THE NEW SCHOOL

The Stock-Flow-Consistent Framework - 3

Gennaro Zezza

Module #5

Empirical SFC modeling

Problems to be addressed

- Lack of data consistency
  - Can usually be addressed. For instance, when we have marginal distributions for payments/receipts we can use the RaS algorithm to estimate the full matrix
- Lack of data on stocks
  - Can be addressed by estimating stocks from flows, when available
- Short samples
  - Sometime can be addressed merging different sources at different frequency
- Econometric issues

An example: The Levy model for Greece

- Short sample for seasonally adjusted data in the NIPA
  - Previous quarters obtained from interpolation of annual data
- Sector accounts only available as non-seasonally adjusted
  - Seasonal adjustment. Requires checking for discrepancies with NIPA figures
- Large discrepancies between sources
  - An example is given by financial balances from the income accounts and from financial accounts
- Econometric issues
  - Structural breaks

Module #6

Financial balances

The *New Cambridge* approach

"The fact that money stocks and flows must satisfy accounting identities in individual budgets and in an economy as a whole provides a fundamental law of macroeconomics analogous to the principle of conservation of energy in physics". (Godley and Cripps 1983)

No need for microfoundation

Example of lake and rivers

The *New Cambridge* hypothesis

- Private sector NAFA is stable relative to income
- Implications: an expansionary fiscal policy to achieve full employment will generate a CA deficit. Another instrument (exchange rate management?) should be used as well
- The New Cambridge hypothesis did not hold in the "short run", but…

Financial balances

From the row and column of the capital account, we get

$Sh + Sf + Sb + Sg + Sw = I$

$\{Sh + Sf\} + 0 - DEF - CA = I$

Net acquisition of financial assets of the private domestic sector (NAFA)

