Towards a theory of Minsky moments: a restatement of the FIH

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Minsky moments

Since the beginning of the ongoing financial crisis → **revival of interest in Minsky's work by academics, practitioners and mass media**

Surprising: his "**financial instability hypothesis**" had been harshly rejected by

mainstream economists {

classical camp (monetarism, NCEcs)

Keynesian camp (neoclassical synthesis, NKEcs)

insulted: demagogue, lugubrious, obscure, vague, and so on

no teaching on Minsky, difficult to publish on Minsky, and so on

Minsky moments

The validity of Minsky is now recognized but confined to *Minsky moments* and *Minsky meltdown:*

- ***Minsky moments:* exceptional circumstances of severe financial crisis**

  Expression coined in 1998 in occasion of the crisis of Russian debt by Paul McCulley manager of bond funds PIMCO, investment company that runs the largest bond Fund → fashionable catch phrase

  A **Minsky moment** "refers to the time when over-indebted investors are forced to sell even their solid investments to make good on their loans, sparking sharp declines in financial markets and demand for cash that can force central banks lo lend a hand" The Wall Street Journal, August 18, 2007

Why Minsky now in Wall Street ?

in this view mainstream theory and policy still valid with the only exception of Minsky moments (that may lead to a Minsky meltdown)

Analogously, Keynes's theory has been often defined as

the theory of [great] depressions

(a few physicists –e.g. Oppenheimer- maintained that the laws of physics are "suspended" near black holes although they work well for the rest of universe)

Instrumental use of Minsky

Reference to Minsky moments and Minsky meltdown as the only possible theoretical endorsement for a policy in blatant contradiction with previously held neoliberal doctrines

For example, after illustration of emergency bail-out plans in the USA, the UK, and EU, **G. Magnus (FT, 14.10.2008)** :

"This comprehensive assault on financial instability is the only solution that Minsky himself would have approved"

However, Minsky would not have approved the policies implemented before and during the ongoing (and preceding) financial crises: destabilizing stabilizations

in order to "stabilize an unstable economy" we need structural interventions that prevent the crises and thwart them before the first symptoms emerge

Lucas's economic regularities

If Minsky had been taken seriously, the current financial crisis (and other before) could have been avoided, or at least strongly mitigated

Can we hope that his insights will be reintroduced in mainstream teaching and research? No, unless we are able to produce a radical redirection in economics (and in real economies)

Mainstream economics is based on a principle of regularity

→ the most influential version is that of Lucas :

economics as a science has to be based and applied only to economic regularities (stationary stochastic processes) (Lucas, 1976, 1981)

→ this implies equilibrium, stability, substantive rationality, and RE

Lucas's economic regularities

Lucas does not deny that ec. phenomena may appear sometime irregular however, they cannot be considered by economic *science*

→ the most relevant example is the **Great Depression**: the more distant in the past it gets the smaller becomes its statistical weight in long-term regularities

The success of this approach has contributed to the ongoing financial crisis by justifying a declining perception of risk

In any case we cannot deal properly with a financial crisis if we exclude a priori the relevance of disequilibrium and instability

→ we need a more general vision:

"The man who has fed the chicken every day at last wrings its neck instead, showing that more refined views as to the uniformity of nature would have been useful to the chicken"

(Bertrand Russell, *The Problems of Philosophy*, 1912, chap IV, On induction)

Financial instability hypothesis: a restatement

The main contribution by Minsky is his pre-analytic vision (Schumpeter, 1954)

much more general than that of mainstream economics: able to account for both regular and irregular phenomena and how they generate each other

we have to { **update** / **develop** } **FIH**

Minsky start his numerous versions of the FIH by a classification of economic units

Financial units { **hedge** / **non-hedge** { **speculative** / **Ponzi** }

Constructive criticism

The use of this trinity by Minsky is full of qualitative details (accounting, institutional, historical, and so on)

However**, the way in which he formalized it is wanting:**

obstacle to a further development of the FIH in model-building and applied research

Unfit for quantitative analysis {

qualitative discontinuities

***m* small and >> not easily amenable to quantitative analysis**

A further category: distressed units

We should consider a further category of financial units: **units in financial distress**

