

Costa Rica: Selected Issues

This paper on Costa Rica was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on February 5, 2013. The views expressed in this document are those of the staff team and do not necessarily reflect the views of the government of Costa Rica or the Executive Board of the IMF.

The policy of publication of staff reports and other documents by the IMF allows for the deletion of market-sensitive information.

Copies of this report are available to the public from

International Monetary Fund • Publication Services
700 19th Street, N.W. • Washington, D.C. 20431
Telephone: (202) 623-7430 • Telefax: (202) 623-7201
E-mail: publications@imf.org Internet: <http://www.imf.org>

International Monetary Fund
Washington, D.C.



COSTA RICA

February 5, 2013

SELECTED ISSUES

Approved By:
**The Western
Hemisphere
Department**

Prepared by Fernando Delgado, Pablo Morra,
Yulia Ustyugova (WHD) and Eugenio Cerutti (RES)

CONTENTS

INTERNATIONAL SPILLOVERS	2
A. Trade and Financial Linkages	2
B. Growth Spillovers	4
C. Fiscal Spillovers	7
D. Banking and Sovereign Stress Spillovers	8
POTENTIAL OUTPUT ESTIMATES	12
ASSESSING FISCAL VULNERABILITY AND MEDIUM-TERM SUSTAINABILITY	14
BASEL III AND COSTA RICA'S BANKING SYSTEM	21
FIGURE	
1. Simulation of Growth Spillovers	6
APPENDIX	
I. Contagion Module – A Simulation of Downstream Risk from Losses on Assets	11
REFERENCES	20

INTERNATIONAL SPILLOVERS¹

This note assesses potential spillovers to Costa Rica from possible shocks due to cross-country linkages. It overviews trade and financial linkages; analyzes the impact of global fiscal consolidation on Costa Rica; reviews possible spillovers from a slowdown in the growth pace of the country's main trading partners; and estimates the impact from potential losses in foreign financial assets on credit availability to Costa Rican borrowers.

A. Trade and Financial Linkages

1. **The geographical diversification of Costa Rica's trade is still relatively limited.** Costa Rica is a small open economy, with exports and imports of goods and real services accounting for 38 and 44 percent of GDP, respectively.² While the product composition and geographical origin and destination of Costa Rica's trade flows are gradually diversifying, the United States remains the country's main trading partner, accounting for about 40 percent of both exports and imports.³ In terms of individual countries, China⁴ is Costa Rica's second most important trading partner (receiving about 7 percent of total merchandise exports and supplying 6½ percent of total imports), followed by the Netherlands on the exports side (7 percent of total exports) and Mexico on the imports side (6.2 percent of total imports). Costa Rica also has close trade linkages with Latin American countries (about 30 percent of total exports and imports). Within this region, the most important trading partners are Mexico, Panama, Nicaragua and Guatemala. Trade with the Euro Area accounts for 15 percent of total exports and 7.2 percent of imports.

¹ Prepared by Yulia Ustyugova.

² Merchandise trade is the most important component of trade flows, accounting for 68 percent of total exports and 85 percent of total imports. However, the exports of real services are growing fast, increasing their share in total trade flows. In 2011, the exports of real services reached 12 percent of GDP and represented 32 percent of total exports. The merchandise trade balance posted a deficit of 12½ percent of GDP, while the balance of real services had a surplus of 8 percent of GDP.

³ While there is no data available about the destination of real services exports, the United States is likely to also be the main partner in this segment of trade, considering the large number of U.S. tourists visiting Costa Rica every year.

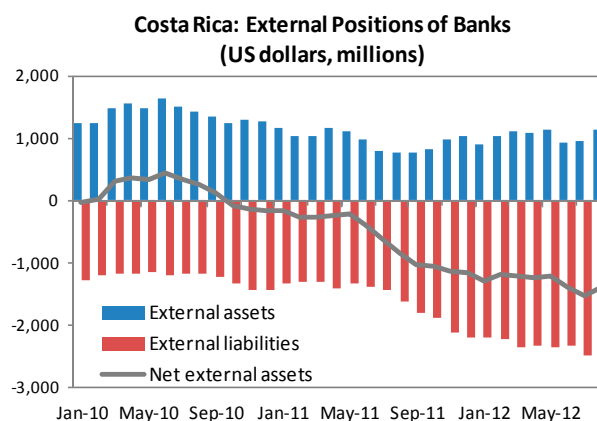
⁴ Including trade flows with Hong Kong.

Costa Rica Trade by Region and Countries, 2011

Origin / Destination	Exports		Imports		Balance
	Value in US\$ mill.	Share (percent)	Value in US\$ mill.	Share (percent)	Value in US\$ mill.
Total	10,408	100	15,372	100	-4,964
Advanced Economies	6,736	65	9,241	60	-2,505
United States	3,969	38	6,185	40	-2,216
Hong Kong	507	5	106	1	400
Euro Area	1,556	15	1,114	7	442
Netherlands	733	7	258	2	475
Belgium	285	3	83	1	202
Developing Asia	441	4	1,262	8	-821
China	200	2	888	6	-688
Latin America and Caribbean	3,111	30	4,618	30	-1,506
Panama	568	5	242	2	325
Nicaragua	457	4	106	1	351
Guatemala	410	4	299	2	110
Mexico	317	3	950	6	-633

Sources: IMF Direction of Trade Statistics and Fund staff calculations

2. **About a third of the banking sector assets belong to foreign banks.** At end-2012, the market share of foreign bank subsidiaries operating in Costa Rica (from the United States, Canada, United Kingdom and Panama) slightly exceeded 30 percent of the banking sector's total assets. The net external position of Costa Rica's banking sector (excluding the Central Bank of Costa Rica) amounts to 4½ percent of GDP with assets and liabilities mostly concentrated in the United States, Panama and Europe.



According to BIS data as of March 2012, the consolidated foreign claims of international banks on Costa Rica predominantly originate in North America and Europe.

