Review Article

EFFECT OF CORRUPTION AND THE RULE OF LAW ON STAGFLATION IN IRAN'S ECONOMY: AN INSTITUTIONAL APPROACH

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ABSTRACT

Stagflation is considered a disaster in the economy of a country and can have irreparable economic, political, and social adverse effects. In the third world countries, this phenomenon is more prevalent and due to the existing defective economic structures. In Iran, stagflation has existed since long ago and has been left untackled. The present research aims to explore the role of the aforementioned factors in Iran's stagflation from 1984 to 2017 by employing an institutional approach. Therefore, this study sought to investigate the effects of social, political, economic, and cultural institutions on economic problems, namely stagflation. The obtained results of logistic regression indicated that there was a significant positive relationship between corruption and stagflation. On the other hand, the rule of law could negatively affect stagflation. These findings suggest the establishment of severe preventive rules which can discourage violators from committing the crime.

Keywords: Stagflation, institutionalism, rule of law, corruption.

INTRODUCTION

Stagflation is a disastrous economic condition that occurs in the majority of countries worldwide especially in developing countries. Economies suffering from this predicament have used different strategies to overcome this condition. These strategies have been based on the analysis of the phenomenon and the overall economic condition of the country. Institutional economics reckons that economic problems, such as stagflation do not just originate from economic factors. Several others including social, political, and cultural factors are also involved in the occurrence of this phenomenon. An exploration of the governing economic system indicates that Iran's economy marked by a particular structure regularly suffers from stagflation which is confirmed by the analysis of the past few years (Madanizadeh & Rahmati, 2014).

When stagflation emerges in the economy of a country, it is accompanied by certain irreparable adverse effects. Iran's economy is not only faced with inefficient and hasty policy-making in economic, social, and political domains but also excessively dependent on the oil industry with its price fluctuations directly affecting people's lives and economy. It also encounters international sanctioning as well as organized corrupted bands in different sectors, such as the banking and monetary system. Iran's economy is trapped with stagflation since this phenomenon appears periodically, therefore, there is a need to do in-depth investigations to tackle stagflation (Bastanifar & Mirzaei, 2014). It seems common policies in economics are of no help and it is time to delve into the new strategies for such problems.

It is noteworthy that though institutional factors at particular times can affect crises, such as stagflation, they have been largely ignored. This is ratified by Nitzan's theory (1990), according to which a social structure can be analyzed in light of the differential accumulation. According to Nitzan, the capitalistic economy does not act as a profit distribution system. Rather, social rules and highly influential groups act innovatively in the market and make much profit, and thus, leaving less profit for other firms. Moreover, they monopolize raw materials and demotivate other firms to produce and compete, and they finally induce stagflation.

Iran is characterized by unique features, including the young and active population, rich oil and gas reservoirs, mineral mines (e.g. copper and iron ore), a climate suited for agriculture, water and land borders with different countries, and incomparable opportunities for foreign trades with neighboring countries. Despite all these blessings,

natural sources, and wealth, there is a question of why the national economy has been a failure and why it is faced with such problems as stagflation. The ever-presence of this predicament in Iran highlights the significance of the issue. A key recent factor to discuss has been institutional and behavioral approaches besides macro-parameters. Behavioral and institutional economists believe that many economic problems originate from social, political, and cultural factors. Thus, it seems essential to conduct a study to find a solution for stagflation and explore its correlates with a focus on the role of institutions as effective social, political, and economic factors, especially the role of government and law. As in every country the governing system plays a primary role in economic, social, and political growth, Iran is not an exception and stagflation is observable in its different year spans through history. Accordingly, the present research firstly aimed to explore the effective factors involved in stagflation in Iran's economy and secondly to propose the right political strategies for the current economic conditions to tackle stagflation.

In light of the theoretical background of stagflation and the existing literature, many factors can be conceived to account for stagflation. The present research employed an institutional approach and more specifically Nitzan's theory and the belief in the effectiveness of social, political, and governmental factors in stagflation and used institutional indices to explore the role of the aforementioned factors in Iran's stagflation in 1984-2017.

