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Effect of Trust on Economic Growth in Selected Countries with High and Low Levels of Corruption

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ABSTRACT

In the last half century, the issues related to social capital, especially trust and its impact on the economic growth have been of particular importance. In this regard, the main purpose of this study is to investigate the effect of trust on the economic growth of selected groups with high and low corruption perception level over the period 2007-2020. We used the Trust Index from the World Value Survey. Then, the generalized method of moment (GMM) method was used for estimation. Gross domestic product, capital formation (at fixed price), human development index, consumer price index, innovation, labor force, economic freedom index, trade openness index, corruption, and democracy were the study variables. All explanatory variables were stationary; therefore, they had a long-run relationship with economic growth. Based on the results, trust had a positive and significant effect on economic growth in both groups of the countries. Due to the fact that trust changes and is affected by the environment, policies should be adopted to increase the level of trust in society. Some policies such as improving the transparency and integrity of institutions and also educational programs (the main emphasis should be placed on the joint work of students and strengthening cooperation between new generations) can increase social capital and, as a result, increasing public trust.

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1. Introduction

Achieving economic growth and development is one of the most important goals of any society. In this regard, governments spend a lot of money on research and planning to achieve this goal. Many studies have been conducted on the impact of various factors on economic growth, among which social capital has received more attention in the last few decades to find out the reasons for the continuation of economic growth differences in countries. "Trust" is one of the main components of social capital; it is important and necessary for economic and social relations (Algan, 2018). "Corruption" can also be mentioned in contrast to trust whose perception can shape the level of trust in societies. Corruption and social trust are based on two different views of human nature. Social trust is based on an optimistic and interactive approach to the world, while corruption is based on a pessimistic and confrontational approach to the world. Therefore, these two concepts are completely opposite to each other (Bronskov, 2003). Trust refers to believing in actions and behaviors that are expected from others, and this belief refers to the possibility that others will do certain things or refrain from doing them. In 1995, Fukuyama presented the definition of trust in the form of a feeling of mutual comfort with the acceptance of each other's behavior, commitments and words, and stated that the difference between countries in their industrial structure depends more on their social capital; i.e. their people's trust and participation in civic groups and associations. Trust is a "generalized expectancy that the verbal statements of others can be relied upon" (Rotter, 1967). In other words, trust is a positive expectation from other people or groups not to behave opportunistically during speech, actions and decisions (Gordon, 2000). Corruption is one of the oldest social problems and international concern such that the former president of the World Bank called it "cancer of corruption" in 1966 and warned that if it is not addressed, it can negatively affect the whole country and prepares the ground for its collapse and destruction (Ahmadi et al., 2015). Corruption is a threat to democracy and the rule of law. With the

increase of corruptions, the level of accountability in financial matters decreases, hindering foreign investment and preventing economic growth and development. Corruption is one of the phenomena whose perception level by people is more important than its actual level. Treisman (2007) and Heidenheimer (2005) were among the scholars who emphasized this characteristic of corruption and believed that the negative effects of the perception of corruption by people are even greater than the effects of corruption itself, because it creates uncertainty, suspicion, mistrust and unpredictability in the economy and society, and can lead to a decrease in social cohesion, a decrease in the amount of investments, economic recession, a decrease in trust in the legal system, and ultimately a decline in social trust (LaFree and Morris, 2004).

This study aims to measures the impact of trust on economic growth in selected countries with high and low levels of corruption. The paper is organized as follows. Section 2 provides the theoretical background about the relationship of trust and corruption with economic growth. In Section 3, we provide a literature review. The methodology and study variables are presented in Section 4. Analysis of the results and the model estimation are presented are presented in Section 5. Finally, Section 6 concludes the paper.

2. Theoretical background

2.1. Positive relationship between trust and economic growth

Trust is one of the most basic cultural values that can explain economic growth and development. According to Arrow (1972: 357), “Virtually, every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence.” Features such as trust play an important role in the functioning of economic systems; such features are the basis or at least facilitate the exchange process that is necessary for any economy. Sen believes that “the development of trust in one another’s words and promises

