

The impact of fiscal policy on economic happiness: evidence from the countries of the MENA region

Countries of
the MENA
region

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Abstract

Purpose – The purpose of this study is to investigate the relationship between fiscal policy (tax revenues and government expenditure) and economic happiness. The panel data are used from 2012 to 2016 for 18 countries of the Middle East and North Africa (MENA) region.

Design/methodology/approach – The study adopted the Barro (1990) model of endogeneity growth to characterize the relationship between fiscal policy and economic happiness. The study estimated the model by using the pooled ordinary least squares method, the fixed effects method and the random-effects method. In addition, the study used the dynamic estimate of this relationship rather than the conventional static estimate through the generalized method of moments' method. This leads to overcoming the endogeneity problem between the dependent variable and the independent variables.

Findings – The main findings indicated that there is a negative and statistically significant relationship between nondistortionary taxes and economic happiness. Also, there is no relationship between public expenditure and economic happiness, whether productive or nonproductive. The results confirmed a positive and significant relationship between other revenues and economic happiness. The current study recommended the diversification of other public revenue sources to increase its contribution to public expenditure financing and the restructuring of the tax system, particularly nondistortionary taxes. These taxes must be replaced by other revenues or by distortionary taxes to increase economic happiness.

Research limitations/implications – The research represents a strong starting base that can help researchers to conduct more studies on economic happiness by using different measures and comparing their results to find out the determinants of happiness. The relationship between economic happiness and fiscal policy with its different aspects requires more studies, especially the relationship between taxes and economic happiness in our region. The study of the relationship between public expenditure and economic happiness according to economic activities can guide decision-makers to direct the expenditure toward economic activities that achieve the happiness of their citizens. Enriching this study requires the availability of fiscal data for the entire MENA region for longer periods, which allow us to divide the countries of the region into petroleum and nonpetroleum countries, but the scarcity of data is one of the limitations of the study.

Practical implications – The governments of MENA countries should diversify other public revenue sources to increase the financing public expenditure by the expense of tax revenues, especially nondistortionary taxes, which would increase the economic happiness of their citizens.

Originality/value – This study is one of the rare studies that investigate the relationship between fiscal policy and economic happiness at the global level. This study contributed to filling the gap of this issue in the MENA region and enriching global literature through the experience of the MENA region. Moreover, this study investigated all aspects of fiscal policy, in contrast to other studies that focused on one of its aspects.



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The weakness in these studies is because of the lack of correlation between the sources of revenues and the face of their spending.

Keywords Fiscal policy, Economic happiness, MENA region, Generalized method of moments (GMM)

Paper type Research paper

1. Introduction

Aristotle asked a question in the first book of *Nicomachean Ethics*: What is the ultimate good that can be attained by hard work? He answered that the general public and their elite agree that “the ultimate good is happiness, but they disagree on determining what it really entails.” Frey (2008), Younis (2009) and Lane (2017) emphasized that happiness is the goal of life, is subject to change over time and affected by various procedures, physical factors and subjective alike. Economists express the happiness by the feeling of good living or the feeling of subjective well-being, which differs from happiness as a positive emotional state, or misery as a negative state. Subjective well-being or good living feeling can be defined as a mental appreciation or general satisfaction for the quality of life that the individual lives or feels about it. There is a great overlap between happiness as an expression of feelings and life satisfaction, which includes a mental assessment of the quality of life. Thus, the study uses the term happiness and life satisfaction interchangeably, such as mainstream happiness economics literature.

Economists’ interest in economic happiness is due to two main reasons: economic policy and institutional conditions. In the first one, it is impossible to get Pareto improvements, because social work involves costs for some individuals. Hence, there is a need to assess the net effects related to individual benefits. Economic policy must also have quantitative evidence of trade-offs between gains and losses, especially between unemployment and inflation. Subjective well-being also depends on institutional quality and the size of social capital. Consequently, the improvement in institutional quality is accompanied by a decrease in social costs, which contributes to higher subjective well-being (Frey and Stutzer, 2002). Accordingly, economic happiness means subjective well-being related to economic issues, such as employment and wealth. Therefore, happiness economics tries to use econometric analysis to discover the factors that increase and decrease human welfare and quality of life. Thus, this study will interchangeably use the terms happiness and economic happiness in the same sense.

The second is fiscal policy that is considered as one of the most important aspects of economic policy, so many economists argued that the relationship between fiscal policy and subjective well-being or happiness is a close relationship and strong. Thomas Jefferson (1809) emphasized that “caring for human life and happiness is the first and only legitimate objective of good government.” Consequently, one of the important roles of the government is to encourage happiness through the tools that countries possess, as Aristotle and Ibn Khaldun argued (Kasmaoui and Bourhaba, 2017).

According to Dao (2017), Bjemskov *et al.* (2005), there are two points of view that clarify the government’s role in influencing happiness or subjective well-being. They are the viewpoint of public choice theory and the view of the new classical school. The public choice theory holds that an increase in the size of government leads to the possibility of more government failures, which negatively affects public welfare. The public choice theory holds that politicians, the government employee class, bureaucrats and stakeholders may prioritize their own interests when designing and implementing policies leading to unnecessary interventions, increasing government spending and expanding leasing. As for

the new classic school, it emphasizes the government's role in overcoming market failures through facilitating and maintaining the institutions necessary for functioning the market and transactions and intervening to correct the exogenous factors. The government is also the only economic agent that can provide public goods, such as national defense and infrastructure. The private sector fails to provide it due to its own nature. Therefore, it can be said that there is a positive and negative effect of government interference in economic activity. This will ultimately be reflected in the personal welfare or happiness of the citizens.

Perhaps one of the most important tools that the government uses to influence happiness through the market is fiscal instruments, whether public spending or taxes in the light of its fiscal policy. Many studies direct their attention to studying the relationship between fiscal policy and economic growth. Few economists have studied the role of fiscal policy in achieving happiness or subjective well-being. Thus, economic growth is the mean of achieving happiness, not the ultimate goal of society. This study aims to identify the impact of fiscal policy on happiness or subjective well-being by studying government budget restrictions.

