THE HISTORY OF STAGFLATION: A REVIEW OF IRANIAN STAGFLATION

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Hossein Salehi, M. Sc.

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Dr. Masha Rahnama
Chair of Committee

Dr. Eleanor Von Ende

Dr. Mark Sheridan
Dean of the Graduate School

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TABLE OF CONTENTS

ACKNOWLEDGMENTS ii

ABSTRACT v

LIST OF FIGURES vi

I. INTRODUCTION 1

1.1. Motivation 1
1.1.1. Keynesian Theory 2
1.1.2. Neo-Classical Theory 3
1.1.3. Neo-Keynesian Theory 4
1.1.4. Quantity Theory of Money (Monetarism) 5
1.1.5. Quantity Theories of Stagflation 7
1.1.6. Shock Theory 7
1.1.7. Differential Accumulation Theory 7
1.2. Research Objective 8

II. LITERATURE REVIEW 10

2.1. Aggregate Supply and Aggregate Demand Model (AS/AD model) 10
2.1.1. Supply-Side Model 12
2.1.2. Demand-Side Model 13
2.1.3. Oil Price Shocks 14
2.2. Monetary Model 16
2.3. Structural Models 20

III. HISTORY OF STAGFLATION: CASES AND CURES 22

3.1. European Stagflation 22
3.2. Latin America: Brazil and Chile 25
3.3. The Great Stagflation 26

IV. IRAN STAGFLATION 34

4.1. History of Iranian Stagflationary Episodes 34
4.2. Oil Shocks 36
4.3. Currency Devaluation 37
4.4. Economic Sanctions 40
4.5. Economic Mismanagement 41

V. CONCLUSION 44

References 46

ABSTRACT

The term “stagflation” was first used by a British politician, Iain Macleod in 1965, to describe the simultaneous occurrence of inflationary period during stagnation. On those days, the United Kingdom was experiencing an inflationary period accompanied by rising unemployment and lack of growth in market demand and business activities. Since then the worldwide economy has faced several stagflationary episodes. This research aims to review the history of stagflation models and theories. Also it tries to investigate the previous stagflation episodes worldwide and their causes. Finally, it will have a special focus on the history of inflation and unemployment in Iran and the occurrence of stagflation in Iran. This study also discusses the possible explanations of current stagflation in the Iranian economy.

LIST OF FIGURES

2.1 Oil Price Volatility (1968-2014) 14
3.1 Unemployment Rate and Inflation in the United States in 1960s 26
3.2 Unemployment Rate and Inflation in the United States in 1970s – 1980s 27
4.1 The Iranian net oil revenue, percent of GDP (1970 – 2012) 37

CHAPTER I
INTRODUCTION

1.1. Motivation

Stagflation is relatively a new theoretical term in economics. "Stagflation" (a portmanteau of stagnation and inflation) generally refers to a combination of a persistent and uncomfortably high inflation, steadily high unemployment rate and a slow economic growth rate. Unlike in recession, when the economic output declines and workers lose their jobs, the economy still grows during stagflationary period, just not fast enough to supply jobs for all the job-seekers.

Technically speaking, the term "stagflation" has different meanings depending on the factors that are being investigated. Samuelson (1972) offers the weak definition of stagflation as the combination of inflation and unemployment while Parkin and Bade (1986) define the strong version. In their paper, they describe stagflation as the combination of inflation and declining output. Between the weak and strong forms, Baumol et al. (1986) offer the moderate version as the occurrence of inflation during a recessionary period in which the economy demonstrates very slow growth.

Stagflation can be categorized into two broad types:

1. It is a business-cycle phenomenon that adjusts a prior demand inflation by appearing in the later phase of the cycle. During this phase, the upward trend of real output slows down and even begins to fall.
2. It is an outcome of an upward shift in supply, known as supply inflation, which is not generated by a larger aggregate demand.

Because of many opinions about the nature of stagflation, it is a complicated conundrum. In order to understand the theories behind stagflation, it is best to start by discussing the available theories in the field of unemployment and inflation. Once these theories are understood, we can apply them to illustrate the phenomenon of stagflation.

1.1.1. Keynesian Theory

The original approach to stagflation was based on unemployment theory which is rooted in the nature of the labor markets and the fact that these do not have market mechanisms. Unlike prices in the goods and services market, wage rates are not regulated by supply and demand. Instead, wages (the price of labor supply) are determined by exogenous factors like institutional variables, rather than by market forces such as excess supply, etc.

According to the classical approach, and specifically William Phillips (1958), there is a reverse relationship between inflation and unemployment. This idea was one of the milestones in the development of macroeconomics. In his research, William Phillips

examined wage inflation and unemployment in the United Kingdom from 1861 to 1957. Phillips found this consistent inverse relationship between unemployment and inflation, so that when unemployment is high, wages increased slowly and vice versa. Prior to the 1970s, Keynesian economists, relying on Phillips reasoning, believed that it is not possible to have both issues, recession and high inflation, together in the economy and they believed the inverse relationship between unemployment and inflation was stable. In other words, Before the 1960s, when stagflation occurred in the United Kingdom, many Keynesians ignored the possibility of having unemployment and inflation together.

1.1.2. Neo-Classical Theory

Broadly speaking, the neo-classical economic theory states that stagflation is caused by the failure of effective allocation in the goods market, mainly as a result of extreme interventions from the government. This approach rejects the impact of monetary policies on stagflation occurrence, instead arguing that the real component of the economy can be only affected by real factors. In other words, nominal variables such as inflation have nothing to do with real ones like the unemployment rate.

This theory also claims that increasing consumption taxes will cure inflationary pressures by persuading saving rather than spending. A good classical example of this phenomenon is the impact of excessive government regulations during the administration of Richard Nixon. He tried to control the inflation (caused by fighting in Vietnam and expanding the Great Society programs) by simultaneously reducing government spending and increasing the interest rate. These actions led to increasing unemployment and also

caused inflation to remain high. The situation worsened during which time he initiated the control of wage and price and the energy crisis began in 1973, until his resignation. In chapter III, the United States stagflationary period and its cures will be discussed precisely.

1.1.3. Neo-Keynesian Theory

Another version of the stagflation theories, often cited by scholars who believed the paradox of stagflation is not explained by "Keynesian" economics, says that at any points of employment below the full-employment state, wage rate and excess demand are independent from each other. They believe that there are two possible causes for the economy to have simultaneous unemployment and inflation, known as cost-push and wage-push.

Cost-push inflation happens when prices rise due to the higher cost of any production factor complementary to labor such as raw materials, energy and taxes. Many of these production factors may temporarily affect production cost. The cost-push doctrine is dated to Sir James Steuart's book, "Inquiry into the principles of political economy", in which he affirmed three main strands of cost-push theory (Humphrey, 1988): first, the price level is a nonmonetary fact that is governed by the same forces that conduct the individual prices of specific goods. Second, the general prices are real entities that move separately from money. In other words, money has nothing to do with determining price level. And third, instead of money, Steuart considers a two-step process governs prices. Based on his two-stage process, market competition is

determined the price levels and the rate of money usage (money turnover velocity) adjusts the existing price level (Humphrey, 1988).

