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Macroeconomics – Which Way Now?

Recent developments in macroeconomics are reviewed, and it is argued that a better understanding of the role of market failures and institutions is a major achievement. The insights in when and how policy intervention may be called for have thus been improved. However, the progress does not imply that we are approaching a situation where business cycles can be “controlled”; rather it implies that we better understand why this would be very difficult if not impossible. JEL: E3, B22

Since the controversy between Keynes and Pigou, the main issue in macroeconomics has been whether and why economies malfunction in periods causing variation in growth rates and unemployment (possibly persistent). Related is the question of whether there is a role for economic policy to stabilize the economy, and if so by what means?

Do we understand these questions better today than we did say 25 or 50 years ago? Yes, I think we do. Advances in macroeconomics have brought forward important insights on the effects of various types of shocks as well as the role of adjustment failures in price and/or wage formation. The role of other forms of market failures (imperfect competition, imperfect information and incomplete market

structures) as well as institutions for macroeconomic issues is also much better understood today. Hence, even though the basic issues are the same, I think our understanding of these issues has improved. This implies neither that our understanding is complete nor that there is consensus in the profession on key questions like the role of stabilization policy. Neither does the progress made imply that we are approaching a situation where the business cycle can be “controlled”; rather it implies that we better understand why this would be very difficult if not impossible.

In the following I would like to outline some of the progress I think has been made in macroeconomics over the last decades. Then I turn to a discussion of the current state of the

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art in macroeconomics including a discussion of methodological issues. The article ends with a discussion of the most important open questions in macroeconomics and the challenges for future research I find most important.

Developments in macroeconomics

John Maynard Keynes set the agenda in macroeconomics by asking “why output and employment are so liable to fluctuations” (Keynes, 1937). This issue has since been the core topic on which macroeconomics has focussed. In terms of methodology modern macroeconomics builds on many important contributions of which two are particularly influential. First, Hicks (1939) launched in his *Value and Capital* the temporary equilibrium approach emphasizing the temporal nature of many types of decision making including in particular savings and investments – two key variables in any macroeconomic analysis. One implication of this is the need to consider macroeconomic issues in an explicit intertemporal context. Second, building on Frisch (1933) business cycle models have focussed on the adjustment process to shocks, addressing the endogenous mechanisms through which shocks are propagated.¹

“... the length of the cycles and the tendency towards dampening are determined by the intrinsic structure of the swinging system, while the intensity (the amplitude) of the fluctuations is determined primarily by the exterior impulse. An important consequence of

this is that a more or less regular cycle may be produced by a cause which operates irregularly. There need not be any synchronism between an initiating force or forces and the movements of the swinging system” (Frisch, 1933:171).

Modern macroeconomic models have a clear affinity to these two important contributions. The hallmark of the current state of the art in macroeconomics is to build intertemporal general equilibrium models to capture the intertemporal linkages and to formulate models based on the incentives of well defined decision makers. Moreover models are – often – stochastic in the sense of introducing various types of shocks to explore both the impact and dynamic response to those shocks.² This constitutes what is often termed “Dynamic Stochastic General Equilibrium Models” (DSGE).

The quest for microfoundation came into macroeconomics early, cf. work on the consumption function (Modigliani and Brumberg, 1954 and many others), on investments (Tobin, 1969 and many others), money demand (Baumol, 1952 and many others). However, although substantial progress was made by this type of work, two problems remained, namely, how to bring these together in a coherent framework (are e.g. the assumptions made in deriving the consumption function consistent with the assumptions made concerning labour markets?), and second, how to deal with the key issue of wage and price adjustment. The answer to the first question is, of course, to build general equilibrium models to ensure

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1. This is the so-called exogenous business cycle model in which the cycle is driven by exogenous shocks. Endogenous business cycle models generate cycles without appealing to exogenous shocks. Current macroeconomics is dominated by “exogenous” business cycle models.
 2. Most work is thus on so-called “exogenous business cycle models” where the cycle is driven by exogenous shocks. There is some work on endogenous business cycle models, but its applicability is still an open question.

consistency between the different elements of the model. A general equilibrium model is a construct which in a consistent way handles interdependencies. The second question is more difficult. Simply building general equilibrium models in the tradition of Walras seemed to be a dead end (see below on real business cycle models) since competitive markets would lead to the first welfare theorem according to which the market allocation is efficient. This did not square well with the starting point of trying to understand why market economies malfunction. Moreover, Arrow (1959) posed the obvious question, “who has the job of quoting prices?” The auctioneer construct cannot be interpreted literally, and being precise about the incentives underlying other forms of behaviour also necessitates that price and wage formation are considered explicitly.

