Thoughts on bubbles and the macroeconomy

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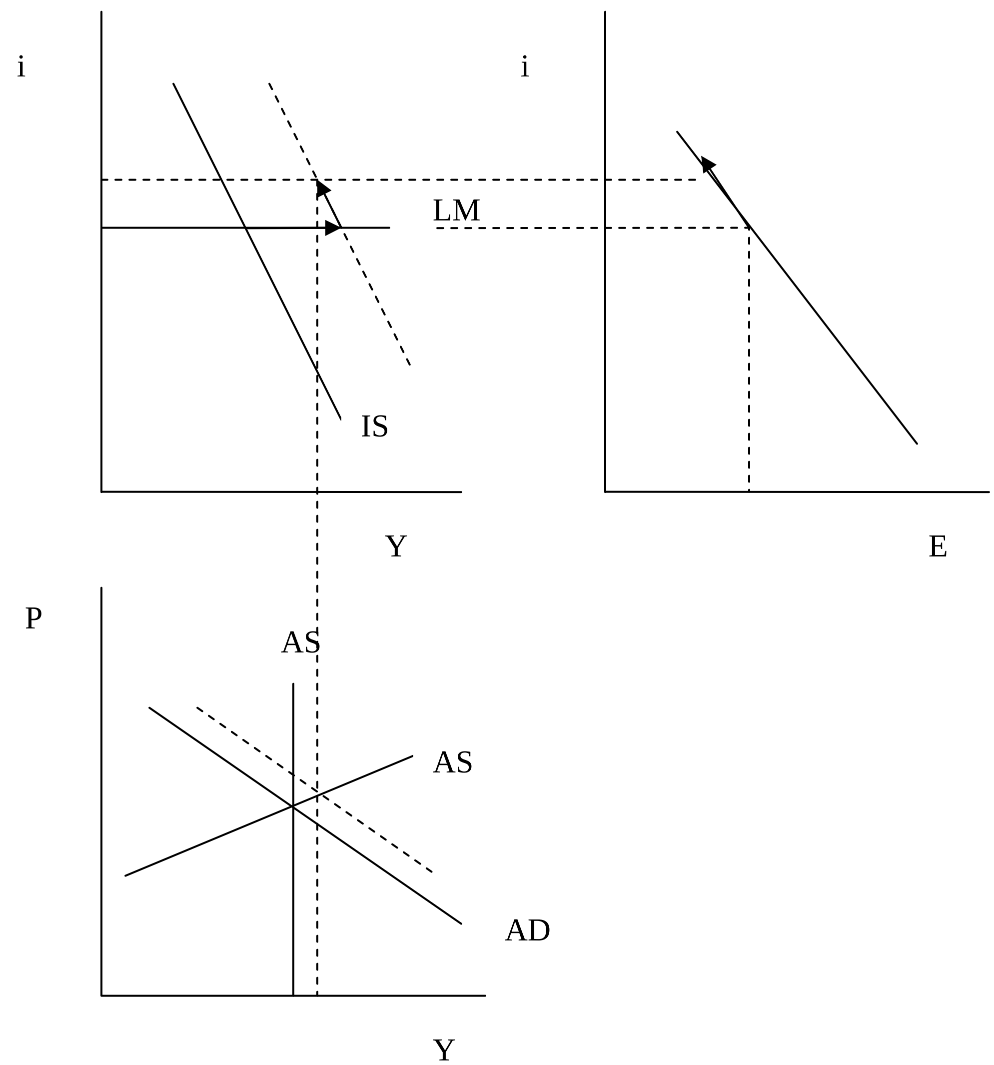
The bursting of the stock-market bubble in Iceland and the fall of house prices and the collapse of the currency market caused the biggest financial crisis any country has faced.

Two questions. First, what made the bubble this big and, secondly, what were the macroeconomic consequences of the rising and then the bursting asset market bubble?

1. What made the bubble big.

The stock market index rose by a factor of nine in a period of four years. This is the biggest bubble seen in the OECD since at least 1960.

The massive recession that followed does not fit easily within the macroeconomic framework used by central banks and most macroeconomist. Following is a very simplified version of such a model:


i
LM
IS
Y
i
E
P
AS
AS
AD
Y

The central bank interest rates are shown by a horizontal LM curve. The story of the bubble economy can be told as follows within this framework:

A domestic credit expansion creates asset price inflation which makes consumption and investment demand rise. This shifts the IS curve. The central bank raises interest rates, shifting the LM curve upwards, hence making the exchange rate appreciate. Net exports fall but the effect of higher interest rates on investment (the IS curve is steep) and net exports is insufficient to prevent an increase of output and employment goes up and so do prices.

The central bank is focused on fighting inflation. Meanwhile, the balance sheets of firms, households and banks are expanding. The level of leverage is increasing but asset prices are also going up so net worth is increasing.

The crisis starts when an external shock makes the supply of credit fall, which makes asset prices come down and the exchange rate depreciate. Firms, households and banks go bankrupt and the aggregate supply curve in the bottom panel shifts to the left, the real side of the economy has collapsed.

