

## **“Expectation shocks and learning as drivers of the business cycle”,**

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### Non-technical summary

#### **PSYCHOLOGY DRIVES BUSINESS CYCLES.**

Psychological factors drive economic recessions and expansions. Although economists had already recognized the importance of psychology almost a century ago - Keynes famously referred to ‘animal spirits’ in his *General Theory* in 1936 - modern macroeconomists leave these factors entirely out of the models that they use to understand business cycles, likely because they are hard to model with mathematical precision and to measure. My article provides a way to introduce psychological forces in macroeconomic models and to assess their contribution empirically. The research shows that ‘animal spirits’ do matter: they can account for about half of the business cycle fluctuations in the U.S. since the 1960s.

#### *Beyond Rational Expectations: Irrational Waves of Optimism and Pessimism*

Economists have understood for a long time the importance of expectations. Earlier economists as Pigou and Keynes emphasized businessmen’s excesses of optimism and pessimism as determinants of economic activity. Since the 1970s, however, macroeconomic models have been almost universally based on the paradigm of rational expectations, which imply that, on average, expectations correspond to the outcomes from the model.

My research relaxes the assumption of rational expectations. I consider a popular macroeconomic model and, as a novelty, I exploit data on observed expectations about future GDP, inflation, and interest rates, from the Survey of Professional Forecasters. Those forecasts serve as proxies for the general state of expectations in the economy. I assume that economic subjects form those expectations from a near-rational model, in which they are allowed to learn about the workings of the economy over time, rather than having full knowledge as under rational expectations. Expectations can, however, depart from the forecasts implied by the learning model: individuals may be, in some periods, overly optimistic – by forecasting, for example, a higher future output than implied by their model – or overly pessimistic. These waves of over-optimism and over-pessimism, measured as the portion of expectations that cannot be reconciled with the learning model, define the expectation shocks in the model.

#### *Main Findings*

These expectation shocks have been a major determinant of business cycle fluctuations in the U.S. since the 1960s. They account for roughly half of fluctuations in GDP, while traditional supply and demand shocks account for the remaining half. Each recession has been preceded by a large pessimism shock, while optimism shocks reach their maximum values in the middle of expansion phases. Psychological forces are also responsible for the persistence of macroeconomic variables: it takes several quarters before the effects of unwarranted jumps in optimism and pessimism die off.

As a check on their interpretation, I show that the identified expectation shocks are indeed correlated with published indicators of consumer and business sentiment; they do not, instead, spuriously reflect larger information sets available to forecasters than those allowed in the model.

#### *Implications for Macroeconomic Research*

The financial crisis has triggered a wave of criticism regarding the state of macroeconomic theory. Outside observers often view macroeconomists as enamoured with the elegance of their constructs, with less regard for the realism of their assumptions and conclusions. A recent bestselling book by Akerlof and Shiller titled “Animal Spirits” calls for a re-examination of the benchmark assumptions in macroeconomics to incorporate concepts from psychology. My paper is an effort in that direction: while it shares the same modelling approach as previous research, it shows that psychological forces are worth bringing back to the core of macroeconomics.

#### *Implications for Policy*

The results are also relevant for policymakers. While rational expectations have sometimes been at the roots, often inappropriately, of policy ineffectiveness arguments, the findings here definitely imply a pro-active role for government policy. Policymakers should intervene to avoid large swings in optimism and pessimism that are disconnected from fundamentals and that may lead to harmful overshooting and undershooting later on. The lessons from the housing market boom and bust have probably been learnt.

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