

# **Endogenous financial crises; and the nature of economics**

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comments welcome

# A methodological challenge

- ‘Minsky’s view that economics should include the possibility of severe crises, not as the result of external shocks, but as events that emerge from within the system, is methodologically sound’ Martin Wolf, *The Shifts and the Shocks* (2014, p xvii).
- If so, how are we doing in macroeconomics?
- If not, are there methodological alternatives?

# Plan of presentation

First, to offer a brief overview of models that can generate endogenous financial crises.

Second, to return to methodological issue  
( should crises be endogenous?)

in light of recent EJ paper by Gilboa et al. (2014)  
“Economic Models as Analogies”.

# Part One: Models with endogenous financial crises and their authors

	First variety	Second variety
'Pecuniary Externalities' In credit markets	<i>Demand-side</i> Kiyotaki and Moore, 1997	<i>Supply-side</i> Hyun Shin et al. 2001,....7,10
Banking crises	<i>Of Liquidity</i> Diamond and Dybvig, 1983	<i>Of Solvency</i> Hellman, Murdock and Stiglitz, 2000

# Pecuniary externalities (PX)

- Arise when price movements that are meant to clear particular markets, have *unintended side-effects*, possibly because of ‘balance sheet rules’ or conventions. (Greenwald/Stiglitz 1986)
- In Kiyotaki and Moore, 1997 (KM), for example, the balance sheet rule is that – because of moral hazard - loans need to be **fully collateralised**.
- But this can generate ‘*accelerator effects*’ and/or ‘*fire-sale externalities*’ in face of macroeconomic technology shocks.

# Supply-side PX

- For Adrian and Shin(2007), the balance sheet rule is that financial intermediaries be **adequately capitalised** - i.e. have enough of their own 'skin in the game' to prevent excess risk-taking.
- But through their effects on the equity base of the intermediaries, asset price changes can be greatly amplified, and risk premia compressed
- This can generate '*boom- bust*' cycles.

# Micro to Macro

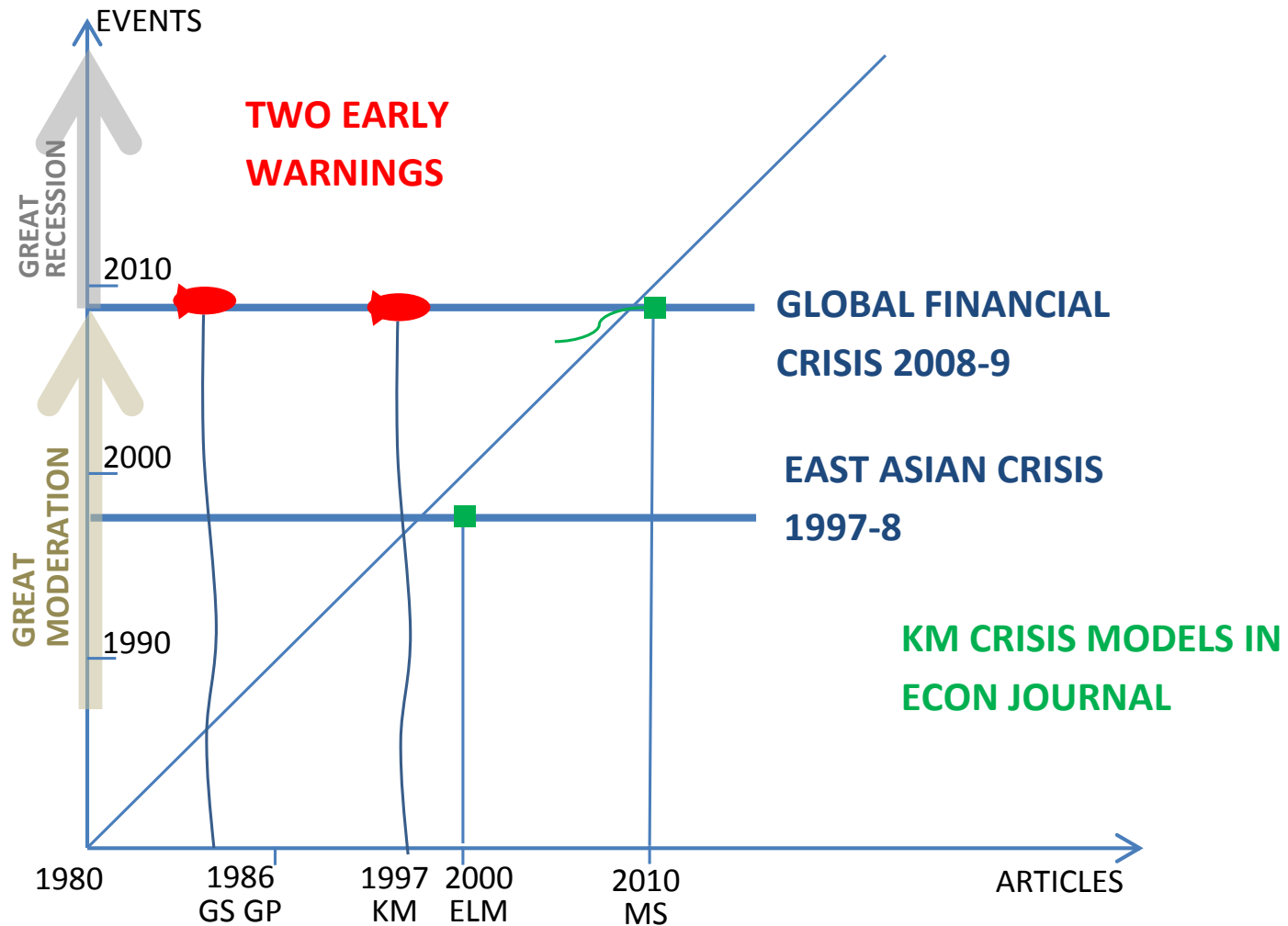
- The common theme is that:
- at the *micro-level* there is a moral hazard/ principal-agent problem (borrowers won't repay; intermediaries will gamble)
- gives rise to a balance sheet rule
- but this can cause *macro-problems* if the balance sheets are subject to a correlated shock (a positive technology shock, for example).

# Crisis models as “early warnings”?

- Could such ideas have acted as ‘early warnings’ for financial crises – particularly the Global Financial Crisis of 2008/9?
- Analysis of previous financial crises in Emerging Market economies plays an important role here.