Consolidated foreign claims of BIS-reporting banks on Costa Rica
(ultimate risk basis, millions of US dollars)

	2011-Q1	2011-Q2	2011-Q3	2011-Q4	2012-Q1
United States	1,613	1,669	1,891	1,936	2,005
Europe	2,222	2,299	2,327	2,186	2,280
UK	1,393	1,461	1,482	1,438	1,526
Germany	420	429	468	414	406
France	115	140	108	74	90
Switzerland	70	59	80	84	84
Spain	76	74	48	48	33
Japan	31	31	28	28	26
<i>All reporting banks</i>	<i>6,208</i>	<i>6,359</i>	<i>6,716</i>	<i>6,855</i>	<i>7,029</i>

Source: BIS, Table 9D

3. **Foreign direct investment (FDI) in Costa Rica is dominated by the United States.** As of 2011, the total FDI stock in Costa Rica amounted to about 40 percent of GDP, of which investments from the United States accounted for 64 percent, followed by the United Kingdom and Spain with 6 percent each. Costa Rica's outward foreign direct investment stock is small, at about 3 percent of GDP as of 2011, and mainly concentrated in Central America (about 57 percent of the total outward direct investment stock).

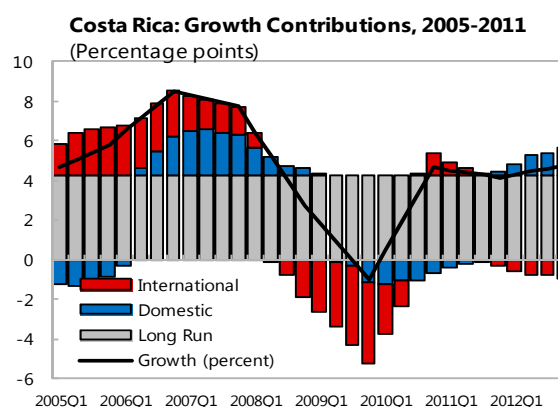
Direct Investment in/from Costa Rica, 2011 (millions of US dollars)					
Inward Direct Investment			Outward Direct Investment		
<i>Total Inward</i>	16,202	100%	<i>Total Outward</i>	1,106	100%
United States	10,333	64%	Netherlands	233	21%
Spain	1,022	6%	Panama	177	16%
United Kingdom	877	5%	Nicaragua	174	16%
Mexico	611	4%	Guatemala	142	13%
Switzerland	476	3%	El Salvador	126	11%

Source: IMF Coordinated Direct Investment Survey

B. Growth Spillovers

4. **A multi-country VAR analysis was used to assess the risk to GDP growth of Costa Rica from a decline in domestic demand in its main trading partners.** The exercise followed the approach described in Poirson and Weber (2011), which posits a decomposition of real GDP growth into three components: long-run growth, dynamic domestic factors, and dynamic foreign factors.

5. **Four different shock scenarios were analyzed to assess the growth implications for Costa Rica.** These consisted of a ½ standard deviation reduction in the dynamic domestic growth component in 2013 (compared to the WEO projections) of the U.S., China, Costa Rica's main European trading partners (Italy, Belgium, the United Kingdom, Germany and the Netherlands) and Central America.⁵ In each scenario, the new



⁵ Comprising Panama, Guatemala, El Salvador, Nicaragua, the Dominican Republic and Honduras.

growth rates for all 16 countries in the sample were computed holding all other domestic components unchanged.⁶

6. **Foreign factors drive the variation in Costa Rica’s GDP growth.** According to the VAR analysis, foreign factors stimulated the economy before 2008 and exerted a drag on GDP growth in 2009. The role of domestic factors appears moderate throughout the whole period under analysis, though recently they contributed to the pickup in economic activity.

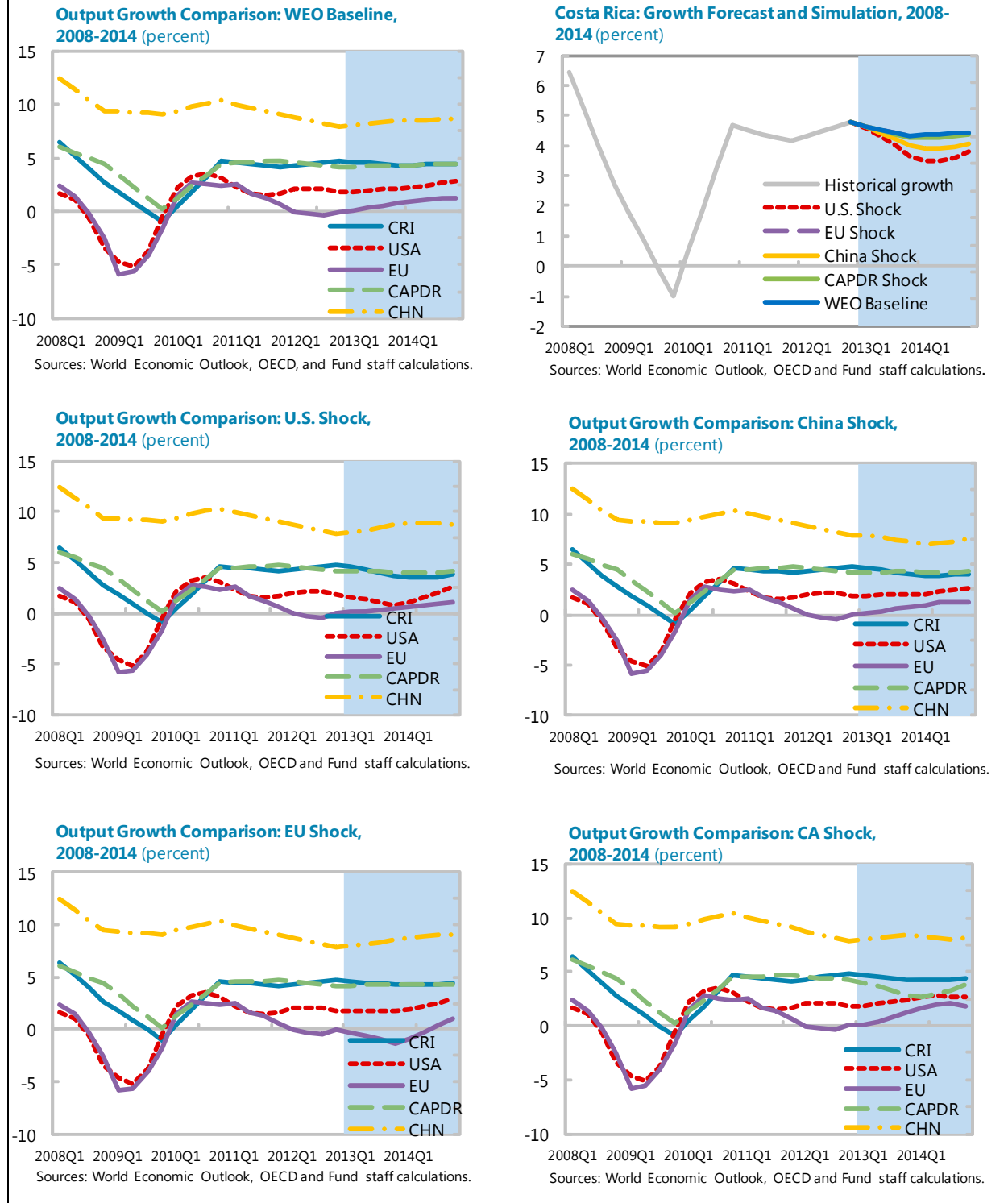
7. **A shock in the U.S. would have the largest impact on Costa Rican growth.** According to the VAR analysis, an adverse shock of $\frac{1}{2}$ standard deviation in the U.S. growth could lower Costa Rican GDP growth by $\frac{2}{5}$ percentage points in 2013 and $\frac{3}{4}$ percentage points in 2014. Such large sensitivity is explained by the close trade linkages between Costa Rica and the U.S. Moreover, since the U.S. is the main trading partner of other Central American countries, with which Costa Rica has close linkages too, an adverse shock in the U.S. would also hit Costa Rica through its negative impact on regional growth.