REVIEW OF THE RELATED LITERATURE

Stagflation

Stagflation is made up of two terms, stagnation and inflation, and thus, characterizes a diseased condition marked by both. A number of different theories have been proposed about the epistemology of stagflation and the ways of resisting it. Almost all developed countries have managed to treat this diseased condition so far. However, at current times, minor symptoms of the disease have emerged even in developed countries (much to a lesser degree than in the past). The consequences of stagflation can be observed in an increased price of raw materials (gas or oil) and agricultural products although countries have started to tackle these problems (Ghobadi & Ra'is Dana, 1989; Weitzman, 1989). Devine (2000), in his article about the ups and

downs of stagflation in 1960-1998 was managed to explore the effective changes. The results showed that during the mentioned period, the effectiveness of oil price shock in creating stagflation was reduced. The analysis of the supply and demand shocks and mapped Phillips' curve and wage and price curve, and observed that an increase in the rate of the wage was followed by an increase in the expenses of firms. Moreover, an increase in the rate of the nominal wage was followed by an increase in the rate of inflation. Moreover, the real wage at the end of the year was balanced in accordance with the ratio of oil price shock. He mentioned the increase in wage and workforce efficiency as the cause of inflation and stagflation. It is noteworthy that Dwayne used potential stagflation to determine stagflation periods within the target time of the study. Potential stagflation is the sum of the unemployment rate and inflation. It is used to measure the success percentage of short-term policies. Berthhold and Grundler (2012) also found that stagflation is considered a threat because it occurred continuously during 1970-2010. As reported, the effect of oil price on the occurrence of stagflation has reduced since 2000 and the increased rate of interest and decreased efficiency were considered as the factors involved in the occurrence of stagflation. With this background in mind, different economic schools have emerged in order to identify the underlying causes of stagflation.

Table 1. Underlying causes of stagflation adopted from Bastanifar and Mirzaei (2014)

Economic school	Cause of stagflation
Neo-Keynesian	Inflation induced by supply or the cost-push inflation including governmental financial policies
Monetarism	Inflation expectations due to rising inflation
Austrian	Increasing the creation of internal money to the extent of growth over the production of goods
Classics	The monetary authority expedient interventions
Differential accumulation	Market concentration on specific influential groups

An institutional economy describes and explores how economic systems work. Eventually, it comes up with an approach which the target systems are expected to follow so as to achieve the pre-specified goals. There are two different schools of thought in the institutional economy, namely classic/primitive institutionalists and new/neo institutionalists. Thorstein Veblen was among the pioneers of the economic institutional approach in the U.S. in the late 19th century. In his view, the neoclassic economy is formal and abstract and is fallaciously based on individual factors detached from the institutional context. Until 1945, economists in this group of institutional approach attempted to develop this approach. The key figure in this group was John R. Commons. Primitive institutionalists believe that institutions should be approached in their economic activity (See Gruchy, 1972). As perceived by classic institutionalists, institutions represent a set of established thinking habits shared by community members. People influenced by conventions and communities, such as families, companies, official associations, and commercial units, conclude that decisions are not solely driven by preferences. Rather, preferences themselves are to a great extent influenced by conventions and habits.

In 1975, Oliver Williamson published "Markets and Hierarchies" and named his approach the neo/new institutional economics. As he elaborated, contrary to the neo-classic economy, issues related to institutions need to be explored. He raised questions, such as why do institutions exist? why are exchanges done sometimes through market contracts and some other times through hierarchies? Neo/New institutionalists viewed an institution as a set of established rules in the society that formed social interactions. They viewed rules, eating manners, language, and money controlled by these institutions. They

believe that institutions play a key role in the economy but are less explored by researchers in this domain.

Institutional efficiency in governing law and corruption

When there are certain norms existing in a community and no one abides by them, these norms are not efficient anymore and cannot form behaviors. For an institution to be efficient, two conditions need to be met. Firstly, it should be approved and accepted by the majority of community members. In other words, citizens and officials both should practically respect institutions basically founded to solve problems in action. Secondly, even if the majority of people abide by the rules and behave accordingly, there must be a reliable guarantee for reacting appropriately to probable violations of rules, corruptive acts, etc. to inhibit abnormal behaviors (Casper & Streit, 1998).

