The Effect of Political Instability on Economic Growth in Iran between Two Revolutions (1907-1979)

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Abstract
From the constitutional revolution (1907) to the Islamic revolution (1979), Iranian governments had been fluctuated sharply (longevity of government from 3 days to more than 12 years). This situation was the result of permanent competition between the king, parliament, government, interest groups, and also international political conditions. In this paper, we study the effect of mentioned conditions on economic growth. For this purpose, we define 7 political instability indices and examine the best definition for political instability that was suitable for the Iranian condition in mentioned duration. Using the Solow growth model and OLS approach, we find that when the longevity of government was smaller than four years, or the longevity of two of three sequential governments were smaller than one year, then Iran experienced political instability and it shrinks the economic growth. Finally, we find that when the government was politically stable, and institutional constraints on government by other branches were strong, the Iranian economy experienced positive and reliable economic growth. These conditions had been experienced in three periods of time: 1927-1939, 1955-1960, and 1964-1977. It means that the duration of 1907-1979 can be divided into two major parts: duration of political stability with remarkable economic growth (for three mentioned periods), and duration of political instability with high economic fluctuations or recession.
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Introduction

Intuitionally, political instability has a remarkable effect on economic growth. Economists have studied the relationship between political instability and economic growth through different patterns in current decades. Various indicators are used as a proxy for political instability. The most common indicators that are used as a proxy for political instability are revolution, riots, strikes, and coups (Carmignani, 2003).

Most studies use cross-country samples to examine mentioned relationship. For example, Alesina et al. (1996) illustrate that political instability through uncertainty can decrease investment, and also weak economic consequences can lead to political unrest. Barro (1991) defines political instability as political unrest (number of assassinations and the occurrence of violent revolutions and military coups) and examines the effect of political instability on economic growth. He finds that political instability harms economic growth. Alesina and Tabellini (1989) define political uncertainty and examine the effect of political uncertainty on investment and capital flight. Alesina et al. (1992) define "political instability" as the propensity of a change in the executive, either by "constitutional" or "unconstitutional" means, and find

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that political instability reduces economic growth. Aisen and Veiga (2011) define political instability as Cabinet changes (Number of times in a year in which a new premier is named and/or 50 percent of the cabinet posts are occupied by new ministers) and find that political instability has a negative effect on economic growth.

Jon-A-Pin (2009) defines 25 political instability indicators and categorized them into four dimensions including instability of the political regime, politically motivated violence, mass civil protest, and instability within the political regime. Using the Panel data approach, he found that only instability of political regime has a significant effect on economic growth. Assassination, revolution, coups, general strikes, government crises, purges, riots, anti-government demonstrations, cabinet change, constitutional change, elections, and executive changes were some highlighted indices in this paper. His study is one of the major studies in this field and had been followed by various researchers.

Kevin (2017), by following Jon-A-Pin (2009), studied the effect of political instability on economic growth and foreign direct investment (FDI). At first, he tested the effect of economic factors (including inflation, debt, and education) on FDI and economic growth. Then by adding political instability in the model, he found that some indices of political instability (including violence, protests, and regime instability) hurt economic growth.

Aisen and Veiga (2013) studied the effect of political instability on economic growth. Using the GMM method and data from 169 countries for 1960-2004 duration, they found a negative effect of political instability on economic growth. They also illustrated that political instability decreases the rate of productivity growth, human and physical capital accumulation. Moreover, they found that economic freedom and homogeneity have positive effects and democracy harms growth.

Karrane and Quinn (2019) studied the effect of ethnic fragmentation, corruption, and political instability on economic growth. Using the GMM method and data from 1996 to 2014 for 157 countries, they found that political instability has a negative effect on economic growth. Moreover, they found that strong institutions (such as constraints on the executive) have a positive effect on economic growth too.

On the other hand, some studies focus deeply on special countries or regions. For example, Campos and Karanasos (2007) examine the effect of Volatility and Political instability on economic growth. Their case study was Argentina as a unique country that was developed in 1900 and a developing country in 2000. They define formal and informal political instability and find informal political instability (assassinations and strikes) and formal political instability (constitutional and legislative changes) have a negative impact on economic growth. Ghura and Mercereau (2004) focused on the Central African Republic. They study the political economy of the Central African Republic that leads to political instability and base on this historical perspective, they found that the propensity for political instability has been increased by low tax revenue, deteriorations in the terms of trade, weak revenue performance, and insufficient economic diversification.

