“The Political Instability, Investment Profile and the Macroeconomic Performance of the Middle East & North Africa (MENA) Region”

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The political instability, investment profile and the macroeconomic performance of the Middle East & North Africa (MENA) region

Abstract

In this paper we focus on the relationship between political stability, investment profile and macroeconomic performance in the Middle-East & North Africa (MENA) region including Turkey. In the theoretical section we evaluate various models, the effect of political stability and investment profile on inflation, economic growth rate and surplus/deficits on the current account balance of payments. In the empirical section we analyze the evidence on the predictions generated by theoretical models. Furthermore, we generate Malmquist Productivity Index (MPI) for the MENA region countries where the data available include Turkey. The empirical section comprises the time span between 1987 and 2003. The reason for the application of MPI in such a study is that when there are many components, factor analysis – a technique that aggregates components with unknown weights – is a convenient and superior alternative. For the period of 1987-2003, we explore that the MENA region countries macroeconomic performances declined and Malmquist index values are highly volatile after the Gulf War. We find out that there has been an inverse relationship between macroeconomic performance and political risk.

Keywords: political risk, macroeconomic performance, Malmquist index.
JEL Classification: O11, O57, P26, E00.

Introduction

Since the early 1980's some developing countries are more successful in catching up developed countries than others. Thus these relatively successful experiences raise the question of why some developing countries are more successful than others. In 1980's some South Asian countries were economically successful than remaining developing countries at least in terms of economic growth. Standard neo classical growth theories could not find satisfactory explanations to these triumphant stories. New economic growth theories, such as endogenous growth theories, could explain these economic successes partially. According to this theory, 80 per cent of cross-country differentials in average per capita growth of GDP can be explained if human capital formation is included in the standard Solow growth model. However, their model still leaves about 20 per cent of growth differentials unexplained. Economists and political scientists have been preoccupied with this problem. Many political scientists believe that apart from differences in production factors, the key success of some countries must be sought in their specific political system.

The effect of political structure on the nation's economic performance is not a new phenomenon. Since the time of Adam Smith, it is accepted that political structures have effects on national economic performance. Similarly only recently it has been seen that political scientist argues the differentials of the nation's economic success. Besides the political factors, institutional factors affect the economic outputs as well and play an important role in the determination of the differentials between countries.

The influence of political structure on macroeconomic performance can be analyzed on the bais of political risks. Fitzpatrick (1983, p. 249) defined political risk in terms of loss of control over ownership or loss of benefits of enterprise by government action. At this point we need to clarify, what does political risk mean?

The definition of political risk is based on the assumption that government actions or interventions may cause undesirable consequences. It embodies the assumption of the universality of government interference as a negative factor. On the other hand, political risk may also be referred to as political events that impose restrictions on specific industries. Within the concept of the second definition the political events typically are changes in government or heads of state and violence, both focused, such as the bombing of supermarkets in Argentina in 1969 (Robock, 1971). Constraints on the firm typically encompass expropriation, restrictions on remittance of profits, discriminatory taxation and public sector competition (Fitzpatrick, 1983, pp. 249-250). So we can define political risk in terms of discontinuities occurring in the business environment as a result of political change.

In this study, we try to examine the interaction between political risk and macroeconomic performance of MENA countries. For this purpose, we used a technique that is similar to those of the literature. In this technical approach macroeconomic performance measured by inflation, current balance account surplus/deficit and economic growth rate are converted to a single measure. We use non-parametric Malmquist Index approach which is based on Data Envelopment Analysis (DEA). We take inflation, current balance account surplus/deficit and eco-

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nomic growth rate of countries as outputs; government stability index and investment profile index as inputs. It can be criticized that there can be additional inputs in the determination of macroeconomic performances other than political risk proxies that are mentioned above for such an approach. Naturally, it may be very realistic to comprise the complete variables which affect macroeconomic performance. However, it is impossible to build up such a variable set, and also, it is unnecessary for the purpose of this study. In other words, in our study, we search for the changes in the macroeconomic performance and its interaction with the political risk concept more than the effecting channels of the macroeconomic performance. Because of having major effects on the primary economic variables, we use the political risk proxies by political instability (PI) as inputs.

For this purpose, in the first section we examined the concept of PI and existing contributions in the applied literature. In the second section the data and the model take place. Section three comprises the findings of the study. And the final section concludes.

1. Literature

When the literature is surveyed, the concept of PI is classified into three broad categories. These three categories form a sound basis for the applied literature. These categories are: the category referring PI as social unrest, myopia and polarization and weak government.