A key challenge thus arose in respect to modelling price and wage setting. Several approaches were taken, but two stand out as particularly important. The fixed price approach (see Barro and Grossman, 1971; Bénassy, 1975; Dréze, 1975; and Malinvaud, 1977) succeeded in building general equilibrium models – including temporal general equilibrium models – which could account for Keynesian insights, although also bringing forth the important insight that other regimes could arise. However, the assumption of prices and wages being completely rigid to changes in market conditions quickly lost appeal. Work initiated in the Phelps-volume (1970) took a different approach to understanding wage and price formation in a setting characterized by various forms of imperfections. This turned out to be a fruitful research agenda, which led to many contributions in labour economics and industrial organisation-inspired approaches to macroeconomics. While proposing many

sources through which maladjustment of wages and prices could arise, these models suffered both from the embarrassment of richness in the form of many different candidate models and the problem that the models tended to be partial in nature and thus leaving open the important question of how these mechanisms would work in a general equilibrium setting (“micro rigidities” need not produce “macro rigidities” (cf. e.g. Caplin and Spulber, 1987)).

Alongside the developments outlined above was the “rational expectation revolution”. This is often associated with the New Classical Macroeconomics where this approach was popularized in a particular model framework in which it led to very strong policy conclusions. However, the “rational expectations” approach should be seen as a development of the “temporary equilibrium approach”. An important insight from temporary equilibrium models is the role expectations about the future has for current economic decision making, since expectations of economic variables can affect actual outcomes (contrary to e.g. expectations about future weather). This also points to a weakness in that it was often difficult to give precise answers since the possible outcomes would span a large interval depending on expectations, i.e. specific questions were left with open ended answers. Rational expectations – or more appropriately model consistent expectations – would reduce the set of possible answers by restricting attention to expectation formation consistent with the model to which the question was posed. Imposing rational expectations can be empirically very restrictive and yet in many cases theoretically very useful. The latter arises especially in the context of policy analysis – analysing the effects of certain policy interventions under the assumption of rational expectation formation allows us to understand through which route the particular

form of intervention works without “cheating” or “surprising” the economic agents. The case of policy intervention is stronger if its effects do not rely on agents misperceiving the effects of policy. Moreover, rational expectations do not lead to a bias in the result in the sense of more coherent outcomes, but the assumption “permits us to show that even in such a world the invisible hand may cease to guide before it has made citizens as well off as – in the given circumstances – they could be” (Hahn, 1982:15).

Is the method the message?

To sum up, mainstream macroeconomic models are characterized by the following ingredients: explicit microfoundation of behaviour, explicit intertemporal general equilibrium structure, stochastic elements (shocks to technology, preferences, public demand etc.) and rational expectations. Often it appears that the “method is the message” in certain parts of the literature. However, although there are good reasons for these methodological choices, the above-mentioned ingredients are largely void of any insights until accompanied by assumptions concerning the economic environment – market structures, information etc. Whether it is assumed that all markets are competitive or characterized by some form of imperfect competition is obviously essential. Therefore the methodological choice neither settles nor biases the answers to the fundamental questions on how a market economy functions and the need and scope for policy intervention. The debate and controversies in macroeconomics have not been settled by the developments in methods, but the methodological advances have led to new insights and helped sharpen the focus on the most essential aspects.

It is often argued that modern macro-

economics assume too much rationality. This is a very important, but also very difficult discussion. First, assuming rational or optimizing agents can mean a variety of things. As an example considering a household with a given preference ordering – the behavioural implications of this assumption would differ fundamentally depending on whether it is assumed that the agent can trade in an economy characterized by a complete set of markets all of which are competitive, or whether it is assumed that the market structure is incomplete, existing markets are imperfectly competitive and agents are imperfectly (incompletely) informed. The important thing about assuming rationality is that it disciplines the researcher to be explicit about the market setting, information etc. This also has the advantage that it becomes possible to take into account how behaviour might change if policy is changed. Second, what economists primarily can hope to understand is the part of behaviour driven by economic incentives; other motives belong to the realm of other behavioural sciences. Hence, assuming optimizing behaviour does not preclude other than economic motives – some of these can be well captured by the preference ordering. Recent work has also shown that it is possible to include various behavioural elements like interdependent utilities, envy, norms, hyperbolic preferences, and restriction in the ability of agents to process and interpret information, and interdependencies between “rational” and “non-rational” agents etc. in the approach. Economic incentives are often misunderstood as implying that the sensitivity of behaviour to changes in economic incentives necessarily has to be large, which obviously need not be the case. One critical assumption is, as I see it, that the preference ordering often is assumed constant or invariant over time, obviously a strong assumption.

