Information in Financial Asset Prices

Proceedings of a conference held by the Bank of Canada, May 1998

Asset Pricing in Consumption Models: A Survey of the Literature

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Discussion

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Carmichael's paper is extremely useful because it both presents the various elements of the consumption-based capital-asset-pricing (C-CAPM) model within a unified framework and summarizes a vast body of literature that has grown steadily over the last 20 years. Most notably, Carmichael's approach makes it easy to understand which theoretical aspects of these models need improving and why.

Section 3 of the paper summarizes the relationship between inflation and financial markets. It includes a discussion of the theoretical implications of cash-in-advance models for asset returns, and presents simulation results of such models. Carmichael concludes that, while including monetary effects improves the performance of C-CAPM models, these gains are still quite modest.

Since the paper is a survey, and surveys are difficult to comment on, I will simply supplement the discussion in Section 3 by briefly presenting some recent empirical findings on the interaction between inflation and asset prices. These provide additional evidence as to the causal effect of monetary policy on financial returns.

First, a study by Chan (1994) discusses the relationship between inflation and interest rates. The paper's premise is that if inflation is correlated with real consumption opportunities, real interest rates should include an inflation risk. To analyze this hypothesis, Chan uses a consumption-based asset-pricing model with an isoelastic utility function, and in which the growth in consumption and purchasing power have a joint lognormal distribution. At equilibrium, the expected real interest rate on a treasury bill equals the sum of three terms: a real interest rate on a riskless indexed bond, the variance of purchasing power growth and the covariance between the growth rates of consumption and money. This equation is estimated with quarterly data from 1959Q1 to 1989Q4 using the two-step technique of Pagan and Ullah (1988). In the first stage, out-of-sample forecast errors are obtained from time-series models and are used to construct variance and covariance terms. In the second stage, the equation is estimated by the generalized method of moments.

Three interesting results are obtained from this estimation. First, there is time variation both in inflation volatility and in the covariance of inflation with consumption growth. Second, some of the variables that predict bond and stock returns are also found to predict these volatility and covariability terms. Finally, the average inflation-risk covariability was very small over the estimation period.

The next two papers discuss the empirical relationship between monetary policy and stock returns. The first study focuses on short-horizon returns, while the second analyzes returns for longer time periods.

Thorbecke (1997) adopts a vector autoregression (VAR) methodology and analyzes monthly stock returns data for 22 industries and for 10 size portfolios. Using the identification strategy of Christiano, Eichenbaum, and Evans (1994), the author shows that a one-standard-deviation positive innovation in the funds rate decreases stock returns by 10 per cent per annum. Similarly, a one-standard-deviation positive innovation in non-borrowed reserves increases stock returns by 24 per cent per annum. These results show that expansionary monetary policy, measured as innovations in either the funds rate or in non-borrowed reserves, has a large and statistically significant effect on nominal stock returns, and similar effects on real stock returns.

The same paper uses yet another measure to identify monetary shocks. This is the 'narrative index' measure put forward by Friedman and Schwarz (1963) and extended by Boschen and Mills (1995). The index is

constructed for the period 1953 to 1991 with monthly data. It classifies monetary policy into five categories: strongly anti-inflationary, anti-inflationary, neutral, pro-growth, and strongly pro-growth.

The stock returns data, stacked in a system of equations, are then regressed on the narrative index, along with the Chen, Roll, and Ross (1986) macroeconomic variables. Again, results show that a one-unit increase in the index increases returns by about 10.4 per cent per annum.

Patelis (1997) examines the long-horizon predictability of stock returns that is attributable to monetary policy. He regresses monthly New York Stock Exchange returns data from 1962 to 1994 at increasing time horizons on various monetary policy variables and financial variables. He shows that there is independent predictive power in the two categories of variables. The same study also finds results similar to those from the Campbell and Shiller (1988) VAR methodology.

To conclude, there is substantial evidence that monetary policy has important effects on real financial variables. One explanation for this phenomenon may be that macroeconomic shocks are propagated depending on the financial health of firms in the economy. In this case, firms' responses to such shocks are state-dependent. Thus, firms' increased vulnerability to unknown future macroeconomic shocks will cause investors to expect higher risk premiums. It therefore follows that monetary policy affects the systematic risk in the economy. This is the same conclusion arrived at in the C-CAPM models surveyed in Section 3 of Carmichael's paper.

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