Remarks

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Firm-financial frictions and macro: an analogy

- Widespread agreement that ‘aggregate demand’ and monetary policy matter for aggregate economic fluctuations.

- Pre-financial crisis DSGE models focused on nominal rigidities (prices and wages) as the key frictions.

- The key mechanism in those models:
  - Monetary policy affects interest rates.
  - Intertemporal substitution by households in frictionless credit markets leads to variations in the demand for consumption (and therefore investment).
Moving beyond inter-temporal substitution

- New data sources, increased capacity to solve more ‘realistic’ models (Adam Guren discussion)

- Fact 1: Households are heterogeneous and a lot of them are liquidity-constrained.

- Fact 2: Interactions of mortgage markets / large durable good purchases with liquidity-constrained households (DeFusco discussion).
  - Refinancing channel
  - Other covenants on mortgages (interest to income, LTV).
  - Frictions in auto loan markets.

- Fact 3: Disturbances to financial sector have important effects on supply of loans to consumers.
Credibility and the new generation of macro models

- New macro models are incorporating heterogeneity, financial frictions in ways that respect that evidence.

- When we put those frictions in business cycle models, they play a large quantitative role
  - examples: HANK models, Wong (2019), Berger et. al. (2021), Kaplan et. al. (2020).

- They change our minds about important macro policy issues
  - Classic example: efficacy of debt-financed fiscal policy.

- Simple DSGE models are still useful for many purposes but we’re moving to richer models with more solid micro foundations.
What about firm-balance sheets and macro?

- We’re at an earlier stage when it comes to integrating firm-centric financial frictions into macro models.

- Classic literature: firm balance-sheet channel of monetary policy

- Asset values and net worth play a key role in propagating, amplifying shocks.

- Assets must be used as collateral for borrowing or because value of net worth reflects probability of default
  - external-finance premium.
Main robust prediction of these models

- Firms’ borrowing constraints are linked to liquidation value of physical assets.

- Movements in net worth/collateral values can heavily influence borrowing and investment dynamics.

- In principle, net worth channel held promise of a powerful propagation mechanism.
  
  - Fire sales of real assets, endogenous tightening of collateral constraints.
Shortcoming of these models

- Shocks to collateral constraints have important effects in models.

- But the net worth channel doesn’t have large propagation effects.

- Kotcherlakota roughly 20 years ago.

- You can get these models to work (see Christiano, Motto and Rostango, 2014)
  - But you need very specific shocks to interact with financial frictions, e.g. risk shocks.
Different tradition

- Literature modeling heterogeneity along multiple dimensions to study how these affect firm dynamics.

- Early contributions focused on age of firms:

- Incorporate financial constraints into standard firm dynamic model with decreasing returns to scale technology.
Different tradition...

- In these models age is important.

- Younger firms have higher growth prospects and/or risk
  - So they’re more financially constrained.
  - Change their borrowing and investment more significantly following a shock.

- Firms typically start with debt-financed investment.
  - As they approach their efficient level, they invest less, tend to pay off their debts.

- Key prediction: leverage is important and decreases with age.
Exciting new empirical literature

- Uses large micro data sets, leverages insights from corporate finance.

- Documents how firm characteristics, including balance sheets, affect impact of monetary policy on firms.

- This literature will lead to fundamental changes in how we model financial frictions in macro models.

- Key lesson: covenants matter (Chodrow-Reich’s discussion)
  - Those covenants are different across small and large firms
  - Quantitative macro models need to incorporate empirically realistic versions of those covenants.
Some time-series evidence

- Benmelech Kumar and Rajan (2020): issuance of secured debt by U.S. corporations declined dramatically over the twentieth century.

- Almost all debt issued in the early years was backed by collateral.
  - Secured bonds accounted for 98.5% of total bond issuance in 1900.
  - In early 2000s, secured bond issuances were below 5% of total bonds issued.

- Secured debt as a fraction of overall corporate debt (including bank loans) outstanding has also declined.
Figure 7: Secured debt as a fraction of total debt issuance, 1900-2017
Ling and Ma (2020): detailed micro evidence

- For US non-financial firms,
  - 20% of debt by value is based on easy-to-value physical assets
  - 80% is based predominantly on cash flows from firms’ operations.

- More plausible to model borrowing-constraints on medium and large firms as restricting total debt as a function of cash flows measured using operating earnings.
  - Firms are less vulnerable to collateral damage from asset price declines,
  - Fire sales in physical assets aren’t an important source of amplification / propagation.
More on differences between different types of firms

- Important differences between small and larger firms (Chodrow-Reich and Fallato (2021))

- Cloyne et. al. (2020): after a monetary policy tightening.

- Borrowing only declines for the younger/non-dividends group.
  - There’s a sizable fall in net worth and a rise in interest payments for all groups of firms.
  - Borrowing of young/no-dividends firms is highly correlated with collateral values but is far less correlated with earnings.
  - Borrowing of older dividend payers is mostly earnings-based.
Cloyne et. al.

- Interpret their findings as indicating that the capital expenditure of younger non-dividend payers is constrained by their asset values and/or net worth.

- As monetary policy changes affect asset prices, this magnifies the investment response.

- Older companies, rely on a more diverse set of funding sources and their investment decisions are, therefore, less vulnerable to fluctuations in asset prices.

- Chodrow-Reich and Fallato (2021): very interesting analysis of differences between small and large firms yesterday.
Cloyne et al.

- Younger firms paying no dividends account for over 75% of the response of aggregate investment to a monetary policy shock.

- They view their results as
  - Supportive of first-generation financial friction models, certainly for young firms
  - Challenge to theories stressing importance of leverage.

- Do we need to reconcile with Yueran and Ma (2020)
  - Equilibrium interaction of small and large firms.
A different cut of the data: Ottonello and Winberry (2020)

- Look at monetary transmission mechanism using quarterly Compustat data.

- Argue that firms with low default risk – those with low debt burdens and high “distance to default” – are the most responsive to monetary shocks.

- Interpret these findings using a heterogeneous firm NKmodel with default risk.

- Low-risk firms are more responsive to monetary shocks because they face a flatter marginal cost curve for financing investment.

- Very interesting paper but important to note that financial frictions in their model don’t generate large macro effects.
Figure 8.—Aggregate impulse responses in full model vs. rep firm model. Notes: “Het agent” refers to calibrated heterogeneous firm model from the main text. “Rep agent” refers to a version of the model in which the heterogeneous production sector is replaced by a representative firm with the same production function and no financial frictions.
Lessons for macro

- Mainstream macro models focus on first generation of financial frictions: liquidation value of physical assets.

- Very hard to come away from the new empirical literature thinking this is a big issue for most firms.

- Banks never lent against $E_t p_{t+1} k_{t+1}$. If anything growth of organizational K makes this channel less plausible.
Lessons for macro

- New generation of models build on new micro evidence about the nature of covenants and paying attention to institutional reality.


- Someone (me?) needs to put Chodrow-Reich and Fallato (2021) in a DSGE model.