



Balance Sheet Approach and Low data availability

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How financial systems work: evidence from financial accounts

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Overview

- What is the Balance Sheet Approach (BSA)?
- IMF surveillance and macrofinancial analysis
- What type of analysis can the BSA support?
- Some applications
- Mainstreaming the BSA and way forward

Objectives of the BSA

- An economy represents an interlinked system of sectoral balance sheets (2008SNA)
 - A tool to operationalize balance sheet analysis in the absence of full from-whom-to-whom sectoral accounts
- BSA complements traditional IMF flow-based surveillance with balance sheets. The BSA is focused on:
 - Vulnerabilities from balance sheet positions
 - Risk build-up
 - Causes and effects of imbalances
 - Interlinkages
 - Transmission channels
 - Remedial policies

Integrated Statistical Framework

MACROECONOMIC INTERRELATIONS

MACROECONOMIC INTERRELATIONS		
Fiscal Accounts	Balance of Payments	National Accounts
Total revenue and grants Total expenditure and net lending Current expenditure Wages and salaries Goods and services Interest Capital Expenditure o/w fixed capital formation Net lending Overall balance Financing External Domestic	<i>Current Account</i> Export of goods and services Import of goods and services Net factor income Net current transfers <i>Capital and Financial Account</i> Capital Account Financial Account Direct Investment Net foreign financing Nonfinancial public sector Nonfinancial private sector Banks Change in net international reserves	Consumption Public Private Gross Domestic Investment Public Private Export of goods and services Import of goods and services Gross Domestic Product Net factor income Net current transfers Gross National Disposable Income
Monetary Accounts		
<i>Net Foreign Assets (net international reserves)</i> Central Bank Rest of banking system <i>Net domestic assets</i> Claims on central government (net) Claims on state/local governments (gross/net) Claims on NFPC (gross/net) Claims on Private Sector (gross) Other items (net) Broad Money (M3)	Target Ceiling Ceiling Ceiling Residual Ceiling Function $M = f(Y, i, \dots)$	Exchange rate, trade, and external policies Fiscal policy Fiscal policy Fiscal policy Monetary policy

BSA and sectoral accounts...

- BSA and sectoral accounts closely related...
 - Some source data (primary statistics) are the same
 - SNA principles
- ...even if they are not the same product
 - Sectoral accounts more rigorous approach in combining source data
- Main strength: analysis of financial sector as channel of shock transmission
- Main weakness: nonfinancial sectors

...are complementary

- Many countries in IMF have no (f-w-t-w) sectoral accounts
 - Availability of source data
 - Statistical capacity
- BSA can be easily prepared for most countries
 - Role of financial system and monetary statistics
- BSA is a tool for analysis, rather than a statistical product
 - Principles underlying BSA can be applied regardless of source data

Preparation of a BSA Matrix

From primary statistics to sectoral linkages

Primary statistics

- Financial Sector
- External Sector
- Fiscal Sector



Country specific assumptions

- FDI
- Other items



Integration of additional sources

- Users can use the framework with ad hoc data

Primary role of statisticians

Primary role for users



IMF BSA tool generates matrix

The BSA: what lies beneath...

What Kind of Questions Can Balance Sheet Analysis Address?



- How healthy are the aggregate balance sheets of the household, nonfinancial corporate, bank, nonbank financial, and government sectors?
- Are there pockets of vulnerability within these sectors that are concealed by aggregate indicators?
- Is balance sheet repair constraining the transmission of macroeconomic policies to real activity?
- What balance sheet vulnerabilities could amplify and propagate the macro-financial impacts of systemic risks?
- How would these macro-financial feedback loops operate, and could they constrain the effectiveness of mitigating policies?

