

Country risk, Financial crisis, and Debt Analysis I

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Michel Henry Bouchet
www.developingfinance.org

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- ☞ Reinhart C., Rogoff K.: *This time it's different* (Princeton, 2009)
- ☞ Paris Club 2014
- ☞ IIF 2014
- ☞ IMF yearly report and WEO 2014
- ☞ BIS reports 2014
- ☞ C-Bonds website

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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

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Domestic and External Financial Equilibrium

What is disposable income?

Y = gross income - imports & taxation

$$Y = C + I + G + X - M - T + (KM - K F)$$

$$\text{Savings} = Y - C$$

$$(\text{S} - \text{I}) + (\text{T} - \text{G}) = (\text{X} - \text{M}) + (\text{KM} - \text{K F})$$

Net savings
Fiscal balance
Trade balance
Net capital inflows

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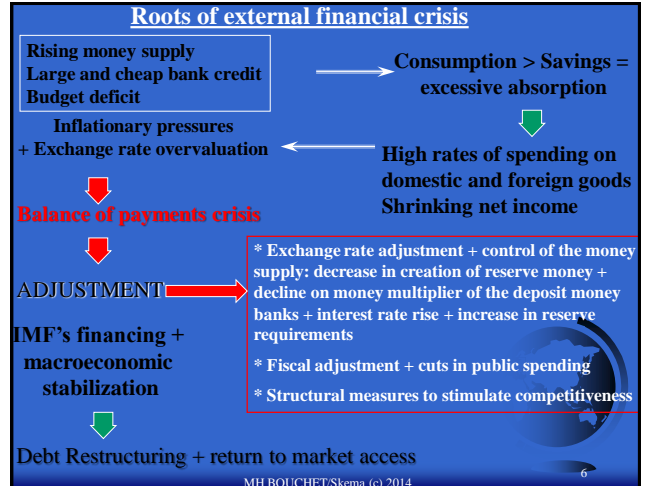
Boosting savings to finance investment without external deficit

if $S < I \Rightarrow X < M$

- 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...)

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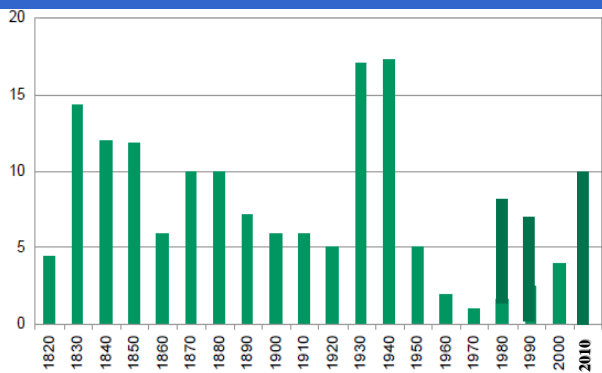
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Number of sovereign debtor countries in default/year

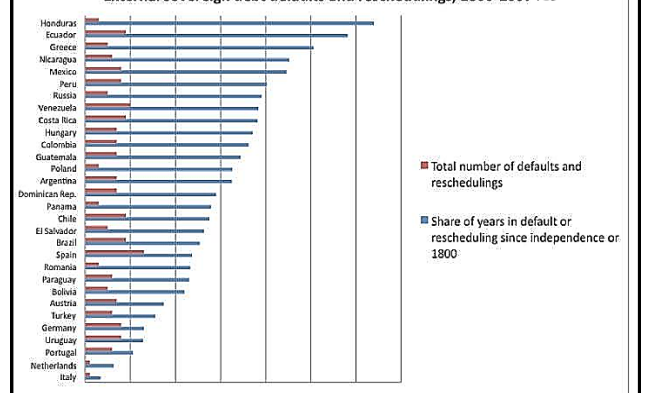


Source : Standard and Poor's, Crédit Agricole S.A.

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External sovereign debt defaults and reschedulings, 1800-2007 /13



Source: Reinhart and Rogoff

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Fitch-Rated Sovereign IDR Defaults (1995–2011)

Argentina: Defaulted on more than USD80 billion of sovereign foreign currency bonds in December 2001, most of which were held by non-residents. Debt default partially cured in 2005, but some holdout investors remained, constraining the rating to 'RD' until July 2010.

Dominican Republic: Distressed debt exchange in 2005 affected more than USD1.1 billion of eligible foreign currency-denominated bond debt.

