New Empirical Evidence on the Determinants of Capital Intensity: An Adaptive Comparison of Iran and China

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ABSTRACT

This research as an empirical study compares the effective factors with capital intensity in Iran and China. For this purpose, we use auto regressive distributed lag model during 1981–2012. The results show that for Iran's economy in the short run, trade openness degree is the most effective factor in capital intensity. In the long run, the relative cost of production factors to capital-labor ratio, has the largest effect. The results also show that, for China's economy, participation rate of production factors has the largest effect on capital intensity. Iran's economy is labor intensive. Finally, the results show that Iran's economy has more saving in capital factor but China's economy has more saving in labor factor. Since Iran has advantages in producing labor-intensive goods, so the more increase in trade openness degree happens, the more labor would be employed. Then, investment in labor intensive goods would increase and it causes an increase in employment and growth. China can use its capacities and more capital in production in order to move toward economic prosperity. China needs to expand free trade based on comparative advantages.

Keywords: Capital Intensity, Heckscher-Ohlin Theory, Labor Force, Capital
JEL Classifications: C22, F14, O11

1. INTRODUCTION

The expanding effect of economic growth makes it one of the main macroeconomic indexes for evaluating country's economic operations. Consumption expenditures of private sector, investment, inflation rate, import, income distribution, economic welfare and employment are important variables in economics that are in a close relation with economic growth. Therefore, identification of effective factors on economic growth is one of the main concerns in most of economic studies. With a glimpse on economic growth theories, it can be shown that physical capital is a common factor in all economic growth theories and models. Therefore, one of the important issues in economic growth models and theories is the determination of optimal capital per capita. In international trade literature, capital per capita can be interpreted as capital intensity. Hence, capital intensity is a vital variable in economic growth theories.

In international trade models, it can be seen that, when economy gets out of trade isolation, it benefits from production facilities of other countries. The benefit from trade occurs when countries allocate their production factors to produce such goods that they have comparative advantages in production. When economy's activities become comparative advantages-based, then specialized activities and international labor division occurs. The result of this process is guiding the production sector toward productive and competitive sectors and as a result the economic welfare of country would be improved. Therefore, knowledge of production factor's share in trade and capital intensity is of great importance.

In this way, in both economic growth and international trade approaches, the effective factors on capital intensity are important especially since the late 2000s, China has become one of the most important business partners for Iran. Thus, the current research attempt to empirically investigate the determinants of capital intensity of Iran and China. Most research were conducted on capital intensity, but they only focused on the capital intensity degree. Therefore, this research tries to focus on the neglected areas. Capital intensity considers as a main factor in economic growth and international trade models, so knowledge of effective

factors that affect it can help policy makers to adopt proper policies in economic growth, development and international trade.

Rest of the paper is organized as follow. After introduction, we review the theoretical and empirical literatures. In the third part, methodology is introduced. In the fourth part, we show the findings of econometrics modeling and in the end, conclusion and policy recommendations are discussed.

2. LITERATURE REVIEW

2.1. Theoretical Literature
2.1.1. Capital intensity and growth theories
Capital intensity or intensity of production factors utilization is relative measures of two production factors that utilize to produce a good to another good.

Capital intensity or capital-labor ratio (k/l) describes the labor force and capital which are used in production. Capital stock means the sum of capital goods in an economy that is measured by the same unit. Since capital –labor ratio shows the amount of capital needed for creating new jobs in industry, so it can show the capital intensive or labor intensive technology.

Capital intensity is an economic term and it means how much capital is used for production in comparison with two ther factors, especially labor. In a financial approach, capital intensity is as the same as capital intensive and it shows that an industry uses a large amount of capital for production. Capital intensity value is different among various industries. Mining, public industries like airlines, railroads and shipping along with service sectors like hotels and restaurants are examples of sectors with high capital intensity (Lee, 2010).

Economic growth theories try to describe the observed realities in growth in global scale. Most of economists consider Adam smith as the first theorist that proposed official description of economic growth in his 1779 book named "wealth of nations."

Smith believes that division of labor, saving, capital concentration, technology improvement, expertise and market development are among effective factors on growth and development. He emphasized on three important effects of labor division such as enhancing productivity, gaining skill and decreasing the time of production and inventing of new equipment. He also believes that capital concentration is the necessary condition for economic development and it can be achieved through increasing the saving. Economic growth process continues smoothly by increasing the saving and it can only be stopped in the scarcity of resources.

