Balance Mechanics and Macroeconomic Paradoxes

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Balance Mechanics

- Developed by Wolfgang Stützel in his two major works

- Idea dates back to Lautenbach

- Contains earliest formulation of the "fundamental identity" often attributed to Tobin or Godley

- Close afinity to sectoral-balances approach and SFC

- Increased interest since the crisis → Stützel (1978) reprinted, much work applying or further developing the approach

- Stock-flow consistent economic accounting framework which can be used to analyse various economic theories and phenomena with great terminological precision.

- An analytical framework, *not* a theory or a model! Does not use specific behavioural rules/equations → as general as possible.

- Fully consistent with SFC modelling, but focusses on concepts common to all economic units and uses a finer typology of economic acitivies.

- Has been used to analyse and critique the loanable funds model (Lindner, 2015), the savings-glut hypothesis (Lindner, 2014; Horn and Lindner, 2011), pension systems (Schmidt, 2012), liquidity preference theory (Lindner, 2015) and Keen's argument relating to effective demand and changes in debt (Reissl, 2015)

- Due to its precision, flexibility, and relative simplicity, we believe that our approach possesses great pedagogical value

- The present paper aims to extend the formalisation of balance mechanics to incorporate asset-price changes.

- The framework is used to analyse a variety of macroeconomic paradoxes proposed in the heterodox literature.

- Main points:
  - Paradox of liquidity, although far less prominent in the literature, should be seen as being on par with paradox of thrift.
  - The paradox of liquidity and the paradox of thrift may mutually reinforce each other.
  - Other paradoxes can be seen as variants of these two 'main' paradoxes, or they may emerge through the interaction between them, giving rise to various 'composite paradoxes' relating to debt and leverage ratios.
  - Underlines the importance of fiscal and monetary backstops to counteract these paradoxes.

Framework

- 2 central elements: simple accounting definitions (not replicated here, see e.g. Lindner, 2015 or Reissl, 2015) and division of the aggregate economy into a group and a complementary group.

- Examples: Domestic economy & ROW; households & non-households; net-debtors & net-creditors...

- Distinction between income & consumption, expenditure & revenue, payments & receipts

- Based on this, we can construct a simple equation showing a group's or the aggregate economy's balance of payments, and add a revaluation term to take into account changes in asset prices.

- 1. Balance Sheet:

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  financial assets (fa) + tangible assets (ta) = liabilities (l) + net worth (nw)
  financial assets = means of payment (m) + other financial assets (ofa)

- fa - l = net financial assets (nfa)

- 1. Revenues and expenditures are transactions which change nfa

- 2. Payments and receipts are transactions that change m (but not nfa!)

- 3. Income and consumption are transactions that change nw.

  → 1. & 2. Combined in balance of payments:
  $$r - e = \Delta m + p_{ofa} * \Delta q_{ofa} - p_l * \Delta l$$

- Revenues and expenditures are on goods and services (p*q), labour (w*emp) and interest (int*q_{fa})

We can add revaluations and transform the BOP derived above to depict the plans/expectations regarding transactions and price changes

$$\Delta NFA^{pl} - REV_{nfa}^{exp} =$$

$$P(Q^s - Q^d) +$$

$$W(EMP^s - EMP^d) +$$

$$INT_{FA} \times Q_{FA}^{exp} - INT_L \times L^{pl}$$

$$\Delta nfa^{pl} - rev_{nfa}^{exp} = \Delta m^{pl} + p_{ofa} \times \Delta q_{ofa}^{pl} - p_l \times \Delta l^{pl}$$

→ We can use this BOP-equation, ammended to include revaluation of existing assets, to depict various macroeconomic paradoxes within the same framework. This will be helpful in analysing potential interlinkages between them.

→ The paradoxes can be expressed in Stützel's terminology of partial, relational, and global statements.

Paradox of Thrift

- Arises when collective attempts to save financially through revenue surpluses ($\Delta NFA_{bp}^{pl} > 0$) lead to a decline in aggregate revenues on currently produced goods and services that is large enough to retard the plans of the units attempting to save.

- Financial savings are 0 in the aggregate so that

$$\Delta nfa_{g,bp} = -\Delta nfa_{cg,bp}$$

- Partial statement: A group can increase its net financial assets by realizing a revenue surplus.

- Relational statement: A group can only increase its net financial assets by realizing a revenue surplus if its complementary group realizes a corresponding expenditure surplus.

