

BuDA: IMF Surveillance Applications

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Outline

1 Macrofinancial Surveillance

2 Surveillance Applications

- IMF Studies
- 2016 Article IV Indonesia
- 2016 Article IV Canada
- 2016 Article IV UAE
- 2016 Article IV Chile
- 2016 WHD Regional Economic Outlook

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Effective surveillance

- Builds on a sound qualitative understanding of the economy
- Assesses linkages
 - business cycles
 - financial cycles
- Identifies risks and vulnerabilities
 - firm-level, i.e. microprudential
 - system-wide level, i.e. macroprudential

Effective surveillance requires:

- Policy context assessment
- Adequate data gathering
- Leveraging on analytical toolkit
 - Econometric methods, i.e. VARs
 - Structural models, i.e. DSGE
 - Network analysis
 - Scenario analysis and stress tests
 - Balance sheet and financial ratio analysis
 - BuDA

How BuDA fits in Surveillance Work

BuDA is one powerful method in the toolkit combining

- Timely market information
- Balance sheet data
- Scenario analysis and stress tests

BuDA has some limitations

- Only looks at listed firms
- Cannot tell a story
- User needs to provide the context

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Article IV Consultations

- 2016 Indonesia (K. Miyajima, J. Shin)
- 2016 Canada (Y. Ustyugova)
- 2016 United Arab Emirates (A. Santos)
- 2016 Chile (L. Brandao-Marques)

Multilateral Surveillance

- 2016 WHD Regional Economic Outlook
(Chan-Lau, Lim, Rodriguez-Delgado, Sutton, Tashu)

Outline

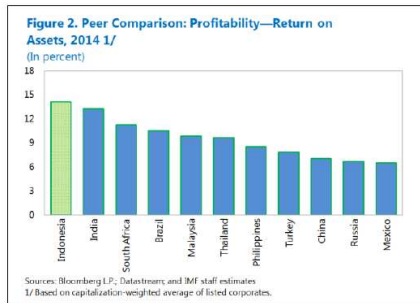
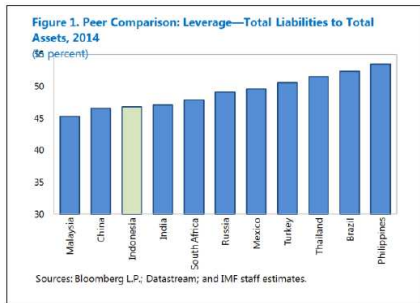
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Policy Context

- Strong corporate sector vis-a-vis peer economies



- FX debt equals 60 percent corporate debt
- Interest coverage ratio weakening to 2008 crisis levels

- Deteriorating corporate debt-at risk
- Headwinds
 - Commodity down cycle
 - Slowing economy


$$1/\text{Interest coverage ratio (ICR} = \text{EBIT/interest expense}) < 1.5$$


1/ Interest Coverage Ratio (ICR) < 1.5

2/ Includes the primary sector, wood & paper, and metals & metal products.

3/ Textiles & textile products, machinery, and chemicals.

BuDA Analysis

- Complements ratio analysis with scenario analysis
- Scenario variables
 - Real GDP growth
 - Unemployment
 - CPI inflation
 - NEER
 - Short-term interest rate

BuDA Analysis

- Baseline scenario

- Moderate GDP growth
- Gradual decline in unemployment
- Falling inflation
- Range-bound exchange rate
- Moderate decline in interest rates

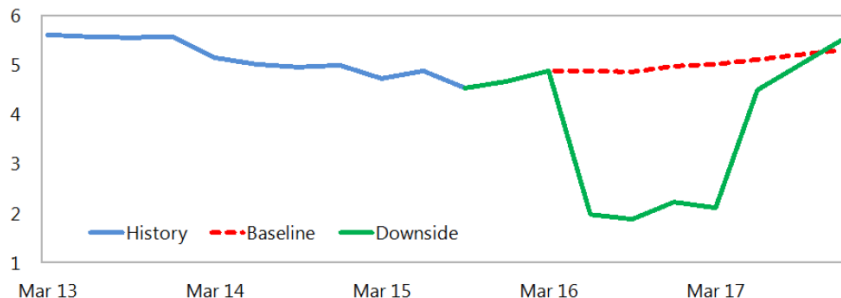
- Adverse scenario

- Sharp drop in GDP growth + V-shaped recovery
- Drastic jump in unemployment rate
- Inflation surge
- Double digit depreciation
- Interest rate spike

BuDA Analysis

GDP Growth

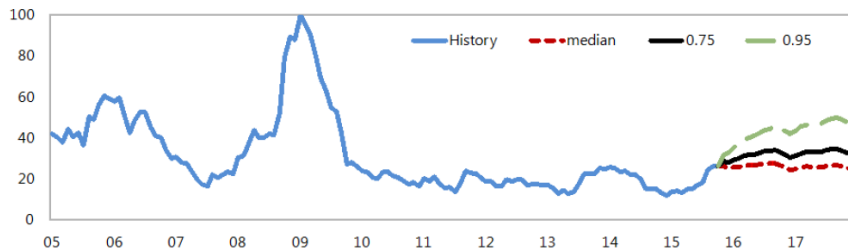
(In percent, year-on-year)



Sources: Haver Analytics Inc.; and IMF staff estimates.