8. **A shock in China would also significantly affect Costa Rica’s GDP growth.** According to the VAR analysis, an adverse shock of $\frac{1}{2}$ standard deviation in China’s growth would lower Costa Rica’s growth by $\frac{1}{5}$ and $\frac{2}{5}$ percentage points in 2013 and 2014, respectively. The shock would propagate to Costa Rica through its direct impact, but most importantly through its negative effect on U.S. growth.

9. **Growth shocks in Europe and Central America appear to have minor effects on Costa Rican’s GDP growth.** These adverse growth effects do not exceed 0.11 percentage points in both 2013 and 2014. The mild impact of the European growth shock stems from the fact that U.S. growth does not seem to be negatively affected by it.

⁶ Results underestimate the impact on growth as there is no second-round effect on other countries’ dynamic domestic component but only on their external dynamic component. However, the approach has the advantage that it takes third country effects—e.g. the impact on Costa Rica of the fall in China’s domestic demand channeled via Guatemala — into account and thus estimates the spillover effects consistently across the 16 countries in the sample. The foreign component includes also four exogenous shocks: a dummy for the oil shock of 1979, a dummy for the Latin American debt crisis of the 1980s, a dummy for the oil shock of 1990, and a dummy for the recent financial crisis. The sample extends from the first quarter of 1975 to the fourth quarter of 2012. The country sample includes Belgium, China, Costa Rica, the Dominican Republic, El Salvador, Germany, Guatemala, Honduras, Hong Kong, Italy, Mexico, the Netherlands, Nicaragua, Panama, the United Kingdom, and the United States.

Figure 1. Costa Rica: Simulation of Growth Spillovers



10. **A severe intensification of euro area sovereign and banking crisis, however, could cut regional output by up to ½ percent relative to the projected levels.** The euro area risk scenario analyzed in the latest WEO (October 2012) assumes that “the forces of financial fragmentation increase and become entrenched, capital holes in banking systems expand, and the intra-euro-area capital account crisis increasingly spills outward” leading to higher corporate risk premiums in all economies and capital flight from euro area and emerging markets. According to the IMF’s staff Global Integrated Monetary and Fiscal model, output in the euro area core and the periphery in this case would fall by about 1¾ and 6 percent, respectively, relative to the WEO projections within one year. The peak decline in output in Latin America and the Caribbean region is estimated at about ½ percent relative to the baseline, which is relatively modest compared with the impact on the other regions due to the relatively limited trade and financial linkages with Europe.

C. Fiscal Spillovers

11. **The impact on Costa Rica of fiscal consolidation in the rest of the world can be simulated through a model based on the national accounting framework.** Estimates rely on projected changes in government revenue and expenditure in Costa Rica’s main trading partners (15 countries covering about 85 percent of total exports). They also take into account carry-over effects on GDP growth from fiscal adjustment in the previous years.⁷

12. **The currently-envisaged pace of worldwide fiscal consolidation would have small spillovers on Costa Rica.** This is because Costa Rica’s exposure to countries facing large fiscal consolidation needs in the near term (e.g., Southern Europe) is small. The simulation results indicate that current budget plans of Costa Rica’s main trading partners would lower GDP growth in Costa Rica by about 0.1 percentage points in 2013.⁸

⁷ For a detailed description of the model, see Ivanova and Weber (2011).

⁸ The methodology employed is based on Ivanova, Anna and Weber, Sebastian, 2011, “Do Fiscal Spillovers Matter?” IMF Working Paper 11/211, Washington: International Monetary Fund.

	Fiscal Contribution to Growth (In percentage points)								
	2011			2012			2013		
	Total growth impact	Of which: domestic spillover effect		Total growth impact	Of which: domestic spillover effect		Total growth impact	Of which: domestic spillover effect	
Costa Rica	0.0	0.1	-0.1	-0.1	0.0	-0.1	0.1	0.2	-0.1
of which:									
- current year	-0.2	-0.2	-0.1	0.1	0.2	0.0	0.0	0.1	-0.1
- carry over prev. year	0.2	0.3	-0.1	-0.2	-0.2	-0.1	0.1	0.2	0.0

Source: IMF staff estimates.

13. **The main risk facing Costa Rica stems from a larger-than-currently anticipated fiscal adjustment in the United States.** Simulations suggest that each percentage point of GDP of fiscal adjustment in the United States would reduce Costa Rican output growth by about 0.1 percentage points.

D. Banking and Sovereign Stress Spillovers⁹

14. **The direct spillovers to Costa Rica from stress in international banks were assessed based on the RES/MFU Bank Contagion Module.**¹⁰ This module estimates potential vulnerabilities of Costa Rican economy stemming from international banks that operate in Costa Rica or are involved into direct cross-border lending, based on the BIS banking statistics and bank-level data.¹¹

15. **The upstream exposure of Costa Rica to all BIS reporting banks is limited.** Costa Rica is exposed to rollover risk through direct cross-border lending by international banks and lending of foreign affiliates operating in Costa Rica that are funded by their parent banking systems. The upper-bound of the rollover risks is captured by the upstream exposure of Costa Rica to all BIS reporting banks, which was about 8 percent of GDP or 13 percent of total domestic and foreign

⁹ Prepared by Yulia Ustyugova and Eugenio Cerutti.

