

Macroeconomic Theory Lecture 8

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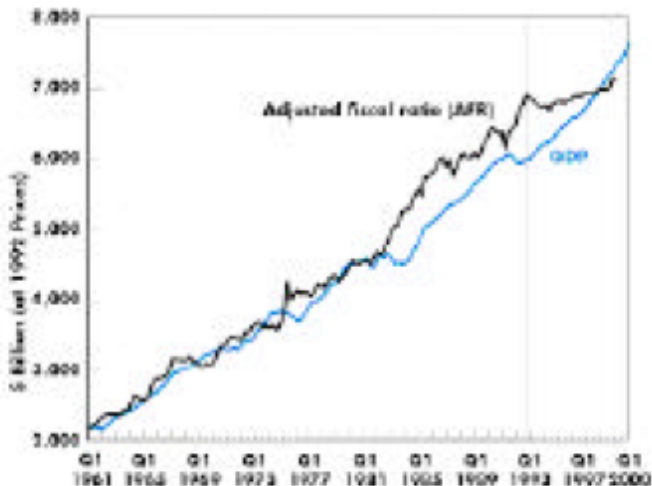
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Godley's seven unsustainable processes, 1999

1. Written in 1999 when everything was fine for the US economy. Clinton: "There are no limits to the world we can create, together, in the century to come."
2. Calling for political intervention and expansionary fiscal policies: *"The view taken here, which is built into the Keynesian model later deployed, is that the government's fiscal operations, through their impact on disposable income and expenditure, play a crucial role in determining the level and growth rate of total demand and output."*
3. Highlighting seven unsustainable processes: *"(1) the fall in private saving into ever deeper negative territory, (2) the rise in the flow of net lending to the private sector, (3) the rise in the growth rate of the real money stock, (4) the rise in asset prices at a rate that far exceeds the growth of profits (or of GDP), (5) the rise in the budget surplus, (6) the rise in the current account deficit, (7) the increase in the United States's net foreign indebtedness relative to GDP."*

Adjusted Fiscal Ratio and GDP

Figure 2 Adjusted Fiscal Ratio and GDP



Note: In this and the following figures, the vertical line is drawn at 1992Q3 unless otherwise indicated.

Source: Citibase and author's calculations (see text for details).

Adjusted Trade Ratio and GDP

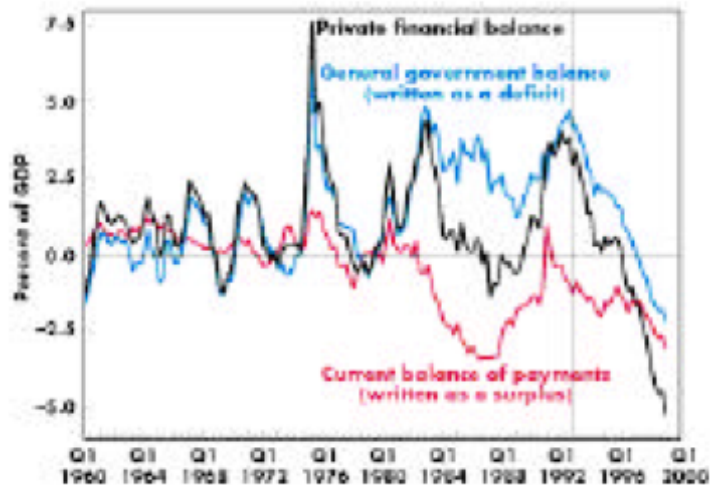
Figure 4 Adjusted Trade Ratio and GDP



Source: Citibase and author's calculations (see text for details).

The Three Major Financial Balances

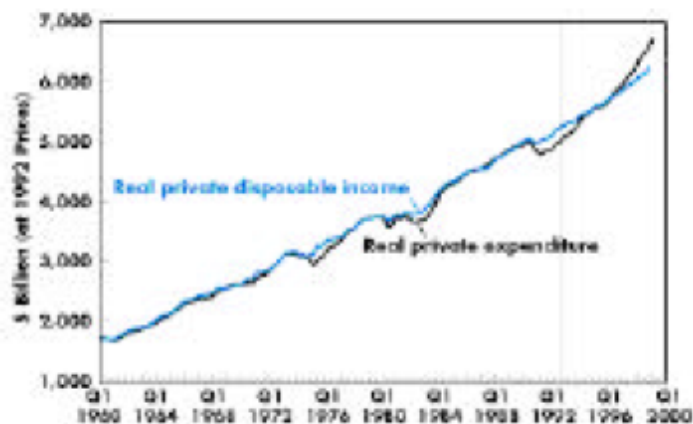
Figure 7 The Three Major Financial Balances



Source: Citibase and author's estimates.