can be a very important ingredient of market success" (1999: 262), and "no society will be viable without some norms and rules of conduct (1977: 332). Based on this point of view, Putnam concluded that norms and networks foster economic growth and do not inhibit it (Putnam, 1993). Such views indicate a positive relationship between trust and economic growth, but how exactly is trust related to economic growth? To answer this question, Whiteley (2000) proposed three direct channels through which public trust can lead to increased economic growth: First, trust has a direct effect on economic performance through reducing transaction costs. These costs are defined as those incurred in the economic processes of exchange and are typically associated with banking, insurance, finance, wholesale, and retail trade or securing professional services from lawyers and accountants, etc. (North, 1990). Therefore, North advocates the development of a new production function that takes transaction costs into account. In high-trust societies, transaction costs should be lower. For example, with fewer lawyers, fewer police is needed to enforce property rights, and fewer insurance policies need to protect against possible risks. Second, high levels of trust enable actors to solve collective action problems. Putnam (1995) propose four reasons why social capital, including social trust, has a positive effect on the economy: (a) it facilitates coordination and cooperation, (b) it paves the way for solving collective actions, (c) it reduces incentives for opportunism, and (d) it reduces human egoism. In this regard, "Making the I into the we" is the technical term that is proposed by the "rational choice" theorists. The third direct effect is that principal-agent problems might be much less significant in high-trust societies than in low-trust societies. Entrepreneurs who spend more time on monitoring employees, suppliers, and trading partners have less time to spend on making innovation in new products or processes. Furthermore, they might rely on simpler contractual arrangements to retain their managers and specialists. Therefore, entrepreneurs with high levels of trust theoretically pay fewer costs to monitor production. Whiteley (2000) also argued that trust affects economic

growth through three indirect channels of physical investment, human capital, and conditional convergence. In high-trust societies, the risk taking of entrepreneurs to invest in physical capital is greater (Keynes, 2000: 125); on the other hand, employees take more risk to invest in human capital. Therefore, the innovations and the implementation of new technologies are greater.

2.2. Negative relationship between trust and economic growth

Olson (1982) analyzed the relationship between collective action and economic growth in a completely different way from Putnam, stating that collective action can undermine the government's power to implement the necessary reforms aimed at maintaining high economic growth rates. Olson argued that stable societies in highly developed states are at risk of encouraging the formation of cartels and collective action organizations over time. Organizations that function as special-interest groups harm economic growth by reducing economic efficiency, by aggregating income in the societies in which they operate, and by making political life more divisive. At high level of solidarity and interpersonal trust, if the aim of collective action is to block and limit the government's reform policies and thus harm the economy, it will no longer promote economic performance. For example, if a government wants to implement labor market reform in which employee' salaries are reduced, wages will be lowered, working hours will be increased, and social spending on unemployment benefits and support would be decreased to reduce the workers' costs. A society with high level of trust and solidarity is more likely to oppose the government's efforts at reform. In response, group representatives stop the reform agenda, thereby limiting the potential for higher economic growth rates. This argument is based on Putnam's findings that a strong civil society is necessary for the emergence of high levels of trust. This strong society can be civil society actors such as church groups, professional groups, and social movement organizations that oppose the government's will to implement reforms. Hence, higher levels of trust do not necessarily lead to greater economic

growth. In societies with low level of trust, an increase in trust should theoretically have a positive effect on economic performance; therefore, a certain level of trust is necessary for the smooth functioning of an economic system. However, a further increase above a certain level of trust may have a negative effect on economic performance, which can subsequently be used to fuel opposition to a government's reform efforts. Therefore, we can expect that the relationship between trust and economic growth is inverted U-shaped. This relationship should apply both within a country and in a cross-country comparative study design.

In Scandinavian states, which are the examples of highly developed economies with high levels of trust, a decrease in the level of trust should lead to an increase in growth, based on the above-mentioned arguments. These countries already have high levels of social trust and collective action agents. From the perspective of growth promotion, these countries should theoretically reduce parts of their solidarity levels. In contrast, in Latin American countries, such as Brazil, where the level of interpersonal trust is very low, an increase in the level of trust should support economic development. The same applies to Mediterranean countries, such as Turkey, where very low level of trust are observed (Roth, 2022). This kind of relationship is also confirmed between democracy and economic growth. Barro and Sala-i-Martin (2004) suggested a curvilinear relationship between democracy and growth. For example, in countries with weak democratic structures, democratization seems to increase growth, but in countries with high level of democracy, the relationship is reversed; i.e., the increase in democracy delays growth.