To understand the massive bubble in Iceland, one has to resort to behavioural finance. A precursor is Hyman Minski who described the stages of the financial boom and bust.

See e.g. Robert J. Shiller, “From Efficient Market Theory to Behavioural Finance.” Cowles Foundation Discussion Paper No. 1385.

Hyman Minski, “The Financial Instability Hypothesis,” The Jerome Levy Economics Institute Working Paper No. 74.

Minsky moment (FIH)

Pro-cyclical changes in the supply of credit.

Displacement

Investors get excited about something: invention, financial deregulation, privatisation, low interest rates and inflow of foreign money. Economic outlook brightens and hence also willingness to borrow and lend. Borrowing and investing, asset prices rise,

- Boom
- The credit expansion creates and economic boom that further fuels optimism. Society invents stories to justify the boom, i.e. dot-com and the influence of the internet, the new economy, “útrás”….
- Euphoria
- Banks extend credit to ever more dubious borrowers, risk averseness declines, new financial instruments: junk bonds, mortgage-backed securities. Borrowing to profit from capital gains; speculative and Ponzi finance. Excessive leverage, speculation. Decline in loan losses. Banks compete for market share by offering loans to new customers. Speculation for capital gains becomes a **mania** (“irrationality”). Bubbles grow.
- Profit taking
- At the top of the market buyers of assets become less eager to buy and the sellers become more eager to sell. Some traders begin to cash in profits. Asset prices start to fall. Leverages investors start to become bankrupt. Other investors continue to hold. More and more investors realize that prices are not going to rise any further and asset prices decline at an increasing rate. Race into more liquid assets accelerates. Banks become more cautious in their lending.
- Panic
- Panic sets in after some dramatic event. The rush is on. Number of bankruptcies rises. Banks stop lending.
- Collapse of Bear Stearns hedge funds in July 2007! Collapse of Lehman brothers.
- The collapse stops when prices have become so low that investors are tempted to buy the less liquid assets or the central bank raises enough liquidity to stop the fall in asset prices. Confidence gradually restores.
-

More on manias (Kindleberger).

- Relationship between rational individuals and a group of individuals can be complex.

- <u>Mob psychology</u>.
- Group thinking when virtually all of the participants in the market change their views at the same time and move as a herd.
- <u>From rationality to irrationality</u>.
- Different individuals change their views market development at different stages as part of a continuing process; most start rationally and then more of them lose contact with reality.
- <u>Heterogeneous beliefs</u>.
- Rationality differs among different traders, investors and speculators, an increasing number of individuals in these groups succumb to hysteria as asset prices increase.
- <u>Fallacy of composition</u>.
- All market participants succumb to the fallacy of composition, the view that from time to time the behaviour of the group of individuals differs from the sum of the behaviours of each of the individuals in the group.
- <u>Failure to predict reactions</u>.
- There is a failure of expectations as to the quality of a reaction to a given stimulus, especially when there are lags between the stimulus and the reaction.
- <u>Wrong model</u>.
- Irrationality may exist because investors and individuals choose the wrong model, or fail to consider a particular and crucial bit of information, or suppress information that does not conform to the model that they have implicitly adopted.

