Reports from the Economic Research Centre

The stable long-run CAPM and the cross-section of expected returns[1]

Discussion paper 05/02
by Jeong-Ryeol Kim

Central banks are more and more concerned with the financial markets, not only because of their importance for monetary policy but also because they play a key role in assessing the risks facing financial institutions. Despite numerous theoretical and empirical criticisms, the capital asset pricing model (CAPM) remains one of the most popular standard analytical tools in this field. It can be used for quantifying the trade-off between risk and the expected return in financial markets. According to this model, a linear relationship exists between the expected return on a particular share and the return on the overall market portfolio, which is expressed by what is known as the market beta.

In line with many reports from the 1970s and 1980s regarding anomalies, however, there is mounting evidence in the literature of the poor empirical performance of the conventional CAPM. Various modifications aimed at improving the empirical performance of the conventional CAPM have therefore been proposed.

This paper presents a modification of the traditional CAPM designed to improve the model's empirical performance. It takes into account the fact that the distribution of re-

1 This discussion paper was published in English under the above title and is downloadable from the Bundesbank's website (www.bundesbank.de).

turns on stock markets can be captured better by a generalised Paretian distribution than by a normal distribution. The paper also notes that information concerning a stock's expected return can be obtained additionally from the common stochastic trend between two stock prices. This model may be called a stable long-run CAPM (SLCAPM).

In order to demonstrate the empirical performance of the SLCAPM, the model's performance is compared with that of some well-known alternative CAPMs such as the book-to-market CAPM devised by Fama and French and the conditional CAPM devised by Jagannathan and Wang. It turns out that the SLCAPM explains over 60% of the cross-sectional variation in the average returns of stocks of companies listed on the New York Stock Exchange and the American Stock Exchange. This is more than the alternative models, even though they make additional use of firm-specific variables.

The modification proposed in the paper thus improves the empirical performance of the CAPM and hence can be used to improve the risk assessment of portfolios.

Price rigidity, the mark-up and the dynamics of the current account[2]

Discussion paper 14/02
by Giovanni Lombardo

In this study we show that the degree of imperfect competition in the market for goods can have important effects on the speed of price adjustments and hence on the response of the current account to shocks (in particular nominal shocks).

An expansionary monetary shock causes the domestic currency to depreciate and, in the presence of price rigidities, it makes domestic goods cheaper than foreign goods. Domestic and foreign demand would consequently switch to some extent to domestic goods. Whether or not that causes an improvement in the current account depends on the relative elasticity of the demand for exports and imports. In turn, these elasticities depend on the degree of substitutability between domestic goods and imported goods. The fact that these goods might not be perfect substitutes does not necessarily imply that the domestic market is imperfectly competitive. It is conceivable that domestic firms are not always able to exploit (ie to derive profits from) this differentiation between domestic and foreign goods. The degree of competition and import/export elasticities are therefore two distinct concepts. Nevertheless, the discussion paper shows that the degree of competition in the domestic market can affect the response of the current account to shocks.

This mechanism is based on the fact that the degree of competition can determine the size of the price adjustments when not all firms adjust their prices simultaneously. The magnitude of price adjustments, in turn, determines the extent of the "expenditure switching"

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and hence the response of the current account.

In the model presented here, the link between competition and price adjustments centres on the use of material factors of production. It is shown that when produced goods enter the production process as means of production, the degree of competition is inversely correlated with the response of the current account to monetary shocks. When the markets are imperfectly competitive, the share of output that can be attributed to the factors of production is smaller than that which would accrue to them in a perfectly competitive world. For a technology that employs intermediate goods, the share of these goods in production is proportional to the degree of competition in the economy: the greater the competition, the larger the share. A larger share of intermediate goods implies that more of the resources available in the economy must be used to produce these goods and, in a world of scarce resources, this will increase production costs and hence the "efficient" price of output. If a firm decides (or is able) to adjust its price, it will factor the increased cost of production into the price. It can therefore be seen that the degree of competition affects the degree (speed) at which the price of domestically produced goods adjusts to monetary shocks. The degree of price adjustment will in turn affect the "expenditure switching" of international demand and, hence, the response of the current account to shocks.

Whether the current accounts in more competitive economies tend to be more responsive to shocks (in particular nominal shocks) is an empirical question. Indeed, there are other factors influencing the relationship between competition and price adjustments and hence the current account. Nevertheless, the paper shows that the market structure of a country (ie competition and price rigidities) is an important factor that must be taken into account when interpreting the response of the current account to shocks.

Monetary indicators and policy rules in the P-star model *(Monetäre Indikatoren und geldpolitische Regeln im P-Stern-Modell)*[3]

Discussion paper 18/02
by Karl-Heinz Tödter

This paper discusses the price gap as an indicator of inflationary developments, integrates it into a small monetary macro-model – the P-star model – and examines various monetary policy strategies in the context of this model.

The P-star model is a macro-model with a macroeconomic goods market, a money market and a response function for the central bank's interest rate policy. Inflation is determined by the price gap. This is composed of the surplus demand for goods and the surplus supply of money. Interest rate changes are thus transmitted via two channels, the degree of utilisation of potential output and the supply of liquidity. By contrast, new-Keynesian

3 This discussion paper was published in German under the above title and is downloadable from the Bundesbank's website (www.bundesbank.de).

models have only one transmission channel, namely the degree of utilisation. In the latter inflation is a real rather than a monetary phenomenon.

Starting from a long-run money demand function, the discussion paper examines the monetary overhang, the price gap and the nominal price gap as monetary indicators of inflationary pressure. Then the P-star model is compared with a new-Keynesian model with regard to stability, disinflation costs and efficiency of monetary policy. It turns out that a stability-oriented monetary policy performs better in a P-star model than in a new-Keynesian model.

Today much space is devoted in economic literature to the analysis of monetary policy strategies. On the basis of the P-star model the discussion paper considers which monetary policy strategies are suited to stabilising inflation and the degree of capacity utilisation. Fluctuations in these variables are triggered in the model by shocks to the real demand for goods, prices or the money demand and then perpetuate themselves in the system.

Inflation targeting has attracted much interest in recent years. It has been adopted by several central banks (eg in New Zealand, the United Kingdom and Sweden). Three variants of this monetary policy strategy may be distinguished with regard to the quantity of information presumably available to the central bank. Central banks pursuing a direct inflation targeting strategy orient themselves to the most recently observed rate of price increases, whereas in the case of inflation forecast targeting they react to projected price rises. Optimal inflation targeting further assumes that the precise structure of the model is known. Although within the framework of this model perspective the last-mentioned strategy minimises fluctuations in the inflation rate around the central bank's inflation target, it entails larger fluctuations in the degree of capacity utilisation than the other alternatives mentioned.

Some authors advise central banks not to orient their policy exclusively to stabilising inflation but also to react anticyclically to fluctuations in the degree of capacity utilisation, ie to follow a Taylor rule. The Bundesbank, by contrast, oriented itself to monetary growth (monetary targeting), while the European Central Bank pursues a two-pillar strategy geared both to monetary growth and an inflation projection. It can be seen that these three strategies lead to smaller fluctuations in the degree of capacity utilisation, interest rates and monetary growth than does pure inflation targeting.

P-star models are theoretically and empirically interesting alternatives to the new-Keynesian models that are in widespread use today. They are suitable for analysing monetary policy strategies above all because they take account of the empirical link between the money stock and the price level and do not reduce the effects of monetary policy to just one transmission channel, namely the interest rate effect on real demand. The decision as to which monetary policy strategy is the most appropriate ultimately depends on the central bank's particular target system.