Ecuador: Missed coupon payment on its 2012 global bonds followed by an announcement that the government would selectively default on all global bonds. The rating was lowered to 'RD' in December 2008.

Indonesia: Paris and London Club rescheduling operations in June 1998, further rescheduling in 2000 and 2002. Indonesia maintained payments on the single Fitch-rated sovereign bond outstanding at the time.

Moldova: USD75 million eurobond restructured in 2002, followed by a Paris Club deal.

Russian Federation: Exceptionally, Fitch dates sovereign default to August 1998. Although this was when the Russian Federation defaulted on its local currency debt, it began to incur arrears on foreign currency debt owed to the Paris Club official bilateral creditors very quickly afterwards. Defaults on foreign currency debt instruments held by private creditors occurred in 1999, although payments on Russian Federation eurobonds were maintained and honored.

Uruguay: Distressed debt exchange in March 2003 affecting more than USD5 billion of sovereign foreign currency debt, mostly held by non-residents.

Jamaica: A coercive debt exchange in February 2010 affected the country's domestic debt, which included foreign currency-denominated instruments to which Fitch's foreign currency rating applied.

RD – Restricted default.

External Debt Analysis

FLAWS: 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/floating)

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



Why/When does a financial crisis erupt?

Gross and Net Flows

☞ **Gross Capital Inflows =**

Σ Long-term + Short-term capital flows

☞ **Net Flows =**

Σ Gross Inflows - Principal Repayments

☞ **Net Transfers =**

Σ Net Flows - Interest Payments

☞ **Total debt service payments =**

Σ Principal payments + Interest payments

IIF's analysis of Capital Flows 2011-2014

Emerging Market Economies: Capital Flows

\$ billion	2011	2012e	2013f	2014f
Capital Inflows				
<i>Total Inflows, Net:</i>	<i>1207</i>	<i>1212</i>	<i>1187</i>	<i>1167</i>
Private Inflows, Net	1146	1181	1145	1112
Equity Investment, Net	598	670	631	633
Direct Investment, Net	593	545	541	523
Portfolio Investment, Net	5	125	89	110
Private Creditors, Net	548	511	514	479
Commercial Banks, Net	195	121	144	154
Nonbanks, Net	353	390	369	325
Official Inflows, Net	61	31	43	55
International Financial Institutions	17	4	6	21
Bilateral Creditors	44	27	37	35
Capital Outflows				
<i>Total Outflows, Net:</i>	<i>-1787</i>	<i>-1269</i>	<i>-1396</i>	<i>-1396</i>
Private Outflows, Net	-811	-932	-1000	-1000
Equity Investment Abroad, Net	-262	-320	-375	-357
Resident Lending/Other, Net	-549	-612	-624	-643
Reserves (- = Increase)	-670	-357	-397	-396
Memorandum:				
<i>Net Errors and Omissions</i>	<i>17</i>	<i>-211</i>	<i>0</i>	<i>0</i>
<i>Current Account Balance</i>	<i>257</i>	<i>288</i>	<i>209</i>	<i>229</i>

The current account of the balance of payments

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

= **Trade balance**

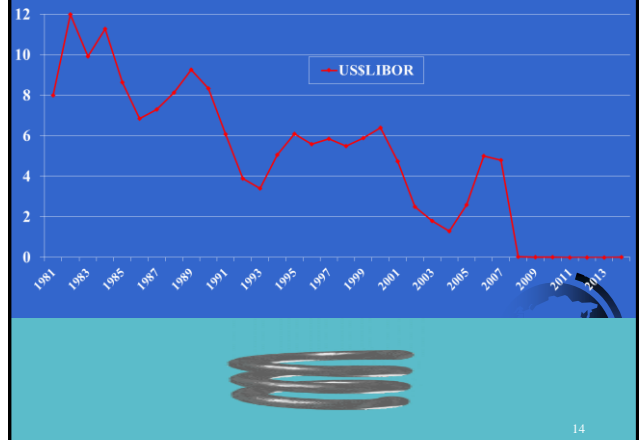
- + Exports of non-financial services
- Imports of non-financial services
- + Investment income (credit)
- Investment expenditures (debit)
- + (-) Private unrequited transfers
- + (-) Official unrequited transfers

= **Current account balance**

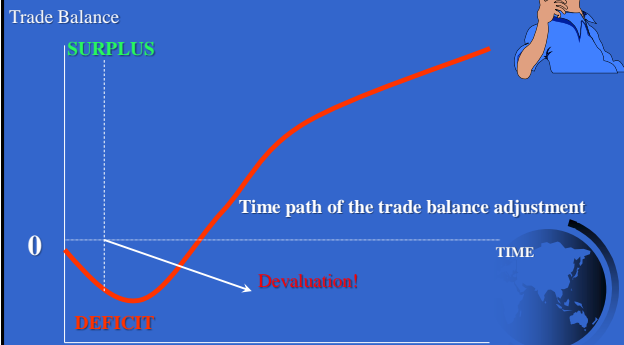
*From less liquid items
toward more liquid items!*



US\$ 6-month LIBOR



Time lag, elasticities and the adjustment mechanism: "J curve"



Reducing the trade deficit?