$NAFA = S - I = DEF + CA$

Financial balances #2

Again, from

$Sh + Sf + 0 - DEF - CA = I = Ih + If$

We get

$(Sh – Ih) + (Sf – If) = DEF + CA$

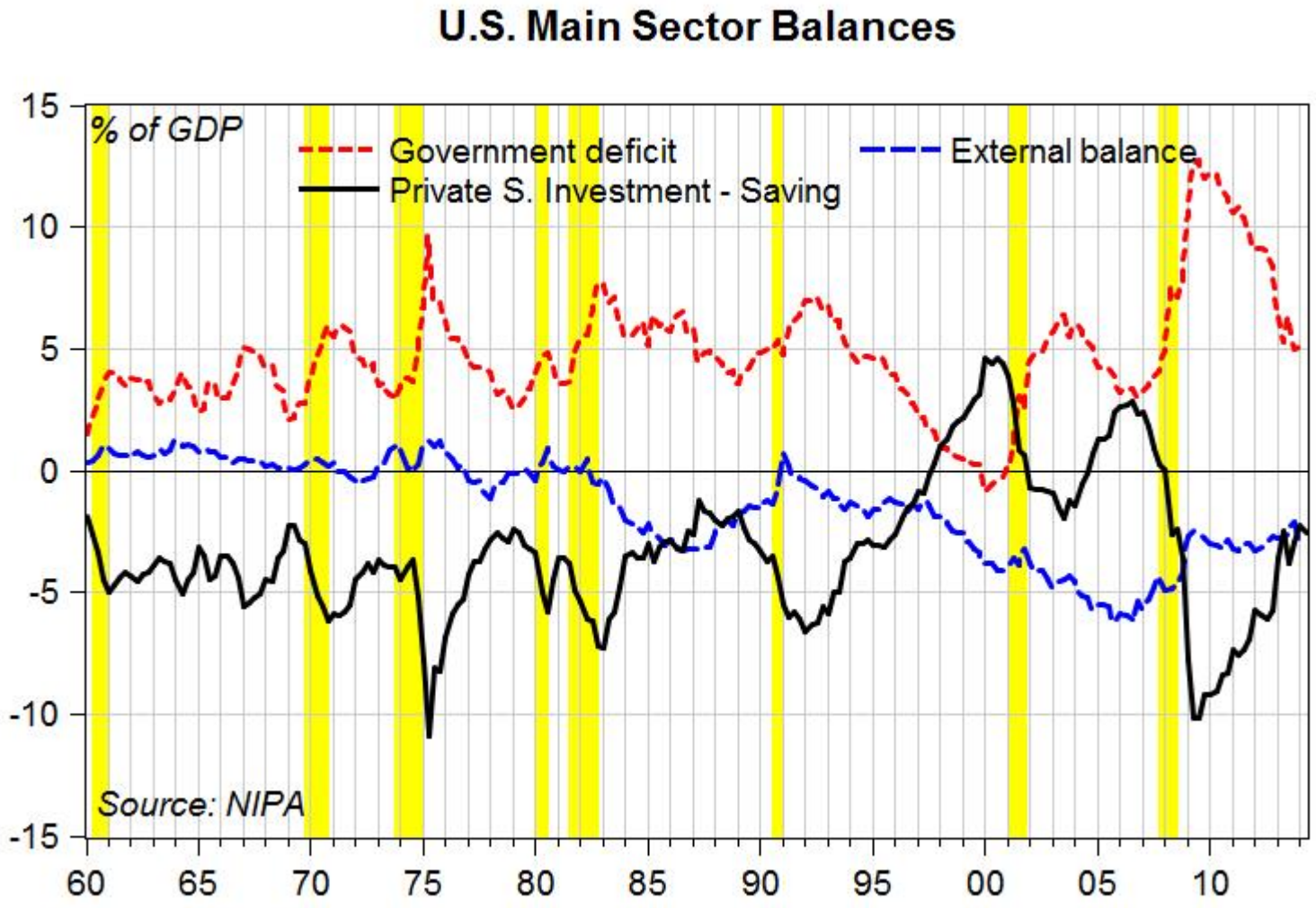
$NAFAh + NAFAf = DEF + CA$

In the US economy before financialization NAFAf was negative but small, i.e. firms financed investment out of retained profits, while NAFAh was positive, and matched by government debt

