# 4 Macroeconomic stabilisation in heterogeneous societies

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ADEMU has been heavily engaged in developing new models for macroeconomic stabilisation which combine frictions in goods and labour markets, typically stressed in the monetary economics literature, with incomplete asset markets, stressed in the literature that has considered distributional issues. When these features are combined, new implications arise for macroeconomic stabilisation. This chapter reviews some of these issues and argues that stabilisation policy is particularly important in the face of idiosyncratic risk and incomplete markets because of the amplification that can arise through countercyclical earnings risk, and because of a new source of interaction between monetary and fiscal policies.

## A new generation of macroeconomic models

A new generation of models have made their way into macroeconomics: models that combine frictions in goods and labour markets with incomplete asset markets and idiosyncratic risk, Heterogeneous Agents New Keynesian (HANK) and HANK + search and matching (HANK&SAM) models. This new generation of macro models not only allow researchers to bridge the gap between microeconomic evidence on consumption and savings choices, but also offer new insights into macroeconomic stabilisation policy. Furthermore, the new models potentially resolve a host of issues that have haunted the macro model's standard representative agent-based macro in the aftermath of the financial crisis.

Representative agent New Keynesian models, the hallmark of much of macroeconomics until recently, are attractive for computational reasons because households and entrepreneurs are subject to only aggregate risk. In such settings, stabilisation policy needs to address the imperfections in goods and labour markets which distort the economy and prevent prices and wages from adjusting towards their frictionless hypotheticals. In much of this literature, monetary policy is a powerful tool for stabilisation purposes, while fiscal policy often can be constrained to targeting inefficiencies due to market power (and possibly to correcting for externalities) subject to monetary-fiscal coordination issues. The latter would typically induce a need to delegate a 'passive' role for one instrument and an 'active' role for another, such as the typical macroeconomic framework that involves monetary policy aiming at price stability and fiscal policy ensuring government solvency. These models leave little role for distributional issues (which perceivably may matter much for stabilisation), do not provide a good account of income, consumption and savings patterns observed in household data, and have problems explaining important features of the recent crisis such as outcomes with persistently low levels of activity, short-term nominal interest rates at or close to their lower bound but positive inflation. Moreover, in these models there is little interaction between demand and supply because of (the indirectly or directly assumed possibilities for) insurance opportunities, which shields agents from risks apart from those directly related to aggregate shocks.

Recently, a literature has developed which has combined the frictions in goods and labour markets stressed in the representative agent models with financial market incompleteness and idiosyncratic risk. This includes a large number of contributions from ADEMU such as Bayer et al. (2017), den Haan et al. (2018), Luetticke (2017), and Ravn and Sterk (2017, 2018). It also formed the basis of an ADEMU conference which was held at UCL in May 2017. The essential new ingredient of HANK models is that households operate in environments where they are subject not only to aggregate shocks but also to idiosyncratic income, and where they lack insurance against such shocks. A simplifying assumption made in some of this new literature is that the idiosyncratic risk faced by households is 'exogeneous'. Nonetheless, because of imperfect insurance, idiosyncratic risk matters for whether households are liquidity constrained or not and this, in turn, matters for macroeconomic outcomes and policy. In such environments, there will typically be rich distributional dynamics that reflect the extent to which

agents – through luck or behaviour – have been subject to shocks over time. By itself, such inequality may motivate new policy concerns, as monetary and fiscal policies in general will have distributional consequences. However, in terms of the aggregate consequences, the main difference between HANK models and representative agent models is the way in which policies matter for aggregate outcomes.

In standard New Keynesian models, monetary policy operates through manipulating expectations and through impacting directly on real interest rates, which in turn affect intertemporal allocations through standard consumption-smoothing channels. In HANK-type models, instead, monetary policy also influences consumption streams for those who are (or anticipate becoming) liquidity constrained through the effects on the intertemporal income stream. This literature has stressed that this channel is extra important in settings with illiquid assets (Luetticke 2017). Indeed, it is often the case that this indirect channel becomes dominant when carefully calibrating these models. Moreover, because Ricardian equivalence fails in these models, the interaction between monetary and fiscal policy becomes very important. In particular, in HANK models fiscal policies that impact directly on household income, such as taxes or transfers, will tend to reinforce the (indirect) impact of monetary policy, while policies that adjust debt will tend to moderate the distributional channels.

## The implications from endogenous risk

The new literature has even richer implications when earnings risk is endogenous. One channel of such risk is unemployment; another is wage risk. Consider a setting where matching frictions prevent continuous clearing of the labour market and give rise to frictional unemployment. Assume also, realistically, that households cannot perfectly insure against unemployment. Because of the matching frictions, jobs are easier to find in booms than in recessions, which induces countercyclical earnings risk. On the other hand, workers may have more to lose in booms if wages are procyclical. This source introduces a procyclical endogenous risk channel. Which of these channels dominates will have consequences for a large number of issues – countercyclical risk tends to amplify shocks to the economy because demand contracts in bad times when workers perceive a high risk of unemployment, and vice versa in booms. When risk is procyclical instead, demand boosts the economy in bad times as workers perceive that

the income loss from losing their job may be smaller than in booms. Ravn and Sterk (2018) argue that empirically, real wages tend not to fluctuate much over the business cycle while the risk associated with job loss is strongly countercyclical. Hence, the endogenous risk channel tends to be countercyclical.

