$OLS(5)$
Time Period	$1996-2002$	$1996-2002$	1996-2002	1996-2002	1996-2002
C	0.526^{***}	0.496^{***}	0.258^{***}	0.182^{***}	0.237^{***}
	(0.061)	(0.065)	(0.057)	(0.064)	(0.075)
CRI	-0.063^{***}	-0.053^{**}	0.022	0.016	0.039^{**}
	(0.026)	(0.027)	(0.023)	(0.022)	(0.021)
PB		0.134	0.186^{***}	0.173^{***}	0.176^{***}
		(0.099)	(0.072)	(0.071)	(0.060)
INST			0.101^{***}	0.049	-0.021
			(0.027)	(0.035)	(0.036)
logCGDP				0.000^{**}	0.000^{***}
				(0.000)	(0.000)
DDOLL					-0.325^{***}
					(0.082)
D*DDOLL					-0.465^{*}
					(0.274)
D					0.179
					(0.115)
$Adj.R^2$	0.028	0.032	0.217	0.247	0.445
$Numberofcountries$	17	17	17	17	17
$Numberofobservations$	166	166	119	119	108

Estimation results of the first model (Eq. (1)). CRI is the creditor rights index which ranges from 0 (low protection) to 10 (high protection), PB is a dummy variable that takes the value of 1 if there is a private credit bureau in the country, $INST$ stands for institutional quality, $logCGDP$ is the logarithm of per capita GDP; $DDOLL$ is the ratio of the dollar deposits to the overall deposits in the banking system and D is a dummy variable that takes the value of 1 if the inflation rate is over 20%. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

6.3. Results Obtained by Replicating Model by De Nicolo et.al. (2005)

Table 8: Replication of De Nicolo et al. (2005)-All Countries

Dependent Variable:	Domestic Private Credit to GDP				
Method	$OLS(2.1)$	$OLS(2.2)$	$TSLS(2.3)$	$TSLS(2.4)$	$TSLS(2.5)$
Time Period	$1990-2004$	$1990-2004$	1998-2004	1998-2004	1998-2004
C	0.732^{***}	0.582^{***}	0.801^{***}	0.775^{***}	-0.011
	(0.042)	(0.035)	(0.072)	(0.070)	(0.446)
DDOLL	-0.412^{***}				
	(0.066)				
DDOLL*INF		-0.098^{***}	0.025	-0.001	0.020
		(0.040)	(0.080)	(0.078)	(0.079)
INF	-0.059^{***}	-0.022	-0.146^{***}	-0.118^{***}	-0.120^{***}
	(0.014)	(0.018)	(0.043)	(0.043)	(0.045)
INST				0.159^{***}	
				(0.061)	
logCGDP					0.090^{**}
					(0.048)
INSTRUMENTS			A	A	B
$Adj.R^2$	0.099	0.043	0.107	0.155	0.127
$Numberofcountries$	47	47	23	23	23
$Numberofobservations$	461	461	105	105	105

Dependent Variable:	Domestic Private Credit to GDP				
Method	$TSLS(2.9)$	$OLS(2.10)$	$TSLS(2.11)$	$TSLS(2.12)$	$TSLS(2.13)$
Time Period	$1998-2004$	$1990-2004$	1998-2004	1998-2004	1998-2004
C	0.853^{***}	0.919^{***}	0.993^{***}	0.945^{***}	0.394
	(0.081)	(0.057)	(0.095)	(0.096)	(0.459)
DDOLL	-0.182	-0.936^{**}	-0.745^{***}	-0.637^{***}	-0.677^{***}
	(0.140)	(0.130)	(0.251)	(0.252)	(0.256)
DDOLL*INF		0.279^{***}	0.379^{***}	0.308^{***}	0.343^{***}
		(0.060)	(0.142)	(0.144)	(0.144)
INF	-0.136^{***}	-0.157^{***}	-0.237^{***}	-0.201^{***}	-0.210^{***}
	(0.036)	(0.025)	(0.051)	(0.053)	(0.055)
INST				0.128^{***}	
				(0.060)	
logCGDP					0.064
					(0.048)
INSTRUMENTS	A		A	A	B
$Adj.R^2$	0.120	0.137	0.170	0.198	0.176
$Numberofcountries$	23	47	23	23	23
$Numberofobservations$	105	461	105	105	105