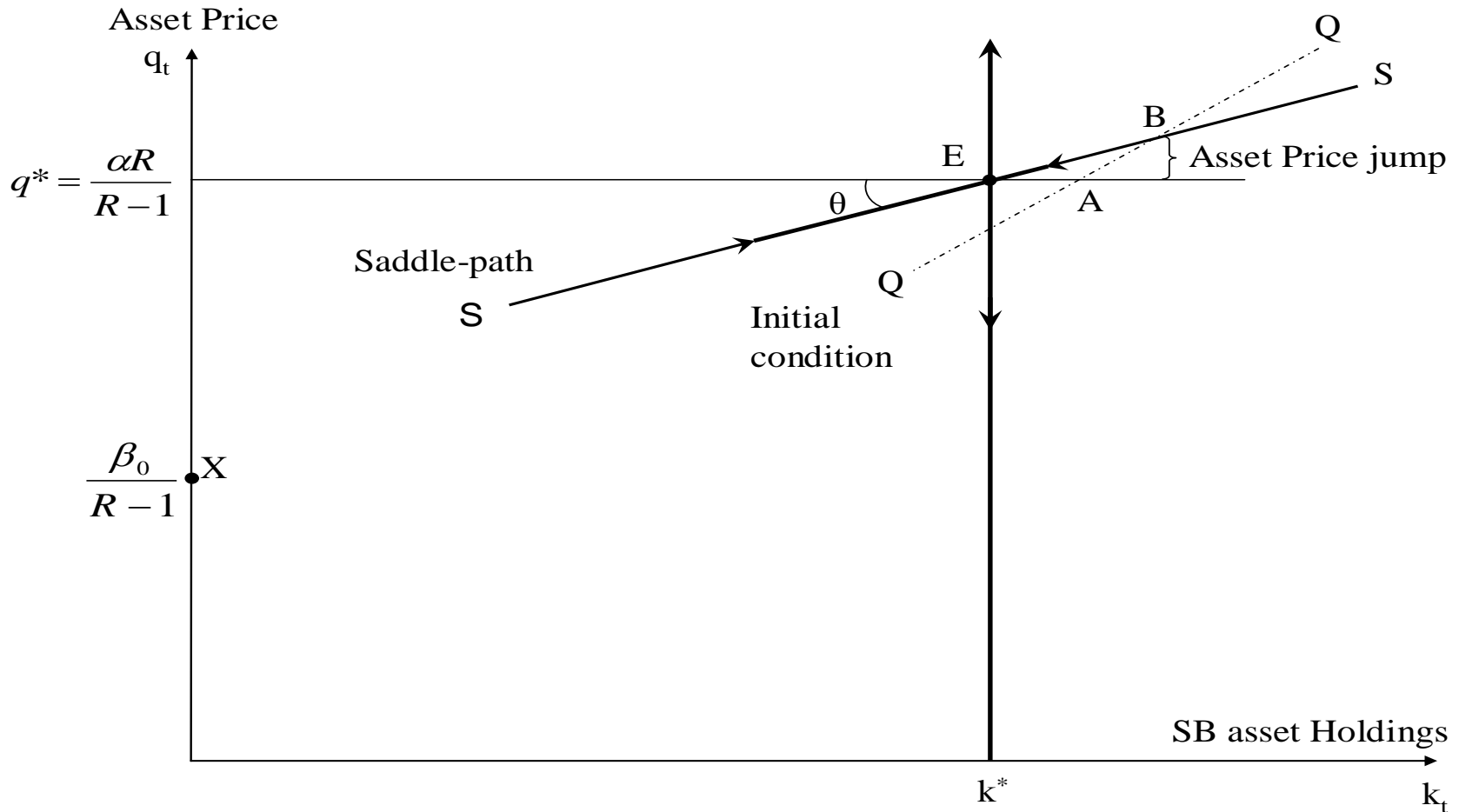
# PX: Demand-side, Kiyotaki and Moore



# K M (1997) Credit cycles

- Fixed endowment of scarce resource (land) to be exploited by heterogeneous agents: 'deep pockets' land-owners with declining MPL; indigent 'small businesses' with constant MPL
- Latter can borrow from former to expand their activities s.t. balance sheet (moral hazard) constraint of full collateralisation
- Constraint works well for idiosyncratic shocks; but for correlated (macro) shocks leads to 'financial accelerator' – next figure - and possible crashes

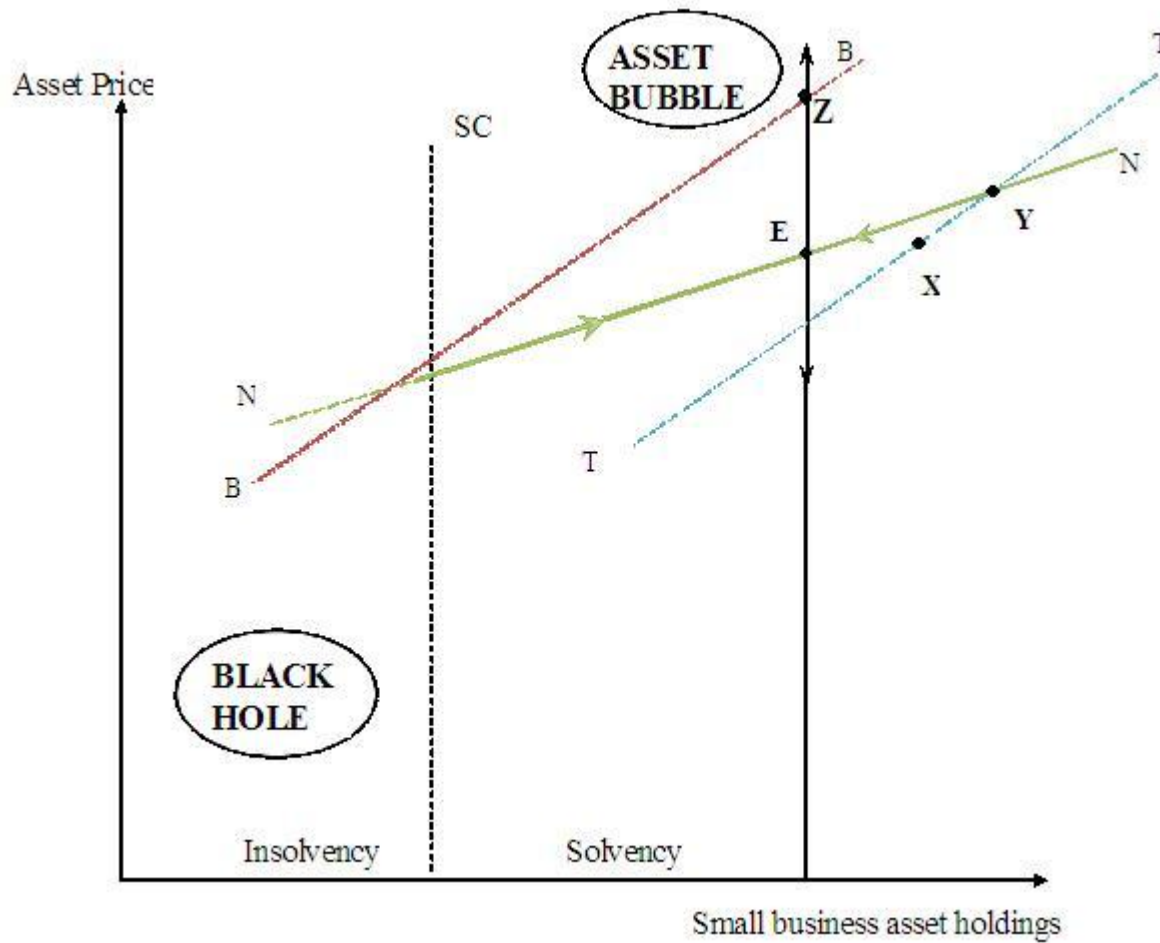
# 'Financial accelerator' in KM (1997): effect of a temporary positive aggregate technology shock