Real Private Expenditure and Disposable Income

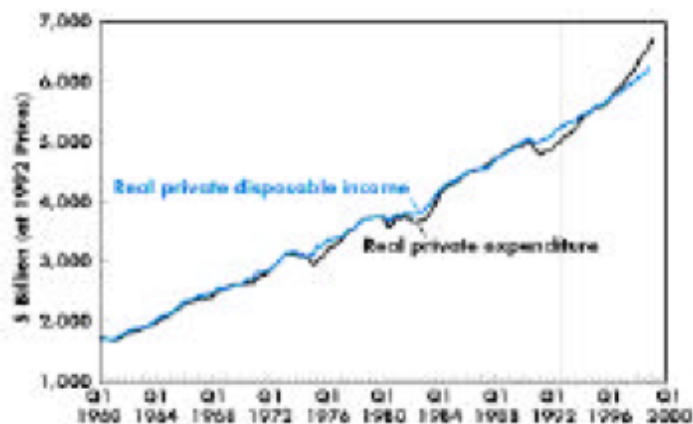
Figure 8 Real Private Expenditure and Disposable Income



Source: Citibase and author's estimates.

Private Financial Deficit

Figure 8 Real Private Expenditure and Disposable Income



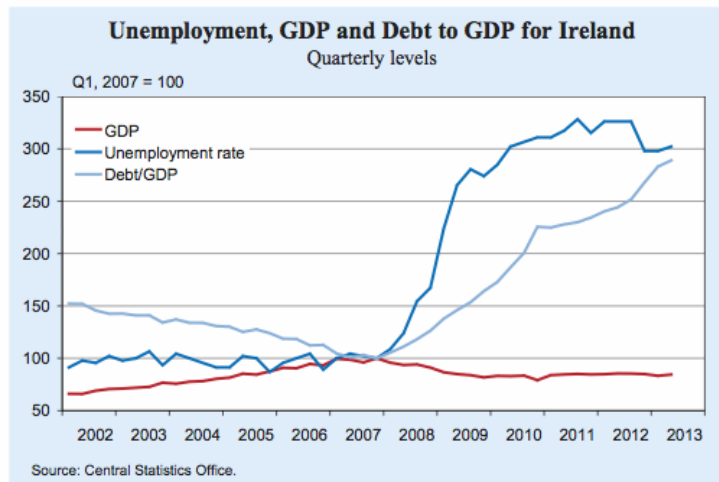
Source: Citibase and author's estimates.

Ireland is no poster child for austerity (Kinsella, 2014)

1. Ireland is getting better, "clean" exit from EU/IMF bailout program. Poster Child for Austerity measures?
2. Maybe not so much...