2.3. Relationship between trust, corruption, and economic growth

Trust is closely related to corruption. If both parties know that breaking the rules is useless, they adapt their behavior and build trust and confidence through continuous interactions. As a result of the high level of trust and the low level of transaction costs, significant benefits are obtained in the market,

and the actors of the activities no longer need formal contracts (Putnam, 1993; Bjornskov, 2003; Fisman and Gatti, 2002). In contrast, a high level of corruption provides grounds for a decrease in trust. This is because corruption, in the form of poor-quality institutions, facilitates non-compliance with the rules, and the resulting high level of transaction costs leads to the loss of total benefits in society. Since in a society with high corruption, not everyone is equal before the law, it unpredictability prevents trust. In the absence of trust in the institutions, economic agents demand more formal contracts to be present in the market. Therefore, high levels of corruption cause non-implementation of contracts between commercial parties and reduce economic growth (Svendsen, 2003). The perception of corruption has a negative effect on trust in political institutions, while the experience of corruption reduces people's trust in national institutions. Corruption strengthens mistrust. The lack of trust makes the government's efforts at mobilizing society to fight corruption ineffective and dismiss the government promise of fighting corruption (Morris and Klesner, 2010). According to Rothstein (2005) and Rose-Ackerman (1999), the strong reciprocal relationship between the perception of corruption and trust in political institutions creates a vicious cycle of corruption-mistrust, in which corruption causes more corruption.

3. Literature review

Whiteley (2000) examined the relationship between social capital and economic growth in a sample of 34 countries over the period 1970 to 1992, within the framework of a modified neo-classical model of economic growth. As a social capital variable, he used a trust index consisting of three different items (trust in one's own family, trust in one's own compatriots, and interpersonal trust) from the World Values Survey (WVS) 1990–1993. He concluded that the trust index of the three indicators had a positive effect on economic growth, with an impact as great as the variable conditional convergence and human capital. His results supported the idea that

attitudinal values are necessary to accurately determine growth regressions. La Porta et al. (1999) used the trust data from the second wave of the WVS. They operate in a sample of 39 countries where the dependent variable was the growth in per capita income from 1970 to 1993. Their results showed that a 10% rise in trust is associated with a 0.3% rise in per capita income. They concluded that trust enhances economic performance and is remarkably robust in the cross-section country design. Contrary to these results, Heliwell (1996), in a sample of 17 OECD countries, found a negative relationship between trust and economic productivity growth. The dependent variable was productivity growth from 1960 to 1992. Except for this study, all empirical studies so far had found a positive relationship between trust and economic growth. Many social scientists who study this concept rely on the positive research results and mostly associate social capital with a positive relationship between social capital and economic growth. Therefore, social capital has a positive image. Svendsen (2003) investigated the relationship of social capital, corruption and economic growth in eastern and western Europe. They hypothesize that power centralization in a political system leads to more corruption due to the monopoly power status of bureaucrats. Corruption again would then lead to a lower level of social capital (trust), and finally slow down economic growth. Based on the results, highly corrupted countries such as Eastern European countries have the lowest level of trust. Low levels of trust (measured as general trust and civic participation) were also related to smaller gross domestic product (GDP) per capita levels. The author also observed a similar pattern in Western Europe. In the European Union, Northern EU member states generally had less corruption, more trust and higher GDP per capita compared to Southern EU member states.

Recent studies have questioned the significant positive relationship between trust and economic growth. Berggren et al. (2008) tested the robustness of the results of Knack and Keefer (1997), Zak and Knack (2001), and Beugelsdijk et al. (2004). They expanded the country sample to

63 countries using data from the fourth wave of the WVS. They investigated whether previous studies on the relationship between trust and growth, which was based on the data from 1970 to 1992, also hold for the 1990–2000 period. They found that when outliers are removed (specifically for China), the relationship between trust and growth was statistically significant only in 10% of the cases out of 1140 regressions. They emphasize that the results of studies show that the trust-growth relationship is less robust than claimed earlier (Berggren et al., 2008). Roth (2007, 2009) found a significant negative relationship between trust and economic growth. Their studies indicated to the downside of the social capital paradigm. Willingness to cooperate and high levels of interpersonal trust within a society, according to Olson's view, can be against the government reform processes. Roth assumed that trust cannot be readily perceived as a constant cultural variable and suggested that countries with a liberal-country regime, such as the US, the UK, Ireland, Canada, and Australia, have experienced strong declines in trust over time. For example, the trust level in the US decreased from 50% to 35.6% during 1990-1995. In the UK, it dropped from 43.6% to 31% during 1990-1998. A loss of trust in the world's largest economy, (the US), by almost one-third of its trust stocks in only five years, is a good reason for the constancy of social trust.