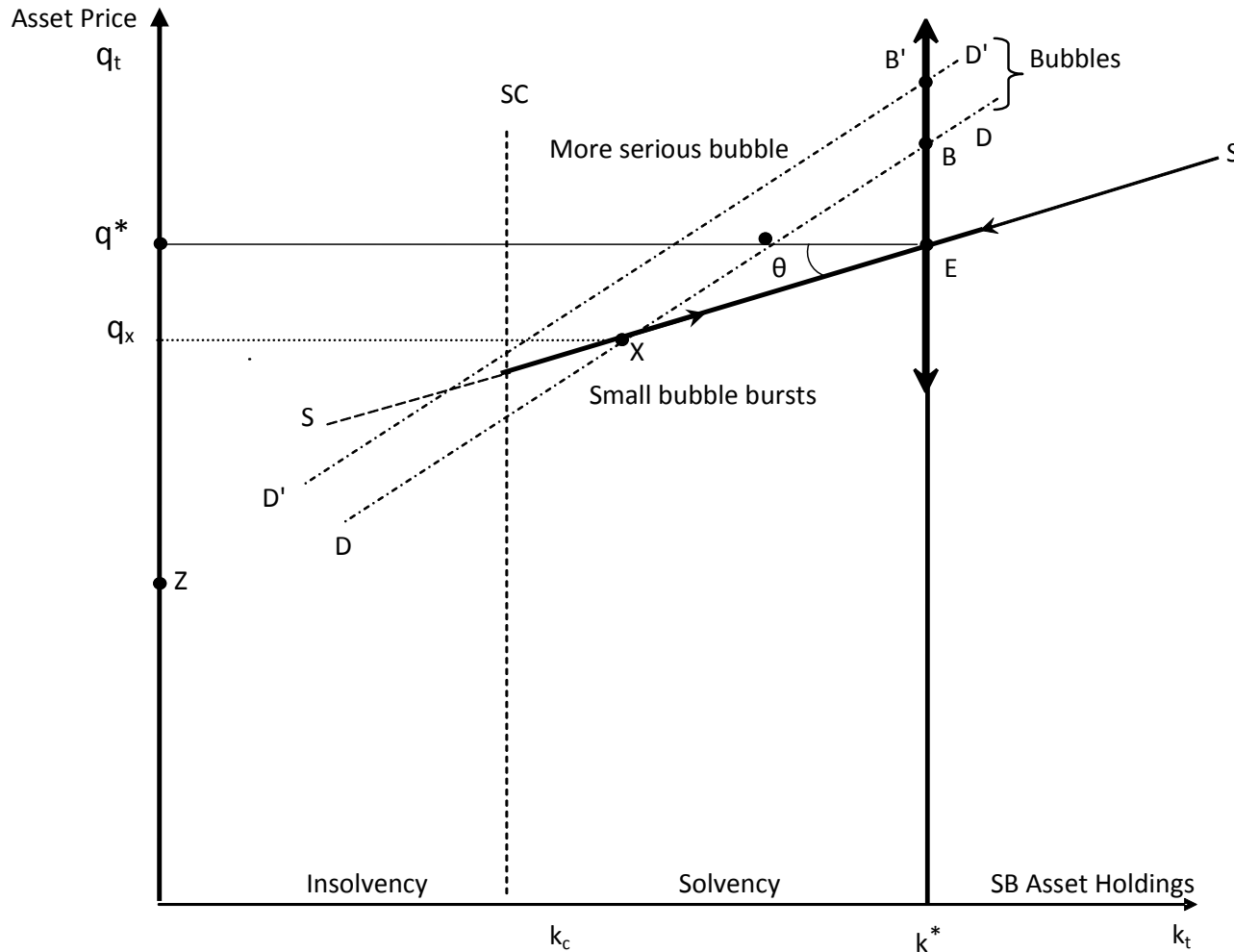
# Correlation of shocks

- Shocks in Emerging Market crisis often came from ‘**liability** dollarisation’; because loans issued in local currency were not trusted (‘original sin’ ), agents were constrained to borrow in dollars.
- A shock to the exchange rate would then generate a correlated shock.
- For Advanced Economies, correlation comes more commonly from co-movements in the value of the **assets** acquired by borrowers.

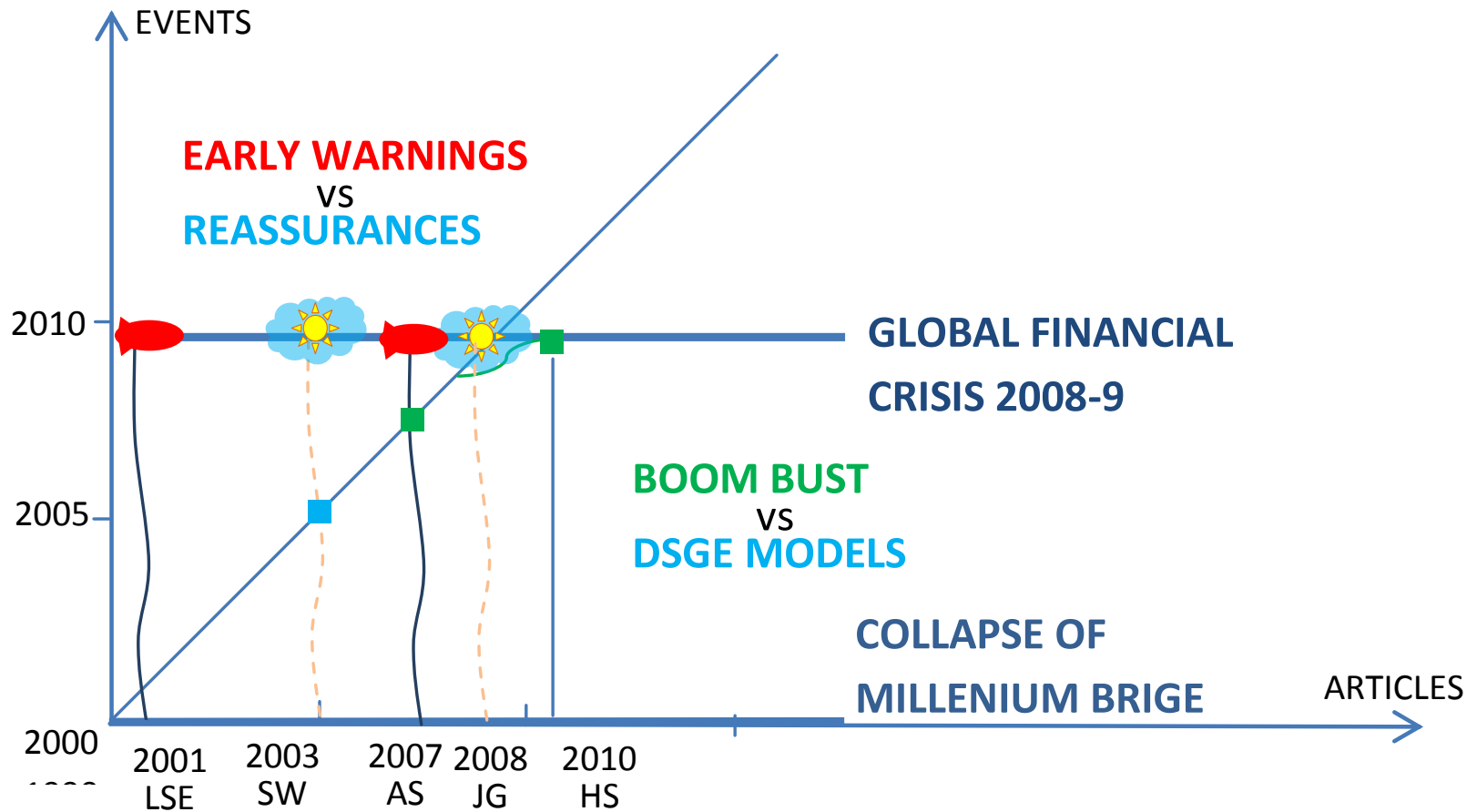
# Black holes



# 'Boom and Bust' in Miller/Stiglitz (2010): asset price bubble and bankruptcy



# Supply-side PX: LSE ahead of the game?



# 'Boom and Bust' in Shin-style model

- As with Kiyotaki and Moore (1997), some 'over-pricing' of risky assets (as with ABS) can lead to a rapid expansion -- followed by deleveraging crisis (See Shin, Chapters 7 and 9, 2010).
- Geanakoplos (2010), "The Leverage Cycle", has developed a similar analysis.
- The **macro-economic** implications of deleveraging are analysed in Krugman and Eggersston (2011).

