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IMPACT OF TRADE AND MACROECONOMIC POLICIES ON INDUSTRIAL GROWTH IN IRAN

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ABSTRACT

The study investigates the impact of monetary, fiscal and trade policy on industrial growth in Iran, over the period 1971 – 2012. To achieve this, money supply, government expenditure and trade openness were used as proxies of monetary, fiscal and trade policy respectively. The findings of regression analysis show that in the long run, monetary, fiscal and trade policies exert positive effect on industrial growth. Industrial growth has found to be significantly influenced by fiscal and trade policy, while monetary policy has insignificant impact on industrial growth in long. But in short run the results of estimated Error-correction model indicate that positive significant impact of fiscal and trade policies on industrial growth and in contrast, monetary policy has negative and insignificant effect on industrial growth.

Keywords: Monetary, Fiscal, Trade, industrial growth, Iran

1. INTRODUCTION

According to the World Economic Forum, the industrial sector is considered the main driver of growth, prosperity and innovation for the countries.This sector, in addition to value-added, more than other sectors of the economy will lead to job creation.Value added, employment stimulate innovation and meet the needs of consumers are the key factors for long-term and sustainable economic growth. The powerful flow of innovation in the field of raw materials, information technology and manufacturing processes, creating new opportunities fordesign and build new products and services, including cases in which the industrial sector will lead to economic growth.

Many of the jobs directly or indirectly linked to the industry.According to a study conducted by the International Organization of Labor in some countries, the industrial sector among economic sectors, on average provided the highest share of the labor force during the years 2010-2013.

Industry sector in trade, research and development and productivity, has a significant contribution. Research conducted by McKinsey institute on some advanced and developing countries show that the industrial sector in 2010 had a share of 70 percent in exports and 77 percent in research and development of the private sector. The share of industry in productivity growth in selected countries was estimated as 37%.

A strong relationship between the industrial sector and other sectors of the economy reveals the importance of this sector more than ever before. Relations between industry and other economic sectors such as agriculture, oil and energy, have led to the scope and impact of the industrial sector will be beyond the industrial sector.In addition, there will be possibility of further use of the service sector activities as an input in industrial sector. For example, statistics show more than 34% of industrial employment is related to service activities in 2012.

According to the Central Bank of Iran, the mining and industry sectors have formed about 18 percent of the country's economy in recent years.In 2012, the share of industrial sector in GDP is 12.6 percent. In this year, industrial sector covers 33.4 percent of the country's employment and 25.7% of country's energy consumption has been in this sector.

Economists believe that most important objectives for policy makers are: full employment, price stability and economic growth. To achieve these objectives mainly used macroeconomic policy. Two main regulatory macroeconomic policies are fiscal policy and monetary policy. Different economic schools on the impact or lack of impact of monetary and fiscal policies on real economic variables in the short run and the long run have different opinions. In two extreme cases, Keynesianism emphasizes the role that fiscal

policy can play in stabilizing the economy. In contrast, Monetarism emphasizes the importance of controlling the money supply and generally they are critical of expansionary fiscal policy arguing that it will cause just inflation or crowding out and therefore not help. Several studies have also found positive role of trade openness on economic growth. Because, openness might has led to technological diffusion and might have raised productivity of the economy, thereby affecting the growth rate.

During different strategies and development plans, industrial growth has been concentrated by policy makers in Iran. This study aims at empirically investigates the effect of monetary, fiscal and trade policies on industrial growth and determine the relative strength of these policies in influencing on industrial growth. It covers a wide time period of 42 years from 1971 to 2012 and dependent variable is industrial value added and independent variables including money supply, government expenditure and trade openness.

The structure of paper is as follows: The next section providesthe empirical literature review. Section 3 presents the model and data sources**.** Section 4reports the estimation results. Finally section 5 concludes the study.

2.   REVIEW OF RELATED LITERATURE

This section presents a brief review of empirical works that have been done in this area of study:Monjazeb (1999) investigated the impact of liquidity on industrial sector value added for Iranian economy. The results indicate that liquidity expansion affect on industrial sector value added and production of large industrial plants in short and medium term. But in long run its effect is lost. Also results show that expansion of debt overhang of banking system affect on industrial value added in short and medium term but in long run its effect is lost [9].

Azizi & Pasban (2001) investigated the impact of fiscal and monetary policies on the production and value added of textile industry in Iran. The results indicate that the effect of monetary policy on textile industry value added in the short run and long run has been positive and relationship between development government expenditures and textile industry value added in short and long run is negative and positive respectively. Also, the effect of fiscal policy on value added in long run has been greater than monetary policy [2].

Seifi Poor (2001) investigated the effect of banking credits on growth of industry sector value added in Iran. The results show that there is a long run positive relationship between fixed investment, credits and industrial value added [12].

Fahim Yahyaee & Falihi (2003) studied effects of monetary and exchange policies on real variables of industrial sector (investment, employment and production). The results show that real supply of money has positive impact on industrial production. Also, bank credits affect positively on industrial production, but its impact is less than the effect of bank credit on investment [4].

