CHAPTER 1

INTRODUCTION

1.1 The Statement of Problems

Presumably, oil price shocks have important impacts on economic activities as oil is a major driving force for economic growth. Numerous amounts of literature suggest the effects of oil price shocks on the U.S. economic activity. Those literature, for example, are Hamiltion (1983, 1988, 1996), Rotemberg and Woodford (1996), Finn (2000), Hamilton and Herrera (2004). More precisely, Brown and Yücel (2002) and Donald, Leiby, and Paik (2003) survey the theoretical and empirical understanding of macroeconomic consequences and oil price shocks. According to a substantial amount of empirical evidence that discuss the effects of oil shocks on economic activity, how macroeconomic policy should respond to oil price shocks, i.e., oil-macroeonomy relationships, becomes a considerable economic research issue for economists.

Seminal theoretical studies that suggest a relationship between oil price shocks and monetary policy response in the U.S. economy are Bernanke, Gertler, and Watson (1997). These papers show that U.S. economy responds differently to an oil price shock when the federal fund rate is constrained to be constant than in the case in which it is unconstrained. Those papers argue that the U.S. recessions during the oil price crises are caused from fighting inflation policies of the central bank not from oil shocks themselves. Their papers lead to an important implication of policy response on oil price shocks in the macroeconomic analysis.

In regards to the effects of oil price shocks on economic activity, they can be explained through transmission channels of oil prices. Oil price shocks affect economic activity both on the supply and demand side. In brief, the supply side suffers as production costs rise resulting in reallocation of the means of production. Producers will cut back their production and contract employment. Changing in the

production sector affects aggregate supply. This, in turn, affects the growth rate of the economy. On the demand side, oil price shocks drive up the general level of prices, which translate into lower real disposable income and finally a decrease in aggregate demand. Apart from the direct effect, oil price shocks have second-round effects on wage rates and inflation expectation which could amplify the impacts of oil price shocks. With the amplification effect and the inflationary pressure, the risk of severe economic recession is raised.

Macroeconomic policy makers have to respond to the effects discussed above by minimizing the magnitude of the oil price shocks in order to stabilize economic activity. In most countries today, shot-run stabilization policy is normally done by monetary policy rather than fiscal policy. During the oil price shocks, monetary policy planners' task is to stabilize the inflation rate driven by oil price shocks. Monetary policy can significantly control the effects of oil price shocks in the short run using interest rates as an instrument. But the issue of concern is that increasing interest rates for fighting inflation will lead to loss of economic growth since investment and consumption will be highly sensitive to interest rates. The major responsibility of the monetary policy makers, therefore, must be to find a trade-off between the objectives of stabilizing inflation and sustaining economic growth.

Interestingly, in many developing countries including Thailand, the discretionary fiscal policy response to oil shocks has an important role to maintain growth in economic activity in the short run. The oil subsidy scheme is implemented, in many developing countries, through discretionary fiscal policy during the time of oil crises. Oil subsidy is usually enacted through controlled retail prices since the government believes that stable oil prices will reduce undesired impacts both on the inflation rate and economic growth. The objective of an oil subsidy scheme is, therefore, to maintain oil prices within the country and minimize the economic and social impacts generated by oil price shocks.

Additionally, from the external balance view, oil importing countries suffer from oil price shocks because the higher oil import bills trigger a deterioration of the terms of trade and the current account deficit. This will depreciate the exchange rates that pass through the purchasing power of the oil-importing country. The purchasing power will transfer from oil consuming to oil producing countries. The real income

reduction in the countries facing higher oil import bills, in turn, means less income to spend on other goods, which translate into lower aggregate demand.

According to the monetary policy response to inflation pressure driven by oil price shocks, the interest rate will increase. This, in turn, affects the capital balance and the balance of payments. The demand for money and the foreign assets holding will also be affected from the interest rate policy.

In regards to the recognition of the oil and macroeconomic relationships as surveyed by much literature, and the effects generated by the monetary policy responses to oil price shocks as referred by Bernanke, Gertler, and Watson (1997)'s arguments, it, therefore, is interesting to analyze impact on macroeconomic activity from oil shocks. Although research of these relationships is not new, the study that analyzed those effects by applying the dynamic stochastic macroeconomic model remains in extensive economics literature due to the advantage of the new instruments that can be used to solve a complex economic model. We can characterize the model to be close to real economic activity, the model; therefore, should be less ambiguous to explain the business cycle.

To explain the effects of oil price shocks and policy responses discussed above, we need a macroeconomic model. The workhorse model for studying a small open economy is the New Keynesian Open Economy Macroeconomics (NOEM) initiated by Obstefeld and Rogoff (1995, 1996). The NOEM is based on micro-foundation and incorporates nominal rigidities and imperfect competition aspects into the dynamic general equilibrium framework to study the effects of alternative policies. The micro-foundation nature of NOEM model benefits us to analyze the behavior of agents based on optimization and rational expectation features.

Particularly, this study develops the theoretical dynamic macroeconomics model to analyse the oil macroeconomy relationships, and examine the response of the monetary policies. The model of this study helps to explain and understand how mechanism of oil price shocks pass through economic activity and the magnitude of those effects.

1.2 Objectives

Because oil is an important factor in Thailand's production processes and Thailand is a high oil-import dependency country, the impact of international oil price shocks on Thailand's economic activity is remarkable both in magnitude and the duration of the effects. Precisely, this paper will explore the following:

(1) the quantitative analysis of the impacts of oil price shocks on macroeconomic variables in the framework of an open economy dynamic stochastic general equilibrium model.
(2) the dynamic responses of simple monetary policy rule as Taylor rule.

1.3 Scope of the study

The model is calibrated and simulated the model for Thailand as a small open economy which makes Thailand a world price taker. The parameters used to calibrate the model will be collected and selected from statistical data from the Bank of Thailand, NESDB and EPPO between the first quarter of 1993 to the fourth quarter of 2007, and the relevant empirical results from previous studies of the Thailand economy.

1.4 Organization of the study

The organization of this paper is divided into six chapters. The first one is introduced here. The second provides the review of related literature and the brief introduction about monetary policy rules and the basic New Keynesian model including the basic structure of a small open economy model. The third illustrates an overview of how the oil industry environment and discretionary fiscal policy react to oil price shocks, in Thailand[1]. The fourth presents the theoretical model and the

[1] Although, this study is to analyze effects of oil price shocks and the response of monetary policy, Thailand has a history of fiscal policy on oil prices. Chapter three, then, describes those policies and their effects.

methodology for solving the model. The model is solved by the methodology for solving a rational linear expectation model. The fifth chapter presents parameterizations of the model, the simulation results of the study, and then a comparison of the model and the historical data by using second moment have been provided. The sixth, finally, is the summary and the limitations of the study.