Job Market Paper[*]

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Contents

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[*]Preliminary note.
[†]Alphabetical ordering.

1 Introduction

- Basically the asset prices are impacted both by flows and cash flow risks. If this happens, then the SDF must be impacted by both flows and preferences.

- Consider the statement in Gabaix Koijen 2020: "the flows are primitive, and the SDF is a book-keeping device to record their influence on prices."

- Research question: How to map flows to SDF empirically?

2 Classes of high dimensional models

- Bewley economies

  - Benhabib et al. (2015)

- HANK

3 Research Question

- Why did the stock market perform so well during the COVID crisis?

- Beliefs based explanation?

- Diferential effects of crisis on macroeconomy and the asset markets?

- Possible answer: The macroeconomy is driven by Firm Beliefs (Refer Laura Veldkamp paper)

- The asset market is driven by Household and Financial Intermediaries beliefs.

- Explore differntail effects of GFC vs Covid. How come asset markets were affected in GFC?

- Explore the Great Recession in this lens too?

4 Theory

- Every agents belief is encoded in his SDF. Assume constant supply of asset.

- COnsider N agents.

- The maximum an agent is willing to pay for an asset with payoff X is :

$$P_i = E_i[X]$$

where E_i is the expecation under the probability measure reflecting the agents beliefs.

- This can be equivalently written as:

$$P_i = E[M_i X]$$

So M_i encodes the belief of the agent.

- Now in equlibrium howver only one price is observed. How does equilibrium happen? Assume that the value attributed by each agent to the assset is $P_1, P_2, ..., P_N$. Without loss of generalilty assume $P_1 > P_2, ... > P_N$.

- Assume that the asset is in 0 net supply.

- Now assume that the current price somehow is $P \in (P_N, P_1)$.

- Basically then all agents with instrinsic value $> P$ will long the asset and all agents with intrinsic value $< P$ will short the asset. If there is a net long position, the price will rise till agents who want to long drop out. Symetrically, if there is a net short position, price will fall till agents who want short drop out and go long instead. In equlibrium, the total long position will equal the total short position and that price is the equilibrium price.

- This way the equilibrium price represents the SDF of the marginal investor.

4.1 The effect of shocks:

- For simplicity I consider 2 types of shocks. Macroeconomic shocks affect all assets and idiosyncratic shocks affect one asset.

- Of course there can be shock that affect industry i.e a subset of assets.

- What a shock does is that it chnages the belief/ probability distribution about the payoff i.e M_i for all $i \in \{1, ..., N\}$ in the parlance above.

- Again the instrinsic value vector is constructed and the equilibirum price is computed via the algorithm above.

4.2 Connection between beliefs and risk premia

- The risk premium of agent i is given by:
$$RP_i = E[X] - E_i[X]$$
$$= E[X] - E[M_i X]$$

- Of course assume that the equilibrium belief is M_e, then the equilibrium risk premium is:
$$RP_e = E[X] - E[M_e X]$$

Note that if the M_i and X is independent, that is if agents i's beliefs/ probability measure is indpendent of the shocks affecting the payoff, then the risk prmeiumi s 0:
$$RP_i = E[X] - E[M_i]E[X]$$
$$= 0$$

since $E[M_i] = 1$. (This is a restriction , I forgot why though).

- In simple terms, lets say the probability measure about Tesla depends on the color of chameleon, independent of the shocks affecting Tesla, then the risk premium is 0.

5 Preliminary model

- Components
    - Secondary asset market with each M assets. Each asset in 0 net supply.
    - N Households. Each of them solving an investor optimization problem.
    - Beliefs based intrinsic value as described above.
    - Goal: Obtain equilibrium prices and asset holdings of each investor.

6 Model

- That is the beliefs is a random measure.

- One model that is relevant in this scenario, is to model heterogenous beliefs with no arbitrage. But the model of beleifs in Kozlowski et al. (2020).

- Create an asset pricing model with beliefs being a random measure. This may lead to the Twisted probabilities paper too.

7   Anectodal evidence:

- `https://www.vox.com/business-and-finance/22421417/stock-market-pandemic-economy`

- `https://www.morganstanley.com/ideas/stock-market-investing-covid19`

- `https://www.cnbc.com/2020/12/30/how-the-pandemic-drove-massive-stock-market-gains-and-what-happens`
  `html#:~:text=The%20spread%20of%20Covid%2D19,has%20surged%20to%20record%20highs.`

8   Beliefs based equilbrium asset pricing models

- Bhamra and Uppal (2014)

- Borovička (2020)

9   COVID response facts:

- Recession just lasted 2 months!! `https://www.cnbc.com/2021/07/19/its-official-the-covid-recession-lasted`
  `html#:~:text=Cramer-,It's%20official%3A%20The%20Covid%20recession%20lasted%20just%20two%`
  `20months,the%20shortest%20in%20U.S.%20history&text=The%20Covid%2D19%20recession%20ended,`
  `the%20shortest%20in%20U.S.%20history.`

- Stock prices hardly fell.

- This is consistent with business cycles being demand driven more than supply driven. Demand is in turn
  beliefs driven . (Kurz et al. (2005)).

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