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## VII. FINANCIAL SECTOR ISSUES<sup>1</sup>

*This note assesses the stability of the financial system, with particular attention to the strength of the banking system and possible credit risks, particularly arising from borrowers with currency mismatches. The position of the banking system is analyzed by looking at the progress made in strengthening bank capital and liquidity, using the Basel III accord as a benchmark. Possible credit risks and related risks to financial stability are analyzed using a balance sheet approach which focuses on various types of mismatches in a country's sectoral balance sheets. The main conclusion is that the financial system appears sound, though dollarization continues to be a source of vulnerability.*

### A. Strengthening Bank Capital and Liquidity in Central America: The Road to Basel III<sup>2</sup>

#### Strengthening Bank Capital and Liquidity in Central America: the Road to Basel III

*This section relies on a study of regulatory progress and growth implications in the transition from Basel I to Basel III in Central America,<sup>3</sup> Panama, and the Dominican Republic (CAPDR) to draw implications on the strength of the banking system in Costa Rica. In particular, the study assesses the strengthening of bank capital and liquidity achieved by the CAPDR supervisory authorities, using the Basel III accord as a benchmark. It also estimates the impact of introducing Basel III capital requirements on short-term growth, and discusses challenges ahead and appropriate steps to be taken. The main conclusion for Costa Rica is that the financial system comfortably meets current regulatory norms and largely complies with Basel III requirements.*

#### The Case for CAPDR countries to implement Basel III Standards

1. **The banking system in CAPDR is now more exposed to risk and competition.** During the last decade, the banking system in CAPDR increased their exposure to counterparty risk. In addition, a growing presence of foreign banks and increase in competition led to the introduction of new financial products, compression of profit margins, and higher risk-taking by local banks.

CAPDR: Market Share of Foreign Banks 1/ (in percent of total assets, end-2011)						
CRI	DOM	GTM	HND	NIC	PAN	SLV
26.3	8.1	8.0	43.0	39.2	53.7	85.8

Source: Supervisory authorities.

1/ Excludes intra-regional banks.

<sup>1</sup> Prepared by Anna Ivanova, Jaume Puig-Forné and Jorge Restrepo.

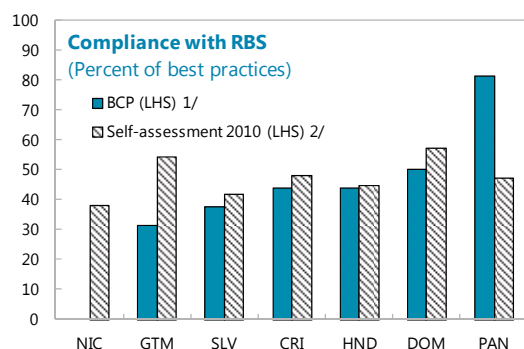
<sup>2</sup> This section presents the main findings in Basso, Oscar, Fernando Delgado and Mynor Meza, 2013. "Strengthening Bank Liquidity in Central America: the Road to Basel III." IMF Mimeo.

<sup>3</sup> Guatemala (GTM), Honduras (HND), El Salvador (SLV), Nicaragua (NIC) and Costa Rica (CRI).

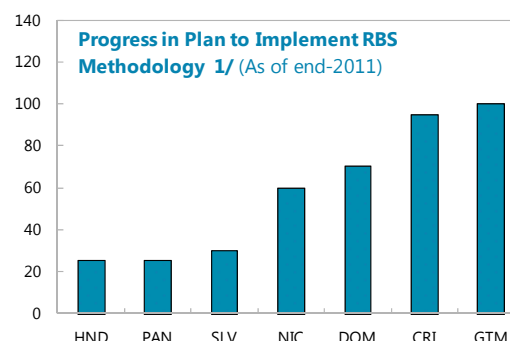
2. **Adopting Basel III will strengthen CAPDR financial systems.** CAPDR countries would benefit from promptly starting to gradually implement the higher prudential standards of Basel III. In particular, it would strengthen supervisor's skills and build up the regulatory and risk frameworks. It would also reduce profits associated with regulatory arbitrage and weaker supervisory capacity. Furthermore, it would strengthen the soundness of the regional financial system by anchoring the existing liquidity and capital buffers. Indeed, the current high levels of liquidity and capital buffers in the region could be largely explained by the slow recovery of domestic credit after the 2008-09 crises. An increase in loan demand could then lead to a quick drop in liquidity as well as in the risk weighted capital ratios below the minimum Basel III standards.

### Compliance with Basel Framework in CAPDR

3. **CAPDR countries are in compliance with most of the Basel I framework and making progress in complying with core principles for banking supervision.**<sup>4</sup> In terms of capital, most CAPDR countries have regulatory capital requirements above the minimum 8 percent of risk weighted assets (RWA). Furthermore, actual capital ratios are well above minimum regulatory requirements. In addition, Costa Rica, Nicaragua, and the Dominican Republic have instituted capital requirements for market risk, and Costa Rica has established requirements for operational risk. However, the use of credit risk models introduced by Basel II has not been implemented in the region. Regarding the capacity of supervision, progress has been made on the implementation of a Risk Based Supervision (RBS) approach, in which the assessment of capital soundness and risk management systems of financial institutions uses the "expert judgment" of the supervisor. Indeed, RBS techniques and broadening the supervisory perimeter have been the main priorities in banking supervision in most CAPDR countries in recent years (Delgado and Meza, 2011).



Source: IMF WP/11/299.  
1/ Basel Core Principles compliance (last FSAP available). Not available for Nicaragua.  
2/ Authorities' self-assessment, as of end-2010



Source: Supervisory authorities.  
1/ Superintendencies' self-assessment on progress in the adoption of the RBS methodology.

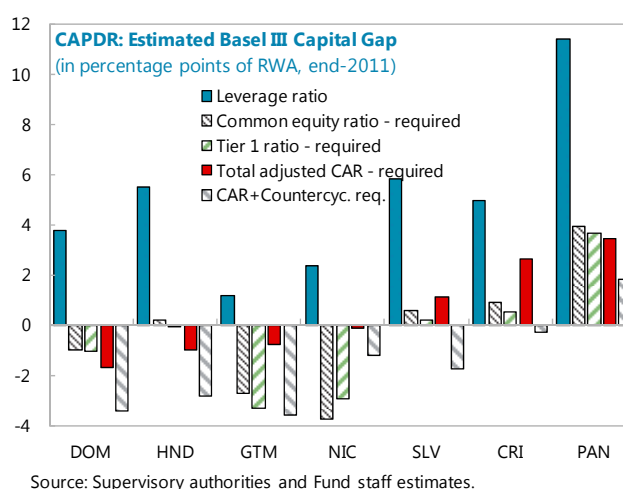
<sup>4</sup> See Delgado and Meza (2011) for a previous assessment of compliance in the region.