- *Behavioural finance:*
- <u>Feedback effects</u> – price increase promote prices increases (ability versus bad luck, for example!)
- <u>Bandwagon effects</u>: Back the most probable winner, abandon the loser
- <u>Greater fool theory</u>.
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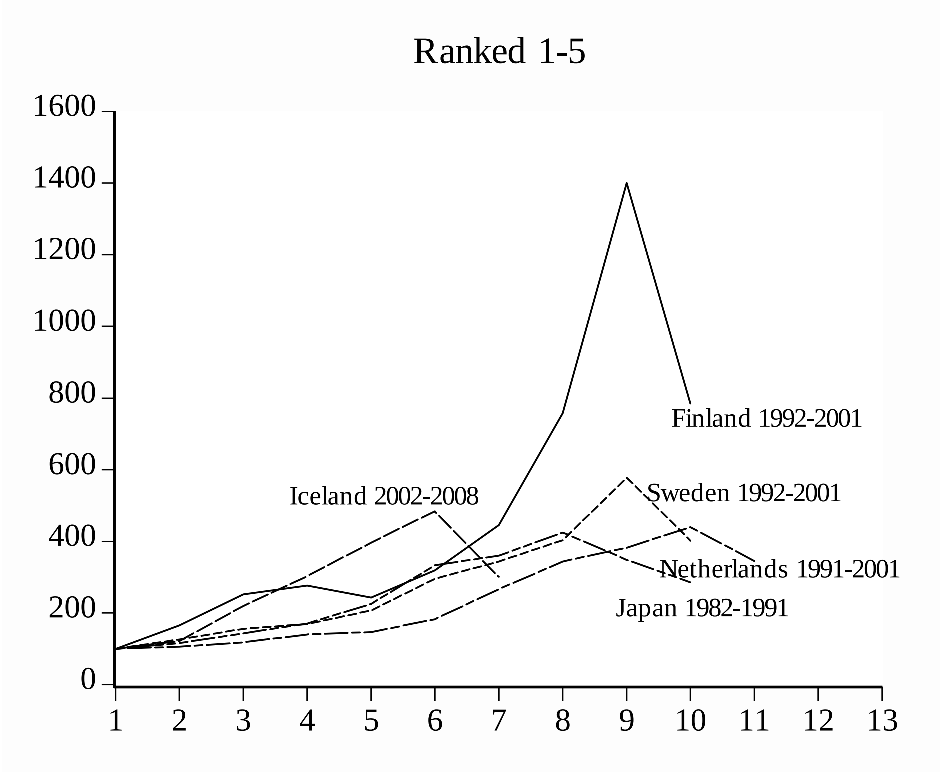
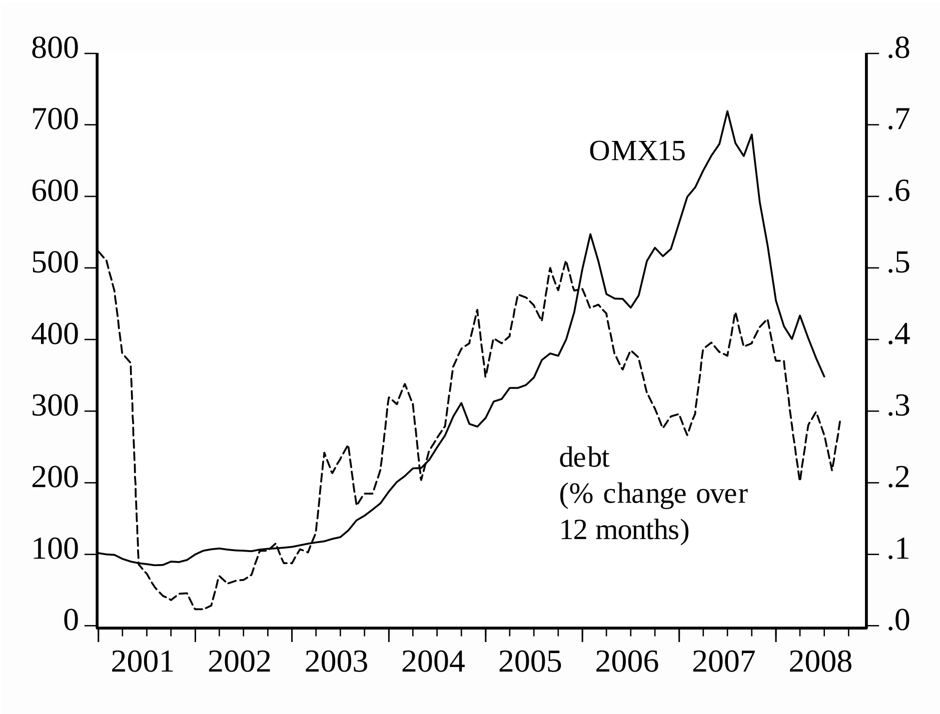
  Greed – <u>irrational exuberance</u> – extrapolation
- <u>Herd behaviour</u>.
- <u>Liquidity</u>. Too much money chasing too few assets.

Five biggest stock market increases in OECD since 1960:



Had something to do with the credit expansion:



The effect of the carry trade is neglected in this figure. Had a big impact from year 2006. This has to be studied further. Tentative hypothesis: the credit expansion explains the stock market bubble!

2) Asset prices and the macroeconomy.

Conventional models incorporate demand effects of changes in stock prices and house prices on investment (Tobin’s q) and consumption (wealth effects).

But supply-side effects are often ignored. These can be even more important during and following a financial crisis.

Supply side effects:

End of housing boom. Rise of natural rate. (Phelps and Kanaginis, 1989).

Credit rationing due to liquidity constraints.

Credit rationing due to solvency considerations.

