How the Wealth Was Won: Factor Shares as Market Fundamentals
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What economic forces drive the value of the stock market over the long term? On this simple and straightforward question, there are surprisingly few empirical answers from academic economists. According to textbook economic theory, the stock market and the broader economy should share a common trend, implying that the same factors that boost economic growth are also the key to rising equity values over longer periods. When it comes to the US stock market, however, a cursory inspection of the postwar experience provides reasonable cause for doubting this central tenet of economic theory.

Some basic empirical facts serve to motivate the point. While the US equity market has done exceptionally well in the postwar period, this performance has been highly uneven over time, even at long horizons. For example, real market equity of the US corporate sector grew at an average rate of 7.5 percent per annum over the 29 years from 1989 to 2017, compared to an average of merely 1.6 percent over the previous 29 years (1966 to 1988). At the same time, growth in the value of what was actually produced by the corporate sector has displayed a strikingly different temporal pattern. Although real corporate net value added grew at a robust average rate of 3.9 percent per annum from 1966 to 1988 amid anemic stock returns, it averaged much lower growth of only 2.6 percent from 1989 to 2017 even as the stock market was booming. This multi-decade disconnect between growth in market equity and output presents a difficult challenge to theories in which economic growth is the key long-run determinant of market returns.

One potential resolution of this puzzle is to posit that economic fundamentals such as cash flows may be relatively unimportant for the value of market equity, with discount rates driving the bulk of growth even at long horizons. Yet there is an alternative hypothesis that can be motivated by an additional set of empirical facts. Within the total pool of net value added produced by the corporate sector, only a relatively small share — averaging 12.3 percent from 1952 through 2017 — accrues to the shareholder in the form of after-tax profits. Importantly, however, this share varies widely and persistently over time, fluctuating from less than 8 percent to nearly 20 percent over the sample. This suggests that swings in the profit share are strong enough to cause large and long-lasting deviations between cash flows and output. If so, growth in market equity could diverge from economic growth for an extended time, even when valuations are largely driven by fundamental cash flows. Indeed, while the 1989–2017 period lagged the 1966–1988 period in economic growth, it exhibited growth in corporate earnings of 5.1 percent per annum that far outpaced the average 1.8 percent earnings growth of the previous period. Behind these trends are movements in the after-tax profit share of output, which fell from 15.3 percent in 1966 to 8.9 percent in 1988, before rising again to 17.4 percent by the end of 2017. These shifts are in turn made possible by a reverse pattern in labor's share of corporate output, which rises from 67.0 percent in 1966:Q1 to 72.4 percent in 1988:Q4, before reverting to 67.7 percent by 2017:Q4.

What role, if any, might these trends have played in the evolution of the postwar stock market? To translate these empirical facts into a quantitative decomposition of the postwar growth in market equity, we construct and estimate a model of the US equity market. Although the specification of a model necessarily imposes some structure, our approach is intended to let the data speak as much as possible. We estimate a flexible parametric model of how equities are priced that allows for influence from a number of mutually uncorrelated latent factors, while at the same time inferring what values

those factors must have taken over our sample to explain the data, including not only factors driving productivity and profit shares, but also independent factors driving risk premia and risk-free interest rates.

Equity in the model is priced, not by a representative household, but by a representative shareholder, akin in the data to a wealthy household or large institutional investor. The remaining agents supply labor, but play no role in asset pricing. Shareholder preferences are subject to shocks that alter their patience and appetite for risk, driving variation in both the equity risk premium and in risk-free interest rates. Since some fraction of output must be retained for reinvestment, rising corporate profit shares not only have a direct effect on equity valuations through expected future payout growth, they should also theoretically be associated with a decline in the quantity of stock market *risk* through an operating leverage risk mechanism. This mechanism affects risk premia and the overall value of the stock market independently of pure preference shocks that alter the pricing of stock market risk.

We estimate the full dynamic model using state space methods. These estimates imply that the most important contributor to the market's gains over the last three decades has been a string of earnings share shocks that reallocated the rewards of production without affecting the size of those rewards. Realizations of these shocks persistently reallocated rewards to shareholders, to such an extent that they account for 51 percent of the market increase since 1989, with virtually all of the increase in the earnings share coming at the expense of labor compensation. Persistent declines in the equity premium and in real interest rates played smaller roles, contributing 24 percent and 8.5 percent, respectively, to the increase in the stock market over this period. Growth in the real value of corporate sector output contributed just 25 percent to the increase in equity values since 1989 and 54 percent over the full 65-year sample. By contrast, while economic growth accounted for more than 100 percent of the rise in equity values from 1952 to 1988, this 37-year period created less than a third of the equity wealth generated over the 29 years from 1989 to the end of 2017.