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Book review

Asset pricing for dynamic economies, Sumru Altug, Pamela Labadie, Cambridge University Press (2008)

Recent events in the financial services industry have demonstrated the importance of these markets in the smooth functioning of the economy. Asset pricing for dynamic economies by Sumru Altug and Pamela Labadie is a significant update and expansion of the earlier book by Altug and Ladadie "Dynamic choice and asset pricing". As such it is a timely examination of the relation between financial markets and dynamic general equilibrium of the economy.

Asset pricing for dynamic economies examines the purpose of financial markets in the economy. The work starts with the development of the basic financial market concepts of complete contingent claims, no arbitrage, binomial asset pricing, the capital asset pricing theory and arbitrage pricing theory. It then proceeds to integrate these ideas into dynamic economies in which individuals are allowed to optimally consume and save in an uncertain environment. Initially this discussion is in terms of an economy in which aggregate uncertainty is represented by a finite state space where there are sufficient assets to span this space. This allows the authors to flesh out the concepts of intertemporal risk shifting in complete contingent claim economy. They then explain how idiosyncratic risk effects the allocation of resources in both a complete contingent claim and sequential trading environments.

Having laid out the substance of modern finance the authors turn to the macro economy by considering the endowment economy initial developed by Robert Lucas (1978). They use both a static and growing first order Markov process to represent the stochastic endowment for the economy. They provide a concise and clear explanation of the arguments needed to demonstrate the existence and uniqueness of a competitive equilibrium. In this economy they develop asset pricing formulas for equity, bonds and options. In addition, they provide a nice explanation of the excess volatility and time vary risk premium anomalies. This leads them to consider non-separable preferences to explain the time variation of risk premium in such endowment economies. One of the many strengths of the book is the discussion of the relation among the various models of non-separable preferences including habits, durable consumption and recursive utility which have been used to explain the empirical behavior of asset prices.

The next part of the book introduces production aspects of the economy so as to better understand the marginal return on various financial investments. They start with a real business cycle model and demonstrate how the financial structure of the firm affects the equilibrium of the economy. After establishing the Modigliani–Miller result that the firm's financial decisions are irrelevant to the behavior of the real economy, they explain how alternative tax policy can influence the investor's intertemporal rate of substitution and hence asset returns. The authors continue to develop the complex relations between asset pricing and the dynamic economy by incorporating various explanations of optimal investment in plant and equipment. First they consider the cost of adjusting the firm to new capital and how it influences the marginal return on investment for the firm. They then consider a market economy in which the firm owns the capital stock and there is a market for used capital. The firm finances the capital with equity and bonds. In these circumstances they are able to explain how the market value of equity relative to the value of used capital, Q, can vary in the presence of adjustment cost. As a result, they reconcile the adjustment cost theory of investment with the production based asset pricing model (see Cochrane (1991). Next, they introduce irreversible investment where the price of used capital is less than new capital. This leads to a real option value to capital goods in that the firm must consider the relation between the used capital price and the expected marginal value of the capital in the future. They show the existence of a higher critical shock to future productive which determines the call option value of buying an additional capital and a lower critical shock which identifies the put option for selling a unit of capital in the future. They then relate the call and put prices to the Q theory of investment. This allows them to use the irreversibility of investment to explain why stock returns are more volatile during times of low productivity. In particular, given a bad shock to productivity firms choose not to invest in capital and the irreversibility of investment causes the firms not to sell excess capital. With this inelastic supply of capital fluctuations in productivity will show up mainly in the fluctuation in the price of capital so that stock returns becomes more volatile. Thus, they provide a deeper understanding of how fluctuations in the real economy translate to the financial markets.

The next part of the book deals with money and international finance. Money is introduced through various types of cash in advance or liquidity constraints. The liquidity constraint is a generalization of the cash in advance constraint which allows individuals to lessen the cash-in-advance constraint through the spending of time on shopping or through short term liquid bonds. This generalization of their model allows them to examine the impact of inflation on asset prices. These constraints drive a wedge

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between the commodity and financial transactions so that the intertemporal marginal rate of substitution is altered. In addition, the liquidity constraint leads to an increased demand for bonds which drives down the short term interest rates relative to the return on equity. The model of international trade allows them to discuss the benefits of risk sharing through the trade in financial assets from different countries. To discuss the trade in nominal currencies the authors use a cash-in-advance constraint in a two country world. Here, the purchase of goods within a country can only be undertaken with the domestic currency. This allows them to discuss the relation between the terms of trade and the exchange rate. In addition, they identify various pricing anomalies such as the deviation from purchasing power parity. Their analysis raises an interesting question concerning the parallel between the anomalies found in domestic financial markets and foreign exchange markets. One is left wondering whether the various attempts to explain mean reverting stock returns such as non-separable preferences and irreversible investment would also help to resolve the deviations from purchasing power parity as well as other anomalies in international finance.

The book is completed by examining various types of market incompleteness such as borrowing constraints and overlapping generations which restricts trading in certain assets. As in the previous sections the focus is on how these types of friction alter the pricing of financial assets. Thus, the book is a rather comprehensive discussion of the relations between dynamic economies and the behavior of financial assets. One curious exception is the lack of a discussion of the banking sector. This is particularly surprising given Ladadie's (1995) work on banking and monetary policy. Except for this minor exception the book provides an excellent survey of the relations between the financial sector and the real economy. I strongly recommend it to individuals interested in learning more about this important issue.

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