Endogeneity growth theories have been concerned, especially the modifications introduced by Barro (1990) through fiscal policy and its impact on economic growth and utility. Although, most of the experimental studies that tried to apply the Barro model focused on the relationship between fiscal policy and growth and they did not address the study of the relationship between fiscal policy and happiness or subjective well-being.

Most countries in the Middle East and North Africa (MENA) suffer from chronic budget deficits, which require fiscal policy reforms by raising public revenues and restructuring public expenditure allocations to boost economic activity and achieve economic happiness. Figure 1 shows that there is a large deficit in the budget of the countries of the MENA region compared with the deficit of the organization for economic cooperation and development (OECD) countries. The average deficit of the countries of the MENA exceeds an average of 6.4% of gross domestic product (GDP) compared to the average of 2.2% of the OECD countries. Perhaps this is due to the low percentage of public revenues to GDP in the countries of the MENA, which is about 24.6% compared to the average of 38.2% for the OECD countries. Besides, public expenditures are still lower in the countries of MENA than in the countries of the OECD reaching 30.9% and 40.4% of GDP, respectively.

The decline in public revenues is due to the lack of diversification in the sources of public revenues, where most countries in the MENA depend on petroleum revenues and the average ratio of petroleum revenues to GDP is about 13.2%. The tax revenue rate for GDP in MENA region is low averaging about 10.9% compared to the OECD average of 34.3%. This

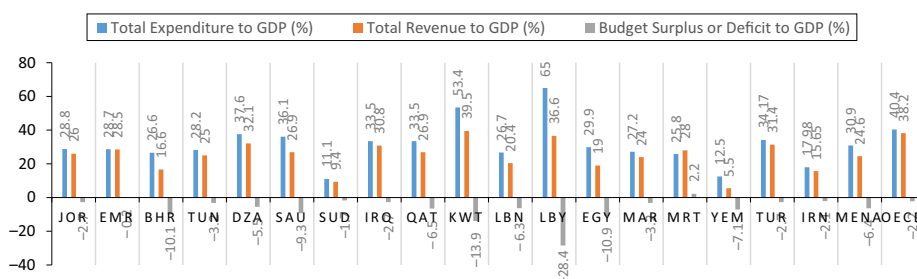


Figure 1. Total revenue, total expenditure and budget surplus or deficit to GDP, 2017

Sources: Arab Economic Report (various issues), www.amf.org.ae/ar/jointrep, OECD (2021), IMF (2017), MENA is the average sample of countries for which data are available

may be due to the tax evasion and the proliferation of the informal sector in the economic system in the countries of the MENA as evidenced by Figures 2 and 3.

The tax system in the MENA region needs to curb the spread of the informal sector and integrate it into the formal economy, support private sector activity and provide more tools to increase the tax base instead of just raising tax rates to increase revenue. With working to simplify the tax system as one of the most important means is to curb the spread of the informal sector and mobilize more revenues. Figure 4 shows the tax structure in the countries of the MENA region compared to the countries of the OECD in 2017.

Figure 4 shows that the average percentage of taxes imposed on goods and services to GDP in the MENA countries is 48.9% compared to an average of 32% in OECD countries. This means that the bulk of taxes come from indirect taxes on goods and services, which strongly affects citizens' purchasing power and thus having an enormous negative impact on happiness and economic well-being. Thus, income taxes in both regions are close. It is worth mentioning that there is diversity in the tax revenue of OECD countries, where the other taxes to GDP have an average of 35%, whereas in MENA countries, it is approximately 17.3%. This means that the countries of MENA focus on tax structure, including taxes on income, profits, goods, services and foreign trade. As oppose to OECD, countries that have large proceeds from social security contributions and taxes on property and others. Thus, MENA countries must carry out many tax reforms by restructuring their taxes and expanding their tax base. This is done by implementing a more comprehensive system that includes more taxpayers.

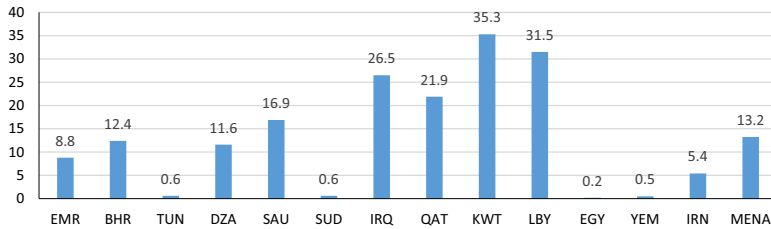


Figure 2.
Petroleum revenues to GDP (%), 2017

Sources: Arab Economic Report (various issues), www.amf.org.ae/ar/jointrep, IMF (2017), MENA is the average sample of countries for which data are available

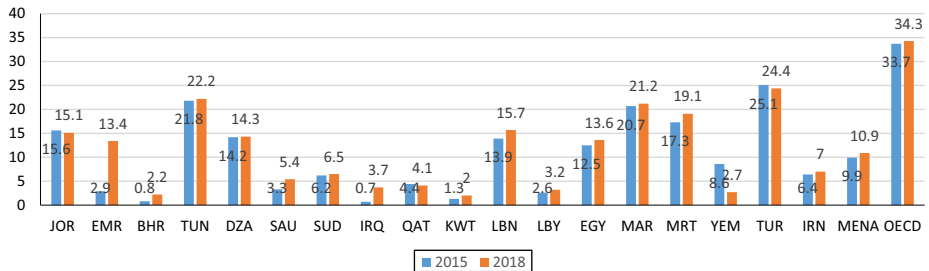


Figure 3.
Tax revenue to GDP (%)

Sources: Arab Economic Report (various issues), www.amf.org.ae/ar/jointrep, OECD (2021), IMF (2017), MENA is the average sample of countries for which data are available

Also, MENA governments should strive to achieve social justice by controlling government spending, setting priorities and directing more efficient support to vulnerable groups, which contributes to reducing the bloated fiscal deficit and providing more resources to create many jobs, economic happiness and sustain growth. Figure 5 indicates that there is a large disparity between the MENA countries and the OECD countries, especially in the expenditure of social services. It reaches an average of 29.8% in the OECD countries compared with 10.5% in the MENA countries. There is also a large part of the public expenditure directed toward defense in the MENA countries, as opposed to the OECD countries. Thus, fiscal policy reforms in the MENA states pose a major challenge to achieving happiness, economic well-being and sustainable economic growth.

