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## 5 Recessions following expansions: The instability of market economies

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The US financial crisis and the euro crisis were both preceded by expansions and followed by recessions. These episodes are recent manifestations of a more general feature: market economies repeatedly go through recessions and expansions. The dominant paradigm used by central banks and governments to understand such fluctuations is based on the belief that the economy is fundamentally stable and that business cycles predominantly reflect the effects of outside forces that, in many cases, can and should be countered by appropriate stabilisation policies.

Conventional wisdom interprets the last 30 years of macroeconomic fluctuations in developed economies in the following way. In the middle of the 1980s, developed economies entered a Great Moderation in which macroeconomic volatility decreased. This stability has been interpreted as the consequence of both smaller shocks and better stabilisation policies, particularly better monetary policies. This view of an ‘end to business cycle history’ was dramatically contradicted by the 2007 Great Recession, which put the role of the financial sector front and centre as a source of shocks and as a mechanism for amplification and propagation.

The theoretical foundations of this view – incarnated by Smets and Wouter (2007) for the pre-Great Recession period, and by Christiano et al. (2015) for the Great Recession period – are as follows. The economy is fundamentally stable, with market forces acting to push it towards a smooth growth path. That smooth growth path is determined by technological, demographic, and social change (the emergence of information

technology, the increase of life expectancy, the increase in female labour market participation, and so on). Business cycles consist of fluctuations around that smooth trend that are caused exclusively by the arrival of random shocks; if there were no shocks, the endogenous stabilising forces would cause the economy to converge to its trend. As Prescott (1999) wrote, “[t]he Marxian view is that capitalistic economies are inherently unstable and that excessive accumulation of capital will lead to increasingly severe economic crises. Growth theory, which has proved to be empirically successful, says this is not true. The capitalistic economy is stable, and absent some change in technology or the rules of the economic game, the economy converges to a constant growth path with the standard of living doubling every 40 years.”

Such a view is compatible with the theoretical results in the applied general equilibrium literature, according to which the growth path or steady state is stable, and fluctuations around it are therefore only caused by shocks. This in turn justifies the idea that one can think of the economy as being at most times in a neighbourhood of its steady state. It also justifies the restriction to linear approximations around the steady state, which is computationally convenient, in particular when one needs to estimate dynamic stochastic general equilibrium (DSGE) models. As Blanchard (2014) wrote, “[w]e in the field did think of the economy as roughly linear, constantly subject to different shocks, constantly fluctuating, but naturally returning to its steady state over time”.

## **Challenging the conventional wisdom**

In our recent research, we challenge this view that fluctuations are the consequences of shocks pushing the economy away from a stable steady state. We do so by providing new evidence, proposing a new conceptual framework, and developing new solution techniques (Beaudry et al. 2016a, 2016b, Galizia 2018). Although we study a set of developed economies, we will focus here on our results for the US economy.

First, we argue that the business cycle is well captured by the fluctuations in the intensity of factor usage. We therefore look at variables such as hours worked per capita, employment and unemployment rates, capacity utilisation. Because these variables do not tend to grow over long periods of time, the problem of how to decompose a variable

into its trend and cycle components is much less of a statistical issue, in contrast, for example, to output per capita.

When looking at such variables, there is much less evidence of a Great Moderation, and business cycles appear to be somewhat regular, typically lasting around 10 years. More formally, we show evidence of a significant peak in the spectral density of such cyclical variables. This cycle has a slightly longer period than the two-to-eight years definition generally adopted in the literature, and is likely to be discarded by usual filtering methods.

The existence of a peak in spectral density contrasts with the common wisdom since Granger (1969) that there are no peaks in the spectral density of macroeconomic variables at business cycle frequencies, and that the business cycle is mainly defined by co-movements. The finding of recurrent cycles with a 10-year period has two possible explanations: the exogenous shocks themselves display such recurrence (which would require them to have a fairly rich dynamic structure), or it is embedded in the economy's internal mechanisms. It is hard to observe proxies for exogenous shocks. When one does – for example, with corrected total factor productivity – one does not find such rich dynamics. We therefore follow the second route and search for endogenous dynamics that are capable of making the economy intrinsically cyclical.

An intrinsically cyclical economy is indeed an economy in which expansion and recessions are linked, in the sense that the expansion is sowing the seeds of the next recession (and vice versa). This property can be found in an old tradition of non-micro-founded models (Kalecki 1937, Kaldor 1940, Hicks 1950, Goodwin 1951), but not in the typical modern DSGE models.

Our second contribution is to present a general class of model that can generate endogenous cyclicity. Three features are essential: complementarities between agents, accumulation, and sluggishness. Because of complementarities, each economic agent tends to choose a higher level of action (consumption, investment in durable goods and capital or hiring depending on the model) when the others are also doing so, thereby creating powerful amplification forces. Because of accumulation, deviations from the steady state do not last forever. At some point, the economy hits the decreasing marginal returns (e.g. for labour or capital) or decreasing marginal utility (e.g. for durables),

and as a result it does not move away from the steady state indefinitely. Because of sluggishness, the swings from above to below the steady state and back are not too frequent, so that fluctuations at the frequencies highlighted in the data can occur.

