



Rebuilding Macro

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1 The Need to Rebuild

- During the Great Moderation, the New Keynesian Dynamic Stochastic General Equilibrium (DSGE) model became the ‘benchmark model’
- When the Great Moderation collapsed into the GFC, macroeconomists looked rather foolish
 - The benchmark model explained neither why the GFC happened,
 - nor why the recovery since the GFC has been so slow.
- Sam Wills and I edited an issue of the ***Oxford Review of Economic Policy***, (*OxREP*) Vol 34 Issue 1 – 2 “Rebuilding Macroeconomic Theory” <https://academic.oup.com/oxrep/issue/34/1-2>
- Very wide range of authors.





- Some history: response to past theoretical crises
- Two questions
 - What difficult challenges faced those developing the DSGE model and/or should it be abandoned?
 - What are the implications of these challenges for those who build policy models for use in policymaking institutions



2 Past Paradigm Shifts

2.1 Response to the Unemployment of the 1930s

- In 1930s, economists only had Alfred Marshall's method of separate analyses of the key markets – for labour, goods and money: partial equilibrium
- But after a fall in investment, the economy did follow Marshall's model and rapidly return to full employment
- Keynes's response was that everything depends on everything else: general equilibrium
 - A shortage of aggregate demand for *goods* leads to unemployment of *labour*
- Keynes first step: took the Marshallian model and added nominal rigidities.
 - This meant that, in response to a fall in investment, wages did not fall in a way which meant that the economy rapidly returned to full employment.



Implications

- To understand what happened Keynes invented new *content*:
 - the consumption function and the multiplier: the IS curve
 - liquidity preference & the LM curve: to ensure that the interest rate did not always move to make savings equal to investment *at full employment*.
- To understand implications Keynes needed new *method*:
 - general-equilibrium analysis provided by the IS–LM system
 - What happens in the goods market – less demand - affects the labour market – unemployment - and *vice-versa* – this unemployment means less demand for goods
- He invented a *new role for policy*: fiscal policy and monetary policy in dealing with unemployment and in preventing excessive booms
 - This change in content method and policy was a clear paradigm shift.



The resulting change in policy had profound effects

2.2 The 1970s and 1980s

- The punchline of the 1970s is that there was a problem with existing theory – the fix price IS-LM model was inadequate to discuss problems of inflation.
- There was not an agreement on a new paradigm. Instead, there were two kinds of response, both of which are still with us



(i) The Evolutionary Response of the 70s

- The first set of responses to the great inflation came from “saltwater” economists in the US and people like me in the UK
- A change of *content*:
 - allowing for a short run Phillips curve, adaptive inflation expectations, & a vertical long-run Phillips curve,
 - a modelling of the supply side including economic growth
- A change of *policy*:
 - adoption of an inflation targeting regime to control inflation
 - by monetary policy, not fiscal policy
 - Coupled with adoption of many supply-side reform agendas to promote economic growth
 - This move to inflation targeting was not really a paradigm shift



(ii) *The Microfoundations Revolution*

- Freshwater belief: inflation had discredited active Keynesianism.
- *Change of paradigm:*
 - models to be microfounded, optimizing, and forward-looking, with expectations of the future being model-consistent or “rational”
 - This microfoundations revolution was **largely accepted**: huge implications
- *Change of method and policy:* requirement that the economy be treated as if it is in constant equilibrium
 - and therefore not needing policy intervention.
 - This second requirement was **comprehensively rejected**
 - Reason provided by Fischer (1977), Taylor (1980) and Calvo (1983)
 - Even if expectations forward-looking & rational, staggered timing of price changes can still lead to gradual adjustment, to nominal rigidities, and so to a role for aggregate demand
 - *Overall outcome:* New Keynesian DSGE model
 - Microfounded model used to study inflation targeting.
- The change in paradigm turned out to have very severe consequences



3 Synthesis in the Benchmark NK DSGE Model

- Output determined by aggregate demand, with 2 components.
 - A forward-looking Euler equation for consumption of representative consumer depending on the interest rate.
 - A forward-looking equation for investment by the representative firm, depending on Tobin's Q
- The natural level of output is determined by a production function
 - using capital and labour, given the level of technology.
- Long run equilibrium determined by the supply side
 - Growth occurs as a result of the accumulation of capital induced by population growth and technical progress
 - Real interest rate converges to the rate of time preference
- Aggregate demand can differ from the natural level of output
 - because of nominal rigidities and so an output gap can emerge.
 - This causes inflation
- Monetary Policy
 - represented by a Taylor rule: determines the interest rate and so influences Tobin's Q



- Policy is simple:
 - Neutralise demand and technology shocks
 - Gradually stabilise inflation
 - When inflation is stabilised there is a “divine coincidence”
 - economy will revert grows at its natural underlying rate