Wage-push was introduced by Laurence J. Laughlin (1909) in an article in the Journal of Political Economy. He noted three types of cost-push inflation: administrated pricing, commodity shortage and wage-push. He characterized the increasing "cost wage" as one of the main causes of increasing production expenses of all types of goods and services, and therefore of increasing prices. In his article, he emphasizes on the role of trade and labor unions in determining a labor force price.

Theories suggest two important observations: first, stagflation is an outcome of consecutive events; and second, monopolistic pricing is vital to explaining the occurrence of stagflation. These two observations suggest that stagflationary periods may not occur in competitive economies. Also there is no indication that recessions are more likely to occur in inflationary states than in monetarily stable periods.

1.1.4. Quantity Theory of Money (Monetarism)

This approach can be summarized in one sentence: "Inflation is always and everywhere a monetary phenomenon."(Milton, 1968) This theory considers changes in money supply to be the key causing of stagflation, rather than other factors related to demand. Contrary to the first approach, the third explanation of stagflation assumes a perfect competitive labor market, in which any disequilibrium moves back to the closest equilibrium point. This approach is based on the failure of the natural rate of unemployment. On this approach, both inflation and unemployment are simultaneously

explained by the same shock, rather than resulting from two different phenomena. This explanation of stagflation is known as the monetarist explanation, and is driven by Friedman's idea and his critique of Keynesians' Philip's curve.

The Keynesian Philip's curve model is based on the idea that low unemployment can be obtained by letting high inflation rates decreases real wage rates and subsequently raise the demand for labor. In contrast, Friedman's explanation was rooted in the concept of the natural rate of unemployment. He argued that a higher rate of inflation would be achievable without low unemployment because workers would adjust their nominal wage demands in getting used to high inflation. He argued that the impacts of expansionary policies would be temporary, and the unemployment rate would return to the natural level with higher price level in long-term. In other words, if unemployment was below the structural equilibrium point, then the price and wage level will increase by highlighting the role of inflation expectations. In fact, Lundberg (1977) praises Friedman as the one who showed that the common theory of having "trade-off" unemployment and inflation can be assumed temporarily.

After Friedman's argument many empirical studies rejected that the Philip's curve by showing an integration of high inflation and high unemployment, i.e. "stagflation". According to this approach, both high inflation and high unemployment are caused by monetary malfunctioning.

1.1.5. Quantity Theories of Stagflation

According to the quantity theories of stagflation, money supply rather than money demand, is the main reason for stagflation. According to these types of theories, another reason for stagflationary period is a growing money supply when the price level is increasing.

1.1.6. Shock Theory

Shock theory takes exogenous forces to be the main reason for stagflation. Such outside factors impose adverse shocks to total of supply in the goods and services market. Oil price shock is one exogenous impulse that influences the aggregate supply curve, and thus the whole economy. This theory will be discussed in more detail later.

1.1.7. Differential Accumulation Theory

Differential accumulation introduced by Jonathan Nitzan and Shimshon Bichler (2001) is another way of explaining stagflation. They relate stagflation to the concept of merge and acquisition, describing it as the main method of large firms to make profits of more than the normal rate of return. In their study, they pay close attention to the impact of inflation on differential profit, which is due to increasing price levels and decreasing production amounts rather than to profit itself. They restate Friedman's quote to convey their idea, argued inflation redistributes, and therefore is a redistribution phenomenon. Nitzan and Bichler (2001) found that differential accumulation mainly depends on

mergers and acquisitions, which can receive advantages from severe stagflation crises in the short run.

Even though the above approaches disagree they all affirm that exogenous factors such, as a government's inappropriate macroeconomic policy and supply shocks can induce stagflation – (Central banks may cause inflation by increasing supply of money while governments may cause stagnation by over-regulating both labor and goods markets, and supply shocks result in raising of prices and slowing down the economy by making production less profitable). The objective of this research study will be introduced in the next section.

1.2. Research Objective

The main aim of this thesis is to explain the concept of stagflation and to investigate different cases of stagflation. It will also try to have a comprehensive review of the history of stagflation worldwide. Next, it will identify the causes of and solution to Iranian stagflation. First the explanatory models of stagflation will be outlined. Then, the history of stagflation in different countries will be reviewed. In the end, the US and Iranian cases will be the focus.

Two following questions will be addressed:

1. Has the Iranian economy been in a period of stagflation?
2. What are the causes of ongoing stagflation in Iran?

As of source of data, economic data is collected from the World Bank, the IMF

and the Central Bank of Iran for discreet time periods, between 1972 and 2014. For the United States, data was collected from Bureau of Labor Statistics (BLS). The world-wide economy has been volatile over this time period, and the Iranian economy which has experienced several economic and political, issues such as several oil price shocks, the Iranian Revolution, and the Iran-Iraq war.

CHAPTER II
LITERATURE REVIEW

In spite of the fact that stagflation is atypical and anomalous in nature, and thus very unlikely in the real world economy, there have been many 20th century examples of minor and major stagflations. Many studies in the stagflation literature have investigated various types of models to explain the causes of and solutions to past stagflationary periods. Some studies have utilized an ordinary AS/AD model, for example while others are more focused on factors such as oil price shocks. In this section, these models will be studied, and hopefully suggest some informative steps toward explaining previous stagflations.

2.1. Aggregate Supply and Aggregate Demand Model (AS/AD model)

According to the aggregate supply and aggregate demand model, during inflationary periods, people's expectations of rising prices increase their demand in the goods and services market, and leading to demands for higher wages. In addition, government payments, such as those for social security (which are linked to Consumer Price Index) increases the government's need for funds. This results in budget deficits and hence higher levels of borrowing, which lead to higher interest rates and costs for businesses and consumers.

On this theory, stagflation can be relieved by two distinct solutions: curing inflation or curing the recession. To cure inflation, the government can force the economy into recession by increasing the interest rate. To cure the recession, the government must spend more, resulting in deficit spending. By increasing its expenditures, the government adds money to the economy, thus solving stagnation. Such actions, however, though they are designed to reduce inflation and unemployment, may actually harm the economy by actually worsening economic growth. In an oil producing country, stagflationary impacts are caused by other factors, not by oil price spikes, but such as currency shocks, decline in GDP, etc.

There are various components that have influence on output and prices. They can be divided into two major categories:

- The factors that influence aggregate supply (known as adverse supply shocks), which reduce firms' production capacity, impacting prices and quantities of inputs. Supply shocks are grouped into three types, including transitory price strike, inflationary shock and deflationary shock.
- The factors that affect aggregate demand (defined as demand shocks) that unlike supply shocks move the price level and real output in the same direction.

It is important to note that some shocks have both supply-side and demand-side elements, for instance oil price shock is within this group of shocks.

2.1.1. Supply-Side Model

Supply-side economics is a macroeconomic model designed to explain the breakdown of the trade-off relationship between inflation and unemployment represented by the Philips curve. To apply the supply-shock model to explain stagflation, we first have to know the type of shocks and their impact on the economy. Because reductions in input result in reductions in total output, the unemployment rate increases and forces the economy into the recession. Therefore an adverse supply shock simultaneously increases inflation and unemployment. In this situation, a government might boost the responsiveness of demand to supply by increasing its expenses, helping to ease the recession and thereby decreasing unemployment. These actions, however, would actually result in higher price level, illustrating that managing the demand would not be an appropriate solution in this context.

