Intermediaries and Asset Prices: Evidence from the U.S., U.K., and Japan, 1870-2016

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Goals

- Financial frictions for intermediaries matter for asset pricing
  - Theory (Brunnermeier-Pedersen 2009; He-Krishnamurthy 2013; Brunnermeier-Sannikov, 2014)
  - Evidence (Adrian-Etula-Muir 2014; Adrian-Moench-Shin 2015; Haddad-Sraer 2015; Haddad-Muir 2017; He-Kelly-Manela 2017)
- Previous work focused on US over shorter samples
- Goals:
  1. Test intermediary asset pricing theories with richer data
  2. Document new stylized facts to improve calibrations

What the paper does

- Novel historical panel of balance sheets and asset holdings
  - 1870–2016
  - Commercial banks and securities dealers
  - US, UK, Japan
  - Careful tedious work!
- Length is important for statistical power of forecasting regressions
- Finds that intermediaries' asset growth forecasts risk premia for stocks and bonds

Contribution

- Provides stronger evidence of return predictability from 3 global financial centers
- More nuanced:
  - Short-term effects only
  - Stronger when intermediaries hold more of an asset class
  - Not only in distress periods
- New empirical facts for disciplining calibrations

Replication of main result

	Commercial Banks						Securities Firms					
	Stock total real returns			Bond total real returns			Stock total real returns			Bond total real returns		
	1yr	2yr	3yr	1yr	2yr	3yr	1yr	2yr	3yr	1yr	2yr	3yr
asset_growth	-0.037*	-0.058***	-0.053**	-0.040***	-0.062***	-0.063**	-0.01	-0.023	-0.055	-0.019**	-0.051*	-0.075*
clus(year)	[-1.945]	[-2.912]	[-2.145]	[-4.119]	[-3.248]	[-2.299]	[-0.648]	[-1.367]	[-1.606]	[-2.345]	[-1.722]	[-1.776]
clus(country year)	[-4.282]	[-2.418]	[-1.778]	[-6.156]	[-3.749]	[-2.789]	[-1.120]	[-1.746]	[-3.921]	[-2.824]	[-1.870]	[-2.496]
R2	0.029	0.043	0.031	0.118	0.11	0.059	0.004	0.008	0.032	0.028	0.071	0.097
Obs	371	371	371	377	377	377	263	263	263	265	265	265

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- Clustered SE assume min number of clusters $\rightarrow \infty$

Suggestion 1: Nonlinearities

- Paper emphasizes that predictability in both expansions and contractions is at odds with prominent intermediary asset pricing theories (He-Krishnamurthy 2013; Brunnermeier-Sannikov, 2014)
  - Those papers differentiated from heterogeneous agent models (e.g. Dumas 1989) by emphasizing nonlinearities due to occasionally binding constraints
  - Interesting and important contribution!

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  - Those papers differentiated from heterogeneous agent models (e.g. Dumas 1989) by emphasizing nonlinearities due to occasionally binding constraints
  - Interesting and important contribution!
- An equation from the theory can help us think about the right measure
  - HKM show risk premia are linear in squared intermediary leverage in a simplified version of He-Krishnamurthy (2012)

$$\lambda_{\eta,t} = \gamma \sigma^2_{\eta,t} \propto \left(\frac{1}{\eta_t}\right)^2$$

  - Adrian-Crump-Vogt (2019 JF) think about same nonlinearities differently

Suggestion 1: Nonlinearities

- Do results in Table 7 reject null that effects are same or that they are different in expansions?
- Is below trend asset growth indicative of systemic financial distress?

