

# Contributions Towards a Framework for Understanding Financial Crisis

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- ▶ The Logical Impossibility of Monetary Profits
  - ▶ Marx
  - ▶ Keynes
  - ▶ stock-flow consistent modelling
- ▶ A Heuristical Solution?
- ▶ An Agent-based model founded on the suggested framework

# Macroaccounting of Monetary Production

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a Framework for  
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Without Connectivity of real and financial spheres, financial crisis  
only have *casino* impact!

M - C - M

M - C monetary financing of real production of  
commodities, primo.

C - M monetary realisation of the real product, ultimo.

The produced surplus value in commodity form has to be realised in money.

$$M - C - C' - M'$$

- ▶ "The class of capitalists can not extract from the circulation, what has not previously been thrown in." (K. Marx: Das Kapital, vol.2, 2.sec., chapt. 17)
- ▶ In fact, as paradoxical as it looks immediately, the class of capitalists themselves throws into circulation the money, that serves the realisation of the surplus-value embedded in the commodities.(ibid.)
- ▶  $t$  - turnover of  $\Delta M \rightarrow$  surplus value =  $t * \Delta M$
- ▶ BUT no simultaneous realization of the surplus. A logical timetrick!

# Marx' Conclusion

But regarding the whole class of capitalists the sentence, that they themselves have to throw the money for realising their surplusvalue (respectively also for circulation their capital, constant and variable) appears not only not paradoxical, it is the necessary condition for the whole mechanism: because here there are only two classes: the working class, that only dispose of their labourpower; the capitalist class, who hold the social means of production as well as the money in their possession of monopoly.)ibid., chap 20.

$$Y = E + Q = C + I = D$$

$D_f = E + Q$  financing joint. The financing of production includes the profit to be realised at the realisation joint

$D_r = C + I$  realisation joint. Precluding real quasi-rents to be realised as a monetary profit, as they are already financed or monetised; and therefore figure as a liability entry in the financial sphere, even before they are to be realised.

$$D_r > D_f \quad ???$$

# Keynes and User Costs

"Prime cost proper, viz. those which can be avoided by not undertaking output in the short period, divide into prime-factor costs, viz. those involved in employing concurrently ultimate factors of production, labour, short loans etc. and user costs or supplementary factor costs, viz. those involved in using machinery, - generally, the products of prime-factors employed in the past. They are prime costs because they can be avoided by not using the machinery, but they are not prime-factor costs because they do not involve the concurrent employment of ultimate factors of production (but aren't necessarily paid out to anyone as income). (Harrod in C.W. xiii, p.539, my underlinings but the brackets are Harrods.)"

- ▶ Harrod is envisaging income created in the production sphere, with no counterpoise in the financial or monetary sphere!

# Choice of Units, Effective Demand and Income

**units** "In dealing with the theory of employment I propose, therefore, to make use of only two fundamental units of quantity, namely, quantities of money-values and quantities of employment." (G.T. p.41)

**effective demand** The pivotal concept 'effective demand' designates the entrepreneurs decision to produce in toto, it is expressed as an number of wage-units, that is a number of units of money. At the financial joint this measures the monetary financing of production. It is the financial disbursement,  $D_f$ , of the circuit. As such it is an empirical fact, and it is therefore what it happens to be.



## Definition of income Inconclusive:

- ▶ " During any period of time the entrepreneurs will have sold finished output for a certain sum which we will designate as A. And they will end up with a capital equipment, which term includes both stocks of unfinished goods or working capital and stocks of finished goods, both together having a value G."  
(Transcription of the first paragraph in G.T. p. 52)
- ▶ "We must...deduct...a certain sum, to represent that part of its value which has been (in some sense) contributed by the equipment inherited from the previous period...The problem of defining income is solved as soon as we have found a satisfactory method for calculating this deduction." (G.T. p.52)

" The difficulty in arriving at a definition of income is due to the fact that the amount of the sales proceeds of any article is a gross figure...some deduction has to be made from the gross sale proceeds in order to arrive at a measure of what can be regarded as income...it is not immediately obvious what this deduction should be.(p.399)...there is a constant leakage going on in the circulation of income (quite apart from saving) unless entrepreneurs are making it good by new investment equal to what they have deducted from the gross price to cover user cost...For user cost is financial provision made by the entrepreneur...**If the entrepreneur's actual financial deduction from gross price which he regards in no sense and in no circumstances available as income, could be laid down by an infallible formula, then I should define income as what remains after this deduction. But there is no such formula.**(p.417, my emphasis )

# The monetising and accounting of profits

A Actual realised sales of finished products - **empirical**.

