SUMMARY OF THE THESIS

This thesis addresses three relevant macroeconomic issues: (i) why Central Banks behave so cautiously compared to optimal theoretical benchmarks, (ii) do monetary variables add information about future Euro Area inflation to a large amount of non monetary variables and (iii) why national saving and investment are so correlated in OECD countries in spite of the high degree of integration of international financial markets.

The process of innovation in the elaboration of economic theory and statistical analysis of the data witnessed in the last thirty years has greatly enriched the toolbox available to macroeconomists. Two aspects of such a process are particularly noteworthy for addressing the issues in this thesis: the development of macroeconomic dynamic stochastic general equilibrium models (see Woodford (1999) for an historical perspective) and of techniques that enable to handle large data sets in a parsimonious and flexible manner (see Reichlin (2002) for an historical perspective).

Dynamic stochastic general equilibrium models (DSGE) provide the appropriate tools to evaluate the macroeconomic consequences of policy changes. These models, by exploiting modern intertemporal general equilibrium theory, aggregate the optimal responses of individual as consumers and firms in order to identify the aggregate shocks and their propagation mechanisms by the restrictions imposed by optimizing individual behavior. Such a modelling strategy, uncovering economic relationships invariant to a change in policy regimes, provides a framework to analyze the effects of economic policy that is robust to the Lucas'critique (see Lucas (1976)). The early attempts of explaining business cycles by starting from microeconomic behavior suggested that economic policy should play no role since business cycles reflected the efficient response of economic agents to exogenous sources of fluctuations (see the seminal paper by Kydland and Prescott (1982) and, more recently, King and Rebelo (1999)). This view was challenged by several empirical studies showing that the adjustment mechanisms of variables at the heart of macroeconomic propagation mechanisms like prices and wages are not well represented by efficient responses of individual agents in frictionless economies (see, for example, Kashyap (1995), Cecchetti (1986) and Bils and Klenow (2004) and Dhyne, Alvarez, Le Bihan, Veronese, Dias, Hoffman, Jonker, Lunneman, Rumler, and Vilmanen (2004)). Hence, macroeconomic models currently incorporate some sources of nominal and real rigidities in the DSGE framework and allow the study of the optimal policy reactions to inefficient fluctuations stemming from frictions in macroeconomic propagation mechanisms.

Against this background, the first chapter of this thesis sets up a DSGE model in
order to analyze optimal monetary policy in an economy with sectorial heterogeneity in the frequency of price adjustments. Price setters are divided in two groups: those subject to Calvo type nominal rigidities and those able to change their prices at each period. Sectorial heterogeneity in price setting behavior is a relevant feature in real economies (see, for example, Bils and Klenow (2004) for the US and Dhyne, Alvarez, Le Bihan, Veronese, Dias, Hoffman, Jonker, Lunneman, Rumler, and Vilmunen (2004) for the Euro Area). Hence, neglecting it would lead to an understatement of the heterogeneity in the transmission mechanisms of economy wide shocks. In this framework, Aoki (2001) shows that a Central Bank maximizing social welfare should stabilize only inflation in the sector where prices are sticky (hereafter, core inflation). Since complete stabilization is the only true objective of the policymaker in Aoki (2001) and, hence, is not only desirable but also implementable, the equilibrium real interest rate in the economy is equal to the natural interest rate irrespective of the degree of heterogeneity that is assumed. This would lead to conclude that stabilizing core inflation rather than overall inflation does not imply any observable difference in the aggressiveness of the policy behavior. While maintaining the assumption of sectorial heterogeneity in the frequency of price adjustments, this chapter adds non negligible transaction frictions to the model economy in Aoki (2001). As a consequence, the social welfare maximizing monetary policymaker faces a trade-off among the stabilization of core inflation, economy wide output gap and the nominal interest rate. This feature reflects the trade-offs between conflicting objectives faced by actual policymakers. The chapter shows that the existence of this trade-off makes the aggressiveness of the monetary policy reaction dependent on the degree of sectorial heterogeneity in the economy. In particular, in presence of sectorial heterogeneity in price adjustments, Central Banks are much more likely to behave less aggressively than in an economy where all firms face nominal rigidities. Hence, the chapter concludes that the excessive caution in the conduct of monetary policy shown by actual Central Banks (see, for example, Rudebusch and Svennsson (1999) and Sack (2000)) might not represent a sub-optimal behavior but, on the contrary, might be the optimal monetary policy response in presence of a relevant sectorial dispersion in the frequency of price adjustments.