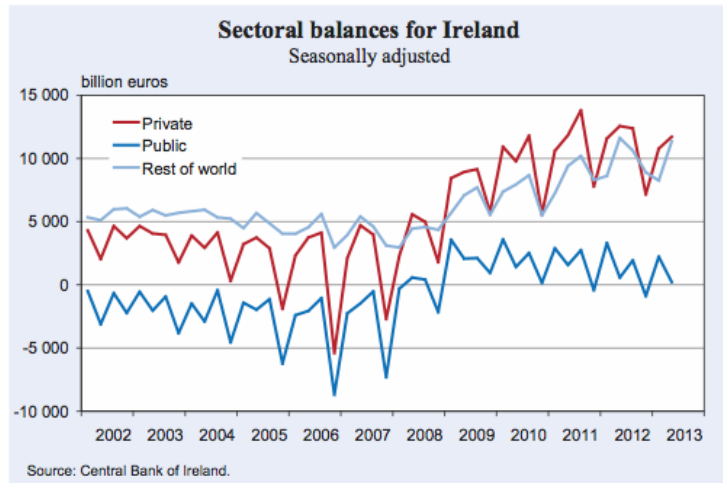
General situation

Figure 1



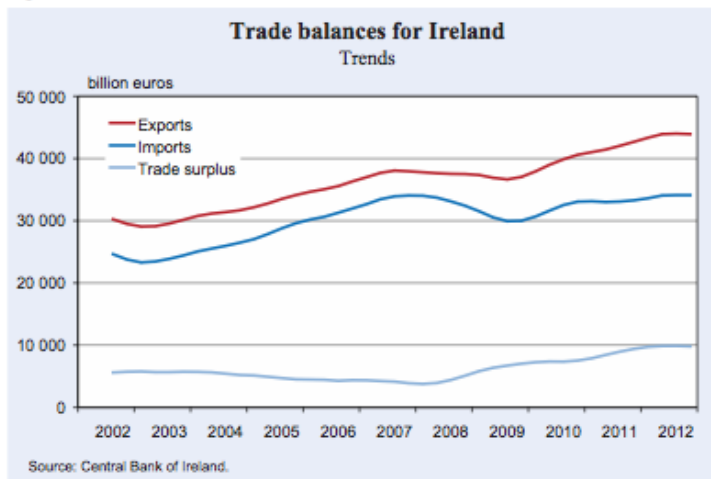
Sectoral balances

Figure 2



Trade Flows

Figure 3



Colombia's financial Dutch disease (Botta et al., 2014)

1. Colombia as a *“success story [which] is now one of the most open and most business-friendly countries in Latin America [...and in which] new opportunities are opening up for foreign investors, particularly in hydrocarbons and mining, construction, and electricity, and there is free-trade access to the US market (Economic Intelligence Unit, 2013, p. 8).”*
2. Financial Dutch disease with unsustainable processes

General situation

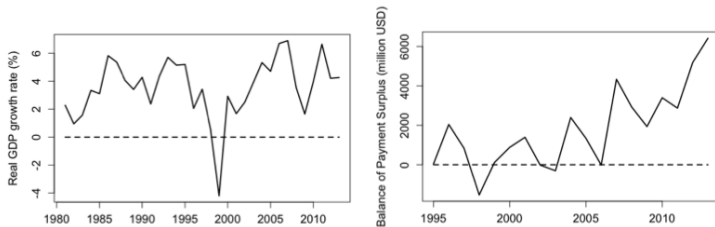
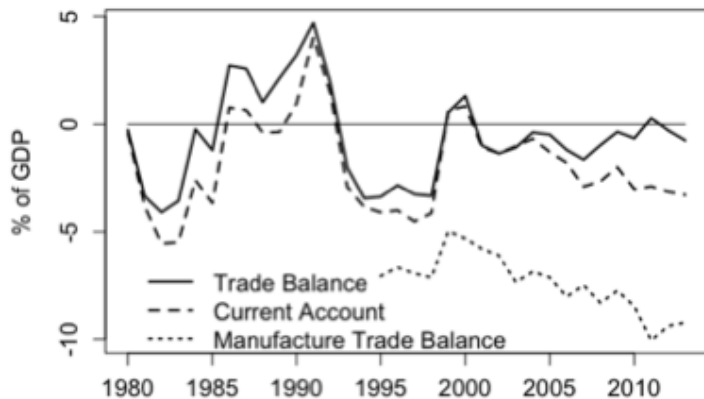
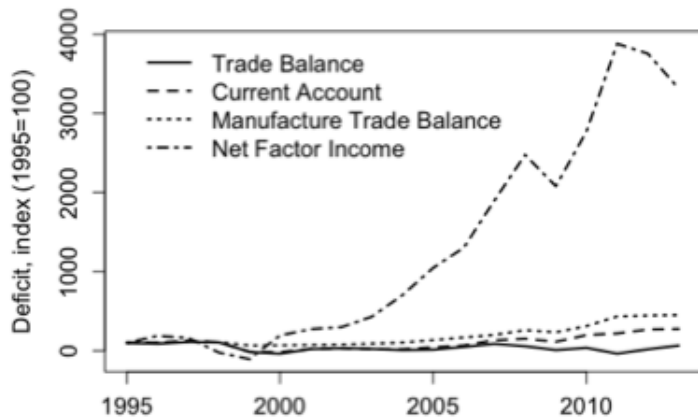


Figure 1: Annual real GDP growth (left), Balance of Payments surplus (right). Source DANE.

Trade Balance and Current Account



Current Account and selected components



Of stocks and flows

1. Importance of balances both in flow and stock levels
2. A seemingly sound situation might hide imbalances building up and leading to unsustainable situation
3. Importance of financial side of economy and feedback from real and finance
4. Need for dynamic model showing path dependency

Where do the SFC models come from?