- ☞ Import elasticity of domestic economic growth
- $\Delta M / \Delta Y =$ 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 =

$$\Delta MD / \Delta P \$ < 0 ?$$

Terms of trade (deterioration post devaluation): it takes more units of Exports to buy x units of imports

> Export elasticity to foreign demand change =

$$\Delta X / \Delta FD \$ > 0 ?$$

This elasticity depends on foreign demand and on trade competitors

> Supply elasticity to foreign demand =

$$\Delta S / \Delta FD > 0 ?$$

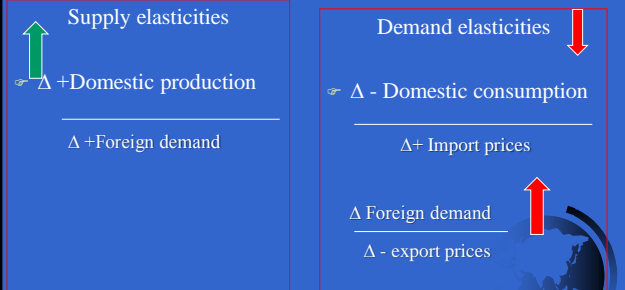
This elasticity depends on the availability of finance, equipment, (imported) inputs, labor...

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Devaluation: the day after

key role of elasticities = ratio of two variations



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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

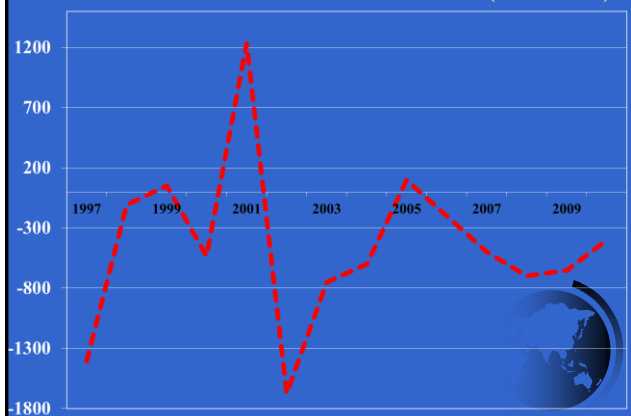
= Capital account balance

- + Exceptional Financing (or arrears)

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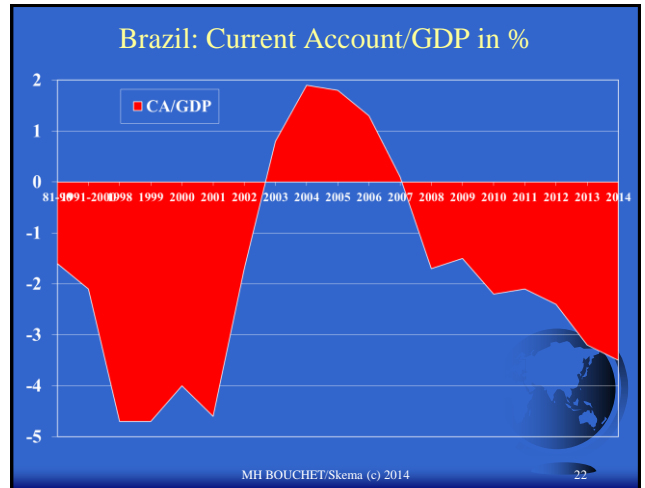
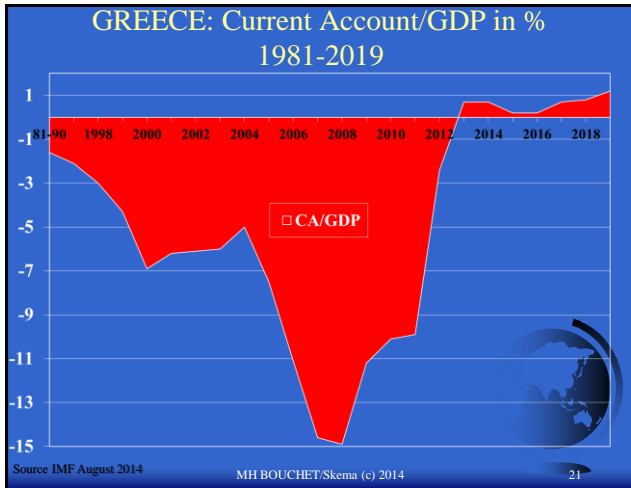
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GREECE: BOP Errors and Omissions (\$ million)