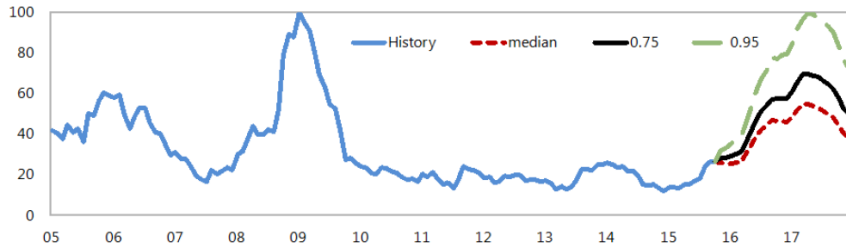
BuDA Analysis

PD Under Baseline Scenario: Mean, 75th and 95th Percentile



Sources: National University of Singapore; and IMF staff estimates.

PD Under Downside Scenario: Mean, 75th and 95th Percentile



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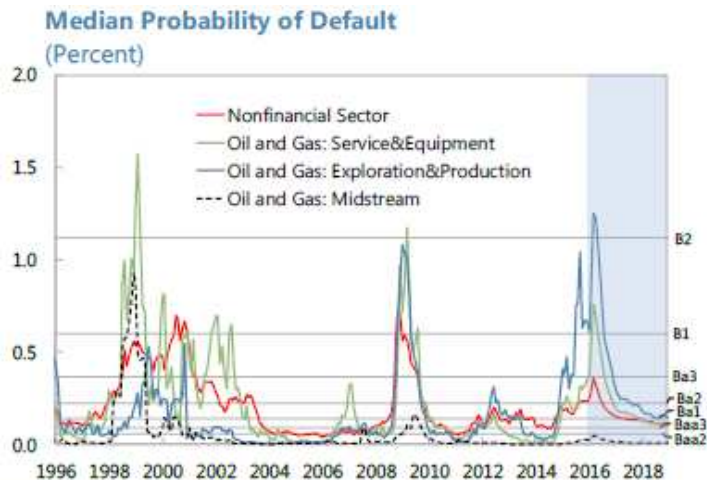
Policy Context

- Rebound of real GDP growth
- Rising unemployment
- Sustained decline in oil prices
- Substantial bank exposure to oil and gas sector
 - Direct and indirect exposure = 13 -15 percent total loans
 - Rising loan delinquencies

BuDA Analysis

- Country desk baseline scenario
- 108 oil and gas companies, of which
 - 72 exploration and production

BuDA Analysis



Sources: IMF staff estimates based on BuDA and Moody's rating grades.

Contributions to Changes in Projected Corporate PDs /1
(basis points)



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Policy Context

- Well capitalized, resilient banking system
- Liquidity buffers adequate but declining
- Headwinds ahead
 - Lower oil prices
 - Higher short-term interest rates
 - Non-oil GDP

BuDA Analysis

- Complements panel data analysis of liquidity buffers
- Analysis includes
 - 17 banks
 - 57 non-financial corporates
- 5-year scenarios
- Scenario variables
 - Oil price
 - real non-oil GDP
 - CPI inflation
 - EIBOR interbank rate

BuDA Analysis

Baseline Scenario

- Oil price down to USD 45 bbl, recovers to USD 60 bbl
- Non-oil GDP down to 2.4 percent, improves to 4 percent
- Inflation down to 2.8 percent, rises to 3.6 percent
- EIBOR moves with LIBOR

Oil price shock

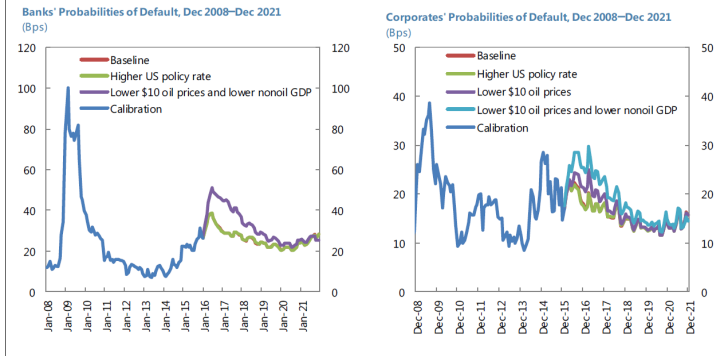
- Oil price down by USD 10 bbl during 5 years
- Non-oil GDP declines by 1.7 percent
- Stable inflation
- EIBOR moves with LIBOR

