Country risk, Financial crisis, and Debt Analysis I

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www.developingfinance.org

Bibliography
- Bouchet, Clark, Grosambert: (Wiley, NY)
- Bouchet, Guilhon: Intelligence Economique et Gestion des Risques (Paris: Pearson)
- Reinhart C., Rogoff K.: This time it’s different (Princeton, 2009)
- Paris Club 2013
- IIF 2013
- IMF, annual report 2013
- BIS reports 2013
- C-Bonds website

External Debt Analysis

Objectives:
1. Examining the robustness of debt-driven growth and the sources of vulnerability
2. Assessing debt servicing sustainability, i.e., liquidity & solvency prospects
3. Early warning indicators of upcoming debt crisis?
4. Analyzing debt restructuring workouts

Domestic and External Financial Equilibrium

What is disposable income?

\[ Y = C + I + G + X – M – T + (KM – K\text{ flight}) \]

Savings = \( Y – C \)

\[ \text{Net savings} \quad \text{Fiscal balance} \quad \text{Trade balance} \quad \text{Net capital inflows} \]

\[ (S – I) + (T – G) = (X – M) + (KM – K\text{ flight}) \]
Boosting savings to finance investment without external deficit

if S < I ⇒ X < M

- a trade imbalance is always rooted in low savings and excessive domestic spending (absorption).
- It requires macroeconomic correction (interest rate hike, devaluation, ↑ taxation, credit reduction, ↑ reserve requirements...).

Roots of external financial crisis

- Consumption > Savings = excessive absorption
- High rates of spending on domestic and foreign goods
- Shrinking net income

ADJUSTMENT

- IMF’s financing + macroeconomic stabilization
- Fiscal adjustment + cuts in public spending
- Structural measures to stimulate competitiveness
- Exchange rate adjustment + control of the money supply: decrease in creation of reserve money + decline on money multiplier of the deposit money banks + interest rate rise + increase in reserve requirements
- Debt Restructuring + return to market access

Number of sovereign debtor countries in default/year

Source: Standard and Poor's, Crédit Agricole S.A.

External sovereign debt defaults and reschedulings, 1800-2007 /I3

Source: Reinhart and Rogoff
External Debt Analysis

**FLOWS:** Balance of payments analysis and capital flight

- Liquidity
- Sustainability of external debt strategy (refinancing, market access, rescheduling, restructuring...)

**STOCKS:** Structure of debt by creditors, maturity (ST/LT), currency and interest rates (fixed浮动)

- Solvency ratios
- London Club debt: secondary market discounts
- Spread/margin over US T Bills and CDS

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**Why/When does a financial crisis erupt?**

**Gross and Net Flows**

- **Gross Capital Inflows** = \( \sum \) Long-term + Short-term capital flows
- **Net Flows** = \( \sum \) Gross Inflows - Principal Repayments
- **Net Transfers** = \( \sum \) Net Flows - Interest Payments
- **Total debt service payments** = \( \sum \) Principal payments + Interest payments

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**IIF’s analysis of Capital Flows 2011-2014**

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<tr>
<th></th>
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<td>842</td>
<td>1020</td>
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<td>Direct Lending/Other, Net</td>
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<td>( \sum ) Current Account Balance</td>
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<td>288</td>
<td>259</td>
<td>220</td>
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</table>

IIF estimate, IMF forecast
The current account of the balance of payments

\[ \text{Export of goods f.o.b.} - \text{Imports of goods f.o.b.} = \text{Trade balance} \]

- Exports of non-financial services
- Imports of non-financial services
+ Investment income (credit)
- Investment expenditures (debit)
+ (-) Private unrequited transfers
+ (-) Official unrequited transfers

= Current account balance

From less liquid items toward more liquid items!

US$ 6-month LIBOR

Time lag, elasticities and the adjustment mechanism: “J curve”

Reducing the trade deficit?

