
Copyright © 2013 The Authors

A copy can be downloaded for personal non-commercial research or study, without prior permission or charge

The content must not be changed in any way or reproduced in any format or medium without the formal permission of the copyright holder(s)

When referring to this work, full bibliographic details must be given

http://eprints.gla.ac.uk/75483-1/

Deposited on: 19th February 2013
Key ideas in our EU crisis report

Paul Cockshott\textsuperscript{1}, Dave Zachariah\textsuperscript{2}

\textsuperscript{1}School of Computer Science: University of Glasgow, \textsuperscript{2}School of Electrical Engineering: KTH Stockholm

Berlin 2013
Quick summary
What determines rate of profit

Theory
Conservation laws
Phase space

Empirical data

Stability pact
Conclusion on the Stability Pact
I will give a quick account of our analysis and then go into depth.

The crisis is caused by two main mechanisms:

1. the falling rate of profit and
2. the polarisation of capital into rentier and productive capital.
Polarisation

- Always a spread of rates of profit,
  - some capitals are obtaining a profit below and some above the current interest rate.
- The higher the interest rate → more capitalists earn less profit than they could earn by simply lending money.
- **Polarisation** of capitalist class into two groups,
  - net debtors
  - net creditors
- Polarisation grows → a distinct class of rentier capitalists arises
There is no net value in finance

Very important!

- Sum of credit is always 0
  - since the asset of one capitalist is a liability of another.
- There is therefore no value held in the financial system.
- Capital can not 'move into finance'
Quick summary

What determines rate of profit

Theory

Conservation laws
Phase space

Empirical data

Stability pact

Conclusion on the Stability Pact
Laws Governing Growth of value

- Growth of value given by product of the rate of profit and the share of this profit that is accumulated.
  - Typically in developed capitalist countries the accumulation share is only about 20 to 30%.
- Fundamentally the rate of accumulation is constrained by the growth of the working class population.
- Marx: “accumulation of capital is growth of the proletariat.”
  - As the growth of the working class slows down, so must the rate of accumulation.
What determines long run rate of profit?

- Factors Increasing Profit Rate
  - Rate of growth of working class
  - Rate of growth of productivity of labour

- Factors Reducing Profit Rate
  - The share of profit being accumulated
    - The more is accumulated the faster the rise in $\frac{c}{v} \rightarrow$ the more profit rate falls
Japan Scenario

In a country like Japan with a static working population, capital accumulation becomes impossible as the low rate of population growth forces down the rate of profit.

In Europe decline not so bad due to lower rate of accumulation.
European profit regime

Quick summary
What determines rate of profit

Theory
Conservation laws
Phase space

Empirical data
Stability pact
Conclusion on the Stability Pact

Onset of low accumulation regime
Consequence of low profits

- If firms attempt to accumulate under these circumstances the law of the falling rate of profit cuts in
  - drives down the rate of profit until a large part of capital is earning less than the rate of interest.
- These firms then stop investing and try lending their profits out via the banking system.
- There are not enough profitable firms wanting to borrow
  - the banks seek other unproductive avenues for the deposits:
    - lending to the state,
    - lending to consumers,
    - and speculation in asset markets.
Stagnation

Thus the typical pattern in a developed capitalist country is

- banking system channels funds from productive companies and rentier class to
  - state,
  - working class consumers via consumer credit,
  - and as vast bonuses paid to the bankers themselves.

- In the City of London alone there are more than 3000 bankers who are paid more than £1 Million a year.

Since, in Europe and Japan, capitalism is a historically obsolete system and can no longer accumulate (due to demographic reasons) the financial system turns into a vast parasitic excrescence consuming the surplus product unproductively or channeling it into unproductive uses.
Quick summary

What determines rate of profit

Theory

Conservation laws
Phase space

Empirical data

Stability pact

Conclusion on the Stability Pact
Laws of motion

Marx, we suggest, wanted to establish a theory of the capitalist economy informed by the laws of physics. This comes across in several ways:

- his avowed aim to write a book on the ‘laws of motion’ of capitalism; Newtonian
- his distinction between the concept of labour and labour power; Watt
- his presentation of value as the crystallisation of human energy; von Mayer, Joule
- and his analysis of commodity exchange as an equivalence relation. Grove
Another result that would have delighted old Hegel is the correlation of forces in physics, or the law whereby mechanical motion, i.e. mechanical force (e.g. through friction), is, in given conditions, converted into heat, heat into light, light into chemical affinity, chemical affinity (e.g. in the voltaic pile) into electricity, the latter into magnetism. These transitions may also take place differently, backwards or forwards. An Englishman [Joule] whose name I can’t recall has now shown that these forces pass from one to the other in quite specific quantitative proportions...
Quick summary

What determines rate of profit

Theory

Conservation laws
Phase space

Empirical data

Stability pact

Conclusion on the Stability Pact
A basic tool of statistical mechanics is the concept of phase space.
Consider a collection of particles in a closed volume. Each particle can be described by 6 numbers:

- 3 numbers to specify the position and
- 3 numbers to specify its momentum.
- We say that each particle has 6 degrees of freedom.
- If you have N particles you have 6N degrees of freedom or dimensions.
Why is this relevant to economy?