Naderan (2004) examined the effect of credit policies on industrial value-added along with other monetary and fiscal policies. The results show a positive, strong and sustainable relation between credit facilities and industrial value added.The results also indicate that government expenditure in the industrial sector, although in the short run has a positive impact on industrial value-added but in long run this type of fiscal policy has a negative effect on industrial value-added [10].

Shafii et al. (2006) examined the impact of fiscal policy on economic growth using ARDL and VDCF methods for the period 1959-2003. Results indicate that development expenditure and taxes have significant impact of positive and negative on economic growth respectively. But government consumption expenditure has no significant impact on economic growth [13].

Hajian et al. (2007) examined the impact of monetary and fiscal policies on value added and other main variables of the agricultural sector in Iran for the period 1971-2004. Results indicate that effect of monetary and fiscal policies on agriculture value added has been positive and in the short run impact of monetary policy on value added, exports and investment is greater than the impact of fiscal policy [6].

Gorgi & alipourian (2008) by using panel data investigated the hypothesis that trade openness through its mechanisms positively affects the economic growth in Iran and some OPEC nations. In the study two kinds of measures of openness have been used. The study found export and import divided by GDP has a positive relationship with growth, but in OPEC nations, while export divided by GDP, has a significant and negative relationship with growth [5].

Bakhtiari & Hervarany (2009) examined the impact macroeconomic policies on the profitability of the agricultural sector during 1996-2005. The study selected changes in money supply as proxy of monetary policy and changes in the state budget as proxy of fiscal policy. The results show that the expansionary monetary policy, generally leading to decrease in profitability and the expansionary fiscal policy has led to increase in profitability of the agricultural sector [3].

Ahmadi & Ghanbarzadeh (2011) studied the impact of openness and foreign direct investment on economic growth in Iran during 1970-2008, using the Bounds testing approach. The results indicate that openness is positively associated and statistically significant determinant of growth, both in short run and the long run. The result also suggested that foreign direct investment is positively associated in the short run but negatively related in the long run [1].

Samsami & Amirjan (2011) studied the effect of banking facilities on industrial and mining value added using simultaneous equations model and 3SLS method for the period 1977-2007. The results show that bank facilities has been effective on value added of industrial and mining sector and on average the production elasticity's to the banking facilities for investment as well as for working capital are 0.05 percent and 0.14 respectively [11].

Mercan et al. (2012) examined the effect of openness on economic growth for the most rapidly developing countries or emerging markets (Brazil, Russia, India, China and Turkey, BRIC-T) via panel data analysis by using the annual data of the period from 1989 to 2010. Results show that the effect of openness on economic growth was positive and statistically significant in line with theoretical expectations [8].

Shahbazi & Karimzadeh (2015) studied the impact of monetary and fiscal policies on industrial sector value added in Iran during 1979-2010. The results show that the impact of monetary and fiscal policies on value added of industrial sector is positive and

statistically significant in the short-run. In the long-run, monetary policy has a negative and significant effect on value added of industrial sector. In contrast, the impact of tax revenues as an alternative variable of fiscal policy on value added of industry is positive and significant, which can indicate that the tax revenues have been influenced by the activities of the industry. Moreover, government expenditure has no significant effect on value added of industrial sector in the long-run [14].

Lotfalipour et al. (2015), investigated the effect of trade openness with energy and human capital on total factor productivity in industrial subdivision.The results of the estimation using panel data show that trade openness, energy consumption and human capital have a significant positive impact on total factor productivity of production. In addition, human capital effect of the type of skills and experience is greater than human capital effect of the type of education on total productivity [7].

3. METHODOLOGY

On the basis of empirical studies, the model to investigate the effect of monetary, fiscal and trade policy on industrial growth examined through the following model specified in functional form:

$IVA = f (M2, GE, OP, DUM)$

The log linear regression model of above equation is set as follows:

$lnIVA = \alpha + \beta_1 lnM2 + \beta_2 lnGE + \beta_3 lnOP + \beta_4 lnDUM + \beta_5 AR(1)$

Where,

IVA = industrial value added as a proxy of industrial growth

M2 = broad money supply as a proxy of monetary policy

GE = total government expenditure as a proxy of fiscal policy

OP = trade openness (exports plus imports divided by GDP)

as a proxy of trade policy

DUM = Dummy variable for years 1980-1987 (war years)

AR (1) = the first degree auto-regressive error

α = Intercept

β = variables' coefficient

The estimated model using annual time series data from the period of 1971to 2012. The data obtained from the Time Series Database of Central Bank of Iran [15].The regression analysis method, unit roots test and co-integration test were employed to analyze the data collected and the empirical results were tested using Eviews 8.

4. EMPIRICAL RESULTS

4.1. Unit Root Test

Table 1 presents the result of the unit root test from Augmented Dickey-Fuller test. All the variables exhibit unit root at the level, that is are non-stationary. But at the first differencing, they all became stationary at 5%. The differencing is needed in order to avoid having a spurious regression. We can say that IVA, GE, M2 and OP variables are integrated of order one, I(1).