4. **CAPDR countries are also adopting cross-border supervision.** Since 2006, CAPDR countries have been working to adopt a cross-border consolidated supervision scheme (CBCS) that identifies the risks assumed by financial conglomerates in the region, through the Council of Superintendents of Financial Institutions of CAPDR (CCSBSO). A methodology for effective consolidated supervision has been developed, with technical assistance from CAPTAC-DR,<sup>5</sup> and common standards have been adopted in each country. Delgado and Meza (2011) estimate that the implementation of the core principles for effective banking supervision of the Basel Committee on Banking Supervision (BCBS) averages 67 percent.

### CAPDR Basel III Capital and liquidity gaps

5. **The results show that when applying Basel III criteria, most countries in the region meet or exceed Basel III capital requirements for most categories.** Capital ratios decline

when adjusted by Basel III guidelines, due to adjustments in capital and RWA, but all countries in the region meet or are close to compliance with Basel III capital ratios. The exception is Guatemala, where all capital ratios (except leverage) are below Basel III minima. Several countries fall below the Basel II total capital adequacy requirement, but negative gaps are about or below 1 percent. Nonetheless, most banking systems in the region remain compliant with Basel III common equity and tier 1 capital requirements. Yet, in case supervisory authorities decide to implement a countercyclical buffer, a substantial strengthening of bank capital will be needed. In addition, there may be some heterogeneity, in particular in Costa Rica capital buffers overall appear lower in public banks, which also have weaker asset quality and earnings compared to private banks (Annex II). All of the banks in Costa Rica are in compliance with the leverage ratio though smaller private domestic banks appear more leveraged (Annex II).



6. **All the banking systems in the region meet or exceed Basel III minimum liquidity requirements.** Even after adjusting for the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR) methodologies, short-term liquidity exceeds more than double the Basel requirements in all countries, while long-term liquidity is particularly strong in Nicaragua and, to

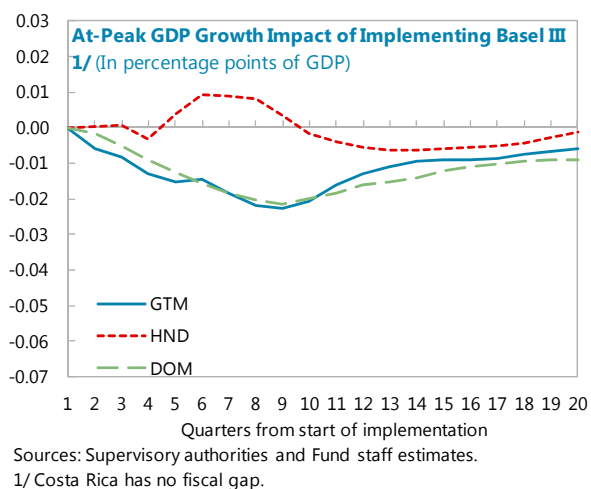
<sup>5</sup> Regional Technical Assistance Center for Central America, Panama and the Dominican Republic.

a lesser extent, in Panama, Guatemala, and El Salvador.<sup>6</sup> Nonetheless, in Costa Rica liquidity buffers are smaller in public banks (Annex II), in particular, in the two largest ones, possibly reflecting the implicit government guarantee and the explicit government guarantee on deposits.

## Macroeconomic Impact of the Transition to Higher Capital Requirements

### 7. Implementing Basel III capital requirements will have a low impact on GDP growth.

Sensitivity analysis of GDP to shocks in CAR in CAPDR and estimates of the impact on GDP growth from increasing current CAR to meet Basel III minimum requirements show that the macroeconomic impact of the transition to Basel III total capital requirements is fairly low.<sup>7</sup> Given the relatively low sensitivity of GDP growth to a CAR shock in the region and the high actual capital levels, the maximum at-peak impact will not exceed -0.02 percentage points of GDP growth (Guatemala). These results are in the low range of values for the macroeconomic impact of the transition to stronger capital and liquidity requirements for BIS countries compiled by the BIS Macroeconomic Analysis Group (MAG).



8. **The response of GDP growth is valid for any reason the capital ratio increases.** The econometric estimation of the impact on GDP growth of a CAR change does not hinge on the motivation for such change. Therefore, after any CAR increase is decided; for example, to match higher regulatory capital ratio levels for required buffers, or to comply with a leverage ratio requirement, one should observe an impact on GDP growth equal, on average, to the estimate obtained with the VAR approach.

## Missing Steps for Basel III and Implementation Challenges

9. **CAPDR countries should continue the pragmatic approach they have followed in the implementation of Basel standards.** The transition from one Basel accord to another should not be understood as a linear process. Thus, CAPDR countries will continue to focus on the implementation of those elements of Basel III that are more relevant for their financial

<sup>6</sup> Excess liquidity over Basel III requirements is estimated following Basel Committee on Banking Supervision (BCBS) instructions (BIS, 2010). See Delgado and Meza (2011) for a previous assessment of compliance in the region.

<sup>7</sup> The VAR analysis used to estimate the effect of CAR hikes on GDP growth follows Lown and Morgan (2006), and Berrospide and Edge (2010).

markets. For instance, the implementation of Basel II.5 regarding positions in derivatives and portfolio securitization has not been a short term priority since they represent a small share of CAPDR banks' operations.

10. **The elements of Basel III implementation that are more relevant for CAPDR financial markets and should have the highest short-term priority are:** (i) adopt Basel III definitions of capital following standards of quality and transparency to allow a more meaningful comparison of the capital position of banks; (ii) implement a capital conservation buffer; (iii) introduce a leverage ratio; and (iv) incorporate market and operational risk capital requirements. The capital and leverage requirements will strengthen soundness and avoid excessive risk taking. In the medium-term, priority should be put on: (v) aligning liquidity requirements with Basel III; and (vi) strengthening the supervisory process (Pillar II) and market discipline and transparency (Pillar III). In the long term, other elements might become important, such as: (vii) considering macroprudential instruments; and (viii) implementing capital charges for SIFIs.

11. **There are several legal and industry-based challenges to Basel III implementation in CAPDR, yet they seem manageable.** Implementing most Basel III elements require regulations that fall largely under the purview of the region's supervisory authorities (with the exception of the Dominican Republic). At the industry level, the strong presence of large international financial groups in the region might lead to a "de facto" compliance with Basel III. However, supervisors are still concerned about the ability of some local and regional groups to adapt to the new regulatory framework because banks would need: (i) skilled staff; (ii) sound IT systems; and (iii) financial muscle to strengthen the capital base. In spite of high average capital buffers, supervisory authorities of five out of seven countries also consider increasing capital levels a challenge for the industry. This apparent paradox is explained because in some countries adjusted levels of tier 1 capital are relatively low (Guatemala), the adoption of specific capital charges for market and operational risk is a challenge (Honduras), and the authorities have a medium-term focus on the implementation of countercyclical capital buffer requirements (Nicaragua and Panama).

