

# On the Valuation of Large Systemic U.S. Banks

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The valuation by market participants of U.S. banks' stock has fluctuated considerably over the last decade. As regards the price-to-book ratio of equity we have also observed large, secular movements during and after the financial crisis that erupted in 2007. To what extent are these movements compatible with a fundamental model of valuation? We address this question for the group of large, systemic U.S. banks. These are the banks that participated in a series of capital assessment tests conducted by the Federal Reserve starting in 2009.

We formulate a dynamic model of valuation linking the price-to-book ratio of equity and measures of fundamentals such as the cost of equity, the dividend payout ratio and the expected growth of net income. This model is an extension of Gordon's growth model of stock valuation and allows both dividend and the cost of equity to be variable over time. We use the pooled mean group (PMG) method of dynamic heterogeneous panels estimation proposed by Pesaran et al. (1999) in order to estimate the long-run equilibrium relationship, if one exists. This method can be viewed as a panel error correction model.

Our results for large, systemic U.S. banks show that there is a valid and stable long-run equilibrium relationship between the price-to-book ratio of equity and the aforementioned fundamental variables: the cost of equity, the dividend payout ratio and the expected growth of net income. At any given point in time, however, there is a large heterogeneity in the degree to which current price-to-book ratios of these banks are temporarily above or below their long-run equilibrium valuation. Furthermore, these divergences are rather persistent over time. On average, only about a quarter of the gap closes each quarter. The existence of persistent but temporary deviations of stock market valuation from a long-run equilibrium value, points to the possibility of predictable trading profits. We sort the bank stocks by the degree of over- or undervaluation implied by our model relative to the long-run relationship. Then, we form costless portfolios that are long the most undervalued stocks and short the most overvalued stocks. Indeed, we find that the out-of-sample returns to such portfolios are predominantly positive.

It is natural to ask what forces are causing these temporary divergences and whether they have relatively stable throughout the last decade. The financial crisis and the ensuing regulatory response to the crisis are likely to have affected the relative importance of these shocks to the steady-state relationship.

Our approach in this paper towards finding a common long-run equilibrium relationship between PB ratios and fundamentals was to limit our sample sectorally and temporally. We looked at large systemic U.S. banks during a period when very large shocks buffeted their valuations. A natural extension of our work would be to use our approach over longer time periods for U.S. banks, international banks, as well as other sectors.