Gadong (2019) studied the effect of political instability on economic growth in Africa. He explained that political instability affects economic growth through some channels such as tax system, government spending, fiscal deficit, inflation, and investment. Using data from 52 African countries for the 1980-2013 duration, he found that stable and high levels of growth rates correlate with low levels of political instability.

Jalib and Wahid (2019) studied the role of uncertain economic and political conditions on debt and economic growth in Pakistan. Using the GARCH approach and data from 1975 to 2011, they found that political instability has a negative effect on economic growth. Using the error correction model and data from 1972 to 2013, Abdolkader (2017) found that political instability in Egypt has a negative effect on economic growth.

Like later studies, in this paper, we focus on a special country. Indeed, some developing

countries have high economic and political volatility. So when a developing country has political and economic stability and this situation seems to continue, the country faces political or economic instability. So in these countries, economic growth, in the long run, fluctuates sharply. Argentina is one of them as the study by Campos and Karanasos (2007). Iran is another one. Some studies show the effect of political instability on Iranian economic growth.

Asgharpour et al. (2013), using the APARCH model, studied the effect of political instability on Iranian economic growth. Using data from 1960 to 2009 and following Jon-A-Pin (2009), they defined formal and informal political instability and found that both formal and informal political instability has a negative effect on Iranian economic growth.

Komijani et al. (2013), using the ARDL approach, and data from 1974 to 2007, studied the effect of political instability on Iranian economic growth. They defined some political instability indices versus some political stability indices and found that political (in) stability has a (negative) positive effect on economic growth.

Both Asgharpour et al. (2013) and Komijani et al. (2013) studied the effect of political instability on Iranian economic growth. Asgharpour et al. (2013) cover data from 1960 to 2009, and Komijani et al. (2013) uses from 1974 to 2007. In this paper, we complete these studies and come back to the constitutional revolution (1907) and cover the data for the duration of Iran between two revolutions (1907-1979). Moreover, we define a new index for political instability that is suitable for the Iranian economy during that period. As our definition of political instability is based on the longevity of government, this study cannot cover the period of post-revolutionary period (from 1979 up to now), as the structure of government has changed from prime minister to presidential after mentioned revolution. After this change, the longevity of government in Iran is clear and it lasts four years, but in Iran between two revolutions, the longevity of governments fluctuated from 3 days to more than 12 years.

Iran as a developing country has experienced a constitutional revolution at the beginning of the twentieth century, but up to now cannot transmit from developing to a developed country. Parliament has been established for more than one hundred years but there is no clear division of political power and then are permanent challenges in the political system that sometimes leads to a coup, riot, and strike. On the other hand, it has volatile economic growth. For example, during the 1960s, the average rate of economic growth was more than ten percent, while sometimes it experienced a negative economic growth rate.

Another consequence of the ambiguity of the division of political power was the instability of government. For example, the longevity of governments fluctuated remarkably (between smaller than one month to more than one decade). In addition, the government was affected by international political powers (like the United States, England, and Russia). Therefore, the governments in Iran between the two revolutions had fluctuated sharply.

In this paper, we study the effect of political instability on economic growth in Iran based on its special context. We define the instability of governments as a proxy for political instability. In our case study, as the longevity of government fluctuated sharply, we define some indicators as political instability based on the longevity of government. After that by the econometric method, we check that which of them can be a suitable indicator for political instability. Indeed, defining these indicators and interpreting the reaction between the longevity of government and economic growth in Iran is the innovation of this paper.

The paper is organized as follows. In section 2, a general perspective of the governments' instability in Iran is illustrated. In section three we explain the methodology and econometric model. In the next section, we survey the results and try to find a suitable proxy for political instability that can suites the context of Iran. The last section covers the conclusion.

A General Perspective of Government Instability in Iran (1907-1979) and Defining Seven Political Instability Indices

In the duration of Iran between two revolutions (1907-1979), the government was affected by five major players: the king and his court, parliament, international power, army, and social groups.