In the social unrest view, PI is taken to be synonymous with socio-political tension. It is assumed that political instability relates to the recorded number of violent political events, such as the politically motivated killings, riots, coups or strikes. One should be aware that several forms of social unrest are not only a challenge to the political system but also affect the property rights of individuals.

In the myopic and polarization view, PI is taken to be related to the number of government changes. Clearly, rapidly changing governments with conflicting preferences will not produce consistent policies.

The last category of PI is weak government view. According to this view, the term "politically instable" indicates the *uncertainty*. Although the actual government needs not fall, there may exist political tensions that seriously threaten its survival. Coalition governments might be more prone to such threats. The weak government approach assumes that every political party represents the specific preferences of its supporters.

In this section we classified the applied literature according to the definitions described above. The findings of the studies taken PI as the social unrest are as follows.

The more frequent riots, coups, politically motivated killings affect the economic growth negatively. Dimitrios and Price (2001), Barro (1991), Kwasi Fosu (1992), Gasiorowski (1998), Levine and Renelts (1992) and Butkiewicz and Yanikkaya (2005) all point out negative relationship between PI and economic growth. PI as social unrest may also affect the foreign direct investment (Brada, Kutan and Yigit, 2006), capital flight (Le and Zak, 2006), investment variability (Fielding, 2003), public deficit (Woo, 2003), the excess liquidity in financial sector (Fielding and Shortland, 2005). The political instability as a social unrest also distorts political reforms, increases the debt maturity restructuring (Balkan, 1992). It also causes high inflation in peace time and low inflation under military government (Gasiorowski, 1998). It does not affect the marginal profitability of capital (Pindyck and Solimano, 1993).

The results obtained from the PI as a social unrest are the same as those obtained from PI as a myopic and polarization. PI as a myopic and polarization is also reducing the economic growth of countries (De Haan and Clemens, 1996; Alesina, Ozler, Roubini and Swagel, 1992). Again it reduces investment (Feng, 2001), increases the share of trade taxes in GDP and seigniorage as a budgetary finance and affects the Central Bank independency negatively (Edwards and Tabellini, 1991; Cukierman, Edwards and Tabellini, 1992; De Haan and Gert Jan Van 'T Hag, 1995; Boschen and Weise, 2004). Additionally, PI engenders weak macroeconomic performance when measured in terms of unemployment and inflation (Alesina, 1989). In the case of rapidly changing governments, it is difficult to implement economic stability programs (Edwards 1994). Notwithstanding, frequent government changes find it difficult to obtain long-term financing. In other words, frequent government changes contribute to a bias toward short-term maturity in international lending (Valev, 2006).

The studies which define PI as a weak government find similar results. Berument and Heckelman (2005) find positive relationship between seigniorage and PI. The weak governments have weak macroeconomic performances in terms of inflation and economic growth (Sakamoto, 2005). Aisen and Veiga (2006), Paldam (1987), Grilli, Masciandaro and Tabellini (1991) find that PI is an important factor in creation and acceleration of inflation. Moreover, PI taken as a weak government relies heavily on public debt. De Haan and Strum (1994), De Haan, Strum and Beekhius (1999) find that PI has positive effect on public debt but negative effect

on budgetary policies. On the contrary, Volkerink and De Haan (2001) find that fragmented governments do not have any effect on government expenditure and revenues accordingly on budget balance. Moreover, Meno and Rizzo (2002) find correlation between flexible exchange rate regime and PI, and Bussiere and Mulder (1999) find that for countries with weak economic fundamentals and low reserves, PI has a strong impact on economic vulnerability.

Additionally, there is another strand of literature for the evaluation of the macroeconomic measurement of countries which are using non-parametric methods. OECD (1987), in analyzing the countries MEP, emphasizes the use of four indicators: GDP growth rate, unemployment rate, inflation rate, and surplus or deficits on the current account of the balance of payments. These indicators are referred to as "magic diamond" in the literature. In studies measuring MEP, it is observed that the aim is generally to use these indicators to establish the "synthetic indicators" of macro economic performance. One of these studies is one carried out by Lovell, Pastor and Turner (1995) on the measurement of MEP of 19 countries. Other studies on the measurement of countries' MEP are as follows: Färe et al. (1994) produced the Malmquist Productivity Index of 17 OECD countries between 1979 and 1988; Lovell (1995) evaluates the performance of 10 Asian countries for the period of 1970-1988; and Lovell & Pastor (1995) measure the performance of 16 Ibero-American countries. Additionally, when evaluating macro economic performance, Melyn & Moesen (1991), Moesen & Cherchye (1998), and Cherchye (2001) used these four indicators but they implemented these indicators by imposing different weights to them.