Distressed units virtually insolvent: net worth negative

In the past two months many banks and financial institutions had to be classified in this way, and –to some extent- this is always true in financial crises: particularly important object of analysis

Minsky did not consider them in a systematic way because they are by definition **virtually insolvent: however this does not mean actual insolvency**

they may be bailed out by the state, by other units, or in consequence of a radical restructuring

even according to Minsky the net worth of a Ponzi unit is negative for "any honest computation of present value" (Minsky 1977 c)

An alternative classification of financial units

Each financial unit is characterized by a pair of values: k_t and k_t^* that define its liquidity and solvency situation at time *t*:

continuum of values in a 2-dimensional space

in order to { -allow a representation in a Cartesian diagram
-comparability of the relative weight of indexes
-keep easily in touch by intuition with their meaning

I restate the two indexes as **ratios**:

$k_{it} = e_{it} / y_{it}$ **current financial ratio: excess (or net) financial outflows**

$k_{it}^* = E (\sum k_{t+s} / (1+r)^{t+s})$ $1 \leq s \leq n$ **intertemporal financial ratio: net worth**

I can represent each financial unit in the following diagram

Classification of financial units

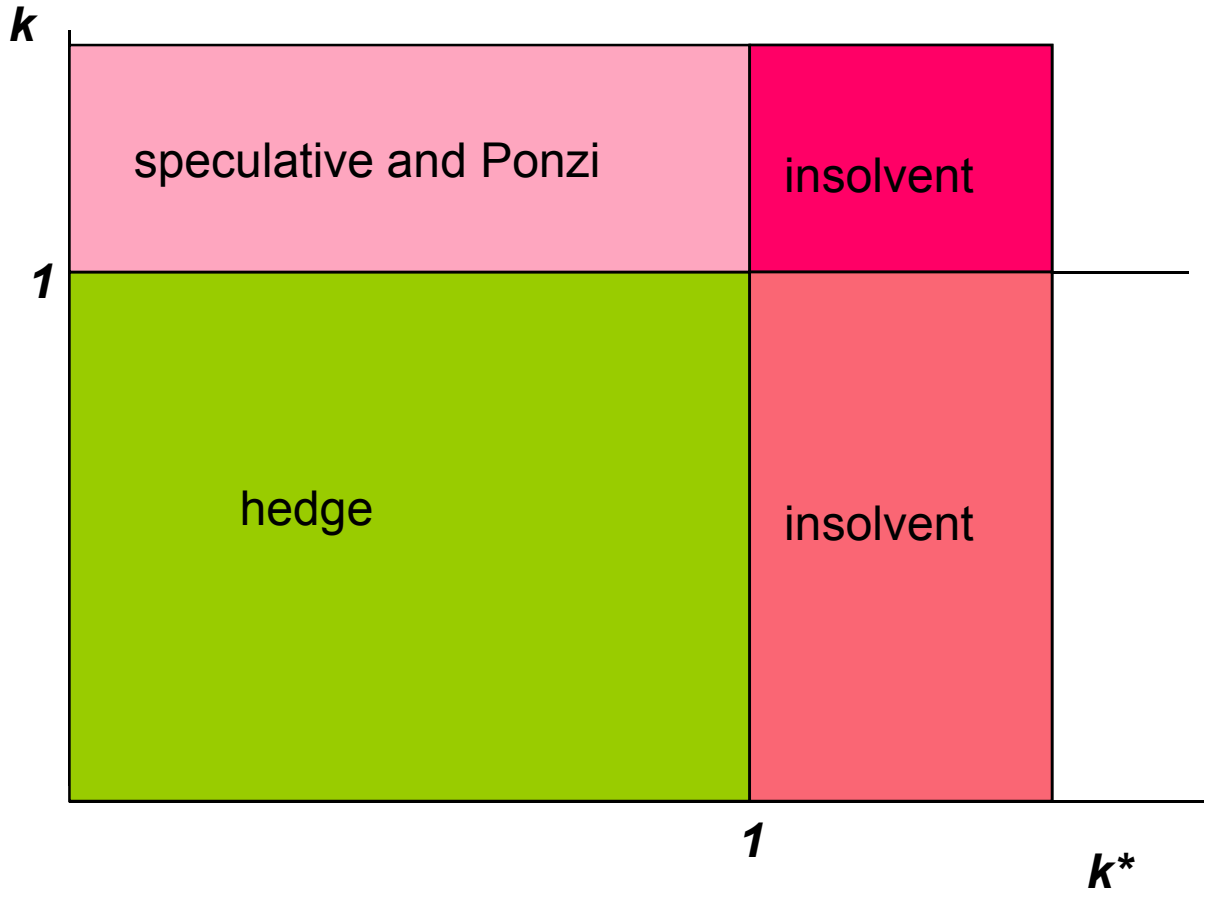
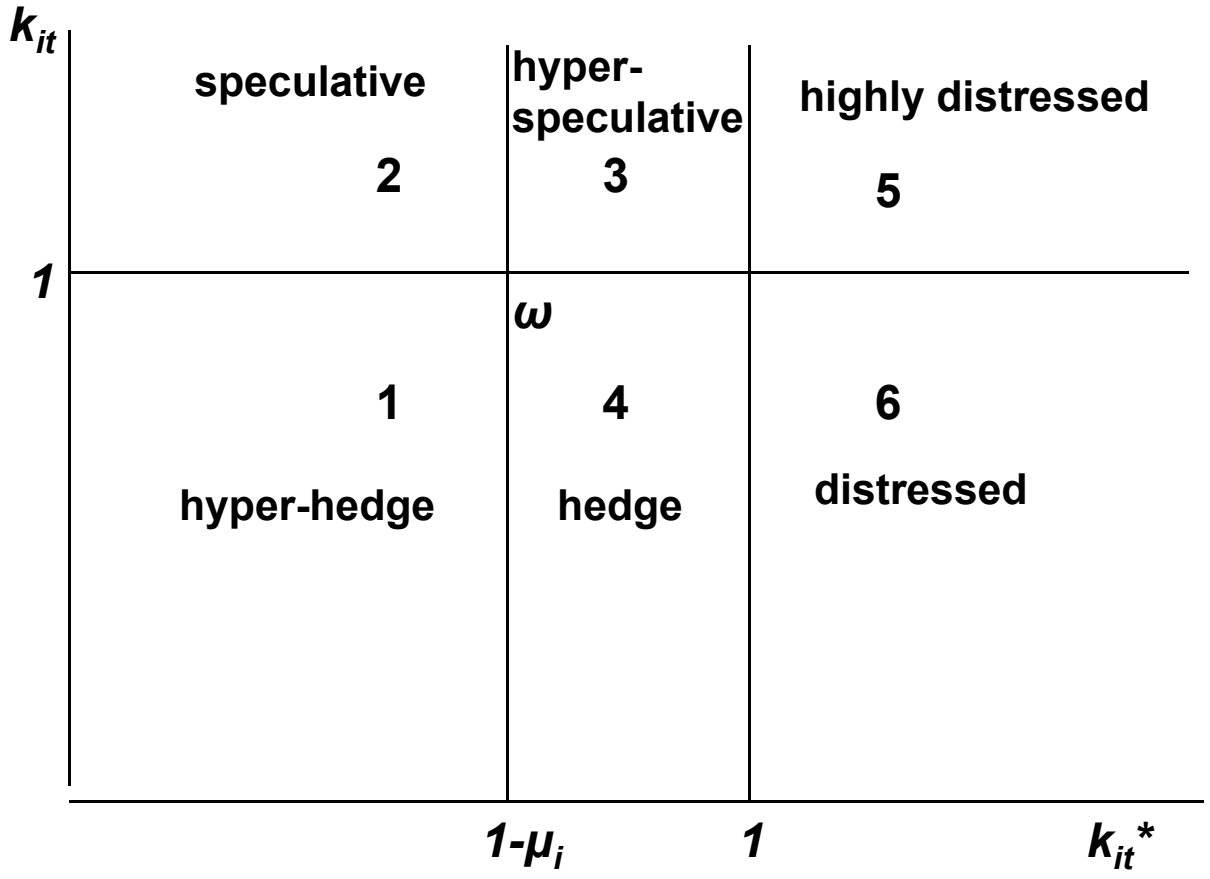