Competition between these groups leads to instability of government. Indeed, the lifetime of a government was a consequence of this competition. When one or two groups could overcome others, the lifetime of government increased; and when there was a remarkable competition between major groups, government fluctuated sharply. For example, when there was a challenge between the king and his opponents in the nationalization of the oil industry (1950-1953), one government lasted just three days (Qavam's government). On the other hand, after 1963, when the king stabilized his forces, he was defined as a prime minister and lasted more than twelve years (Hoveida's government). The lifetime of government in Iran between two revolutions has illustrated in figure 1 and is extracted in this paper for the first time.
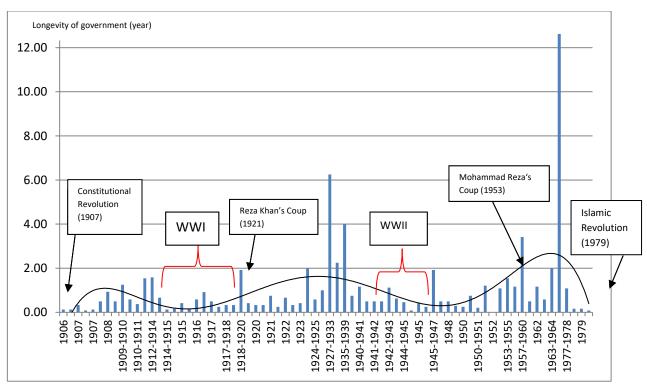

Figure1. Longevity of Governments (Year) in Iran (1907-1979) and Main Political Events Affected It
Source: Data for the duration of 1906 -1959 are from Khavarinajad (2009; 2002), and for 1959-1979 are from the central bank.
Notes:
1- data for the longevity of governments are from Azhand (1990).
2- vertical axis is the longevity of governments (year), Hoveida government is the longest (more than 12 years). As the curve shows, after Constitutional Revolution (1907), the longevity of governments has increased, but with world war one (WWI) this trend stopped. Again, after the Reza Shah's coup (1921) the longevity of governments has increased again until world war two (WWII). From WWII to Mohammed Reza's coup (1953), governments fluctuated a lot. In this period, the smallest longevity of government (Qavan government) has experienced. Then after the mentioned coup, the longevity of governments has increased, and we have the government of Hoveida with more than 12 years' longevity. And finally, this trend was interrupted by the Islamic revolution in 1979.

In Figure 1, the horizontal axis shows the year, and the vertical axis shows the longevity of governments. Some major political events shape government fluctuations (figure 1) that are constitutional revolution (1907), WWI, Reza Khan's coup (1921), WWII, Mohammad Reza's

coup (1953), and Islamic Revolution (1979).

These political events affected economic growth sharply. As Figure 2 shows, after the constitutional revolution, the Iranian economy started to boost its potentials, but First World War stopped it and leads to negative economic growth. Again after the coup (1921) and regime change in 1926 from Qajar to Pahlavi, the Iranian economic condition improved and this condition continued and was finally stopped by World War II (1941), and the Iranian economic condition got really bad condition with -17% growth.
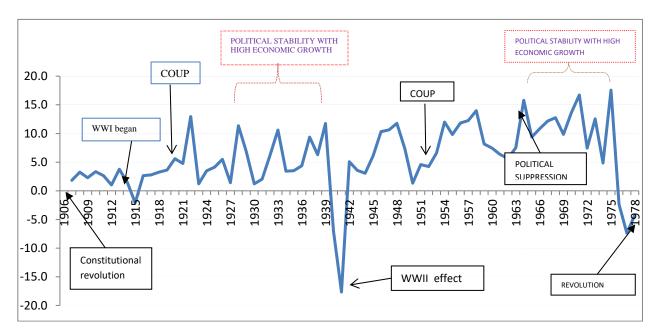

Figure 2. Economic Growth of Iran (1907-1976), and Major Political Events
Source: Data for the duration of 1906 -1959 are from Khavarinajad (2009; 2002), and for 1959-1979 are from the central bank.
Note: Economic growth is in percent.

After that Iranian economy started to be better, but political competition between the king, parliament, international players, and army forces was the major character of Iran, which finally leads to Coup (1953). As competition between the king and his opponents increased from 1949 to 1953, we can see economic growth decrease again. After the coup, the Iranian economy started to be better with the help of foreign forces, especially the United States.

After the coup, economic conditions were boosted, but the political condition was not good, and opponents of the king were powerful. Mohammed Reza, as the king, overcame the Prime Minister (Ali Amini), and suppressed the opponents in 1964, and seized all powers in his hand. After that economic growth in Iran increased sharply, and a golden decade of growth shaped in Iran. In this period, the government of Hoveida lasted more than 12 years (the longest duration of government in Iran) and political stability leads to remarkable economic growth. As this high growth was achieved in political suppression, the imbalance between economic and political systems increased. Then political opponents of the king and regime increased and finally lead to the revolution (1979).