## B. Balance Sheet Analysis<sup>8</sup>

*This section of the financial sector issues note looks at risks to financial stability using balance sheet analysis of the Costa Rican economy. Particular attention is paid to the external position of the economy and currency mismatches that often play a key role in emerging market crises.<sup>9</sup> The balance sheet of the aggregate economy has been weakened by the recent deterioration in the fiscal situation. The external position has also deteriorated, mostly as a result of increased reliance by commercial banks on external financing. However, external risks at the country level remain limited given the large stock of FDI liabilities relative to external debt as well as the sizeable official reserves relative to short-term debt. This study also finds that risks from currency and maturity mismatches are limited, concentrated in the non-financial public sector and financial sector respectively.*

12. **The Balance Sheet Analysis (BSA) was developed as a useful framework to help better understand the financial crises of the late 1990s and early 2000s.** It was proposed by Allen et al. (2002) and has been applied to many emerging-market countries. The BSA studies the stocks of financial assets and liabilities and analyses the maturity and currency mismatches at the aggregate economy level and at each economic sector. It can highlight a country's vulnerabilities to liquidity or solvency problems and reveal potential spillovers across sectors that can transmit the impact of economic shocks.

13. **The main instrument for this analysis is the balance sheet matrix.** It typically depicts five sectors: (i) the central bank; (ii) the non-financial public sector which includes the central government, state and local governments, public non-financial firms, and social security; (iii) the financial sector including other depository corporations and other financial firms (nonbanks); (iv) the non-financial private sector which includes non financial corporations and other domestic resident sector (largely households); and (v) the rest of the world or nonresidents. Within each sector, assets and liabilities are decomposed into foreign currency or domestic currency and some estimates can be made of maturity structure. The matrix shows the inter-sectoral claims and liabilities between each domestic sector and versus nonresidents (see Annex I for the basic structure of the matrix).

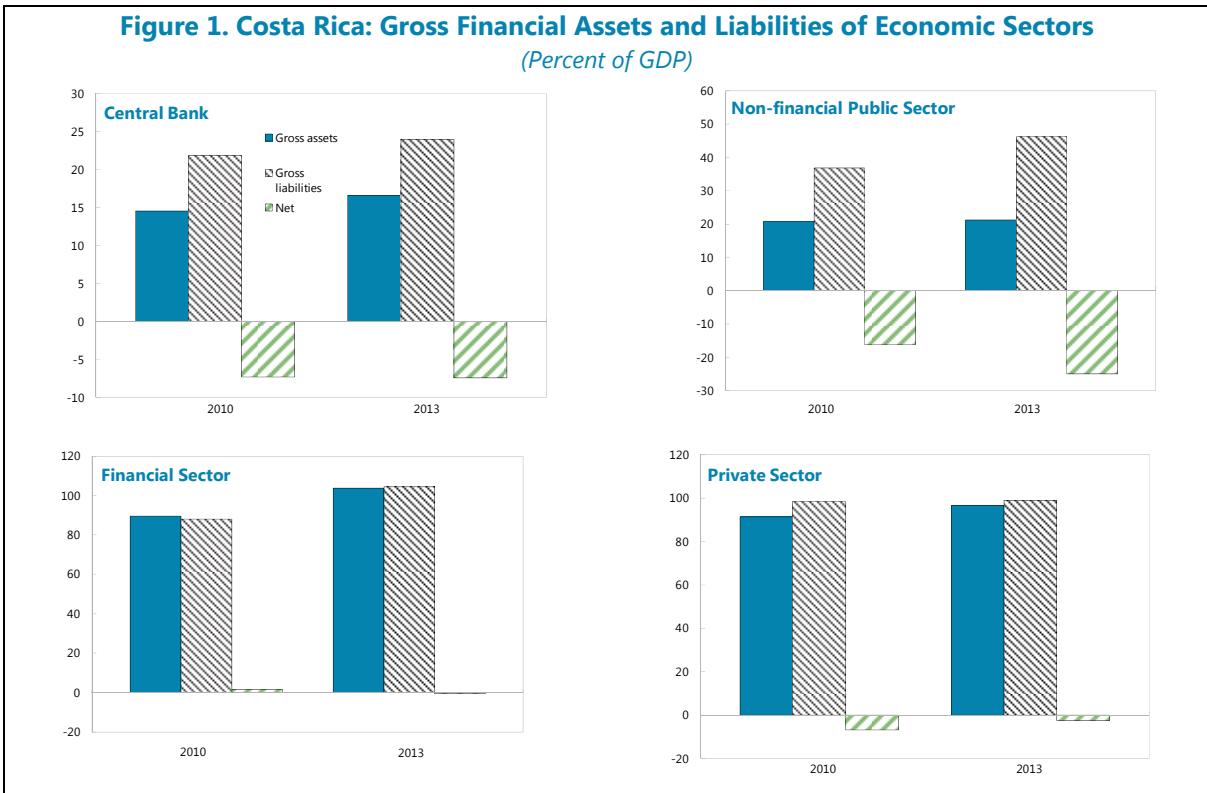
14. **The overall balance sheet positions of the domestic economic sectors have changed moderately since 2010.**<sup>10</sup> The central bank remains a net debtor as the sterilization cost of the accumulation of foreign reserves continues to weigh on its balance sheet (Analytical Note IV). The non-financial public sector's net debtor position has increased driven by large fiscal deficits

<sup>8</sup> Prepared by Jaume Puig-Forné

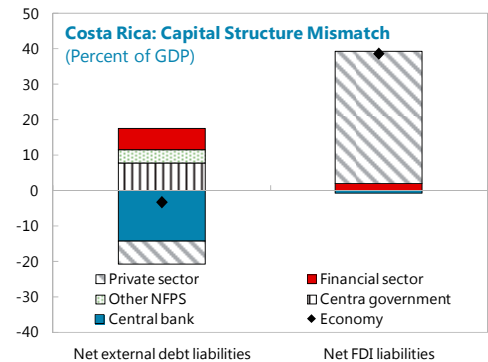
<sup>9</sup> Allen, Rosenberg, Keller, Setser and Roubini (2002).

<sup>10</sup> This is the first year when comprehensive BSA data are available from the central bank. The period since 2010 captures part of the recent period of worsening domestic fiscal situation, as well as the recent period of strong capital inflows into emerging markets.

of the central government (Analytical Note III). The financial sector’s net creditor position has switched from small creditor position to small debtor position following the increase in the sector’s external debt. Meanwhile, the private sector’s debtor position, which mainly reflects its large FDI liabilities, has declined somewhat reflecting continued increase in bank deposits and other savings instruments (Figure 1).