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BALANCE of PAYMENTS (\$ million)	2003	2004	2005	2006	2007
Trade Balance	-1 130	-411	-1 577	-2 494	-5 105
Merchandise exports	4 882	6 151	7 910	8 061	8 500
Merchandise imports	-6 012	-6 562	-9 487	-10 555	-13 600
Balance on Services, Income & Transfers	42	178	114	-385	-1 331
Services & income receipts	849	1 013	1 262	1 277	1 404
Exports of services	697	879	1 130	1 162	1 214
Interest receipts	150	125	115	110	175
Other services & income receipts	-2	9	17	16	15
Services & income payments	-1 022	-1 130	-1 773	-2 255	-3 155
Imports of services	-902	-984	-1 423	-1 583	-2 040
Interest payments	-116	-134	-321	-639	-1 065
Other services & income payments	-4	-12	-29	-33	-50
Transfers, net	214	295	625	593	415
Private transfers, net	103	182	320	394	269
Official transfers, net	111	113	305	199	150
Current Account	-1 088	-233	-1 463	-2 879	-6 431
Foreign investment, net	14	416	396	600	642
Foreign Direct Investment (disbursed, net)	87	341	417	600	500
Portfolio equity investment, net	-73	75	-21	0	142
International financial institutions	137	434	-7	-236	550
IMF	0	216	-315	-356	500
World Bank Group	0	100	100	0	0
Other multilateral creditors	137	118	208	120	50
Paris Club and other bilateral creditors	85	69	348	132	-128
London Club	95	651	277	726	1 639
Credit flows	70	601	222	641	139
Interest arrears	0	0	0	0	0
Short-term credits	25	50	55	85	1 500
Other private creditors (bond markets)	-4	10	1 000	1 500	200
Resident lending abroad, net	541	-683	430	-19	481
Errors and omissions, net	152	93	-150	-250	-350
Gold reserve variation	50	86	38	47	-81
Reserves excluding gold (= increase)	-7	-893	-924	294	1 988

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

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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

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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%

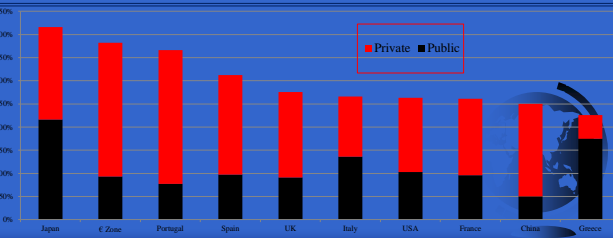
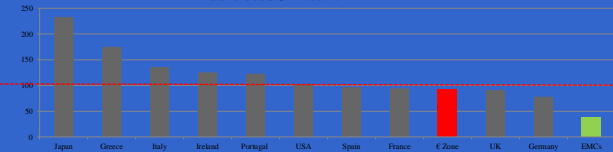
* average debt crisis threshold 1970-2010 Reinhart/Rogoff (Maastricht)

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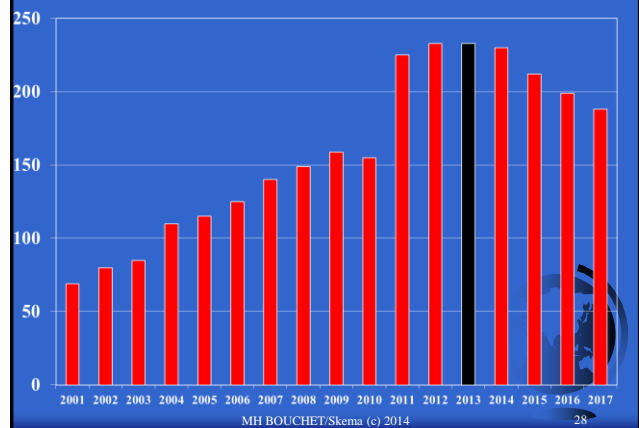
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OVERALL NATIONAL DEBT BURDENS % GDP