- Again dealing with a system with very large numbers of agents.
- We have analogues of position and momentum.
  - The total debt/credit position of an agent is analogous to its mass,
  - and the rate of change of its debt/credit position is analogous to its momentum.

Thus if two billion people in the world are enmeshed in debt/credit relations then the whole system is a phase space of 2 billion dimensions/degrees of freedom.
Phase Diagrams

Project the high dimensional phase space down onto only two dimensions: for example, position and momentum and compute probability density in this space.
Growth of entropy

We ran models of a capitalist economy with a large population of workers and capitalists and a banking system and plotted the probability distribution of capitalists over time in phase space and computed entropy.

Note how entropy increases with time as the system becomes more disordered. Dark colour means higher density of firms.
Explanation

Since the rentier firms try to accumulate credits with the banks somebody has to borrow these.

- If insufficient firms voluntarily borrow from the banks, conservation laws force firms to go into debt involuntarily due to making losses.
- Unless some other source absorbs the funds available for lending the system tends to collapse at this point.
- There are 3 possible absorbers of the rentier funds:
  1. Working class consumption on credit
  2. State borrowing
  3. Borrowing by other countries.

The breakdown occurred when loans to working class failed in the sub-prime mortgage crisis.
UK sectoral balance trends

Chart 1: Financial balance by sector (% of GDP)

The key measures to solve the Euro crisis according to the Pact are to establish a balanced budget for the state sector. 

*Eurozone Sectoral Balance in billion Euro.*

<table>
<thead>
<tr>
<th></th>
<th>households</th>
<th>Non-fin</th>
<th>Fin</th>
<th>Govt.</th>
<th>Rest of world</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surplus</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>households</td>
<td></td>
<td>48</td>
<td>22</td>
<td>39</td>
<td>-122</td>
</tr>
<tr>
<td>Non-fin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Fin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Govt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rest of world</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All sectors other than the state run a surplus, the change proposed by the treaty is drastic.

- wipe out all net financial transactions between the sectors by changing the state borrowing from 122 billion Euros → 0
- surplus of the household sector, the company sector and the rest of the world → 0,
- Requires 100% accumulation rate of company sector
Households

In principle, austerity to reduce the financial surplus of the households possible:

- 90% income tax on higher incomes
- a progressive tax on property.

Such policies are not being followed,

- the prospect of eliminating the financial surplus of the personal sector is negligible.
Industry

Firms voluntarily seek external finance to expand if they anticipate
▶ a high rate of profit on investment,
▶ a rapidly expanding market for their products.
▶ This is blocked by austerity measures are curtailing consumer demand.

But, rate of profit has only been held up since the 1980s by reduction in accumulation rate.
▶ An increased investment rate thus self-curtailing.
▶ Attempting to force companies as a whole to run at break even → bankrupting a significant fraction
Banks

- Banks in the Euro-zone are running a surplus of some 160 billion Euros
- a thus responsible for $\frac{1}{3}$ of the total deficit of the state sector.
- There is almost nothing that the individual Euro zone governments can do to eliminate this.
  - Whole thrust of economic policy has been to protect the interests of banks.
- States could levy heavy taxes on financial firms,

But

- Countries in the Euro-zone in the worst financial position have least profitable banks.
One effective tool that national governments have traditionally been able to exercise to overcome trade deficits is now out of reach for the Eurozone.

▶ They can no longer devalue to bring their trade back into balance.

▶ The ECB again could force a devaluation if it systematically buys up large quantities of dollar securities.

▶ But the national governments can not instruct it to do so.
Quick summary
What determines rate of profit

Theory
Conservation laws
Phase space

Empirical data

Stability pact
Conclusion on the Stability Pact
Conclusion

The structure set up under monetary union effectively makes it impossible for national governments to meet the obligations that they have undertaken in the pact. Any serious attempt to impose balanced budgets by austerity measures will be ineffective in its professed aim, and would as a side effect engender a downward spiral of bankruptcies, rising unemployment and deepening economic ruin. Only radical change in production and property relations can restore European prosperity.