From a historical perspective, there are increasing and decreasing trends in the longevity of government (Table 1). It is common that in increasing trends, agents optimize their behavior based on the long-run plan, and in decreasing trends, they have a short-run view of the economy. So in the increasing trend, investment of agents increases then economic growth improves, and it is expected that decreasing trend hurts economic growth. On the other hand, the duration of increasing or decreasing trends is important too. It is expected that if agents are living in the middle of an increasing trend they invest more than those who are living at the beginning of

that trend.

Table 1. Increasing or Decreasing Trends of the Longevity of Government in Iran Between two Revolutions

Years	Increasing or decreasing trends of the longevity of the government	Political stability	Political instability	Major reason affects the trend	Internal conditions or external force as a major reason
1907-1913	Increasing	●●●		Constitutional	Internal conditions
1914-1920	Decreasing		●●●	WWI	external force
1921-1941	Increasing	●●●		Reza Khan's Coup	external force
1942-1953	Decreasing		●●●	WWII	external force
1953-1976	Increasing	●●●		Mohammed Reza's Coup	external force
1977-1979	Decreasing		●●●	Islamic Revolution	Internal conditions

Source: Data for the duration of 1906 -1959 are from Khavarinajad (2009; 2002), and for 1959-1979 are from the central bank.

As mentioned above, the competition between different groups in unclear political structure leads to government instability, and then the longevity of governments fluctuates remarkably. For example, some governments last only for some months. In some studies, such as Aisen and Veiga (2011), the number of cabinets in one year is referred to as a political instability indicator. The results of the paper show that it isn't a suitable indicator for our case study. On the other hand, it is hard to imagine that when one government lasts more than one year, agents evaluate that year as politically stable. They try to predict the length of life of the next government too. We follow this idea and found four periods that both sequential governments last more than one year in Iran between two revolutions. Each period is created by political or economic events and lasted by these forces too. Constitutional revolution (1907), stabilization of political power of Pahlavi regime (1927), coup (1953), and land reform (1963) have a positive effect on government long life, while World War I, World War II, economic crisis (1959), and revolution (1979) are the last points of periods (Table 2).

Table 2. Political Stability Durations When Both Sequential Governments Last More Than One Year in Iran Between Two Revolutions

Duration	Major elements that shape the duration	Major elements that interrupt the duration
1912-1914	Increase of the parliament power in Iran	WWI (1914)
1927-1939	Stabilization of political power thorugh army forces	WWII (1940)
1954-1959	coup (1953)	Economic crisis(1958)
1964-1977	Stabiliztion of the political power	Islamic Revolution (1979)

Source: Data for the duration of 1906 -1959 are from Khavarinajad (2009; 2002), and for 1959-1979 are from the central bank.

Based on this historical perspective, we define 7 proxies that can be referred to as political instability index and check which of them are suitable significant in econometric models.

1. First index for political instability: The decreasing trend of the longevity of governments we define a proxy as political instability when the trend of the longevity of government is decreasing; we set -1 when the trend of the longevity of government is decreasing and +1 when increasing. Table 1 shows political (in) stability trends.

2. The second index for political instability: Durability of government based on first indicator base on the first indicator, we define another indicator that is accurate than it. Instead of a dummy variable as defined in the first indicator, we define the duration of

increasing or decreasing trends as a new indicator. It is expected that if agents are living in the middle of an increasing trend they invest more than those who are living at the beginning of that trend. As a previous indicator, we define an increasing trend and political stability period and decreasing trend as a political instability period. So we set +1 for the first year of increasing trend and example +5 for the fifth year of that trend. And also we define this mechanism for decreasing trends. We set -1 for the first year of decreasing, -2 for the second year of that period, and so on.

As table 1 illustrates governments in Iran fluctuate and the length of life of governments is volatile between some days to more than one decade. Base on this information we define some proxies:

3. Third index for political instability: Longevity of government smaller than one year:

The governments that have a long life smaller than one year are unstable and these periods are referred to as political instability duration. We set -1 for these periods and +1 for other years.
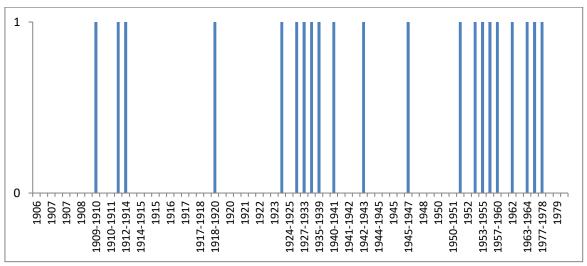

Figure 3. When Longevity of Government is More Than One Year is considered as Political Stable
Source: Data for the duration of 1906 -1959 are from Khavarinajad (2009; 2002), and for 1959-1979 are from the central bank.
Note: number one (zero) relates to political stability (instability).