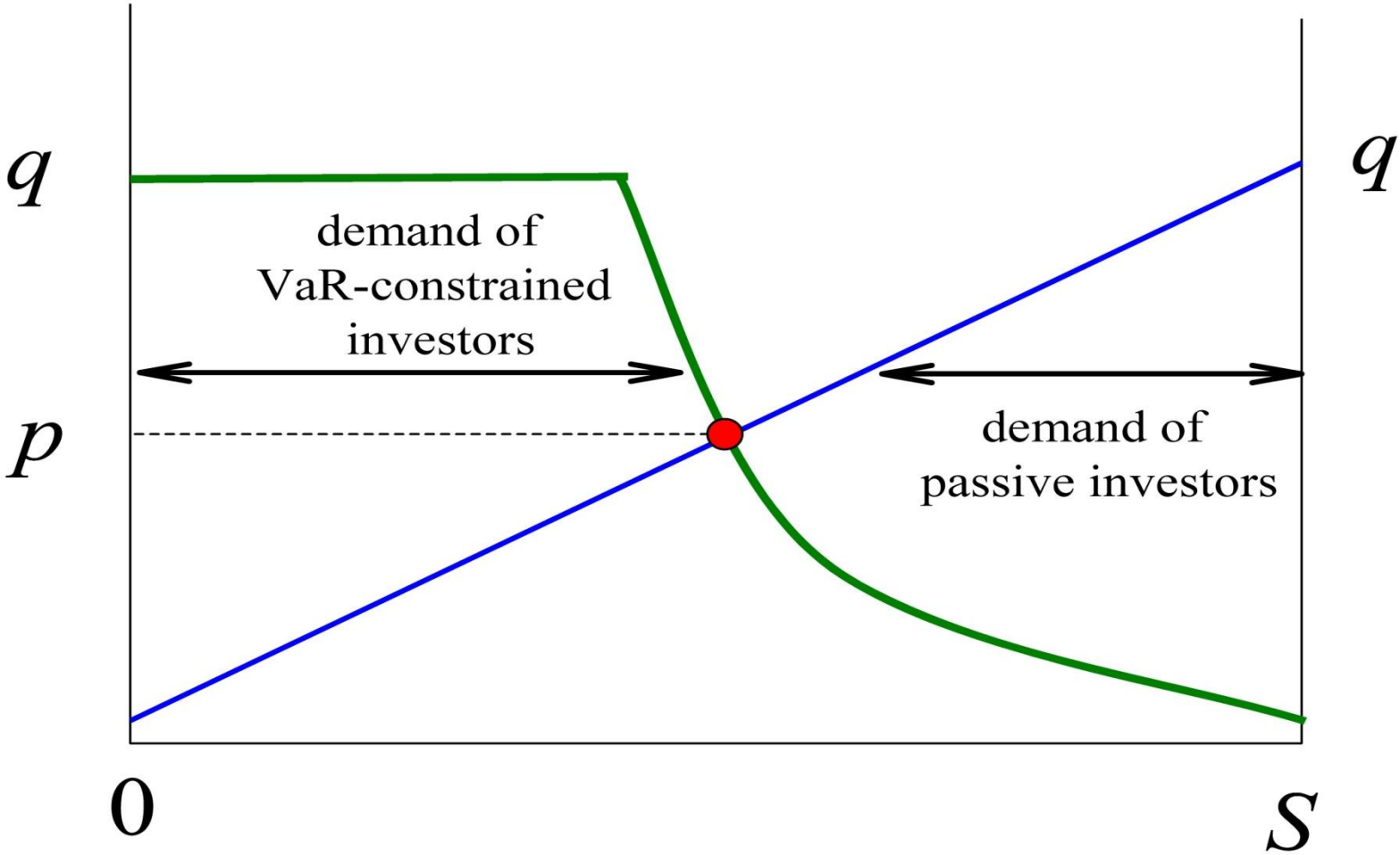


# Millenium Bridge

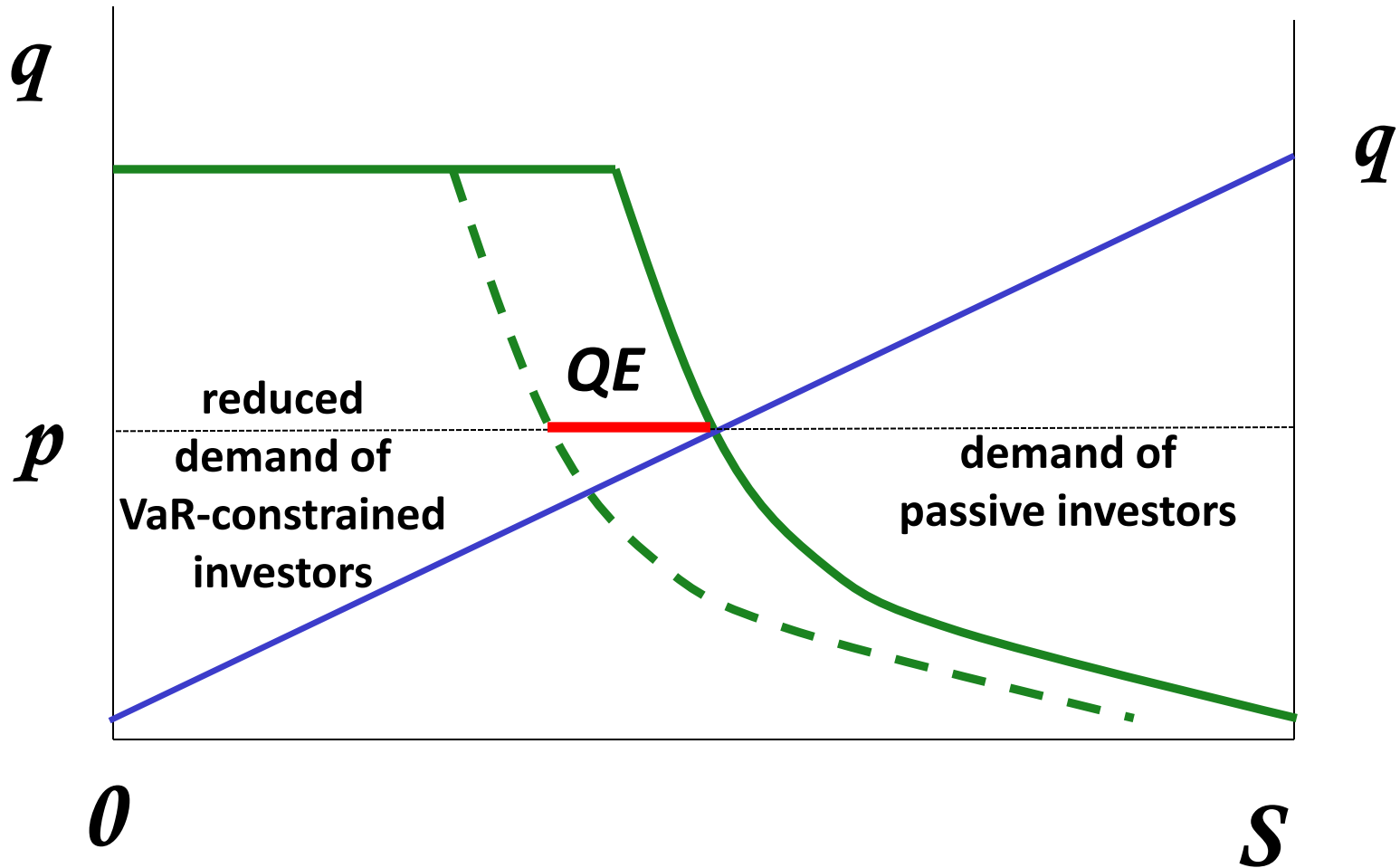


When the London Millennium footbridge was opened in June 2000, it swayed alarmingly