Table 1: Relationship with Minsky's trinity: rules of translation

	This paper $k_{it} = e_{it} / y_{it}$ $k_{it}^* = E\left(\sum_{s=1}^{n} \frac{k_{it+s}}{(1+r)^{t+s}}\right)$	Minsky $m_{it} = y_{it} - e_{it}$ $m_{it}^* = E\left(\sum_{s=1}^{n} \frac{m_{it+s}}{(1+r)^{t+s}}\right)$
Hedge unit	$k_{it} < 1$, for every t $k_{it}^* < 1$, $1 \le t \le n$	$m_{it} > 1$, for every t $m_{it}^* > 0$, $1 \le t \le n$
Speculative unit	$k_{it} > 1$, for $t<s<n-1$, s small $k_{it}^* < 1$ $1 \le t \le n$	$m_{it} < 0$, for $t<s<n-1$, s small $m_{it}^* > 0$ $1 \le t \le n$
Ponzi unit	$k_{it} > 1$ for $t < n-1$ $k_{it}^* > 1$ $1 \le t \le n-1$	$m_{it} < 0$, for $t < n-1$ $m_{it} >> 0$ for $t = n$ $m_{it}^* < 0$, $1 \le t \le n-1$

Suggested classification of financial units



Financial instability hypothesis: a model

We are now in a position to restate the core of the FIH with the aid of a simple model (the simplest that produces most Minsky consequences):

interaction between the current financial ratio and the intertemporal financial ratio (cash-flow approach), where 1- *μ is the desired margin of safety*:

(1)
$$\frac{\dot{k}_{it}}{k_{it}} = -\alpha_i \left[k^*_{it} - (1 - \mu_i) \right]$$

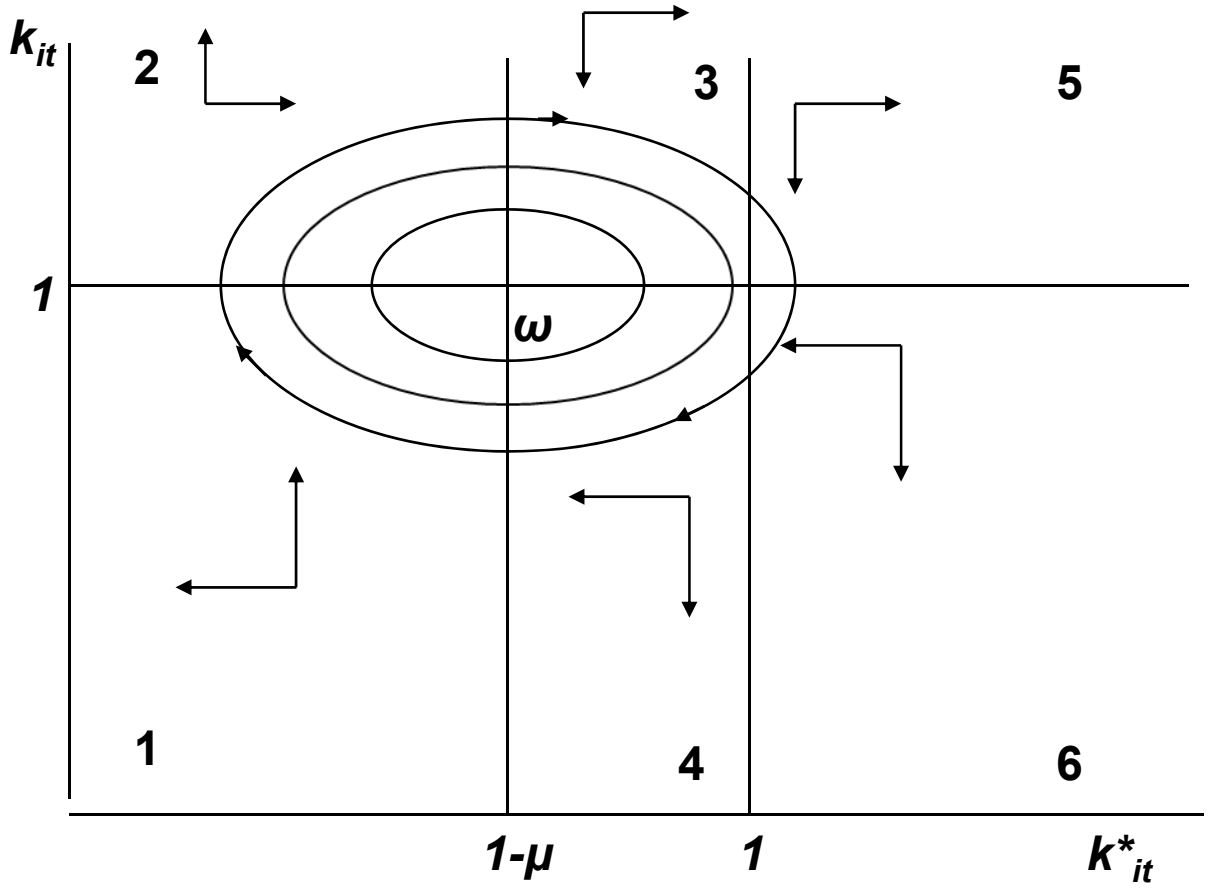
(2)
$$\frac{\dot{k}^*_{it}}{k^*_{it}} = \beta_i \left(k_{it} - 1 \right)$$