15. **External risks at the country level are limited given the dominance of FDI liabilities and the sizeable official reserves.** Costa Rica has a total net external debtor position of about 35 percent of GDP in 2013, but this largely reflects large FDI liabilities, which are a sign of a strong capital structure at the country level. Excluding FDI liabilities, the economy has a small net creditor position of about 4 percent of GDP, implying reduced risks of capital account crises (Table 1).<sup>11</sup> The economy as a whole also has limited

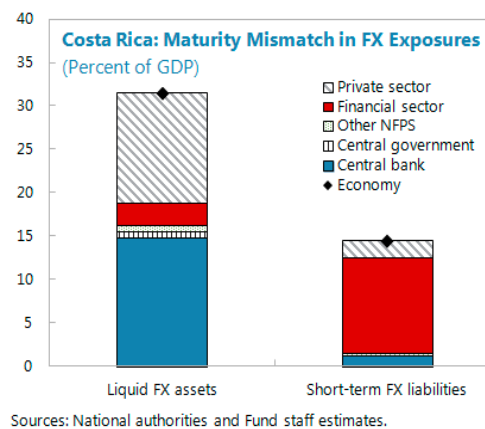
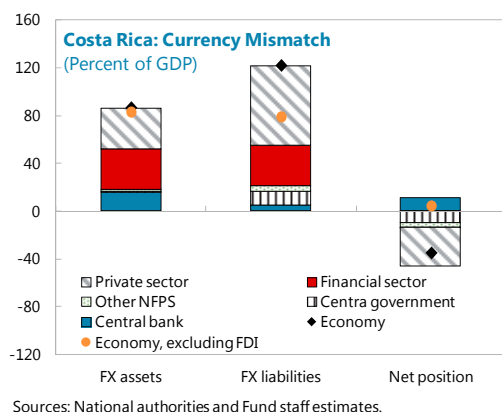


Sources: National authorities and Fund staff estimates.

<sup>11</sup> A country’s capital structure is critical in determining its vulnerability to market volatility. Emerging markets that undergo capital account crises tend to have “inverted” capital structures that magnify a shock, with debt-service payments generally remaining unchanged or increasing—if denominated in FX or with floating rates—as payment capacity decreases during crises. In contrast, payments from equity are state contingent, with profits and dividends falling in bad times. (IMF, 2002).

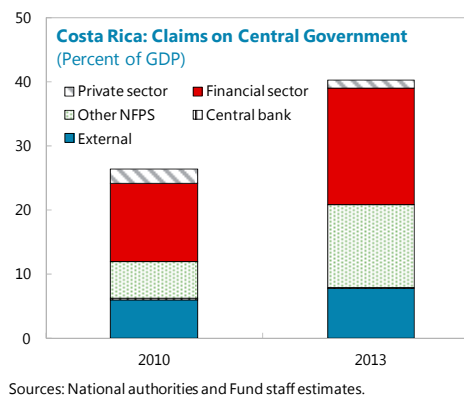


vulnerability to currency risks, given its positive net FX debt position (Table 1).<sup>12</sup> The existing currency risks are concentrated in the non-financial public sector, which would suffer the largest losses in the event of an exchange rate shock—about 4 percent of GDP with a 30 percent depreciation shock (Table 2). Vulnerabilities arising from maturity mismatches in FX exposures are also limited at the country level, given sizeable official reserves and private sector liquid foreign assets relative to short-term FX liabilities concentrated in the financial sector (Table 1).<sup>13</sup>



**16. The total public sector is exposed to risks from currency mismatches, although these have declined with the accumulation of official reserves.**

The public sector has a net external creditor position of about 3½ percent of GDP, reflecting sizeable central bank reserves relative to external debt of the central government and public enterprises (Table 1). However, the public sector has a net FX debtor position once FX-denominated domestic debt of the central government and commercial banks' claims on central bank reserves—related to required reserves on FX deposits—are also taken into account. The public sector's net FX debtor position has declined from 6 to 3 percent of GDP from 2010 to 2013 reflecting mostly the accumulation of central bank reserves over this period. The weakening of the fiscal situation of the central government in recent years has not substantially increased the country's external vulnerabilities according to the BSA analysis, as the bulk of the increase in debt has been financed by the social security fund and the domestic financial sector.<sup>14</sup> Maturity risks in FX exposures of the public sector are limited



<sup>12</sup> Again excluding FDI liabilities.

<sup>13</sup> Analysis of maturity mismatches at the economy level focuses on short-term FX exposures, since short-term exposures in domestic currency vis-à-vis the rest of the world are virtually non-existent.

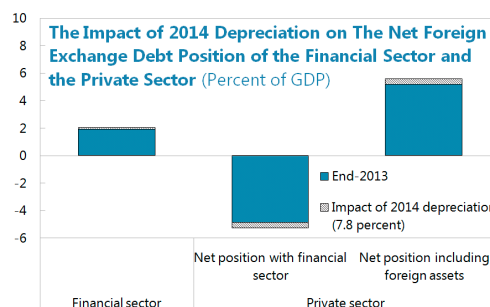
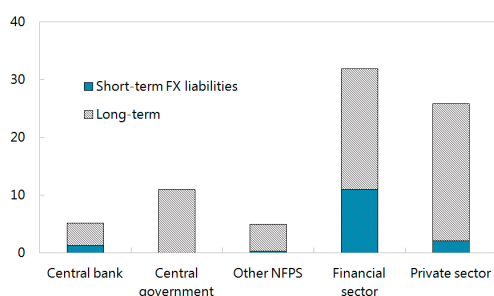
<sup>14</sup> Notwithstanding recent large Eurobond issuance, the increase in domestic debt over the entire period of rising debt—since 2008—has been seven times as large as the increase in external debt.

given the large size of official reserves and the typically long maturities of public sector external debt.