But



But the economy does not return to a given growth path

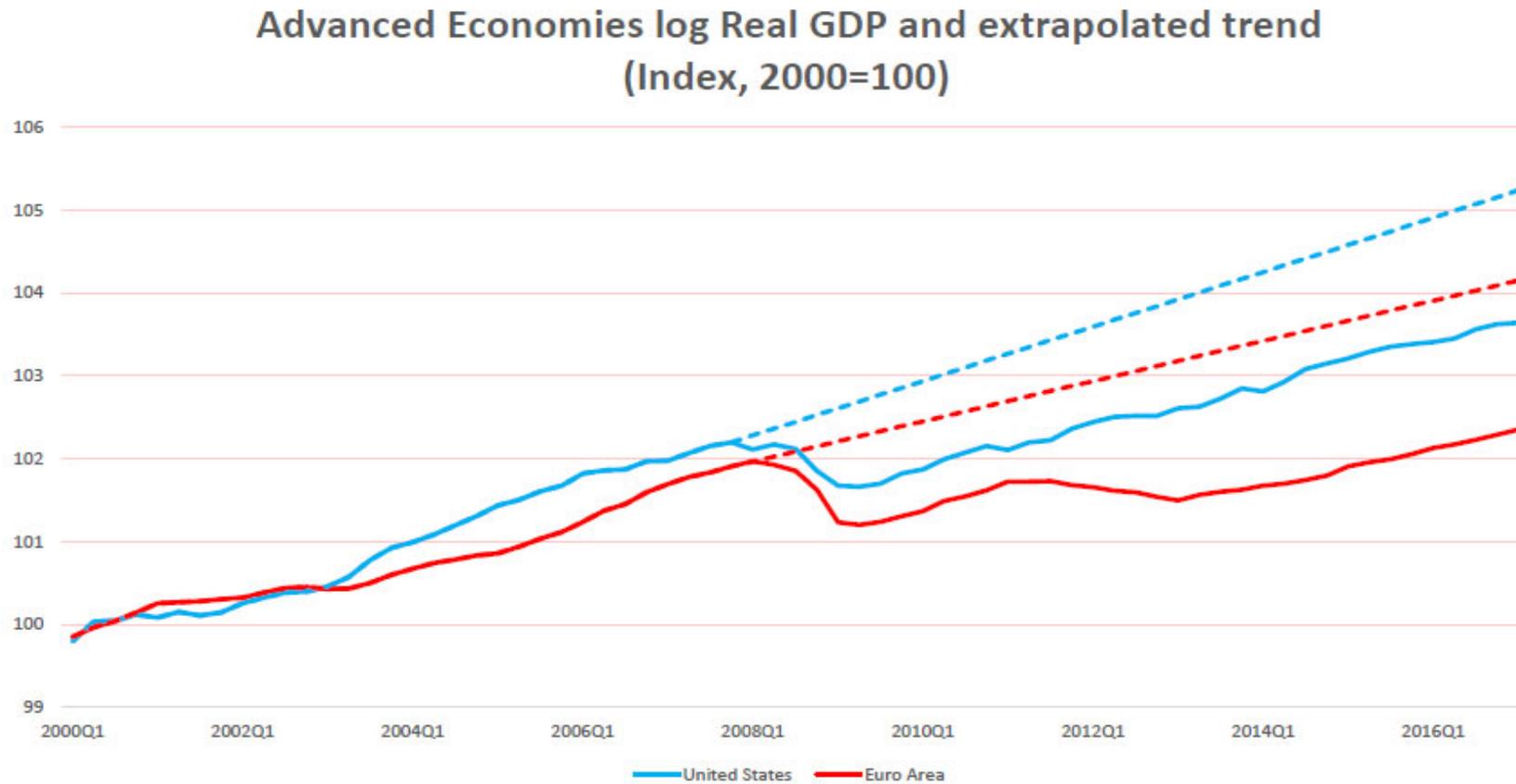


Figure 1.

Source: Blanchard and Summers (2017)





The difficulty is not surprising....

- In what follows I provide a list of five reasons for this difficulty.