4. Fourth index for political instability: Both two sequential governments have smaller than one-year longevity

Based on table one, we define political stability as the duration when both sequential governments have more than one year-long life. We set +1 for these durations and -1 for other durations. It's expected that this indicator can explain the relationship between political instability and economic growth better than the previous indicator. We can see that, based on this index, Iran between two revolutions has political stability in four periods. The first period has happened before WWI, and WWI has led to political instability. The second period lasted more than one decade (1927-1939) and in this duration, Reza Shah started to change the Iranian traditional system to modern. This period stopped again with WWII (similar to the previous period). The third period started after Mohammed Reza's coup (1953) and continued to 1959 (in this year, and one year before, Iran beard economic crises). The last period belongs to Hoveida's government, as it lasted for more than 12 years. After some years, with the Islamic revolution, this period stopped again.
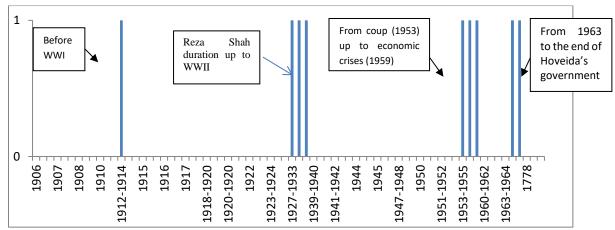
Figure 4. Political Stability, When Both Two Sequential Governments Last for More Than One Year
Source: Data for the duration of 1906 -1959 are from Khavarinajad (2009; 2002), and for 1959-1979 are from the central bank.
Note: number one (zero) relates to political stability (instability).

5. Fifth index for political instability: From three sequential governments, two of the last smaller than one year

The results of this indicator are similar to the previous indicator, but the first duration of table 2 is excluded from the durations that are referred to as political stability duration. In this condition, we have three periods in which Iran had political stability. In the first period, Reza Shah had stabilized his power, and for the first time, we can see that from three sequential governments, two of them lasted more than one year. From 1927, economic growth in Iran increased and up to 1939 (one year before WWII), this situation has continued. The second duration started after the coup (1953) and continued to 1959 (economic crises). Moreover, after that time demonstrations against the regime increased and finally regime suppressed the demonstration in 1963. The third period belongs to Hoveida's government. His government lasted more than one decade, and in this period, inflation was very low (smaller than 5 percent) and economic growth was very high (more than 8 percent).
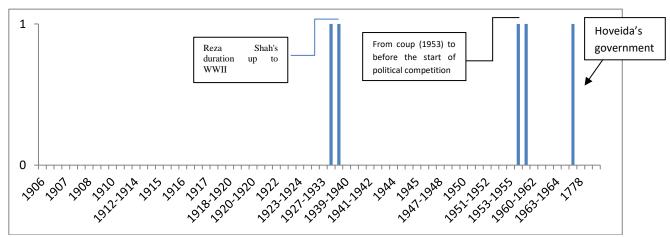

Figure 5. Political Stability, When Two of Three Sequential Governments Last More Than One Year
Source: Data for the duration of 1906 -1959 are from Khavarinajad (2009; 2002), and for 1959-1979 are from the central bank.
Note: number one (zero) relates to political stability (instability).

6. Sixth index for political instability: The longevity of government is smaller than four years

In most countries, the longevity of government and the long life of parliament is four years.

In Iran between two revolutions, there was no restriction on the minimum or maximum of the longevity of government. So we define another political instability indicator based on this criterion. So when the longevity of a government is equal to or more than 4 years, we illustrate that period as a political stability period. As it has been shown in Figure 5 from constitutional revolution (1907) to Islamic revolution (1979), Iran experienced political stability conditions just for two periods of time. The first political stability of Iran happened from 1927 to 1939. In this period, for the first time, Iran had a government duration of more than 6 years. In this period, as we mentioned earlier, economic conditions were good, but from 1931 to 1939 Reza Shah captured all political power in his hand and suppressed all opponents. In reality, economic growth in this duration has happened at the cost of political suppression. The next period, as one government (prime minister) lasted more than four years belongs to Hoveida's duration. As mentioned before, in this duration, the macroeconomic condition was stable and the 1960s is the golden decade for the Iranian economy. We need more economic studies for this economic golden decade to understand the process of policymaking in this duration.
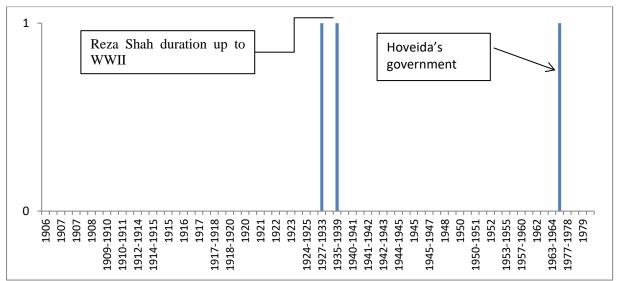