After World War II, economic growth and its effective factors have always been the main concern for economists. Harrod – Domar growth model is the first coherent model that describes the determinants of balanced growth and first model that describes the economy's behavior in the long run. Harrod – Domar emphasize that investment is the main motive of economy. They try to find a steady state growth rate in their model.

Harrod – Domar growth model uses Leontief production function, constant rate of saving to production and exogenous growth of labor and estimate the steady state growth as $\{g+\lambda = s/v\}$. In this model, s represents saving rate, v is capital to production ratio; g is labor growth rate and λ is technical progress rate. Since $g+\lambda$, s and v are considered as exogenous variables; therefore, steady state growth is very low.

Harrod – Domar growth model emphasizes on investment. In their model investment and capital accumulation play the main roles in economic growth and development. Investment has two effects: First, investment supply effect that causes generation of income and second, investment demand effect that enhances economy's production capacities.

Despite all the critiques to Harrod – Domar growth model such as: Impossibility of substitution of labor and capital, the hypotheses of inflexibility, close economy and constant technology, this model emphasizes on capital accumulation role on economic growth through saving, which is used latter development theories.

Different methods are used in the above-mentioned model such as: Considering a production function with no constant coefficients and assuming that saving is a function of profit rate or income distribution or a combination of both. Robert Solow uses the first method. He considers a cobb-Douglas production function and then comes up with flexible steady state growth model. Therefore, after classical Harrod – Domar theory of growth, the neoclassic theory of growth was raised.

Solow growth theory is the representative of neoclassical growth theories. Solow (1956) presented another theory for economic growth. He accepts all the assumptions of Harrod – Domar except for its production function. The neoclassic steady state growth condition is as $\{g_1+\lambda = s/v\}$, which v represents capital to production ratio as Harrod – Domar model, but this ratio is not constant. For this reason, this model is flexible enough to return to a stable equilibrium. Thus, one of the main differences between classical growth models and neoclassics is that classics assumes that there is no substitution between production factors, while Solow growth model accepts this assumption.

There is a lot of criticisms to neoclassic production function which was a way to improve Harrod – Domar model. Among those who criticized neoclassic growth model were economists of Cambridge school of thoughts such as: Kaldor, Robinson and Sen. Sen believes that investment play no role in Solow model and there would be the same problems of inconstancy and lack of equilibrium in Solow model with considering investment function in model, like Harrod – Domar model.

These critics to neoclassic model lead to another growth theory proposed by Kaldor and Robinson. These two economists were the noble economist of Cambridge school that use Harrod – Domar dynamic growth model and with the aid of Keynesian analysis, propose a growth theory. Kaldor despite the most neoclassic economists that assume the technical progress as constant believes that economic development can be measured by technical progress.

One of the important features of Kaldor growth model is the use of technical progress instead of production function in growth model that has the privileges of considering income, wage, profit, capital, saving and investment over production function.

From the late 1950s to the late 1960s, neoclassic theories lost their power and many deficiencies were found. In the late 1980s, PaulR omer proposes a new theory, which is endogenous growth theory. This theory was different from neoclassic growth theory. Because it assumes that economic growth is the result of endogenous factors that determines inside a system. Endogenous growth theory divided into two groups. First, growth models which is based on human capital that attributes the stable long run growth to human capital accumulation (Lucas, 1998). Second, growth models, which is based on thoughts economy that believes that technical progress can be achieved through the investment in research and development and creating new thoughts (Romer, 1990; Grossman and Helpmen, 1991; Aghion and Howitt, 1992).

The main feature of endogenous growth models is that they can describe production per capita in steady state and the difference in growth rates among different countries. In this type of models, non-stop and permanent changes in effective factors on growth (such as investment) lead to a permanent change in the growth rate. Human capital is the main source of growth in most of endogenous growth models.

In endogenous growth models, new assumptions were adopted, such as increasing return to scale, Endogenous constant coefficient of Cobb-Douglas production function (A in $Y = AK^bL^a$) and considering research and development expenditures (R and D).

It can be concluded that in economic growth theories, three most factors: Importance, capital accumulation, human capital and research and development.

Capital accumulation is the main precondition of growth. Many countries try to develop their economic growth process by capital accumulation in the form of domestic saving or with the benefits of foreign financial sources. In international trade literature, capital per capita considers as capital intensity or capital intensive. Therefore, the importance of capital intensity in economic growth theories is obvious.