For the rules to be widely accepted, three conditions need to be met. They have to be general, certain, and open. *General* means involving no discrimination and being equally enacted for everyone. Class equity (different rules for people) should exist to ensure that everyone is supposed to obey the rules including the governors themselves. *Certain* means that the law needs to be transparent and reliable. All citizens should know why the law has been made and what consequences could arise if it is not obeyed. Being *open* means being flexible (i.e. allowing factors to react appropriately to progressively new conditions).

Rule of law and economy

Discipline and order seem to be essential for every community. High costs are paid annually to maintain discipline, which further points to its significance. Classicists believe that there is a harmony in all economic actions which can finally enforce discipline over economic actions. Institutionalists believe that institutions can exercise discipline. Many institutions have been basically formed to exercise discipline. It can be maintained that the underlying philosophy for all social institutions is solving problems within a community including economic problems. North (1994) pinpoints that transferring economic, social, and political rules of western countries to the third world countries cannot guarantee any development. It is agreed that all developed countries share a deep respect for governing law and property rights. Helliwell et al. (2018) extensively investigated the empirical associations between good rule of law and financial welfare. This study addressed 157 countries with their financial statements from 2012 to 2015 in terms of the quality and effectiveness of the rule of law in life. Their findings indicated that the quality of the political rule of law in a time horizon makes considerable changes to life and its quality. For instance, 10 countries with the highest level of governmental service quality and 10 others with the lowest level of governmental service quality during 2012-2015 were compared. The obtained results indicated that the mean score of life quality was significantly higher in the former countries. Generally speaking, it could be acknowledged that the quality of service provision lies in supporting the quality of a democratic government.

Corruption

Corruption prevails in many countries, yet to different degrees. The severity of corruption and its consequences differ across countries as a function of economic, political, and the current developmental stage. The expansion of corruption is accompanied by the rising costs of activities and exchanges. Growth and competition get disrupted. Moreover, entrepreneurs and manufacturers not closely banded with sources of wealth and authority get demotivated and skeptical. The development of society is hindered and challenged in many ways. If there is no well-thought-of plan to fight this disaster, society will gradually move toward annihilation. The roots can be traced back to the history of many parts of the world. Closely relevant to this, is the book "Why do nations fail?" by Ajamoqlu and Robinson, which looks into the matter.

In a body of research by such scholars as Hishmaan, Coase, Stiglitz, Williamson, and Olson, a comprehensive perspective of institutions

interacting with commonplace economic variables has been presented and has attracted attention to corruption in recent years. Among the pioneers of relevant discussions are Rose Ackerman and Klitgaard. Why corruption and its effects on the economy have been investigated is to raise awareness of the adverse effects of corruption on different economic layers in society. If widespread, corruption can reduce economic growth and cause many problems such as stagflation. Economic corruption deals with all behaviors and misbehaviors that disrupt economic order or economic function at different levels (Islamic Congress Research Center, 1995). It is noteworthy that corruption impedes competition growth and counteracts attempts to lower the rate of poverty and social discriminations. It decreases motivation, disempowers institutions, and distributes sources unequally, and consequently brings about many losses on different domains especially economics.

Differential accumulation theory

In the 1990s, the differential accumulation theory was proposed by Nitzan, who maintained that institutional factors in special conditions can affect economic issues (e.g., stagflation). Nitzan analyzed social structure within the differential accumulation theory. As he viewed it, the capitalistic economy does not act as a profit distributing system. Rather, social regulations and influential groups act innovatively in the market and make huge profits and, thus, lower the rate of profit-making for other firms. Besides, they monopolize raw materials and demotivate other firms and leave no space for competition. They eventually cause economic problems such as stagnation, inflation, and stagflation. According to Nitzan, in a capitalistic economy profit is not distributed competitively, contrary to a fully competitive market. Instead, social rules and highly influential groups hold a high portion of shares in the market and lessen the profits for other firms. They monopolize raw materials and demotivate production and competition for other firms and, thus, producing stagflation. According to this theory, monitoring and correcting market rules and fighting powerful social groups can reduce stagflation.