2. Data and model

The data set covers annual data for 12 Middle East and North Africa countries for the period of 1987-2003 obtained from DataStream database. Annual inflation rates as measured by the annual growth rate of consumer price index, the current balance account surplus/deficit as a percentage of GDP, real GDP growth rates are all obtained from the DataStream database. The political (in)stability is measured by the *Government Stability Ratings* obtained from International Country Risk Guide (ICRG) published by the PSR Group. The risk rating assigned to each country is the sum of three subcomponents: government unity, legislative strength and popular support, and ranges from zero (low stability) to twelve (high stability). Investment profile index is also obtained from International Country Risk Guide. Investment profile index consists of three subcomponents: contract viability/expropriation, profits repatriation and payment delays. It also ranges from zero (high risk) to twelve (low risk).

The DEA methodology used for the calculation of total factor productivity in this paper is based on Farrell's (1957) and Shepherd's (1970) works, and also famously known as the Malmquist productivity index. The Malmquist index uses the distance functions introduced by Shepherd (1970) for efficiency measurement. This function is the inverse of the efficiency measure developed by Farrell (1957), which makes it possible to measure technical as well as productivity change by calculating Malmquist index (Fare et al., 1994).

The Malmquist index could be constructed as either input-oriented or output-oriented. In the input-oriented version, an input distance function characterizes the production technology by searching at a minimum proportional reduction of the input vector, given an output vector. In the output-oriented version, an output distance function characterizes the production technology by searching at a maximum proportional expansion of the output vector, given an input vector. This paper uses output oriented approach for the measurement of productivity change. Therefore, the methodological explanation given below is based on the output-oriented approach.

Accordingly, the Malmquist productivity index measures the productivity change of each countries between two adjacent time periods by calculating the ratio of the distances of each period relative to common technology.

Following, Fare et al., (1994) the output oriented Malmquist index between time period t and t+1 could be defined as

$$M_O^{t,t+1}(y^t, y^{t+1}, x^t, x^{t+1}) =$$

$$= \left[\frac{D_O^t(y^{t+1}, x^{t+1})}{D_O^t(y^t, x^t)} \frac{D_O^{t+1}(y^{t+1}, x^{t+1})}{D_O^{t+1}(y^t, x^t)} \right]^{\frac{1}{2}} \quad (1)$$

where the values greater than one indicate increased productivity and the values less than one indicate decreased productivity. In this equation y^t represents an output in period t whereas x^t represents an input in period t. As previously stated in the introduction part of the study, we take inflation, current balance account surplus/deficit and economic growth rate of countries as outputs; government stability index and investment profile index as inputs. In this model, the notation represents the distance from the period t observation to the period t+1 technology. Correspondingly, the index could be interpreted as a measure of total factor productivity (TFP) change. The Malmquist productivity index could also be decomposed into two components as

$$M_O^{t,t+1}(y^t, y^{t+1}, x^t, x^{t+1}) = \\ = \frac{D_O^{t+1}(y^{t+1}, x^{t+1})}{D_O^t(y^t, x^t)} \left[\frac{D_O^t(y^t, x^t)}{D_O^{t+1}(y^t, x^t)} \frac{D_O^t(y^{t+1}, x^{t+1})}{D_O^{t+1}(y^{t+1}, x^{t+1})} \right]^{\frac{1}{2}} \quad (2)$$

where the term outside the brackets measures the change in the output oriented technical efficiency between periods t and t+1. This term simply computes efficiency change as the ratio of technical efficiency in period t to the technical efficiency in period t+1. The term within brackets measures the shift in the production frontier (technology) as geometric mean of two ratios of distance functions. In other words, the Malmquist TFP index is a multiplication of technical efficiency change and technological change. Consequently, the Malmquist index shows two major impacts: the shifts in the frontier over time (technological change) and changes in efficiency relative to the frontiers for different time periods (technical efficiency change).

