

Asset Pricing Models and Regulatory Economics

Student's Name

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In the last 50 years, asset pricing models have become the main methodology for estimating fair rates of return in regulatory proceedings. Asset pricing is an important concept in financial and regulatory economics, which means a formal treatment of the two major pricing principles, including general equilibrium asset pricing and rational asset pricing. The main purpose of regulated utility companies for using asset pricing models is to address their sensitivity to unanticipated inflation or decreased industrial production since regulatory utilities greatly depend on the interest rate and their vulnerability to inflation and other economic factors is the risk that significantly increases the capital cost. Therefore, asset pricing models, including the traditional capital asset pricing model, the conditional capital asset pricing model, the intertemporal capital asset pricing model, and the production-based asset pricing model, serve regulatory economists such as government or independent administrative agencies as effective tools for pricing risky securities, preparing for rapid inflation, and computing expected returns for corporate assets.

Developed by Sharpe and Lintner, the traditional capital asset pricing model (CAPM) is a financial instrument for determining capital cost in the context of regulatory economics. Regulators use the model of capital asset pricing to determine the relationship between risk and return for assets, estimate the time value of money, and receive compensation for assumed risks (Rossi, 2016). A riskless asset and unlimited sales are the basis of this model that determines a market equilibrium. According to the CAPM, if future expected dividends are given, and the market is efficient, the price of a corporate asset equals its fundamental value. Thus, regulating utilities use the CAPM to set a high price in a low expected return and a low price in a high

expected return to establish the market equilibrium and concentrate on expected returns for their investors.

Given the static nature of the traditional capital asset pricing model that does not allow changes in variables, regulators prefer to use the conditional capital asset pricing model (CCAPM) that reasonably assumes conditional moments. In particular, the CCAMP posits that the relative risk and the expected excess returns of an asset can alter depending on a business cycle (Cisse et al., 2019). Additionally, regulators are expected to understand that if covariances, variances, and risk premia vary with a business cycle and market conditions, the CCAMP captures the real situation in economics more appropriately. The CCAMP relates expected returns to asset risk when creating a market portfolio. The most significant determinants of stock price movements are variables of business cycles that allow estimating beta risk for each asset month by month. In the context of regulatory economics, the CCAMP ensures that asset pricing occurs based on business conditions and macroeconomic environment in a particular country.

The intertemporal capital asset pricing model (ICAPM) presents a more realistic setting for pricing assets because it assumes that investors can change the sums of money invested in each asset and withdraw some part of their investment at various points of time. In comparison to the CAMP and CCAMP, the ICAPM includes not only the amount of investment in each asset but also the fraction of the wealth that is invested in each asset (Rossi, 2016). The ICAPM assumes that investors operate in a perfect market in which all assets have limited liability, no transaction costs or taxes are imposed, and assets are divisible (Rossi, 2016). Given the adequately regulated market, investors' decisions do not influence the market price, and they can trade their assets at the same rate without any limits. As such, a distinct point in time determines

different conditions for investors' trading activities since the state variables such as market prices and the asset price changes constantly change.

Unlike the conditional and intertemporal capital asset pricing models, the production-based asset pricing model (PAPM) takes the demand side as given and models the supply side (production) of the regulatory economy. According to the PAPM, an investor receives a dividend from a single asset in every period depending on the state (Lansing, 2015). However, the most important production-based factors that this model takes into account are the discount factor of the investor and the total production. Meanwhile, the capital stock and labor input are assumed to remain constant in all states. Thus, the marginal product of capital is considered to correlate with the production of sales and depends on the adjustment costs of new investments. The PAPM allows regulators to receive increased marginal benefits by causing a rise in total production and reducing future investments that form an effective strategy for regulating supply and demand at the national level.

The international capital asset pricing model (ICAPM), which was developed by Stulz, is used by regulated utility corporations worldwide for pricing assets that are located not only in investors' home countries but also abroad. Thus, the ICAPM considers such factors as the influence of exchange rates, consumption rates across countries, and barriers to foreign investment when it comes to pricing capital assets (Lansing, 2015). According to this model, the relationship between the price of an asset and the denominated currency of a country reveals the expected nominal return of asset (Lansing, 2015). Stulz's ICAPM works if asset prices are jointly distributed across countries, the consumption good is costlessly traded, and no transaction costs, tariffs, and taxes are imposed on the consumption good. Certainly, the ICAPM provides an

effective framework for international trade in which investors act as risk-averse price takers in possession of the same information about the market.

As a result, asset pricing models are aimed at ensuring that all trading activities take place continuously in equilibrium, and regulators select the most appropriate investment strategies to receive maximum return for assets. In the context of regulatory economics, asset pricing models serve as a backbone for investors to regulate their risk and return rates for assets and ensure appropriate compensation for taking risks. Even though each of the explained asset pricing models is based on different assumptions that pertain to various economic factors, all of those are focused on the maintenance of balance between supply and demand. The major benefit of using one of the asset pricing models is the mitigation of investment risks, since investors do not start investing in different assets both in their home countries and abroad until the risk of cash flow is computed and justified. Thus, asset pricing models are effective tools for mitigating investment risk, pricing risky securities, and determining expected returns for corporate assets under the conditions of regulatory economics.

References

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