Our contribution is to bridge the gap that is the result of the lack of studies that address the relationship between fiscal policy and happiness, in particular link fiscal policy and growth literature to the literature of subjective well-being. There is a severe scarcity of studies that investigate the relationship between fiscal policy and happiness through endogeneity growth models. In addition, our study investigates all aspects of fiscal policy, in contrast to other studies that focused on one of its aspects, which constitutes a weakness in these studies. This is because of a correlation between the sources of revenues and the face of their spending. Therefore, our study is a unique study as it is based on longitudinal data related to the countries of the MENA region, whereas other studies focused on one country or high-income developed countries, especially the OECD countries. Besides, our study contributes to identifying the role of fiscal policy in developing countries in achieving economic happiness, especially the MENA region. The study also takes into consideration the government budget restrictions unlike other studies either in the context of subjective well-being studies or in the framework of studies of endogeneity growth.

The study adopted a dynamic method for the analysis of panel data using the generalized method of moments (GMM), which is characterized by the cohesion and the overcome endogeneity problem between the dependent variable and independent variables. Our study also relies on relatively recent data for the countries of the MENA region, including taxes and government spending. This study does not use the total values of taxes and public expenditures as most studies in the literature. These taxes were divided into distortionary taxes and nondistortionary taxes and government spending was divided into productive government spending and nonproductive government spending. Therefore, our



Sources: Arab Economic Report (various issues), www.amf.org.ac/ar/jointrep, OECD (2021), IMF (2017), MENA is the average sample of countries for which data are available

Figure 4.
Tax structure, 2017

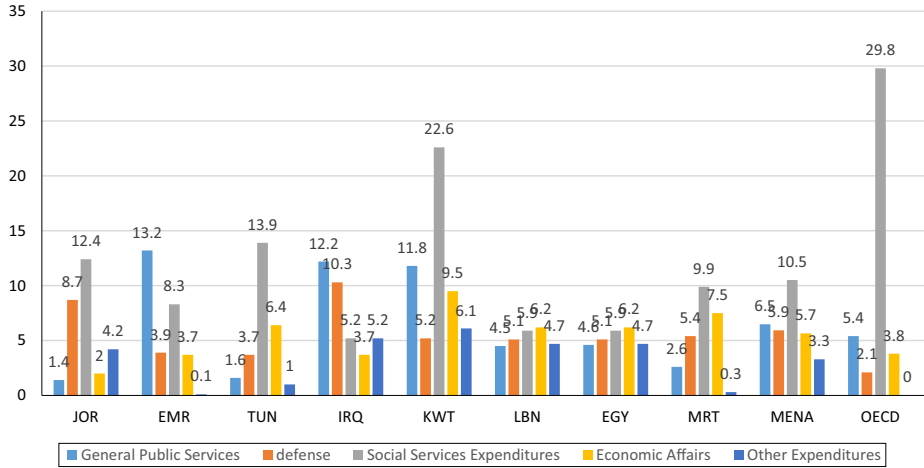


Figure 5. General government expenditure by function as percentage of GDP, 2017*

Notes: Data for Jordan for the year 2018 and data for Tunisia and Kuwait for the year 2016
Sources: Arab Economic Report (various issues), www.amf.org.ae/ar/jointrep, OECD (2021), IMF (2017), MENA is the average sample of countries for which data are available

study aims to investigate the role of nondistortionary and distortionary taxes in achieving happiness and the extent to which subjective well-being is affected by productive expenditures and nonproductive expenditures that helps governments to shape their fiscal policies.

The rest of the study is organized as follows: Section 2 reviews theoretical and experimental literature, Section 3 explains the study methodology and variables and data sources. Section 4 presents the discussion and results. Section 5 deals with the conclusions.

2. Literature review

The role of fiscal policy in achieving growth and subjective well-being is attached with the literature of endogeneity growth, particularly in the writings of Robert J. Barro (1990), Barro and Sala-I-Martin (1992). He tried to understand the role of fiscal policy in achieving economic growth and utility. Barro has expanded earlier endogeneity growth models, such as Lucas (1988), Romer (1986, 1988) and Rebelo (1991) to include tax-funded government services that affect production and utility. The Barro (1990) model of endogeneity growth is based on fixed returns on capital in a broad sense. The model seeks to maximize the infinite public utility of the household in a closed economy as follows:

$$u(c, h) = \frac{(c^{1-\beta} \cdot h^\beta)^{1-\sigma} - 1}{1 - \sigma} \tag{1}$$

where (c) is consumption per capita, ($\sigma > 0$) is the constant rate of time preference and $0 < \beta < 1$. The number of population that is proportional to the number of workers and consumers is fixed. Assuming that the total expenditure for each household is $g + h$, where (h) represents the amount of government's consumption services and (g) government's

expenditure for productive services. The model also assumes that the income tax is a fixed rate to be the budget restriction:

$$T = (\tau_g + \tau_h) \cdot y \quad (2)$$

As $\tau_g = \frac{g}{y}$ is the ratio of government's expenditure for productive services,

$\tau_h = \frac{h}{y}$ is the ratio of government's consumption services.

[Barro \(1990\)](#) added to the production function g in the AK model, which represents the number of public services provided for each household product. The model assumed that these services are provided without fees and they are not subject to congestion effects. Consequently, public services are input into private production. This is the productive role that creates a positive link between government and growth. Production is characterized by constant returns to scale for both k and g , but the diminishing returns is only in K .