Roth in his study in 2009 examined 41 countries over the period 1980–2004. The dependent variable was the growth rate of per capita income for the five growth periods 1980–1984, 1985–1989, 1990–1994, 1995–1999, and 2000–2004. Trust data were generated from all four waves of the WVS (1981–1984, 1990–1993, 1995–1997, and 1999–2002), as well as one wave of the Eurobarometer (from 1986). For better comparability of results, he used the same growth model used in the studies by Knack and Keefer (1997), Zak and Knack (2001), Beugelsdijk et al. (2004), and Berggren et al. (2008). He found a significant negative relationship between social trust and economic growth. The decrease in social trust in a country had an association with the increased growth rate. This negative relationship is

contrary to the positive relationship in the cross-section of countries. Shah (2019) suggested a model to examine the relationship of trust with growth and its benefits and implications, which was validated by Markov process. Their results indicated significant impact of trust on economic growth by achieving convergence in very few iterations in the case of trust-based economy. On the other hand, economy with lowest trust level shows delayed convergence and takes around 4 times more iterations to attain equilibrium. Kondo and Papanikolaou (2021) in a study titled "trust, collaboration, and economic growth" proposed a macroeconomic model in which variation in the level of trust leads to higher innovation, investment, and productivity growth. Innovators generate ideas but are inefficient at implementing them into productive capital on their own. Firms can help innovators implement their ideas, which are disciplined only by the value of their reputations. The authors modeled trust as a public signal and created a correlated equilibrium. According to them, when trust is high, firms predict fruitful collaborations and thus can commit to not expropriating inventors, leading to the more efficient production of new capital. Miniesy and AbdelKarim (2021) examined the relationship between generalized social trust and economic growth in the Middle East and North Africa (MENA) region. They used a multiple linear regression model based on panel data of 104 countries from 1999 to 2020. Their results showed an overall positive and significant relationship between trust and economic growth in the general model and for all country classifications, except for MENA, where the overall relationship was negative but almost negligible. Trust had the highest impact on growth in developing Asian countries, followed by developed, Sub-Saharan Africa, developing America, and MENA countries. Furthermore, their results showed that the overall negative effect of trust on economic growth in MENA was only during waves 6 and 7, where the coefficients were considerable.

There are also some related studies conducted in Iran. Delangizan et al. (2013) investigated the effect of financial corruption perception on economic growth in a sample of 156 countries during 2000-2011, using the generalized

method of moments (GMM). Their results showed that in countries with high economic freedom, the relationship between financial corruption perception and economic growth was positive, but in the countries with moderate and low economic freedom, the relationship was negative. Behdani et al. (2020) investigated the relationship between indicators of economic inequality and trust in Iran. For this purpose, they used statistics and information during 2013-2018 and related mathematical methods. Their results showed that indicators of economic inequality and trust had a direct and close relationship with each other. Shaghaghi Shahri (2020) examined the effects of financial decentralization and corruption control on economic growth in the oil-producing countries during 1998-2017. Most of the oil-producing countries have a centralized structure with a high amount of financial corruption due to being a single product and depending on the revenue from the sale of crude oil. Their results showed that the improvement of the corruption control index in different models increased their economic growth; by financial decentralization, economic growth could be obtained. Moreover, the negative effects of financial corruption on economic growth were reduced by applying decentralization. Makian et al. (2021) studied the effect of social capital components on the economic growth of selected countries, one group with the highest level of social capital and one with the lowest level of social capital, over the period of 1998-2014. Their results showed that, in countries with a high level of social capital, the components of social capital had a direct and significant impact on economic growth, while in countries with low social capital, some components had no statistically significant impact. In the first group of countries, stability in corruption control policies had a positive effect on economic growth, but in the second and third groups of countries, this stability was detrimental to economic growth and caused its decrease. Current paper investigates the effect of trust on the economic growth of selected groups with high and low corruption perception level.

4. Research Methodology

This study was conducted using the panel data of 29 countries with high levels of corruption including: Belarus, Brazil, China, Colombia, Ecuador, Egypt, Ethiopia, Guatemala, Indonesia, Iran, Iraq, Kazakhstan, Kyrgyz, Lebanon, Mexico, Nigeria, Pakistan, Peru, Philippines, Russia, Serbia, Thailand, Tunisia, Ukraine, Vietnam, Zimbabwe, Argentina, New Zealand and Romania and 26 countries with low levels of corruption include: Georgia, Jordan, Malaysia, Turkey, Australia, Canada, Chile, Cyprus, Estonia, Finland, France, Germany, Hong Kong, Hungary, Italy, Japan, Korea, Netherlands, Norway, Poland, Singapore, Slovenia, Spain, Sweden, Switzerland and United States over the period of 2007-2020. These countries were grouped based on the corruption perception index score. We used the GMM estimation for the dynamic panel data.