2.1.2. Capital intensity in international trade theories framework

The main core of international trade theories is comparative advantages theory. The first theory in international trade concept is mercantilism in 16th century. This theory considers the gold and silver resources as the national wealth and the determinant factor for trading with other countries. Based on this theory, every country should try to export more and decrease the amount of import to gain trade balance surplus. As the result of this theory, governments should only interfere with economy in order to control import and increase the trade balance surplus. Therefore, accumulation of capital as gold and silver was a priority.

Adam Smith started his discussion with an obvious issue that both countries voluntarily engaged in trade so they both gain profits.

When one country doesn't gain any profit or even lose something, then it will stop trading. Smith in "wealth of nations" introduces a new theory in international trade, "absolute advantages." He first criticized the mercantilism approach and then analyzed the causes and effects of trade between countries and explained the benefits of trade for nations. In his point of view, if a country is able to produce cheaper goods than others, the chances are to export the goods and would be eager to import goods that do not need to be produced (Salvatore, 2015).

In 1817, David Ricardo published "principles of political economics and tax" that criticized the absolute advantages theory of smith and proposed the comparative advantage theory. He stated that when a country has the absolute advantage of producing all goods, it can produce the one goods which has the most advantage and then export it, and import the goods that have less advantage to be produced. With this policy, the country would benefit from the foreign trade.

In the controversy with Ricardo's idea, the difference between comparative advantages is the cause of difference in production factors productivity. Heckscher-Ohlin proposes a theory in first half of twenty century and considers the difference in comparative advantage as the result of difference in countries accessibility to natural resources for production. The main factor for engaging in trade is the abundance of production factors and difference in relative prices caused by difference in relative abundance of production factors. One country which has more capital, started to export capital intensive goods and the country with more labor would start exporting labor intensive goods. In this theory, the reason for trade is the difference in resources in each country (Salvatore, 2015).

Based on the common literature in international economics, the determinants of capital intensity would be analyzed in two approaches: Supply side and demand side. The factor in demand side is participation rate of production factors and in supply side is the relative cost of production factors (labor and capital). Another factor that affects capital intensity is trade openness degree (Judzik and Sala, 2015).

When expected demand of firm can't be measured by real value, they would react by adjusting the use of production factors. These reactions include Labor recruitment and termination, change in participation rate of capacity or both of the reactions together. In other words, uncertainty in real level of goods creates a channel for transition; this means that demand side conditions affect investment and supply side effects on labor recruitment choices or their termination.

Demand side incentives affect the capital intensity through two factors including capacity utilization rate and employment rate. There is a positive relationship between capital intensity and participation rate of production factors, because when consumers' demand increases, then firm chooses to utilize more capital rather than labor between two production factors (labor or capital), this choice increases the participation rate of production factors. As the result, capital intensity increases. The firm's choice about

expanding their capacity through investment and human resources is largely dependent on its future demand and the demand is not determined. Therefore, it is normal to act cautiously.

From supply side, relative costs of production factors affect on capital intensity. There is an indirect relation between capital intensity and relative costs of production factors whenever real wages increase faster than capital cost, the labor employment would decrease because of demand rule. It happens because labor becomes more expensive rather than capital and demand for labor becomes less than demand for capital. As a result, capital intensity would increase.

Trade openness degree is the ratio of sum of export and import to gross domestic product. Trade openness degree has negative and significant effect on domestic investment level. From Harrod – Domar point of view, investment increases the capital. Therefore, along with increase in Trade openness degree, domestic investment decreases and causes the reduction of capital and capital intensity. Therefore, trade openness degree has negative effect on capital intensity.

2.2. Empirical Evidences
Hurdle (1974) studies the relation between leverage, market structure, risk and profitability. He makes a theoretical framework for these variables and then examines the model for 2228 production firm in the USA during 1960s. He included the capital intensity in risk equation and conclude that high capital intensity is related to low risk.

Bowen et al. (1987) use cross section data for 27 countries in 1967 to study the relative abundance of twelve important factors in production process. The results show that the Heckscher-Ohlin relative abundance theory is correct for 50% of the sample. It means that 50% of countries are eager to produce and trade goods which they have more production factors to produce it.

Salvatore and Barazesh (1990) study the contents of production factors of export and import goods in the USA. They used input-output model during 1958–1981. The results show that the ratios of capital to labor for imported goods are higher rather than exported goods. This result is correct for all sectors except for agriculture. However, when natural resource orientated sectors omitted from the study, Leontief paradox no longer exists.