Changes in oil price is one of the supply-side shocks and its impact on the global economy have been very interesting topic in research. These shocks have been in the center of the interest of the researchers. According to the literature, the relationship between oil prices and price level, as well as output, to the fact that they have different influences on oil-consuming and oil-producing countries. Since the oil shocks are very important factors in the world economy, we will focused more on this subject later in this research. (William Nordhaus, 2007)

2.1.2. Demand-Side Model

As discussed previously, the original neo-classical school focused on the supply side of the economy and tried to explain stagflation as solely the result of supply shocks. In the case of the United States, the reduction in the total economic output was much larger during stagflation than could be explained solely by supply shocks. In addition, the neo-classical model did not give reasonable explanation for the jump in unemployment that followed economic changes like increases in oil prices.

Blanchart and Quah (1989) offers demand-side disturbances as the cause of the decline in economic output during stagflation and of the jumps in unemployment that follow changes. Demand shocks are the result of monetary and fiscal policies that make inflation and output move in the same direction. In their study, they assumed that two types of fluctuations impact unemployment and output: one has long-term impacts on both variables, while the other only influences output. Their conclusion was also verified by some other studies, such as Blinder (1987).

The severity of the shocks described either supply- or demand-side models, depends on many factors including the size of the shocks, the persistence of the shocks, the dependence of the economy on the factors that are hit by the shocks (Sester, 2004). In the next section, the supply shock effect on stagflationary periods will be discussed in more detail.

2.1.3. Oil Price Shocks

Oil price shocks and their impacts on the economy have been under investigation for many years. Figure 2.1 demonstrates the oil price volatility between 1968 and 2014. As can be seen, the real oil price faced two huge jumps during 1970s.

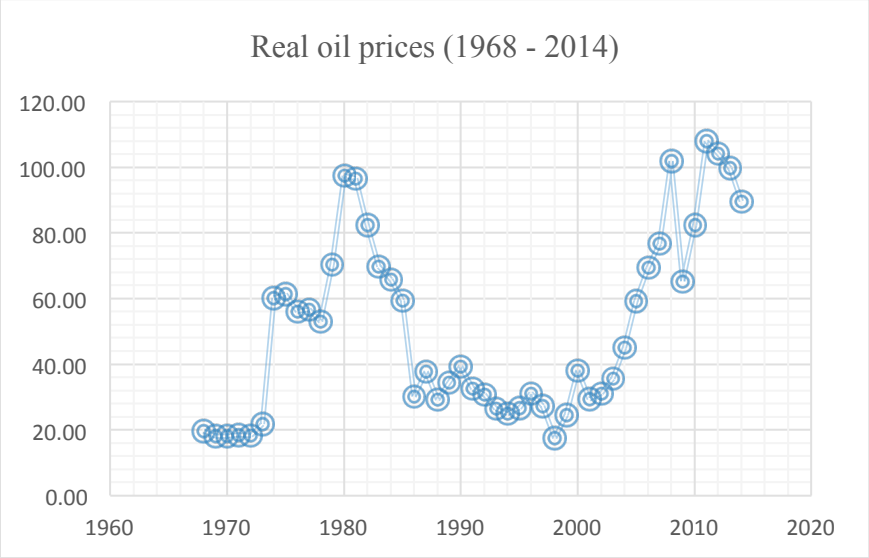

Figure 2.1 Oil Price Volatility (1968-2014)

To evaluate the effects of oil price shocks, it is necessary to understand the factors that drive crude oil prices. Oil price shocks can be categorized on the basis of different factors, including whether they are supply-driven or demand-driven, and whether they are happening to an oil importer or an oil exporter (Guntner, 2014). The negative oil price shocks differ based on whether the economies are oil-consumer or oil-producer. Another field of research is to study the immediate and long term impact oil-price effects (Cashin et al., 2014).

In one of the first investigations in this field, Malinvaud (1977) and Solow (1980) modeled the relationships between oil and stagflation and wages and stagflation. Blinder (1979) considered the effect of energy prices emphasizing the impact of oil, wages and labor performance on inflation, which is associated with output decline.

Concerning the importance of the oil prices in producing stagflation, there is a broad range of opinions. While some researchers argue that oil prices are important contributors to stagflation (Jimenez-Rodriguez and Sanchez, 2010), others provide strong evidence to the contrary. Jimenez-Rodriguez and Sanchez (2010) believe that oil prices can be recognized as an important factor, despite their decreasing impact since 1990. This argument is supported by another study explaining the decreasing effect of oil (Kilian, 2009b). In general however, most of the studies in this field suggest that the impact of oil prices is just one part of the whole story (Roger, 2005) and (Kilian, 2008, 2009a).

Hamilton (2009) recently compared the oil shock of 2007-2008 to the three major shocks that hit the global economy between 1978 and 1990. During this period, three events occurred in three main oil-producers countries that disrupted the oil flow from the Middle East to other developed and developing countries (Hamilton , 2009).

In another recent study, Kilian and Hicks (2013) argue that repetitive positive shocks to demand caused the oil price shock between 2003 and 2008. This study supports the models that suggested that the demand aspect of the oil market should be further investigated (Kilian, 2009b) and (Bodenstein et al., 2011).

Blinder and Rudd argued that the oil price shocks also had some side effects, including an "oil tax", which decreased the real income of consumers by making oil more expensive. Another side effect of the increase in oil prices shocks was rise of the prices of other imported goods (Blinder, Alan S.; Rudd, Jeremy B., 2008).

In another paper, Robays (2012) studies the impact of oil price shocks on macroeconomic factors for different certainty levels in economy. Referring to several documents that prove the different behaviors of decision makers in an increasing-uncertainty environment, he concluded that macroeconomic variables are impacted by oil price changes during uncertain conditions.

When the economies were exposed to oil price shocks, governments tried to moderate their negative impacts by implementing monetary policies. Therefore, understanding the link between oil price shocks and monetary policy regimes is crucial.

2.2. Monetary Model

Monetary policies have attracted substantial empirical research as another causing factor of stagflation. Monetary policy is usually considered an opposite force to oil price shocks, moderating oil prices steep fluctuations, but it can also lead to stagflation. Bruno and Sachs (1985) focused on the inadequacy of money, and argued that monetary expansion is one of the major causes of stagflation. They conclude that purely demand-side models are not sufficient to explain this economic phenomenon. In another famous research, it has been proven that monetary policies are one of the major factors for having higher inflation and lower output and therefore stagflation.

Monetary policy regimes are described as monetary arrangements, by considering a set of expectations, including expectations of the public and policy-makers (Bordo and Schwartz, 1997).

In general, there are two major monetary policy regimes (Galebotswe, O., 2012):

1. Under the first regime, monetary policies are applied via deposit and lending interest rates as the direct controls, credit limits, and reserve requirements. In periods of monetary stability and economic growth, this regime uses the exchange rate to reduce the imported inflation and to keep domestic industries competitive.
2. Under the second regime, direct instruments are replaced by indirect controls, and the main goal of monetary policy is to stabilize the price level. In addition, interest rates and credit controls are discontinued.