4.1. Generalized method of moments

In panel data models, by entering the lagged dependent variable as independent variable on the right side of the model, the dynamic panel data model is obtained (Baltagi, 2008). The presence of lagged dependent variable causes the non-autocorrelation assumption between explanatory variables and error terms to be violated. Therefore, the use of ordinary least squares (OLS) can cause biased and inconsistent results. The use of GMM estimation by the instrumental variable can solve these endogeneity issues. It allows all the regression variables to enter the model as instrumental variables if they are not correlated with the disturbance terms (Greene, 2008). The GMM estimation is one of the most efficient methods to estimate the effectiveness of institutions. This method does not require detailed information on the distribution of disturbance terms, and its foundation is based on the assumption that the disturbance terms are not correlated with instrumental variables in the equations. On the other hand, it has higher validity in terms of the probability of correlation between the error terms and

the explanatory variables in the fixed effects model. The GMM is defined as follows:

$$Y_{i,t} = \alpha_1 + \beta_2 Y_{i,t-} + \gamma X_{i,t} + \eta_I + \varepsilon_{i,t} \quad (1)$$

Where, Y is the dependent variable, i.e., economic growth (GDP), X is a set of explanatory variables, η represents the individual or fixed effects of countries, ε is the disturbance term, and t and i represent the time and country, respectively.

In this study, we used the Arellano–Bond estimator for the GMM (Arellano and Bond, 1991). The proposed method includes removing individual effects independent of time (η_i) by first-order differencing in equation (1) and writing:

$$Y_{i,t} - Y_{i,t-1} = \beta(Y_{i,t-1} - Y_{i,t-2}) + \gamma(X_{i,t} - X_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \quad (2)$$

In this condition, $(Y_{i,t-1} - Y_{i,t-2})$ and $(\varepsilon_{i,t} - \varepsilon_{i,t-1})$ have correlation with each other.

4.2. Study variables

The study model for examining the effects of trust and innovation indicators on economic growth is as follows. The econometric models used in this study were the modified models of Bucci and Segre (2011) and Tabellini (2010):

$$\begin{aligned} GDP\_FIXED_{it} = {} & \alpha_i + \beta_1 GDP\_FIXED_{it-1} + \beta_2 FIXEC\_CAPITAL_{it} \\ & + \beta_3 HDI_{it} + \beta_4 INFLATION\_CPI_{it} \\ & + \beta_5 INNOVATION_{it} + \beta_6 LABOR_{it} + \beta_7 TRAD_{it} \\ & + \beta_8 tRUST_{it} + \beta_9 ECONOMIC\_FREEDOM_{it} \\ & + \beta_{10} CORRUPTION_{it} + \beta_{11} dEMOCRACY_{it} + U_{it} \end{aligned} \quad (3)$$

i=1, 2, …, 25, 26 t=2007, 2010, …, 2020

Based on the above model, the study variables are:

Fixed GDP: The total value of final products (in Iranian Riyals) produced by economic units in a country during a certain period of time; Fixed capital formation (at constant price): It refers to the acquisition of new assets or the improvement of existing assets by companies, government and households, and represents the amount of added value invested in an economy; Human development index (HDI): It measures the human development in each country based on the three criteria of "life expectancy", "education" and "per capita income"; Consumer price index (CPI): It measures the average change in prices paid by consumers over a period of time for a basket of goods and services; Innovation index: It consists of about 80 indicators that consider the multidimensional aspects of innovation and ranks world economies based on innovative capacities; Trust index: It refers to the level of trust in people's commitments in economic and social interactions; Labor: workforce rate; Economic freedom index: it measures the degree of economic freedom in five areas: Size of government, legal system and security of property rights, access to sound money, freedom to trade internationally, and regulation of markets; Corruption index: It shows the level of corruption in the countries; Democracy; Trade openness. All variables were included in the model logarithmically. The time period and the study population were selected based on access to the maximum available data and the group of study countries.