F Factor payments (at macrolevel only labour) - **empirical**.

I Investment as a real phenomenon - **imaginary!**

S Savings out of money-income - **empirical**.

Q Profits - the maximand! - **imaginary!**

1.  $Q = A - F + I$

2.  $Q + F - A = I$

3.  $F - A = S$

4.  $Q + S = I$

5.  $Q = I - S$

# The monetising and accounting of profits

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# Balance Sheet

	House- holds	Firms	Bank	Total
Deposits	$+D_h$	$+D_f$	$-D$	0
Loans	$-L_h$	$-L_f$	$+L$	0
Capital		$+K$		$+K$
Equities	$+pE$	$-pE$		0
Net worth	$Vh$	$Vf$	$\approx 0$	$+K$

Table: Balance sheet - simplified Godley, Dos Santos or Zezza

# Current Transaction Flow Matrix

Positive is source, negative is use of funds. Capital gains not included since they are not transactions.

	House- holds	Firms current	Firms capital	Bank	Total
Consumption	$-C$	$+C$			0
Investment		$+\Delta K$	$-\Delta K$		0
Wages	$+W$	$-W$			0
interest D	$+i_d Dh$	$+i_d Df$		$-i_d D$	0
interest L	$-i_l Lh$	$-i_l Lf$		$+i_l L$	0
dividends	$+F$	$-F$			0
$\Sigma$	$SAVh$	$Fu$	$-\Delta K$	$\approx 0$	0

Table: Current transaction flow matrix

# Flow of Funds

From flows to  $\Delta$ Stock. Sectoral budget constraints. Capital gains may be added.

	Households	Firms	Bank	Total
Savings	$SAVh$	$Fu$	$\approx 0$	$SAV$
$\Delta$ Deposits	$-\Delta Dh$	$-\Delta Df$	$+\Delta D$	0
$\Delta$ Loans	$+\Delta Lh$	$+\Delta Lf$	$-\Delta L$	0
$\Delta$ Equities	$-p\Delta Eh$	$+p\Delta Ef$		0
$\Delta$ Capital		$-\Delta K$		$-\Delta K$
$\Sigma$	0	0	0	0
$\Delta V$	$SAVh+$ $\Delta pE_{t-1}$	$Fu-$ $\Delta pE_{t-1}$		$SAV = \Delta K$

Table: Flow of Funds

In a simplified World;

- ▶  $SAV_h = W - C$
- ▶  $F_u = \Delta K + C - W =$  “retained profits”
- ▶  $SAV = SAV_h + F_u = W - C + \Delta K + C - W = \Delta K$
- ▶ “firms do retain a part ( $F_u$ ) of their profits (or Marshallian “quasi-rents”)

(Dos Santos (2004))

- ▶ The problem is that such profits have already been spend on purchasing capital goods!
- ▶ Firms only gain a real profit, not a monetary profit.
- ▶ Note similarity with Keynes'  $Q + S = I$



# A Simple Example - current transactions

	House-	Firms	Total
	holds	current	capital
Consumption	-80C	+80C	0
Investment		+20 $\Delta K$	-20 $\Delta K$
Wages	+100W	-100W	0
$\Sigma$	SAVh=20	Fu=0	- $\Delta K=20$

What if firms purchase capital for 40 rather than 20?

	House-	Firms	Total
	holds	current	capital
Consumption	-80C	+80C	0
Investment		+40 $\Delta K$	-40 $\Delta K$
Wages	+100W	-100W	0
$\Sigma$	SAVh=20	Fu=20	- $\Delta K=40$

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Wages	+100W	-100W	0
$\Sigma$	SAVh=20	Fu=20	- $\Delta K$ =40

- ▶ Can the retained profits of 20 be seen as a monetary profit for the aggregate of firms - and can it be spend on purchasing capital goods or labor in future periods?
- ▶ The answer must be NO!
- ▶ The retained profits just means that households do not “own” all capital.