4 A list of challenges

4.1 Supply side hysteresis

- The secular stagnation hypothesis – Summers, Gordon, argues that the slow recovery has been caused by slower population growth, and a reduced rate of technological progress.
- It is likely that the supply side shocks are a result of the short-run reduction in demand which happened during the GFC
 - Reduced investment leading to a reduction in embodied technical progress
 - Hysteresis in the labour market
- We need to understand why excess supply did not – and does not - cause deflation – the old “nominal rigidities” question



4.2 More careful treatment of demand

- Importance of own funds for decisions.
 - For both firms and households: funds on hand, collateral, and ability to borrow
 - For intermediaries: importance of capital ratios and leverage for intermediaries.
- Muellbauer provides significant detailed support for these claims in the modelling of consumption. In his view, proper modelling of e.g. consumption requires two things.
 - First, abandoning the analytical straitjacket of the Euler equation for consumption
 - Second, this does not just mean fitting a ‘looser’ form of the same equation, with different coefficients than those imposed by theory.
 - Instead, it must link liquid, illiquid, and housing assets to consumption, and should study house price booms and collapses, even if the theory behind the linkages might not be fully understood. A need for evidence-based research: driving theory with data.
- More generally – ‘heterogeneous agents’ interact in complex ways – some firms will only invest if others invest and vice versa



4.3 Endogenous Risk and Leveraged lenders

- Conventional risk models effectively treat individual financial entities in isolation. Risk applies to institutions individually; spillovers are not modelled.
 - In practice, financial institutions are spread through *direct* contractual linkages: individual bank defaults lead to liquidity constraints and balance sheet effects for other institutions. There are also important *indirect* effects
 - Whether risk spreads depends crucially on whether other market participants act as *shock absorbers* or *shock amplifiers*.
- A new transmission mechanism can emerge, a paradox of prudence (Brunnermeir).
 - Keynes's paradox of thrift; more saving by one can lead to less savings by others
 - This paradox of prudence: contraction of asset demand due to balance sheet effects by one institution can lead to contraction by other institutions.
 - Many argue that crisis was caused by rollover crisis
 - shadow banking sector over-lent for investment in mortgages
 - Risk can build up gradually





4.4 A need to depart from rational expectations – difficult

- Backward lookingness important, and learning
- But looking forward also important
 - Bounded rationality.
 - Extrapolative expectations (Minsky like).



4.5 Non- Linearities and Multiple Equilibria - very difficult

- The existence of non linearities,
 - (i) Zero lower bound
 - (ii) Doom loops between sovereign and financial. Zero lower bound.
- Multiple equilibria
 - Liquidity runs (used to be bank runs, and more general liquidity runs).
 - Difficult to capture probability that they happen.
- The need to know the plumbing. Need for a study of granularity
 - Complex interactions between individual entities.
 - Financial example: Direct, and indirect through asset sales.
 - But as already noted there may be other instances – egof interaction between investors.



5 Implications for Core Model: multiple equilibria as possibility

- Carlin and Soskice describe the possibility of a sustained Keynesian unemployment equilibrium as an explanation of Fig 1
 - This is a model in which important parts of the micro-foundations revolution are deliberately suppressed
- There is one equilibrium
 - inflation is at target, equilibrium exists in the labour market, the real interest rate is positive and at its ‘neutral’ rate, technical progress and growth continue
- But there is another possible equilibrium
 - inflation is stuck below target, there is unemployment but no falls in wages, the real interest rate is stuck above its neutral level but cannot be cut because of the zero bound, investment is low and so is growth, productivity grows slowly
 - This has significant policy implications
 - Implications for both monetary and fiscal policy
 - There are many other ways in which this kind of outcome might happen



6 Implications: the need to be cautious about the future

- Olivier Blanchard draws a distinction between three kinds of models
 - Formal DSGE models
 - Staying close to theory, theory is worked out in full, as necessary takes liberty with the facts
 - This type of model has academic credibility, and prestige, and is published in leading journals
 - Less formal models: structural economic (SE) models, used for policy purposes.
 - Taking some liberty from theory, aim is to stay closer to the facts even if theory not fully understood.
 - Toy models
 - used for pedagogical purposes
 - Ramsey, OLG, ISLM, Mundell Fleming,...



- Simon Wren Lewis has (convincingly) argued that the prestige, and resulting hegemony, of the DSGE tradition has inhibited work on structural economic models
 - e.g work the build up of risk in the run-up to the financial crisis.
 - His plea, and that of Olivier Blanchard, is to for us to give structural economic (SE) models wider support, and to make them more widely accepted.
- My claim here is that the core DSGE model overlooked many things (obviously true) and that incorporating these things will be difficult (this also seems clear).
- There is thus an important sense in which the core DSGE model was a toy model –
 - something set out for pedagogical purposes to show how the bits fit together
 - A recognition of this might effect the hegemony of the DSGE model
 - Such a recognition might make us
 - more willing to give support to SE models, even if they are incomplete,
 - more willing to develop the DSGE model in challenging ways even if these developments, too, are incomplete.



7 Conclusions

- We have described a number of challenges ways in developing core DSGE macroeconomic model, and have suggested that these might reduce the influence of the microfoundations hegemony.
- The related lesson is that there needs to be more pluralism.
- There may no longer be a true church
- The subject may well become much more messy.
- See ***Oxford Review of Economic Policy***, Vol 34 Issue 1 – 2
“Rebuilding Macroeconomic Theory”

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