¹⁰ For methodological details see Cerutti, Eugenio, Stijn Claessens, and Patrick McGuire, 2012, "Systemic Risks in Global Banking: What can Available Data Tell Us and What More Dare are Needed?" BIS Working Paper 376, Bank for International Settlements.

¹¹ Such analysis may underestimate the potential spillovers, since it does not take into account the exposure of the domestic banks to analyzed shocks due to data limitations.

credit to non-bank private and public sectors,¹² as of March 2012.¹³ The upstream exposure to the Euro Area bank lenders is low, at about 1½ of GDP and 2½ percent of total credit to non-bank sector, respectively.

16. **Foreign credit availability to Costa Rican borrowers would not be much affected by substantial losses in claims of BIS-reporting banks on selected economies.** Based on the decline in value of private and public sector assets assumed in each scenario in the table below, the module calculates the losses on the international banking systems. If the banks do not have sufficient capital buffers to cover the losses triggered in a scenario, they have to deleverage (reduce their foreign and domestic assets) to restore their capital-to-asset ratios,¹⁴ thus squeezing credit lines to Costa Rica and other countries. The most sizable impact on claims on Costa Rican borrowers would stem from

Spillovers to Costa Rica from International Banks' Exposures as of March 2012

	Shock Originating From Magnitude 1/	Impact on claims on CRI borrowers (percent of GDP) 2/
Greece	30	0.0
Greece, Ireland, and Portugal	30	-0.1
Italy	10	0.0
Spain	10	-0.1
France	10	-0.3
Germany	10	-1.0
Netherlands	10	-0.3
Austria	10	0.0
UK	10	-1.2
Selected European Countries 3/	10	-2.9
US and Canada	10	-3.7

Source: RES/MFU Bank Contagion Module based on BIS, ECB, and IFS data.

1/ Magnitude denotes the percent of on-balance sheet claims (all borrowing sectors) that lose value.

2/ Reduction in foreign banks credit to Costa Rica due to the impact of the analyzed shock on their balance sheets, assuming a uniform deleveraging across domestic and external claims.

3/ Austria, Greece, Ireland, Portugal, Italy, Spain, France, Germany, Netherlands, and UK.

¹² Total credit to the non-bank sectors in Costa Rica is calculated based on adding IFS local (both domestic and foreign owned) banks' claims on non-bank borrowers, and BIS reporting banks' direct cross-border claims on non-bank sectors (BIS Locational Banking Statistics Table 6B)

¹³ This estimation corresponds to a worst case scenario – losing access to all BIS reporting banks financing without possibility of replacing it domestically or externally.

¹⁴ Bank recapitalizations as well as other remedial policy actions (e.g., ring fencing, monetary policy, etc.) at the host and/or home country level are not assumed.

losses in U.S. and Canadian assets. The direct impact on claims on Costa Rican borrowers from the decline in value of European assets does not exceed 3 percent of GDP. In turn, the maximum impact on the banking system would amount to 1½ percent of the system's total assets or about 1 percent of GDP.

17. **A substantial decline in value of the sovereign debt of the three IMF/EU-program countries would not directly affect foreign credit availability to Costa Rica.** The impact of the simulated losses in the balance sheets of international banks lending to Costa Rican borrowers would be close to zero. This is due to their limited sovereign exposure to the euro area periphery countries.

Spillovers to Costa Rica from International Banks' Sovereign Exposures as of March 2012

	Shock Originating From Magnitude 1/	Impact on claims on CRI borrowers (percent of GDP) 2/
Greece	50	0.0
Greece, Ireland, and Portugal	50	0.0

Source: RES/MFU Bank Contagion Module based on BIS, ECB, and IFS data.

1/ Magnitude denotes the percent of sovereign on-balance sheet claims that lose value.

2/ Reduction in foreign banks credit to Costa Rica due to the impact of the analyzed shock on their balance sheets, assuming a uniform deleveraging across domestic and external claims.

18. **The indirect effects on the Costa Rican economy associated with the analyzed shocks, however, could be much larger.** The model estimates do not consider the negative effects of deleveraging on market confidence, balance sheets of corporates, and output growth, which could aggravate Costa Rican and foreign banks' losses through an increase in non-performing loans. The impact stemming from these factors could be potentially more damaging for Costa Rica's economy than the estimated direct foreign bank spillovers.

Appendix I: Contagion Module – A Simulation of Downstream Risk from Losses on Assets¹

The analysis is based on several rounds of shocks. The first round considers bank losses on assets that deplete their capital partially or fully. The banking sector losses are calculated based on percentage loss assumptions in a particular economic sector (public sector, banking sector, and/or non-bank private sector) of an individual country or group of countries. In the second round, if losses are large enough, a capital ratio is assumed to be restored through deleveraging (loans not being rolled over and selling of assets, assuming no recapitalization). In the third round, banks are assumed to reduce their lending to other banks, causing fire sales, and further deleveraging. Potential bank failures cause additional losses to other banks on the asset and liability sides. Final convergence is achieved when no further deleveraging needs to occur. Methodological details may be described by the following set of equations:²

The analysis of the contagion of a crisis across borders and through common lender effects is based on considering a stylized bank balance sheet given by:

$$\text{Assets} = \text{Capital} + \text{Other} _ \text{Liabilities}$$

where $\text{Assets} = \text{Foreign_Assets} + \text{Domestic_Assets}$. To quantify the effect of a shock on assets, it is assumed that, when facing a loss of LLR percent on its foreign assets, a bank combines asset sales DEL and recapitalization $RECAP$ to maintain a sound capital to asset ratio CAR . For a given loss on its asset portfolio, the set of possible combinations of deleveraging (asset sales) and recapitalization is given by:

$$\text{Capital} - \text{LLR} * \text{Foreign_Assets} + \text{RECAP} = \text{CAR} * (\text{Assets} - \text{LLR} * \text{Foreign_Assets} - \text{DEL})$$

Hence, in the absence of a recapitalization of the banking sector, the extent of deleveraging by the financial institutions of a creditor country is given by:

$$\text{DEL} = \text{Assets} - \text{LLR} * \text{Foreign_Assets} - 1 / \text{CAR} * (\text{Capital} - \text{LLR} * \text{Foreign_Assets})$$

The process of deleveraging results in a global reduction of cross-border claims by all international banks affected by the shock either directly or indirectly. For each recipient country, the extent of capital outflows is the aggregation of the deleveraging process by all creditor countries. Additional rounds of deleveraging may take place if shocks are large enough to cause international banks' insolvencies, and if fire sales of assets occur, triggering further losses. The system converges to equilibrium when no further deleveraging takes place.