# A simple example - flow of funds

With capital purchase of 20:

	House- holds	Firms	Total
Savings	+20SAVh	0Fu	20SAV
$\Delta$ Equities	-20 $\Delta E$	+20 $\Delta E$	0
$\Delta$ Capital		-20 $\Delta K$	-20 $\Delta K$
$\Sigma$	0	0	0
$\Delta V$	0	0	SAV = $\Delta K$ = 20

With capital purchase of 40:

	House- holds	Firms	Total
Savings	+20SAVh	+20Fu	40SAV
$\Delta$ Equities	-20 $\Delta E$	+40 - 20 $\Delta E$	0
$\Delta$ Capital		-40 $\Delta K$	-40 $\Delta K$
$\Sigma$	0	0	0
$\Delta V$	0	0	SAV = $\Delta K$ = 40

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# SFC and monetary profits

- ▶ Society's change in net worth = savings =  $\Delta$ Capital
- ▶  $\Delta$ Capital is a real profit to society. Not a monetary profit. Without a theory of value we cannot know its value - in real or monetary terms.
- ▶  $F_u$  - retained profits can only be a positive monetary volume if another sector has negative savings.
- ▶ In the aggregate firms can *at best* get back the money they spent on wages.
- ▶  $F_u$  cannot finance future investments. It has already been used for financing investments.
- ▶ cause or effect? Is retained earnings determined by the firm, or by the saving or consumption decision of households?

# Where to search for a solution to the realisation problem?

*“...these difficulties are rightly regarded as “conundrums”. They are “purely theoretical” in the sense that they never perplex, or indeed enter in any way into, business decisions and have no relevance to the causal sequence of economic events”*

(Keynes(1936))

That they cannot obtain a monetary profit does not stop firms from producing. Either Marx and Keynes were wrong about M-C-M', or firms are somehow convinced that they earn a monetary profit!

# A Heuristical Definition of Monetary Wealth

$$\begin{array}{r} \text{Assets} \\ \text{▶ - Liabilities} \\ \hline = \text{Wealth} \end{array}$$

- ▶ Works for monetary assets, but if we insist on a theoretical measure of real assets we end up in another logical impossibility (Capital controversy).

- ▶ valuation of real capital - that's what stock markets are for!!!

$$\begin{array}{r} \text{▶} \\ \text{Monetary assets + equity evaluated at stock market prices} \\ \text{- (Monetary Liabilities + equity evaluated at issuing price)} \\ \hline = \text{Monetary Wealth} \end{array}$$

- ▶ profit =  $\Delta$ monetary wealth of firms
- ▶ *almost* stock-flow consistent - a flow deduced from stocks rather than all changes in stocks determined from flows!

# Praxis of the corporate sector

There are, however, some distinctions between conventions that should be adopted when dealing with national accounts, one the one hand, and corporate sector accounts on the other.

Emphasising the importance of constructing income and balance sheet accounts on a sectoral consistent basis leads us to the usual national accounting convention of treating equities as a liability of the corporate sector. [...] On the other hand, it is usual in interpreting corporate sector accounts *not* to treat equities as liabilities.

The concept of wealth which is likely to be of economic interest excludes (some part of) equity as a liability of the corporate sector.

(Patterson (1990))



# almost Stock-Flow Consistency

	House- holds	Firms	Bank	Total
Deposits	$+D_h$	$+D_f$	$-D$	0
Loans	$-L_h$	$-L_f$	$+L$	0
Capital		$+K$		$+K$
Equities held issued	$+pEh$	$+pEf$ $-E^s$		$pE$ $-E^s$
Net worth	$Vh$	$Vf$	$\approx 0$	$(p-1)E + K$

Table: Heuristical Balance sheet

# Flows generate stocks

	House- holds	Firms current	Firms capital	Bank	Total
Consumption	$-C$	$+C$			0
Investment		$+\Delta K$	$-\Delta K$		0
Wages	$+W$	$-W$			0
interest D	$+i_d D_h$	$+i_d D_f$		$-i_d D$	0
interest L	$-i_l L_h$	$-i_l L_f$		$+i_l L_g$	0
dividends	$+F_h$	$+F_f - F$			0
$\Sigma$	$SAV_h$	$SAV_f$	$-\Delta K$	$\approx 0$	0