The shared concept in currently implemented monetary regimes is the concept of nominal anchor. An anchor can be described as a restraint on discretionary policy, put in place to avoid poor results in long run. They are necessary because monetary policies can have different outcomes in the long- and short-runs. This issue is called the time-inconsistency problem. For instance, a short-term expansionary monetary policy will force the economy to produce more, decreasing unemployment rate, but it will increase the price level in the long run.

In addition to the two major monetary policy regimes that are mentioned above, there are four basic types of monetary policy approaches, which are used in a number of

countries (Mishkin, 1999):

- Exchange-rate targeting
- Monetary targeting
- Inflation targeting
- Monetary policy with an implicit nominal anchor

Mishkin argues that the ability of monetary policy regimes to limit discretionary policymaking is the key factor to measuring the success of those regimes (Mishkin, 1999). He explains that by limiting discretionary policymaking, prices can be stabilized in the long run.

Different monetary policy regimes cause significantly different impacts on inflation. Bernholz (2003) explained this phenomenon by assuming that governments tend to have a bias towards inflation. This bias is more powerful if the country is experiencing war or revolution, as will be seen in Iran's case.

Cavallo (1977) and Farmer (1988) have shown that monetary policy alone can cause stagflation, in the absence of any supply-side shocks. Barsky and Kilian (2000) examined the role of monetary fluctuations without considering supply shocks. They argued that stagflation is a purely monetary phenomenon (Barsky, Robert B. ; Kilian, Lutz, 2001). They are convinced that stagflation would not occur again since the economy has not experienced a major shift in monetary (Barsky R.B.; L. Kilian, 2002).

Kilian believes that stagflation occurred as a direct result of oil price shocks to

countries and monetary policies, and therefore argues that the absence of stagflation can be interpreted as a result of improved monetary policies, on which oil price shocks have no effect (Kilian, 2007).

Barsky and Kilian (2007) argue that oil shocks cannot account for significant increases in the prices of other industrial commodities such as raw materials and therefore oil supply shocks may not be the primary source of stagflation. In contrast, the case of "go-stop" monetary policies gave a more coherent explanation of substantial part of observed inflation in 1973/74. Go-and-Stop explains the behavior of the monetary authority, which is very important component of the monetary analysis, since it shows either an endogenous response to the economy situation or exogenous intervention. In opposition to this theory, however, the Federal Reserve switched between sharply expansionary and contractionary monetary policies several times before the oil shocks in late 1973. Several authors have tried to explain why the Federal Reserve did not predict the consequences of such actions. Hetzel (1998) suggested that the Fed chairman believed in special-factors theory of inflation ranging from unions and corporations to government deficit, food, and, oil price rises.

Prior to this study, Blinder (1979) and Bruno and Sachs (1985) determined monetary expansion as one of important initiating causes of stagflation episode of 1973-1975. And monetary expansion caused in the second episode of stagflation between 1979 and 1982. They have a provided monetary model to test stagflation as a monetary phenomenon rather than a supply shock reaction in the economy. In other words, they showed the inadequacy of money explains price level movements and hence stagflation.

Other studies investigate whether output pulls up the price level. Based on Fuhrer and Moore's research (1995), there is a cross-correlation function between United States GDP growth and inflation rising, which describing inflation as persistent structural phenomenon. In such models, both inflation (called sluggish inflation) and output rise together to their peaks and decline monotonically. Also it is discussed that the sluggish inflation is the state of economy in which all agents learn about changes in the monetary policy regime.

In the algorithm, suggested by Knotek and Khan (2012), the occurrence of stagflation is almost definite if the economy experiences any deviation from the current monetary policy. There are several factors that impact the choice of a monetary system, including: fiscal arrangement, degree of wage flexibility, and trade importance (Knotek and Khan, 2012).

2.3. Structural Models

The concept of structural stagflation first is introduced by Olivera (1964), by arguing the necessity of non-monetary theory of inflation which he claims is "the underlying region of physical flows, real prices and sectional disequilibria" (Olivera, 1964). In the case of supply shortage, and consequently an increase in the general price level, the expansion of money supply will be unavoidable. Therefore the structural inflation redefines money as a passive adjustable factor, instead of an exogenous and adaptable variable. Olivera's theory, which is known as the Latin American Structrualist theory of inflation, highlights the paradox between inflation, and a recession which

happens after oil shocks and consistent inflationary period in Argentina (Nicolini-Llosa, 2007a). In his second study, Olivera (1967) introduces his two-stage model for explaining the difference between the elasticity of demand and supply would create pressure on price level and cause structural inflation. Therefore, changes in relative prices will result in changes in economic structure (Olivera, 1977a,b). In other words, each economic structure can be assigned to one set of relative prices. In his next paper, Olivera (1978) describes inflexible and decraesing money prices as the sufficient condition for having structural stagflation. Structural stagflation indicates the relationship between changes in relative prices and changes in general price levels (Canavese, 1982)

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CHAPTER III
HISTORY OF STAGFLATION: CASES AND CURES

Stagflation has various types of social, political, cultural, and most importantly economic side effects depending on the structure of the country. The characteristic of a given period of stagflation is determined by many different factors, including economic structure, efficiency of fiscal and monetary policies, structure of government budget, elasticity of investment with respect to interest rate, consumption behavior in the society, government intervention in the economy, etc. The interesting point is that the factors that cause stagflation in one nation can cure stagflation in another. Before turning to stagflation in the United States and Iran, it will be helpful to consider the most important lessons that can be learned from past stagflationary periods in different countries. Explanations for major instances of stagflation will therefore be examined in detail.

3.1. European Stagflation

One of the clearest instances of stagflation occurred in Europe. Although the European countries are mutually dependent to some extent, stagflation manifested differently in each country during this period. A study conducted by Malinvaud (1987), identified the most important failure, as the main causes of stagflation in Western European countries. He argues that their macroeconomic perspective was shortsighted, taking only short-run economic performance into account. European economists neglected the long-run issues, and hence could not propose a solution when stagflation occurred in Europe. In addition, even though monetarist economists cautioned of

stagflation troublesome to society and the market, their warnings were not informative and timely enough to stop the deteriorating situation (Malinvaud, 1987). This study suggestes avoiding oversimplified explanations of stagflation. It also recognized three mutually dependent features:

- Very limited and biased economic policies, which had tendency toward demand contraction.
- Rigid and over-regulated market mechanisms, which gave the economy a rigid structure especially in the labor market.
- Lack of appropriate resolution, which limited competitiveness and decreased profitability.

America's "Great Depression" and "Great Stagflation" are the most famous harsh economy situations. Even though a huge proportion of the stagflation literature is mainly focused on these events, the Great Stagflation was not the most severe and prolonged stagflationary period in history, the stagflation in the United Kingdom during the sixties and seventies was worse. First it covers a longer time period – almost twice as long as the American stagflation period – and has double-digit inflation – twice as large as inflation that was experienced in the US.

The United Kingdom experienced stagflation during 1970s and early 1980s, when both high inflation and high unemployment occurred simultaneously. This episode of stagflation did not admit of easy solution through Keynesian demand management policies. Instead, attempts to cure the stagflation through Keynesian demand management made the situation worse. The concept of demand management refers to government

policies for achieving full employment equilibrium. Based on Bean's (1994) study, these policies general decrease unemployment by, limiting the cyclical volatility in short-run and by increasing economic output and employment.