Stagflation has been a concern in the recent economic status of Iran leading to a bulk of research on the effective factors involved in stagnation, inflation, and stagflation (Raghfar, 2013; Khani et al., 2013; Shakeri, 2014; Madanizadeh & Rahmati, 2014). The factors investigated more have been deficit spending, volume of liquidity, oil revenues, and balance of payments. However, there is a dearth of research on variables, such as government, institutions, and law. Accordingly, the present research aimed to explore the effect of the law on stagflation. A brief review of some national and international studies in this domain is provided in the section below.

METHODOLOGY

In the present study, Berthold and Grundler's (2013) model was used to measure the independent variables affecting stagflation. The dependent variable, stagflation, has been considered a dummy variable. The dependent dummy variable would be scored 1 when the economy was stagflated during the target years. When there was no stagflation, the score would be 0. This estimation method was derived from Denhaan and Sumner's model (2004). In order to collect data, a comprehensive search was conducted to find reliable sources in leading databases, including Central Bank of the Islamic Republic of Iran, The World Bank, the ICRG website and the International Monetary Fund will be used.

Logistic regression:

Logistic regression is a practical technique used for analyzing categorical data. For instance, if the probability of a test result is win/lose, it is thus categorical. One type of regression analysis binominal regression, which is used when the dependent variable has a binomial distribution with a dichotomous value. In such models, each observation follows from a Bernoulli trial (binominal distribution, Shahroudi, 2007). In many cases, the dependent variable (Y) is valued

0 or 1 (Y=0 when the target condition is not met; Y=1 when the target condition is met). The following probability model can be presented:

Equation 1:
$$P(Y=1|X_i)= F(X_i,\beta)$$
$$P(Y=0|X_i)= 1- F(X_i,\beta)$$

Vector $X_i= [1, X_{2i} ... X_{ky}]$ includes a set of factors on which the probability of occurrence of Y depends. B stands for the impact of X_i (Souri, 2013). Accordingly, all the explaining variables comprise vector X_i. The relationship between the explaining variable X_i and the decision variable Y_i depends on the form of the function $F(X_i, \beta)$, which can be linear or non-linear (Souri, 2013).

The above-mentioned discussion within a regression analytic model with Y will be defined as follows:

Equation 2:

$$Y_i= E(Y|X_i) + u_i = F(X_i,\beta) + u_i$$

Thus, $F(X_i, \beta)$ is the same conditional mean score for Y. If for $F(X_i, \beta)$, a linear equation is defined, the above-mentioned equation will be exactly equal to the multivariate linear regression. Overall, for $F(X_i, \beta)$, different functions have been suggested as will be introduced below (Souri, 2013):

1. Linear probability model (LPM)
2. Probit model
3. Logit model

Probit and Logit models are non-linear (i.e. the relation between X_i, and P_i is non-linear. These models in which the dependent variable can get either of only two values are also known as binary dependent variable models. To calculate, the maximum likelihood estimation is used (Shrinbakhsh & Khunsari, 2005).

Goodness of fit:

Goodness of fit index has been defined for Logit models based on the logarithm of likelihood ratio and is known as McFadden's Likelihood Ratio Index (R^2). It is defined as:

Equation 3:

$$R_M^2 = LRI = 1 - \frac{Ln\ L_R}{\ln L_0}$$

L_{UR} is the magnitude of the infinite likelihood function and L^0 is the magnitude of the likelihood function and only includes y-intercept. LRI always ranges between 0 and 1. If the explaining variables are 0 in value, then the strength of the explaining variable in the model is 0. Thus, , $\ln LUR = \ln L0$ and LRI=0. The maximum value of LRI is estimated when all coefficients of the explaining variables are statistically significant. Yet, in reality, this is hard to conceive (Souri, 2013).

