Research Title: “Four Essays on New-Keynesian Macroeconomics”

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Abstract: This dissertation attempts to explore four independent research questions related to macro-cum-monetary literature of developing economies. For each research question, the New-Keynesian modeling approach is being considered as a common theoretical framework. This approach combines micro-foundations of both households and firms optimization problems and with a large collection of both nominal and real (price/wage) rigidities that provide plausible short-run dynamic macroeconomic fluctuations with a fully articulated description of the monetary policy transmission mechanism; see, for instance, Christiano et al., (2005) and Smets and Wouters (2003). The key advantage of modern dynamic stochastic general equilibrium (DSGE) models with micro-foundations, over traditional reduce form macroeconomic models, is that the structural interpretation of their parameters allows to overcome the famous Lucas critique (1976).2 Traditional models contained equations linking variables of interest of explanatory factors such as economic policy variables. One of the uses of these models was therefore to examine how a change in economic policy affected these variables of interest, other things being equal. In the following, I will summarize each chapter and discuss the main findings in turn. The first essay presents a medium-scale open economy (DSGE) model suitable for developing economy, like Pakistan. In such emerging market economies with large informal sectors, one of the enduring research questions is to construct and calibrate a valid micro-founded DSGE model featured with nominal and real rigidities. This issue is really challengeable as such economic model which comprehensively explores the transmission mechanism of economic behaviors in the developing economies is scarcely available due to unavailability of high frequency data and because of a major share of the undocumented economy in the observed economic data. Furthermore, due to nature of small open emerging economy, business cycle fluctuations are mainly prone to external shocks, like international oil and commodity price shocks and sudden stops in capital inflows mainly in terms of foreign direct investment. This requires an intensive customization of readily available DSGE models which are capable to answer these dynamics especially in the context of developing countries. Therefore, this study comes forward to meet these challenges by constructing a small open economy DSGE model feature with informal sectors vis-à-vis various external shocks. This intensifies the exposure of a SOE to these exogenous shocks in a manner consistent with the stylized facts listed above. We then focus on optimal monetary policy analysis by evaluating alternative interest rate rules and calibrating the model using data from Pakistan economy as benchmark emerging economy case. The learning and determinacy analysis suggest monetary authority in developing economies to follow Taylor principle and to put some weight on exchange rate fluctuations, even if there is relatively less inertia in the setting of policy interest rate. Finally, for the future research, this
model can be extended by incorporating banking and non-banking financial sectors to understand dynamics associated with fiscal borrowing from the banking system, and its likely consequences on monetary expansion and inflation. This helps to explain fiscal dominance issue, which is also an important feature of developing economies in large. In the second essay, we have established a theoretical model with micro-foundations that captures some important features of Pakistan’s economy which have emerged in sixty-four years of its history. A comparison of Pakistan’s economic performance during different regimes shows that macroeconomic fundamentals tend to show an improvement during the autocratic regimes as compared with those prevailing during democratic regimes. In particular, periods of autocratic regimes are typically characterized by low inflation, robust growth and low level of bureaucratic corruption due to better governance. In contrast, the economic performance during the democratic regimes has been observed to worsen with weak governance and high levels of corruption, high inflation due partly to reliance on seigniorage to finance public spending, and lackluster growth. Using annual data from 1950 to 2011, computational modeling is carried out by applying Markov-Regime switching technique with maximum-likelihood procedures. The estimation results based on empirical modeling setup are supportive of the above stylized-facts and also confirm the implications of the theoretical model. The third essay investigates and searches for a stable money demand function for Pakistan’s economy, where monetary aggregate (M2) is considered as the nominal anchor in the recent past. The stability of the money demand has long been debated in the conduct of monetary policy. It is argued that for stability of the money demand, a stable or at least predictive relationship should exist between money and its goal variables (inflation and growth). However, this relationship weakens over time, particularly in developed economies during early 1990s, due to increased financial innovation and deregulation that change the preferences of economic agent. Nevertheless, central banks of many emerging and advanced economies, particularly European Central Bank (ECB), continue to focus on the developments of monetary aggregates as they hold that money contains important economic information and its significance in monetary policy framework cannot be ignored. Central bank of Pakistan (SBP) remained in monetary aggregates targeting regime until 2009 when it formally started to monitor short term market interest rate by introducing interest rate corridor. The main reason for this switching is the lack of central bank’s control over the base money. Though SBP does not target particular level of broad money under the current monetary framework, the money is still an important indicator of explaining movement in goal variables, inflation and economic growth. Keeping in view of this relative importance, we are motivated to analyze stability of the money demand function and to find out relevance of monetary aggregates in the context of Pakistan. The core functional specification of money demand is derived from a set of inter-temporal optimal decisions made by households and firms, in a Dynamic Stochastic General Equilibrium (DSGE) setting. This specification is then estimated empirically using various econometric techniques. While, in this stage, various other potential determinants of money demand are also investigated in terms of goodness of fit. This is because of the change in preferences of both households and firms and widening of operational scope of financial sector during the last two decades. Further, since the
development of structured financial instruments are still in evolution phase, it is necessary to analyze different empirical specifications for robustness check. Another empirical contribution of this study is to provide stability analysis both in terms of model and parameter. In case of Pakistan, a large body of literature has empirically estimated the money demand function and tested for stability of demand and velocity of money. However, the results are mixed and provide conflicting explanation because of specification differences and estimation methodologies. In this study, we incorporated potential variables that effect money demand and checked for its stability in case of Pakistan. Our results show that money demand function is stable in case of Pakistan. It is well known in standard economic literature that nominal frictions have significant impact on the transmission mechanism of monetary policy. Motivating from this notion, the forth essay considers a closed economy version of DSGE model with various nominal frictions vis-à-vis monetary-cum-fiscal blocks to seek the basic query that how monetary policy impacts real economic activities while in the presence of nominal frictions, like price stickiness, staggered wages, information stickiness, etc. Using Bayesian Simulation techniques, we estimate the model for the closed economy. Our simulation results show that despite the apparent similarities of various frictions, their responses to shocks and fit to data are quite different and there is no agreement on their relative performance. As a result, Monetary Authorities cannot afford to rely on a single reference model which contains few nominal frictions of the economy but need to model a large number of alternative ways available when they take their decision of optimal monetary policy.