This table presents the results of the model developed by De Nicolo et.al. (Eq. 2). $DDOLL$ is the ratio of the dollar deposits to the overall deposits in the banking system, INF is the natural logarithm of the inflation, $logCGDP$ is the logarithm of per capita GDP. Instrument list A: INST, MVP, RESTRIC Instrument List B: A + logCGDP. Where $INST$ stands for institutional quality, MVP the Minimum Variance Portfolio coefficient, $RESTRIC$ the index of restrictions on the holdings of foreign currency deposits. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent

Table 9: Replication of De Nicolo et al. (2005)-Asia

Dependent Variable:	Domestic Private Credit to GDP				
Method	$OLS(2.1)$	$OLS(2.2)$	$TSLS(2.3)$	$TSLS(2.4)$	$TSLS(2.5)1$
Time Period	$1990-2004$	$1990-2004$	1999-2004	1999-2004	1999-2004
C	0.129^{***}	0.886^{***}	1.583^{***}	1.100^{***}	-4.899^{***}
	(0.073)	(0.084)	(0.171)	(0.058)	(0.680)
DDOLL	-0.989^{***}				
	(0.199)				
DDOLL*INF		-0.333^{***}	-0.132	-0.956^{***}	-0.186
		(0.081)	(0.565)	(0.161)	(0.200)
INF	-0.175^{***}	-0.073	-0.643^{***}	0.154^{*}	0.018
	(0.035)	(0.056)	(0.195)	(0.079)	(0.097)
INST				0.835^{***}	
				(0.063)	
logCGDP					0.673^{***}
					(0.070)
INSTRUMENTS			A	A	B
$Adj.R^2$	0.563	0.331	0.603	0.972	0.950
$Numberofcountries$	8	8	3	3	3
$Numberofobservations$	84	84	16	16	16

Dependent Variable:	Domestic Private Credit to GDP				
Method	$TSLS(2.9)$	$OLS(2.10)$	$TSLS(2.11)$	$TSLS(2.12)$	$TSLS(2.13)$
Time Period	$1999-2004$	$1990-2004$	1999-2004	1999-2004	1999-2004
C	1.597^{***}	1.448^{***}	1.866^{***}	1.215^{***}	-4.815^{***}
	(0.161)	(0.091)	(0.184)	(0.072)	(0.932)
DDOLL	-0.744	-1.722^{**}	-5.194^{***}	-1.408^{**}	-0.158
	(0.789)	(0.2207)	(2.088)	(0.646)	(0.150)
DDOLL*INF		0.475^{***}	3.275^{**}	0.032	-0.081
		(0.114)	(1.451)	(0.474)	(0.787)
INF	-0.582	-0.353^{***}	-0.838^{***}	-0.039	0.004
	(0.164)	(0.053)	(0.183)	(0.087)	(0.141)
INST				0.770^{***}	
				(0.062)	
logCGDP					0.666^{***}
					(0.092)
INSTRUMENTS	A		A	A	B
$Adj.R^2$	0.627	0.636	0.716	0.979	0.945
$Numberofcountries$	3	8	3	3	3
$Numberofobservations$	16	84	16	16	16

This table presents the results of the model developed by De Nicolo et.al. (Eq. 2). $DDOLL$ is the ratio of the dollar deposits to the overall deposits in the banking system, INF is the natural logarithm of the inflation, $logCGDP$ is the logarithm of per capita GDP. Instrument list A: INST, MVP, RESTRIC Instrument List B: A + logCGDP. Where $INST$ stands for institutional quality, MVP the Minimum Variance Portfolio coefficient, $RESTRIC$ the index of restrictions on the holdings of foreign currency deposits. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent

Table 10: Replication of De Nicolo et al. (2005)-Latin America

Dependent Variable:	Domestic Private Credit to GDP				
$Method$	$OLS(2.1)$	$OLS(2.2)$	$TSLS(2.3)$	$TSLS(2.4)$	$TSLS(2.5)1$
Time Period	$1990-2004$	$1990-2004$	1999-2004	1999-2004	1999-2004
C	0.257^{**}	0.439^{***}	0.554^{***}	0.462^{***}	2.218^{***}
	(0.126)	(0.089)	(0.114)	(0.103)	(0.346)
DDOLL	0.290^{**}				
	(0.123)				
DDOLL*INF		0.109^{**}	0.278^{***}	0.367^{***}	0.261^{***}
		(0.046)	(0.060)	(0.061)	(0.038)
INF	0.035	-0.030	-0.118^{**}	-0.139^{***}	-0.062^{*}
	(0.037)	(0.037)	(0.055)	(0.047)	(0.037)
INST				-0.228^{***}	
				(0.086)	
logCGDP					-0.210^{***}
					(0.042)
INSTRUMENTS			A	A	B
$Adj.R^2$	0.031	0.031	0.527	0.65	0.807
$Numberofcountries$	10	10	4	4	4
$Numberofobservations$	109	109	19	19	19