Unit Root Test:

This test explores whether there is any correlation between the target variable and their former values to prevent regression fallacy. In fact, using non-stationary data can lead to regression fallacy. If there are two stationary variables as independent random series, when one is fitted to the other, t and r^2 will be low in value. This is evident for variables that are not dependent on each other. However, when two variables have a time trend and not related logically, regression of one on the other will have a high r^2 value. If so, standard regression analyses can lead to an apparently good regression with all statistically significant values and a high r^2. However, it is a regression fallacy (henceforth Y; Souri, 2013).

If a variable is non-stationary it is termed differently as:

Y_{t-1} is a function of a random walk process as $Y_t = Y_{t-1} + u_t$ or of a random walk with drift As $Y_t = \mu + Y_{t-1} + u_t$

Y_{t-2} denotes a unit root process which shows the unity of $\emptyset$ in the model $Y_t = \mu + \emptyset Y_{t-1} + u_t$

Y_{t-3} has a random trend.

Y_{t-4} refers to an accumulated series which represents the accumulation of the effect of random shocks in past eras on Y_t.

Y_{t-5} is a variable on which the effect of random shocks does not disappear through time.

In fact, the unit root is $\emptyset = 1$ in each of the following models:

$$Y_t = \emptyset Y_{t-1} + u_t$$

$$Y_t = \mu + \emptyset Y_{t-1} + u_t$$

$$Y_t = \mu + \beta t + \emptyset Y_{t-1} + u_t$$

Non-stationary Y_t or the unit root ($\emptyset = 1$) is described as AR(1) which can be without Y-intercept, with Y-intercept or with a trend.

The unit root hypothesis is defined as:

$H_0: \phi = 1$ (Unit root is present and the variable is non-stationary)

$H_1: \phi < 1$ (Unit root is not present and the target variable is stationary)

The first equation can be rewritten as below:

$$Y_t - Y_{t-1} = \emptyset Y_{t-1} - Y_{t-1} + u_t \Rightarrow \Delta Y_t = \theta Y_{t-1} + u_t \Rightarrow \theta = \phi - 1$$

In which:

The unit root test is $\theta = 0$ and $\phi < 1$ *is equal to* $\theta < 0$ Thus, the hypotheses are rewritten as below:

$H_0: \theta = 0$ (The unit root is present and the variable is non-stationary)

RESULTS

Initially, a summary of all variables within the model is presented in the following table.

Table 2. Summary of variables within the model

	Corruption	Liquidities	Inflation	Rule of law	Stagflation/ dependent variable (dummy)
Mean	2.618235	5.488537	19.02353	3.636765	0.647059
Maximum data	4.000000	7.184686	49.30000	5.000000	1.000000
Minimum data	1.500000	3.901289	4.400000	1.000000	0.000000
standard deviation	0.933438	1.027681	9.290564	1.243119	0.485071
Number of data	34	34	34	34	34

As can be observed in Table 2, the highest standard deviation belongs to the inflation data indicating the highest standard deviation and fluctuation in the national data during the investigated period. Moreover, the highest frequency of data was also that of inflation (49 units). It can be concluded Iran faces a high rate of inflation as well as high inflation fluctuations.

Unit root test results:

The following table summarizes the results of tests for detecting a unit root.

Table 3. Test of durability

	ADF test		Elliott-rothenberg-stock point- optimal test		Result
	With a Y-intercept	With a Y-intercept and trend	With a Y-intercept	With a Y-intercept and trend	Result
Rule governance	*	*			stationary
inflation	*	*	*		stationary
liquidity		*	*	*	stationary
corruption			*	*	stationary

* stationary variable

In the present research, two tests of ADF and Elliott-Rothenberg were used to detect a unit root. As the summary of results shows all variables within the model are stationary.

Data estimation results:

The logit model was used for data analysis. To display model robustness and stability and also to compare the estimated values, both probit model and ordinary least square method were used.