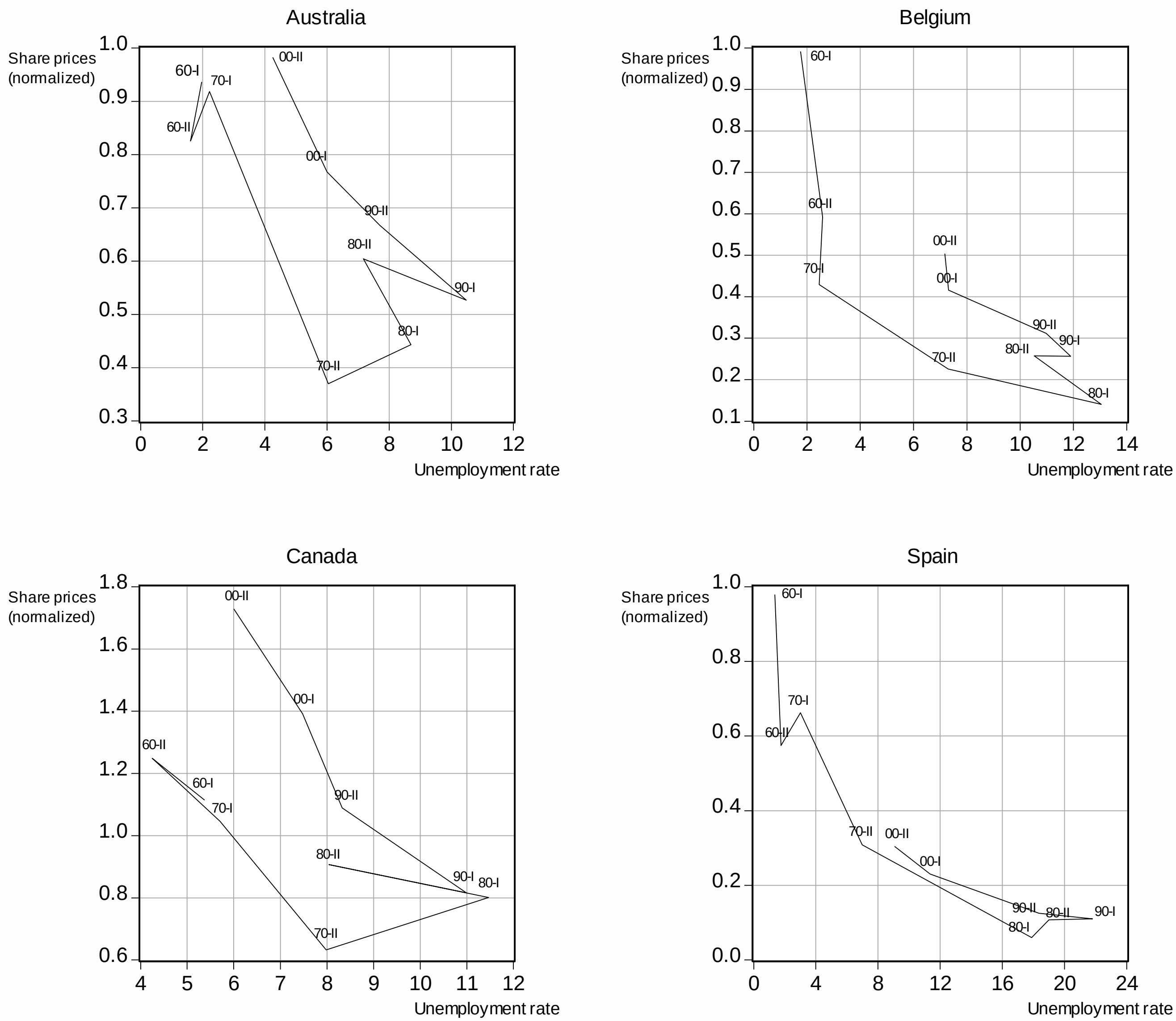
Lower equity in non-financials. Reduces labour demand. (Greenwald et al. 1993)

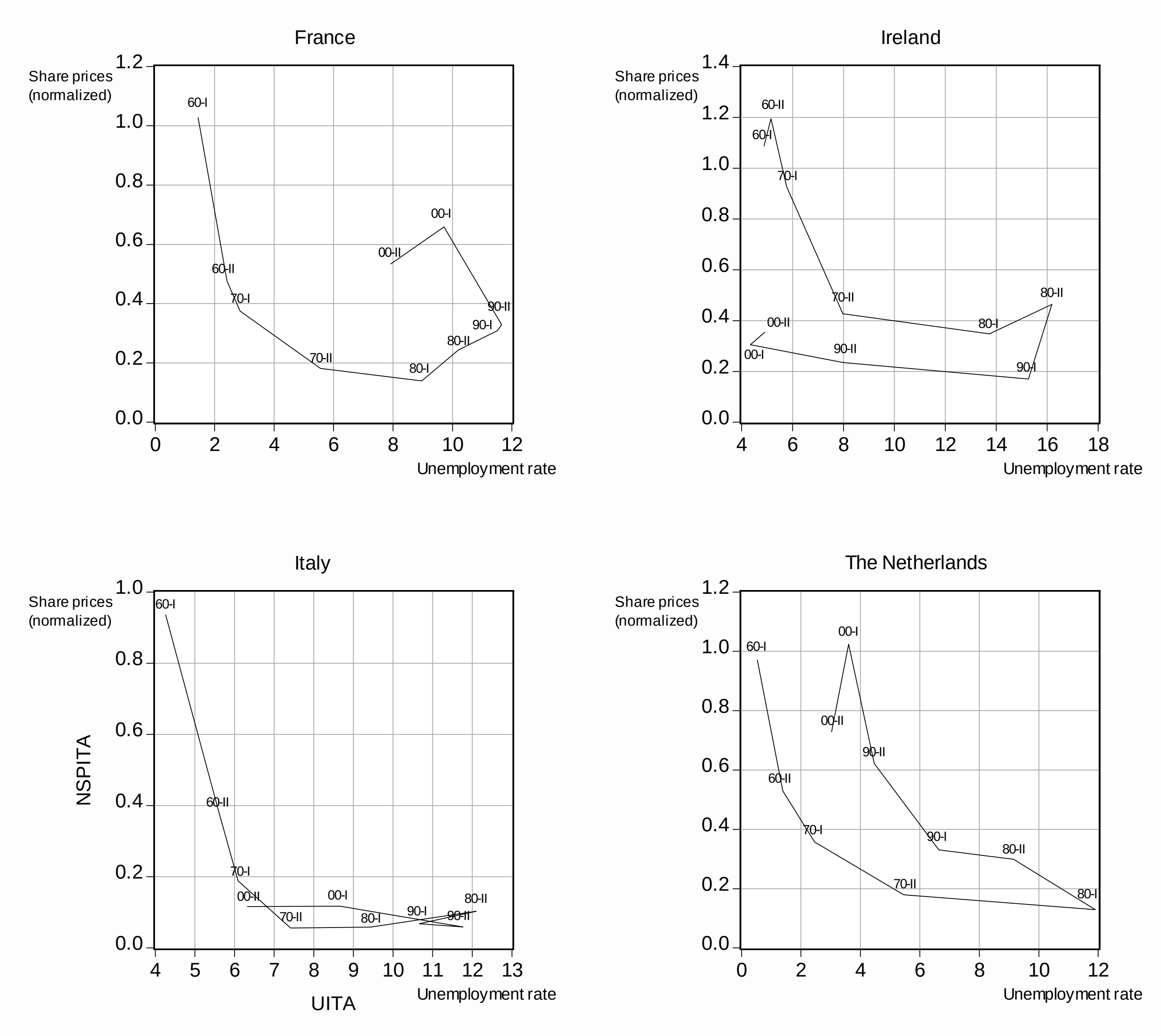
Higher uncertainty premium.