Public debt/GDP % 2014

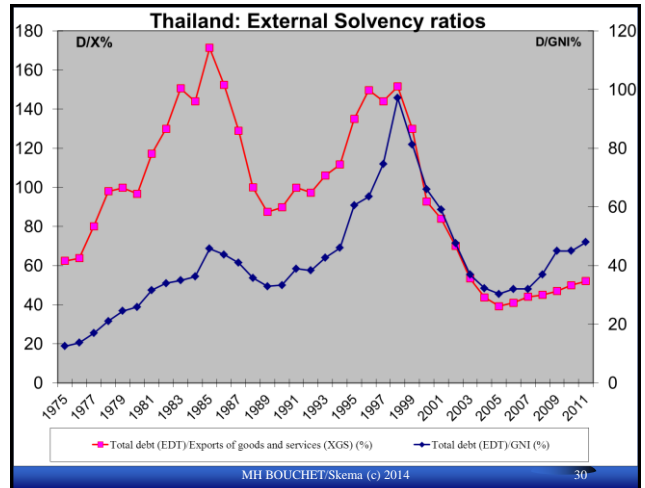
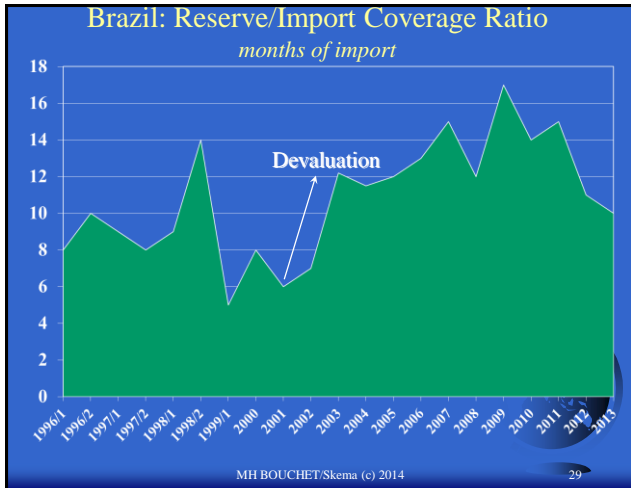


GREECE: Public Debt/GDP in %



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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



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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 * overall indebtedness

LIBOR

Average growth rate of Exports of Goods & Services

Time

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External debt Analysis II

r = average rate of interest and g = average GDP growth rate

$$DEBT_t = DEBT_{t-1} * (1+r) - \text{Primary Budget Balance}$$

$$GDP_t = GDP_{t-1} * (1+g)$$

$$\frac{DEBT_t}{GDP_t} = \frac{DEBT_{t-1}}{GDP_{t-1}} * \frac{(1+r)}{(1+g)} - \frac{\text{Primary Budget Balance}}{GDP_t}$$

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

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

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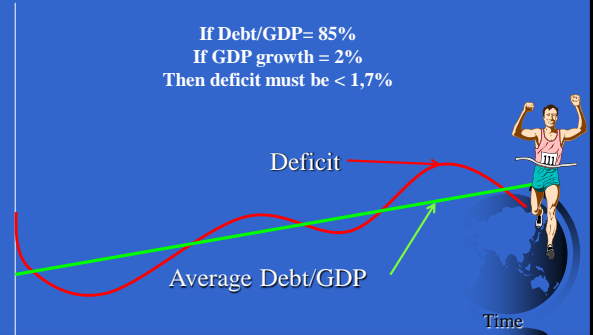
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External Debt Analysis III

How to stabilize the Debt/GDP ratio?

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

If Debt/GDP= 85%
If GDP growth = 2%
Then deficit must be < 1,7%



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External Debt Analysis IV

How to stabilize the Debt/GDP ratio?

