Important Thoughts

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A.Y. 2018/2019

10/11/2018

- Steady state debt-to-assets ration is about 0.372.
- Drop in loans on the 2007 US recession was 26%.
- Thinking about a sign restriction on dispersion? Could it be interesting?
- Most of the action in the short run is due to financial shocks. This is consistent with Gilchrist, Sim, and Zackrajsek (2014).
- Uncertainty shocks take times to build a large negative impact but they are very persistent. This is consistent with the findings of Jurado, Ludvigson and Ng (2015).
- When I observe an uncertainty shock, spillovers on the credit supply side are allowed but the identification assumption is that what can potentially happen in future remains more powerful than what is happening today in response to it. To make it simply, when an unanticipated financial shock hits the economy, firms expect that such an effect will be lower tomorrow. Conversely, when an uncertainty shock hits the economy, firms expect that what might potentially happen tomorrow remains worse than any spillover effect they experience today. Moreover, uncertainty shocks should be also related to the risk to be even more financially constrained in future while unanticipated financial shocks should be related to the expectation to be less financially constrained in future. Not surprisingly, an uncertainty shock is highly correlate with an expected financial shock which does not move credit spread today. Although there is much more going on when an uncertainty shock hits the economy we can still think of it as a future financial shock. Indeed, an exercise which should convince the audience of the reliability of my assumption is the correlation between an uncertainty shock and an expected financial shock. Identify an uncertainty shock using a

Cholesky identification where uncertainty is ordered first. Identify an expected financial shock as the one orthogonal to current credit spread which maximizes the variance explained of credit spread over the first quarter. The correlation between these shocks is always above 80%.

- Harford, Klasa, Maxwell (2013) is potentially an interesting paper related to the previous point. They find that firms mitigate refinancing risks by increasing their cash holdings by saving from cash flow. It might be useful to discuss propagation effects. Uncertainty affects much more the risk of being financially constrained in future rather than being financially constrained today! Key point I have to make! Uncertainty remember more expected financial shocks.

- Why using cash holdings? Because it is an unconditional buffer available in both good and bad states of the world. It is not subject to general equilibrium effects like other financial assets or cash flow.

- Empirical evidence is important because I use results which exploit cross-sectional variation to infer aggregate results in time variation.

- In Gilchrist, Sim, and Zakrajsek (2014) firms do not take into account the intertemporal trade off between investing today versus investing tomorrow because the option of moving resourcing between today and tomorrow is not available. In other words cash flow is not designed in our model. Moreover, they model an uncertainty shock to be observationally equivalent to an unexpected financial shock because without financial frictions an uncertainty shock has basically zero effect in the economy. I am not against the idea that after an uncertainty shock financial frictions are able to amplify its effect but it is not true in the data that controlling for financial frictions the effect is ten times smaller.

- Definition of a **financial shock**: unanticipated innovations to a proxy of financial conditions - F_t - orthogonal to changes in the risk of bankruptcy or any other known exogenous economic disturbances. In other words, a financial shock is an unexpected deterioration of the credit conditions - in general proxied by the credit spread - which cannot be explained by other economic forces as productivity or policies. Mathematically they can be presented as follows,

$$F_t = g(fundamentals_t) + \iota_t^F$$

If we ignore ι_t^{CS} then we interpret financial frictions as a possible accelerator in the spirit of Bernanke, Gertler, and Gilchrist (1999). Allowing possible movements in ι_t^F then we allow financial frictions to influence economic performance

on its own. Practically speaking what does ι_t^F represent? Well, I personally interpret ι_t^F as a change in the risk-bearing capacity of the financial sector which cannot be directly linked to other economic disturbances. So, ι_t^F is a measure of our ignorance regarding changes in financial conditions (credit spread), but it is an important one since those changes cannot be explained by traditional sources of business cycle fluctuations.

- Definition of an **uncertainty shock**: innovations in the expected variance of future shocks which cannot be explained by traditional sources of economic fluctuations. Similarly to financial conditions, uncertainty is an endogenous countercyclical variable which tends to jump when the economy is hit by large shocks. As shown by Kozlowski, Veldkamp, and Venkateswaran (2017) - NBER WP and Kozlowski, Veldkamp, and Venkateswaran (2018) - NBER Macroeconomics Annual, when agents observe large 1st-order shocks they may also use this information to update the distribution of future shocks implying a jump in uncertainty. However, this jump is endogenous to a large realized shock. Mathematically uncertainty shocks can be represented as follows,

$$U_t = h(fundamentals_t) + \iota_t^U$$

  where U_t is a proxy of uncertainty. What does ι_t^U represent? According to Nimark (2014) - AER and Forni, Gambetti, and Sala (2017) - WP, I interpret ι_t^U as a signal regarding future states of the economy which implies changes in the variance of the distribution of future shocks.

- Using cross-sectional variation to learn on time-variation. Develop this point.

- If you assume that cash is simply negative debt then an increase in the excess bond premium is related to a decrease in the amount of debt which implies an increase in cash. Opler et al. hint that cash is not simply negative debt because cash it is used as a buffer to keep investing even if there are financial constraints.