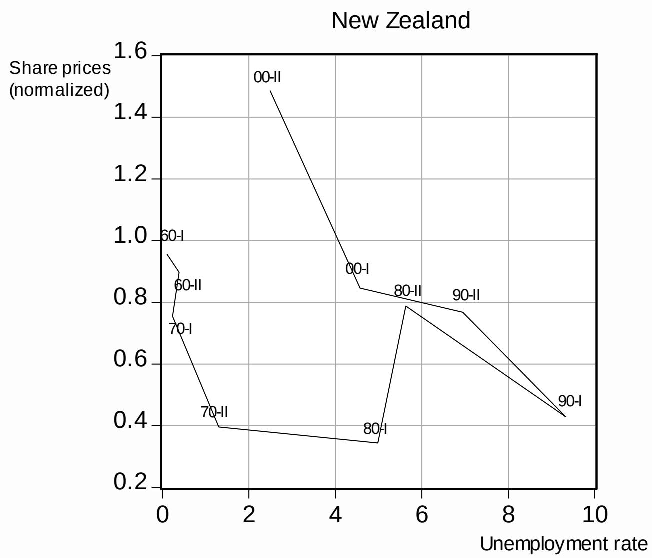
Lower rates of productivity growth. (Hoon and Phelps (1996).

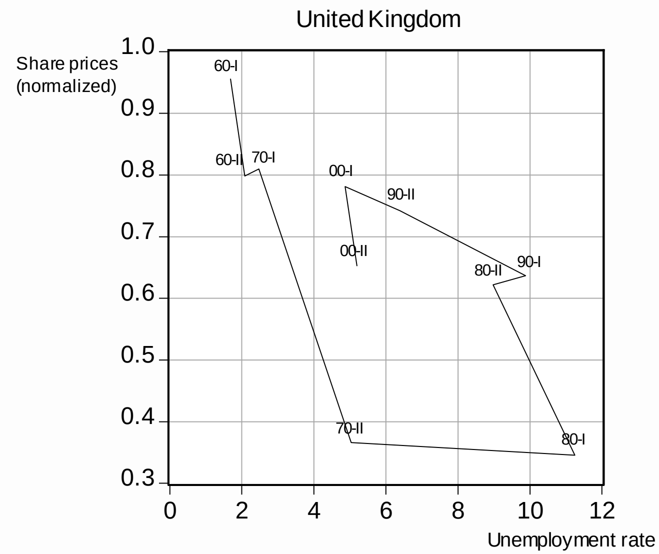
Lower real exchange rates. Phelps (1992).

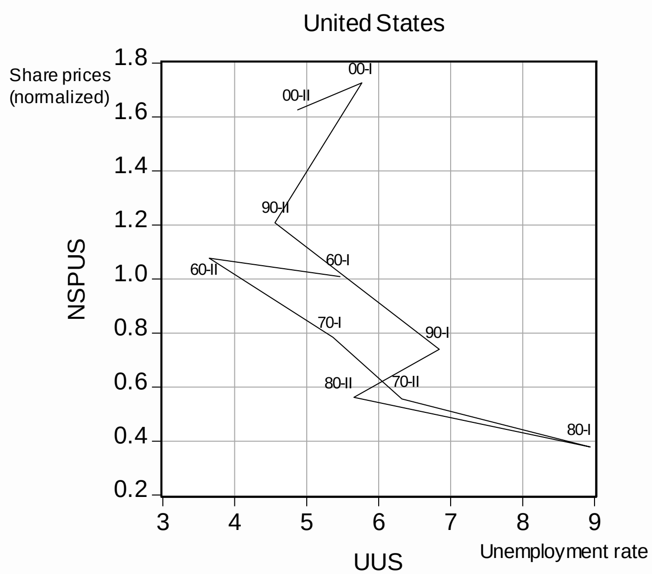
Higher oil prices. Raise mark-ups and lower labour demand.