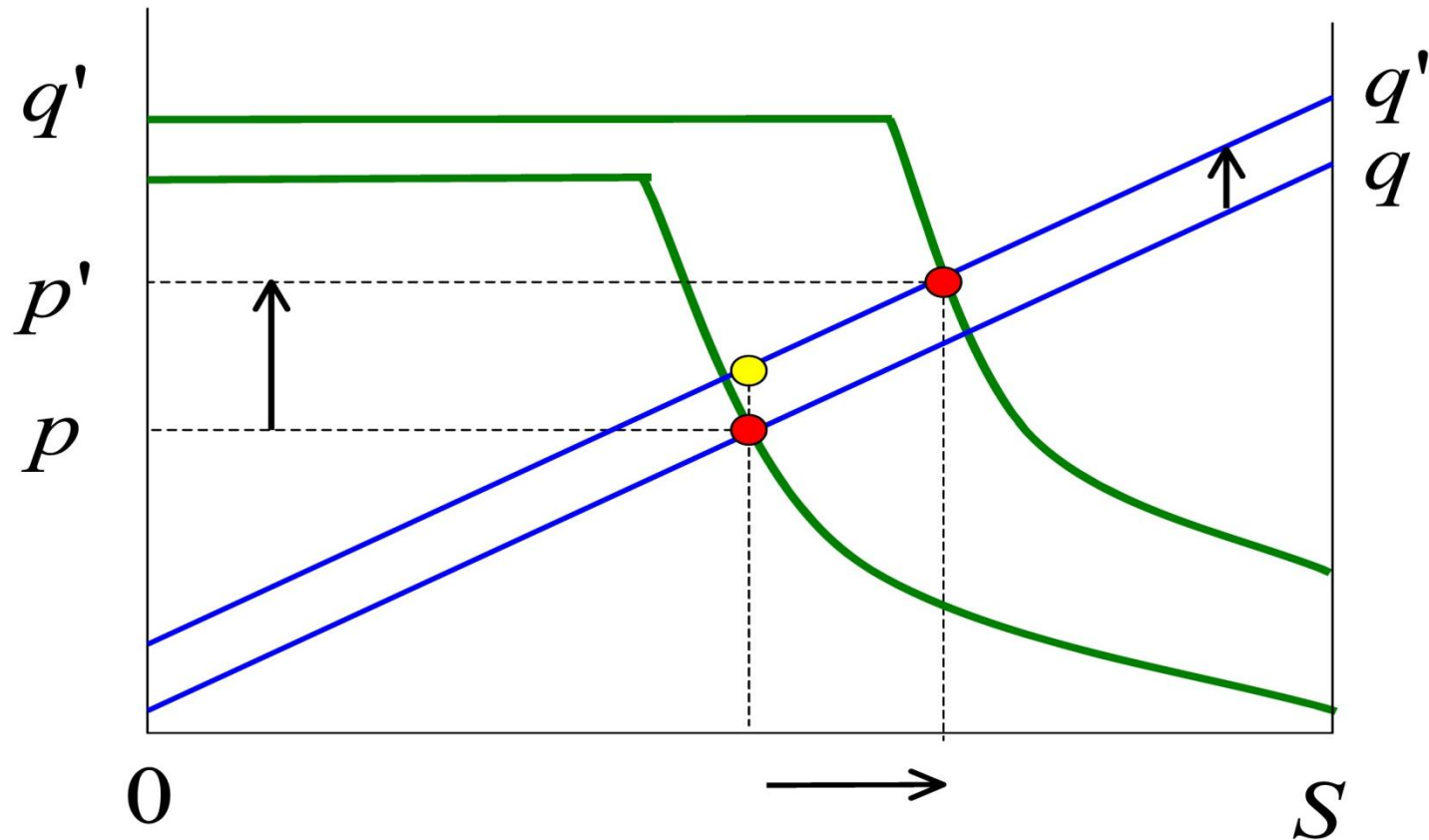
# Determination of risk premium



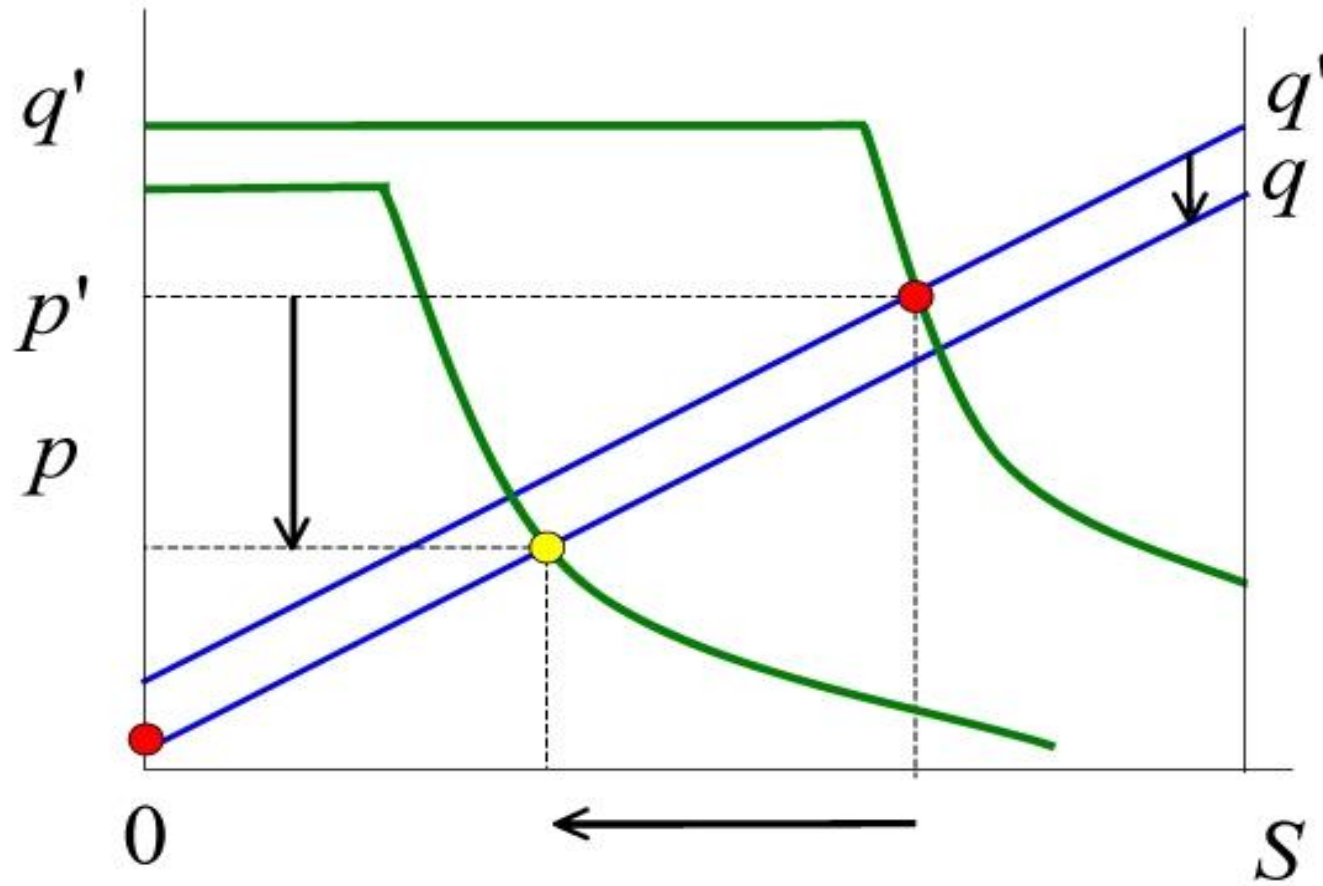
# QE to prevent a rise in a risk premium



# Positive shock to returns: Compression of risk premium from increase in intermediary balance sheets



# 'Boom and Bust' in Shin-style model: a sketch with mis-priced risky assets



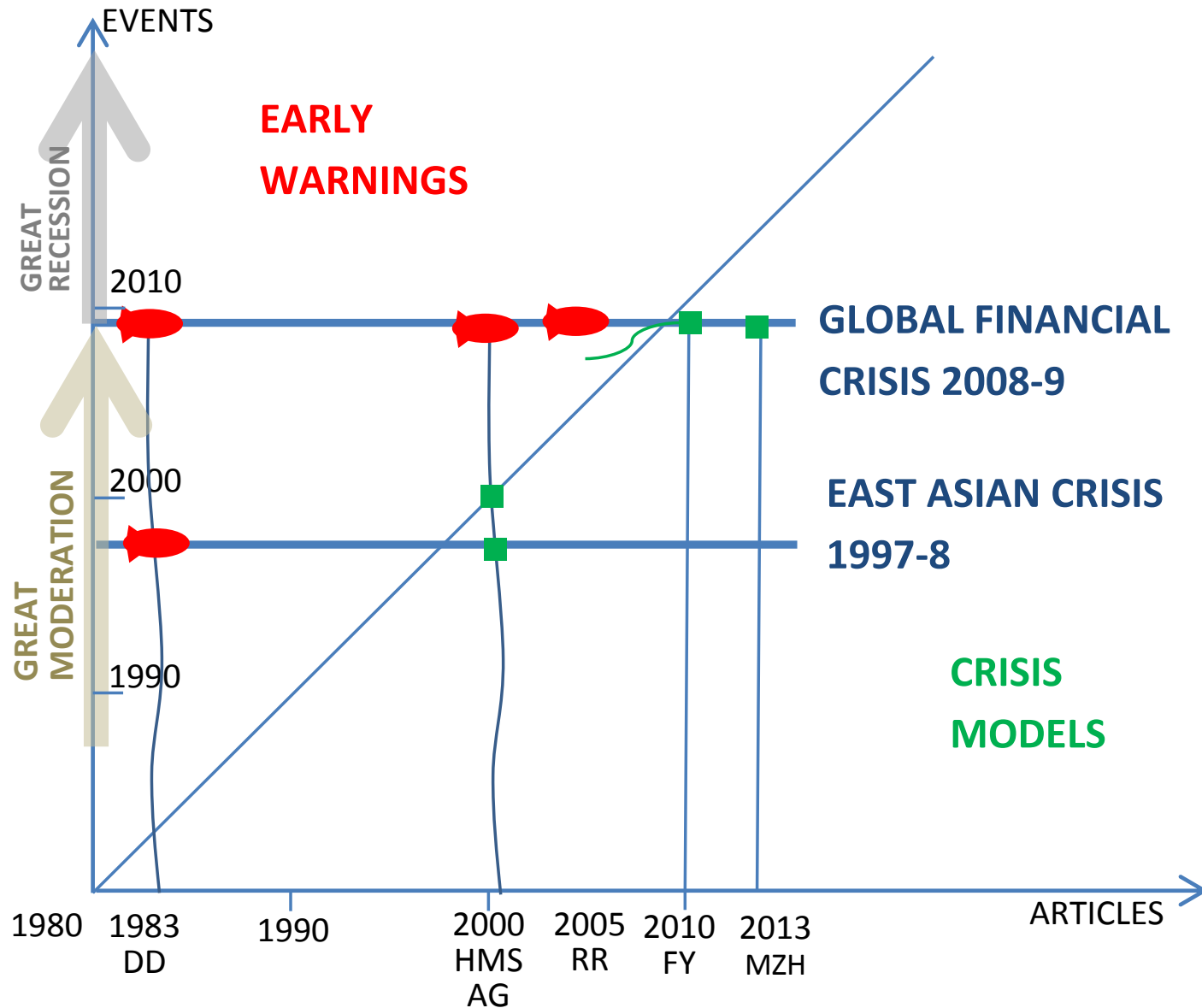
# Hyun Shin (now at BIS) writes:

- ‘Financial regulation ... has the role of imposing the appropriate Pigovian taxes that that *internalize the externalities* as much as possible’
- Job description for Macro-pru? 3 ideas:
- **leverage caps or countercyclical capital targets**
- **forward-looking provisioning**
- **institutional reform** to cut length of credit chains