Interest rate shock

- EIBOR increases by 100 bps

BuDA Analysis

Figure 3. Probabilities of Default for Banks and Corporates under Adverse Macroeconomic Scenarios



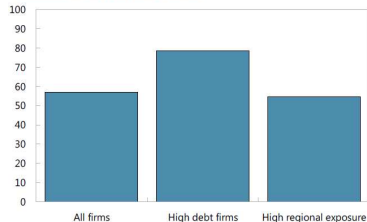
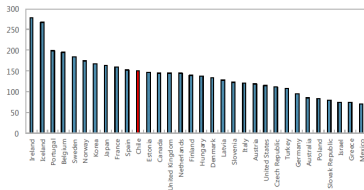
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- Corporate debt high vis-a-vis peers
- FX debt higher for highly levered non-financial firms
- High regional exposure of corporate sector



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BuDA Analysis

- Multiapproach analysis
 - Balance sheet analysis
 - Network analysis
 - BuDA Analysis

BuDA Analysis

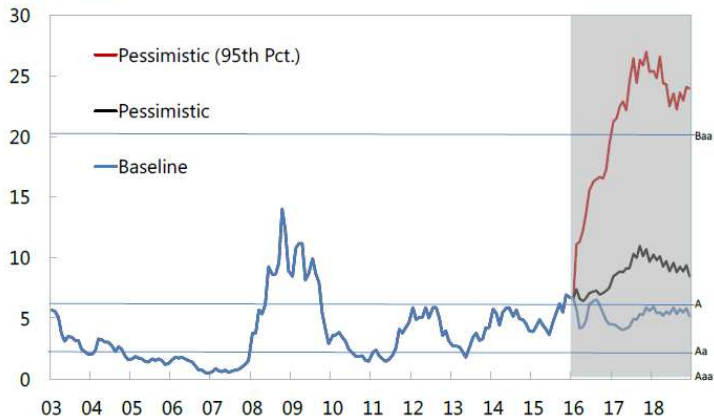
Scenarios

- Baseline
 - Country desk projections
 - GDP growth
 - Unemployment
 - CPI Inflation
- Pessimistic
 - Growth slowdown by 5 percent
- Regional Downturn
 - Growth slowdown by 5 percent partner countries
 - Elasticity pass-through 0.3

BuDA Analysis

Probabilities of Default: Baseline and Pessimistic Scenarios

(Basis points)

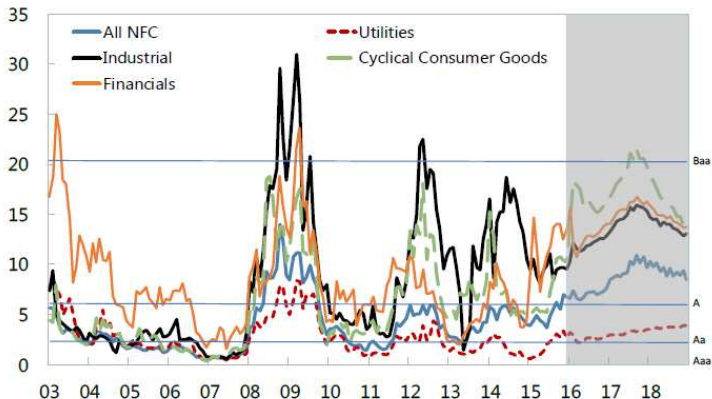


Sources: IMF staff estimates based on BuDA and Moody's rating grades.

BuDA Analysis

Probabilities of Default by Sector: Pessimistic Scenario

(Basis points)

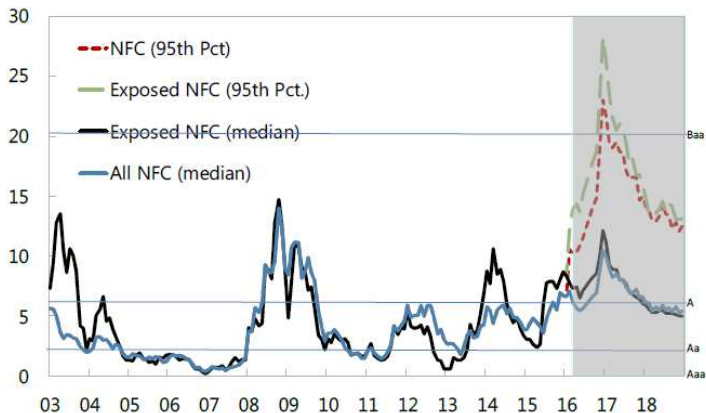


Sources: IMF staff estimates based on BuDA and Moody's rating grades.