¹ Prepared by Eugenio Cerutti.

² Based on Tressel, Thierry, 2010. "Financial Contagion through Bank Deleveraging: Stylized Facts and Simulations Applied to the Financial Crisis," IMF Working Paper 10/236, Washington: International Monetary Fund, and Cerutti, Claessens, and McGuire (2012).

POTENTIAL OUTPUT ESTIMATES¹

1. Three methodologies were employed to assess potential output growth in Costa Rica.²

- A Hodrick-Prescott (HP) filter.³
- A production function approach (PF). The exercise was performed using a Cobb-Douglas production function assuming constant returns to scale technology.⁴
- A regime-switching model. The model was used to identify the characteristics in terms of average growth and volatility for the three states of economy: recession, sustainable growth and overheating.⁵ The pattern for potential growth was then identified by the estimated sustainable growth rate.

Average Potential Growth and Output Gap Volatility, 1994-2011

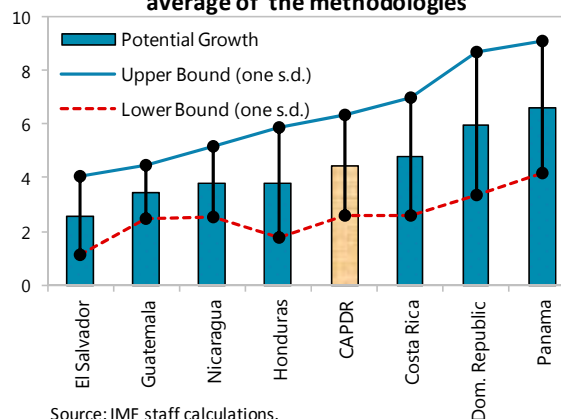
	Potential Growth	Output Gap Volatility
HP Filter	4.8	2.4
Production Function	4.7	2.3
Regime Switching	5.0	1.1
Average	4.8	1.9

Source: IMF staff calculations.

2. The average potential output growth in 1994-2011 was 4.8 percent, with an output gap volatility of 1.9 percent. The PF approach

provided the lowest potential output growth estimate at 4.7 percent, while the regime-switching model yielded the highest at 5 percent. The potential output growth and the output gap volatility in Costa Rica were broadly comparable with the regional averages, at 4.4 and 1.9 percent respectively.

Potential Growth in CAPDR in 1994-2011: average of the methodologies



Source: IMF staff calculations.

¹ Prepared by Yulia Ustyugova.

² The analysis relied on annual data for 1994-2011.

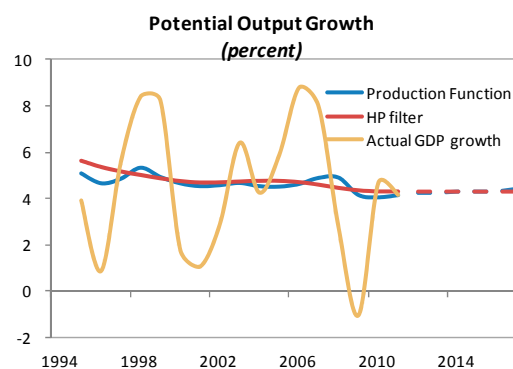
³ The restriction parameter λ was set at 100, as suggested by the literature for annual time series.

⁴ The elasticity of labor to output was set at 0.35. The depreciation rate of the stock of capital was assumed at 5 percent per year.

⁵ Based on Estevo, M. and Johnson C., 2012, "Potential Output and Output Gap in Central America, Panama and Dominican Republic". Working paper, unpublished (Washington: International Monetary Fund).

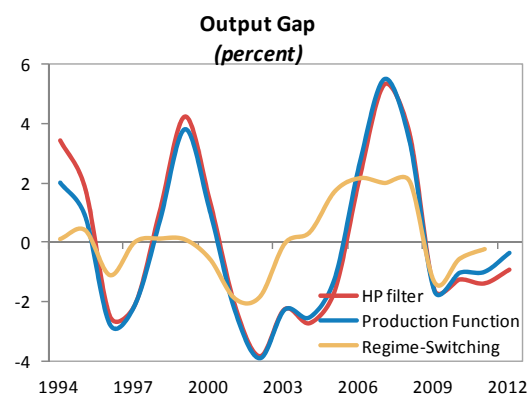
3. **The estimates suggest that potential output growth slowed in recent years.** According to the PF estimates, potential growth declined by about $\frac{3}{4}$ percentage points to 4.1 percent in 2009-2010 due to a fall in the contributions of both labor and capital. The HP filter approach points to a slightly smaller drop in the potential growth rate, of $\frac{1}{2}$ percentage point, to 4.3 percent in 2010.

4. **A moderate recovery to a potential output growth rate of about 4½ percent is projected over the medium term.** Under the PF and HP filter approaches, potential growth would recover to about 4.3 - 4.4 percent. The RS approach indicates that, in 2010-2011, the economy of Costa Rica moved from a recessionary state to a state of sustainable growth, with potential output growth at 5 percent.



Source: BCCR, IMF staff calculations.

5. **The estimates under two of the approaches point to closing output gaps in 2011-2012.** In 2009-10, the output gap was negative at about 1.6 percent of potential output. According to the RS and PF approaches, Costa Rica's output gap would be around zero in 2012, while the HP filter approach points to a still negative output gap of about 1 percent.



Source: IMF staff calculations.

6. **The macroeconomic projections prepared by the staff imply that in the medium term Costa Rican economy will grow at its potential.** Real GDP growth is projected to converge to a potential rate of 4½ percent by 2015, which is an average across the three methodologies employed in the analysis.