Lubatkin (1994) studies the relation between diversity strategy and risk in 246 USA stock market firms during 1970–1984. The results show that there is a negative relation between capital intensity and risk.

Lee and Schluter (1999) study the production factors combination in import and export goods in the USA. They use Input-output model during 1972–1992 and examine the effects of export, domestic consumption and labor productivity on skilled and unskilled labor demand. Results show that export is not an effective factor on labor demand change and developed countries' import from developing countries would increase the unskilled labor demand in the USA.

Lee (2010) studies the effect of capital intensity on firm performance, especially in restaurant sector in the USA. He used panel data during 2000–2008 from 524 firms. The results show that capital intensity has negative effect on firm's performance.

Hasan et al. (2013) study the effective factors of capital intensity for India. They use cobb-Douglas production function during 1980–2004. The results show that labor market rules causes costs for using labor. Therefore, if firms try to increase capital intensity then labor demand would decrease and this causes limitation for trade benefit based on comparative advantages. India comparing to other similar countries in resources and development, has more capital intensity.

Judzik and Sala (2015) study the determinants of capital intensity for Japan and the USA. They use autoregressive distributed lag (ARDL) method for time series data during 1970–2011. Independent variables are relative costs of production function, participation rate of production factors, trade openness degree and direct tax of household and trade taxes. Results show that in the USA, demand side factors such as participation rate of capacity has higher effect on capital intensity. Results also show that in the USA, there is a higher tendency for capital factor and in Japan there are more tendencies for labor.

3. METHODOLOGY

In this research, data are annual time series and are collected from World Bank database. The effective factors of capital intensity are estimated as follows. All the variables are based on theoretical and empirical studies.

$$kn_t = f \{(cc_t - w_t), (cur_t - nr_t), op_t\} + \varepsilon_t \tag{1}$$

Where kn_t represents the capital intensity, cc_t represents cost of capital, w_t is cost of labor (wage), cur_t is economy's utilization capacity rate, nr_t is employment rate, op_t is trade openness degree and ε_t is error term. All the variables are in logarithm form. For calculating the relation between variables, ARDL method is used.

4. FINDINGS

In this research, we first present the results of variables' stationary test with Dickey-Fuller test. The results of the tests for Iran and China are shown in the Tables 1-4.

As it can be seen from Table 1, none of the variables, which are used in this research, are stationary in level. Therefore, we examine them in first difference. The results are shown in Table 2 for stationary test in first difference.

As it can be seen from Table 2, all of the variables are stationary in first difference. The ARDL method can be used if the variables are stationary in level or in first difference. In this case, all variables are stationary in first difference and we can be allowed to use ARDL method.

According to Table 3, all variables except for the participation rate of production factors are non-stationary in level. Therefore, we need to test the variables in first difference.

According to Table 4, all variables are stationary in first difference. As the variables are stationary in level and first difference for China, we can use ARDL method.

After examining the stationary tests for variables, we calculate the ARDL model for the short run and the long run for Iran and China.

4.1. Estimation of Model for Iran

In order to estimate the model for Iran, we use ARDL method with trend and intercept. The criterion for choosing this method is Schwartz criterion and we also use the coefficient covariance matrix. The results are shown in Table 5.

Table 5 show that ARDL (1,2,1,0) model is the best model for calculation based on Schwartz criterion. All variables in the model are significant.

Table 1: Dickey Fuller test results for stationary test for Iran in level

With trend and intercept		
Variables	**Test critical value**	**T-statistics**
LK	−3.19	−2.24
L (CW)	−3.19	−1.25
L (CN)	−3.19	−2.31
L (OP)	−3.19	−2.13

Source: Author's calculation

Table 2: Dickey Fuller test results for stationary test for Iran in first difference

With trend and intercept		
Variables	**Test critical value**	**T-statistics**
D (LK)	−3.19	−3.50
D (LCW)	−3.19	−5.51
D (LCN)	−3.19	−3.42
D (LOP)	−3.19	−4.16

Source: Author's calculation

Table 3: Dickey Fuller test results for stationary test for china in level

With trend and intercept		
Variables	**Test critical value**	**T-statistics**
LK	−3.19	−0.82
L (CW)	−3.19	−1.36
L (CN)	−3.19	−3.38
L (OP)	−3.19	−1.36

Source: Author's calculation

Table 4: Dickey Fuller test results for stationary test for china in first difference

