An Equilibrium Model of Institutional Demand and Asset Prices
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Executive Summary

The share of outstanding U.S. stock that is held by institutions such as mutual funds, hedge funds, pension funds, insurance companies, endowments and foundations, and sovereign wealth funds has increased from about a third to two-thirds over the last 30 years. Over that time, a variety of questions have arisen regarding the role of institutions in determining asset prices. What is the impact of institutional investors on market liquidity? What is their role in asset pricing anomalies? How much of the stock market volatility during the 2008 financial crisis is explained by the behavior of large asset managers? What are the implications for regulation of these institutions?

Answering these questions requires a new asset-pricing framework that incorporates two important realities of institutional holdings. First, institutions hold heterogeneous portfolios because of differences in beliefs, constraints, or benchmarks. Second, large institutions strategically account for price impact as part of the portfolio-choice problem.

Ralph S.J. Koijen and Motohiro Yogo develop an asset-pricing model starting with a portfolio-choice problem of strategic investors with heterogeneous beliefs or constraints. Under traditional assumptions in empirical asset pricing, they show that an investor's asset demand system can be expressed as a function of asset prices and characteristics, with equilibrium asset prices determined by market clearing for each asset.

They estimate their model for the U.S. stock market using institutional holdings data from SEC Form 13F, which they merge with stock prices from the Center for Research in Stock Prices and firm characteristics from Compustat. These characteristics include dividends, book equity, and profitability. They estimate the asset demand system for each institution, and using the market clearing condition, develop an accounting framework to decompose every asset price movement into parts that are due to changes in observed fundamentals such as earnings changes and parts that reflect institutional demand factors unrelated to the observed fundamentals.

The research yields two principal findings. First, liquidity, as measured by the price impact of trades, has improved over the last three decades. The price impact for the average institution has declined, especially for low-liquidity stocks at the 90th percentile of the liquidity distribution. This means that the cross-sectional distribution of liquidity has significantly compressed over this period. For the least liquid stocks, the price impact of a 10 percent increase in demand has declined from 0.83 percent in 1980 to 0.15 percent in 2014. Second, the asset demand behavior of the largest 25 institutions, which manage about a third of the stock market, explains only 7 percent of the cross-sectional variation in stock returns during the financial crisis. The behavior of smaller institutions, which also manage about a third of the stock market, explains 30 percent of the variation in returns. Direct household holdings and non-13F

institutions, which account for the remaining third of the stock market, explain 59 percent of the variation in returns. The largest institutions explain a relatively small share of stock market volatility because they tend to be diversified buy-and-hold investors that hold more liquid stocks with smaller price impact.

The researchers develop a framework to aggregate data on institutional holdings, asset prices, and characteristics into estimates of expected returns for each stock, which predicts returns out of sample. Mean reversion in institutional demand implies mean reversion in stock prices, which leads to stock return predictability. Sorting stocks into quintile portfolios based on their measure of expected returns, they find an out-of-sample spread in average returns of 15 percent equal-weighted and 6 percent value-weighted. Standard models of expected returns in the cross-section, such as the Capital Asset Pricing Model (CAPM) or the Fama-French three-factor model, cannot explain this pattern. The researchers framework can be applied to both fixed-income and equity markets to study a range of questions related to the impact of large-scale asset purchasing programs, such as which types of institutions substitute out of Treasuries and mortgage-backed securities in response to quantitative easing, and what are its consequences for bond prices and liquidity.