Figure 6. Political Stability, When the Longevity of Government is Smaller Than Four Years
Source: Data for the duration of 1906 -1959 are from Khavarinajad (2009; 2002), and for 1959-1979 are from the central bank.
Note: number one (zero) relates to political stability (instability).

7.   Seventh index for political instability: The number of cabinets in one year
    This indicator can be defined as the number of cabinets in one year or the number of new cabinets in one year, as Aisen and Veiga (2011) use the latter as their major indicator of political instability.

Methodology

Using the Solow growth model, we introduce political instability indicators in the model and then examine the model. Solow model can be defined by production function and the mechanism of investment accumulation as follows:

$$y(t) = A(t)f\big(k(t)\big) \tag{1}$$

$$\frac{\dot{k}(t)}{k(t)} = \frac{s\,f\big(k(t)\big)}{k(t)} - (\delta + g + n) \tag{2}$$

Where $f(.)$ is the per capita production function, $A(t)$ is the labor-augmenting technology term, $k(t)$ is the effective capital-labor ratio, s is the saving rate, δ is the depreciation rate of capital, g is the growth rate of technology, and n is the growth rate of population. Differentiating (2) concerning time leads to

$$\frac{\dot{y}(t)}{y(t)} = g + \varepsilon_k\left(k(t)\right)\frac{\dot{k}(t)}{k(t)} \tag{3}$$

where $\varepsilon_k\left(k(t)\right) = \frac{f'(k(t))k(t)}{f(k(t))}$ is the elasticity of production to capital. In steady-state, k converges to k^*. By expanding equation (2) around k^* and replacing it in equation (3) we have

$$\frac{\dot{y}(t)}{y(t)} = g - \left(1 - \varepsilon_k(k^*)\right)(\delta + g + n)(\log y(t) - \log(y^*(t)) \tag{4}$$

Various studies estimate this model. For example, see Barro and Sala-i-Martin (2004) and Acemoglu (2009). The general application form of this model is following (see Carmignani (2003))

$$g_{t,t-1} = \alpha\, X_t + \beta\, Z_t + \gamma\, \text{Pol}_t + \varepsilon_t \tag{5}$$

Where X_t is the set of economic variables that contribute to explain the dependent variable, such as the investment rate, the government-consumption ratio, the inflation rate, and the rate of urbanization; and Z_t is the set of institutional variables and Pol_t is political instability variable. Some studies estimate models without Z_t variables.

Data and Estimation

The central bank of Iran was established in 1960 and has produced data collection since 1959, so we use data for 1959-1979 from the central bank. We use the data collection of Khavarinajad (2009; 2002) for 1907-1959 duration.

We use the rate of inflation (π_t), inverse rate of urbanization (invurb_t) and the lag of per capita income ($\log y_{t-1}$) as economic explanatory variables. As Iran is a member of OPEC and depends on oil, we use per capita oil revenue ($\log \text{oil}_t$) as an economic variable too.

We also use "polity2" and "xconstant" variables from the Polity IV data set as institutional variables. Polity2 indicates democracy and xconstant refers to the institutionalized constraints on the decision-making powers of chief executives.

First, we survey economic growth only by economic variables (see table 30). However, R^2 of the model is very low (=0.17), and also there is omitted variable as we examine the Ramsey test. Then we added institutional variables ("ploity2" and "xconstant") to the model and the explanatory power of the model increased to 0.26 and show that institutional variables affect economic growth as the results show the xconstant variable is significant and has a positive sign that means increasing of institutionalized constraints on the decision making powers of chief executive will improve the economic growth. The negative coefficient of $\log y_{t-1}$ shows the convergence of the economy in the long run.