This elementary model produces clockwise cycles that have properties very similar to those described by Minsky in the FIH

(based on Vercelli, A., 2000, Financial Fragility and Cyclical Fluctuations, *Structural Change and Economic Dynamics*. 1. pp.139-156); and:

Sordi, S., and A. Vercelli, 2006, Financial Fragility and Economic Fluctuations, *Journal of Economic Behaviour and Organization,* 61 (4), pp. 543-561)

Financial fluctuations



The financial feedback and complex behavior

The feedback between *k* and *k, although apparently very simple, may easily lead to complex behavior (regime shifts, bifurcations, chaos):**

Self-referential loop {

-part/whole

-present/future

-subject/object

-realized/expected

Dieci, R., Sordi, S., and A.Vercelli, 2006, Financial fragility and global dynamics, *Chaos, Solitons and Fractals, 29(3), pp.595-610*

Disequilibrium and instability

The model shows persistence of disequilibrium (limit cycle or inward/outward spiral according to the parameters)

what makes dynamic instability plausible is the declining perception of risk, the more so the more persistent is the boom

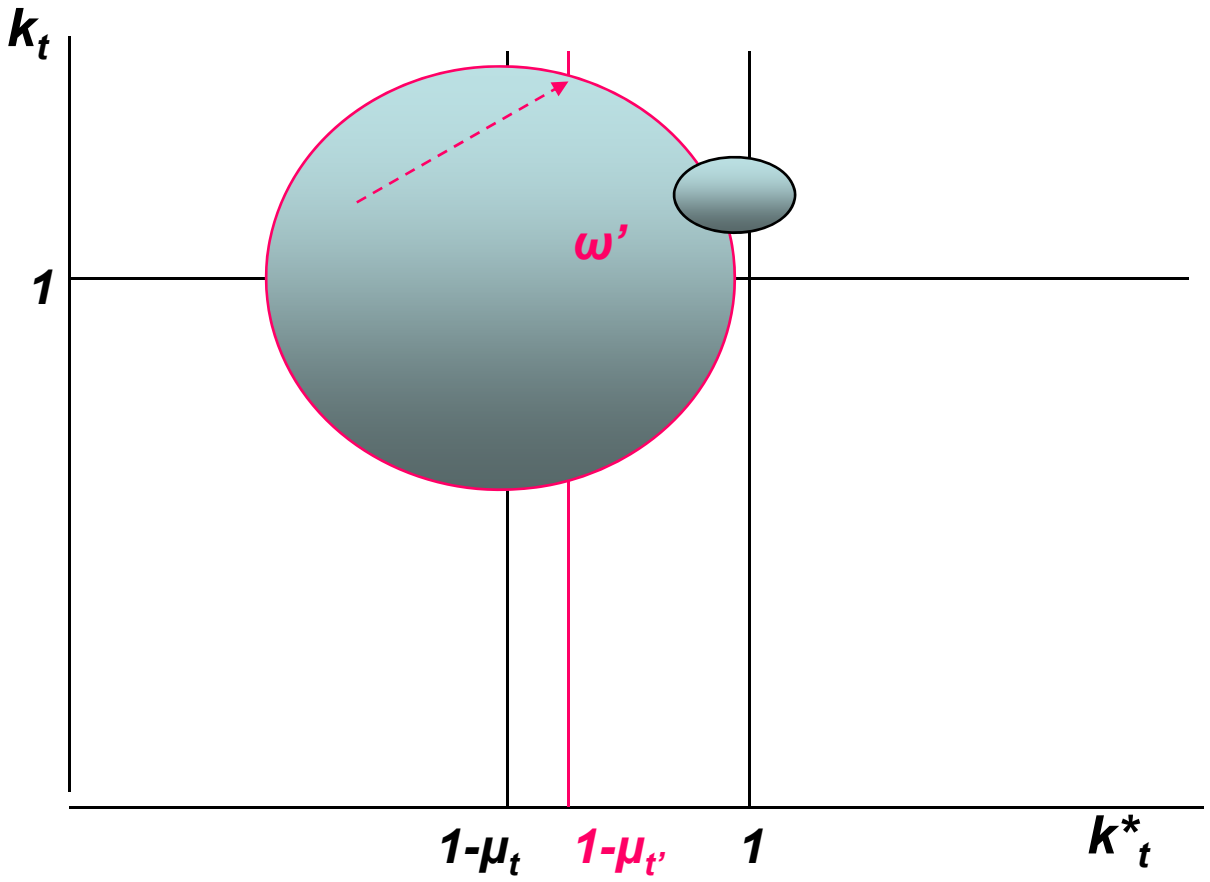
→ the safety margin *1- μ* shifts towards the right increasing the gap from equilibrium