17. **The financial sector maintains a net FX creditor position despite a significant increase in foreign borrowing.** The net external debtor position of the financial sector, excluding net FDI exposures, has increased from 1 to 6 percent of GDP from 2010 to 2013 as financial corporations have increased reliance on foreign bank borrowing and ramped up bond issuance in international markets. That said, the financial sector maintains a modest net foreign currency creditor position—excluding net FDI exposures—of about 2 percent of GDP, as the sector channeled the additional external financing into domestic credit in FX, avoiding direct currency mismatches in their balance sheets on aggregate (Tables 1 and 2). The financial sector is the sector of the economy with the greatest maturity mismatches in FX exposures, consistent with the typical maturity transformation function of the sector.<sup>15</sup>

18. **Vulnerabilities from currency risks in the non-financial private sector appear limited to positions vis-à-vis the banking sector.** The private sector has a net FX debtor position of 5 percent vis-à-vis the domestic banking sector, implying a risk that currency mismatches in these positions could translate into credit quality issues for the banking sector in the event of currency depreciation. For example, the depreciation experienced in 2014 has generated losses of about 0.5 percent in private sector positions with the domestic banking sector (Table 2), and a larger 30 percent depreciation shock would cause losses of about 1.5 percent of GDP. The private sector, however, has an overall net FX creditor position of 5 percent of GDP once foreign assets held by the sector are also taken into account (Table 2). This implies that the private sector in aggregate benefits from currency depreciation. Maturity risks in FX positions of the private sector are minimal, given that short-term FX bank deposits are significantly larger than short-term FX liabilities (Table 1).<sup>16</sup>

Costa Rica. Maturity Breakdown of FX debt liabilities  
(Percent of GDP, 2013)



1/ Private sector net FX position with financial sector includes FX bank credit and deposits of non-financial corporations and households. Private sector net FX position also includes foreign assets of these sectors.

<sup>15</sup> The strength of the capital structure of banks is analyzed in section C of this AN from a regulatory capital point of view.

<sup>16</sup> Lack of detailed data on breakdown of private sector into nonfinancial corporations and households prevents the analysis of the strength of the capital structure of nonfinancial corporations.

**Table 1. Costa Rica: External and Foreign Currency Positions**

	Non-financial		Public Sector	Financial Sector	Private Sector	Economy
	Central Bank	Public Sector				
<b>End-2013</b>	(In percent of GDP)					
Gross External Assets	16.0	0.7	16.7	4.2	13.7	34.5
Gross External Liabilities	1.0	12.2	13.2	12.3	44.4	69.8
Net External Position	15.0	-11.5	3.5	-8.1	-30.7	-35.3
<i>Net External Debt Position 1/</i>	15.0	-11.5	3.5	-6.0	6.6	4.0
Gross FC Assets	16.0	1.9	17.8	34.1	34.3	86.2
Gross FC Liabilities	5.1	15.8	20.9	34.3	66.4	121.6
Net FC Position	10.9	-14.0	-3.1	-0.2	-32.1	-35.4
<i>Net FX Debt Position 1/</i>	10.9	-14.0	-3.1	1.9	5.2	4.0
Gross ST FC Assets	14.7	1.5	16.2	2.6	12.7	31.4
Gross ST FC Liabilities	1.2	0.3	1.5	11.0	2.0	14.4
Net ST FC Position	13.5	1.2	14.7	-8.4	10.7	17.0
<b>End-2010</b>						
Gross External Assets	14.3	0.4	14.7	4.9	15.3	34.9
Gross External Liabilities	1.4	10.9	12.3	7.9	43.5	63.6
Net External Position	12.9	-10.4	2.4	-3.0	-28.2	-28.8
<i>Net External Debt Position 1/</i>	12.9	-10.4	2.4	-0.9	6.2	7.8
Gross FC Assets	14.2	2.7	16.9	34.0	39.9	90.8
Gross FC Liabilities	6.8	16.3	23.0	33.9	61.9	118.9
Net FC Position	7.4	-13.5	-6.1	0.1	-22.1	-28.1
<i>Net FX Debt Position 1/</i>	7.4	-13.5	-6.1	2.2	12.4	8.5
Gross ST FC Assets	12.7	2.2	14.9	2.3	13.5	30.7
Gross ST FC Liabilities	2.3	0.2	2.5	13.2	4.1	19.8
Net ST FC Position	10.4	2.0	12.4	-10.9	9.4	10.9

Sources: Banco Central de Costa Rica, and Fund staff estimates.

1/ Excluding net FDI position.

**Table 2. Costa Rica: Net Foreign Currency Debt Position and Exchange Rate Shocks**

(In percent of GDP)

	End-2013	Loss/Gain	
		From 2014 depreciation	From large exchange rate shock (30 percent)
Central bank	10.9	0.8	3.3
Nonfinancial public sector	-14.0	-1.1	-4.2
Financial sector	1.9	0.1	0.6
Private sector			
Vis-à-vis financial sector 1/	-4.9	-0.4	-1.5
Vis-à-vis all sectors 2/	5.2	0.4	1.6

1/ Includes FX bank credit and deposits.

2/ Includes FX bank credit and deposits, and net foreign assets of the private sector.

## Annex I. Costa Rica: Net Intersectoral Asset and Liability Positions

Table A1. Net Intersectoral Asset and Liability Positions, 2010

(In percent of GDP)