- Import elasticity of domestic economic growth
\[ \Delta M / \Delta Y = \text{Income elasticity of demand for imports: percentage of (induced) change in imports divided by the percentage of change in income; if M double while Y is growing 50%, the value of income elasticity} = 2. \]
Trade elasticities: What about the price effects of exchange rate changes on the BOP?

- **Import demand elasticity** to prices =
  \[ \frac{\Delta MD}{\Delta P} < 0 ? \]
  Terms of trade (deterioration post devaluation): it takes more units of Exports to buy x units of imports

- **Export elasticity** to foreign demand change =
  \[ \frac{\Delta X}{\Delta FD} > 0 ? \]
  This elasticity depends on foreign demand and on trade competitors

- **Supply elasticity** to foreign demand =
  \[ \frac{\Delta S}{\Delta FD} > 0 ? \]
  This elasticity depends on the availability of finance, equipment, (imported) inputs, labor...

Devaluation: the day after
key role of elasticities = ratio of two variations

Supply elasticities
\[ \Delta + \text{Domestic production} \]
\[ \Delta + \text{Foreign demand} \]
Demand elasticities
\[ \Delta - \text{Domestic consumption} \]
\[ \Delta - \text{Import prices} \]
\[ \Delta - \text{Export prices} \]

The Capital Account

*From less liquid items to more liquid items!*

**Capital account**
- (+) Direct investment (non debt creating flows)
- (+) Portfolio investment (NDCF)
- (+) Other long-term capital (private + official)
- (+) Other short-term capital (private + official)
- (+) Net errors and omissions
- (+) Counterpart items
- (+) Change in reserves

= **Capital account balance**
  + Exceptional Financing (or arrears)
Risk Management and BOP Analysis

+ Export of goods f.o.b.
- Imports of goods f.o.b.

= Trade balance

+/- Exports of non-financial services
+/- Interest payments
+/- Private/Official unrequited transfers

= Current account balance

+/- FDI
+/- Portfolio capital flows
+ LT Capital inflows
- Debt Servicing Payments
+/- ST Capital Flows

Reserve Variation
External Debt Analysis: The dual face of Country Risk

**Liquidity Risk**
- Debt Service Ratio: \((P+I/X)\)
- Interest Ratio \((I/X)\)
- Current account/GDP
- Growth rate of exports/ Average external interest rate

**Solvency Risk**
- Debt/Export ratio
- Debt/GDP ratio
- Debt/Reserves
- ST Debt/Total Debt
- ST Debt/Reserves
- Reserve/Import ratio

Liquidity and Solvency Thresholds

**Stock variable**
- Solvency = Debt/GDP < 66%*
- Debt/Exports < 150%
- Reserves/months of Imports > 6 months

**Flow variable**
- Liquidity = Debt Service ratio < 33% of X
- Interest/X ratio < 25%

*average debt crisis threshold 1970-2010 Reinhart/Rogoff (Maastricht)

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### Public debt/GDP % 2013

<table>
<thead>
<tr>
<th>Country</th>
<th>Public Debt/GDP % 2013</th>
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<tbody>
<tr>
<td>Japan</td>
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<tr>
<td>Greece</td>
<td>150</td>
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<tr>
<td>India</td>
<td>60</td>
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<td>Mexico</td>
<td>50</td>
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<td>USA</td>
<td>25</td>
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<td>China</td>
<td>180</td>
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### Greece: Public Debt/GDP in %

<table>
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<th>Year</th>
<th>Public Debt/GDP %</th>
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<tr>
<td>2001</td>
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<tr>
<td>2002</td>
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<td>2015</td>
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<td>2016</td>
<td>270</td>
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<td>2017</td>
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The *debt trap* in a nutshell

« *Austerity + deficits* »
- Deficit shrinking with spending cuts + wage reduction + tight fiscal and monetary policy = GDP fall =
- solvency ratios worsening = Rating downgrading = Higher borrowing costs

« *Deficit-driven stop & go* »
- Large primary fiscal deficit = higher consumption = larger external deficit = larger unfunded financing requirements =
- GDP rises = « stop & go » = Rating downgrading! = Higher borrowing requirements

External Debt Analysis I

How to stabilize the Interest/Export ratio?

