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The preparation of monetary policy

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Document Version

Publisher's PDF, also known as Version of record

Publication date:

1998

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Berk, J. M. (1998). *The preparation of monetary policy: essays on a multi-model approach*. [Thesis fully internal (DIV), University of Groningen]. s.n.

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1 Summary

Central in the conduct of monetary policy is the concept of monetary transmission, i.e. the processes that lie between adjusting instrument variables by the policy maker and the effects on the ultimate target variables. We start this book by stressing the complexity of the monetary transmission mechanism. Economic theory only provides some basic notions, and there exists considerable ambiguity regarding the various transmission channels actually operating in the economy, as well as their 'signs'. Given this uncertainty, we propose a general framework for preparing a strategy of monetary policy. Characteristic of our proposal is a multi-model approach, where the policy maker instead of using a single model designed to answer all questions uses a range of relatively small models, dealing with specific chains in the transmission mechanism. The choice of models is to be determined by the level of abstraction required by the problem at hand. The objective of this approach is to provide the policy maker with stable, economically interpretable relationships which can be used for policy purposes.

We illustrate this approach with five case studies, each dealing with different stages of the monetary transmission mechanism. The subjects of these studies fall into two categories: expectations and international interdependencies. As mentioned in the first chapter, both are important factors in the transmission mechanism, but receive relatively little explicit treatment in most (empirical) discussions of the channels of monetary transmission. The role of expectations is highlighted in chapters 2, 3, and 5, in which the information content for monetary policy of, respectively, the yield curve, the exchange rate expected by market participants and future inflation expected by consumers is discussed. The influence of international linkages is investigated with respect to three separate elements of the transmission mechanism: the long-term interest rate (chapter 3), real output (the business cycle, chapter 4) and the inflation rate (chapter 6).

In chapter two we study the relationship between the term structure of interest rates and non-financial activity: that is, (real) economic activity and inflation. We argue that such a

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relationship can be interpreted as a (semi) reduced form of a dynamic macroeconomic model where both long-term and short-term interest rates are jointly determined. Economic theory thus predicts a reduced-form like relationship between differences in observed interest rates on financial instruments with varying maturities on the one hand and unobservable differences in expected inflation rates and in expected real interest rates on the other hand.⁸⁹ The latter provide information on expected movements in future economic activity. The yield curve thus, in principle, incorporates information relevant for the monetary policy maker. We review the empirical evidence regarding the information content of the yield curve, and conclude that there exists considerable uncertainty in this respect. The evidence favouring the yield curve as leading indicator for inflation is not very convincing, because it is difficult to discriminate empirically between the effects on the curve of future real interest rates and of future inflation. On the other hand, the yield curve is a stable leading indicator for future economic activity. There are, however, several interpretations of this relationship, depending on the nature of shocks hitting the economy and the speed of price adjustment. The latter, in turn, illustrates the importance of institutional factors as the functioning of credit, labour and product markets, as mentioned in the first chapter.

In chapter three we investigate the international co-movement of long-term interest rates, in terms of the standard (uncovered) interest parity relation stating that the difference between any two countries' nominal interest rates equals the expected depreciation of the first country's currency against the second's (over the life of the instrument), plus a risk premium. This parity relation functions as a benchmark to assess the degree of co-movement. Financial liberalisation and innovation, more specifically the development of the cross-currency interest rate swap market, increase the possibilities for hedging long-term currency positions. This could imply a stronger tendency towards co-movement of financial variables, such as bond yields. As a result, the uncovered interest rate parity relationship, the use of which was previously confined to short-term interest rates, can be applied to longer-term interest rates as

⁸⁹ In this overview, we neglect the role played by risk premia. See chapter 2 for a discussion.

well. This has consequences for the policy maker, as long-term interest rates in most countries are more relevant for the business cycle than short-term rates. Central to uncovered interest rate parity are (exchange rate) expectations, and in our empirical analysis we use survey data to measure them. Co-movement is analysed from a bilateral as well as from a multilateral perspective. Putting our reduced form to the test empirically, we find no evidence of an increased international interdependence in long-term interest rates. Although in line with most of the academic literature, this result is somewhat counterintuitive. Increased deregulation stimulates innovations on financial markets and increases the mobility of capital. This surely increases the opportunities for arbitrage and for an increase in the international interdependence of bond yields. However, our findings indicate that these opportunities remain to be realised. Possible explanations include the empirical rejection of the (sometimes stringent) assumptions used to construct the theoretical model from which the reduced form (uncovered interest rate parity) is derived. It could furthermore be the case that structural imbalances (for example on the budgetary front) in the countries investigated cause national factors to exert an important influence on bond yields, inhibiting increased interdependence.