So, with constant returns to scale, the production function can be written as follows:

$$y = \varnothing(k, g) = k \cdot \varnothing\left(\frac{g}{k}\right) \quad (3)$$

The variable k represents the amount of capital for the product, which corresponds to the per capita share of the gross capital. [Barro \(1990\)](#) assumed that government's expenditure for productive services (g) can be measured in proportion to the per capita volume of government purchases of goods and services.

The study is based on the [Barro \(1990\)](#) model that government's consumption services (h) is viewed as nonproductive expenditure, and therefore they do not enter the production function, but they are directly involved in the utility function. In contrast, the productive expenditure (g) enters the production function directly along with the private capital (k). It is clear that [Barro \(1990\)](#) distinguished between productive government spending and unproductive government spending.

[Barro \(1990\)](#) and [King and Rebelo \(1990\)](#) predicted that distortionary taxes and productive expenditures would affect economic growth in the long run. [Grimes et al. \(2016\)](#) argued that although Barro's model includes income taxes and lump sum taxes only, the treatment of the job supply is completely inelastic and makes the consumption taxes equivalent to a flat tax. So, indirect taxes, such as consumption taxes, sales and value-added taxes are seen as distortionary taxes in many empirical studies.

Several empirical studies have examined the relationship between fiscal policy and economic growth, including the [Barro \(1990\)](#) study, which dealt with 98 countries during the period from 1960 to 1985. This study found that there is an indication related to the increase in the resources of nonproductive government services are associated with a decline in per capita growth, but they may enhance the utility. The study of [Banja et al. \(2007\)](#) showed that the relationship between growth, taxes and government spending would take the form of Hill. This finding was confirmed by a pilot study on the USA from 1962 to 1997 in the form of five-year intervals. Economic growth will initially rise with the increase of taxes on productivity expenditures, such as education, highways and public safety, but it will decline later. Where increasing the tax share reduces the net return to private capital. [Bleaney, Gemmell and Kneller \(2001\)](#) tested the expecting related to [Barro's \(1990\)](#) endogeneity growth model that is government spending and taxes would have temporary and lasting effects on growth. The study relied on annual longitudinal data and average period data for OECD countries during the period from 1970 to 1995. The study was concerned with identifying the long-term and short-term effects of the fiscal policy of these countries during

the study period. The findings were in line with those of [Barro \(1990\)](#), which is a consolidation of the Barro model of endogeneity growth. The study could not get indications to support long-term fiscal impacts.

Although many studies have investigated the relationship between fiscal policy and economic growth, there are very few studies that tackled the relationship between fiscal policy and economic well-being or happiness. Although happiness is the goal of governments by adopting a fiscal policy, economic growth is only a means, not an end. [Grimes et al. \(2016\)](#) asserted that most of these studies dealt with one aspect of fiscal policy, such as taxes or government expenditures without addressing all aspects of fiscal policy. Few of them directed sufficient attention to government budgetary constraints testing the effects of taxes without controlling how revenues were spent or testing the effects of government spending without controlling how revenues were increased.

One of the studies that examined the relationship between government spending and happiness was the [Ram \(2009\)](#) study, where large samples from countries, including 145 countries and several indicators of happiness, income and government spending were used from 1995 to 2007. The study found that increased government spending does not reduce happiness in the various models tested, where the relationship was not significant. The results also confirmed the positive significant relationship between income and happiness. Although the study did not distinguish between productive and nonproductive government spending and did not explain how to finance this government spending, it was able to provide a broader vision through many countries and to use data from many sources to reinforce its findings.

The [Dao \(2017\)](#) study attempts to establish a link between government size and happiness in both the short and long term, through a longitudinal sample of 183 countries from 1990 to 2016. One of the most important results of the study is that government spending only affects happiness in the short term. This study also tried to identify the most important indirect channels that transmit the effects of government spending on happiness; however, the results showed that the importance and direction of the transmission channels are not homogeneous. This study also suffers from the same criticism directed at [Ram's](#) study, but the study dealt with many countries and confirmed the results of the study in [Ram \(2009\)](#).

[Kasmaoui and Bourhaba \(2017\)](#) followed the same pattern as previous studies. They studied the relationship between government spending and happiness using longitudinal data from 2006 to 2015 for about 132 countries. The study used the model of fixed effects and random effects and the GMM. The study supported a positive relationship between public spending and happiness in all study countries. Social support, life expectancy for healthy life, freedom to make life decisions and confidence in national government contribute positively and significant to happiness. Our observation on previous studies continues to apply to this study as well.

As for studies that dealt with the relationship between taxes and happiness, the study by [Oishi, Schimmack and Diener \(2012\)](#) exposed the progressive tax relationship to increasing levels of subjective well-being. Cross-section data covering 54 countries were used for the year 2007 and it concluded that Rawls' theory that a good society redistributes its wealth so that all citizens have the same opportunities to succeed in the future through equal access to public goods, such as quality education and health care. The results also showed that progressive taxes are positively related to the subjective well-being of countries, and that individuals who live in countries with more progressive taxes live a better life than those who live in countries with less progressive taxes. What distinguishes the study by [Oishi et al. \(2012\)](#) is that it linked progressive taxes to every indicator of self-welfare, which showed

that the relationship between more progressive taxes and higher levels of well-being is achieved by citizens' satisfaction with public goods, such as education and public transport.

The Akay (2012) study examines the impact of income and salary taxes on subjective well-being in Germany through 26 years of longitudinal data and through a range of population variables. He found that the tax effect on subjective well-being is significant and positive and that there are many channels by which taxes affect welfare. The most important of them are public goods and insurance. The Albanese (2015) study used the ratio between taxes and social security as an indicator of the population's share of well-being to study the relationship between social taxes and happiness through annual data for the period 1980–2011 for ten European countries. He found strong evidence of a positive relationship between the social tax rate and happiness. He also pointed out that the links between what citizens expect for taxes paid and their well-being will become stronger after the crisis, which should be seen in policy making.