Dependent Variable:	Domestic Private Credit to GDP				
$Method$	$TSLS(2.9)$	$OLS(2.10)$	$TSLS(2.11)$	$TSLS(2.12)$	$TSLS(2.13)$
Time Period	$1998-2004$	$1990-2004$	1998-2004	1998-2004	1998-2004
C	-0.083	0.333	1.757^{**}	1.293^{*}	2.815^{***}
	(0.238)	(0.254)	(0.823)	(0.747)	(0.581)
DDOLL	0.741^{***}	0.167	-1.365	-0.932	-0.778
	(0.0.188)	(0.376)	(0.926)	(0.831)	(0.614)
DDOLL*INF		0.049	0.745^{**}	0.678^{**}	0.528^{***}
		(0.142)	(0.322)	(0.283)	(0.214)
INF	0.119^{*}	0.006	-0.545^{**}	-0.429^{*}	$-0.309*$
	(0.071)	(0.091)	(0.0294)	(0.262)	(0.197)
INST				-0.206^{**}	
				(0.087)	
logCGDP					-0.198^{***}
					(0.042)
INSTRUMENTS	A		A	A	B
$Adj.R^2$	0.440	0.023	0.559	0.662	0.814
$Numberofcountries$	4	10	4	4	4
$Numberofobservations$	19	109	19	19	19

This table presents the results of the model developed by De Nicolo et.al. (Eq. 2). $DDOLL$ is the ratio of the dollar deposits to the overall deposits in the banking system, INF is the natural logarithm of the inflation, $logCGDP$ is the logarithm of per capita GDP. Instrument list A: INST, MVP, RESTRIC Instrument List B: A + logCGDP. Where $INST$ stands for institutional quality, MVP the Minimum Variance Portfolio coefficient, $RESTRIC$ the index of restrictions on the holdings of foreign currency deposits. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent. In this case the only countries that we have with complete data are Bolivia, Nicaragua, Uruguay and Venezuela

Table 11: Replication of De Nicolo et al. (2005)-Transition Economies

Dependent Variable:	Domestic Private Credit to GDP				
$Method$	$OLS(2.1)$	$OLS(2.2)$	$TSLS(2.3)$	$TSLS(2.4)$	$TSLS(2.5)1$
Time Period	$1990-2004$	$1990-2004$	1999-2004	1998-2004	1998-2004
C	0.597^{***}	0.377^{***}	0.451^{***}	0.404^{***}	-1.410^{***}
	(0.039)	(0.025)	(0.035)	(0.033)	(0.577)
DDOLL	-0.596^{***}				
	(0.076)				
DDOLL*INF		-0.302^{***}	-0.339^{***}	-0.198^{***}	-0.181^{***}
		(0.036)	(0.065)	(0.068)	(0.075)
INF	-0.008	0.101^{***}	0.075^{***}	0.030	0.042
	(0.011)	(0.016)	(0.028)	(0.027)	(0.027)
INST				0.147^{***}	
				(0.040)	
logCGDP					0.200^{***}
					(0.062)
INSTRUMENTS			A	A	B
$Adj.R^2$	0.255	0.274	0.472	0.613	0.589
$Numberofcountries$	18	18	10	10	10
$Numberofobservations$	173	173	36	36	36