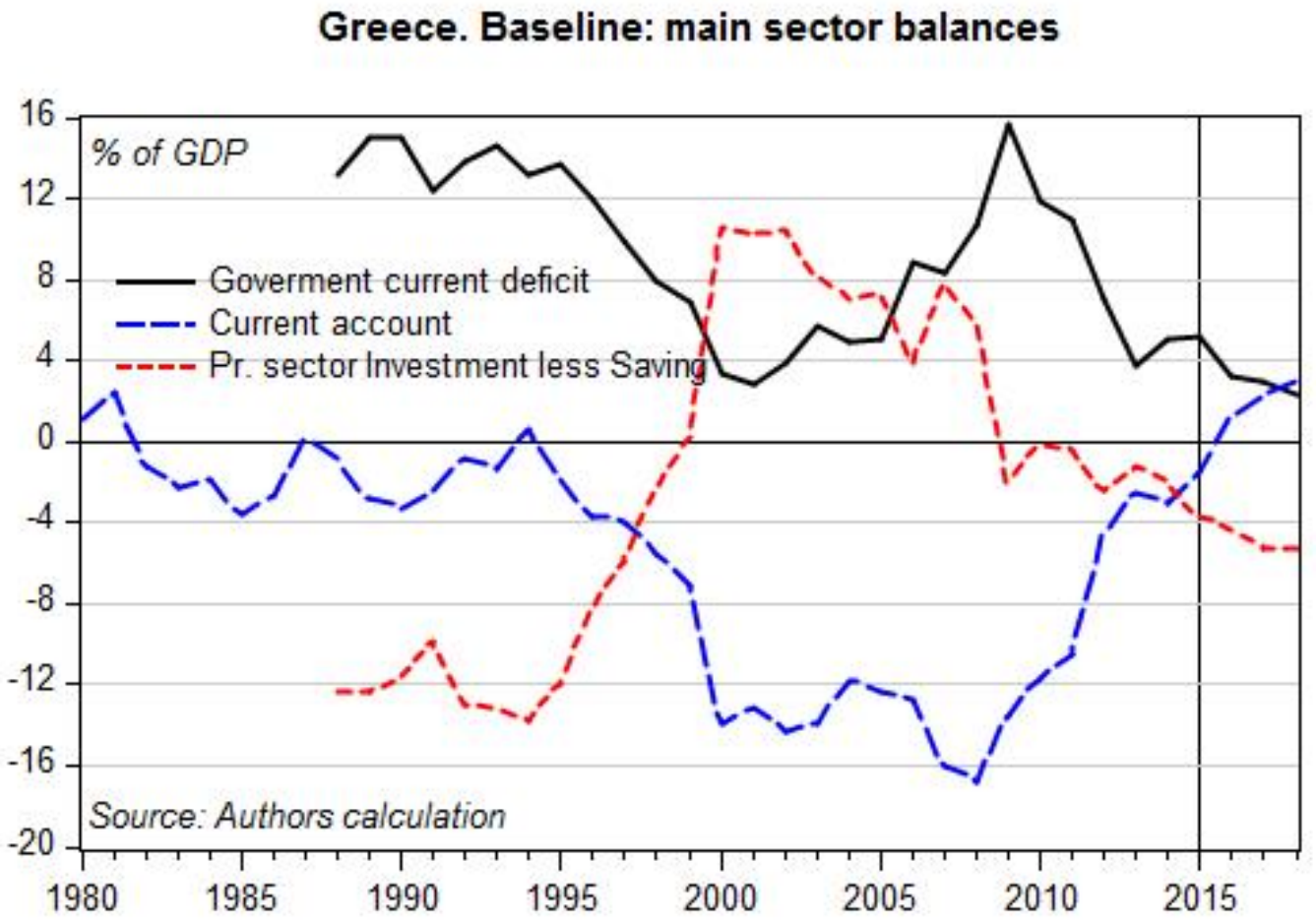
Financial balances

Possible configuration of financial balances

1. Balanced CA; government deficit > private surplus [U.S. and other countries pre-1980s]
2. Balanced gov.budget; CA surplus > private surplus [Germany]
3. Balanced gov. budget; private deficit > CA deficit
4. CA deficit > Gov deficit -> Private sector deficit [U.S. post 1990; Greece]


U.S. Main Sector Balances
% of GDP
Government deficit
External balance
Private S. Investment - Saving
Source: NIPA
15
10
5
0
-5
-10
-15
60
65
70
75
80
85
90
95
00
05
10

Greece – our latest projection



Stock-flow norms

In a model where stocks feed back on flows, in a stable growth path stock-flow ratios are stable, since stocks and flows grow at the same rate.

An empirical SF model can therefore be used to analyze the deviations from the steady-growth path.

Parameters in the model help understand if (and when) stock-flow norms are shifting.

There is no strong mechanism which gets the model (or the economy!) quickly back to the steady-growth path: unbalances can last for long periods, usually implying accumulation of debt for at least one sector.

It is difficult – maybe impossible – to incorporate a turning point into the model (to formalize when debt becomes “excessive”)

Levy models - econometrics

Godley was skeptical about econometrics.

He believed that a model with a properly developed SF accounting would imply growth path which did not depend crucially on econometric techniques.

He had strong beliefs about the values of crucial model elasticities (say, the response of trade to relative prices) and would dismiss econometric results which were at odds with his prior beliefs. His beliefs, anyway, came out of extensive analysis of the economy through model simulation: long-run multipliers emerging from simulating a SF model depend in a non-linear way from parameters in single equations.

When the model is used in dynamic simulation, errors will cumulate, and feedbacks from stocks to flows may easily imply large deviations of simulated variables from actual data.

The result is that a good econometric estimate for a single equation, obtained through fashionable econometric techniques, may not be the optimal choice when inserted into a SF model

Estimation strategy

Our estimation strategy is based on ECMs whenever possible, keeping in mind that the model is not meant to provide short-term forecasts.

Special attention is given to:

- Weak exogeneity of regressors (IV or 2sls estimates when needed)
- Parameter stability (structural breaks)

Private expenditure

Our crucial equation is the private sector expenditure function, which – under a standard assumption in *new Cambridge* models *a* la Godley – implies a long-run stock-flow norm.

$$PX_t = c_0 + c_1 YD_t + c_2 FA_{t-1} + Z_t$$

Where Z is a vector of stationary variables which influence the propensity to spend out of income

Simulation strategy

- "Reasonable" values for the growth path in exogenous variables:
  - Government expenditure (from official sources)
  - World output, world inflation (IMF, …)
  - Monetary policy (interest rates)
- Assumptions about variables influencing private expenditure:
  - Capital gains; etc.

Implications

- A simulation strategy we often use is to let the model compute the amount of borrowing the private sector needs, in order for the economy to reach the growth path projected by official institutions
- We next use the model to derive the growth path of output, and unemployment, under “more reasonable” assumptions about borrowing
- We finally evaluate the effects of policies on our “more reasonable” scenario

Thank you

zezza@unicas.it
zezza@levy.org