Chapter Title: Discussion of "Shocks and Crashes"

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Discussion

Robert Gordon began the discussion by expressing his reservations about the authors' exclusively statistical approach. He explained that over the past thirty to forty years, many factors other than the three statistical shocks they identify (productivity, factor share, and risk aversion) have been discussed as potential causes for observed fluctuations in the data. He argued that such factors received insufficient attention from the authors, and highlighted some historical examples: the role of inflation illusion in explaining the stock market decline of the 1970s, as hypothesized by Modigliani and Cohn (1979); the role of monetary policy under Federal Reserve Chairman Paul Volcker in explaining the stock market increase beginning in 1982; the role of asset price changes in explaining the persistent decline of the personal saving rate from the mid-1990s to 2007; and the role of increasing household liabilities in explaining the consumption boom over that same period.

Sydney Ludvigson responded by arguing that any of these factors could be captured by one or more of the shocks they identify. They find that the main driver of fluctuations in financial wealth looks like a movement in risk premia, because it forecasts future changes in excess returns but does not seem to be related to consumption or labor income. The hypothesis that monetary policy under Volcker affected financial wealth would be consistent with this finding to the extent that policy affected risk premia, for example. She noted that this hypothesis, however, along with many of the others suggested by Gordon, would also likely involve movements in consumption, which is not consistent with their finding.

N. Gregory Mankiw followed up on this exchange by asking which of the authors' three shocks is responsible for the early 1980s recessions.

Ludvigson explained that the productivity shock was primarily responsible for that episode. They find that housing suffered during that period, but stock market wealth did not decline, which she argued was consistent with their interpretation of the shocks.

José Scheinkman pointed out that around 2007, interest rates on credit default swap (CDS) contracts for five-year Greek debt were less than 1 percent. Similar contracts for Argentina, which had defaulted only a few years earlier, were around 2 percent during that time. He acknowledged the possibility that agents could have experienced a decline in risk aversion during this period, as the authors suggest, but argued that a more plausible hypothesis is that agents simply did not understand the risks of public finance and therefore had inaccurate forecasts of future state-contingent outcomes. Ludvigson agreed with this alternative possibility, but argued that if agents had incorrect forecasts, she would have also expected them to change their consumption based on the errors in those forecasts; the risk aversion shock they identify, however, does not affect consumption. She also emphasized that the paper focuses exclusively on data from the United States; in her view the extent to which they can apply their conclusions to other countries (or to CDS rates) is not clear.

Marjorie Flavin questioned the identifying assumption that the risk aversion shock does not affect the contemporaneous value of consumption. She argued that in almost any model of consumption, an exogenous positive shock to the coefficient of relative risk aversion should lead to an immediate drop in consumption. She therefore wondered whether the authors had, by assumption, ruled out the possibility of correctly identifying a risk aversion shock.

Ludvigson claimed that not all models would give that implication, and that their model in particular does not. She also argued that even without the assumption that risk aversion shocks do not contemporaneously affect consumption, they would still find that consumption is very close to being a random walk. To the extent that the risk aversion shock is not permanent, therefore, she could not see any reason to expect it to be correlated with consumption. She emphasized that the more important point, in her view, is that deviations of the variable cay_t (a particular linear combination of consumption, financial wealth, and labor income) from trend do not help to predict consumption; they only help to predict the future path of financial wealth. She argued that any model that generates a contemporaneous correlation between risk aver-

sion shocks and consumption would still need to be reconciled with this finding.

Varadarajan Chari, and Mankiw also commented on Flavin's question. Chari offered a potential example in favor of the authors' definition of a risk aversion shock: in a neoclassical growth model, the steady state does not change if the coefficient of relative risk aversion changes, because the steady-state capital stock is not affected by that parameter. Mankiw took issue with this example because it abstracts from uncertainty, and Chari acknowledged that the case with uncertainty would be more complicated.

Ramon Marimon wondered how the authors can tell whether the factor share shock is not essentially the same object as the labor share itself. Ludvigson explained that the factor share shock they identify is permanent and does not affect consumption on impact. The shock is orthogonal to productivity, moreover, while the actual series is not. She also indicated that the authors do find some effect of uncertainty on the factor share shock, which might provide an alternative interpretation for that shock.

Tarek Alexander Hassan asked why the authors only considered the United States, rather than a panel of different countries. If the goal is to map fundamental historical causes (such as political risks) into something that is more interpretable for economists, he wondered why the one-country approach would be best. Ludvigson agreed that considering other countries would be excellent idea, but explained that due to time constraints and data limitations, it was not possible for them to adopt that approach.

Parker suggested using observable variables to support the interpretations of the three shocks identified in the paper. For example, one could examine the impulse response of measured total factor productivity (TFP) to the productivity shock, the actual labor share to the factor shares shock, and even an independently constructed measure of risk aversion to the risk aversion shock. He also conjectured that the authors' shocks could represent news about future TFP or future labor productivity. Ludvigson was sympathetic to these suggestions.

Ludvigson also provided some discussion of the issues raised by Mark Watson during his prepared remarks regarding the persistence of the variable cay_t. She acknowledged that this cointegrating residual has become more persistent over time, especially over the last ten years, and that this increase in persistence is shared by many measures of as-

set value relative to fundamental value (price-dividend ratios, price-earnings ratios, etc.). She also explained that the authors are planning to carefully consider these issues in the future. Nevertheless, she argued that mean shifts may be responsible for some of the problems toward the end of the sample, expressed skepticism about the reliability of most unit root tests to identify nonstationary process in finite sample, and claimed that the stationarity tests the authors considered did not provide strong evidence of nonstationarity. She concluded by pointing out that if cay_t is indeed nonstationary, then some explanation is needed for why, given a basic household budget constraint, financial wealth would not share a common trend with consumption and the labor share.

Finally, Parker raised a question for Watson regarding whether the stationarity of cay_t is more important for understanding the behavior of the shocks themselves, or the effects of those shocks on other endogenous variables. Watson explained that the estimated shocks are very similar regardless of whether cay_t is $I(0)$ or $I(1)$; in fact, the productivity and factor share shocks are identical. In the case of impulse responses, however, the effects will depend on the horizon of interest. At longer horizons, the results may be quite different. Peter Bossaerts asked whether nonstationarity in cay_t could change the conclusion that it does not affect consumption and income. According to Watson, this conclusion may be affected in principle, but is not in practice. The decomposition of consumption and income changes is basically unchanged when additional permanent feedback coming from cay_t is allowed.

Reference

Modigliani, Franco, and Richard A. Cohn. 1979. "Inflation, Rational Valuation, and the Market." *Financial Analysts Journal* 35 (2): 24–44