Table: Current transaction flow matrix

# Flows generate stocks

	House- holds	Firms	Bank	Total
Savings	$SAVh$	$SAVf$	$\approx 0$	$SAV$
$\Delta$ Deposits	$-\Delta Dh$	$-\Delta Df$	$+\Delta D$	0
$\Delta$ Loans	$+\Delta Lh$	$+\Delta Lf$	$-\Delta L$	0
$\Delta$ Equities	$-p\Delta Eh$	$-p\Delta Ef$		$-p\Delta E$
New issues		$+p\Delta E$		$+p\Delta E$
$\Delta$ Capital		$-\Delta K$		$-\Delta K$
$\Sigma$	0	0	0	$SAV = \Delta K$

Table: Flow of Funds

# Introducing revaluations

	House- holds	Firms	Bank	Total
Savings	$SAVh$	$SAVf$	$SAVb$	$SAV$
$\Delta$ Depos.	$-\Delta Dh$	$-\Delta Df$	$+\Delta D$	0
$\Delta$ Loans	$+\Delta Lh$	$+\Delta Lf$	$-\Delta L$	0
$\Delta$ Equity	$-p\Delta Eh$	$-p\Delta Ef$		$-p\Delta E^s$
new issues		$+p\Delta E^s$		$+p\Delta E^s$
$\Delta$ Capital		$-\Delta K$		$-\Delta K$
$\sum$	0	0	0	$SAV = \Delta K$
<i>revaluations</i>				
Equity	$\Delta pEh_{t-1}$	$\Delta pEf_{t-1}$		$\Delta pE_{t-1}$
new issues		$p\Delta E^s - \Delta E^s$		$p\Delta E^s - \Delta E^s$
$\Delta V$	$\Delta Vh =$ $SAVh+$ $+\Delta pEh_{t-1}$	$\Delta Vf =$ $SAVf+$ $\Delta pEf_{t-1}+$ $p\Delta E^s - \Delta E^s$	$\Delta Vb \approx 0$	$\Delta K+$ $\Delta Ep+$ $\Delta pE_{t-1}$ $-\Delta E^s$

Table: Flow of Funds

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# The monetary profit

- ▶ When equity prices go up, society *feels* richer, and this may affect the behaviour of firms as well as households.
- ▶ The monetary wealth of households increase, and with a wealth-effect in consumption, consumption increases.
- ▶ The monetary profit of firms, defined as change in monetary wealth, increases, and this may make firms, as well as banks, more optimistic.
- ▶ When equity prices go down, we see the opposite effect.

# An agent-based model founded on the suggested framework

- ▶ Agent-based macroeconomics - monetary production theory!
- ▶ Accounting identities *emerge* since every flow has a sender as well as a recipient.
- ▶ All agents within a sector (household, producer of investment goods, producer of consumption goods) start out identical
- ▶ All agents trade on equity market
- ▶ Behaviour on equity market is stabilizing rather than herd following, i.e. they try to sell expensive and buy cheap!
- ▶ A Tobin's  $q$  effect in investment decision.
- ▶ Herding behaviour as well as wealth effects in consumption!

# Results from an agent-based model founded on the suggested framework

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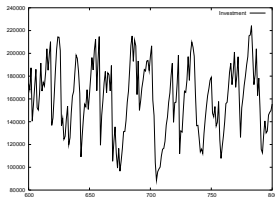
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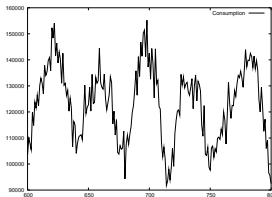
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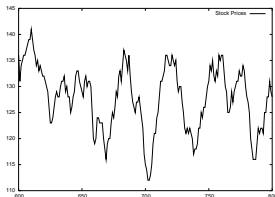
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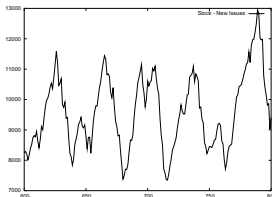
Investment



Consumption



Equity price



New Issues