In chapter 4 we develop leading indicators for fifteen industrialised countries, which enable us to forecast the business cycle fairly reliably between 4 to 6 months ahead. These leading indicators can be interpreted as reduced forms, relating various currently observed variables to the unobservable future business cycle. Given the non-neutrality of money in the short term (see chapter 1), these leading indicators are by themselves of interest for monetary policy makers as information variables. The measures of future economic activity in addition allow us to explore the international interdependence of business cycles, which, as mentioned earlier, is also relevant in the context of monetary transmission. In line with the findings of the third chapter, the empirical analysis does not reveal any tendency towards increased international interdependencies between national business cycles over time. For some countries, however, especially in Europe, economic interdependence is already particularly strong. A result that is of interest with respect to our study of the role of expectations is that we find empirical support for the proposition that expectations of economic agents are

important factors shaping the future business cycle: variables reflecting expectations of consumers and producers have a large predictive content concerning future output, albeit for relatively short horizons.

We explicitly deal with expectations in chapter five, when we assess the information content of the qualitative responses of consumers to surveys regarding perceived past and expected future price developments. A first task is to specify a theoretical framework that can be used to convert these qualitative survey responses into quantitative time series of expected inflation. Central to this conversion is the assumption that respondents answer the survey questions on the basis of probability distributions. Following an empirical analysis of the accuracy and other time series properties of the derived measures of expected inflation, we next investigate the relevance of these measures for monetary policy. This could be the case in, for example, the direct inflation targeting strategy, in which projections of inflation by the policy maker play a central role. We find that the derived inflation expectations are cointegrated with actual future inflation, thereby indicating their usefulness as information variables for monetary policy. However, since the expectations are not a causal determinant of future inflation, we conclude that caution is warranted in using these direct measures of inflation expectations for monetary policy purposes.

In chapter six the long-run relationship between Dutch and German consumer price levels is investigated. We derive an empirical relationship between Dutch and German consumer price levels which, *inter alia*, enables the policy maker to gauge whether the policy conducted, i.e. aiming at maintaining a stable exchange rate of the guilder *vis-à-vis* the Deutsche mark, has resulted in similar price movements in the two countries. We show that the ultimate objective of this peg, an inflation rate which is in line with the relatively low inflation rate in Germany, has indeed been realised. Moreover, Dutch and German price levels are found to be cointegrated. As a result, a price shock in the Netherlands is eventually adjusted, insofar as it deviates from that in Germany. With similar inflation rates in both countries, and price levels forming a cointegrating relationship, Dutch competitiveness with respect to Germany, to the extent that it is reflected in consumer prices, remains constant.

2 Concluding remarks

In line with the objective of our general framework, that is to provide the policy maker with stable, economically interpretable relationships which can be used for monetary policy purposes, we conclude by providing the policy maker with some of these relationships. These relationships are derived from the five cases studied.

1. Domestic economic fundamentals continue to be key factors shaping movements in long-term interest rates among the major industrialized countries, despite the international integration of financial markets. This means that the domestic policy maker still exerts considerable influence on domestic long-term interest rates, *via* the expectations of economic agents about future short-term interest rates. However, this does not make things easier for the policy maker, since the relationship between long-term interest rates and the rates under direct control of the central bank is complicated. The nature of the underlying shocks hitting the economy, and institutional and structural factors influencing the speed of price adjustments, are especially relevant in this respect.
2. The policy maker should be cautious in using the information contained in the yield curve for monetary policy purposes. The reduced form-like relationship which the yield curve depicts, is consistent with different underlying economic structures. Thus, different economic phenomena could lie behind the same observed movement in the yield spread, and the proper monetary policy response could, in principle, be different for these phenomena.
3. A similar conclusion applies to measures of expected inflation derived from consumer surveys. These measures provide information regarding future inflation, but are no causal determinants of inflation. Monetary policy wants to respond to underlying sources of inflationary pressure. Our direct measures of expectations do not qualify as such. The usefulness of the latter hinges on the understanding of economic agents of the relationship

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between the underlying sources of inflation and inflation itself, and the fact that agents act upon that understanding. This understanding, however, could radically change in the case of a policy intervention that modifies the relationship between the underlying states and the inflation that eventually occurs.