Table 1. The Effect of Democracy and Executive Constraint on Iranian Economic Growth (1907-1979)

	log y_{t-1}	log oil$_t$	π_t	invurb$_t$	Polity2	Xconst	R^2
First Model without polity IV variables	-24.85* (6.73)	0.25 (1.26)	0.05 (0.08)	-0.74* (0.24)			0.17
Second Model with polity IV variables	-36.31* (7.72)	-0.24 (1.22)	-0.2 (0.6)	-1.1* (0.28)	-0.48 (0.26)	2.07* (0.63)	0.26

Source: Research finding.
*significant in %5

In the third stage, we examine the model by economic variables and political instability. Results are shown in table 4, Where pol_inst$_t$ refers to political instability as we define in this paper.

Table 2. The Effect of (Seven) Political Instability Indicators (Are Defined in This Paper) on Iranian Economic Growth (1907-1979)

	log y_{t-1}	pol_inst$_t$	log oil$_t$	π_t	invurb$_t$	R^2
First Political instability indicator	-41.5* (9.01)	-2.3* (.89)	1.5 (1.34)	0.005 (.06)	-1.2* (.31)	0.36
second Political instability indicator	-46.87* (8.66)	-0.33* (0.12)	2.13 (1.31)	0.02 (0.059)	-1.34* (.29)	0.48
third Political instability indicator	-48.27* (8.98)	-2.41 (1.90)	2.20 (1.35)	0.04 (0.06)	-1.42* (.30)	0.32
fourth Political instability indicator	-45.97* (8.52)	-5.35* (1.64)	2.56* (0.05)	0.013 (0.81)	-1.37* (0.005)	0.39
fifth Political instability indicator	-46.30* (8.94)	-3.81 (2.21)	2.46 (1.35)	0.04 (0.06)	-1.40* (0.30)	0.33
sixth Political instability indicator	-51.59* (9.06)	-3.75* (1.93)	2.53 (1.35)	0.05 (0.60)	-1.48* (0.30)	0.34
Seventh Political instability indicator	-48.57* (9.96)	.56 (.86)	2.37 (1.37)	.00004 (.0002)	-1.44* (.32)	0.31

Source: Research finding.
*significant in %5

As table 4 shows, adding the political instability variable to the model improves the explanatory power. All indicators that we define in this paper as political instability have a negative effect on economic growth as is expected, and as table 4 shows first, second, fourth, and sixth indicators are significant. This means that they can be a suitable indicator for political instability. In the next step, we check them in another model to be sure.

Finally, we test the simultaneous effect of political instability and institutional variables. The results are shown in Table 5.

Table 3. The Effect of (seven) Political Instability Indicators (Are Defined in This Paper), Executive Constraint and Democracy on Iranian Economic Growth (1907-1979)

	log y_{t-1}	pol_inst$_t$	log oil$_t$	π_t	Polity2	xconst	invurb$_t$	R^2
First Political instability indicator	-64.24* (10)	0.67 (1.50)	2.58 (1.36)	0.071 (0.59)	0.47 (0.45)	2.42* (0.45)	-1.81* (.319)	0.37
second Political instability indicator	-62.43* (9.-06)	-0.17 (0.14)	2.16 (1.21)	-0.07* (0.058)	0.07 (0.34)	2.29* (0.34)	-1.77* (.30)	0.49
third Political instability indicator	-63.2* (9.32)	-1.14 (1.91)	2.27 (1.21)	-0.07 (0.21)	0.22 (0.50)	2.38* (0.001)	-1.79 (1.21)	0.48
fourth Political instability indicator	-61.7* (8.98)	-3.40* (1.72)	2.38 (1.90)	-0.07 (0.06)	-0.02 (0.33)	2.24* (0.58)	-1.79* (0.30)	0.50

	$\log y_{t-1}$	pol_inst$_t$	log oil$_t$	π_t	Polity2	xconst	invurb$_t$	R^2
fifth Political instability indicator	-62.29* (9.10)	-2.03 (2.24)	2.38* (1.21)	-0.07 (0.23)	0.17 (0.32)	2.37* (0.59)	-1.79* (0.31)	0.48
sixth Political instability indicator	-68.81* (9.47)	-3.80* (۱٫۸۹)	2.53* (1.18)	-0.07 (0.06)	0.03 (0.31)	2.59* (0.59)	-1.93* (0.31)	0.51
Seventh Political instability indicator	-64.97* (9.76)	.335 (.30)	2.29 (1.20)	-.0002 (.0001)	.335 (.302)	2.23* (.56)	-1.79* (.31)	0.48

Source: Research finding.