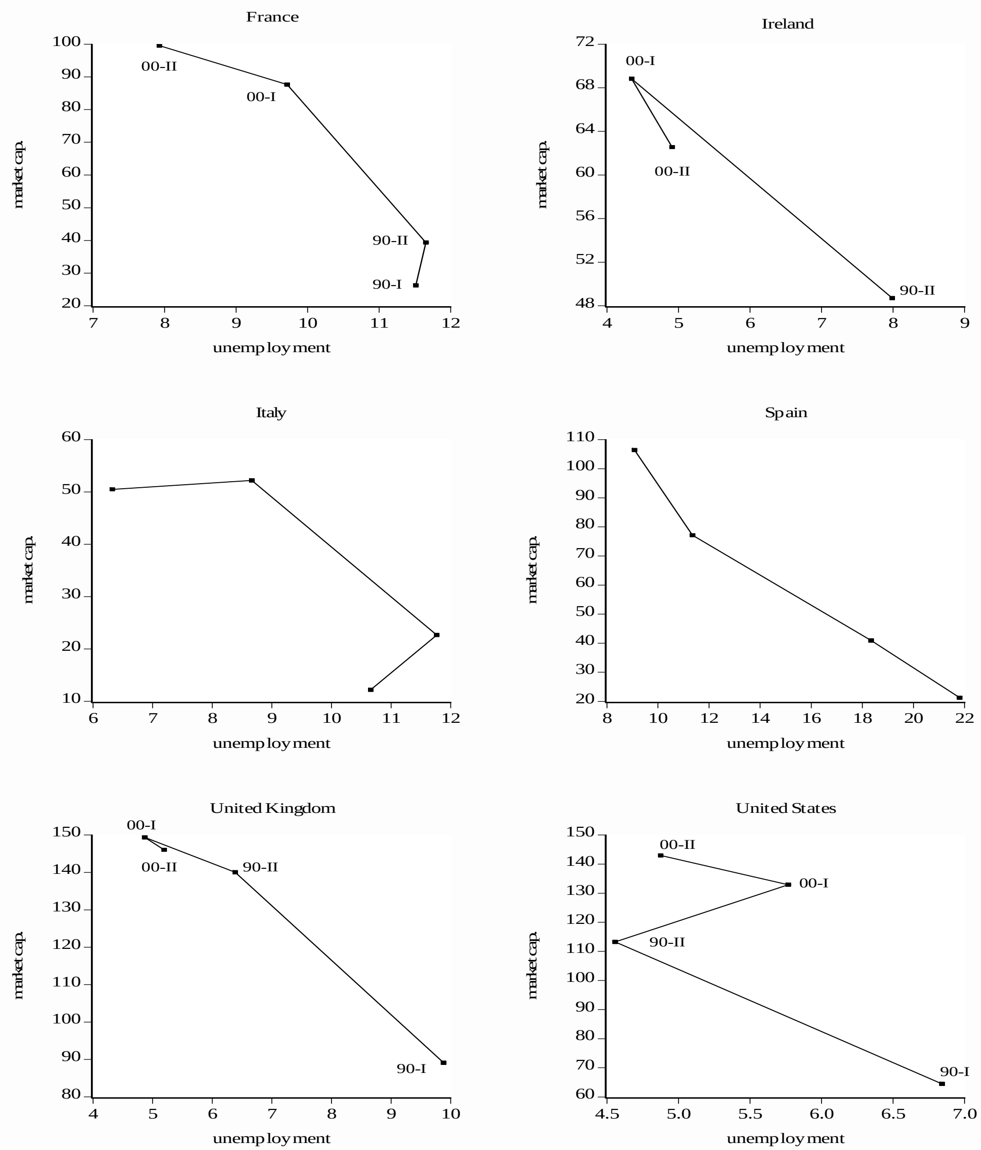

Australia
Share prices (normalized)
Unemployment rate
60-I
60-II
70-I
70-II
80-I
80-II
90-I
90-II
00-I
00-II
Belgium
Share prices (normalized)
Unemployment rate
60-I
60-II
70-I
70-II
80-I
80-II
90-I
90-II
00-I
00-II
Canada
Share prices (normalized)
Unemployment rate
60-I
60-II
70-I
70-II
80-I
80-II
90-I
90-II
00-I
00-II
Spain
Share prices (normalized)
Unemployment rate
60-I
60-II
70-I
70-II
80-I
80-II
90-I
90-II
00-I
00-II