Table 4. Data estimation results:

Dependent variable: stagflation	Logit model (basic model)	Probit model	OLS model
Rule of law	-11.75* (6.07)	-6.42* (3.3)	-0.36** (0.11)
Inflation	0.45** (0.19)	0.24** (0.09)	0.02** (0.007)
Volume of liquidities	8.37** (3.8)	4.7** (1.9)	0.3 (0.19)

Corruption	7.17* (4.08)	4.03* (2.25)	0.09 (0.18)
y-intercept	-24.95 (19.16)	-14.95 (10.6)	-0.41 (1.2)

Bracketed values=standard deviation

* and ** are 5% and 10% significance levels, respectively.

The results indicated in Table 4 represent the initial values of logit, probit, and OLS model estimations. Screening the table posits that the research hypotheses are accepted, meaning that the rule of law and stagflation are correlated negatively and the other variables, such as corruption, are positively correlated with stagflation. To interpret logit model estimates, the margin of error for dependent and independent variables needs to be estimated.

Table 5. Margin of error for variables

Dependent variable: stagflation	Margin of error in the logit model

Rule of law	-0.39
Inflation	0.0016
Volume of liquidities	0.028
Corruption	0.024
LR-CHI2 value	30.95 (Significance level=99%)
LRI value	0.71

Interpretation of data estimations:
Statistical significance of estimated values:
Considering the above mentioned statistical analysis, the following values can be estimated. With regard to the rule of law, it can be said that an increase in this variable for 1 unit was followed by a decrease in the dependent variable for -.0.03 unit. The statistical analysis of inflation was indicative of the fact that an increase in this variable for 1 unit was followed by an increase in the dependent variable for 0.001 unit. Moreover, a close look at liquidities suggested that an increase in this variable for 1 percent is followed by an increase in the dependent variable for 0.002 unit. From the data related to corruption, it could be estimated that an increase in this variable for 1 unit was followed by an increase in the dependent variable for 0.02 unit.

Statistical significance of total regression
The LR-CHI2 was used to test the statistical significance of total regression, and its zero-assumption is taken to prove the insignificance of the model. The results showed that the zero-assumption was rejected. Thus, the model in its totality was statistically significant.

Goodness of fit index (GFI)
To test the goodness of fit in the logit model, McFadden's index known as the likelihood ratio index was used which is defined as the logarithm of the likelihood ratio. The closer this index to 1, the better fitted the model. The closer it is to 0, the less fitted the model is. GFI was estimated here at 0.71 which attests to the model fitness.

DISCUSSION AND CONCLUSION

The present research aimed to explore the effect of corruption and the rule of law and on stagflation in Iran's economy with an institutional approach from 1984 to 2017. Stagflation has emerged recurrently in the country within years and no serious attempt has been made to prevent it. Researchers have only approached the predicament from an economic point of view. However, institutionalists believe that social, political, economic, and cultural institutes affect economic disasters including stagflation. Accordingly, the institutional approach was employed in conducting the present research.
The present research hypothesized that the rule of law was significantly but negatively correlated with corruption and significantly and positively correlated with stagflation. The body of national and international literature was reviewed and it was concluded that the underlying factors of stagflation differ across countries. A variety of factors account for stagflation that needs to be identified so that the appropriate strategies can be employed in the social context of Iran and help to get out of the predicament.
In light of the findings and the acceptance of research hypotheses, corruption could significantly and positively predict stagflation while the rule of law significantly and negatively predicted stagflation. Thus, the following suggestions are made to help prevent the recurrence of this economic issue in Iran. Implementing projects to facilitate organizational performance, updating governmental systems to reduce human interventions, and accelerating official affairs to reduce official corruption, which can motivate novice entrepreneurs and manufacturers. We can, thus, hope to improve production and employment and leave less or no trace of stagflation. Furthermore, the executive and judicial forces in Iran can cooperate to prevent unlawful imports which demotivate domestic manufacturing firms and workshops with such adverse effects as a recession or low sale. Finally,

the rules and regulations should be adequately preventive and inhibitory so that the violators of law never dare to commit the crime again.

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