Necessary condition: the growth rate of exports must be at least equal to the average interest rate on total external indebtedness

Interest payments grow every year at the average interest rate time * overall indebtedness
External Debt Analysis II

- $r = \text{average rate of interest and } g = \text{average GDP growth rate}$

- $\text{DEBT}_t = \text{DEBT}_{t-1} \times (1+r) - \text{Primary Budget Balance}$

- $\text{GDP}_t = \text{GDP}_{t-1} \times (1+g)$

- $\text{DEBT}_t = \text{DEBT}_{t-1} \times (1+r) - \text{Primary Budget Balance}$

- $\frac{\text{DEBT}}{\text{GDP}}_t = \frac{\text{DEBT}_{t-1}}{\text{GDP}_{t-1}} \times \frac{1+r}{1+g} - \frac{\text{Primary Budget Balance}}{\text{GDP}}$

Reducing DEBT= Reducing r, increasing g, or boosting primary surplus.

External Debt Analysis III

How to stabilize the Debt/GDP ratio?

Necessary condition: Deficit must be < (Debt/GDP * GDP growth rate)

- If Debt/GDP = 85% and GDP growth = 2%
- Then deficit must be < 1.7%

External Debt Analysis IV

How to stabilize the Debt/GDP ratio?

Necessary condition: Deficit must be < (Debt/GDP * GDP growth rate)

- $g = \text{growth rate of GDP and } d = \text{deficit/GDP ratio}$

- $\text{DEBT}_t = \text{DEBT}_{t-1} + \text{DEF}_{t-1} \quad \text{DEF} = d \times \frac{Y_t - Y_{t-1}}{1+g}$

- $\text{DEBT}_t = \text{DEBT}_{t-1} + d \times \frac{Y_t}{1+g}$

- $\frac{\text{DEBT}_t}{\text{Y}_t} = \frac{\text{DEBT}_{t-1}}{\text{Y}_{t-1}} + \frac{d}{1+g}$

So, if DEBT/Y < 120%, DEF should be < 3% for a 2.5% GDP growth rate.

NORTH SEA GLOBAL EQUITY MANAGEMENT

<table>
<thead>
<tr>
<th>Risk Categories</th>
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<th>Indicators</th>
<th>Risk Assessment</th>
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<td>GDP growth rate - %</td>
<td>performance</td>
<td>quarterly</td>
<td>WB</td>
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<td>only &gt; 0</td>
<td>2</td>
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<td>quarterly</td>
<td>WB/MF</td>
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<td>3</td>
<td>Current account/GDP - %</td>
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<td>quarterly</td>
<td>IMF/MF</td>
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<td>Capital Flight / Reserves - %</td>
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<td>quarterly</td>
<td>WB</td>
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4. Risk ratings

- 5-year CDS
- Corruption Index
- Credit Rating
- Human Development Index
- Doing Business Index
Vietnam’s external debt outstanding

Total external debt: US$56 billion

- Debt/GDP = 55%
- Debt/XGS = 50%
- Debt service ratio/XGS < 5%

Vietnam’s total external debt: US$56 billion (e)

- o/w <30% ST

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Vietnam’s international bank debt

- International bank claims on Vietnam: US$ 20.6 billion as of end-12 (o/w 24% from UK banks, 17% from French banks, 11% from US banks)
- o/w US$4.8 on the non-bank private sector.
- Short-term debt: US$8.5 billion
- Undisbursed credit commitments: US$0.92 billion
- Total overseas deposits in international banks: US$ 4.9 billion
- o/w Deposits of private nonbank agents: US$1213 million (US$360 million end-2005)
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<td>NET RATIO%</td>
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<td>4.84%</td>
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<td>-1.71%</td>
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<td>5.48%</td>
<td>5.42%</td>
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