when the awareness spreads that the margin of safety has been overcome it may be too late: the inertia of the cycle pushes the economy near the solvency barrier → growing financial fragility of financial units

Financial fragility may be defined as the size of the minimum shock that pushes a financial unity beyond the solvency barrier:

endogenous instability

Financial fluctuations: dynamic and structural instability



Sequence of financial cycles (long cycle)

The degree of instability and fragility reached in the final stage of a financial cycle depends on the characteristics of preceding cycles

Tend to grow in proportion to { time distance from the last big crisis; gravity and length of the last crisis

The safety margin tends to grow progressively: germs of successive crisis:

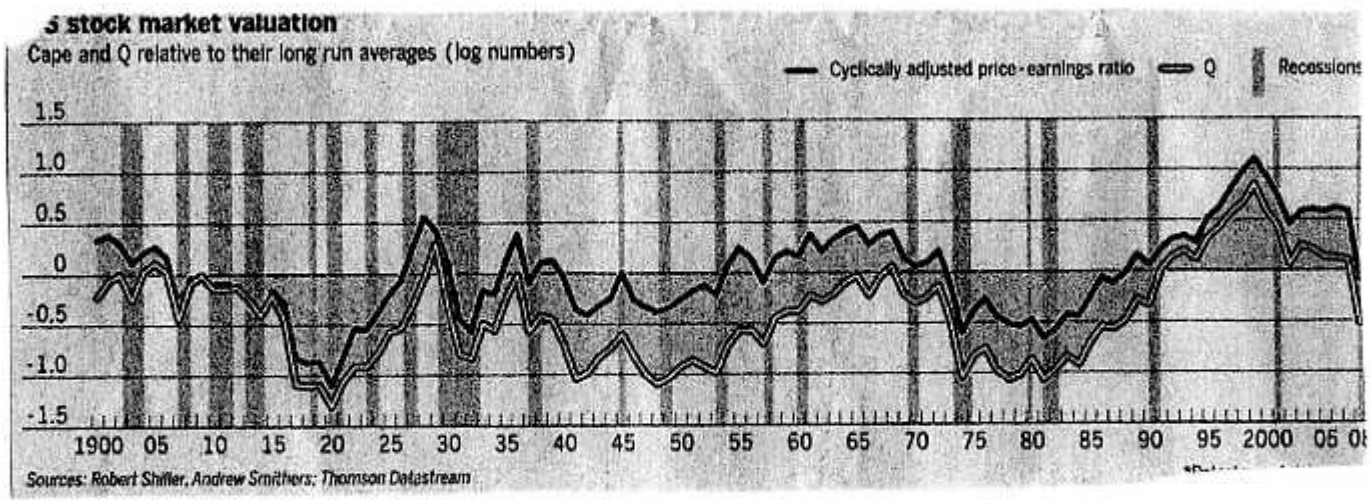
Long financial cycles of about 30 years:

Trough-to trough: 1920-1950, 1950-1982, 1982-?