BuDA Analysis

Probabilities of Default: Regional Shock

(Basis points)



Sources: IMF staff estimates based on BuDA and Moody's rating grades.

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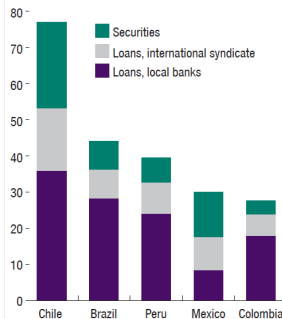
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Policy Context

- Macro deterioration in the region
- Declining commodity prices
- High levels of corporate debt
- Potential increase in corporate solvency risk
- Spillovers from corporates to banks

Figure 3.1.1. Nonfinancial Corporate Debt by Instrument
(Percent of GDP, 2014)



Sources: Bank for International Settlements; Dealogic; IMF, International Financial Statistics database; and IMF staff calculations.

BuDA Analysis

Scenarios

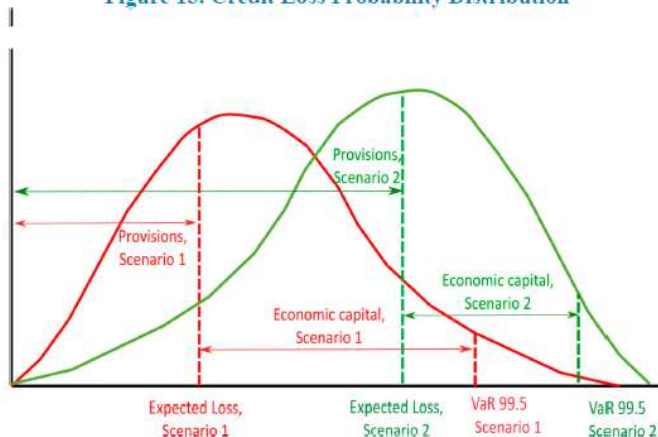
- Based on desk baseline projections
- Domestic variables
 - Real GDP growth
 - Nominal exchange rate
- External variables
 - Commodity prices (oil and metals)
 - Aggregate demand conditions in advanced economies
 - External borrowing costs

BuDA Analysis

Bank Provisions and Capital

- Assumes homogeneous corporate loan portfolio
- Models loss distribution using single factor model

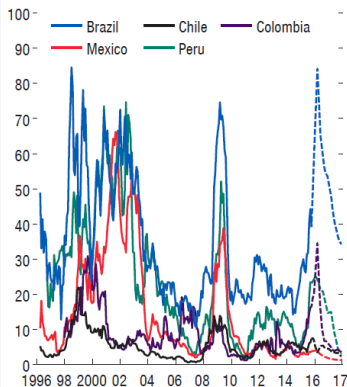
Figure 13. Credit Loss Probability Distribution



BuDA Analysis

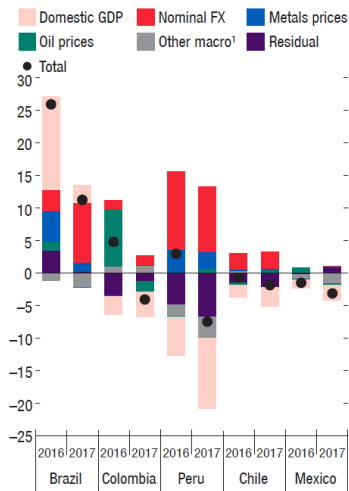
Figure 3.1.3. Probabilities of Default in the Nonfinancial Corporate Sector

(Median probability across firms in each country, basis points)



Sources: Credit Research Initiative at the Risk Management Institute (National University of Singapore), and IMF staff calculations.

Figure 3.1.4. Contributions to Changes in Projected Corporate Probabilities of Default
(Median probability of default, basis points)



BuDA Analysis

Table 3.1.1 LA5: Required Provisions and Economic Capital
(Percent of GDP)

	Provisions		Economic Capital	
	2015 ¹	2016–17 ²	2015 ¹	2016–17 ²
Brazil	1.3	2.2	3.7	5.1
Chile	1.4	1.1	7.6	6.1
Colombia	1.2	1.3	4.7	4.1
Mexico	0.4	0.3	2.3	1.7
Peru	0.6	0.8	4.4	5.5

Source: IMF staff calculations.

Note: LA5 = Brazil, Chile, Colombia, Mexico, and Peru.

¹Provisions (capital), as of October 2015, against corporate loans, estimated as total provisions (capital) multiplied by the ratio of commercial to total loans.

²Average.