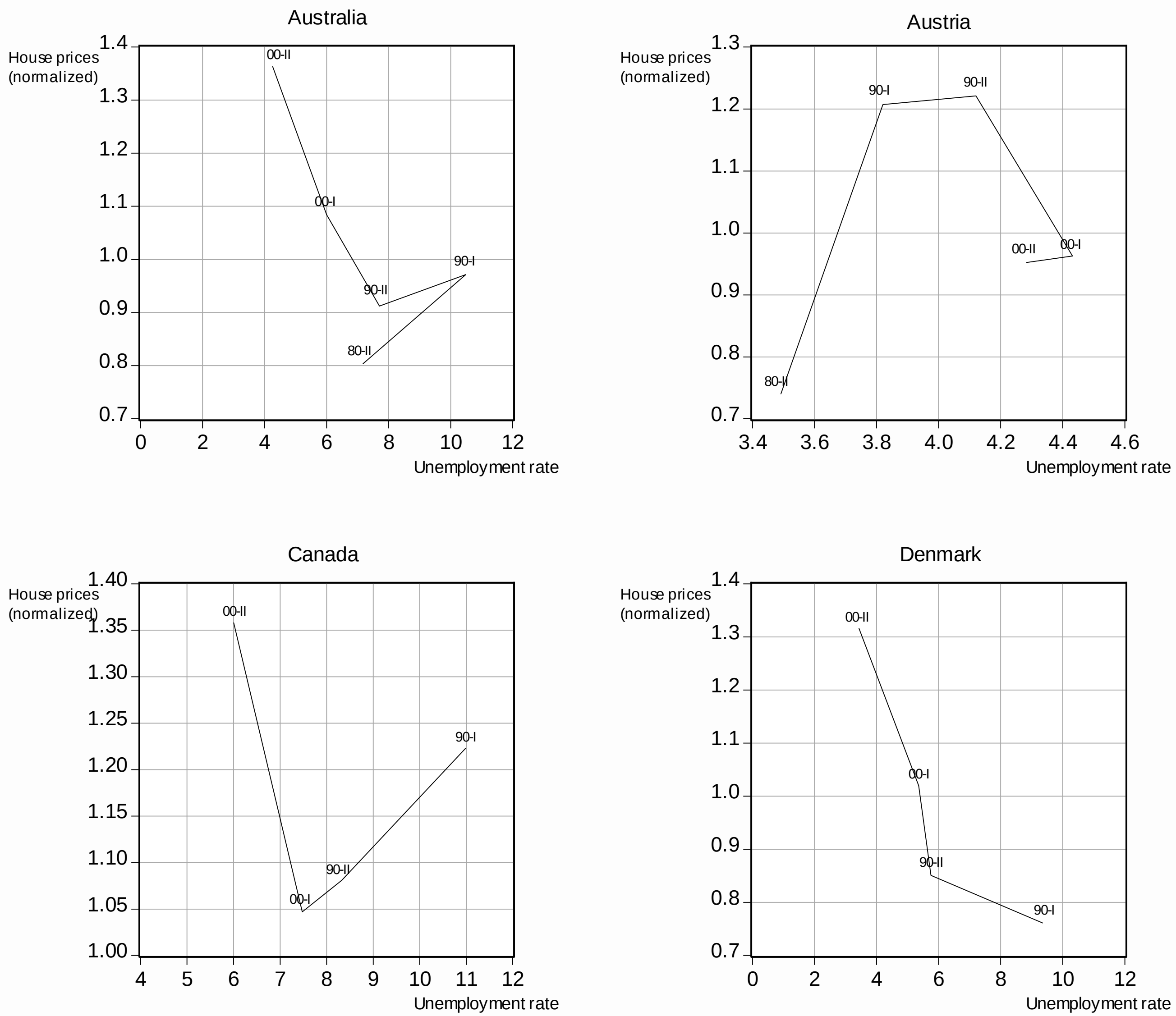

France
Share prices (normalized)
Unemployment rate
60-I
60-II
70-I
70-II
80-I
80-II
90-I
90-II
00-I
00-II
Ireland
Share prices (normalized)
Unemployment rate
Italy
Share prices (normalized)
NSPITA
UITA
Unemployment rate
The Netherlands
Share prices (normalized)
Unemployment rate