With trend and intercept		
Variables	**Test critical value**	**T-statistics**
D (LK)	−3.19	−4.40
D (LCW)	−3.19	−3.89
D (LOP)	−3.19	−5.27

Source: Author's calculation

Based on the calculated coefficients shown in Table 5, 1% increases in capital intensity in current year causes 0.68% increase in capital intensity of the next year. Also, 1% increase in relative cost of production factors causes an average increase about 0.09% in capital intensity. Furthermore, 1% increase in participation rate of production factors causes an average increase about 0.04% in capital intensity. And at last, 1% increase in economic openness degree causes an average decrease about 0.1% in capital to labor ratio. We should notice that time trend is also effective on capital intensity. Based on Table 5 results, among the independent effective factors to capital intensity in Iran, for the short run, trade openness degree has the greatest effect on capital intensity. After that, participation rate of production factors and relative cost of production factors have the most effect on capital intensity, respectively.

To examine the significance of adjustment coefficient, integration test is conducted. The results of integration test are shown in Table 6.

The results in Table 6 show that the adjustment coefficient is between zero and one and its $P < 5$ so it is significant. We can conclude that there is the long run relation between variables. The coefficient of CointEq(−1) which is −0.31 showing that each year one third of the gap between the short run and the long run would be removed, which means that one third of the short run fluctuations would be adjusted in the long run. So, it takes 3 years to a complete removal of fluctuations effect.

In order to investigate the existence of the long run relation, we conduct bounds test. The results of this test are shown in Table 7.

Results of bounds test in Table 7 show that there is a long run relation between variables.

Table 5: Estimation results for ARDL model for Iran in short run

Variables	Coefficient	Standard error	T-statistics	P
LK(−1)	0.68	0.09	6.90	0.00
LCW	−0.0.01	0.02	−0.36	0.71
LCW(−1)	0.009	0.03	0.32	0.75
LCW(−2)	0.09	0.02	3.76	0.001
LCN	−0.04	0.01	−2.89	0.008
LCN(−1)	0.04	0.01	2.42	0.02
LOP	−0.1	0.04	−2.47	0.02
Intercept	1.37	0.46	2.96	0.007
Time trend	0.008	0.001	4.44	0.00

Source: Author's calculation, ARDL: Autoregressive distributed lag

Table 6: Integration test results for Iran

Variables	Coefficient	Standard error	T-statistics	P
D (LCW)	−0.01	0.02	−0.36	0.71
D (LCW(−1))	−0.09	0.02	−3.76	0.001
D (LCN)	−0.04	0.01	−2.89	0.008
D (LOP)	−0.103	0.04	−2.47	0.02
D(@ TREND)	0.008	0.001	4.44	0.00
CointEq(−1)	−0.31	0.09	−3.19	0.00

Source: Author's calculation

The long run coefficients for Iran are shown in Table 8.

Results of Table 8 show that there is a positive relation between relative costs of production factors and capital intensity as if relative costs increase about 1% then capital intensity increases about 0.29%. There is no significant relation between economic openness degree and participation rate of production factors with capital intensity in the long run.

4.2. Estimation of Model for China

In order to estimate the model for China, ARDL method with trend and intercept is used. The criterion for choosing this method is Schwartz criterion and we also use the coefficient covariance matrix. The results are shown in Table 9.

Table 9 show that ARDL (1,0,0,1) model is the best model for calculation based on Schwartz criterion. All variables in the model are significant.

Based on the calculated coefficients shown in Table 9, 1% increase in relative costs of production factors, causes an average increase about 0.08% in capital intensity. Also, 1% increase in participation rate of production factors causes an average increase about 0.39%

in capital intensity. In the end, 1% increase in economic openness degree causes an average decrease about 0.08% in capital to labor ratio. We should notice that time trend is also effective on capital intensity. Based on the results of Table 9, among the independent effective factors to capital intensity in China, for the short run, participation rate of production factors has the greatest effect on capital intensity. Furthermore, relative cost of participation of production factors and economic openness degree has the same effect on capital intensity.

The results of integration test are summarized in Table 10.

The results in Table 10 show that the adjustment coefficient is between zero and negative one and its P < 5 so it is significant. We can conclude that there is the long run relation between variables. The coefficient of CointEq(−1) which is −0.21 shows that, each year about one fifth of the gap between the short run and the long run would be removed, which means that one fifth of the short run fluctuations would be adjusted in the long run. Therefore, it takes 5 years to a complete removal of fluctuations effect.

The results of the bounds test are shown in Table 11.