Issuer of liability (debtor)	Public sector									Financial Sector						Nonfinancial Private Sector			Rest of the World		
	Central bank			Central government			Public Nonfinancial Corporations			Other depository corporations			Other financial corporations			Includes non-financial corps and households			Nonresidents		
	Claims	Liabilities	Net pos.	Claims	Liabilities	Net pos.	Claims	Liabilities	Net pos.	Claims	Liabilities	Net pos.	Claims	Liabilities	Net pos.	Claims	Liabilities	Net pos.	Claims	Liabilities	Net pos.
Central bank				2.3	0.3	2.0	1.1	0.0	1.1	10.3	0.0	10.3	2.2	0.0	2.1	4.6	0.0	4.6	1.4	14.3	-12.9
In domestic currency				0.6	0.3	0.3	1.0	0.0	1.0	6.9	0.0	6.9	2.1	0.0	2.1	4.4	0.0	4.4	0.0	0.1	-0.1
In foreign currency				1.7	0.0	1.7	0.0	0.0	0.0	3.5	0.0	3.5	0.1	0.0	0.1	0.1	0.0	0.1	1.4	14.2	-12.8
Central government	0.3	2.3	-2.0				5.7	0.3	5.4	5.4	1.6	3.8	6.8	0.9	5.9	2.3	0.2	2.1	5.9	0.0	5.9
In domestic currency	0.3	0.6	-0.3				5.4	0.3	5.0	2.9	1.6	1.3	5.7	0.9	4.8	1.6	0.2	1.4	0.0	0.0	0.0
In foreign currency	0.0	1.7	-1.7				0.3	0.0	0.3	2.5	0.0	2.4	1.1	0.0	1.1	0.7	0.0	0.7	5.9	0.0	5.9
Public Nonfinancial Corps.	0.0	1.1	-1.1	0.3	5.7	-5.4				0.3	2.1	-1.7	1.2	0.2	1.0	3.6	5.9	-2.3	5.0	0.4	4.6
In domestic currency	0.0	1.0	-1.0	0.3	5.4	-5.0				0.1	1.9	-1.8	0.4	0.1	0.3	3.6	5.9	-2.3	0.2	0.0	0.2
In foreign currency	0.0	0.0	0.0	0.0	0.3	-0.3				0.2	0.1	0.1	0.8	0.0	0.8	0.0	0.0	0.0	4.8	0.4	4.4
Other depository corporations	0.0	10.3	-10.3	1.6	5.4	-3.8	2.1	0.3	1.7				7.8	2.0	5.9	49.7	46.9	2.7	7.8	4.2	3.5
In domestic currency	0.0	6.9	-6.9	1.6	2.9	-1.3	1.9	0.1	1.8				5.7	1.0	4.7	29.4	28.9	0.5	1.1	0.2	0.8
In foreign currency	0.0	3.5	-3.5	0.0	2.5	-2.4	0.1	0.2	-0.1				2.1	0.9	1.2	20.3	18.1	2.3	6.7	4.0	2.7
Other financial corporations	0.0	2.2	-2.1	0.9	6.8	-5.9	0.2	1.2	-1.0	2.0	7.8	-5.9				16.0	1.8	14.2	0.1	0.7	-0.5
In domestic currency	0.0	2.1	-2.1	0.9	5.7	-4.8	0.1	0.4	-0.3	1.0	5.7	-4.7				12.4	1.4	11.1	0.0	0.2	-0.2
In foreign currency	0.0	0.1	-0.1	0.0	1.1	-1.1	0.0	0.8	-0.8	0.9	2.1	-1.2				3.5	0.4	3.1	0.1	0.4	-0.3
Nonfinancial private sector	0.0	4.6	-4.6	0.2	2.3	-2.1	5.9	3.6	2.3	46.9	49.7	-2.7	1.8	16.0	-14.2				43.5	15.3	28.2
In domestic currency	0.0	4.4	-4.4	0.2	1.6	-1.4	5.9	3.6	2.3	28.9	29.4	-0.5	1.4	12.4	-11.1				0.0	0.0	0.0
In foreign currency	0.0	0.1	-0.1	0.0	0.7	-0.7	0.0	0.0	0.0	18.1	20.3	-2.3	0.4	3.5	-3.1				43.5	15.3	28.2
Rest of the world	14.3	1.4	12.9	0.0	5.9	-5.9	0.4	5.0	-4.6	4.2	7.8	-3.5	0.7	0.1	0.5	15.3	43.5	-28.2			
In domestic currency	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.2	-0.2	0.2	1.1	-0.8	0.2	0.0	0.2	0.0	0.0	0.0			
In foreign currency	14.2	1.4	12.8	0.0	5.9	-5.9	0.4	4.8	-4.4	4.0	6.7	-2.7	0.4	0.1	0.3	15.3	43.5	-28.2			
<b>Total</b>	14.6	21.8	-7.3	5.4	26.4	-21.0	15.3	10.4	4.9	69.2	69.0	0.2	20.4	19.1	1.3	91.3	98.3	-6.9	63.6	34.9	28.8
in domestic currency	0.3	15.1	-14.7	3.7	15.9	-12.2	14.4	4.6	9.7	40.0	39.7	0.3	15.5	14.5	1.1	51.5	36.3	15.1	1.2	0.5	0.7
in foreign currency	14.2	6.8	7.4	1.7	10.4	-8.7	1.0	5.8	-4.8	29.1	29.3	-0.1	4.9	4.6	0.2	39.9	61.9	-22.1	62.4	34.3	28.1

Sources: Banco Central de Costa Rica, and staff estimates.

**Table A2. Net Intersectoral Asset and Liability Positions, 2013**  
(In percent of GDP)

Issuer of liability (debtor)	Public sector									Financial Sector						Nonfinancial Private Sector			Rest of the World		
	Central bank			Central government			Public Nonfinancial Corporations			Other depository corporations			Other financial corporations			Includes non-financial corps and households			Nonresidents		
	Claims	Liabilities	Net pos.	Claims	Liabilities	Net pos.	Claims	Liabilities	Net pos.	Claims	Liabilities	Net pos.	Claims	Liabilities	Net pos.	Claims	Liabilities	Net pos.	Claims	Liabilities	Net pos.
Central bank				1.0	0.2	0.8	1.0	0.0	1.0	12.7	0.4	12.3	4.5	0.0	4.5	3.8	0.0	3.8	1.0	16.0	-15.0
In domestic currency				0.2	0.2	0.0	1.0	0.0	1.0	9.4	0.4	9.0	4.5	0.0	4.5	3.8	0.0	3.8	0.0	0.1	0.0
In foreign currency				0.8	0.0	0.8	0.0	0.0	0.0	3.3	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	1.0	16.0	-15.0
Central government	0.2	1.0	-0.8				12.8	0.0	12.8	5.5	0.6	4.8	12.8	1.6	11.1	1.2	0.7	0.5	7.7	0.0	7.7
In domestic currency	0.2	0.2	0.0				12.5	0.0	12.5	4.0	0.6	3.4	12.3	1.6	10.7	0.1	0.7	-0.6	0.0	0.0	0.0
In foreign currency	0.0	0.8	-0.8				0.3	0.0	0.3	1.4	0.0	1.4	0.5	0.0	0.5	1.1	0.0	1.1	7.7	0.0	7.7
Public Nonfinancial Corps.	0.0	1.0	-1.0	0.0	12.8	-12.8				0.6	2.6	-2.0	0.9	0.1	0.8	0.0	0.1	-0.1	4.5	0.7	3.8
In domestic currency	0.0	1.0	-1.0	0.0	12.5	-12.5				0.4	2.5	-2.1	0.7	0.1	0.6	0.0	0.1	-0.1	0.0	0.0	0.0
In foreign currency	0.0	0.0	0.0	0.0	0.3	-0.3				0.2	0.1	0.1	0.2	0.0	0.2	0.0	0.0	0.0	4.5	0.7	3.8
Other depository corporations	0.4	12.7	-12.3	0.6	5.5	-4.8	2.6	0.6	2.0				8.0	1.0	7.0	52.2	51.7	0.4	12.1	3.4	8.7
In domestic currency	0.4	9.4	-9.0	0.6	4.0	-3.4	2.5	0.4	2.1				5.8	0.7	5.1	35.6	30.2	5.3	0.2	0.1	0.1
In foreign currency	0.0	3.3	-3.3	0.0	1.4	-1.4	0.1	0.2	-0.1				2.2	0.3	1.8	16.6	21.5	-4.9	11.9	3.3	8.6
Other financial corporations	0.0	4.5	-4.5	1.6	12.8	-11.1	0.1	0.9	-0.8	1.0	8.0	-7.0				25.6	2.0	23.6	0.1	0.7	-0.6
In domestic currency	0.0	4.5	-4.5	1.6	12.3	-10.7	0.1	0.7	-0.6	0.7	5.8	-5.1				22.7	1.5	21.2	0.0	0.1	-0.1
In foreign currency	0.0	0.0	0.0	0.0	0.5	-0.5	0.0	0.2	-0.2	0.3	2.2	-1.8				2.9	0.5	2.4	0.1	0.6	-0.5
Nonfinancial private sector	0.0	3.8	-3.8	0.7	1.2	-0.5	0.1	0.0	0.1	51.7	52.2	-0.4	2.0	25.6	-23.6				44.4	13.7	30.7
In domestic currency	0.0	3.8	-3.8	0.7	0.1	0.6	0.1	0.0	0.1	30.2	35.6	-5.3	1.5	22.7	-21.2				0.0	0.0	0.0
In foreign currency	0.0	0.0	0.0	0.0	1.1	-1.1	0.0	0.0	0.0	21.5	16.6	4.9	0.5	2.9	-2.4				44.4	13.7	30.7
Rest of the world	16.0	1.0	15.0	0.0	7.7	-7.7	0.7	4.5	-3.8	3.4	12.1	-8.7	0.7	0.1	0.6	13.7	44.4	-30.7			
In domestic currency	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	-0.1	0.1	0.0	0.1	0.0	0.0	0.0			
In foreign currency	16.0	1.0	15.0	0.0	7.7	-7.7	0.7	4.5	-3.8	3.3	11.9	-8.6	0.6	0.1	0.5	13.7	44.4	-30.7			
<b>Total</b>	16.6	24.0	-7.4	4.0	40.2	-36.2	17.3	6.0	11.3	74.9	75.9	-1.0	28.9	28.5	0.4	96.5	98.9	-2.5	69.8	34.5	35.3
in domestic currency	0.6	18.9	-18.3	3.2	29.2	-26.0	16.2	1.1	15.1	44.8	45.0	-0.2	24.9	25.1	-0.1	62.2	32.6	29.6	0.2	0.3	-0.1
in foreign currency	16.0	5.1	10.9	0.8	11.0	-10.2	1.1	4.9	-3.8	30.1	30.9	-0.8	4.0	3.4	0.6	34.3	66.4	-32.1	69.6	34.2	35.4