Malinvaud (1987) also observed that economists in Germany and United Kingdom have different opinions about the main cause of stagflation in Europe. In Germany, it is believed that institutional rigidity was the main problem, while in the UK the deflationary bias of economic policies is blamed.

Sovala (1989) analyzed the effects of stagflation in Finland arguing that different theories are needed to explain the persistence of inflation and unemployment during the late 1970's. He concluded that oil price shocks caused inflation to worsen rapidly, however he was not certain of the cause of the decrease in employment. He suggested the contractionary aggregate demand policy as one possible cause of the European stagflation, although he concluded that for Finland the aggregate supply effect was not very strong.

Charemza (1992) investigated the effect of the European stagflation on Poland. He argued that market uncertainty about future prices was a main reason for the market failure in Poland. Given the growing uncertainty regarding expected income, he claimed not trading would be the best strategy for individuals in this type of market (Charemza, 1992).

3.2. Latin America: Brazil and Chile

Latin American is not an exception to the experience of stagflation. The most famous stagflationary episode in Latin America occurred in the Brazilian economy between 1963 and 1966, when annual output growth decreased by 6.8 percent, and the price level increased by 40 percent (Morley, 1971). Morley (1971) suggests four major causes for the stagflation in Brazil:

- Slow increase in demand
- Sudden shocks in demand with respect to supply
- Sudden restrictive policies to stop inflation
- Reduction in new investment capacities

In this study, Morley (1971) argues that the above phenomena caused deteriorate inflation by weakening the private sector and decreasing planning and investment opportunities. Therefore, he proposes solutions that are more focus on the policies' implementation methods and severity. Agreeing with Morley, Kafka (1966) lists three main aspects of this stabilization program: Supply policy, fiscal and monetary policy, and demand policy. He argues that tight monetary controls were an important part of the stabilization program in Brazil (Kafka, 1966).

The Chilean stagflation was another stagflationary episode in Latin America triggered by government's programs to stabilize the economy. Foxley (1980) investigates the connection between stagflation and the stabilization programs in Chile and Brazil. Using the monetarist approach, he chooses these two countries because of the monetary

nature of their policies. He argues that the types, timing and intensity of these stabilization policies were important contributors to the Chilean stagflation (Foxley, 1980).

3.3. The Great Stagflation

The great stagflation, is viewed as one of the most severe monetary policy mistakes of the last century (Mishkin, 2010). When the Great Stagflation hit the world economy, it was economists' job to explain it and devise a cure. Before this time period the world economy, including the American economy, had been behaving in accordance with the Philip's curve (Figure 3.1).

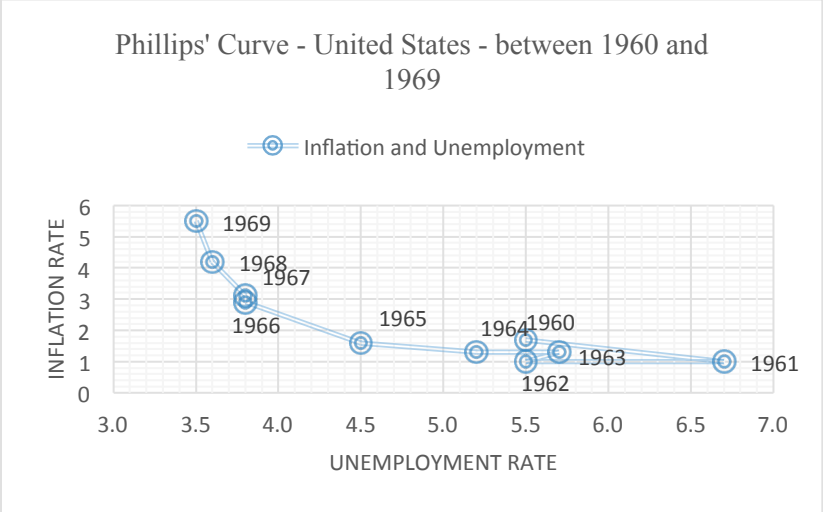

Figure 3.1 Unemployment Rate and Inflation in the United States in 1960s

In the 1970s, however there were exceptional changes in the worldwide economy that forced economists to question their previous assumptions. During these years,

unprecedented changes in oil prices caused developed countries to have two-digit inflation rates. Despite what was predicted by Phillips' theory increasing price levels and decreasing real wages did not reduce unemployment, but actually increased the supply in the labor market, thereby increasing the unemployment rate (Khan and Knotek, 2015).

The term "great stagflation" was coined by Blinder (1979), and has been used continuously in the literature. There have been a variety of studies examining the American stagflation, its causes and solutions. The first was Blinder (1979), which examined stagflation by focusing on fiscal and monetary policies during the recession (1973-1975), and on inflation (1973-1974).

Figure 3.2 shows that instead of moving inversely, inflation and unemployment rate increased or decreased co-vary in several cases. These irregular changes occurred between 1971 and 1972, 1973 and 1974, 1975 and 1976, 1979 and 1980, and 1982 and1983.

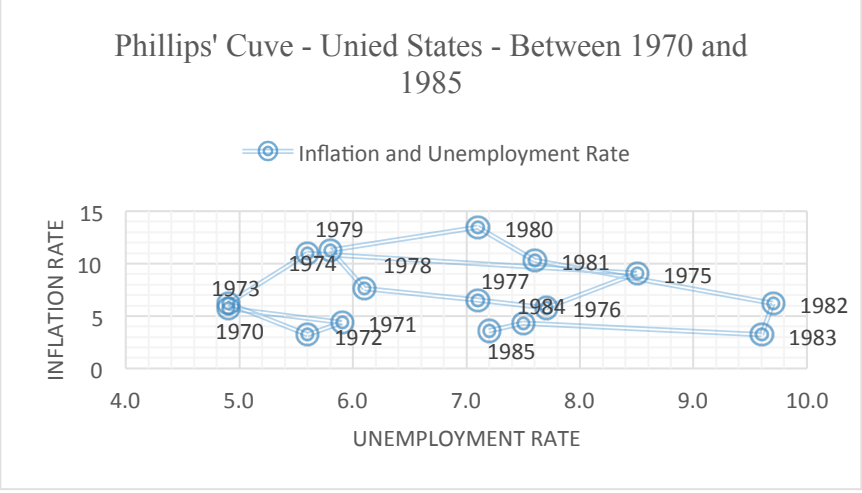

Figure 3.2 Unemployment Rate and Inflation in the United States in 1970s -1980s

Using expansionary policies, John Maynard Keynes proposed his simple theory of demand and his functional explanation of stagflation. According to these, inflation was a side effect of growth in the economy. Supply and demand explain everything during expansionary economic state, such that when demand is high, the price level rises.

The demand management strategy offered by the Keynesians was applied, but it worsened the situation. By increasing income tax rates, the government decreased supply while demand was still high, thereby increasing inflation instead of output. The supply-side policy was first utilized for curing stagflation in reducing income tax rates to help boost the supply in response to a high demand.

The economists' misperceptions ignored other powerful economic forces that could put inflation into an upward spiral. Inflation expectations had been increasing in the late 1960s, so that a very modest tightening of monetary policy in 1969-70 produced recession without reducing inflation. In addition, the increase in government spending prompted by the Vietnam War led to severe stagflation in the United States.

