The Endowment Model and Modern Portfolio Theory
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Executive Summary

In 1990, only 6 percent of total university endowment fund assets were allocated to illiquid alternative assets. By 2015, the allocation to illiquid assets had risen to more than 50 percent. An asset allocation strategy based on high allocations to alternative assets was popularized, at least in part, by David Swensen at the Yale University Investments Office, and is often referred to as the endowment model. The endowment model recommends that sophisticated investors should try to identify superior active managers and allocate a significant fraction of their portfolio to illiquid alternative assets.

Numerous university endowments claim to have achieved long-term outperformance by following this approach. Despite the success of some advocates of the endowment model, many long-term investors do not hold alternative assets at all. Further, during the financial crisis universities such as Harvard and Stanford incurred significant costs as a result of their portfolios' illiquidity.

The high average level and the large cross-sectional dispersion in allocations to illiquid alternative assets raises a number of important questions. What is the optimal asset allocation for a long-term investor given illiquid alternative investment opportunities? What explains the cross-sectional variation in asset allocation strategies? How do investor preferences and the characteristics of the alternative investments affect investment strategies? What are the welfare implications of the expanded investment opportunities possible with alternative assets?

Stephen Dimmock, Neng Wang, and Jinqiang Yang develop a model of asset allocation and spending choices when an illiquid alternative asset is added to the investment opportunity set. The alternative asset can earn excess returns relative to the benchmark or public equity (e.g., illiquidity premiums or compensation for managerial skill), but also has risks that are not spanned by public equity. In their model, the alternative asset has a maturity date when it becomes fully liquid, but by paying a transaction cost the investor can trade in the alternative asset before it matures. The model also allows the investor to engage in liquidity diversification by staggering the maturities of portions of the alternative asset holdings over time. The researchers calibrate their model and show that their results match the empirically observed average portfolio allocations of university endowment funds, and can explain the cross-sectional dispersion in allocations with reasonable variation in the alternative asset's alpha or volatility that cannot be explained by other factors.

Investors may differ in their spending flexibility. Some, such as pension funds, have little ability to substitute spending across periods, while others, such as family offices, have great ability to do so. To capture this variation across investors, the model allows for separation of risk aversion and the elasticity of intertemporal substitution (EIS), with a higher EIS indicating greater flexibility to shift spending across

periods. Unlike the standard modern portfolio theory with fully liquid investment opportunities and full spanning of risk, in the case of illiquidity the EIS significantly alters the spending rate and asset allocation. Investors with a higher EIS are more willing to hold illiquid assets and have substantially lower spending rates. Over time, aggressive asset allocations towards risky illiquid assets, combined with flexible and patient spending, results in substantially greater wealth accumulation for high EIS investors.