Long cycles in finance, USA, 1900-2008

The last one: 1980-?

US Stock market valuation



Source: Martin Wolf FT, 26.11.08 from Robert Shiller et al.

CAPE= Cyclically adjusted price-earning ratio

Q= cyclically adjusted Tobin Q

The neoliberal long cycle

We are at the end of a long cycle started at the turn of the 1970s

When the CAPE (*cyclical adjusted price–earnings ratio*) was at a minimum

It continued to grow in the 1980s and 1990s culminating in 1999

Then it was artificially kept above the long-period average

Only in the last few months it diminished beyond the long-term average but it could be still far from the minimum

Neoliberal cycle { financial capitalism / market fundamentalism

Greenspan effect →↑ liquidity to reduce the size and length of financial crises

↓ prudential margin **1- μ**

Liquid reserves

We can refine the model by adding further features considered by Minsky and/or playing an important role in the real world

In order to understand the policy implications of the approach here advocated we have to introduce **other two margins of safety:**

1) Liquid reserves of financial units: **shift the solvency line to the right**

typically a small percentage θ of the unit's net value (say, no more than 10-20%):

-may play a significant role when the lack of liquidity is not particularly serious
-rapidly depleted when the unit approaches or trespasses the solvency barrier

→this suggests that **capital requirements (Basel 2) are insufficient to stabilize**

Liquidity constraint

We may consider a further safety margin:

2) liquidity constraint, i.e. a cap λ to the maximum value of the imbalance between outflows and inflows

the financial deficit D_{it} of the unit i at time t is defined by

$$(14) \qquad D_{it} = k_{it} - 1 = \frac{e_{it} - y_{it}}{y_{it}} > 0$$

The constraint $D_{it} \leq \lambda$ translates in graphic terms in a horizontal line above the liquidity line and sufficiently close to it

this constraint may be quite powerful: bounds the upward fluctuations **constraining the increase of financial fragility**

→ **it can avoid, or at least greatly mitigate, Minsky moments**

Leverage constraint

Let's assume that the unit *i* trespasses the liquidity line at time τ and that finances deficits by borrowing. The stock of debt H_{it}, of the financial unit *i* at time *t*, for $t > \tau$ is thus given by

(15) $$H_{it} = H_{i\tau} + \int_{\tau}^{h} D_{it}\, dt \qquad t > \tau,\ h > \tau.$$