*significant in %5

We check the non-linearities in the regressors. Barro(1994) illustrates non-linear relationship between democracy and economic growth. We check this issue for polity2 variable as shows democracy. For endogenity problem we use the value of political instability index at the beginning of the period as Barro (1994) does. Finally, we check specification of the model base on the Ramsey criteria. This tests examined in previous estimation too.

From seven indicators that are referred to as political instability, only the fourth and sixth indicators are significant. These two indicators were significant in the previous estimation too. Indeed, in the previous estimation, we found four of six indicators, are defined in this paper, can be a suitable indicator for political instability. However, the latest estimation illustrates that only two of them are suitable to define as political instability indicators.

At first, we define political instability based on decreasing trend of the longevity of government (first indicator) and also we extract another indicator from that (second indicator). Estimation base on equation (5) shows that they have a negative effect on economic growth and are significant so they can be a suitable indicator for political instability. On the other hand, when we introduce polity IV variables they become insignificant and only "xconstant" variable is significant. These results show that institutionalized constraints on the decision-making powers of chief executives are very important, and if these constraints can lead to more fluctuation of government, it is not reasonable to release control of the government in favor of government stability.

We define 4 indicators based on the longevity of the government. Examination of the effect of political instability on economic growth, without using polity IV variables shows that two of them (third indicator and fifth indicator) are insignificant which are "longevity of government smaller than one year", and "from three sequential governments, two of them have smaller than one-year longevity", and two of them (fourth and sixth) are significant which are "both of two sequential governments have smaller than one-year longevity", and "longevity of government is smaller than four years". These results indicate that, when at least two sequential governments last more than one year, the political environment is stable and agents can go beyond the short-run perspective. As in Iran (1907-1979), the fluctuation of governments was very high, when two sequential governments lasted more than one year, the political condition could be deducted as stable. When the longevity of a government was more than four years this analysis is true too.

Finally, the results show that the last suggested indicator is insignificant. This indicator (the number of (new) governments in one year) in both estimations is insignificant. Aisen and Veiga (2011) define this indicator as political instability and find the negative effect of that on economic growth. The result of this paper shows that it's better to define political instability based on the context of each country and be cautious in using this institutional variable.

These results are also approved when we examine the effect of political instability on economic growth with polity IV variables. As table 5 shows this examination leads to raising the explanatory power of the model and also institutionalized constraints on the decision-making powers of chief executives can improve the economic growth.

Conclusion

The constitutional revolution (1907) in Iran changed the political structure. Before that, the king was absolute power but after the revelation, the semi-parliamentary system has established and political power was divided between the king, parliament, government, and militaries. As this division of power was ambiguous, there were permanent challenges between different groups and this system continued to the second revolution (1979). Between the two revolutions, the government fluctuated sharply due to mentioned challenges.

In this paper, we define political instability based on the instability of government and examine the relationship between political instability and economic growth. We suggest seven indicators as political instability and find that only two of them are suitable to be referred to as political instability indicators. We find that political instability has a negative effect on economic growth and this result is invigorated as we add polity IV indicators as an institutional variable (democracy and executive constraints).

We found that when both two sequential governments last more than one year or one government lasts more than five years that period can be recognized as a political stability period in Iran between two revolutions (1907-1979) and the best political structure that could lead to economic growth was the periods that chief executive controlled systematically and also mentioned political stability achieved.

In Iran between two revolutions (1907-1979), these conditions happened in three periods including (see figures 5 and 6): 1927-1939, 1955-1960, and 1964-1977. The first period belongs to Reza Shah's duration when he changed the political regime from Qajar to Pahlavi and continued to 1939. It is really important to mention that, after 1931 the political power seized gradually in his hand and this leads to political opponents and resistance against his king, and he arrested his opponents and killed some of them. The effect of these conditions on the economy appeared after 1937. The next duration (1955-1960) happened after the coup (1953) and the king and his advocates tried to compensate bad political conditions with economic improvements. However, these conditions could not continue and led to economic crises and finally, political demonstrations in 1964, and the regime suppressed all of them. So from 1960 to 1964 Iranian economy fluctuated and the competition between the king and his opponents was very high.

The last period (1964-1977) happened after the king suppressed political opponents and also a political demonstration in 1964. In this duration, the longest longevity of one government in Iran experienced an average rate of economic growth was more than 10 percent. Similar to Reza Shah's duration (1926-1941), economic growth and political stability in Mohammed Reza Shah's duration (1941-1979) happened in political suppression and finally lead to the Islamic revolution (1979). So next researches can study how one developing county (such as Iran) can maintain simultaneously its high rate of economic growth on one hand and open political sphere on the other hand.

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