Grubb et. al. (1982) argues that the time lag between productivity and wage aspirations is possible explanation of the great stagflation. Tambalotti (2004) provides some explanations of the great stagflation using the standard sticky price model and taking into account the dynamics of a shock to the economic productivity rate.

The next interesting theory about the causes of the great stagflation is the impact of the significant oil price changes, which could contribute to both inflation and recession in the United States as a major oil-importer country. When the last U.S. recessions are

investigated, it can be noticed that all of them were preceded by a shock in the oil market. However, this the recent shocks were more temporary than the early ones, which were more persistent (Roubini and Sester, 2004). They argued that it is because of decrease in oil dependency in the United States economy.

Though researchers disagree about the specific explanations of stagflation, they agree that the great stagflation was mainly a result of inappropriate monetary policies. Still there is a huge disagreement about the Federal Reserve's strategies regarding stagflation. While some researchers believe that the Fed's was at fault in not taking a few appropriate actions to ease stagflation (Ball, L. M., 2013), others suggest that central bank took many actions that moved the economy even deeper into stagflation (Meltzer, 2013). Some complementary papers address the necessity of exploring the role of imperfect information in central bank strategies targeting inflation (Oraphanides and Williams, 2005a, 2005b). Oraphanides and Williams conclude that two components of adverse supply shocks, as well as the assessment of unemployment natural rate doomed the expansionary policies during the 1970s' stagflation. They believe that monetary approaches can stabilize the price level only if central banks have a clear perception of the natural rate. They used the same justification for other, similar experiences in Canada and the United Kingdom during the same period of time. In one of the most recent studies, Khan and Knotek claim that credible inflation targeting might be limiting uncertainty in monetary policies, thereby decreasing the chance of stagflation (Khan and Knotek, 2015).

A large portion of the studies examining the causes of the great stagflation focus

on President Ronald Reagan's economic program and evaluating his program. He approached fiscal and monetary policy by considering their long-run growth effects through the private-sector, instead of their short-term impacts (Mac, 2000). This set of economic policies is now known as "Reaganomics", which has the basis in "Supply-side Economics". In the Joint Economic Committee Staff Report, Ronald Reagan's economic recovery program is introduced as the end of the "Government knows best" approach to the economy. Prior to this change, it asserts the government was controlling the economy too much. After the Reagan Administrations, the following elected Presidents followed the policy package. For this purpose, government starts stabilizing the price level by cutting marginal tax rates.

During the Reagan Administration, one the biggest changes in monetary policy was focusing on price stability. Ronald Reagan prevented the Federal Reserve to control the supply of money for handling interest rate and unemployment (Mack, 2000). According to Mac (2000), Regan believed that the most appropriate situation in the economy is the one that society's inflation expectations have nothing to do with their long-run planning. Therefore, he assigned people to the Federal Reserve Board to transfer his ideas in this regard and to depoliticize monetary policy. It is offered that deregulating the American economy was initiated by 1975 and ended before his administration (Noll and Joskow, 1981). However, they believe that they were prevented from more re-regulations during his administration. In addition, some researchers criticize Reagan's deregulation policies by claiming that not only they were not achieved but also they were never tried (Viscusi, 1982). Meanwhile, other researchers such as Zinam (1982) argue

that for better evaluation on Reaganomics, we need to have a close look at its two major characteristics:

1. His basic economic philosophy
2. Structural changes in long-run economy

According to these two characteristics, Reaganomics rely on individualism and libertarianism. Ronald Reagan believed that individuals and enterprises are responsible for economic decisions and the government should make the decisions which cannot be made by them (Zinam, 1982). Zinam claims that the Reagan Administration neither let the economy take its own course nor suggest a short-run solution for it.

In another paper, the available critics of supply-side economy can be categorized into three main groups (Bartlett, 1982):

1. Conservative Keynesians' critique primarily moved from the demand-side approach. They claim that government can manipulate the economy mainly by aggregate demand, which is linked to the budget deficit rises. So they expect to have aggregate demand increase, caused by rising budget deficit. The drawback of their idea is they do not differ between the reasons of government budget deficit, either it is due to higher expenses or lack of government revenue. Supply-side economists, in contrast, pay enough attention to this issue and distinguish these two reasons and introduce "crowding-out" effect. Claiming that this effect is triggered by government higher spending rather than its tax cut, he argues several reasons to justify

why tax cuts are outweighed (Bartlett, 1982). He shows that tax cuts:

- Create revenue feed-back, increase savings and automatically decrease spending.
- Decrease the volume of underground economy and demotivate tax runaways
- And finally, it reduces investment in unproductive assets, e.g. collectibles.

2. Rational Expectations School

   This school is mainly rooted in the idea that deficits are inflationary. Miller (1980) and Lucas (1981) have two different assumptions in this regard. While Miller claims that having identical bonds and money would make deficits inflationary, Lucas claim that inflation is caused by monetizing the debt by the Fed. Both of these views were challenged by Bartlett (1982), stating the absolute differences between bonds and money.

3. Libertarian and Austrian School

   The third and last category of critiques is based on increasing deficit spending. Under this class, it is argued that government revenue might increase because of supply-side and the "Laffer curve". Anderson's concern is that the supply-side approach only substitutes government control of supply for government control of demand (Anderson, 1980)

In another paper, Danziger (1983) argues that Reagan's welfare program is only a very negligible source of reducing poverty. In contrast, he reasons that the welfare reform

had negative impact on poverty by reducing the "Aid to Families with Dependent Children" (AFDC) number of cases, and therefore increasing poverty for many welfare participants (Danziger, 1983). Throop (1991) discusses that the tripled national debt during the Reagan Administration was mainly spent on consumption, not investment, resulted in a decrease in production, and hence income. He suggested that tax cuts, deregulation and less likely government intervention during Reagan's presidency, are the main reasons for having a larger debt to foreigners (Throop, 1991).

On the opposite side, they are some studies that support Reagan's program and his strategies. According to Modigliani (1988) research, the deficit was caused by the huge decrease in individual and business taxes. He believes that Reagan fiscal policy was a significant successful in cutting taxes as part of Supply-side Economics and pulling the economy out of the inflation (Modigliani, 1988).

CHAPTER IV
IRAN STAGFLATION

By analyzing economic historical time series in Iran, it can be realized that unemployment and inflation are not new topics to debate. Iran has experienced several inflationary periods over the last 50 years most of which were motivated by oil price increases, and consequently, the growth in the government oil revenue.

Based on previous researches, Iran`s economy always has the potential of having stagflation. By studying the structure of economy in Iran, currency shocks, instability of fiscal and monetary policies, and it`s constant budget deficit are the main reasons resulting in this issue. In this section, some of these studies will be reviewed.

4.1. History of Iranian Stagflationary Episodes

Since 50 years ago, Iranian economy has been recognized as an ill economy because of several fluctuations caused by not only national issues (inconsistency in governments' policies, etc.) but also international factors (foreign disagreements, etc.).

Before studying the Iranian stagflations, it is beneficial to take a look at the overall states of Iranian economy. In table 4.1, the previous inflation rates and economy growth in Iran between 1972 and 2012 are presented. During this 40-year time window, there were several significant changes in Iran and in Middle East region that had direct impact on Iran as one of the major oil-producing countries, including the Arab-Israeli war and oil embargo (1973-1974), the Iranian revolution (1979), Iraq`s invasion of Iran

(1980-1988), Iraq`s invasion of Kuwait (1990), and the most recent political conflicts and Iranian energy, trade and financial sanctions (2010-present).