5. Results and discussion

5.1. Countries with high corruption

Table 1 presents the results of GMM estimation for countries with high corruption. As can be seen, in countries with a higher level of corruption, the variables related to the physical relations of production had an effect on economic growth. The effect of trust index on the economic growth of these countries was negative, which can have two main reasons. First, the level of trust in economic policies in these countries is very low due to high

corruption. Second reason can be related to the quality of trust data in these countries. At 95% confidence level, 1% increase in fixed capital formation and labor increases economic growth by 0.108 and 0.316%, respectively; 1% increase in the economic freedom increases economic growth by 0.10%; 1% increase in HDI, trust, and democracy, economic growth increases by 0.121, 0.056 and 0.033%, respectively. To ensure the appropriateness of the GMM method for model estimation, two tests should be performed. One of these tests is Sargan's J-statistic test, which is used to check the satisfactory of over-identifying restrictions (i.e. validity of instrumental variables). In our study, the P value for J-statistic was reported 0.398 which is greater than 0.05; therefore, the null hypothesis cannot be rejected and it can be said that the used instruments are valid. The second test is the serial correlation test. Arellano and Bond (1991) stated that in GMM estimation, disturbance terms must have first-order serial correlation (AR1), not second-order serial correlation (AR2). As it can be seen from Table 2, at 90% confidence level, the first-order correlation in the model was significant, but the second-order correlation was not significant.

Table 1. Results of GMM estimation for countries with high corruption

Variables	Coefficient	SE	t	P value
Fixed GDP	0.659	0.035	18.897	0.000
Economic freedom	0.100	0.028	3.521	0.001
Fixed capital formation	0.108	0.014	7.538	0.000
Labor	0.316	0.033	9.477	0.000
HDI	0.121	0.059	2.037	0.043
CPI	0.000	0.001	0.007	0.993
Innovation	0.015	0.011	1.4	0.163
Trade openness	-0.031	0.022	-1.422	0.156
Trust	0.056	0.01	5.609	0.000
Corruption	-0.013	0.001	-8.796	0.000
Democracy	0.033	0.016	2.004	0.046
Effects Specification				
Cross-section fixed (first differences)				

Variables	Coefficient	SE	t	P value
SD of dependent variable	0.011	Mean of dependent variable		0.005
Residual sum of squares	0.019	SE of regression		0.008
Instrument rank	30.000	J-statistic		19.937
		P-value (J-statistic)		0.398

SD= Standard deviation, SE= Standard error

Source: research findings

Table 2. Arellano-Bond serial correlation test for countries with high corruption

Test order	m-Statistic	rho	SE (rho)	P
AR1	-1.794	-0.005	0.002	0.033
AR2	-1.152	-0.001	0.001	0.249

Source: research findings

5.2. Countries with low corruption

Table 3 presents the GMM estimation results for countries with low corruption level. Based on the results, as expected, the effect of trust on economic growth was positive; 1% increase in trust increased economic growth by 0.005%. The highest level of effect on economic growth was related to the economic freedom, where 1% increase in this index increased the economic growth by 1.002%. The positive effect of fixed GDP in both groups of developed and developing countries indicates that economic growth in these countries is subject to stable and long-term macroeconomic policies and requires forward-looking planning. According to theoretical expectations, by increasing the amount of fixed capital formation, labor force, innovation, democracy and trade openness, the economic growth can be obtained in countries with low corruption. Based on the results, at 95% confidence level, 1% increase in fixed capital formation, labor force, and trade openness increased economic growth by 0.146, 0.825, and 0.280 %, respectively. The P value of the J-statistic test was 0.499, indicating that the

null hypothesis is accepted and there is no correlation between instrumental variables and disturbance terms (Table 4). Similar to countries with high corruption, in countries with low corruption, the serial correlation test showed that, at 95% confidence level, the first-order serial correlation in the model was significant, but the second-order serial correlation was not significant.

Table 3. Results of GMM estimation for countries with low corruption

Variables	Coefficient	SE	t	P value
Fixed GDP	0.026	0.002	13.346	0.000
Economic freedom	1.003	0.022	44.748	0.000
Fixed capital formation	0.146	0.002	83.916	0.000
Labor	0.825	0.087	9.528	0.000
HDI	0.024	0.016	1.456	0.146
CPI	-0.011	0.003	-4.143	0.000
Innovation	0.032	0.004	7.751	0.000
Trade openness	0.280	0.013	20.887	0.000
Trust	0.005	0.002	1.965	0.050
Corruption	-0.002	0.010	-0.181	0857
Democracy	0.009	0.001	6.428	0.000
Effects Specification				
Cross-section fixed (first differences)				
SD of dependent variable	0.057	Mean of dependent variable		0.002
Residual sum of squares	1.460	SE of regression		0.061
Instrument rank	31.000	J-statistic		19.356
		P value (J-statistic)		0.499

SD= Standard deviation, SE= Standard error

Source: research findings

Table 4. Arellano-Bond serial correlation test results for countries with low corruption