The study of Grimes *et al.* (2016) is the only study as the best of our knowledge which dealt with the relationship between fiscal policy and subjective well-being using Barro's (1990) endogeneity economic growth theory considering government budget constraints. They used longitudinal data covering about 130 countries for the world value survey waves for periods 1981–1984, 1989–1993, 1994–1999, 2005–2009 and 2010–2012. Despite the large number of countries included in this study, regressions were performed for most of the descriptions used in this study. It found that there was data available for only 35 countries. Most of these countries are developed and high-income countries from OECD countries. They have concluded that distortionary taxes are associated with higher levels of subjective well-being than nondistortionary taxes. The subjective well-being of the richer individuals is less affected by indirect taxes than lower-income people. They also found that unproductive public spending was associated with higher welfare for middle-class compared to others and transferring part of the spending to the subnational government was linked to higher subjective well-being, but that tax collection through the subnational government was associated with low subjective well-being. As for Eklou and Fall (2020), they investigate the effect of fiscal consolidations on the cost of welfare is by identifying the effect of discretionary spending cuts and tax increases on social welfare. The study covers 13 European countries, including more than half a million individuals during the period from 1980 to 2007. It also examines the consequences of two famous financial shocks in the 1980s on the social welfare of Denmark and Ireland. The study found that fiscal consolidations have a negative impact on the well-being of individuals, especially when they are based on spending cuts. The study also confirms that even expansionary fiscal consolidation can lead to welfare costs, which is confirmed by the experience of Denmark and Ireland.

3. Data and methodology

3.1 Data

According to Barro (1990) and Grimes *et al.* (2016), public expenditures and taxes are divided into two main categories: distortionary taxes and nondistortionary taxes and productive expenditures and nonproductive expenditures. Other expenditure excluded when model is estimated to avoid duplication of inclusion and budget surplus (BS) is excluded to avoid full autocorrelation. Nondistortionary taxes are indirect taxes posed on goods and services, i.e. sales tax, VAT and customs duties, whereas distortionary taxes are income and profit taxes, social security contributions, payroll and labor force taxes and property taxes (real estate tax). The distortionary and nondistortionary taxes are expressed as a percentage of GDP. Productive expenditures include education, health, housing, transportation, defense and public services, whereas nonproductive expenditures include

social security, welfare, economic and recreational services. Where productive and nonproductive expenditures were expressed as a percentage of GDP.

The financial statements were obtained through the Arab Monetary Fund for the Arab country. For Turkey, the data was obtained through the OECD. The data for Iran were obtained from the Ministry of Finance's website. Investment data was also updated through the University of Pennsylvania's online database.

Macroeconomic control variables that may affect happiness are added. These variables are the real GDP per capita adjusted for purchasing power parity (PPP) and the investment rate of GDP is acquired through fixed capital formation. Personal control variables are healthy life expectancy at birth and freedom to make life choices. Healthy life expectancy at birth is measured by the average number of years expected to be by newborns in full health. In addition, freedom to make life choices is measured by the annual average of bilateral responses, i.e. whether a person is satisfied with the freedom of what to do in his or her life or not are. Macroeconomic and personal control variables were obtained from the World Bank database.

The dependent variable (happiness) is expressed through the subjective well-being index, which represents the average national response to the question of life assessments. This indicator gives the conscious level of happiness that ranged from zero (the worst life possible) to ten (the best possible life). The data were obtained from the [World Happiness Report \(2018\)](#). The study uses longitudinal data for 18 countries in the MENA region covering the period from 2012 to 2016. The short period is due to the lack of data on fiscal and happiness variables for all countries in the region for longer periods. The countries that are tackled in this study include Algeria, Bahrain, Egypt, Kuwait, Libya, Lebanon, Iraq, Iran, Jordan, Mauritania, Morocco, Sudan, Saudi Arabia, Qatar, Turkey, Tunisia, Yemen and the United Arab Emirates.

3.2 Model specification

Our study is based on the model of [Grimes et al. \(2016\)](#) and the study of [Bleaney, Gemmell and Kneller \(2001\)](#) with modifications, where we use country-level data rather than individual data and replace some of the social and control variables. The model takes the following form:

$$HAPP_{i,t} = \beta_0 + \beta_f F + \beta_2 X + \beta_3 M + \gamma_i + \gamma_t + \varepsilon, \quad (4)$$

where

$HAPP_{i,t}$ = Happiness Index

i = state

t = time

F = fiscal variables

X = personal and social control variables

M = macroeconomic control variables

γ_i = the fixed effects of the state

γ_t = the fixed effects of time

From [equation \(4\)](#), the author show that the equation of fiscal variables (F) takes the following form:

$$\beta_f = \beta_{ndt} \cdot NDT + \beta_{dt} \cdot DT + \beta_{pe} \cdot PE + \beta_{ue} \cdot UPE + \beta_{or} \cdot OR + \beta_{oe} \cdot OE, \quad (5)$$

where

DT = the ratio of distortionary taxes to GDP

NDT = the ratio of nondistortionary taxes to GDP

PE = productive expenditure as a percentage of GDP

UPE = nonproductive expenditure as a percentage of GDP

OR = other revenue as a percentage of GDP

OE = other expenditures as a percentage of GDP

The BS variable has been deleted to avoid full autocorrelation. The variable of other expenditure as a percentage of GDP has also been excluded not to duplicate its inclusion. In addition, it is already included in the productive and nonproductive expenditures according to what is available in international reports.

Every year, the government's budget is restricted in spending or saving all taxes and all expenditures are financed by taxes or borrowing, which can be illustrated by the following equation:

$$DT_t + NDT_t + OR_t = PE_t + UPE_t + OE_t + BS_t, \quad (6)$$

Grimes *et al.* (2016) emphasized the importance of recognizing the constraints of the government's budget, when analyzing the effects of fiscal policy because it does not occur in a vacuum and it needs expenditure that must be financed and taxes that must be spent or saved. If any variable is studied individually, such as productive expenditure and the conclusions are built upon it, then it will not be gotten a clear picture of its effect on subjective well-being or happiness. This is due to its impact on subjective well-being or happiness that depends on whether it was funded by reducing nonproductive spending, increasing deforming or nondistortionary taxes and borrowing money. Therefore, one of the variables of the government budget constraints listed in the equation (6) must be deleted to avoid fully autocorrelation linear relationships at the estimation of equation (4).