ASSESSING FISCAL VULNERABILITY AND MEDIUM-TERM SUSTAINABILITY¹

With a rising public debt-to-GDP ratio, Costa Rica needs to address its fiscal challenges to ensure medium-term sustainability. This note presents Costa Rica's fiscal position and the outlook for the medium and long term, examines indicators of fiscal vulnerability, discusses the need for fiscal adjustment, and assesses the optimal pace of fiscal consolidation.

1. **Costa Rica's fiscal position deteriorated sharply in recent years.** After posting a small surplus in 2008, Costa Rica's fiscal balance turned into a deficit of over 5 percent of GDP by 2010. The fiscal position deteriorated as a result of a significant decline in tax revenues (as these returned to their trend level) and a sharp increase in expenditure (mainly wages and transfers) on account of countercyclical policies implemented in response to the 2008-09 crisis. Tighter fiscal policies pursued since 2011 managed to improve the fiscal position moderately.² However, the fiscal expansion of 2009-10 has been only partially unwound, and the fiscal deficit remains well-above debt-stabilizing levels. The overall public sector deficit is estimated to have totaled 4½ percent of GDP in 2012, and the consolidated public sector debt to have reached 38 percent of GDP at year-end (up from 27¼ percent of GDP in 2008).

2. In the absence of corrective measures, the consolidated public sector deficit and public debt would rise to about 7½ percent of GDP and 50 percent of GDP, respectively, by 2018.³ The main pressures for public finances would stem from a projected increase in education expenditure,⁴ and higher envisaged investment spending. In addition, the combination of a rising public debt and higher interest rates is projected to increase the interest bill by about 2 percentage points of GDP during the projection period.

¹ Prepared by Pablo Morra.

² Efforts to curb the pace of growth of government expenditure managed to slow it to about nominal GDP growth by 2011, but an attempt to enact a tax reform failed in early 2012.

³ The projections exclude the electricity and telecommunications company ICE (Instituto Costarricense de Electricidad). Including the ICE, the consolidated public sector debt would reach 53 percent of GDP by 2018 (from 31 percent in 2008).

⁴ A constitutional reform approved in 2011 mandates the government to raise spending in education (currently nearing 7 percent of GDP) to 8 percent of GDP by 2014.

3. **In light of a deteriorating fiscal path, we examine some indicators of vulnerability.**

First, to assess sovereign debt rollover risks, we compute the public sector's gross financing needs and we examine available sources of financing. Second, we look at market perceptions of credit risk by analyzing credit default swap (CDS) spreads on sovereign debt and bond yields. Third, we evaluate vulnerabilities associated with growth, interest rate and exchange rate shocks by using the IMF's debt sustainability analysis (DSA) framework and stochastic debt analysis.

4. **Large gross financing needs make Costa Rica vulnerable to changes in market sentiment, but a stable domestic investor base mitigates risks.**

The average maturity of Costa Rica's public debt stands at about 3 years.⁵ Hence, about a third of the public debt stock matures every year. Substantial public debt amortizations combined with a high fiscal deficit result in large annual gross public sector financing needs. These amounted to 10 percent of GDP in 2012, and are projected to remain at similar levels over the projection period. While large financing needs expose Costa Rica's public finances to changes in market sentiment, the existence of a stable domestic investor base mitigates risks. As of December 2012, local institutional investors, including the government's social security agency,⁶ nonfinancial public sector institutions, banks and private domestic investors held over 80 percent of the total public debt.

5. **Sovereign credit risk perceptions are low.** Five-year credit default swap (CDS) spreads⁷ on Costa Rican sovereign bonds stand at about 300 basis points, about 180-200 above than those of the highest-rated countries in Latin America. These have not significantly changed in recent years. Indeed, one of the rating agencies upgraded Costa Rica's sovereign credit rating to investment grade level in 2010, making it the highest rated credit in Central America after Panama.

6. **Domestic government bond yields have risen.** Pressured by higher public sector financing needs and stronger private sector credit demand, interest rates on local currency-denominated government bonds rose by about 200 basis points in 2012, reaching 11-11½ percent. If sustained, the rise in government bond interest rates is poised to worsen public debt dynamics by increasing the public sector's interest bill. The latter is already projected to grow driven by the steady increase in the public debt stock.

⁵ Excluding the Central Bank debt, the average maturity of the public debt rises to 5 years.

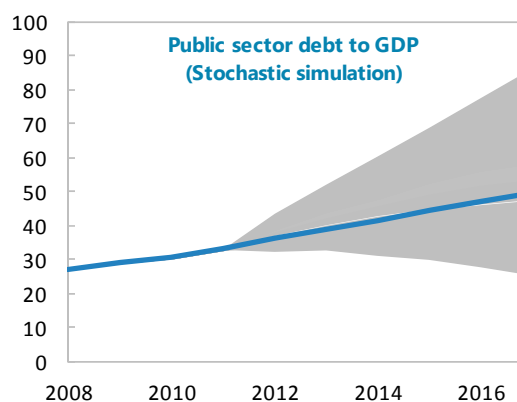
⁶ Caja Costarricense de Seguro Social (CCSS).

⁷ Credit default swap (CDS) spreads measure the cost of seeking insurance against sovereign default.

7. **Public debt dynamics is highly sensitive to growth shocks, but less sensitive to interest rate shocks.** Simulations under the DSA framework suggest that, if growth in 2013-18 were to be on average one half standard deviation-lower than envisioned in the baseline scenario (i.e., 3 percent instead of 4.5 percent) and all other variables remained unchanged, the public debt would rise to 61 percent of GDP by 2018, about 11 percentage points above the level projected in the baseline scenario. A similar shock to the average real interest rate at which the government borrows (of about 125 basis points) would have a smaller impact, raising the public debt-to-GDP ratio by about 3 percentage points of GDP above the baseline scenario. Hence, an interest rate shock would have to be larger (e.g., one standard deviation or larger) than a growth shock to have a significant impact on the public debt dynamics.

8. **The sensitivity of the public debt ratio to currency depreciation is relatively small.** At 12½ percent at end-2012, the share of foreign-currency denominated debt in total public debt is relatively low in Costa Rica. Hence, it would take a large real currency depreciation to equal the impact of the growth and interest rate shocks described above. The real currency depreciation would have to exceed 30 percent for the public debt ratio to rise to 60 percent of GDP by 2018.

