Summary of Discussions at the "Advancing Macro Finance Workshop"

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1. **Banking and Financial Intermediation**

   1. **There was a general agreement about the effectiveness of monetary policy (MP) and fiscal policy (FP) interventions during COVID-19, but open questions remain.**
      - Fiscal and monetary policy interventions averted household and corporate defaults, helped banks stay in good shape, and preserved investor confidence.
      - Signaling was very effective. The Fed stating it would be willing to buy corporate bonds was enough to stabilize the market without having to buy a large quantity of bonds.
      - It would be nice to understand better how we avoided a financial crisis.
   2. **Have we solved crises? In response to this question, the participants focused on:**
      - Whether we can do this in the future:
        1. Some interventions directly require fiscal and monetary space (e.g., asset purchases).
        2. Others indirectly require fiscal and monetary space. For example, the effectiveness of the Fed signaling that it is willing to intervene (e.g., in corporate bond markets) depends on if the Fed can credibly intervene, for which it must have sufficient monetary policy space.
        3. The US has been able to borrow a lot and spend a lot. Japan borrowed a lot for decades. Most participants agreed that there is some upper limit on fiscal capacity, but most also agreed that we do not have a good quantitative idea of what that limit is.
           a. Conflicting signals: Debt/GDP has increased rapidly during the pandemic, but safe asset literature suggests there is a shortage of safe assets (e.g., convenience yield estimates).

   b. Potentially, governments should focus on reducing spending during good times to preserve space for crises.

  4. Emerging markets have less ability to remove tail risks via monetary and fiscal policy because they do not have deep enough pockets to credibly commit to intervene. What makes the US special, and can the US do this forever?

   a. Maybe yes: The "specialness" of the US may lie in better institutions and the ability to print its own currency, which allow it to credibly commit to repay debt.

   b. Maybe no: Perhaps the US has not hit its limit of fiscal capacity yet.

- What might be the side effects of such massive intervention (e.g., moral hazard, inflation).

3. Differences from the previous crisis

- COVID-19 was not a direct shock to the household debt, which is the main asset on banks' balance sheets.

 1. Moreover, banks take less credit risk these days since much of it is offloaded to government-sponsored enterprises (GSEs).

 2. The source of financial shock matters. More work is needed to understand dynamic transmission of financial shocks to the real economy.

- Speed of intervention: There can be nonlinearity in crisis amplification, so speed can matter.

- Growth of non-bank finance since the financial crisis, including corporate bond market, private equity, and Fintech lenders.

- Post-crisis regulations ensured banks were better capitalized than in 2008.

2. Household Balance Sheets

1. It is useful to think beyond MPCs. To tackle questions going forward about state dependence, heterogeneity, etc. MPCs don't help that much.

2. There is a general consensus that empirical evidence suggests a need for departing from rational expectations, but how to integrate the empirical evidence and modeling remains an open question.

- Workshop participants generally agreed on the need to understand which parts of the theoretical models should be tested against empirical evidence. There was an active discussion on how to obtain the empirical evidence on expectations.

  1. It would be useful to understand which parts of the theory and policy are hyper-sensitive to the rational expectations assumption. It has been well-recognized that using data on prices and actions alone is insufficient in many cases, so we need data on expectations. Data inevitably also contains measurement errors—how do we model them?

  2. Survey data is inherently sparse, and models depend on all moments of the belief distribution. This gap suggests that researchers inevitably need to extrapolate the data in using them for the models. Is there a Cobb-Douglas equivalent for models of beliefs? Even though the model may not be perfect, it can be useful for many applications.

  3. Some forms of beliefs and expectations are more easily measured than others. One example is the tendency to over-extrapolate from recent developments in housing prices. This is salient and easier to measure, especially for homeowners (maybe less so for renters). But it is also useful to know agents form expectations about what other people might do and how they think about general equilibrium forces, which may be difficult to elicit from surveys. In addition, changes in beliefs in response to a policy can be difficult to measure. To address this issue, having timely surveys can be helpful.