Such endogenous countercyclical earnings risk has a host of implications deriving from a new interaction between the demand and supply sides of the economy. When households lack insurance against unemployment, they have a precautionary savings motive which contracts demand when labour market conditions weaken. This, in turn, induces a contraction in goods demand – over and above the mere income losses of those who lose their jobs – because employed households worry about the potential consequences of job losses. Firms can react to such a contraction in demand in a variety of ways, but due to labour and goods market frictions, they will reduce their labour demand. Lower labour demand, in turn, implies even higher job loss risk on the part of employed households, which motivates even stronger precautionary savings demand. Hence, due to the countercyclical endogenous earnings risk, HANK&SAM models introduce an amplification mechanism through a supply-side and demand-side interaction. Ravn and Sterk (2017) show that this mechanism can help understand why the increase in job losses at the beginning of the financial crisis set off an extended period of poor labour market conditions and rising long-term unemployment. Ravn and Sterk (2017) also argue that a stronger policy response to the crisis could have partially neutralised the demand channel and stabilised the economy.

In environments where the endogenous earnings risk is sufficiently important, the economy may be sensitive to bad long equilibria that involve low activity, high unemployment, and low but positive inflation. Ravn and Sterk (2018) discuss that such long-run equilibria, or 'unemployment traps', resemble secular stagnation outcomes. In the HANK&SAM setting, these outcomes derive from households worrying about adverse labour market outcomes, which can be self-fulfilling when precautionary savings motives are sufficient strong. Such bad outcomes can be avoided most directly by providing sufficient insurance against adverse income shocks for households (i.e. through unemployment benefits). Hence, stabilisation policy is important not only for short- to medium-term outcomes, but may also help insulate the economy from potentially long-lasting slumps.

The presence of countercyclical endogenous earnings risk also implies that monetary policy will have to be designed to generate more stabilisation than is dictated by the well-known 'Taylor principle'. This principle essentially insures against self-fulfilling equilibria in the vicinity of equilibrium by making real interest rates and inflation move together in response to fluctuations in the economy. In incomplete market settings, such a policy may not be sufficient to root out other equilibria because of the interaction between the demand side and the supply side of the economy and precautionary savings. In particular, when nominal rigidities and precautionary savings motives are both strong, monetary policy needs to be extra aggressive to stabilise the economy.

## Interaction between the demand and supply sides

The interaction between the demand side and the supply side that generates countercyclical earnings risk has other interesting implications. One issue concerns the inflationary impact of supply side shocks such as technology shocks. In traditional New Keynesian models, technology shocks impact on marginal costs, and stabilisation policy involves stabilising these. In such settings, higher productivity means lower inflation. In HANK&SAM models with countercyclical endogenous risk, higher productivity also spurs higher labour demand, which in turn lowers job risk and thus stimulates goods demand. This latter channel, in turn, implies that higher productivity may induce higher inflation. For the same reason, liquidity traps (periods where nominal interest rates are at or close to their lower bound) may occur at positive inflation rates if monetary policy responds not only to inflation but also to outcomes such as unemployment.

This latter implication is interesting empirically. In the aftermath of the financial crisis, as the economy slumped, short-term nominal interest rates went close to their lower bound and remained there for an extended period. Yet inflation, while low, remained positive in the euro area as well as in other major economies such as the UK and the US. This feature is hard to explain in standard representative agent models used for policymaking since the liquidity trap in such models is accompanied by deflation. Specifically, in these models, the slump in activity in a liquidity trap occurs as a process of low demand driving down inflation and nominal interest rates until eventually nominal rates cannot fall any lower, at which point the economy becomes deflationary and activity slumps. In the new generation of models, the slump in activity also induces

an increase in earnings risk due to rising unemployment, which depresses demand although inflation may be positive. It is this precautionary savings motive that can lead the economy into a liquidity trap with low, but positive, inflation.

Avoiding such outcomes again hinges both on monetary and fiscal policies giving stabilisation policy a key role in the economy. Interestingly, in such settings, supply-side reforms may help the economy recover as their impact on labour demand may induce increased goods demand, thus helping to stimulate the economy. Interestingly, in the standard representative agent model, supply-side reforms may be counterproductive in liquidity traps. The reason is that supply-side reforms will tend to drive down inflation because of the impact on the marginal costs of production. Even lower inflation, in turn, increases real interest rates, reducing demand. In contrast, in the face of incomplete markets, supply-side reform, by reducing unemployment, can stimulate inflation because this alleviates the precautionary savings motive which can drive up goods demand.

## Conclusion

In summary, the new generation of models have many implications for the design of monetary and fiscal policies that need to be considered by policymakers. Providing insurance against adverse shocks – for example, through unemployment insurance and other channels – is important for stabilising the demand side of the economy, monetary policy becomes extra important for neutralising the amplification mechanism, monetary-fiscal interaction is key not only in terms of providing anchors but also in terms of implications for demand deriving indirectly through household income, and welfare issues related to uncertainty and inequality matters for the design of optimal policies.

No doubt the new literature will develop rapidly over the coming years, but it already appears to be on track to replace the representative agent New Keynesian model.

# References

Bayer, C, L Pham-Dao, R Luetticke and V Tjaden (2017), "Precautionary Savings, Illiquid Assets, and the Aggregate Consequences of Shocks to Household Income Risk," Discussion Paper, University College London.

den Haan, W, P Rendahl and M Riegler (2018), "Unemployment (fears) and Deflationary Spirals," *Journal of the European Economic Association*, forthcoming.

Luetticke, R (2017), "Transmission of Monetary Policy with Heterogeneity in Household Portfolios," Discussion Paper, University College London.

Ravn, M O and V Sterk (2017), "Job Uncertainty and Deep Recessions," *Journal of Monetary Economics* 90: 125-141.

Ravn, M O and V Sterk (2018), "Macroeconomic Fluctuations with HANK&SAM: An Analytical Approach," Discussion Paper, University College London.

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