DSGE models are proving useful also in empirical applications and recently efforts have been made to incorporate large amounts of information in their framework (see Boivin and Giannoni (2006)). However, the typical DSGE model still relies on a handful of variables. Partly, this reflects the fact that, increasing the number of variables, the specification of a plausible set of theoretical restrictions identifying aggregate shocks and their propagation mechanisms becomes cumbersome. On the other hand, several questions in macroeconomics require the study of a large amount of variables. Among others, two examples related to the second and third chapter of this thesis can help to understand why. First, policymakers analyze a large quantity of information to assess the current and future stance of their economies and, because of model uncertainty, do not rely on a single modelling framework. Consequently, macroeconomic policy can be better understood if the econometrician relies on large set of variables without imposing too much a priori structure on the relationships governing their evolution (see, for example, Giannone, Reichlin, and Sala (2004) and Bernanke, Boivin, and Eliasz (2005)). Moreover, the process of integration of good and financial markets implies that the
source of aggregate shocks is increasingly global requiring, in turn, the study of their propagation through cross country links (see, among others, Forni and Reichlin (2001) and Kose, Otrok, and Whiteman (2003)). A priori, country specific behavior cannot be ruled out and many of the homogeneity assumptions that are typically embodied in open macroeconomic models for keeping them tractable are rejected by the data. Summing up, in order to deal with such issues, we need modelling frameworks able to treat a large amount of variables in a flexible manner, i.e. without pre-committing on too many a-priori restrictions more likely to be rejected by the data. The large extent of comovement among wide cross sections of economic variables suggests the existence of few common sources of fluctuations (Forni, Hallin, Lippi, and Reichlin (2000) and Stock and Watson (2002)) around which individual variables may display specific features: a shock to the world price of oil, for example, hits oil exporters and importers with different sign and intensity or global technological advances can affect some countries before others (Giannone and Reichlin (2004)). Factor models mainly rely on the identification assumption that the dynamics of each variable can be decomposed into two orthogonal components - common and idiosyncratic - and provide a parsimonious tool allowing the analysis of the aggregate shocks and their propagation mechanisms in a large cross section of variables. In fact, while the idiosyncratic components are poorly cross-sectionally correlated, driven by shocks specific of a variable or a group of variables or measurement error, the common components capture the bulk of cross-sectional correlation, and are driven by few shocks that affect, through variable specific factor loadings, all items in a panel of economic time series. Focusing on the latter components allows useful insights on the identity and propagation mechanisms of aggregate shocks underlying a large amount of variables. The second and third chapter of this thesis exploit this idea.

The second chapter deals with the issue whether monetary variables help to forecast inflation in the Euro Area harmonized index of consumer prices (HICP). Policymakers form their views on the economic outlook by drawing on large amounts of potentially relevant information. Indeed, the monetary policy strategy of the European Central Bank acknowledges that many variables and models can be informative about future Euro Area inflation. A peculiarity of such strategy is that it assigns to monetary information the role of providing insights for the medium - long term evolution of prices while a wide range of alternative non monetary variables and models are employed in order to form a view on the short term and to cross-check the inference based on monetary information. However, both the academic literature and the practice of the leading Central Banks other than the ECB do not assign such a special role to monetary variables (see Gali, Gerlach, Rotemberg, Uhlig, and Woodford (2004) and references therein). Hence, the debate whether money really provides relevant information for the inflation outlook in the Euro Area is still open. Specifically, this chapter addresses the issue whether money provides useful information about future inflation beyond what contained in a large amount of non monetary variables. It shows that a few aggregates of the data explain a large amount of the fluctuations in a large cross section of Euro Area variables. This allows to postulate a factor structure for the large panel of variables at hand and to aggregate it in few synthetic indexes that still retain the salient features of the large cross section. The database is split in two
big blocks of variables: non monetary (baseline) and monetary variables. Results show that baseline variables provide a satisfactory predictive performance improving on the best univariate benchmarks in the period 1997 - 2005 at all horizons between 6 and 36 months. Remarkably, monetary variables provide a sensible improvement on the performance of baseline variables at horizons above two years. However, the analysis of the evolution of the forecast errors reveals that most of the gains obtained relative to univariate benchmarks of non forecastability with baseline and monetary variables are realized in the first part of the prediction sample up to the end of 2002, which casts doubts on the current forecastability of inflation in the Euro Area.

The third chapter is based on a joint work with Domenico Giannone and gives empirical foundation to the general equilibrium explanation of the Feldstein - Horioka puzzle. Feldstein and Horioka (1980) found that domestic saving and investment in OECD countries strongly comove, contrary to the idea that high capital mobility should allow countries to seek the highest returns in global financial markets and, hence, imply a correlation among national saving and investment closer to zero than one. Moreover, capital mobility has strongly increased since the publication of Feldstein - Horioka’s seminal paper while the association between saving and investment does not seem to comparably decrease. Through general equilibrium mechanisms, the presence of global shocks might rationalize the correlation between saving and investment. In fact, global shocks, affecting all countries, tend to create imbalance on global capital markets causing offsetting movements in the global interest rate and can generate the observed correlation across national saving and investment rates. However, previous empirical studies (see Ventura (2003)) that have controlled for the effects of global shocks in the context of saving-investment regressions failed to give empirical foundation to this explanation. We show that previous studies have neglected the fact that global shocks may propagate heterogeneously across countries, failing to properly isolate components of saving and investment that are affected by non pervasive shocks. We propose a novel factor augmented panel regression methodology that allows to isolate idiosyncratic sources of fluctuations under the assumption of heterogenous transmission mechanisms of global shocks. Remarkably, by applying our methodology, the association between domestic saving and investment decreases considerably over time, consistently with the observed increase in international capital mobility. In particular, in the last 25 years the correlation between saving and investment disappears.
Bibliography