Sources: Banco Central de Costa Rica, and staff estimates.

## Annex II. Costa Rica: Bank Heat Maps

### Assets and Ownership of Costa Rican Banks

Bank	Total Assets		Ownership	
	(last available year, millions of USD)			
Bank A	10,159		Public	Domestic
Bank B	8,508		Public	Domestic
Bank C	4,296		Mixed	Domestic
Bank D	3,095		Private	Foreign
Bank E	2,322		Private	Foreign
Bank F	1,475		Private	Foreign
Bank G	1,072		Public	Domestic
Bank H	880		Private	Foreign
Bank I	790		Private	Foreign
Bank J	625		Private	Foreign
Bank K	456		Private	Domestic
Bank L	388		Private	Domestic
Bank M	339		Private	Foreign
Bank N	246		Private	Domestic
Bank O	234		Private	Domestic

### Aggregate Bank Heat Maps<sup>1</sup>

	Overall							
	2007	2008	2009	2010	2011	2012	2013	2014
Public Banks	2.0	-0.3	-2.5	-0.5	-0.1	-1.3	-3.4	-4.0
Private Banks	-3.8	-1.7	-1.7	0.8	3.1	3.0	1.6	1.8

	Capital Adequacy							
	Equity to RWA (inc. floor/cap per Basel II)							
	2007	2008	2009	2010	2011	2012	2013	2014
Public Banks	0.2	-0.5	0.2	1.1	0.1	-1.5	-1.4	-1.3
Private Banks	-1.0	-1.0	-0.1	1.0	1.5	1.0	0.4	-0.2

	Asset Quality							
	Impaired Loans to Gross Loans							
	2007	2008	2009	2010	2011	2012	2013	2014
Public Banks	0.1	0.0	1.9	1.4	1.0	0.8	0.9	0.6
Private Banks	-0.9	-0.5	0.1	-0.4	-1.2	-1.2	-1.0	-0.9

	Earnings							
	Return on Average Assets							
	2007	2008	2009	2010	2011	2012	2013	2014
Public Banks	0.6	-0.3	-0.9	-0.2	0.8	0.9	-1.2	-1.5
Private Banks	-2.0	0.0	-0.9	-1.6	-0.1	0.7	0.1	1.2

	Liquidity							
	Liquid Assets to Deposits and Short-term Borrowings							
	2007	2008	2009	2010	2011	2012	2013	2014
Public Banks	-0.2	-0.8	-1.1	-1.3	-1.3	-1.1	-0.8	-1.0
Private Banks	-1.0	-0.3	0.1	1.4	1.1	1.0	0.9	0.8

	Leverage							
	Tangible Equity to Tangible Assets							
	2007	2008	2009	2010	2011	2012	2013	2014
Public Banks	1.5	1.2	1.1	1.3	1.3	1.0	0.8	0.3
Private Banks	-0.7	-0.9	-0.8	-0.4	-0.7	-0.9	-0.9	-0.9

<sup>1</sup> The Heat maps are based on the methodology from Jesakul, Kwoh, and Lian Ong (2013).

Individual Bank Heat Maps<sup>2</sup>

Name	Asset Quality						
	Impaired Loans to Gross Loans						
	2007	2008	2009	2010	2011	2012	2013
Bank 1	-0.6	-0.4	0.3	1.1	0.5	-0.5	-0.2
Bank 2	-1.1	..	-0.8	-1.2	-0.7	-1.2	..
Bank 3	..	..	..	..	-0.8	-0.7	-0.6
Bank 4	2.9	-0.4	-0.6	-0.2	0.1	-0.5	-0.3
Bank 5	..	..	..	..	..	-0.5	-0.3
Bank 6	1.4	1.2	2.0	2.0	0.9	1.2	-0.3
Bank 7	0.4	-0.1	0.0	-0.3	-0.3	0.3	..
Bank 8	-0.7	-0.8	-0.8	-1.1	-1.1	-0.9	-0.6
Bank 9	-0.8	-0.6	-0.6	-0.6	-0.7	-0.6	-0.3
Bank 10	-0.7	-0.4	-0.4	-0.5	-0.4	-0.2	0.1
Bank 11	-0.5	-0.5	-0.5	-0.6	-0.6	-0.5	0.3
Bank 12	0.0	1.3	1.8	1.4	0.8	-0.5	-0.5
Bank 13	0.4	0.2	-0.1	..	0.1	-0.6	-0.7
Bank 14	..	0.9	-0.6	1.7	1.7	-0.3	0.0
Bank 15	..	..	..	..	-1.2	-1.0	-1.2