A very brief historical excursus

Three authors played a crucial role:

1. Morris A. Copeland:

- ▶ *Social Accounting for Moneyflows* (1949)

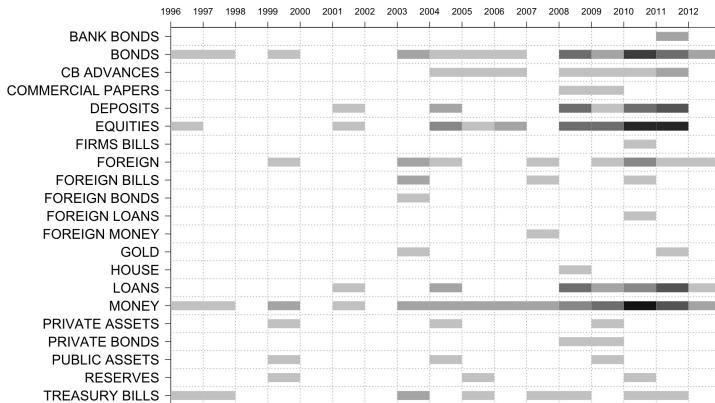
2. James Tobin

- ▶ Backus et al. (1980): arguably first complete SFC (matrix approach to accounting + closure).
- ▶ Tobin (1982): Nobel lecture, in part a SFC Manifesto (1. Precision regarding time; 2. Tracking of stocks; 3. Several assets and rates of return; 4. Modeling of financial and monetary policy operations; 5. Walras's Law and adding up constraints.)

3. Wynne Godley

- ▶ formalization and development, thanks to a more appropriate economic approach (money matters...)(among the other works see Godley and Lavoie, 2007):

Assets through time (Caverzasi and Godin, 2014)



The darker the more papers used the asset

What are we talking about?

Which SFC are the components of an SFC model?

1. accounting part: matrix approach
2. behavioral equations

Accounting

Rules: consistency (wrt stock and flows, within and between)

- ▶ someone's asset is someone else's liability AND someone inflow is someone else's outflow
 - ▶ *quadruple entry system* Copeland (1949)
- ▶ budget constraint for each individual sector and for the economy as a whole ("Walras' law and adding up constraint" Tobin 1982 or "budget constraint or system-wide consistency requirement" Godley and Lavoie 2007)

The matrix approach

1. Aggregate balance sheet: starting stocks of the economy.
2. Transaction flows: all the flows of the economy.
3. Flows of funds: how all flows end up in new stocks. End of the current period's stock = starting stocks of the following period.

NB 2 and 3 often presented jointly

Accounting part 1

THE INITIAL STOCKS: the aggregate balance sheet

Tab.1 Aggregate Balance Sheets. A (+) sign before a variable denotes an asset while a (-) sign denotes a liability					
	Households	Firms	Banks	Gov.	Tot
Bank Deposits	+CA		-CA		0
Bank Loans		-L	+L		0
Capital		+K			+K
Net worth	Vh	Vf	Vr	Vg	V

Accounting part 2

CURRENT TRANSACTIONS: the transaction flows

Tab. 2 Current Transactions: (+) sign denotes receipt, (-) sign denotes a payment						
	Households	Firms		Banks	Gov.	Tot
		current	capital			0
Consumption	-C	+C				0
Investment		$+\Delta K$	$-\Delta K$			0
Memo: Final Sales at market prices = $pX = C + I = W + P$						
Wages	+W	-W				0
Interests on L		$-rL_{t-1}$		$+rL_{t-1}$		0
Interests on CA	$+rcCA_{t-1}$			$-rcCA_{t-1}$		0
Dividends	+Ff	-Ff				0
Totals	SavH	Fu	$-\Delta K$	SavB	SavG	SAV

Accounting part 3

THE FLOW OF FUNDS: from the flows to the end of the period's stocks

Tab.3 Flow of Funds:					
(+) sign denotes sources of funds, (-) denotes uses of funds					
	Households	Firms	Banks	Gov.	Tot
Current Sav	+Sav H	+Fu	SavB	0	+SAV
Δ Bank Deposits	$-\Delta CA$		$+\Delta CA$		0
Δ Bank Loans		$+\Delta L$	$-\Delta L$		0
Δ Fixed K		$-\Delta K$			$-\Delta K$
Total	0	0	0	0	0
Net Worth	SAVH	Fu	Vb	0	SAV

MEMO: The net worth of a sector is increased by its current savings during the period, plus capital gains.