The coefficients for each fiscal variable are interpreted by increasing one unit funded by changing the deleted category. This study follows what Grimes *et al.* (2016) who suggested that the BS should be deleted because increasing the spending variable requires decrease the surplus. For tax variables, the assumption is that increasing the surplus. After equation (4) is estimated, the effect of a fiscal variable can be identified by the estimated coefficients through addition or subtraction. For example, to increase the productive spending as percentage of GDP PE_t by 1% that was financed by increasing distortionary taxes DT_t . Thus, the distortionary tax coefficient should be added $\hat{\beta}_{DT}$ to the productive expenditure coefficient of $\hat{\beta}_{PE}$. But if the increase in productive expenditure PE_t by reducing nonproductive expenditure UE_t , then one must subtract the nonproductive expenditure coefficient $\hat{\beta}_{PE}$ from the productive expenditure coefficient $\hat{\beta}_{UE}$.

There are several measures of happiness, such as the World Happiness Report, Gallup Global Emotions, Happy Planet Index, OECD Better Life Index, Global Happiness and Well-Being Policy Report and Gallup Sharecare Well-Being Index. These reports use different measurements (whether the strength of social connections or obesity rates), so rankings can vary from one index to another. Most economic literature on happiness uses life satisfaction measures, when conducting happiness analysis. This is based on the argument that is measuring of life satisfaction and happiness are similar and uniform. Surely, these alternative measures of well-being are closely related and have the same covariates, although there are still critiques of the methods used to measure happiness. This is because happiness expresses things related to feelings, whereas life satisfaction is more related to assessing life conditions. Indeed, assessments and feelings about life conditions are closely related (Dao, 2017; Lane, 2017). Therefore, we use the Global Happiness Report as the mainstream of happiness literature.

The model in equation (4) is estimated using standard methods of estimating panel data, using pooled panel analysis, fixed effects and analysis and random effects analysis. The study used Hausman test to compare the specifications of the fixed effects model and the

random effects model to determine the most appropriate model for estimation. These models take the following form:

- Pooled ordinary least square model:

$$HAPP_{i,t} = \beta_0 + \beta_1 NDT_{it} + \beta_2 DT_{it} + \beta_3 PE_{it} + \beta_4 UPE_{it} + \beta_5 OR_{it} + \beta_6 INV_{it} + \beta_7 GDPPR_{it} + \beta_8 LIF_{it} + \beta_9 CHO_{it} + \varepsilon_{it}, \quad (7)$$

where

i = state

t = time

INV_{it} = investment rate of GDP

$GDPPR_{it}$ = real GDP per capita adjusted for purchasing power parity (PPP)

LIF_{it} = healthy life expectancy at birth

CHO_{it} = freedom to make life choices

- Fixed effects model:

$$HAPP_{i,t} = \beta_i + \beta_1 NDT_{it} + \beta_2 DT_{it} + \beta_3 PE_{it} + \beta_4 UPE_{it} + \beta_5 OR_{it} + \beta_6 INV_{it} + \beta_7 GDPPR_{it} + \beta_8 LIF_{it} + \beta_9 CHO_{it} + \gamma_t + \varepsilon_{it}, \quad (8)$$

The study adopts a dynamic approach to longitudinal data to increase efficiency in estimation using the GMM system estimator, introduced by [Blundell and Bond \(1998\)](#) to overcome the problem of the endogeneity between the dependent variable and the independent variables. In addition to addressing the problems of omitted variable bias, the effects of a unit root in the choice of instruments and the use of lagged dependent variables. This method is also used in the case of a large number of cross-section units and a short period ([Blundell and Bond, 1998](#)). The GMM model takes the following form:

$$HAPP_{i,t} = \rho HAPP_{i,t-1} + \beta_1 NDT_{it} + \beta_2 DT_{it} + \beta_3 PE_{it} + \beta_4 UPE_{it} + \beta_5 OR_{it} + \beta_6 INV_{it} + \beta_7 GDPPR_{it} + \beta_8 LIF_{it} + \beta_9 CHO_{it} + \beta_i + \varepsilon_{it}, \quad (9)$$

[Arellano and Bond \(1991\)](#) used the first difference in [equation \(8\)](#) to eliminate unobserved heterogeneity (β_i) as follows:

$$\Delta HAPP_{i,t} = \rho \Delta HAPP_{i,t-1} + \beta_1 \Delta NDT_{it} + \beta_2 \Delta DT_{it} + \beta_3 \Delta PE_{it} + \beta_4 \Delta UPE_{it} + \beta_5 \Delta OR_{it} + \beta_6 \Delta INV_{it} + \beta_7 \Delta GDPPR_{it} + \beta_8 \Delta LIF_{it} + \beta_9 \Delta CHO_{it} + \Delta \varepsilon_{it}, \quad (10)$$

The estimator of the system of the generalized moments method provided by [Blundell and Bond \(1998\)](#) creates a system of two equations, where the first equation takes the differences and the second equation is at the level. Then, the variables in the level in the second equation are considered as an instrument with its first differences and the difference variables are considered as an instrument of the lagged values of their levels. The GMM takes the following two equations:

$$\Delta HAPP_{i,t} = \rho \Delta HAPP_{i,t-1} + \beta_1 \Delta NDT_{it} + \beta_2 \Delta DT_{it} + \beta_3 \Delta PE_{it} + \beta_4 \Delta UPE_{it} + \beta_5 \Delta OR_{it} + \beta_6 \Delta INV_{it} + \beta_7 \Delta GDPPR_{it} + \beta_8 \Delta LIF_{it} + \beta_9 \Delta CHO_{it} + \Delta \varepsilon_{it}, . \tag{11}$$

$$HAPP_{i,t} = \rho HAPP_{i,t-1} + \beta_1 NDT_{it} + \beta_2 DT_{it} + \beta_3 PE_{it} + \beta_4 UPE_{it} + \beta_5 OR_{it} + \beta_6 INV_{it} + \beta_7 GDPPR_{it} + \beta_8 LIF_{it} + \beta_9 CHO_{it} + \beta_i + \varepsilon_{it}, \tag{12}$$

To ensure that the estimated of GMM model is valid, the study use the Arellano–Bond test to test the serial correlations to the error terms and Sargan test of overidentifying restrictions.