9. **Results from a stochastic sustainability exercise for public debt underscore significant medium-term risks to public debt dynamics.** A stochastic simulation of the public debt path was made by (1) estimating the implicit fiscal reaction function to public debt developments and the output gap in past fiscal behavior; and (2) producing frequency distributions of debt paths under growth, interest rates and exchange rate shocks. Simulations yielded an upward trend in the public debt-to-GDP ratio, with the median debt forecast reaching about 55 percent of GDP by 2018. In addition, the median debt forecasts were consistently higher than baseline projections and subject to considerable risk, as evidenced by the width of the fan chart.



Source: IMF staff estimates.

10. **To ensure medium-term sustainability and build resilience to shocks, Costa Rica needs to pursue ambitious fiscal consolidation.** We considered three possible policy goals (listed from the least to the most ambitious): (i) stabilizing the public debt-to-GDP ratio at the current level; (ii) reducing the public debt ratio to the pre-crisis level (27¼ percent of GDP); and (iii) lowering the public debt-to-GDP ratio in the amount necessary to improve the sovereign credit rating by one notch over a period of 10 years. The former represents the minimum action that would be required

to achieve fiscal sustainability, while the latter would aim at rebuilding fiscal buffers. Estimates indicate that achieving these objectives would require improving the primary balance by a minimum of 2½ (to achieve sustainability) to up to 5½ percentage points of GDP –to improve the sovereign credit rating (see Garza, Morra and Simard, 2012).

11. The required fiscal adjustment rises by an additional 1½ percentage point of GDP if the actuarial deficit facing the public pension system is considered. The largest program in Costa Rica’s pension system is a pay-as-you-go defined-benefit plan covering Old Age, Disability and Survivor Insurance (Invalidez, Vejez y Muerte –IVM) administered by the Social Security Fund (Caja Costarricense de Seguro Social – CCSS), an autonomous public sector institution.⁸ The IVM currently covers ⅔ of the labor force (approximately 1½ million workers) and has about 165,000 beneficiaries. In addition to the IVM, the judiciary and the teachers have their own social security plans. Estimates show that:

- *The public pension system is financially unsustainable in the long term.* The system currently runs a cash surplus of over 1 percent of GDP. However, it is projected to turn a cash deficit over the medium and long term due to a combination of system maturation and population aging.
- *The pension system’s actuarial imbalance adds about 1½ percentage points of GDP to the fiscal sustainability gap.* Simulations indicate that, to achieve actuarial balance, pension reforms equivalent to about 1½ percent of GDP would be required (in the form of higher contributions, reduced replacement rates, and/or an increase in the retirement age). Therefore, combined with the 2½ percent of GDP adjustment required to stabilize the public debt ratio (¶ 10), the fiscal sustainability gap (i.e., the total fiscal adjustment needed to achieve long-term fiscal sustainability) stands at 4 percent of GDP.

12. **Fiscal consolidation will require action on both revenue and expenditure.** The significant size of the required adjustment calls for a multipronged strategy, aimed at increasing revenue and restraining the pace of growth of expenditure.⁹ Adjustment options include:

⁸ In addition to mandatory participation in the IVM, workers have the option to participate in defined-contribution plans (non-mandatory) administered by other institutions to supplement their pensions.

⁹ For a more detailed discussion, see Garza, Morra and Simard (2012).

- *Bringing tax rates closer to international levels.* At 13½ percent of GDP, Costa Rica's tax revenue ratio is well below that of middle-income countries (19 percent of GDP), reflecting a low tax effort by international standards (Pessino and Fenochetto, 2010). This is due in part to below-average tax rates on both consumption and income. In particular, consideration could be given to turning the existing 13 percent sales tax into a full-fledged value-added tax, establishing a tax rate more aligned with international standards.¹⁰
- *Increasing the tax base and reducing tax expenditure.* Another reason behind Costa Rica's low tax revenue ratio is the existence of several tax exemptions and special treatments. According to the authorities' estimates, tax expenditure in Costa Rica stands at about 4 percent of GDP, stemming mainly from exemptions to the sales tax and special income tax incentive schemes. Efforts to mobilize revenues should therefore carefully review the scope to broaden the tax base and cut tax expenditure.
- *Strengthening revenue administration.* There seems to be ample scope to improve revenue administration by incorporating technology, improving administrative procedures, training staff, enhancing auditing capabilities, increasing controls on taxpayers, improving coordination between the internal revenue and customs offices, and adopting a risk-management approach to revenue administration (by concentrating efforts on the areas with the greatest risks to collection).
- *Reforming the civil service.* The fiscal stimulus imparted in 2008-09 resulted in a large increase in the public sector's wage bill. While tighter spending policies have been adopted thereafter, wage growth remains a potential source of pressure for public finances. It is important to review the set of rules governing public sector employment and compensation arrangements, ensuring these are appropriately linked to performance, efficiency and sustainable public finances.

13. **The optimal fiscal consolidation path would be to deliver significant upfront tightening.** Pressured by a substantial fiscal adjustment need, the authorities face the challenge of undertaking fiscal consolidation while minimizing its impact on growth. To conciliate both objectives and determine the optimal fiscal consolidation path, we resort to a model of quadratic preferences in which the size of the required fiscal adjustment and the size of the output gap enter into the objective function of the policy maker (Kanda, 2011). The model indicates that the optimal fiscal adjustment path should be moderately front-loaded. Against a background of a low output gap, it predicts an optimal path with fiscal tightening of about 1½ percent of GDP in the first year and

¹⁰ The average value-added tax rate in Latin America is 14 percent.

declining additional adjustment in subsequent years. Under this scenario, the output gap would open slightly, reaching ½ percent of potential output in the first year and close gradually thereafter.

Costa Rica. Optimal fiscal consolidation path under model of quadratic preferences

(In percent of GDP, unless otherwise stated)

	Year										
	0	1	2	3	4	5	6	7	8	9	10
Discretionary fiscal adjustment		1.5	0.8	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.0
Fiscal sustainability gap	4.0	2.5	1.7	1.3	1.0	0.7	0.4	0.2	0.1	0.0	0.0
Output gap (in percent of potential GDP)	-0.1	-0.5	-0.4	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0

Source: IMF staff estimates.