A dilemma arises between “small” and “large” models. Small models usually have the advantage that explicit solutions can be found or characterized, and therefore these models and their results are more transparent and easier to interpret. However, building explicit dynamic stochastic general equilibrium models tends in many cases to imply large models; accordingly, there is a trade-off between size, sophistication and interpretability. As a way around this problem resort is often taken to a calibration. A calibration is basically a model simulation, where some care is taken in picking parameter values from empirical studies and in fixing other parameters so that the model reasonably matches some key variables of actual economies. A simulation or calibration can thus often be a useful way of better understanding a larger model. Some problems arise in the use of calibration. There is a tendency in some parts of the literature to set up large models, briefly characterize the steady state equilibrium and then present the results of a calibration reporting results on various business cycle metrics. Too often this ends up as a “black box” in the sense of “lots of results, but not much insight”. As a research strategy I find the (over) emphasis on calibration dangerous – it is a safe approach in the sense that you can always produce some results (and with modern computers quite easily so), but insights are not following proportionally. Moreover, too strong empirical claims are often made based on calibrations – a calibration is not a genuine empirical test of the model, and it can never be a substitute for proper empirical work. Often parameter choices are arbitrary (from which studies are they picked?), and they may even come from models, based on other assumptions than those featured in a given application. In addition there are a lot of free parameters in calibrations because they often focus on a few

business cycle facts (standard deviations or correlations between given variables), and the parameters chosen often exceed substantially the number of stylized facts which the model is sought to match. To improve the match, new mechanisms and thus parameters are introduced, but it is not quite certain that progress has been made by suggesting a model which better can replicate a few business cycle facts if it is an enlarged model in which more parameters have been introduced (with more parameters to chose, it should be possible to produce a better “match” of a given number of “facts”). Accordingly, I find that the literature is too focussed on calibrations, that they are often interpreted too strongly and too often offer very little insight on the actual mechanisms at work.

Challenges

Despite the progress which has been made, important open questions are left, some old and classical, and some new coming along with the continuous process of structural changes affecting economies.

Despite all the progress made in constructing DSGE models, there is still a problem accounting satisfactorily for the most important business cycle fact, namely that there is strong persistence in the adjustment process. Empirical evidence very clearly and strongly shows how persistent the adjustment process is. The interesting issue here is which endogenous propagation mechanisms would imply that even a temporary shock gets such lasting effects, cf. Frisch (1933). It is not difficult to explain the persistence if shocks are persistent, but then the theory is non-interesting. Real-business models claimed that even in settings without market imperfections it was possible to account for most of the observed business cycle variations as the response of market economy to (technology)

shocks.³ However, it soon became quite clear that the model could only replicate persistence by assuming that shocks are very persistent (see e.g. Cogley and Nason, 1995). Accordingly, the basic real business cycle model can hardly qualify for the term “business cycle model”. Since then a substantial amount of work has gone into explaining such persistence via wage and price adjustment or other mechanisms (see e.g. Taylor, 1999). I think it is fair to summarize the current state by saying that some improvements have been made in finding mechanisms which can account for persistence, but we are still some way from accounting for the strong persistence found empirically.

Although substantial progress has been made in understanding wage and price formation it is still the case that contract forms are exogenously postulated in DSGE-models. As an example there has been much work on the implications of staggered price (and/or wage) setting for the dynamic adjustment processes. However, in all of this work there is an assumption that the contract structure is exogenously given.

One advance in macroeconomics has been the understanding of the different importance of demand and supply shocks. However, most of the recent literature has tended to focus on various types of supply shocks (to technology or the disutility of labour etc.), whereas less attention has been paid to demand shocks. This is a shortcoming since empirical evidence clearly points to the role of both demand and supply shocks. This “bias” towards supply shocks may reflect that it is easier to introduce such shocks in a DSGE framework than traditional shocks to aggregate demand. An important challenge for future work is to make

progress in this area.

Potentially this is related to another “bias” in recent work. There is a large leap from assuming that intertemporal decision making is important to assuming that this can be properly modelled in a setting with infinitely lived households⁴ having access to more or less complete capital markets. While theoretically neat this overlooks substantial problems in relation to both decision making and the way capital markets work. The problems encountered here are most clearly seen by the fact that intertemporal consumption models have very little empirical success. An important challenge is to keep the focus on intertemporal decision making while avoiding the assumptions of infinitely lived households and perfect capital markets.

Finally, while much progress has been made in understanding the role of macroeconomic policies and in particular through which mechanisms it can be welfare improving, most of the literature builds on a representative agents approach. This approach is useful in many contexts, but often leaves out important insights when it comes to policy issues, which often involve distributional issues. However, recent work has made progress in analysing heterogeneous agent models (see e.g. Storesletten, Telmer and Yaron, 2001).

3. Also the models have difficulties in explaining features related to the labour market, see e.g. Stadler (1994).

4. An alternative is to assume an overlapping generation's framework. While useful in capturing finite individual lives in an infinitely running economy, its workable version (two or three periods in life) makes it difficult to interpret in a business cycle context.

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