Table 1: Unit Root Test Result using ADF Procedure

variables level	ADF stats	Prob	variables First Difference	ADF stats	Prob	Results
LIVA	-0.067659	0.9462	D(LIVA)	-4.959060	0.0002	I(1)
LGE	-0.615659	0.8558	D(LGE)	-4.579953	0.0007	I(1)
LM2	-0.312853	0.9140	D(LM2)	-3.390393	0.0172	I(1)
LOP	-2.812272	0.0655	D(LOP)	-3.535802	0.0120	I(1)

NOTE: * denotes significance at 5% I(1) Indicates Unit Root in level and Stationary after first difference.

4.2. Regression analysis

The results of ordinary least square in table 2 show that all explanatory variables, namely government expenditure, money supply and trade openness positively contributes to the industrial value added in long run. Government expenditure and trade openness were found statistically significant at 5%. It shows that one percent increase in government expenditure and trade openness will raise industrial value added by 0.98 and 0.67 percent respectively. But here money supply has insignificant effect on industrial value added. The adjusted R-squared result reveals that 99% of the total variation in industrial value added is accounted by changes in fiscal policy, monetary and trade policies. The Durbin-Watson (DW) statistics reveals that the model is free from the problem of autocorrelation.

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Table 2: Result of the Estimated Long Run Model

Variables	Coefficient	t-statistics	Prob.
Constant	-2.032089	-1.907507	0.0647
LGE	0.986215	3.748039	0.0006
LM2	0.000602	0.002442	0.9981
LOP	0.677051	3.049225	0.0044
DUM	0.109024	0.527810	0.6010
AR(1)	0.725133	5.313293	0.0000
R-squared	0.990755	F-statistics	750.1657
D.W	1.998079	Prob.	0.000000

4.3. Co-integration Test

The other step of the time series analysis would be testing for co-integration. So, we tested for a co-integrating relationship among variables using Johnson co-integration test. The test results in table 3 below reveal that the dependent variable is co-integrated with the independent variables. The trace statistics value is greater than the critical values at 5% level of significance for at least 2 equations. Therefore, the test indicates a rejection of the null hypothesis that says no co-integration. There are two co-integration relationships between/among the variables that show long run relationship between the variables.

Table 3: Johansen Co-Integration Test Result (Trace)

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	5% Critical Value	Prob.**
None*	0.580472	82.99344	69.81889	0.0031
At most 1*	0.522066	49.11705	47.85613	0.0379
At most 2	0.219975	20.32400	29.79707	0.4011
At most 3	0.184850	10.63525	15.49471	0.2349
At most 4	0.066034	2.664313	3.841466	0.1026

Trace test indicates 2 co-integrating eqn(s) at the 0.05 level.
* denotes rejection of the hypothesis at the 0.05 level.
** MacKinnon-Haug-Michelis (1999) p-values.

4.4. Error Correction Model

The results from the error correction model in table 4 show that the coefficient of error correction term is negative and less than1 hence it is statistically significant but as the value of coefficient is very low so it shows a slow speed of adjustment towards equilibrium when occurs disequilibrium in the economy.In addition to this money supply shows an insignificant relationship with industrial value added in short run and Government expenditure and trade openness have statistically significant effect on industrial value added in Iran. The Durbin Watson of the model indeed confirms the absence of auto-correlation or serial-correlation. The explanatory variables actually explain 57 percent of the behavior of industrial growth in Iran. The positive signs of the coefficient of independent variables, government expenditure and trade openness implies that a unit change in any of these variables will result a positive change in the level of industrial value added.

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Table 4: Results of Error Correction Model

Variables	Coefficient	Std.Error	t-statistics	Prob.
C	0.060014	0.143193	0.419115	0.6776
D(GE)	1.074778	0.256770	4.185755	0.0002
D(M2)	-0.411146	0.652201	-0.630397	0.5324
D(OP)	0.718778	0.207494	3.464083	0.0014
ECM(-1)	-0.326406	0.146729	-2.224551	0.0325
R-squared	0.574339		F-statistics	12.14357
D.W	2.064076		Prob.	0.000002

5. CONCLUSION

The paper investigates the impact of monetary, fiscal and trade policy on industrial growth in Iran. To achieve this, money supply, government expenditure and trade openness were used as proxies of monetary, fiscal and trade policy respectively. The study revealed that monetary, fiscal and trade policies exert positive effect on industrial growth in long run. Fiscal and trade policy have statistically significant impact on industrial growth, while the effect of monetary policy was insignificant on industrial growth in long. In short run, the study found that fiscal and trade policies have positive significant impact on industrial growth, and in contrast, monetary policy affects industrial growth negatively and insignificant. Results indicate that fiscal policy is more powerful in promoting industrial growth in Iran. This shows that the size of government expenditure is very important in determining the performance of the industrial growth in Iranian economy.

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