Efficiency of Asset Valuation Rules Under Price Movement and Measurement Errors

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Synopsis and Introduction: Errors arise in measuring changes in prices of assets due to imperfection and incompleteness of asset markets. Furthermore, the rates of price-change, and the magnitudes of errors of measurement vary and are often correlated across assets. Suppose we characterize an economy by means and variances of price changes for individual goods and of measurement errors in these changes as well as by the degree of diversification in the asset portfolios held by individual firms. In such an economy, the linear valuation rule that yields the most efficient estimate of change in the economic value of these asset portfolios is the one that minimizes the mean squared error (MSE). This paper presents a linear aggregation model of valuation to help understand how the minimum MSE valuation rule is affected by various parameters that characterize the economy, and the circumstances under which historical-cost valuation rule yields a (statistically) more precise estimate of the unobserved economic value of firms' assets than the current valuation rule. The analytical findings of the paper are consistent with the reluctance of accountants to depart from historical cost in spite of the existence of low inflation, and in spite of scholarly critiques of this valuation rule by Chambers (1966), Edwards and Bell (1961), Sterling (1970) and others. They are also consistent with the use of specific price indexes by most firms to prepare SFAS 33 disclosures. Several testable implications of the results are provided.