References

Bannister, Geoffrey and Barrot, Luis-Diego, 2012, "A Framework for Assessing the Level of Public Debt," Central America, Panama and the Dominican Republic, Challenges Following the 2008-09 Global Crisis, Washington: International Monetary Fund

Garza, Mario; Morra, Pablo; and Simard, Dominique, 2012, "The Fiscal Position: Prospects and Options for Adjustment," Central America, Panama and the Dominican Republic, Challenges Following the 2008-09 Global Crisis, Washington: International Monetary Fund

Kanda, Daniel, 2011, "Modeling Optimal Fiscal Consolidation Paths in a Selection of European Countries," IMF Working Paper 11/164, Washington: International Monetary Fund

BASEL III AND COSTA RICA'S BANKING SYSTEM¹

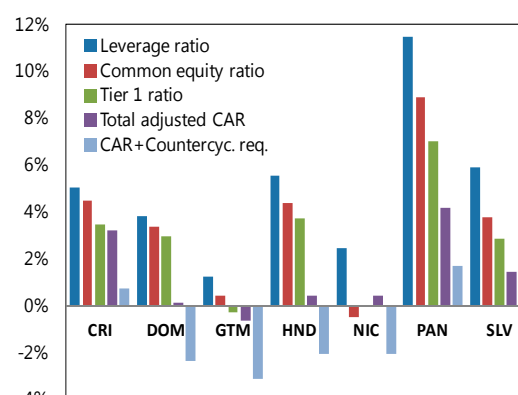
1. **Costa Rica is well placed to gradually implement key components of the Basel III accord.** It is in compliance with most of the Basel I framework and has made good progress in applying the Basel Core Principles. Despite inadequate legislation, supervisory authorities have also advanced in implementing a risk-based supervision approach and in adopting a cross-border consolidated scheme that allows for the identification of risks taken by financial conglomerates.

2. **Introducing Basel III standards would increase bank soundness and strengthen financial stability, but could weigh on economic growth in the short term.** The Basel accord has

evolved to address weaknesses uncovered by the 2008-09 global crisis mainly by strengthening capital and liquidity requirements. However, banks faced with higher capital and liquidity requirements may be forced to curtail credit supply and adjust asset composition, which could have an adverse impact on output in the short term.

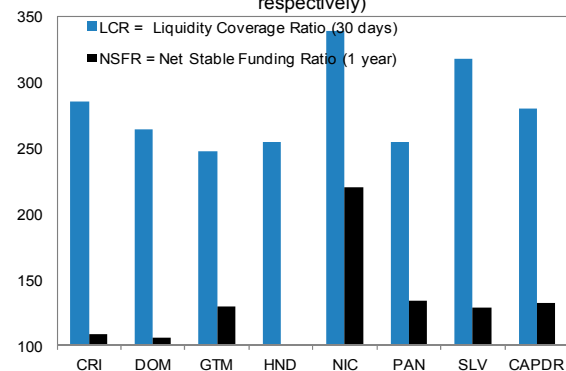
3. **When adjusted by Basel III guidelines, the capital adequacy ratios (CAR) of Costa Rica's banking system decline due to changes in risk-weighted assets (RWA), but still satisfy Basel III requirements.** The adjustments to RWA to meet Basel III requirements for Costa Rica's banking sector are estimated at 6 percent. The size of the adjustment is relatively minor when compared to other countries in the region. Nevertheless, when applying Basel III criteria, Costa Rica's banking system is currently compliant with all Basel III (capital and liquidity) ratios. Moreover, current

CAPDR - Estimated Basel III Capital Gap
(in percent of RWA, end-2011)



Source: IMF staff estimates.

Compliance with Basel III Liquidity Requirements
(in percent of 1 month and 1 year liabilities, respectively)



Source: Supervisory authorities and IMF staff estimates.

¹ Prepared by Fernando Delgado, based on Basso, O., Delgado, F. and M. Meza, 2012, "Strengthening Bank Capital and Liquidity in Central America: the Road to Basel III," IMF, Working Paper (unpublished).

capital levels would suffice, on average, in case supervisors were to implement a countercyclical buffer of 2.5 percent of RWA.

4. **Costa Rica's banking system exceeds Basel III minimum liquidity requirements.** This holds even after adjusting for the liquidity coverage ratio and net stable funding ratio methodologies. Short-term liquidity is more than twice the Basel requirements, while long-term liquidity is at 109 percent of the requirement.

5. **The macroeconomic impact of the transition to Basel III total capital requirements is negligible in Costa Rica.** The impact of the new Basel III capital requirement on short-term output growth in Costa Rica was estimated using a Vector Auto Regression (VAR) model. The results suggest that the at-peak growth impact of increasing the total capital ratio by 1 percentage point would amount to about -0.05 percentage points of GDP, and that growth returns to the steady state after approximately 50 quarters from the beginning of the CAR increase. Such growth impact is 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. However, as Costa Rica banking system presents no negative gap vis-à-vis Basel III capital requirements, the macroeconomic impact of firming up existing capital by bringing requirements in line with Basel III would be negligible.

6. **Costa Rica would benefit from using Basel III as a guide to strengthen prudential regulation and supervision.** The Basel III framework would be appropriate given the growing size and complexity of Costa Rica's financial system. Basel III implementation would help improve supervisory skills and regulatory and risk management frameworks. This would be particularly important given also the entry of foreign banks and increased competition.

7. **The pragmatic approach that Costa Rica has followed in the implementation of Basel standards should continue guiding the implementation of Basel III.** It is more appropriate to focus on those elements of Basel III that are more relevant for Costa Rica's financial markets. The elements with the highest short-term priority should be: (i) adopting Basel III definitions of capital; (ii) implementing a capital conservation buffer; and (iii) introducing a leverage ratio. Over the medium-term, the priority should shift to: (iv) aligning liquidity requirements with Basel III; and (v) strengthening the supervisory process (Pillar II) and market discipline and transparency (Pillar III). In the long term, other elements might become important, such as: (vi) considering macroprudential instruments; and (vii) implementing capital charges for systemically important financial institutions.

8. **Legal and industry-based challenges to implementing Basel III in Costa Rica seem manageable.** Implementing most Basel III elements require regulations that fall largely under the purview of Costa Rica’s supervisory authorities (SUGEF). At the industry level, the strong presence of large international financial groups might lead to a “de facto” compliance with Basel III. However, adapting to the new regulatory framework, including the adoption of internal risk models, might be more difficult for some local banks.