	Stock index real total returns			*Bond real total returns*		
	1yr ahead	2yrs	3yrs	1yr ahead	2yrs	3yrs
Commercial Banks						
Asset growth (below trend)	-0.000	-0.015	-0.005	-0.021**	-0.028**	-0.027**
	[-0.002]	[-0.503]	[-0.101]	[-2.526]	[-2.558]	[-2.266]
Asset growth (above trend)	-0.067***	-0.094*	-0.092	-0.055***	-0.090***	-0.091**
	[-7.878]	[-1.951]	[-1.625]	[-4.911]	[-3.506]	[-2.288]
Adj. R^2	0.033	0.045	0.033	0.123	0.119	0.059
N	371	371	371	377	377	377
Securities Dealers						
Asset growth (below trend)	-0.011	-0.033**	-0.032*	-0.008	0.028***	0.026**
	[-0.771]	[-2.050]	[-1.809]	[-0.790]	[2.634]	[2.249]
Asset growth (above trend)	-0.010	-0.018	-0.067***	-0.025***	-0.092***	-0.128***
	[-0.842]	[-1.356]	[-2.863]	[-4.410]	[-3.178]	[-3.726]
Adj. R^2	-0.012	-0.006	0.019	0.016	0.111	0.138
N	263	263	263	265	265	265

Suggestion 2: Intermediary heterogeneity

- He-Kelly-Manela (2017) show it matters greatly if we study intermediary balance sheets at holding company vs. subsidiary level
  - Efficiency of internal capital markets matters
  - Find positive stock and bond return predictability consistent with theory, mixed bag in other asset classes

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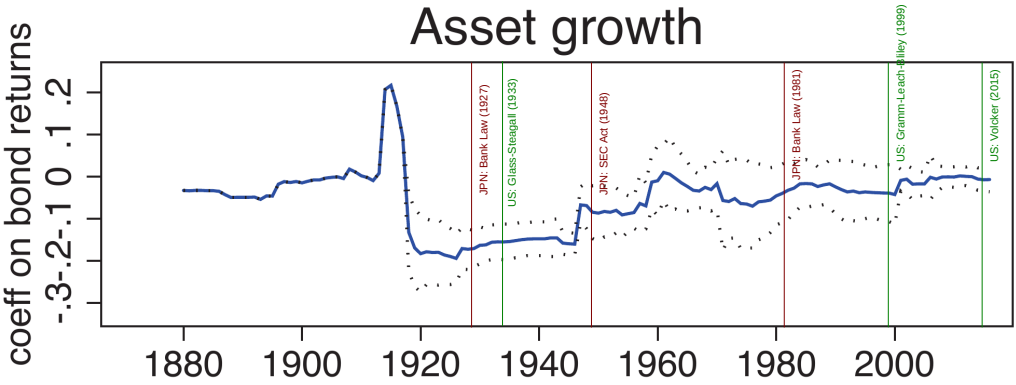
- Kelly-Manela-Moreira (2018) find stronger evidence with news-implied intermediary capital ratio, 1927–2016

Suggestion 2: Intermediary heterogeneity

- How do we think about classification as securities dealers vs. commercial banks around major changes?
- Rolling 30-year regressions predicting 3-yr returns with securities dealers assets



- Structural breaks?

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- Main independent variable is nominal asset growth
  - "asset growth, defined as the past-year change in total assets"
  - Also has inflation in it

$$A_{it} = a_{it} \times \pi_{it}$$

$$\Delta A_{it} \equiv \frac{A_{it}}{A_{it-1}} - 1 \approx \log \frac{a_{it}}{a_{it-1}} + \log \frac{\pi_{it}}{\pi_{it-1}}$$

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- Negative relationship could be all about inflation

My Take

- Paper has potential to challenge and improve intermediary asset pricing theory
- Documents interesting new facts about balance sheets of marginal investors in global financial centers over a long history
- Sharpening results about nonlinearities would be especially useful

Appendix / Minor Comments

- `ivreg2` spits out these warnings:

```
Warning: estimated covariance matrix of moment conditions not of full rank.
         overidentification statistic not reported, and standard errors and
         model tests should be interpreted with caution.
Possible causes:
         number of clusters insufficient to calculate robust covariance matrix
         singleton dummy variable (dummy with one 1 and N-1 0s or vice versa)
partial option may address problem.
```

- Consider `reghdfe` instead
- See Cameron-Gelbach-Miller (2011 JBES) for multiway clustering
- Even Thompson that you cite says that "I use a Monte Carlo to evaluate how large sample sizes must be in practice. When I apply pure double clustering, and do not adjust for persistent common shocks, the standard errors are reliable in data sets with at least 25 firms observed over 25 time periods."
- I suggest only clustering by time because the number of countries is quite small
- Also, the confidence interval early in Appendix Figure 3 (rolling regressions) are hard to believe