Dependent Variable:	Domestic Private Credit to GDP				
$Method$	$TSLS(2.9)$	$OLS(2.10)$	$TSLS(2.11)$	$TSLS(2.12)$	$TSLS(2.13)$
Time Period	$1999-2004$	$1990-2004$	1999-2004	1999-2004	1999-2004
C	0.589^{***}	0.475^{***}	0.440^{***}	0.288^{***}	-2.071^{***}
	(0.060)	(0.058)	(0.066)	(0.064)	(0.644)
DDOLL	-0.416^{***}	-0.260^{**}	0.036	0.312^{**}	0.315^{**}
	(0.130)	(0.140)	(0.169)	(0.150)	(0158)
DDOLL*INF		-0.194^{***}	-0.355^{***}	-0.299^{***}	-0.273^{***}
		(0.068)	(0.099)	(0.081)	(0.085)
INF	-0.040^{**}	0.061^{**}	0.080^{**}	0.064^{**}	0.079^{***}
	(0.020)	(0.027)	(0.038)	(0.031)	(0.031)
INST				0.185^{***}	
				(0.042)	
logCGDP					0.260^{***}
					(0.066)
INSTRUMENTS	A		A	A	B
$Adj.R^2$	0.265	0.285	0.457	0.649	0.624
$Numberofcountries$	10	18	10	10	10
$Numberofobservations$	36	173	36	36	36

This table presents the results of the model developed by De Nicolo et.al. (Eq. 2). $DDOLL$ is the ratio of the dollar deposits to the overall deposits in the banking system, INF is the natural logarithm of the inflation, $logCGDP$ is the logarithm of per capita GDP. Instrument list A: INST, MVP, RESTRIC Instrument List B: A + logCGDP. Where $INST$ stands for institutional quality, MVP the Minimum Variance Portfolio coefficient, $RESTRIC$ the index of restrictions on the holdings of foreign currency deposits. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent

6.4. Results Obtained by Replicating Model by De Nicolo et.al. (2005) using MVP2

Table 12: Replication of De Nicolo et al. (2005)-All Countries- using MVP2

Dependent Variable:	Domestic Private Credit to GDP				
Method	$OLS(2.1)$	$OLS(2.2)$	$TSLS(2.3)$	$TSLS(2.4)$	$TSLS(2.5)1$
Time Period	$1990-2004$	$1990-2004$	1998-2004	1998-2004	1998-2004
C	0.732^{***}	0.582^{***}	0.674^{***}	0.658^{***}	-0.360
	(0.042)	(0.035)	(0.050)	(0.048)	(0.327)
DDOLL	-0.412^{***}				
	(0.066)				
DDOLL*INF		-0.098^{***}	-0.083	-0.083	-0.085
		(0.040)	(0.058)	(0.055)	(0.056)
INF	-0.059^{***}	-0.022	-0.065^{**}	-0.036	-0.046
	(0.014)	(0.018)	(0.033)	(0.033)	(0.032)
INST				0.177^{***}	
				(0.047)	
logCGDP					0.118^{***}
					(0.037)
INSTRUMENTS			A	A	B
$Adj.R^2$	0.099	0.043	0.077	0.144	0.125
$Numberofcountries$	47	47	40	40	40
$Numberofobservations$	461	461	170	170	170

Dependent Variable:	Domestic Private Credit to GDP				
Method	$TSLS(2.9)$	$OLS(2.10)$	$TSLS(2.11)$	$TSLS(2.12)$	$TSLS(2.13)$
Time Period	$1998-2004$	$1990-2004$	1998-2004	1998-2004	1998-2004
C	0.822^{***}	0.919^{***}	0.980^{***}	0.934^{***}	0.253
	(0.059)	(0.057)	(0.074)	(0.074)	(0.336)
DDOLL	-0.430^{***}	-0.936^{**}	-0.887^{***}	-0.789^{***}	-0.798^{***}
	(0.102)	(0.130)	(0.169)	(0.168)	(0.172)
DDOLL*INF		0.279^{***}	0.306^{***}	0.262^{***}	0.265^{***}
		(0.060)	(0.092)	(0.090)	(0.092)
INF	-0.092^{***}	-0.157^{***}	-0.200^{***}	-0.163^{***}	-0.174^{***}
	(0.024)	(0.025)	(0.040)	(0.041)	(0.041)
INST				0.136^{***}	
				(0.045)	
logCGDP					0.079^{***}
					(0.036)
INSTRUMENTS	A		A	A	B
$Adj.R^2$	0.154	0.137	0.202	0.240	0.221
$Numberofcountries$	40	47	40	40	40
$Numberofobservations$	170	461	170	170	170