4. Results and discussion

Table 1 shows the summary of descriptive statistics for study variables. There are significant disparities between the countries of the MENA region in the fiscal variables related to distortionary and nondistortionary taxes on the one hand and productive and nonproductive expenditure on the other hand. By contrast, there are no significant disparities in the economic happiness variable. This indicates that although fiscal policies differ across the countries of the MENA region, the impact has not been strong on economic happiness. In other words, fiscal policy in general has not played an important role in influencing economic happiness in the MENA region.

To determine an estimate method that is consistent with the nature of the data, the study used the Hausman test and the Lagrange multiplier (LM) test. Hausman’s test is used to trade-off between the fixed effects model and the random effects model. The null hypothesis of the test states that the two models are not systematically different. Because p is 0.8684, Ho failed to reject. This means that the coefficients of the two models are equal. Therefore, the most appropriate model is the model of random effects as shown in Hausman test results for the trade-off between the method of fixed and random effects as follows:

Test: H_0 : Difference in coefficients not systematic

$$\begin{aligned} \text{Chi2}(9) &= (b - B) / [(V_b - V_B)(\hat{-} - 1)](b - B) \\ &= 4.59 \\ \text{Prob} > \text{Chi2} &= 0.8684 \end{aligned}$$

Variable	Obs.	Mean	SD	Min	Max
DT	90	5.037535	4.514793	0	17.98169
NDT	90	5.49634	4.400675	0	13.83508
OR	90	21.74521	18.59931	1.440116	72.84388
PE	90	6.706969	4.918533	0.0022835	22.83717
UPE	90	28.71307	21.02534	8.844217	147.7813
HAPP	90	5.294627	0.8896519	2.982674	7.217767
UNEMP	90	9.165056	5.104637	0.14	19.03
LIF	82	63.08714	4.471489	52.5381	68.71557
CHO	77	0.6728381	0.1431163	0.3145646	0.9491195
GDPPR	90	13847.4	17511.55	432.3861	70396.82
INV	77	24.91687	10.59676	1.701789	54.21825

Table 1.
Summary descriptive
statistics of the study
variables

Besides, the study used the Breusch–Pagan LM for the trade-off between the random effects method and the pooled ordinary least-squares method. The null hypothesis in the LM test is that variances across entities are zero. This revealed that there is no significant difference across units (i.e. no panel effect). Because (p) is 0.0121, the null hypothesis can be rejected. Therefore, the random effects method is the best method to estimate the study model as shown in [Table 2](#).

[Table 3](#) shows the results of the study model estimation using the methods of ordinary least squares (OLS) pooled, fixed effects, random effects and GMM. Many control variables, such as unemployment and inflation, are omitted because they are strongly correlated with other explanatory variables. The results of the model of random effects indicated that distortionary taxes have negative significant effects on happiness. Therefore, reducing the percentage of distortionary taxes to GDP by 5.5% will increase happiness by 1%. The random effects model also showed that investment and life expectancy at birth have a positive and significant impact on happiness, whereas the productive and nonproductive public expenditures were not significant in all models. There is no evidence for a relationship between public expenditure in general and happiness, which is consistent with the findings of [Ram \(2009\)](#).

To improve the efficiency of the estimation, the dynamic model was followed the GMM to estimate the study model, because it gives stronger and more accurate results than the random effects model. Many regressions were performed using the GMM by using many control variables, whether macroeconomic, personal and social. According to Wald test, the first model provides the best results, because it achieves the highest test value. The results of the GMM (1) model showed that there is a negative and significant relationship between nondistortionary taxes and happiness. This refers to an increase in happiness by 1%, a decrease in the ratio of nondistortionary taxes to GDP by 13%. This finding is consistent with the results of [Grimes et al. \(2016\)](#) and [Eklou and Fall \(2020\)](#) who mentioned that nondistortionary taxes have a negative impact on happiness. Moreover, GMM model results are also consistent with the finding of [Ram \(2009\)](#) that is the nonexistence of evidence in supporting the hypothesis, including the relationship between public expenditures and happiness. This is because productive and nonproductive public expenditures were not statistically significant. The results of the GMM model also confirmed a positive and significant relationship between other revenues as a percentage of GDP and economic happiness. This indicates that the expansion in the development of other sources of revenue contributes greatly to achieving economic happiness. Other variables, such as distortionary taxes, life expectancy, freedom to make decisions and investment, were not significant indicating that they did not affect happiness. The relationship between real GDP per capita using PPP and economic happiness was statistically insignificant. This confirms the

Breusch and Pagan Lagrangian multiplier test for random effects

Table 2.

LM test results for the trade-off between random effects method and pooled ordinary least-squared method

Happ [ID, t] = xb + u [ID] + e [ID, t]
Estimated results =

	Var	Sd = sqrt (Var)
happ	0.8135756	0.9019843
e	0.1038623	0.3222768
u	0.14009	0.374286
Test = Var (u) = 0		
	Chibar2 (01) = 5.08	
	Prob > Chibar2 = 0.0121	