Use of BSA in Fund Surveillance

- BSA is not new (dates back to Asian crisis)...
- ...but data limitations constrained mainstreaming
 - Incomplete financial sector coverage
 - No stocks for government balance sheet
 - Few sectoral breakdowns in IIP
- Triennial Surveillance Reviews (2011 and 2014)
 - General call to include balance sheets in Fund surveillance
- STA supports bilateral surveillance
 - Preparation of country matrices
 - Contributions to policy papers
 - Capacity development to support the BSA

BSA and Macrofinancial Analysis

General setting: sectoral vulnerabilities spread in the economy

Sectoral vulnerability

Examples:

- Exposure to FX
- Indebtedness
- Liquidity constraints



Shock hits

Examples:

- Balance sheet losses
- Loss of funding
- Default rates increase



Financial system

- NPLs and losses
- Connected to most economic sectors



Initial shock spreads

- BSA allows for simulation of economic impacts

BSA a Tool for a Variety of Analyses

Integrating macro with financial

- STA has prepared over 30 BSA matrices for surveillance
 - Mostly for Low or Middle Income Countries

Examples in this presentation

- Indonesia 2015 AIV¹: external → financial
- Swaziland 2017 AIV²: fiscal → corporate → financial

1/ Ugazio, G (et al.) "Macrofinancial Linkages in Indonesia", Selected Issues for the 2015 Indonesia Article IV

2/ Ugazio, G (et al.) "The Macroeconomic Impact of Fiscal Vulnerabilities ", Selected Issues for the 2017 Swaziland Article IV

BSA matrix for Indonesia (GROSS)

(2016Q4, percent of GDP)

	Government		Central Bank		Other Depository Corporations		Other Financial Corporations		Nonfinancial Corporations		Households		External	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
Government														
<i>Total</i>			3%	3%	4%	2%	1%	0%	3%	20%	0%	0%	17%	0%
<i>In domestic currency</i>			3%	3%	3%	2%	1%	0%	3%	20%	0%	0%	0%	0%
<i>In foreign currency</i>			0%	0%	1%	0%	0%	0%					17%	0%
Central Bank														
<i>Total</i>	3%	3%			8%	0%	0%	0%	0%	0%	4%	0%	1%	13%
<i>In domestic currency</i>	3%	3%			7%	0%	0%	0%	0%	0%	4%	0%	0%	0%
<i>In foreign currency</i>	0%	0%			2%	0%	0%	0%	0%	0%	0%	0%	1%	13%
Oth. Dep. Corporations														
<i>Total</i>	2%	4%	0%	8%	3%	3%	3%	2%	12%	19%	29%	17%	6%	2%
<i>In domestic currency</i>	2%	3%	0%	7%	3%	3%	3%	2%	9%	14%	26%	17%	3%	0%
<i>In foreign currency</i>	0%	1%	0%	2%	0%	0%	0%	0%	3%	5%	2%	0%	3%	2%
Oth. Fin Corporations														
<i>Total</i>	0%	1%	0%	0%	2%	3%	2%	2%	1%	4%	6%	2%	1%	0%
<i>In domestic currency</i>	0%	1%	0%	0%	2%	3%	2%	2%	1%	3%	6%	2%	0%	0%
<i>In foreign currency</i>	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Nonfinancial Corporations														
<i>Total</i>	20%	3%	0%	0%	19%	12%	4%	1%					42%	22%
<i>In domestic currency</i>	20%	3%	0%	0%	14%	9%	3%	1%					0%	0%
<i>In foreign currency</i>			0%	0%	5%	3%	1%	0%					42%	22%
Households														
<i>Total</i>	0%	0%	0%	4%	17%	29%	2%	6%					0%	0%
<i>In domestic currency</i>	0%	0%	0%	4%	17%	26%	2%	6%					0%	0%
<i>In foreign currency</i>			0%	0%	0%	2%	0%	0%					0%	0%
External														
<i>Total</i>	0%	17%	13%	1%	2%	6%	0%	1%	22%	42%	0%	0%		
<i>In domestic currency</i>	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%		
<i>In foreign currency</i>	0%	17%	13%	1%	2%	3%	0%	1%	22%	42%	0%	0%		

Source: IMF Staff Estimates.