Name	Overall						
	2007	2008	2009	2010	2011	2012	2013
Bank 1	..	..	..	..	..	..	..
Bank 2	..	..	..	..	..	..	..
Bank 3	..	..	..	..	3.7	..	..
Bank 4	..	..	..	..	..	..	..
Bank 5	..	..	..	..	..	..	..
Bank 6	..	..	..	..	..	..	..
Bank 7	..	..	..	..	..	..	..
Bank 8	3.1	1.4	2.2	3.2	5.4	5.5	..
Bank 9	-0.6	-0.3	-1.3	-1.2	-0.9	-1.6	-2.2
Bank 10	-1.9	-1.1	-2.2	-2.0	-0.4	..	..
Bank 11	-2.9	-2.1	0.0	-2.1	-2.3	-3.0	..
Bank 12	..	..	..	..	..	..	..
Bank 13	..	..	..	..	..	..	..
Bank 14	..	..	..	..	..	..	..
Bank 15	..	..	..	..	2.4	2.9	2.3

<sup>2</sup> The Heat maps are based on the methodology from Jesakul, Kwoh, and Lian Ong (2013).



Name	Capital Adequacy						
	Equity to RWA (inc. floor/cap per Basel II)						
	2007	2008	2009	2010	2011	2012	2013
Bank 1	..	..	..	..	..	..	..
Bank 2	..	..	..	..	..	..	..
Bank 3	..	..	..	..	0.5	..	..
Bank 4	..	..	..	..	..	..	..
Bank 5	..	..	..	..	..	..	..
Bank 6	..	..	..	..	..	..	..
Bank 7	..	..	..	..	..	..	..
Bank 8	0.2	0.2	1.3	2.0	1.7	1.1	..
Bank 9	-0.1	0.1	0.2	0.2	0.0	-0.1	-0.3
Bank 10	-0.7	-0.2	-0.2	-0.1	-0.1	..	..
Bank 11	-1.2	-1.1	-1.1	-1.6	-1.6	-1.7	..
Bank 12	..	..	..	..	..	..	..
Bank 13	..	..	..	..	..	..	..
Bank 14	..	..	..	..	..	..	..
Bank 15	..	..	..	..	1.0	0.0	0.3

Name	Earnings						
	Return on Average Assets						
	2007	2008	2009	2010	2011	2012	2013
Bank 1	-0.6	-0.2	-0.3	-0.5	-0.7	-0.3	-0.7
Bank 2	-0.6	0.0	-0.2	-0.4	0.5	0.8	..
Bank 3	..	4.3	-1.1	-1.2	-0.9	-0.5	-0.8
Bank 4	-0.7	0.4	0.7	-0.1	-0.3	0.2	0.2
Bank 5	..	..	..	..	..	-0.8	-1.2
Bank 6	-2.5	-0.9	-1.1	-0.9	-0.8	-0.2	-0.5
Bank 7	0.5	0.9	0.4	-0.1	2.2	1.9	..
Bank 8	1.1	0.3	-0.1	0.5	2.6	1.9	1.0
Bank 9	-0.1	-0.2	-0.5	-0.4	0.0	0.0	-0.3
Bank 10	-0.1	-0.3	-0.5	-0.4	-0.4	0.3	-0.8
Bank 11	-1.1	-0.5	-0.4	-0.8	-0.4	-0.3	-1.1
Bank 12	-1.5	-0.7	-1.1	-0.8	-0.9	0.2	0.1
Bank 13	-0.5	0.8	-0.3	-0.4	1.2	0.6	0.4
Bank 14	-0.7	0.0	-0.8	-0.4	0.2	-0.3	-1.0
Bank 15	..	..	..	..	-1.7	0.2	0.3

Name	Liquidity						
	Liquid Assets to Deposits and Short-term Borrowings						
	2007	2008	2009	2010	2011	2012	2013
Bank 1	-0.7	-0.7	0.2	-0.5	-0.2	-0.3	-0.4
Bank 2	0.1	0.7	1.0	0.2	0.3	0.2	..
Bank 3	..	..	3.4	0.6	2.8	-1.2	-1.1
Bank 4	1.1	-0.3	-0.6	-0.3	-0.4	-0.4	-0.3
Bank 5	..	..	..	..	..	0.8	1.2
Bank 6	0.0	-0.1	0.5	0.4	-0.2	0.1	0.1
Bank 7	0.4	0.6	1.0	0.9	0.8	1.2	..
Bank 8	-0.5	-0.1	0.0	-0.6	-0.8	-0.3	-0.4
Bank 9	-1.1	-0.6	-1.3	-1.3	-1.2	-1.6	-1.4
Bank 10	-1.1	-0.7	-1.6	-1.7	0.0	-1.9	-1.4
Bank 11	-0.4	-0.7	1.4	0.1	-0.1	-0.1	-0.1
Bank 12	0.1	-0.1	0.3	0.3	0.8	0.7	0.5
Bank 13	0.1	0.2	0.2	0.3	0.2	0.1	0.2
Bank 14	0.1	0.2	1.0	-0.8	-0.8	-0.9	0.0
Bank 15	..	..	..	..	1.0	1.2	-0.5

Name	Leverage						
	Tangible Equity to Tangible Assets						
	2007	2008	2009	2010	2011	2012	2013
Bank 1	-1.1	-0.5	-0.3	-0.5	-0.6	-0.8	-1.0
Bank 2	0.4	-0.2	-0.2	-0.3	-0.1	0.0	..
Bank 3	..	5.1	2.1	0.6	0.6	1.2	0.9
Bank 4	2.0	2.3	0.5	-0.1	0.0	0.0	-0.6
Bank 5	..	..	..	..	..	-0.5	-1.4
Bank 6	-0.5	-0.3	-0.3	-0.2	-0.2	0.0	0.1
Bank 7	-0.7	-0.3	-0.3	-0.3	-0.2	-0.1	..
Bank 8	1.5	0.2	0.2	0.3	0.9	1.9	2.2
Bank 9	-0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.6
Bank 10	-0.7	-0.3	-0.3	-0.3	-0.3	-0.4	-0.7
Bank 11	-0.7	-0.3	-0.4	-0.5	-0.8	-1.4	-1.0
Bank 12	-0.3	-0.3	-0.3	-0.2	-0.3	0.1	0.1
Bank 13	-0.6	-0.4	-0.4	-0.4	-0.5	-0.6	-0.6
Bank 14	-0.2	-0.2	-0.5	-0.5	-0.7	-1.0	-0.1
Bank 15	..	..	..	..	0.9	0.5	1.1