To make the Malmquist approach clearer, suppose that there is only one input used for production of one output, as seen in Figure 1. Here, the line $0V^t$ presents the production frontier of the period t and the line $0V^{t+1}$ shows the production frontier of the period of t+1 while the input-output combinations in period t, and period t+1 are (x_i^t, y_i^t) and (x_i^{t+1}, y_i^{t+1}), respectively. The line $0V^{t+1}$ indicates an improvement in technology, which means that efficient countries could produce the same output by using less of input than was needed under the technology of $0V^t$. Two principal changes could be depicted between period t and period t+1. Firstly, due to the technological change, the country now produces more output per unit of input in period t+1 than in period t. In other words, its input-output combination in period t+1 would have been infeasible using period t technology. In fact, that is the reason why the technical change is taken place. Secondly, the country is also experiencing technical efficiency change too, since now its operating point is closer (in relative terms) to the frontier in t+1 than it was in period t.

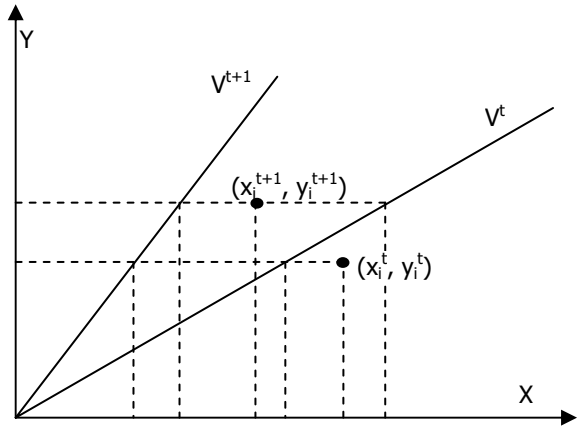

Fig. 1. A visual representation of Malmquist Index approach for one input and one output

To calculate the required distance functions for each country, four separate DEA based linear programming problems have to be solved. The form of the models with the assumption of constant return to scale technology is as follows:

(3) (4)

$$\left[D_O^t(y^t, x^t)\right]^{-1} = \max_{\phi,\lambda} \phi, \qquad \left[D_O^{t+1}(y^{t+1}, x^{t+1})\right]^{-1} = \max_{\phi,\lambda} \phi,$$
$$st \quad -\phi y_i^t + Y^t \lambda \geq 0, \qquad st \quad -\phi y_i^{t+1} + Y^{t+1} \lambda \geq 0,$$
$$x_i^t - X^t \lambda \geq 0, \qquad x_i^{t+1} - X^{t+1} \lambda \geq 0,$$
$$\lambda \geq 0 \qquad \lambda \geq 0$$

(5) (6)

$$\left[D_O^t(y^{t+1}, x^{t+1})\right]^{-1} = \max_{\phi,\lambda} \phi, \qquad \left[D_O^{t+1}(y^t, x^t)\right]^{-1} = \max_{\phi,\lambda} \phi,$$
$$st \quad -\phi y_i^{t+1} + Y^t \lambda \geq 0, \qquad st \quad -\phi y_i^t + Y^{t+1} \lambda \geq 0,$$
$$x_i^{t+1} - X^t \lambda \geq 0, \qquad x_i^t - X^{t+1} \lambda \geq 0,$$
$$\lambda \geq 0 \qquad \lambda \geq 0$$

Equations (3) and (4) compute the optimal distance function in time t and t+1 using corresponding periods' inputs and outputs respectively. On the other hand, equation (5) computes optimal distance function using input and output observations from period t+1 relative to technology in period t. Similarly, equation (6) computes optimal distance function using input and output observations from period t relative to technology in period t+1. These four optimal distance functions are used in Malmquist productivity index shown in equation (2).

3. Results

During the 1987-2003 period, Malmquist index (MI) values belonging to the MENA region fall 3,9% on average. The years when the index values change positively are 1989,1990, 1991, 1993, 1994, 1996, 1998, 2000, 2002 and 2003, whereas the negative changing years are 1988, 1992, 1995, 1997, 1999 and 2001. From this perspective it is impossible to say that index values move in the same direction. On the other hand, the highest year of total factor productivity is 1998, and the lowest year of total factor productivity is 1995.

Other than above findings, someone can easily trace the interaction between Malmquist Index (MI) and Technological Change (TC)-Efficiency Change (EC) in Figure 2. Till 1994, MI and TC move in the same direction. Similarly, after 1994, MI and EC move in the same direction. Considering Figure 2, there is a conspicuous point where it coincides with the 1990 Gulf War. This point is the breaking point in terms of macroeconomic performance. With a one-year lag, Gulf War has dramatic negative effect

on macroeconomic performances. Moreover, with the effect of war, beginning in the year 1994, EC becomes the determining factor of MI and its volatility increases.

