Investor Betas

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In Markowitz (1952) investors allocate wealth by trading off the expected return on an asset against the contribution of that asset to the total variance of their portfolio. The equilibrium implications, as expressed by the CAPM model, are that one factor, market beta, should rationalize the cross section of expected returns. The failure of this prediction remains a prominent puzzle in asset pricing and has led to multiple strands of literature that try to identify a risk-return tradeoff in asset prices.

One approach relies on Arbitrage Portfolio Theory to rationalize empirical factors which do generate robust risk-return relationships. This work drifts away from the canonical insight that investors should demand higher returns for assets with high *portfolio* level covariance. More recently, He and Krishnamurthy (2012, 2013) and others emphasize that institutions, not representative households, are the key players in asset markets. Starting with Koijen and Yogo (2019), a large literature estimates reduced-form demand systems, which are nonparametric functions of observable characteristics or investor "style."

We connect these two strands of research back to Markowitz's seminal idea by demonstrating that an asset's covariance with one's own portfolio is a first-order determinant of perceived risk, and hence, expected return.

We empirically estimate this relationship separately for equities and corporate bonds using quarterly holdings data. First, we construct a time series of portfolio returns for each institutional investor. Next, for each asset × fund pair we estimate a time-series beta in a first stage regression. , Our analysis provides a unique "subjective" beta for each fund that holds a stock rather than a single (market) beta for each stock. To aggregate these, we calculate a share-weighted average of the beta across funds, yielding the "investor beta" measure for each asset.

Intuitively, these investor betas can deviate substantially from market betas when asset holdings are sufficiently segmented. To see this, consider a stark example of perfectly segmented markets where one green investor only holds "green technology" stocks and one brown investor only holds "brown technology" stocks. In this setup, investor betas are driven by the covariance of green (brown) stocks with the green (brown) investor portfolio return. On the other hand, the market beta measures a stock's covariance with the market portfolio return which includes both investors' asset holdings.

While some green stocks might be perfect hedges for brown stocks, the brown investor is unable to take advantage of that risk-sharing opportunity. Given imperfect hedging, regulatory

risk can have an ambiguous risk premium even though it is “diversifiable.” Partial segmentation creates a disconnect between aggregate and investor-relevant risks.

Unlike market betas, “investor betas” display a distinct positive relationship with asset returns. In equity markets, a unit increase in investor betas is associated with approximately 6 percent higher returns. For bonds, the relation is closer to 2 percent. These risk premium estimates are consistent with reasonable levels of risk aversion, approximately 6 in equity markets, and 4 in bond markets.

The paper supplies novel evidence that investors trade off risk and return within their own portfolios, and that assets with high portfolio level risk across investors exhibit high returns. Broadly, the paper suggests that the traditional, one-size-fits-all measures of investor performance and firm funding costs should be adjusted to consider the clientele of those who hold each asset.