  4. How to do counterfactuals?

3. **There was a continued emphasis on heterogeneity and state-dependence on both the theory and the empirical side.**

   - **State-dependence:** Some participants emphasized the point that asking agents for beliefs about activities or issues that are not salient at the moment is different from asking agents for beliefs about salient issues. For example, beliefs of house prices can be different among those who own/trade houses compared to those who do not. Surveys could also address some of this heterogeneity.

   - **Heterogeneity:** We need to have a better idea of whose beliefs matter and whose beliefs we should be measuring.

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3. **Firm Balance Sheets**

1. **Participants expressed a lot of interest in the changing nature of firms' production activities and recent developments in new forms of financing.**
    - There was much discussion on the rise of intangible assets (data, human capital, brands, etc.).
        1. Do intangible assets limit firms' ability to borrow? Do they increase the importance of pledging earnings?
        2. Measurement of intangibles is important and challenging.
        3. How does our modeling of intangibles affect measurement?
        4. Many measures of intangibles are correlated with determinants of expected returns. How do we disentangle those effects? General acknowledgement that this literature needs to think more about risk.
    - There was also a lot of discussion about data.
    - Does data help small firms obtain financing?
        1. Some participants argued no.
            a. Incumbents can be more data-intensive than new entrants, thereby giving them easier access to financing.
            b. Data may involve increasing returns to scale and strengthening advantages of larger firms.
        2. Some participants argued yes.
            a. Data can alleviate information asymmetries that small firms face by allowing lenders to better predict (and so lend against) earnings (e.g., in Brazil, China). The rise of Fintech lenders that collect your data and lend to you has helped here (e.g., Square was mentioned).
            b. Certain things that used to require scale can now be leased (e.g., AWS), which in principle reduces the advantage of big firms over small firms when it comes to data collection and storage.
            c. We have seen a rise of new lenders (PE, VC, Fintech) that are willing to lend against data, which has helped small firms.

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- There was a general agreement that we need to update models of firm borrowing to reflect earnings-based debt and lender discretion.

2. **Implications for aggregate outcomes**
   - What are the drivers of concentration?
     1. Changing firm boundaries (in part driven by the rise of intangibles). Better understanding of production functions is needed.
     2. Maybe the financing advantage of large firms over small firms has grown over time?
   - What are the drivers of the fall in productivity growth? How important is finance? Does a low interest rate slow down the exit of low productivity firms?
   - Importance of heterogeneity. Which dimension of heterogeneity is important?

4. **From Micro to Macro**

1. **Substantial discussion among the participants was directed at understanding fruitful ways to write models.**
   - **Complexity of the models:**
     1. A given macroeconomic policy impacts different parts of the economy at the same time. While the "small" models are good for qualitatively sketching out the individual mechanisms, one inevitably needs to integrate the different insights to make a judgment on the policy. Both small- and large-scale models could help us gain insights.
     2. For large models, a challenge is to unpack the "black box." For small models, a challenge is the need to understand how to calibrate them. Despite this difficulty, there is definitely a scope for them in understanding mechanisms.
   - **Model comparison**
     1. Useful to take model comparison seriously in a balanced manner.
   - **Non-linearities**
     1. Much of the empirical evidence that we saw is linear, despite the important role for non-linearities.

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2. **Consensus that micro data is highly valuable.**

- The increasing availability of micro data has revealed new facts on heterogeneity among households and firms, both in their characteristics and in the way they respond to shocks. Research questions have adapted to these new facts, trying to account for the heterogeneity and trying to understand how it affects shock transmission.

- Such micro data can sometimes break the observational equivalence across different aggregate models. There have been major changes in the way we approach model testing obtained thanks to micro data.

- An important challenge is distilling the complex facts on heterogeneity into key aspects that general equilibrium models can incorporate. The large set of new heterogeneity facts makes it hard to compute tractable models. In the future, there is value in theorists and empiricists coming up with clever ways to identify which heterogeneity is key and needs to be in general equilibrium models.