Results of bounds test in Table 11 show that there is the long run relation between variables.

The long run coefficients for China are shown in Table 12.

Results of Table 8 show that there is a significant relation between relative costs of production factors and participation rate of production factors with capital intensity. However, there is no relation between economic openness degree and capital intensity. In this way, if relative costs increase about 1% then capital intensity increases about 0.4%. Also, if participation rate of production factors increases about 1% then capital intensity increases about 1.86%. Therefore, in China, the most effective factors on capital

Table 7: The results of bounds test for Iran

Test statistic	Value	K
F-statistic	9.14	3
Critical value bounds		
Significant (%)	0	1
	bounds	bounds
10	3.47	4.47
5	4.01	5.07
2.5	4.52	5.62
1	5.17	6.36

Source: Author's calculation

Table 8: Estimation results for ARDL model for Iran in long run

Variables	Coefficient	Standard error	T-statistics	P
LCW	0.29	0.11	2.64	0.01
LCN	−0.005	0.03	−0.14	0.88
LOP	−0.32	0.17	−1.83	0.08
Intercept	4.33	0.15	27.77	0.00
Time trend	0.02	0.006	4.02	0.00

Source: Author's calculation, ARDL: Autoregressive distributed lag

Table 9: Estimation results for ARDL model for china in short run

Variables	Coefficient	Standard error	T-statistics	P
LK(−1)	0.78	0.08	9.17	0.00
LCW	0.085	0.03	2.76	0.01
LCN	0.39	0.07	5.16	0.00
LOP	0.008	0.03	0.23	0.81
LOP(−1)	−0.081	0.03	−2.08	0.04
Intercept	2.90	0.52	5.51	0.00
Time trend	0.01	0.003	3.27	0.003

Source: Author's calculation, ARDL: Autoregressive distributed lag

Table 10: Integration test results for China

Variables	Coefficient	Standard error	T-statistics	P
D (LCW)	0.08	0.03	2.76	0.01
D (LCN)	0.39	0.07	5.16	0.00
D (LOP)	0.008	0.03	0.23	0.81
D(@TREND)	0.01	0.00	3.27	0.00
CointEq(−1)	−0.21	0.08	−2.49	0.01

Source: Author's calculation

Table 11: The results of bounds test for China

Test statistic	Value	k
F-statistic	8.05	3
Critical value bounds		
Significant (%)	0	1
	bounds	bounds
10	3.47	4.45
5	4.01	5.07
2.5	4.52	5.62
1	5.17	6.36

Source: Author's calculation

Table 12: Estimation results for ARDL model for China in long run

Variables	Coefficient	Standard error	T-statistics	P
LCW	0.4	0.08	4.76	0.00
LCN	1.86	0.80	2.23	0.02
LOP	−0.33	0.18	−1.79	0.08
Intercept	13.57	4.43	3.06	0.00
Time trend	0.05	0.006	7.36	0.00

Source: Author's calculation, ARDL: Autoregressive distributed lag

intensity are participation rate of production factors, and then relative costs of production factors. We should notice that time trend also has effects on capital intensity.

5. CONCLUSION

A large number of the studies that concern about capital intensity, only few studied the calculation of capital intensity degree. Since capital intensity is an important factor in economic growth theories and international economics, so the acknowledge about effective factors can help governments to a better policy making in growth, development and international trade. Therefore, the results are summarized as follows.

In Iran, in the short run, openness degree has the largest effect on capital intensity. However, in the long run, relative costs of production factors have the largest effect. In China, in both the short run and the long run, participation rate of production factors has the largest effect on capital intensity.

As stated before, in the short run in Iran, trade openness degree has more effect on capital intensity. According to theoretical literature, if trade openness increases, it decreases the domestic investment and reduction in capital. Therefore, gradually, labor would substitute with capital, so capital saving occurs in Iran. This phenomenon would help Iran with its unemployment issue. In China in the short run, participation rate of production factors has the largest effect on capital intensity. Therefore, increase in consumers consumption demand would increase participation rate of production factors. This shows more utilization of capital. Therefore, in China, gradual capital would substitute with labor and labor saving would occur.

Since Iran has advantages in producing labor-intensive goods, so the more increase in trade openness degree happens, the more labor would be employed. Then, investment in labor intensive goods would increase and it causes an increase in employment and growth.

China can use its capacities and more capital in production in order to move toward economic prosperity. China needs to expand free trade based on comparative advantages.

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