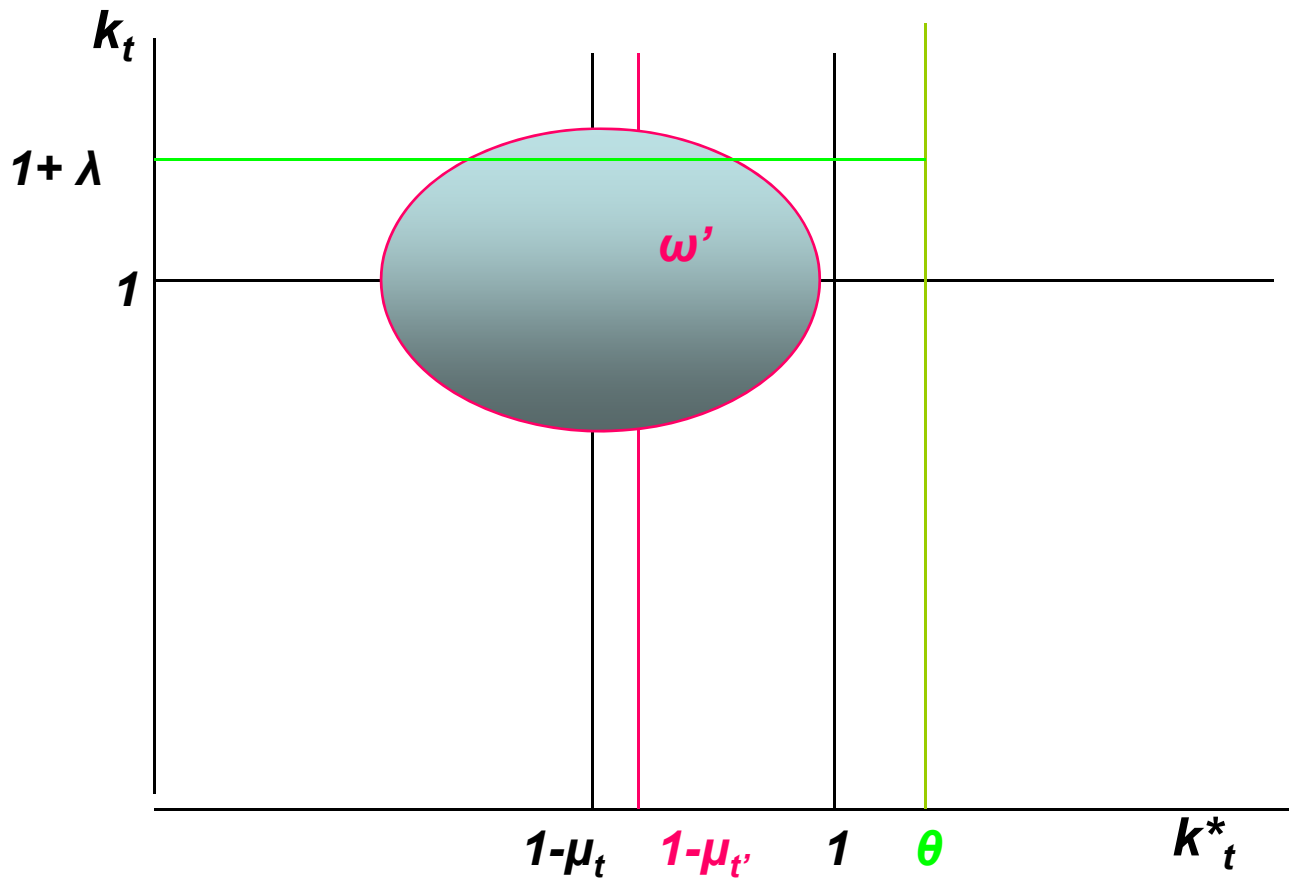
the additional debt increases continuously in fields 2 and 3

→ a leverage cap would have effects similar to those of an illiquidity cap

also these three additional precautionary measures tend to weaken at the end of a long boom: necessary to make them compulsory

A compulsory requirement of liquid reserves may help, but a compulsory cap on liquidity imbalances, and/or on the admissible maximum leverage, look to be more decisive:

capital requirements are less efficacious because buffer stocks are typically used too late when they are easily depleted


k_t
$1+\lambda$
1
ω'
$1-\mu_t$
$1-\mu_{t'}$
1
θ
k^*_t

Policy: causes

The problems mentioned above were the consequence of 30 years of

neoliberal policies {

-deregulation (repeal of the Glass-Stegall Act, 1999; shortcomings of the Sarbanes-Oxley Act 2001

-privatization (pension funds)

also {

↑ inequality of income →↓ consumption →↑ households debt

↑ flexibility of labor →↑ uncertainty of income

→ households {

growing participation in the financial markets

growing financial fragility

Policy: implications

Markets must be seriously regulated; in particular financial markets:

Multinational banks { **too big (and interrelated) to fail**

too big to be bailed out

This requires {

- **strict regulations**
- **incentives and rewards (stock options)**
- **dimensional cap**
- **redistribution of income**
- **new role for the state**

The ultimate cause of the crisis

The ultimate cause of the crisis are not toxic assets but toxic ideologies:

- **market fundamentalism: its failure starts to be recognized also by many past believers: Martin Wolf, Greenspan…**

  → we need a major redirection that will be hard to pursue

- **growth fetishism:** shared by mainstream classical and Keynesian economists (Ben Friedman)

  shift towards sustainable development that may continue with low or even moderately negative growth rate

- **innovation fetishism: not always beneficial:**

  in finance often to elude control and to increase profits at the detriment of other people

  shift to sustainable innovation

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