This table presents the results of the model developed by De Nicolo et.al. (Eq. 2). $DDOLL$ is the ratio of the dollar deposits to the overall deposits in the banking system, INF is the natural logarithm of the inflation, $logCGDP$ is the logarithm of per capita GDP. Instrument list A: INST, MVP, RESTRIC Instrument List B: A + logCGDP. Where $INST$ stands for institutional quality, $MVP2$ the Minimum Variance Portfolio coefficient calculated accordingly to Neanidis and Savva (2009), $RESTRIC$ the index of restrictions on the holdings of foreign currency deposits. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent

Table 13: Replication of De Nicolo et al. (2005)- Asian Economies - using MVP2

Dependent Variable:	Domestic Private Credit to GDP				
Method	$OLS(2.1)$	$OLS(2.2)$	$TSLS(2.3)$	$TSLS(2.4)$	$TSLS(2.5)$
Time Period	$1990-2004$	$1990-2004$	1999-2004	1999-2004	1999-2004
C	1.189^{***}	0.886^{***}	0.901^{***}	0.931^{***}	-4.136^{***}
	(0.073)	(0.084)	(0.110)	(0.049)	(0.340)
DDOLL	-0.989^{***}				
	(0.119)				
DDOLL*INF		-0.333^{***}	-0.250^{*}	-0.208^{***}	-0.036
		(0.081)	(0.161)	(0.072)	(0.060)
INF	-0.175^{***}	0.073	0.101	0.090^{*}	-0.071^{*}
	(0.035)	(0.056)	(0.109)	(0.051)	(0.040)
INST				0.782^{***}	
				(0.067)	
logCGDP					0.593^{***}
					(0.039)
INSTRUMENTS			A	A	B
$Adj.R^2$	0.563	0.331	0.285	0.855	0.904
$Numberofcountries$	8	8	8	8	8
$Numberofobservations$	84	84	37	37	37

Dependent Variable:	Domestic Private Credit to GDP				
Method	$TSLS(2.9)$	$OLS(2.10)$	$TSLS(2.11)$	$TSLS(2.12)$	$TSLS(2.13)$
Time Period	$1999-2004$	$1990-2004$	1999-2004	1999-2004	1999-2004
C	1.141^{***}	1.448^{***}	1.430^{***}	1.179^{***}	-3.039^{***}
	(0.093)	(0.091)	(0.111)	(0.060)	(0.387)
DDOLL	-0.957^{***}	-1.722^{***}	-1.767^{***}	-0.850^{***}	-0.637^{***}
	(0.195)	(0.207)	(0.274)	(0.164)	(0.156)
DDOLL*INF		0.475^{***}	0.667^{***}	0.223^{***}	0.256^{***}
		(0.114)	(0.179)	(0.099)	(0.087)
INF	-0.141^{***}	-0.353^{***}	-0.425^{***}	-0.108^{**}	-0.194^{***}
	(0.054)	(0.053)	(0.089)	(0.054)	(0.044)
INST				0.608^{***}	
				(0.060)	
logCGDP					0.486^{***}
					(0.041)
INSTRUMENTS	A		A	A	B
$Adj.R^2$	0.550	0.636	0.673	0.919	0.935
$Numberofcountries$	8	8	8	8	8
$Numberofobservations$	37	84	37	37	37

This table presents the results of the model developed by De Nicolo et.al. (Eq. 2). $DDOLL$ is the ratio of the dollar deposits to the overall deposits in the banking system, INF is the natural logarithm of the inflation, $logCGDP$ is the logarithm of per capita GDP. Instrument list A: INST, MVP, RESTRIC Instrument List B: A + logCGDP. Where $INST$ stands for institutional quality, $MVP2$ the Minimum Variance Portfolio coefficient calculated accordingly to Neanidis and Savva (2009), $RESTRIC$ the index of restrictions on the holdings of foreign currency deposits. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table 14: Replication of De Nicolo et al. (2005)- LA Economies - using MVP2