Table 4.1 Previous States of the Economy in Iran (1972-2012)

Time Period	Economy Changes		Comments
1972-1978	Average Money Growth	41.4%	Oil price shock boosted oil revenue, increased government expenditure, society consumption behavior changed, export increased.
	Average Rate of Inflation	13.45%	
1979-1989	Average Rate of Inflation	18.92%	Iran revolution and Iraq-Iran war, no private investment, dropped in oil revenue and GDP, government ran huge budget deficit
	Annual GDP Growth	-9%	
1990-1994	Average Rate of Inflation	22.41%	War stopped, foreign borrowing increased, civil expenditure increased, money multiplied has risen, expansionary fiscal and monetary policies, moving barriers for imported goods
	Annual GDP Growth	6.44%	
1995-1999	Average Rate of Inflation	49.38%	The highest rate of inflation, decrease in GDP growth, decrease in oil price and hence oil revenue, trouble in paying back foreign debts, budget deficit increased
	Annual GDP Growth	3.26%	
2000-2004	Average Rate of Inflation	14.12%	Stable expansionary period, increase in oil revenue, budget deficit decreases
	Annual GDP Growth	5.49%	
2005-2007	Average Rate of Inflation	14.16%	Oil revenue steady increased,
	Annual GDP Growth	6.85%	
2008-2012	Average Rate of Inflation	22.73%	Decline in oil revenue, Iranian Rial devaluation, CPI because of removing energy subsidies and supply side shortage
	Annual GDP Growth	2.32%	

In the next sections, the causes of the most recent stagflationary period in Iran will be discussed.

4.2. Oil Shocks

Oil shocks have different impacts on oil-exporting countries. Iran, having 10% of the world's oil reserves and the world`s 2nd largest gas reserve, is one of the major oil-producing countries that covers a substantial percentage of its nominal GDP by the oil sector during 1970-2014. According to a report, issued by the Central Bank of Iran, 60% of government annual budget depended on oil revenues in 2008. Another important aspect of studying oil price is that the revenue of exporting oil is much more volatile that other revenues for the governments. Mehrara and Oskoui (2007) investigated the sources of fluctuations in an exporting country and claim that oil price shocks are the most important causes of output changes in Iran and Saudi Arabia. They realize that a dramatic increase in oil price will result in a decrease in non-oil exports, known as the main sign of the Dutch disease.

Mehrara and Oskoui (2007) state that the most effective strategy to minimize the negative effects of oil booms is to finance productive industries and invest to diversify economic base. However, the absence of institutional mechanisms intensifies the output fluctuations and make countries like Iran even more vulnerable to such volatilities. Farzanegan and Markwardt also support that the government pushes its current expenditure upward, increasing long-term loans and therefore deteriorating the inflation (Farzanegan and Markwardt, 2009). Figure 4.1 demonstrates the volatility of the net revenue of oil as a percent of GDP in the Iranian economy.

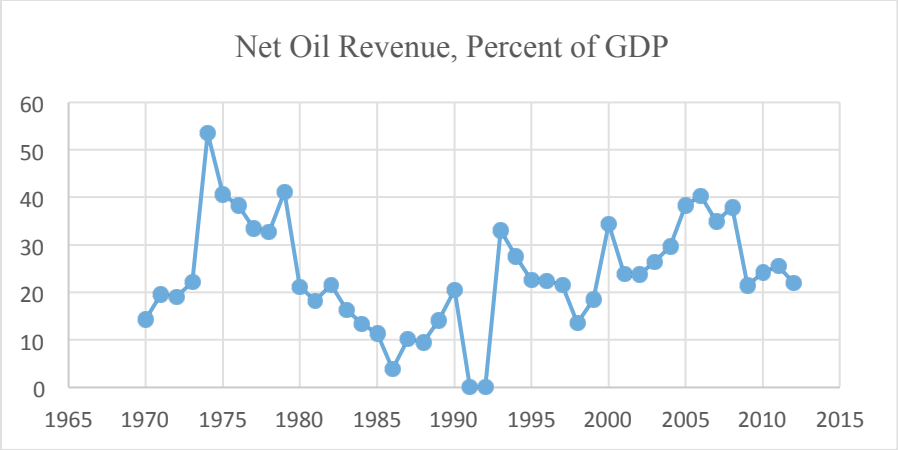

Figure 4.1 The Iranian net oil revenue, percent of GDP (1970 – 2012)

Although positive oil price shocks is one of the causes of the inflation in Iran, negative oil shocks will harm the economy too. In fact, Farzanegan and Markward claim that oil busts would negatively hit the Iranian economy. One of the consequences of international sanctions on Iranian oil industry and limiting of the country`s oil export is currency depreciation.

4.3. Currency Devaluation

Unlike other causes of stagflation, there is little attention towards the impacts of currency depreciations in the literature. Currency devaluation, occurring mostly in less developed countries, would force economy towards stagflation by decreasing real income and reducing the domestic output especially in developing countries. The decrease in consumption would be much more powerful than improving the net exports, therefore the economy will enter stagnation.

One of the studies in this field discussed that the devaluation would decrease the production of non-tradables, unlike the tradable goods and services, and therefore not only the price of such productions would increase, but also the demand for them would decline (Guitian, 1976). Guitian took both supply- and demand-side of the economy and concluded that the total utilization of the economy would decrease because of this disequilibrium (Guitian, 1976). In addition to goods and services market in less developed countries, other markets were investigated in several studies, including money market and labor market (Hanson, 1983) and (Wijnbergen, 1986). Hanson (1983) claimed that high labor supply elasticity with real wages in the labor market would increase the importance of policy making in the labor market. He argued that the evaluation of these policies highly depends on the causes of the unemployment and the time preference (Hanson, 1983). As a solution to managing demand, devaluation is considered an ineffective strategy in the short run because of having negative effect on the supply side of the economy (Wijnbergen, 1986). He showed that cuts in supply would have significant inflationary impacts that cause the economy to enter a real depreciation. As another study, Gylfason and Schmid (1983) introduced a macro model to show the positive real effects of devaluation in short- and medium-term in both developed and less developed countries. This idea was later completed so that utilizing foreign debt would reduce the positive effect of devaluation in less developed countries (Gylfason and Risager, 1984). In addition, Solimano (1986) and Edwards (1986) studied such impacts in different time periods. They found the impact of devaluation to be contradictory in the first months and after that it converted to expansionary effect, but both agreed that it has no impact in the long-run (Solimano, 1986) and (Edwards, 1986).

Bahmani (1995) has examined the devaluation of Iranian Rial by stating that it has lost its value by more than twenty fold. He argues that the impact of Rial deprecation is contradictory and suggested several policies to help the Iranian economy to solve this issue, including eliminating multiple exchange rates. He claims that market intervention in the long run should target economic fundamentals, i.e. inflation. By stabilizing the price level, not only would the inflation be stopped, it would also increase the efficiency of the economy and therefore help the Rial to become appreciated (Bahmani O., 1996). He also addresses that in an oil-dependent economy, currency depreciation would decrease aggregate supply more than increase aggregate demand and hence would have stronger contractionary pressure. By proving that depreciation is not only inflationary but also contractionary, he shows that substantial currency devaluation is one of the causes of Iranian stagflation (Bahmani O., 1996).