# Models of Banking Fragility

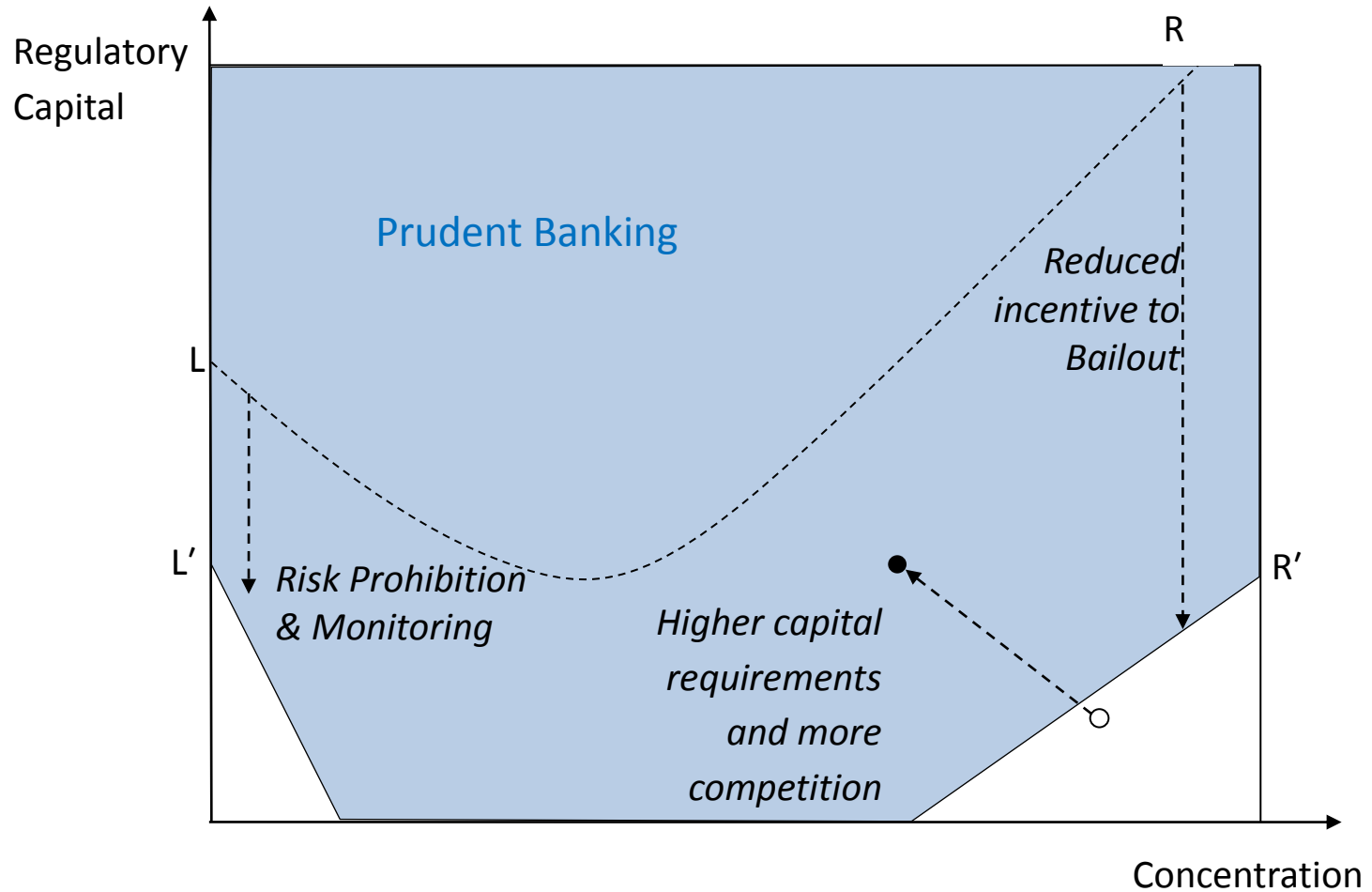
- Classic Diamond Dybvig(1983) : bank runs
- Hellman, Murdock and Stiglitz(2000): asymmetric info and gambling
- Foster and Young(2010): use of derivatives to conceal gambling
- Miller et al (2013) combines the above wrt UK

# Models of Banking crisis





# Regulatory Reform in the UK: in brief



## Part Two: Methodological matters

- Minsky's challenge was that the same theory encompass normal times and crisis.
- Could this be too ambitious/demanding?
- John Hicks (1983) proposed that 'economics is a discipline, not a science'; so no over-arching, all-encompassing approach is called for.
- Instead, there could be a set of models, to be used in appropriate circumstances

# Krugman on Samuelson's Synthesis

- “In the Samuelsonian synthesis, one must count on the government to ensure more or less full employment; only [then] do the usual virtues of free markets come to the fore.
- [This] requires some *strategic inconsistency* in how you think about the economy. When you're doing micro, you assume rational individuals and rapidly clearing markets; when you're doing macro, frictions and *ad hoc* behavioural assumptions are essential.”

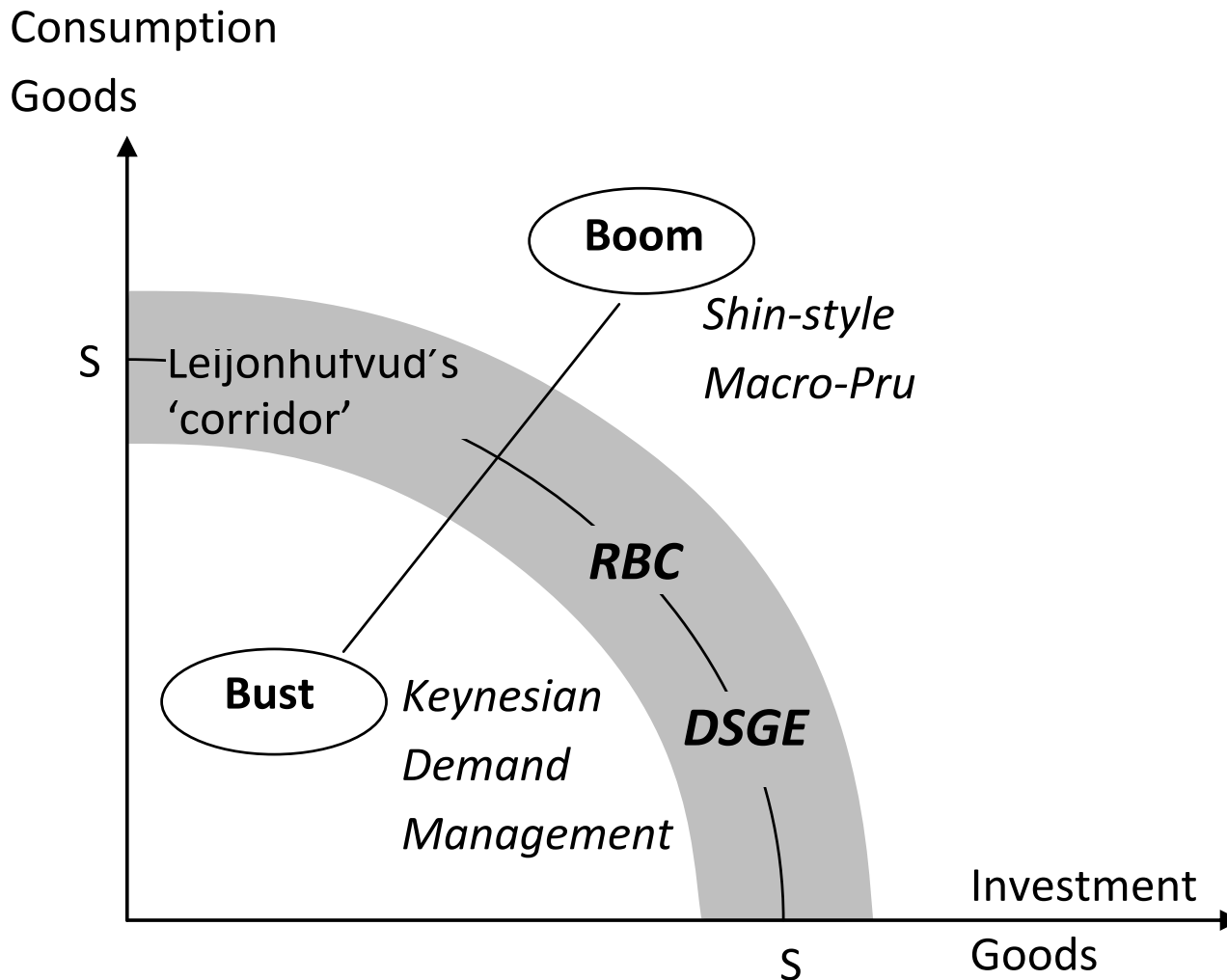
# So SS proved 'not intellectually stable':

- [For policy purposes, inconsistency may be OK]
- “ But economists were bound to push at the dividing line between micro and macro – which in practice has meant *trying to make macro more like micro*, basing more and more of it on optimisation and market-clearing.
- The result was the *Dark Age of Macro*” [in which the history of the subject is forgotten].