Dependent Variable:	Domestic Private Credit to GDP				
$Method$	$OLS(2.1)$	$OLS(2.2)$	$TSLS(2.3)$	$TSLS(2.4)$	$TSLS(2.5)$
Time Period	$1990-2004$	$1990-2004$	1999-2004	1999-2004	1999-2004
C	0.257^{**}	0.439^{***}	0.377^{***}	0.368^{***}	0.790
	(0.126)	(0.089)	(0.077)	(0.083)	(0.513)
DDOLL	0.290^{**}				
	(0.123)				
DDOLL*INF		0.109^{**}	0.211^{***}	0.220^{***}	0.198^{***}
		(0.046)	(0.053)	(0.062)	(0.055)
INF	0.035	-0.030	-0.015	-0.018	-0.005
	(0.037)	(0.037)	(0.004)	(0.042)	(0.042)
INST				-0.031	
				(0.103)	
logCGDP					-0.049
					(0.061)
INSTRUMENTS			A	A	B
$Adj.R^2$	0.031	0.31	0.281	0.263	0.275
$Numberofcountries$	10	10	8	8	8
$Numberofobservations$	109	109	40	40	40

Dependent Variable:	Domestic Private Credit to GDP				
$Method$	$TSLS(2.9)$	$OLS(2.10)$	$TSLS(2.11)$	$TSLS(2.12)$	$TSLS(2.13)$
Time Period	$1999-2004$	$1990-2004$	1999-2004	1999-2004	1999-2004
C	0.005	0.333	0.173	0.169	0.571
	(0.131)	(0.254)	(0.287)	(0.292)	(0.620)
DDOLL	0.511^{***}	0.167	0.278	0.272	0.246
	(0.127)	(0.376)	(0.378)	(0.384)	(0.383)
DDOLL*INF		0.049	0.102	0.113	0.103
		(0.142)	(0.156)	(0.164)	(0.157)
INF	0.135^{***}	0.006	0.064	0.060	0.064
	(0.043)	(0.091)	(0.116)	(0.119)	(0.117)
INST				-0.027	
				(0.104)	
logCGDP					-0.045
					(0.062)
INSTRUMENTS	A		A	A	B
$Adj.R^2$	0.284	0.023	0.272	0.253	0.263
$Numberofcountries$	8	10	8	8	8
$Numberofobservations$	40	109	40	40	40

This table presents the results of the model developed by De Nicolo et.al. (Eq. 2). $DDOLL$ is the ratio of the dollar deposits to the overall deposits in the banking system, INF is the natural logarithm of the inflation, $logCGDP$ is the logarithm of per capita GDP. Instrument list A: INST, MVP, RESTRIC Instrument List B: A + logCGDP. Where $INST$ stands for institutional quality, $MVP2$ the Minimum Variance Portfolio coefficient calculated accordingly to Neanidis and Savva (2009), $RESTRIC$ the index of restrictions on the holdings of foreign currency deposits. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent

Table 15: Replication of De Nicolo et al. (2005)-Transition Economies - using MVP2

Dependent Variable:	Domestic Private Credit to GDP				
Method	$OLS(2.1)$	$OLS(2.2)$	$TSLS(2.3)$	$TSLS(2.4)$	$TSLS(2.5)1$
Time Period	1990 − 2004	1990 − 2004	1999-2004	1999-2004	1999-2004
C	0.570^{***}	0.350^{***}	0.407^{***}	0.378^{***}	-0.439
	(0.042)	(0.027)	(0.029)	(0.030)	(0.327)
DDOLL	-0.555^{***}				
	(0.086)				
DDOLL*INF		-0.159^{***}	-0.310^{***}	-0.217^{***}	-0.265^{***}
		(0.030)	(0.062)	(0.071)	(0.061)
INF	0.001	0.066^{***}	0.089^{***}	0.062^{**}	0.075^{***}
	(0.008)	(0.015)	(0.029)	(0.030)	(0.028)
INST				0.082^{***}	
				(0.035)	
logCGDP					0.093^{***}
					(0.036)
INSTRUMENTS			A	A	B
$Adj.R^2$	0.163	0.110	0.372	0.424	0.437
$Numberofcountries$	18	18	15	15	15
$Numberofobservations$	204	204	51	51	51