Test order	m-Statistic	rho	SE (rho)	P
AR1	-1.077	-0.493	0.158	0.008
AR2	0.921	0.179	0.122	0.326

Source: research findings

6. Conclusion

Trust and corruption play an important role in social and economic growth, as our study also showed the positive effect of trust on economic growth in both groups of countries with high and low level of corruption. This emphasizes the adoption of policies to provide a platform of trust and control corruption. Although corruption is a negative and hated phenomenon, the formation of trust in the society can overcome the effect of corruption as much as possible and provides the means for economic growth. The positive effects of democracy, human development and economic freedom in our study also indicated the positive impact of socio-economic variables on economic growth in both groups of countries. It should be noted that although the results are sufficiently accurate in countries with low corruption, but in countries with high levels of corruption, due to the quality of the data and especially the trust index, we should be cautious about the results. Mistrust indicates the emergence and existence of a type of official and unofficial institutions in the economic sector, which cause fear of partnership and cooperation among people in the society; as a result, people prefer mistrust and limit their activities and economic participation to the circle of their friends and relatives in order to avoid the resulting losses. By changing policies towards efficient and development-oriented policies and avoiding the profiteering of politicians and planners, the level of trust can be changed and affected by the environment. Therefore, it is necessary to follow policies that can increase the level of trust in the society such as improving the transparency and integrity of institutions. Another and even more important policy is related to educational programs with an emphasis on the participatory work of a group of college students, which can strengthen cooperation between new generations, increase social capital and, as a result, increase social trust. Another important point is the stability of economic growth in the two groups of countries. Those with low corruption, which are mainly developed countries with strong economic infrastructure, can have a sustainable economic growth rate, but in countries with high

corruption, which are mostly developing countries, due to poor infrastructure, lack of stability of development strategies, and poor management, the economic growth may not have a stable trend over time. Furthermore, in countries with high corruption, labor force has the greatest effect on economic growth, while in countries with a low level of corruption, the economic freedom has a stronger role in economic growth. Improvement of economic freedom is a necessary condition, not a sufficient condition, for the achievement of economic growth; it is necessary to remove political obstacles to achieve economic growth by increasing economic freedom. The effect of fixed capital formation on economic growth in both groups of countries is almost similar, and it can be said that physical investment in the countries from 2007 to 2020 led to the increase of fixed capital formation and, as a result, strengthened their economic growth. In Iran, considering that the link between trust and production has not been firmly established yet, the low level of trust will probably cause negative effects on the society and economy, especially in the long term. Therefore, more studies are needed to investigate the reasons and effects of low trust from sociological, economic and political perspectives. Due to the fact that trust changes and is affected by the environment, policies should be adopted to increase the level of trust in society. One of these policies is related to increasing institutional trust through improving the transparency and integrity of institutions. Another policy is related to educational programs; the main emphasis should be placed on the joint work of students and strengthening cooperation between new generations, increasing social capital and, as a result, increasing public trust. To clarify the effect of trust on Iran's economic growth, a further study is recommended to examine the status and effect of trust on Iran's social and economic indicators.

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All authors had contribution in preparing this paper.

Conflicts of interest

The authors declare no conflict of interest.

References

Ahmadi, A., Homayouni, G., & Asgari Dehabadi, H.R. (2015). Administrative and financial corruption in today's organizations. Iran, Tehran, Fozhan Press. (In Persian).

Arellano, M., Bond, S. (1991). Some Test of Specification for Panel Data: Monte Carlo Evidence and Application to Employment Equations. *Review of Economic Studies*, 58, 277-297.

Arrow, K. (1972). Gifts and exchanges. Philosophy and public affairs. 1, 343–362.

Baltagi, B. H. (2008). Econometric analysis of panel data. Chichester: John Wiley & Sons Ltd.

Barro, R., & Sala-i-Martin, X. (2004). Economic growth. MIT Press.

Berggren, N., Elinder, M., & Jordahl, H. (2008). Trust and growth: A shaky relationship. *Empirical Economics*, 35, 251–274.

Beugelsdijk, S., de Groot, H. L. F., & van Schaik, A. B. T. M. (2004). Trust and economic growth: A robustness analysis. Oxford Economic Papers, 56, 118–134.

Bucci, A. & Segre, G. (2011). Culture and human capital in a two-sector endogenous growth model, *Research in Economics*, Elsevier, 65(4), 279-293.

Bronskov, C. (2003). Corruption and Social Capital. Retrieved from: https://pure.au.dk/ws/files/32303928/000313139.