Table 1. Yearly Malmquist index values

Year	Efficiency Change	Technological change	Malmquist index
1987	1,06	0,87	1
1988	1,00	1,18	0,92
1989	1,07	1,02	1,18
1990	0,95	1,45	1,09
1991	1,06	0,51	1,37
1992	1,01	1,05	0,54
1993	1,03	1,03	1,06
1994	0,55	0,81	1,06
1995	1,07	0,97	0,45
1996	0,67	0,97	1,04
1997	1,55	1,10	0,65
1998	0,76	0,83	1,70
1999	1,05	1,03	0,63
2000	1,06	0,91	1,08
2001	1,44	1,11	0,97
2002	0,96	1,06	1,60
2003	0,99	0,97	1,02
Mean	1,06	0,87	0,96

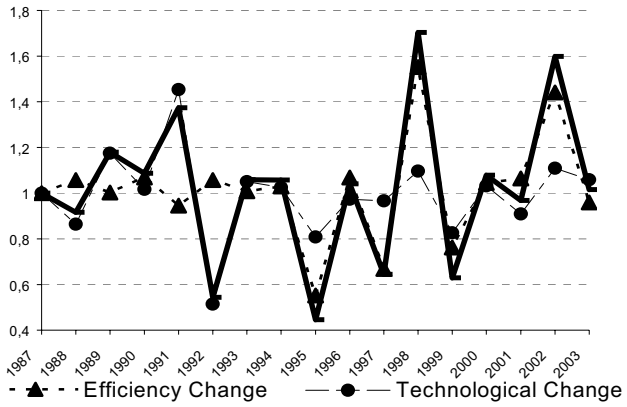

Fig. 2. Yearly Malmquist Index values

In this case, although the general structure of MENA region seems to be stable, specific countries experience important macroeconomic fluctuations.

Another striking finding of this study is that MI values and important global shocks go hand in hand. In this context, the region's MI values coincide with the 1990 Gulf War, 1992 Russian Crisis, 1997 East Asian Crisis and 1999 Argentina Crisis. For the sake of analyzing the long-run effects, it would be useful to discuss the regional and country specific cumulative Malmquist values. For this purpose we compiled Table 2 and Figure 3.

Table 2. Cumulative Malmquist index values

Year	Efficiency Change	Technological change	Malmquist index
1987	1,00	1,00	1,00
1988	1,06	0,87	0,92
1989	1,06	1,02	1,08
1990	1,13	1,03	1,17
1991	1,07	1,50	1,61
1992	1,13	0,77	0,88
1993	1,14	0,81	0,93
1994	1,18	0,83	0,98
1995	0,65	0,67	0,44
1996	0,70	0,65	0,46
1997	0,46	0,63	0,29
1998	0,72	0,69	0,50
1999	0,55	0,57	0,32
2000	0,57	0,59	0,34
2001	0,61	0,54	0,33
2002	0,88	0,60	0,53
2003	0,84	0,63	0,53

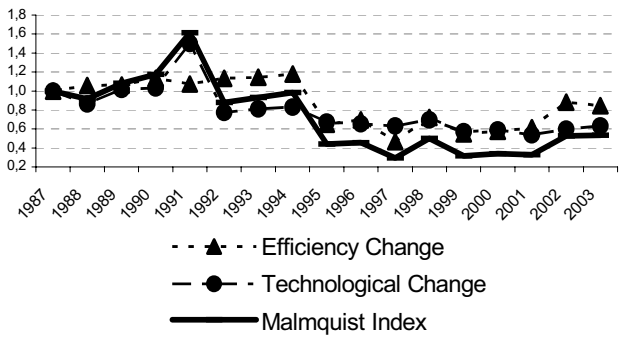

Fig. 3. Cumulative Malmquist index values

At the end of 17 years, MI values fall 47% and reach 0,53. Total factor productivity is the principal component in the so-called reduction. We can easily interpret this result as the general trend of macroeconomic performances going down. Additionally, Gulf War makes macroeconomic performance of the region worse in total.

Another group of findings of the study is about the trends that are experienced by each country. Figure 4 shows the countries which have extreme performance. The first of these figures shows the MI values. According to this figure, the most successful country in terms of macroeconomic indicators is Algeria. Before the Gulf War, Syria's macroeconomic performance is raising but after the Gulf War it dramatically falls. The most unsuccessful country is Morocco. The second figure renders an opinion about the EC and TC directions on the country bases. Specifically, when we interpret the TC curve, we can easily realize the negative effect of the Gulf War. While Jordan is the most affected country by the Gulf War, Turkey is the least affected one. Fi-

nally, the most successful countries in terms of efficiency changes are Algeria and Iran. But among those two countries Algeria is more stable in terms of efficiency compared to Iran. We call attention to the fluctuated nature of the Iran's efficiency. Jordan and Libya are the two whose efficiency scores are falling during the whole period.