Iranian Rial devaluation has begun gradually since 1979 after the Islamic Revolution (Bahmani, 2005). Bahmani breaks down the progress of Rial depreciation into several stages between 1979 and 2005, including the Iranian Revolution (1979), Breaking off the diplomatic relations between the United States and Iran (1980), the Iran-Iraq war (1981-1989), use of three exchange rates (1991) and several oil price fluctuations (1993-2003).

Recently, Iranian economy has experienced another strong volatility, caused by the United States` broader financial and economic sanctions against transactions by Iran's Central Bank. Financial and economic sanctions are powerful foreign policy tools that have been used to discipline adversaries (Takeyh and Maloney, 2011). Relying on oil

revenue, Iran has been able to stabilize exchange rate and utilize it to control inflation rate (Naderi, 2008). This traditional anchor has failed working due to the recent sanctions, imposed by the United States and the European Union. In the next chapter, the effect of Iran's sanctions on its economy and stagflation will be discussed.

4.4. Economic Sanctions

Since 1979, Iran has been a target for the United States sanctions and a diplomatic cut off between Iran and the US. Due to the latest wave of economic and financial sanctions, Iran's oil revenue is held in customers' banks and cannot be easily transferred to Iran, and hence the Iranian exchange market is facing serious challenges (Isfahani, 2012). The rising need for dollars in the market is rapidly depreciating the value of Rial. The US sanctions are limiting Iranian oil sales to a few countries, including China, Japan, South Korea, India, Turkey and Taiwan, however the funds were not directly available to Tehran. In return for selling oil, Iran could purchase goods originating in these countries and humanitarian goods from other countries. Based on this provision, Iran could not collect and spend all of its oil revenue fast enough, leaving more than one hundred bullion dollars in foreign escrow accounts. Due to these circumstances, price of imported goods, as well as domestic production quickly shot up, and therefore the economy experienced a massive 40% inflation, while limited access to the international financial systems (i.e. SWIFT) and embargoed key industries forced Iranian economy into a recession (Hsieh et al., 2015).

4.5. Economic Mismanagement

Economic mismanagement is another major weakness in the structure of Iranian economy. As previously discussed, oil revenue in many oil-producing countries is paid to governments, and thus the economic influence of the oil revenue volatility is highly dependent on the governments' saving/investment strategies (Mehrara and Oskoui, 2007). Although Iran has created a saving fund – the Oil Stabilization Fund (OSF) – to manage its oil revenue, the government failed to achieve the fund's objectives and a huge portion of this fund (nearly $150 billion) was withdrawn without strong economic rationale (Heuty, 2012).

According to the report written by Jahangir Amuzegar, the Iranian economy has been closely regulated by the government. Although there are a lot of efforts to reduce the influence of the government by re-regulating and redefining privatization, the government still plays a dominant role in the Iranian economy (Amuzegar, 2010). The major industries, infrastructure and telecommunication, are still primarily owned by the government and its affiliates (Farzanegan and Markwardt, 2009).

Failing to utilize the full capacity of tax revenues is another aspect of mismanagement in Iranian economy, which forces the country to rely more on oil revenues. Basirat et al. (2014) introduce tax revenues as one of the stable sources of income that helps a sustainable economic growth in Iran. Iran has very limited types of taxes, and also the Iranian GDP consists of relatively very low share of tax revenue. Samimi et al. (2009) break down the share of each tax type in GDP them as:

- 2.16 percent on legal Individuals
- 1.88 percent on Import
- 0.97 percent on goods and services
- 0.27 on wealth

The main reason for such low tax revenue is a very weak and inefficient tax structure. In addition, lack of sufficient power for raising tax revenues, lack of a tax culture among taxpayers, large number of governmental and tax-exempt institutions, and very few large taxpayers in private sector could be other contributing reasons (Samimi et. al., 2009). Another report supports their claims by stating that tax income makes less than seven percent of Iranian total GDP, while half of the potential taxable economy is currently tax exempt, tightening the government's revenue sources even more (Carnegie Endowment for International Peace, 2010).

One of the largest burdens on the government budget, if not the largest, is subsidies, paid to suppliers, producers and consumers, which cause a huge economic waste and inefficiency in distributing national income. The New York Times has reported that fuel subsidies annually cost $32 billion dollar for Iran. Even though Iranian government has been planning to remove subsidies, there is an ongoing debate over the implementation methods and their success. Cutting subsidies, primarily energy subsidies and in a smaller scale, food subsidies, was initiated four years ago as a solution to save the economy from increasing international sanctions (The New York Times, 2015). In another study, Kershenas (2013) focuses on the future of the Iranian economy, by pointing out several mismanagement issues. Use of outdated production technologies is

one of these issues that increases the production cost and waste and lessens the competitiveness of the Iranian final goods. Being locked in long sanctions is considered the main reason for these economic challenges.

CHAPTER V
CONCLUSION

Stagflation is a relatively new topic in economics, though many developed and developing countries have experienced this economic phenomenon. Stagflation is the simultaneous occurrence of high inflation and a high unemployment rate. Economists and policymakers debate several points concerning stagflation, including the determinants of stagflation, the possibility that stagflation will reoccur, whether there are differences between stagflations in difference economies, etc. although the fundamental characteristics of all stagflationary periods are identical, the causes of each case vary. There is strong agreement in the literature, however stagflation is mainly a monetary phenomenon.

This study reviews the history of stagflation, from its first occurrence until now. In the first chapter, all available theories to explain stagflation are considered. While there is stronger support for some of them (e.g. the quantity theory of money and the shock theory), the others have been rejected (e.g. the classical Keynesian theory). In the second chapter, the literature on stagflation models is investigated. There are three types of model to explain the behavior of macroeconomic factors during stagflationary episodes: AD/AS models, oil price shock models and monetary policy models. Chapter three applies these models to determine stagflation in different regions, including Europe, Latin America and the United States. Finally, chapter four investigates the reasons for the ongoing stagflation in Iran. Iran, as an oil-producer, is facing prolonged and severe

inflation accompanied by a high unemployment rate, which have put the country into a recession. There are several reasons for the Iranian stagflation, including: oil price shocks, currency devaluation, international economic sanctions, and economic mismanagement.

After comparing the Iranian stagflation with the previous cases, it can be concluded that there is a very negligible similarity between them, making previous resolutions in the worldwide economy inapplicable. Iran economy has been suffering from a wide range of issues that make the economy very volatile in growth, price levels, and performance. This set of issues includes price oil shocks, currency devaluation, economic sanctions, and economic mismanagement. Due to different causes of the current Iranian stagflationary period, the previous solutions for this phenomenon cannot be an option. One of the main obstacles of curing the Iranian stagflation episode is the existence of corruption in the system, as several former authorities in the upper governmental level have been accused of corruption recently. Although most of the main cases do not result in a conviction, the existence of such problem in Iran's economy is not hidden anymore. Hence, even after easing of international sanctions on Iran, its economy needs a strong will to encounter and overcome such problems.

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