Bjørnskov, C. (2003). Corruption and Social Capital - Is there a causal link? European Public Choice Society meeting, Aarhus, Denmark.

Delangizan, S., Sharif Karimi, M., & Khalvandi, Z. (2013). Effect of financial corruption perception index on economic growth based on the differentiation between countries in the field of economic freedom using the generalized method of moments. *Financial Economics*, 7, 161-186. (In Persian).

Fisman, R., & Gatti R. (2002): Decentralization and Corruption: Evidence Across Countries. *Journal of Public Economics*, 83, 325-345.

Gordon, M. T. (2000). Public Trust in Government: The USA Media as an Agent Accountability. *International Review of Administrative Sciences*, 66, 297-310.

Greene, W. H. (2008). Econometric analysis (sixth edition). New Jersey, Upper Saddle River, Pearson International.

Heidenheimer, A. (2005). Political Corruption. Concepts & Contexts (3rd Edition). New Brunswick, N.J.: Transaction Publishers.

Heliwell, J. (1996). Economic growth and social capital in Asia. NBER working paper 5470, National Bureau of Economic Research.

Keynes, J. M. (2000). Allgemeine Theorie der Beschäftigung, des Zinses und des Geldes. Berlin: Duncker & Humblot GmbH.

Knack, S., & Keefer, P. (1997). Does social capital have a payoff? A cross-country investigation. *Quarterly Journal of Economics*, 112, 1251–1288.

Kondo, J., Li. D., & Papanikolaou, D. (2021). Trust, Collaboration, and Economic Growth, Management Science, INFORMS, 67(3), 1825-1850.

LaFree, G. & Morris, N. (2004). Corruption as a Global Social Problem. In G. Ritzer (ed) Handbook of Social Problems: A Comparative International Perspective, 600-618.

La Porta, R. (1999). Trust in large organizations. World Bank, In P. Dasgupta & I. Serageldin (Eds.), Social capital—A multifaceted perspective, 310–324.

Miniesy, R.S., & AbdelKarim, M. (2021). Generalized Trust and Economic Growth: The Nexus in MENA Countries. *Economies*, 9(1), 39.

Morris, S., & Klesner, J. (2010). Corruption and Trust: Theoretical Considerations and Evidence from Mexico. *Comparative Political Studies*, 43(10), 1258-1285.

North, D.C. (1990). Institutions, institutional change and economic performance. UK: Cambridge University Press.

Olson, M. (1982). The rise and decline of nations: Economic growth, stagflation and social rigidities. UK: Yale University Press.

Putnam, R. (1993). Making Democracy Work. Civic traditions in modern Italy. US: Princeton University Press.

Putnam, R.D. (1995). Bowling alone: America's declining social capital. *Journal of Democracy*, 6, 65–78.

Roth, F. (2007). Trust and economic growth: Conflicting results between cross-sectional and panel analysis. Ratio Working Papers, 102.

Roth, F. (2009). Does too much trust hamper economic growth? Kyklos, 62, 103–128.

Roth, F. (2022). Social Capital, Trust, and Economic Growth. In: Intangible Capital and Growth. Contributions to Economics. Springer, Cham.

Rose-Ackerman, S. (1999). Corruption and Government. UK: Cambridge University Press.

Rothstein, B. (2005). Social Traps and the Problem of Trust. UK: Cambridge University Press.

Shah, S. (2019). On Trust Dynamics of Economic Growth. MPRA Paper 94095, University Library of Munich, Germany.

Sen, A. K. (1999). Development as freedom. UK: Oxford University Press.

Sen, A. K. (1977). Rational fools: A Critique of the Behavioural of Economic Theory. Philosophy and Public Affairs, 6, 317–344.

Shaghaghi Shahri, V. (2020). Decentralization, Corruption and Economic Growth (Case Study: Oil Exporting Countries). *Economic Research* (Tahghighat- E- Eghtesadi), 55, 689-715. . (In Persian).

Svendsen, G.T. (2003). Social Capital, Corruption and Economic Growth: Eastern and Western Europe. Working Paper, Aarhus University, Denmark.

Treisman, D. (2007). What Have We Learned about the Causes of Corruption from Ten Years of Cross, National Empirical Research?, *Annual Review of Political Science*, 10, 211-244.

Whiteley, P. F. (2000). Economic growth and social capital. Political Studies, 48, 443–466.

Zak, P. J., & Knack, S. (2001). Trust and growth. *The Economic Journal*, 111, 295–321.