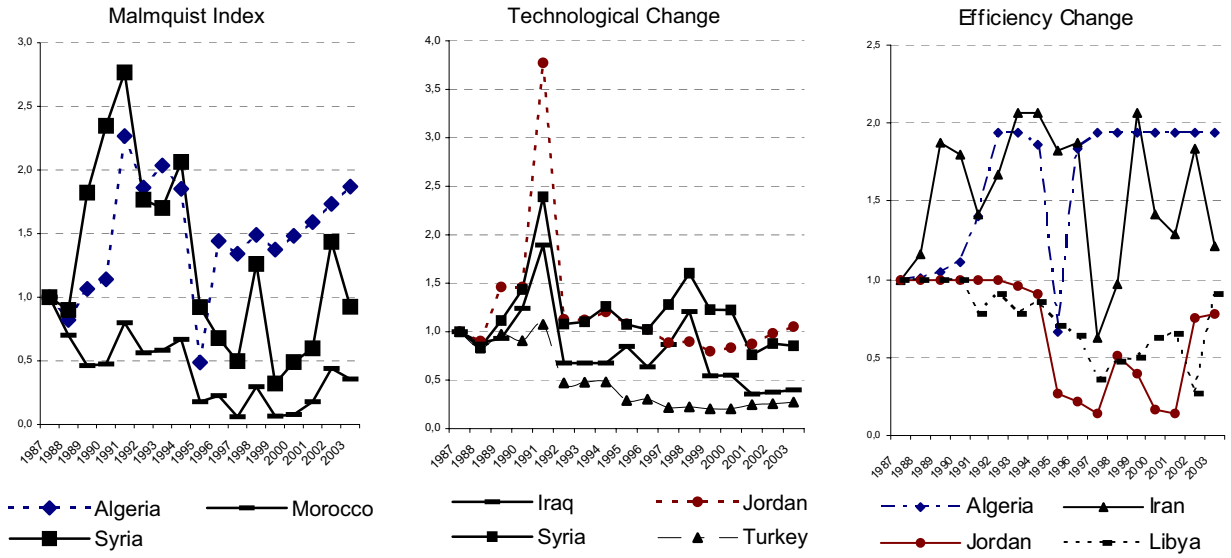

Fig. 4. The results and trends for specific countries

Finally, we will discuss the relationship between political risk and MI results. In the analysis, we classify countries in terms of "government stability" and "investment profile" which are the proxies for the political risk. In this context of classification, the countries which have a value below the average are referred to as "high risk" and those having a value above the average are referred to as "low risk" countries. This reasoning is given in the table below.

Table 3. Political risk and MI relationship

		Policy uncertainty (invesment profile)	
		High	*Low*
Political instability (government stability)	*High*	High political risk	High political risk
	Low	Medium political risk	Low political risk

In the table given below, we represent the results for the MENA region. From the analysis given above, we derived the result that the higher the political riskis, the lower the macroeconomic performance will be. Additionally, the lower the political risk of a country is, the higher is the macroeconomic performance. For example, in the countries where the political risk is low, the total factor productivity values are increasing by 2%, and in the countries where the political risk is high, TFP is decreasing by 1% on average.

Table 4. Political risk and macroeconomic performance

Political risk level	Countries	EC	TC	MI
High	2 (Iraq, Iran)	1,08	1,11	0,99
Medium	6 (Algeria, Israel, Kuwait, Libya, Syria, Turkey)	1,10	1,10	0,82
Low	4 (Jordan, Morocco, Saudi Arabia, Egypt)	1,17	1,20	1,02

Conclusion

In the political economy literature, there has been an ongoing discussion about the political stability/risk and economic performance. In this study, we discuss the relationship between macroeconomic performance and political risk in a multi-dimensional concept for the MENA region. We can summarize the paper's findings as follows:

For the period of 1987-2003, we explore that the MENA region countries' macroeconomic performances decline and Malmquist index values are highly volatile after the Gulf War. We find out that there has been an inverse relationship between macroeconomic performance and political risk. In countries where the political risk is low the Malmquist index values are high, and in countries where the political risk is high, Malmquist index values are low.

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