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

g = growth rate of GDP and d = deficit/GDP ratio

$$DEBT_t = DEBT_{t-1} + DEF_{t-1} \quad DEF = d * Y_t \quad \Delta Y_t = Y_{t-1} (1+g)$$

$$\frac{DEBT_t}{Y_t} = \frac{DEBT_{t-1}}{Y_{t-1}} + \frac{d * Y_{t-1}}{Y_t}$$

$$\frac{DEBT_t}{Y_t} = \frac{DEBT_{t-1}}{Y_{t-1}} * \frac{Y_{t-1}}{Y_t} + \frac{d}{1+g} = \left(\frac{1}{1+g}\right) * \frac{DEBT_{t-1}}{Y_{t-1}} + \frac{d}{1+g} = \frac{d}{1 - (1/(1+g))} = \frac{d}{g}$$

So, if DEBT/Y < 120%, DEF should be < 3% for a 2,5% GDP growth rate

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NORTH SEA GLOBAL EQUITY MANAGEMENT

Risk Categories	I no.	Indicators	Risk	Data	Source	
1. Real Economy			Assessment	Frequency		
	" _t > 0	1	GDP growth rate - %	performance	quarterly	WB
	" _t > 0	2	Budget Deficit/GDP - %	overheating	quarterly	WB/IMF
	only > 0	3	REER 2005=100	competitiveness	quarterly	BIS
	" _t > 0	4	Credit growth %	overheating	quarterly	WB/IMF
" _t > 0	5	CPI%	overheating	quarterly	IMF & CB	
2. External Finance			competitiveness	quarterly	IMF&IIF	
	" _t > 0	6	current account/GDP - %	competitiveness	quarterly	IMF&IIF
	only > 0	7	DSR - % XGS	liquidity	quarterly	IMF&IIF
	only > 0	8	Ext. Debt/Exports %	liquidity	quarterly	IMF&IIF
	only > 0	9	Ext. Debt/GDP - %	solvency	quarterly	IMF&IIF
	" _t > 0	10	Reserves coverage - months	liquidity	quarterly	IMF&IIF
	only > 0	11	Net Ext Liabilities/GDP%	sustainability	quarterly	BIS/IMF
only > 0	12	Reserves/ST DEBT - %	liquidity	quarterly	IMF	
3. Spill-over			performance	quarterly	WB	
	only > 0	13	Trade openness ratio - %	performance	quarterly	WB
only > 0	14	Capital Flight / Reserves - %	capital flight	quarterly	BIS	
4. Risk Ratings			default	weekly	Bloom&berg	
	in bp	15	5-year CDS	default	weekly	Bloom&berg
	only > 0	16	Corruption Index	governance	annual	TI
	only > 0	17	Credit Rating	risk assessment	randomly	S&P
	only > 0	18	Human Developpt Index	governance	annual	UNDP
	only > 0	19	Doing Business index	performance	annual	WB

Vietnam's external debt outstanding

Total external debt: US\$56 billion

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

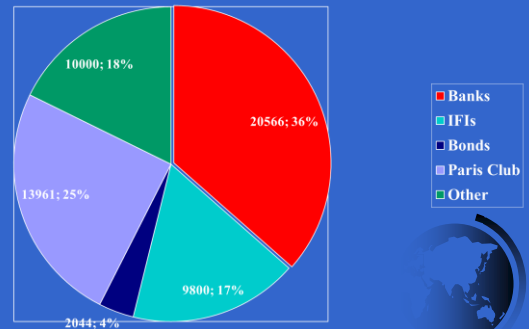


IMF/2010

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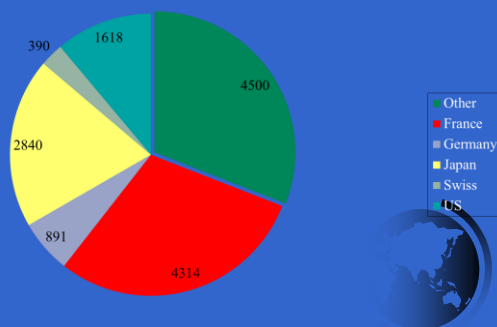
Vietnam's total external debt: US\$56 billion (e) o/w <30% ST



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Vietnam's international bank debt



Source: BIS 2013

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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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Vietnam-Net Liquidity Ratios

VIETNAM	2006	2007	2008	2009	2010	2011	2012
Bank Loans	4,795	9,052	16,081	12,380	15,990	18,600	
Bonds	2,000	2,000	2,000	2,000	2,000	2,000	
Bank deposits	4,509	6,324	3,438	4,086	4,847	4,559	
Private dep	0,509	0,770	0,720	0,765	0,796	0,956	
Reserves	20	21	23	14,1	12,4	14	
GDP	57,294	71,100	90,300	93,200	103,600	118,600	128,500
NET RATIO%	30,918%	22,886%	9,255%	4,084%	-0,717%	-1,721%	0,000%
Private dep/R	2,55%	3,67%	3,13%	5,43%	6,42%	6,83%	

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