Discussion: "Preparing for the Storm: Firm Policies & Recession Risk" by Kakhbod, Livdan, Reppen, and Umar

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How do firms optimally prepare for bad times?

- Continuous time model of optimal firm financing and investment decisions under recession risk
- Describe optimal investment, cash savings, equity issuance, dividend policies, and default decisions under macro risk conditional on size and capital
- Empirical evidence for model predictions using Compustat data
- Contribution: to jointly characterize rich financing and investment choice problem & take it to the data
- Discussion
  - Summarize paper
  - Model-Data connection

Model in a nutshell

- Decreasing returns to scale Zk^{α}
- Productivity
  - High agg state and low agg state governed by a Markov Chain
  - Shocks are *idd* within state
- Capital depreciates at rate δ, investment is irreversible, adjustment costs are convex and state dependent
- Fixed debt costs (generates default)
- Financial frictions
  1. Equity issuance costs: cyclical fixed - acyclical proportional component
  2. Cash holding cost (proportional)
  3. Default on long term debt: liquidation value of capital stock state dependent
- Model is solved using parameters from the literature

Key model insights

- Model results: a model w/ recession state features
  1. Higher precautionary cash holding buffers, decreasing in size
  2. Lower investment (as more cash); even less for small firms
     U shape in cash as low cash firms have to issue equity anyways thus no need to cut investment
  3. Precautionary equity issuance of small-low cash firms
  4. Lower payouts for large-cash rich firms
  5. Lower firm valuations

Empirical findings of the paper

- Measuring recession risk using term spread (seems reasonable e.g., Ang, Piazzesi, and Wei, 2006)
- Get probability from probit model with current term spread on the RHS and NBER-recession-in-12-month-indicator on LHS
- Quarterly Compustat data
- Key empirical findings
  1. Smaller firms have a higher (all positive) equity issuance sensitivity vis-a-vis recession risk
  2. Firms cut back on investment when recession looms - especially low cash firms
  3. Recession risk decreases payout for large & cash rich firms
  4. Recession risk lowers stock returns especially for low-cash firms

Model-Data Connection

- This paper:
  - Comparative static of model
  - Turn recession risk on or off and compare policies

- Sensible? Matter of taste! But model seems disconnected from data
- Recession risk on and off in the model $\neq$ capture empirical exercise
- Empirical exercise seems to capture sensitivity of financing choices to business cycle (e.g., Covas and Haan, 2011; Zetlin-Jones and Shourideh, 2017; Begenau and Salomao, 2019)
- Example: large firms equity payout sensitivity to recession risk:
  - Regression picks up large f's known procycical payout policies $\Rightarrow$ relative to boom high, payout declines as firm approaches recession
  - How to not pick up mean reversion?
  - Which unique model predictions could be tested with the data? How to map this to the data? Ex: $payout_{t-1} \notin$ expansion state

Suggestion: take model more seriously

(1) Take model to the data: estimate or calibrate

(2) Show empirical model fit, cyclicality of leverage, equity & debt issuance, investment, by size & cash

(3) Study counterfactual when aggregate risk $\Uparrow$ - closer to empirics

(4) Lucas (1987) found surprisingly low cost of business cyles
Since then several attempts to show why they might be larger (e.g., Imrohoroğlu, 1989; Alvarez and Jermann, 2004)

How do firms manage recession risk? Literature

- Sharpen contribution vis-a-vis the literature
  - Literature on dynamic capital structure choice and aggregate risk (e.g., Hackbarth et al., 2006; Bhamra et al., 2010; Begenau and Salomao, 2019; Chen et al., 2021)
    - Here extra firm heterog but need to emphasize more what that buys us
  - Connect to risk management literature (e.g., Froot et al., 1993; Holmström and Tirole, 2000; Caballero and Krishnamurthy, 2008)
  - Other things firms could do to help them manage risk: e.g., collateral to help with risk management (Rampini and Viswanathan, 2010)
- Key issue in many of these models: firms want to preserve debt capacity or generally financial slack (Whited, 1992)
- Opportunity to explore why many firms are not bracing themselves? E.g., SBV! Fed raises interest rates and yet no management of interest rate risk? What if any are the cost of hedging?

Do you need all your ad-hoc assumptions?

1. Counter-cyclical equity issuance cost (as Covas-Den Haan 2011)
   - Not clear if needed.
   - Net equity issuance cyclicality size dependent (not all procylical) (Jermann and Quadrini, 2012; Begenau and Salomao, 2019)
     - Small firms more constrained but higher growth options
     - Higher funding needs in good times
     - Good times (expansion states) relax financing constraints: internal funds more plentiful - productivity persistent
     - Small firms issue more debt and equity in good times
     - Large firms closer to optimal scale lower funding needs plus higher internal funds
     - No need for cyclical cost

2. State dependent adjustment costs
   - Similar logic as above should hold
   - Not clear what payoff off - especially if model not taken to the data

Minor comments

- Measurement of capital: large shifts in Compustat sample towards R&D intensive firms has consequences for optimal cash holding policies (Begenau and Palazzo, 2021) but also for measurement of capital, e.g., intangible capital (Belo et al., 2022)
- To capture firm size, why not use total assets? B.16 suggests that statistical significance declines
- McKeon (2015) shows that frequency of equity issuance is overstated due to exercise of employee stock option
- The timing seems important for some of the empirical results. When a recession is near, firms will cut back on investment. As small firms inv is procyclical - it will look like they "cut-back" investment more the closer they get to the recession. So this seems somewhat mechanical once we know that small firms investment policies is more procyclical. Also a firm that has invested a lot in the previous quarters will look now "cash poor" and seemingly cut back on investment. Again this seems mechanical
- Does Table 6 survive if standard Fama French factors are included? Does Table 6 pick up recession risk management or firms that are bad in market timing? Should also control for past investment

Conclusion

- Interesting paper!
- Suggestion to better connect model to the data
- Could explore: Why are firms failing to manage certain aggregate risks? Recession very salient, e.g., perhaps interest rate risk not
- Extensions: Consider looking at dimensions such as productivity, product type, hedging costs, collateral type and relationship to management of aggregate risk

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