# “Economic Models as Analogies”

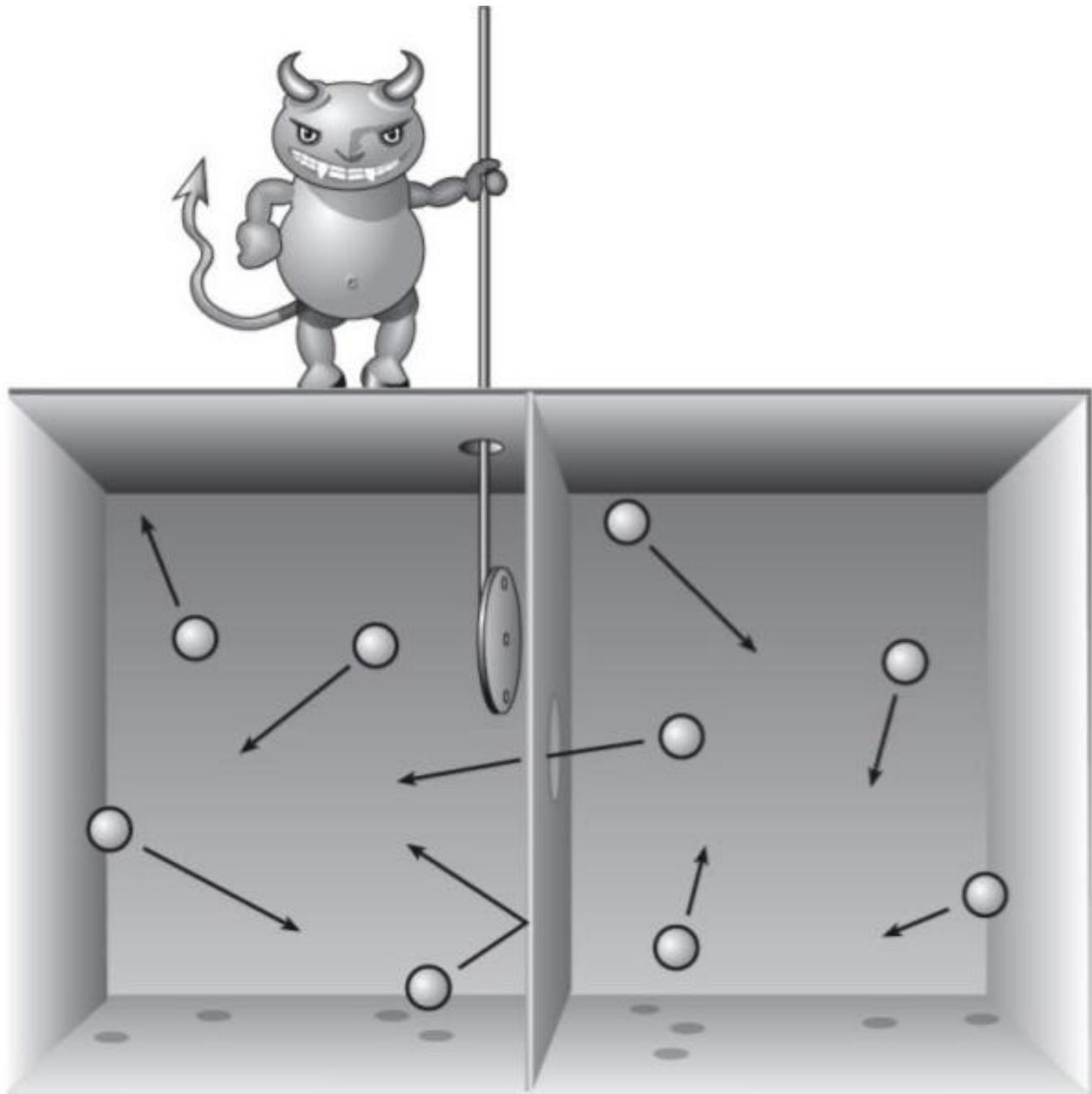
- The Hicksian perspective supported by Gilboa et al. (2014) in *Economic Journal*. They argue:
- Economic models not in general designed to incorporate universal laws of behaviour:
- often more like elaborate ‘case studies’ fitted to particular circumstances – to be employed with care elsewhere.
- Could this lead to a revival of the Samuelson Synthesis (SS)?

# Samuelson's Synthesis (updated)



# Factors that may drive the economy outside Leijonhufvud's 'corridor'

- The DSGE/RBC approaches tend to ignore such **multiple equilibria** as bank runs (Northern Rock), or sovereign debt crisis ( Eurozone).
- Also, as Rajan warned in 2005, '**financial development** can make the world riskier'
- as financial strategies designed to exploit asymmetric information may cause crisis.
- In thermodynamics, "**Maxwell's Demon**" was a thought experiment. In economics, it's a reality!





# Conclusions

- Krugman warns SS not intellectually stable.
  - Economists in the corridor strive for the consistency by extending micro-economic reasoning to eliminate Keynesian unemployment and irrational exuberance (e.g. Gali, 2008).
  - But, by ignoring asymmetric information, moral hazard - and the PX and Multiple Equilibria the multiple equilibria that may arise - the dominant paradigm left macro-economists totally unprepared for crisis.
  - What to do?

# Conclusions (continued)

- **Either** ensure that macro-models are sufficiently broad as to *encompass booms and slumps* as well as normal times
- **Or** to acknowledge that in economics there is not one model (the latest!) to deal with all problems;
- It is a *scientific discipline* that includes many different models, to be used with discretion
- In calling for what refer to as *a Pluralist approach*, is this not what the students of the Post-Crash Economics Societies are asking for?

# A “Krugman Compromise”?

DSGE style model with heterogeneous agents  
with exogenous shock to debt limits

<b>Regime</b>	<b>Follow Taylor Rule</b>	<b>Follow Krugman and Eggerstton (2011)</b>
<b>Great Moderation (pre-2008)</b>	<i>Plain-vanilla DSGE</i>	(Fear of losing credibility)
<b>Great Recession (post-2008)</b>	(Risk of stagnation)	<i>“Torsy-turvy Economics” (Heterogeneous Agents)</i>

**Table. Fitting Policy to Regime**

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# Other references

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- Krugman and Eggertson (2011): exogenous debt, heterogeneous agents, Fisherian debt deflation and liquidity trap.
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- **Current policy**
- [Miller and Zhang \(2014\) “To exit the Great Recession, central banks must adapt their policies and models”](#) voxEU