Dependent Variable:	Domestic Private Credit to GDP				
Method	$TSLS(2.9)$	$OLS(2.10)$	$TSLS(2.11)$	$TSLS(2.12)$	$TSLS(2.13)$
Time Period	1999 − 2004	1990 − 2004	1999-2004	1999-2004	1999-2004
C	0.583^{***}	0.549^{***}	0.481^{***}	0.419^{***}	-0.347
	(0.053)	(0.061)	(0.064)	(0.069)	(0.373)
DDOLL	-0.497^{***}	-0.504^{***}	-0.205	-0.107	-0.085
	(0.117)	(0.141)	(0.157)	(0.160)	(0.160)
DDOLL*INF		-0.022	-0.228^{***}	-0.183^{**}	-0.234^{***}
		(0.048)	(0.087)	(0.087)	(0.085)
INF	-0.027^{*}	0.010	0.060^{*}	0.050	0.064^{**}
	(0.015)	(0.021)	(0.036)	(0.036)	(0.035)
INST				0.074^{**}	
				(0.037)	
logCGDP					0.087^{***}
					(0.038)
INSTRUMENTS	A		A	A	B
$Adj.R^2$	0.304	0.160	0.379	0.417	0.428
$Numberofcountries$	15	18	15	15	15
$Numberofobservations$	51	204	51	51	51

This table presents the results of the model developed by De Nicolo et.al. (Eq. 2). $DDOLL$ is the ratio of the dollar deposits to the overall deposits in the banking system, INF is the natural logarithm of the inflation, $logCGDP$ is the logarithm of per capita GDP. Instrument list A: INST, MVP, RESTRIC Instrument List B: A + logCGDP. Where $INST$ stands for institutional quality, $MVP2$ the Minimum Variance Portfolio coefficient calculated accordingly to Neanidis and Savva (2009), $RESTRIC$ the index of restrictions on the holdings of foreign currency deposits. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

6.5. Summary of Results from Replication of De Nicolo et. al. (2005)

Using MVP and eq. 2.12	All countries	Latin America	Asia	Transition
DDOLL	-0.637^{***}	-0.932	-1.408^{**}	0.312^{**}
DDOLL*INF	0.308^{***}	0.678^{**}	0.302	-0.299^{***}
INF	-0.201^{***}	-0.429^{*}	-0.039	0.064^{**}
INST	0.128^{***}	-0.206^{**}	0.770^{***}	0.185^{***}
No. of countries	23	4	3	10
No. of Observations	105	19	16	36

Using MVP and eq. 2.13	All countries	Latin America	Asia	Transition
DDOLL	-0.677^{***}	-0.778	-0.158	0.315
DDOLL*INF	0.343^{***}	0.528^{***}	-0.081	-0.273^{***}
INF	-0.210^{***}	-0.309^{*}	0.004	0.079^{***}
logCGDP	0.064	-0.198^{***}	0.666^{***}	0.260^{***}
No. of countries	23	4	3	10
No. of Observations	105	19	16	36

Using MVP2 and eq. 2.12	All countries	Latin America	Asia	Transition
DDOLL	-0.789^{***}	0.272	-0.850^{***}	-0.107
DDOLL*INF	0.262^{***}	0.113	0.223^{***}	-0.183^{*}
INF	-0.163^{***}	0.060	-0.108^{***}	0.050
INST	0.136^{***}	-0.027	0.608^{***}	0.074^{**}
No. of countries	40	8	8	15
No. of Observations	170	40	37	51

Using MVP2 and eq. 2.13	All countries	Latin America	Asia	Transition
DDOLL	-0.798^{***}	0.246	-0.637^{***}	-0.085
DDOLL*INF	0.265^{***}	0.103	0.256^{***}	-0.234^{***}
INF	-0.174^{***}	0.064	-0.194^{***}	0.064^{**}
logCGDP	0.079^{***}	-0.045	0.486^{***}	0.087^{***}
No. of countries	40	8	8	15
No. of Observations	170	40	37	51

This table summarizes the results presented in tables 8, 9, 10, 11, 12, 13, 14 and 15. The results corresponds to Equations (2.12) and (2.13) of De Nicolo et al. (2005). Equation (2.12) is estimated using a 2SLS to control for endogeniety. The regressors are the constant, Deposit dolarization (DDOLL), and interaction term between inflation and dollarization (DDOLL*INF), the natural logarithm of inflation (INF), the institutions index (INST) and the natural logarithm of the per capita GDP (logCGDP). For Equation (2.12) the instruments used are: INST, MVP, RESTRIC. Where $INST$ stands for institutional quality, MVP the Minimum Variance Portfolio coefficient, $RESTRIC$ the index of restrictions on the holdings of foreign currency deposits. For Equation (2.13) the instruments used are the same as before plus logCGDP. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent

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