Variable	Pooled	Fixed	Random	GMM (1)	GMM (2)	GMM (3)	GMM (4)
DT	-0.04993045**	-0.0544378	-0.0559881*	-0.04222432	-0.0129878	0.0098273	-0.0125151
NDT	0.01735416	-0.06627475	-0.00537349	-0.12968802*	-0.0889457*	-0.1011665*	-0.1908129*
OR	0.00424204	0.02415611*	0.00883159	0.06380965***	0.0119054*	0.0380406	0.06448997*
PE	0.02040315	-0.01344794	-0.01373099	0.00010513	0.010411	0.0458267	0.0550868
UPE	0.00911735	0.0140824	0.00597259	-0.00182975	0.0012204	-0.0016776	-0.0015607
LIF	0.07940172***	0.31669867	0.08413209***	0.30062232	-	-	0.5027773
CHO	0.81753249	0.99367201*	0.79696815	1.0999487	-	-	-
GDPPR	0.00002715**	-0.00002315	0.00001328	0.00023784	0.000082**	0.0000867	0.0001476
INV	0.01748221	0.02269518	0.02713617*	0.01533574	-	-0.0216762	-0.0058164
happ L1.	-	-	-	-0.68647383	-0.2114034	-0.2566154	-0.3696003
_cons	-1.3464581	-15.701758	-1.3171673	-13.950445	5.416745***	5.795822***	-26.0713
N	67	67	67	36	54	43	39
r^2	0.82405362	0.23838382	-	-	-	-	-
R^2 -a	0.79627261	0.11812864	-	-	-	-	-
Wald test	-	-	-	281.71(10)	28.15(7)	28.05(8)	266.39(9)
				($p = 0.00000$)	($p = 0.0002$)	($p = 0.0005$)	($p = 0.00000$)

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3.
Results of the
regression of
the model used in the
study using methods
of pooled, fixed
effects, random
effects and GMM

paradox of [Easterlin et al. \(2011\)](#), including the nonexistence of long-term relationship between income and happiness. The rest of the regressions using the generalized moment GMM method confirmed the results of the first GMM model.

Wald statistic is used in this study to test the joint significance of the independent variables asymptotically distributed as X_k^2 under the null hypothesis states that there is no relationship, where k is the number of coefficients estimated. Thus, the test value is significant and this test is shown in [Table 3](#). As the result of this study, the null hypothesis is rejected, and the validity of the models is confirmed. Arellano–Bond test is used for first- and second-order autocorrelation in the first-differenced errors. The output in [Table 4](#) showed that there is no significant evidence of serial correlation in the first-differenced errors at orders 1 and 2. To test the overidentifying restrictions, the Sargan test is used. The output in the [Table 5](#) presents strong evidence that supports the null hypothesis that is over identifying restrictions is valid. Previous tests confirmed that our model does not suffer from a misspecification.

5. Conclusion

Although fiscal policy plays an important role in achieving economic happiness, examining their relationship has not received any attention. Economic literature has focused on examining the relationship between fiscal policy and economic growth. The focus of the literature is economic growth, and the goal of any country’s policy is to achieve happiness for its citizens. Consequently, most of the literature focused on the means without concern for the ultimate end. The scientific contribution is bridging the gap of a scarcity of studies that have investigated the relationship between fiscal policy and economic happiness. This study investigated the theory of public choice and the neoclassical theory of government intervention with its fiscal policies and its impact was on economic happiness. The first theory sees a negative relationship between fiscal policy and economic happiness, but the neoclassical theory, on the contrary, emphasizes a positive impact of fiscal policy on economic happiness.

The study followed the [Barro \(1990\)](#) model and the [Grimes et al. \(2016\)](#) model, where fiscal policy instruments is included in this study in the endogeneity growth model and link them to economic happiness, contrary to [Barro \(1990\)](#) who conducted most literature on connecting fiscal policy with economic growth. According to [Barro \(1990\)](#), taxes were divided into distortionary and nondistortionary and expenditures were also divided into productive and nonproductive. Taking into account the government budgetary constraints

Table 4.
Arellano–Bond test
for zero
autocorrelation in
first-differenced
errors

Order	Z	Prob > Z
1	1.03	0.3030
2	−0.23711	0.8216

Note: H_0 : no autocorrelation

Table 5.
Sargan test of
overidentifying
restrictions

H_0 : Overidentifying restrictions are valid	
$\chi^2(5)$	2.27918
Prob > χ^2	0.8093

is by including other revenue and expenditure in our model. This is because the elements of fiscal policy do not work in a vacuum but rather work in harmony with each other, where public expenditures are funded naturally through public revenues.

Panel data was used from 2012 to 2016 for 18 countries in the MENA region. The model of this study is estimated using pooled OLS, fixed effects and random effects. For improving the results of the model, GMM is used to address the problem of endogeneity between dependent and independent variables. One of the research limitations is the scarcity of fiscal data for MENA countries, and therefore we were unable to include a sufficiently large number of observations. The availability of data enables us to divide the countries into petroleum and nonpetroleum countries and to conduct many regressions to enrich the study.

The most important findings are that there is a negative and statistically significant relationship between nondistortionary taxes and economic happiness. In other words, reducing nondistortionary taxes contributes to increasing the economic happiness of the citizens of MENA. The results support Ram's (2009) findings that there is no evidence for a relationship between public expenditure, whether productive and nonproductive, and economic happiness. The results also support the study of Easterlin *et al.* (2011) that is the nonexistence of the relationship between income and economic happiness. Besides, it confirmed a statistically positive and significant relationship between other revenues and economic happiness. In other words, increasing other revenues plays an important role in achieving the economic happiness of MENA citizens. Finally, it does not support a relationship between life expectancy at birth, freedom of decision-making, investment and economic happiness in the MENA region.

Based on the recommendation of this study, the governments of MENA countries should diversify other public revenue sources to increase their contribution to financing public expenditure at the expense of tax revenue, especially nondistortionary taxes, which contributes to increasing the economic happiness of its citizens. More attention should be given to studying economic happiness using different measures and comparing their results to determine the determinants of happiness. The topic of the relationship between economic happiness and fiscal policy with its different aspects requires more studies, especially the relationship between taxes and economic happiness that needs more study and analysis, especially in our region. The study of the relationship between public expenditure, classified according to economic activities and economic happiness, can guide decision-makers in directing expenditure toward economic activities that best achieve the happiness of their citizens.

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Further reading

Arab Economic Report (various issues) available at: www.amf.org.ae/ar/jointrep

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