In this abstract class of model, we propose a specific explanation that shares many features with the mechanisms highlighted by Morten Ravn in Chapter 4 of this eBook. The complementarity between agents is created by the incompleteness of financial markets. In an economy where consumers face a risk of unemployment that is largely uninsurable, everyone is encouraged to spend more when others are spending more, since larger aggregate expenditure reduces unemployment, which in turn lowers an individual agent's own risk of losing her job. As a result, each individual can reduce her level of precautionary savings and spend more. In equilibrium, then, an agent spends more when others spend more. This mechanism is able to produce cyclical forces when coupled with the accumulation of durable goods and residential investment. The endogenous cyclical forces are generated by individually rational decisions that generate a socially costly instability. There is therefore room for stabilisation policy.

The sequence of expansions and recessions is explained as follows: at the end of the recession, the stock of real estate and durable goods is depreciated, so that some agents decide to spend (to replace an old car, for example, or to eventually decide to purchase a larger or better located house) even though the risk of unemployment is still high. In doing so, they increase expenditures, which tends to increase production and employment, and thus to reduce unemployment risk, pushing other agents to reduce their precautionary savings and spend more as well. This expansion does not stop when the socially optimal level of housing and durable goods is reached, because each individual has a desire to spend, even though each of them rationally understands that the inevitable future recession is likely to be larger when the stock of houses and durable goods is large. When households decide to slow down their accumulation by reducing their spending, they create an increase in unemployment, and thus an increase in precautionary savings which reduces spending even more, thereby amplifying the initial decrease in spending. The economy is then in a state of deficient demand, and a vicious spiral is triggered. The economy goes into recession, which lasts until stocks of houses and durable goods are sufficiently reduced for agents to start spending more.

As a result of the above mechanisms, it is possible in principle for multiple steady states and/or sunspot equilibria to emerge. In our analysis, we focus on cases in which complementarities are ‘weak’, meaning that there is a unique steady state and that trajectories are determinate. Nevertheless, weak complementarities can generate strong centrifugal forces close to the steady state, causing it to lose local stability. From bifurcation theory, we then know that a limit cycle will exist in the global dynamics (i.e. in the non-linearised version of the model). The economy then perpetually cycles without shocks. The steady state is unstable, but the model is not globally explosive. Absent any shocks, the cycle would be fully predictable. It is reasonable to believe, however, that the economy is also continually affected by events such as changes in perceptions, in expectations, changes in technology and so on, so that the length and the amplitude of the cycle will vary in a unpredictable way.

This ‘stochastic limit cycle’ environment is not simply a theoretical curiosity, and we show that, when estimated, the model parameters are in the zone in which these limit cycles appear. Shocks are still needed, however, not to *create* fluctuations but rather to make them less predictable. Our third contribution is to develop a way to solve for such saddle-path-stable limit cycles (see Galizia 2018 for a detailed exposition).

## **Policy implications**

Such a view of economic instability has drastic implications for economic policy, as it changes our assessment of the best stabilisation policies in a recession. Because expansion phases tend to be too long, the economy almost necessarily ends up in a situation of over-accumulation (of capital, houses, and durable goods). There is then some truth in the Hayekian view on the need to ‘liquidate’ capital. Sustaining aggregate demand through stimulation policies is in a sense useless, as it simply postpones the recovery. For example, a policy of supporting the construction sector in Spain in 2008 would have been unproductive, since nearly 30% of the 3.5 million housing units built since 2001 were vacant. However, there is no guarantee that the liquidation driven purely by market forces would be socially optimal. In the economy that we have sketched in the previous paragraph, we can show formally that liquidations are inefficiently severe because, at root, the effect of individual spending decisions on aggregate unemployment risk not internalised. Although expenditure must be reduced, the economy is in a

situation of deficient demand, causing the recession to be too abrupt. In that sense, some Keynesian-type demand policy is desirable. This will slow down the liquidation and prolong the recession, but that path will be less costly because unemployment will be lower. There is a trade-off between the length and the severity of the recession, and the market does not choose the right balance between the two.

Such mechanisms, in a non-linear model, can also contribute to the debate on ‘secular stagnation’ launched by Summers (2013). Decentralised economies work well when they are far enough below their steady growth path – the capital stock (productive capital, housing, durable goods) is relatively low compared to the level of technology, which causes spending to be high and unemployment low, so that the absence of insurance against unemployment risk is almost irrelevant. But when the economy is prosperous and fluctuates around its stationary growth path, its capital needs are largely met (not in absolute terms, but relative to the level of technology) and the economy thus exists in a very different regime. Unemployment is high in recessions, demand is insufficient, and the economy displays endogenous cycles. It is somehow the fate of prosperous economies to go through booms and busts and to be in chronically deficient demand. If technological progress slows down, the economy finds itself in a situation of excess capital (relative to this new technological path), and therefore, through the mechanisms previously described, in a structural deficit of demand. However, such deficient demand cannot be eliminated by aggregate demand policy. Boosting demand would increase the stock of capital, housing, and durable goods, and therefore ultimately aggravate the shortfall in demand.

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