- Global statement: In the aggregate economy, changes in net financial assets are always zero. The aggregate economy cannot save financially

- if there is excess planned saving through revenue surpluses, there will be an excess supply of goods and services, labour, and/or a shortfall in capital income, which in case of debt instruments amounts to default → decline in revenues increases risk of default → link to other paradoxes

- Only arises from inconsistent *financial* saving plans. If a unit increases its production of new tangible assets/capital goods, aggregate saving will always increase since aggregate net worth will increase.

- Usual example is households reducing expenditures which then has knock-on effects on firms.

- The paradox of cost (at least the 'short run' version, following Lavoie's distinction) can be viewed as a variant of the paradox of thrift.

- Firms attempting to increase profits (increase nfa) through cutting wages → leads to the same dynamics

- Closest to the versions presented by Keynes (1930) and Kalecki (1971)

- Dynamic/long-run version is the one arising in neo/post-Kaleckian growth models

Paradox of Liquidity

- Present in Keynes, term proposed by Dow (1987). Also important in the work of Minsky (esp. 1986) but relatively little literature explicitly pointing out the potential paradox when compared to paradox of thrift

- In Stützel's terminology, we can write:

  - Partial statement: A group can sell and buy whatever assets it wishes without affecting the liquidity of those assets. Each group can make use of the liquidity of its assets.

  - Relational statement: The liquidity of any asset will only be preserved at the same 'level' to the extent that the complementary group is prepared to sell/buy the asset to/from the group immediately at the pre-existing market price.

  - Global statement: If the aggregate economy wishes to be a net seller/buyer of assets, the liquidity of these assets will decrease/increase. The aggregate economy cannot make use of the liquidity of its assets.

- Liquidity is a partial concept.

- If aggregate plans to become more liquid by selling assets (=demanding money) are higher than plans to become less liquid by buying assets, overall asset prices are likely to fall due to an excess supply of assets:

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$$\Delta M^d - \Delta M^s = P_{assets}(\Delta Q^s_{asset} - \Delta Q^d_{asset}) > 0$$

- The paradox of liquidity is the financial account equivalent to the paradox of thrift

- It can influence the current account both directly (sale of tangible assets) and indirectly (financing, interest rates, etc.)

- We saw above that the paradox of thrift can increase default risk. Obviously, so can the paradox of liquidity (lack of means of payment, increasing interest rates)

- Both can be combined to derive debt paradoxes

Some debt paradoxes

- Building on Fisher and Koo. Concept goes back to Steindl, but Fisher and Koo lend themselves more readily to a balance-mechanical analysis.

- The paradox derived from Fisher can be called a "debt-to-revenue paradox" in which units try to decrease (increase) their debt-to-revenue ratio but end up increasing (decreasing) it

- The paradox derived from Koo can be called a "leverage paradox" in which units try to decrease (increase) their leverage but end up increasing (decreasing) it.

- Both paradoxes are composite paradoxes in that they can arise from or be exacerbated by the paradoxes of thrift and liquidity applying simultaneously.

$$dtr = \frac{l}{r} \qquad dstr = \frac{int \times l}{r} \qquad leverage = \frac{l}{nw} = \frac{l}{ta + gfa - l}$$

- All these ratios can be reduced if units have enough money or can generate sufficient receipts to reduce their debt. Two ways of generating receipts: sale of fin. assets or realising revenue surpluses in the form of means of payment

$$\Delta m = -\Delta f v_{ofa} * p_{ofa} + r - e$$

- A predominance of plans to realise revenue surpluses will lead to the paradox of thrift; if there is a predominance of plans to generate receipts via asset sales, the paradox of liquidity will ensue.

Table 2: How debt ratios change when a group plans to **decrease** them

	Paradox of thrift	*Paradox of liquidity*
l/r	may increase due to fall in *r*	slower decrease
int × l/r	may increase due to fall in *r*	may increase if *int* is variable
l/nw	may remain constant	falls less than planned or increases, depending on change of asset price

- The paradoxes of thrift and liquidity are linked through the danger of default.

- increased default probability → attempts to save financially → decline in aggregate revenues → increased default probability → asset sales?

- increased default probability → attempts to sell assets → asset price decline → fewer receipts → attempts to save financially?

- Both dynamics can be mutually reinforcing

- Importance of monetary and fiscal backstops to counteract the paradoxes of thrift and liquidity (see e.g. Eurocrisis) and prevent debt-paradoxes. As underlined by Koo, lengthy unsuccessful attempts to deleverage can lead to stagnation.