Capital Flight and Depreciation Simulation

- Top panel: effects of a 30 percent depreciation
 - NFCs external liabilities increase by 14 percent of GDP
 - Banking system is not directly exposed to FX
- Capital flight and depreciation combined shock
 - In addition to the top panel, NFCs external funding withdraws
 - NFCs need to draw liquidity from banks, thereby impacting the banking system.
 - The banking system was not originally exposed to FX

Capital Flight and Depreciation Simulation Results

Indonesia: Net cross-sectoral exposures

	Government	Central Bank	Banks	NBFIs	NFCs	HHs	ROW
(In percent of GDP, after 25 percent depreciation shock)							
Government		-0.05%	0.11%	0.00%	0.00%	0.00%	4.46%
Central Bank	0.05%		0.44%	0.00%	0.00%	0.00%	-3.95%
Banks	-0.11%	-0.44%		-0.03%	-0.63%	0.58%	0.62%
NBFIs	0.00%	0.00%	0.03%		-0.16%	0.00%	0.23%
NFCs	0.00%	0.00%	0.63%	0.16%			14.39%
HHs	0.00%	0.00%	-0.58%	0.00%			0.00%
ROW	-4.46%	3.95%	-0.62%	-0.23%	-14.39%	0.00%	
(In percent of GDP, after combined shocks)							
Government		-0.05%	0.11%	0.00%	0.00%	0.00%	4.46%
Central Bank	0.05%		0.44%	0.00%	0.00%	0.00%	-3.95%
Banks	-0.11%	-0.44%		-0.03%	-6.90%	0.58%	0.62%
NBFIs	0.00%	0.00%	0.03%		-0.16%	0.00%	0.23%
NFCs	0.00%	0.00%	6.90%	0.16%			8.12%
HHs	0.00%	0.00%	-0.58%	0.00%			0.00%
ROW	-4.46%	3.95%	-0.62%	-0.23%	-8.12%	0.00%	

Banking system overall not very exposed to FX shocks

14.39%

The depreciation increases corporate external liabilities

-6.90%

Liquidity withdrawal involves financial system

Source: Indonesia 2015 Article IV Consultation Selected Issues Paper.

Understanding indirect links

- Financial system in Swaziland has two connections with the sovereign:
 - Direct
 - Indirect
- Direct exposure through holdings of government debt
- Indirect through illiquid claims on nonfinancial sectors
 - Nonfinancial sector heavily exposed to government through accumulation of arrears
- Need to understand the **full** exposure in case of a fiscal shock

Transmission of Fiscal Vulnerability

Swaziland: Cross-sectoral exposures (percent of GDP)

	Government		Central Bank		Banks		PSPF		Other Financial		Nonfinancial Corporations		Households		External	
	A	L	A	L	A	L	A	L	A	L	A	L	A	L	A	L
Government			0	12	4	1	4	0	0	1	6	3			9	0
Central Bank					3	0	0	0	0	0	0	0	1	0	4	19
Banks					1	2	2	0	1	1	15	11	13	10	1	4
PSPF									0	5	0	0	40	0	0	27
Other Financial									2	2	2	1	1	0	23	34
Nonfinancial Corporations															5	0
Households															0	0
External																

Government arrears

Large holdings of government debt by financial institutions

Large exposure of banks to nonfinancial sectors

Mainstreaming the BSA

- Ideally generate a BSA matrix with “single-click”
 - Depending on data availability
 - Supports about 120 countries in IMF membership
 - Countries with fully developed f-w-t-w accounts excluded
- Scenario building in the BSA tool
 - Work in progress
 - Depreciation, capital flight etc.
 - Contingent liabilities



Way forward

- Data improvements with focus on stocks
 - Full coverage of financial sector
 - Improvement of external sector with sectoral information
 - Promote the compilation of stocks for fiscal sector

- Capacity development