4. Although the international linkages between national business cycles did not increase in the period 1975-1990, economic interdependence between the different countries in Europe is particularly strong. National monetary policy has to take this into account, in that this international dimension reduces the scope of the domestic policy maker in following an independent monetary policy.
5. On the other hand, recognising and using the economic interdependence may eliminate the need for such an independent monetary policy, as the Dutch case study (chapter six) illustrates. The high interdependence of European economies, more specifically the real economic integration of the Dutch and German economies, is recognised by Dutch monetary authorities and exploited for policy purposes, by pegging the exchange rate of the Guilder to the D-mark. In doing so, they succeed in bringing the Dutch inflation rate in line with the relatively low inflation rate in Germany, and keeping it there.
6. There is an implication for European Economic and Monetary Union that follows from our three case studies on economic interdependence. A prerequisite for a successful monetary union, a sufficient degree of integration of economic activity, seems to be satisfied for at least the core countries. This is indicated by the strong interdependence of the business cycles of these countries as well as by the success of Dutch monetary policy, which would not have been possible without such an integration. However, the lack of increasing interdependence of bond yields indicates that there remain some important national imbalances to correct, for example in the fiscal positions of the respective governments.

The five case studies illustrate that it is possible to simplify the interactions between various endogenous and policy instruments that take place in different chains of the monetary

transmission mechanism. This simplification entails transforming some of the interactions into simple relationships, using different types of models to address different issues (other examples of this approach include studies of money demand and of the formation of wages). Although this multi-model approach provides the policy maker with useful information regarding specific issues in the mechanism of monetary transmission, some of our studies, in particular those regarding the direct measures of expectations (i.e. those derived from survey data and from yield curves), illustrate the limitations of our approach. It is not always clear how the reduced-form like relationships pertaining to these expectational variables could serve as guidelines for the policy maker, as their interpretation is ambiguous. In that case, the information supplied by them will have to be conditioned by the understanding of the policy maker of the structural relationships between the variables incorporated in the various relationships. This understanding is also the key to the assessment by the policy maker of the weights to be given to the information coming from different models.

At various places in the preceding chapters we point out that the policy maker is in need of stable relationships, which then can be used for policy purposes. The empirical applications in the five case studies provide us with econometrically stable relationships, illustrating the role played by international interdependencies and expectations in various stages of the process of monetary transmission. It is important to note that these relationships, based on the traditional concept of stability which focusses on situations in which the frequency approach is valid as a general characterisation of uncertainty, are not useless in the face of fundamental uncertainty as discussed in the first chapter. In this case, however, the policy maker has to acknowledge the fundamental incompleteness of the available knowledge. This recognition entails that the policy maker not only uses the abovementioned econometrically stable relationships in the preparation of monetary policy, but that he also employs rules, conventions, traditions and experience. In this respect monetary policy indeed is, at least partly, an art.

This study started with the hypothesis that, given the complexities and uncertainties inherent in the transmission mechanism, less emphasis should be placed on the dominant role

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of structural econometric models in the preparation of monetary policy. Instead of using a single (large) structural model, the policy maker should use a complementary range of different models, the selection of which is to be determined by the problem at hand. With the qualification that we illustrated this approach with only a limited number of case studies, the results of the previous chapters leave us with the impression that perhaps this hypothesis is in need of modification. Structural models are an indispensable ingredient in the preparation of monetary policy. It is the interaction of structural and other models that is likely to provide the largest gains in the preparation of monetary policy. Such an interaction is likely to create complementarity, which will in turn lead to synergy-effects, i.e. a greater understanding of the transmission mechanism. A study of this interaction is, however, left as an important topic for future research.