The equations: 2 steps

1. The accounting identities

All the identities and flows implied by the accounting
e.g. for firms (F = total profit)

$$F = +C + \Delta K + rc \cdot CA_{t-1} - W - rl \cdot L_{t-1} \quad (1)$$

$$Ff = F - Fu \quad (2)$$

2. The behavioral equations: economic theory comes into play

The closure: through theory we try to find an equation for each variable not directly determined by the accounting making theoretical assumptions on the behavior of the sectors.

$$Fu = \zeta F \quad (3)$$

$$C = \alpha_1 \cdot YD + \alpha_2 \cdot V_{-1} \quad (4)$$

The structure of the SIMplest model and the accounting

Hypothesis

1. NO private money
 - ▶ no banks
 - ▶ no loans and thus no interest payment
2. Closed
 - ▶ no import nor export
 - ▶ no capital flows
3. Pure labour economy
 - ▶ no K
 - ▶ no intermediate costs
4. No supply constraint of any kind
5. No inventories
6. Quantity adjustment mechanism: $S = D$

The structure of the SIMplest model and the accounting

Sectors

1. Households

- ▶ buy consumption goods and pay taxes
- ▶ get wages
- ▶ accumulate assets

2. Producers

- ▶ sell services or goods to households and govt
- ▶ pay wages

3. Government

- ▶ buy goods from firms
- ▶ get taxes

Assets

- ▶ high powered money (cash)

The Model part 1: matrices

Transaction Flow Matrix

	Households	Production	Government	Σ
Consumption	$-C$	$+C$		0
Govt. expenditures		$+G$	$-G$	0
[Output]		$[Y]$		
Wages	$+WB$	$-WB$		0
Taxes	$-T$		$+T$	0
Savings	S_h	0	S_g	0
Change in money stock	$-\Delta H$		$+\Delta H$	0
Σ	0	0	0	0

The Model part 1: matrices

Transaction Flow Matrix

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Change in money stock	$-\Delta H$		$+\Delta H$	0
Σ	0	0	0	0

Balance Sheet

	Households	Production	Government	Σ
Money	$+H$		$-H$	0

The Model part 2: the behavioral equations

From assumption 4 (no supply constraints) and 6 (volume adjustment $S = D$)

$$C_s = C_d \quad (5)$$

$$G_s = G_d \quad (6)$$

$$T_s = T_d \quad (7)$$

$$N_s = N_d \quad (8)$$

The Model part 2: the behavioral equations

(9) Disposable income; (10) Taxes; (11) Consumption; (12) GDP; (13) employment

$$YD = W \cdot N_S - T \quad (9)$$

$$T = \theta \cdot W \cdot N_S \quad (10)$$

$$C = \alpha_1 \cdot YD + \alpha_2 \cdot H_{h-1} \quad (11)$$

$$Y = C_s + G_s \quad (12)$$

$$N = \frac{Y}{W} \quad (13)$$

The Model part 2: the behavioral equations

Variation in cash

$$\Delta H_s = H_s - H_{s-1} = G - T \quad (14)$$

$$\Delta H_h = H_h - H_{h-1} = YD - C \quad (15)$$

watertight accounting: Walrasian principle (n^{th} equation implied by the remaining $n-1$)

$$\Delta H_s = \Delta H_d \quad (16)$$

NB that is our *redundant equation*: when trying to compute a model, it is important to identify one and not include it in the computation, otherwise the model would be overdetermined. Remember it can always be used to check if the model is correct (e.g. if $\Delta H_s \neq \Delta H_d$ we had a mistake)

Adding expectations: model SIMEX

- ▶ Consumption depends on *expected* NOT on actual income.
- ▶ We discover the *buffer stock*

Supply equals demand = no news

$$C_s = C_d \quad (17)$$

$$G_s = G_d \quad (18)$$

$$T_s = T_d \quad (19)$$

$$N_s = N_d \quad (20)$$

Consumptions & expectations

$$YD = W \cdot N_S - T \quad (21)$$

$$T = \theta \cdot W \cdot N_S \quad (22)$$

$$C = \alpha_1 \cdot YD^e + \alpha_2 \cdot H_{h-1} \quad (23)$$

$$Y = C_S + G_S \quad (24)$$

$$N = \frac{Y}{W} \quad (25)$$

$$YD^e = YD_{t-1} \quad (26)$$

Households can make a wrong estimate of their disposable income. Hence the quantity of money held represents the adjusting mechanism (*i.e. buffer stock*)

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