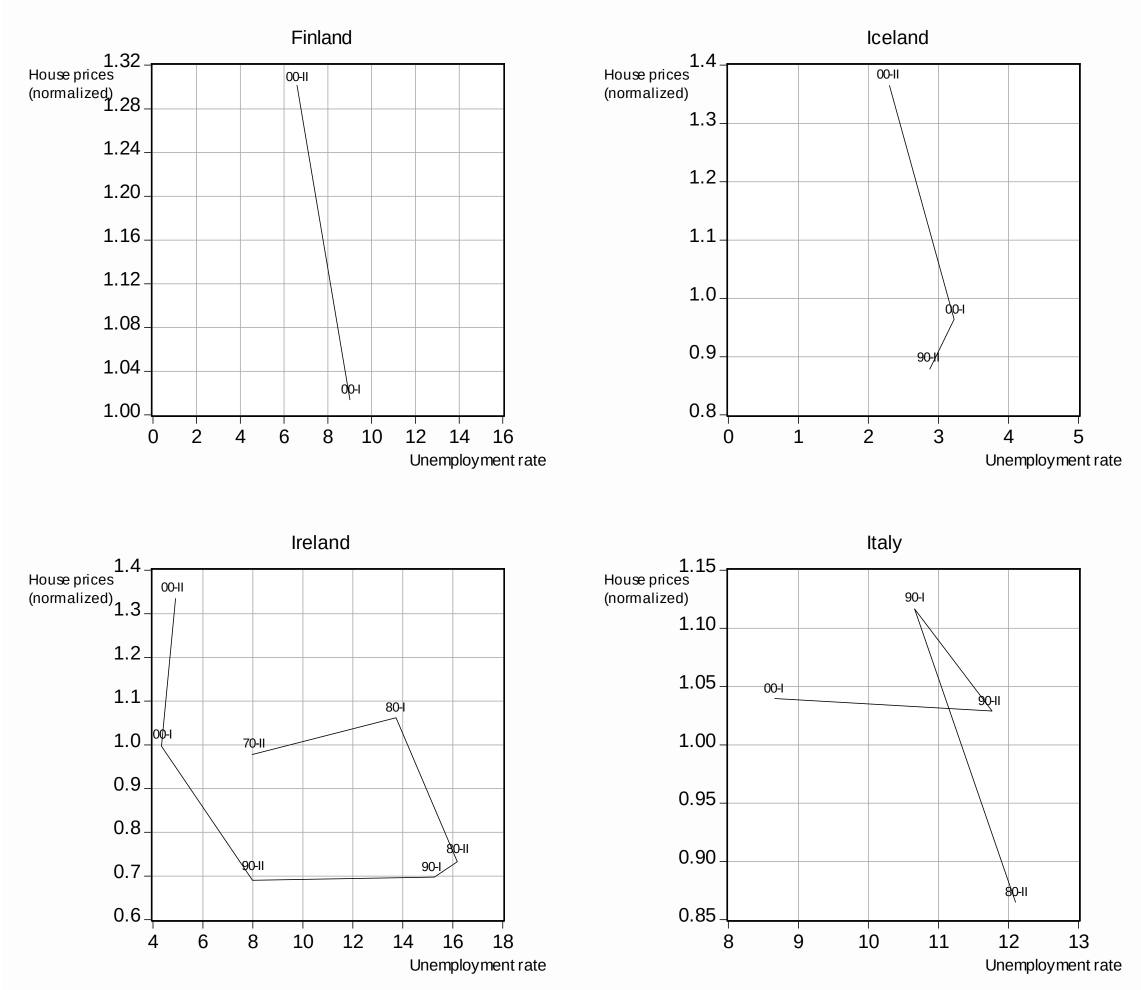

New Zealand
Share prices (normalized)
Unemployment rate
00-II
00-I
60-I
60-II
70-I
70-II
80-I
80-II
90-I
90-II


United Kingdom
Share prices (normalized)
Unemployment rate
60-I
60-II
70-I
70-II
80-I
80-II
90-I
90-II
00-I
00-II


United States
Share prices (normalized)
NSPUS
UUS
Unemployment rate
00-I
00-II
90-II
60-I
60-II
70-I
90-I
80-II
70-II
80-I


France
market cap.
unemployment
00-II
00-I
90-II
90-I
Ireland
market cap.
unemployment
00-I
00-II
90-II
Italy
market cap.
unemployment
Spain
market cap.
unemployment
United Kingdom
market cap.
unemployment
00-I
00-II
90-II
90-I
United States
market cap.
unemployment
00-II
00-I
90-II
90-I


Australia
House prices (normalized)
Unemployment rate
00-II
00-I
90-I
90-II
80-II
Austria
House prices (normalized)
Unemployment rate
90-I
90-II
00-II
00-I
80-II
Canada
House prices (normalized)
Unemployment rate
00-II
90-I
90-II
00-I
Denmark
House prices (normalized)
Unemployment rate
00-II
00-I
90-II
90-I


Finland
House prices
(normalized)
1.32
1.28
1.24
1.20
1.16
1.12
1.08
1.04
1.00
00-II
00-I
0
2
4
6
8
10
12
14
16
Unemployment rate
Iceland
House prices
(normalized)
1.4
1.3
1.2
1.1
1.0
0.9
0.8
00-II
00-I
90-II
0
1
2
3
4
5
Unemployment rate
Ireland
House prices
(normalized)
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
00-II
00-I
70-II
80-I
80-II
90-I
90-II
4
6
8
10
12
14
16
18
Unemployment rate
Italy
House prices
(normalized)
1.15
1.10
1.05
1.00
0.95
0.90
0.85
90-I
00-I
90-II
80-II
8
9
10
11
12
13
Unemployment rate

Conclusions

--- bubble is a worthy topic of study in behavioural finance. Bubble in Iceland explained by a domestic credit expansion.

--- changes in asset prices “explain” the long swings of the unemployment rate quite well. This is a supply-side effect.