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ECONOMIC GROWTH IN IRAN THROUGH LABOR PRODUCTIVITY GROWTH

Abstract:

Economic growth is a fundamental measurement to assess a country's performance and productivity. For this reason, growth and productivity are in policy agenda of many countries especially success economic countries. Based on some studies and reports (e.g., those by UK parliament, 2016; OECD, 2012), labor productivity in developed countries is analyzed and considered as a secondary economic growth.

In this study, we investigated the relationship between economic growth and change of labor productivity in Iran and their challenges. Our object was to answer to two questions: 1) Is any relationship between level of GPD and labor productivity in Iran? ; 2) What are the driving forces (effective factors) behind the growth of labor productivity?

To answer to question 1, economic data from national and international information bank gathered. Relation between GDP and labor productivity examined by calculating some ratios and finally, trends and behavioral patterns analyzed. Patterns drew on Iran's economic status compared with 10 other countries in regional category (such as USA, Japan, Turkey, and France).

Therefore, the study findings revealed that there is a direct relationship between GDP and labor productivity In Iran.

To answer to the question 2, initially we developed a conceptual model based on theories and considered labor productivity as complex and multi-dimensional phenomenon (Economic and social dimensions) and assumed labor productivity as a function of internal (organizational) and external (environmental) factors.

According to find effective factors, a questionnaire based on conceptual model designed and before evaluating the reliability and validity of questionnaire, it reviewed with 15 academic and professionals. Data collected through questionnaires that distributed to 250 managers and employees from government and non-government sectors.

Structural Equation Modeling (SEM) employed, which reported significant and positive relationship between the labor productivity and driving forces such as: competitiveness, size of government sector, unemployment, corruption, social security system (external factors) and Wage/salary, work culture, employee adaptability, employee knowledge and skill, team working, performance appraisal system, career management (internal factors). Whereas, the association between labor productivity and some variables such as sex, age, post and position, sector were not supported. Eventually, challenges based on driving forces that are identified as more effective, discussed.

As conclusion findings can be applied by policy makers and managers to make policies to improve labor productivity and increase economic growth rate in Iran.

Keywords:

labor productivity, Economic Growth, Effective Factors, Modeling, planning

JEL Classification: J24, O53, O20

Introduction

Prosperity and high quality of life are universal goals for most governments. However, the precise way to best achieve these goals is the subject of considerable debate. It addition, based on theories and best practices of successful governments, issues of productivity and international competitiveness are at the forefront of contemporary policy debate.

Today growth and productivity are on the policy agenda in most countries. Recent strategic and operational plans of developed countries have highlighted large diversities in growth and productivity as well as a range of policies that could enhance the growth.

Productivity is important as it directly linked to living standards. A country's ability to improve its standard of living over time depends on its ability to raise its output per worker. Stronger productivity growth leads to stronger GDP growth. But GDP growth is not totally supported by productivity growth, especially labor productivity. It really depends on size and quality of workers.

According to Haller (2012) economic growth is the process of increasing the sizes of national economies, the macro-economic indications, especially the GDP per capita, in an ascendant but not necessarily linear direction.

Findings support the managerial note that human resources have a strategic role for productivity increase of any system. Therefore with the effective and optimum uses of it, all the advantages supplied by the productivity growth can be obtained (Attar et al., 2013)

Development and economic growth

Today, sustainable development aims to improve the quality of life in a comprehensive manner. World Development Report (2003) mentioned quality of life is including economic prosperity, social equity and environmental protection. Therefore Economic, social, environmental and cultural aspects must be integrated in a harmonious manner to enhance the intergenerational well-being.

Sustainable development therefore “involves maximizing the net benefits of economic development, subject to maintaining the services and quality of natural resources over time” (Pearce and Turner 1990).

By reviewing the nature of economic prosperity we can summarize the Goals of development as:

- Growth (of gross income per capita);

- Improvement in quality of life;

- Sustainable development;

- The Millennium Development Goals.

Economic development, according to Joseph Schumpeter (1961), involves transferring capital from established methods of production to new, innovative and productivity-enhancing methods. On the other word, Economic development is a process whereby an economy's real national income as well as per capita income increases over a long period of time.

According to Meier (2000); "Economic development is a process whereby an economy's real national income increases over a long period of time". In this definition, a) process, b) real national income, c) long period are key variables.

In addition economic growth is a process of quantitative, qualitative and structural changes, with a positive impact on economy and on the population's standard of life, whose tendency follows a continuously ascendant trajectory (Balcerowicz, 2001).

Beside of relationship between economic development and growth there is some differences refer to the fact that, while economic growth concerns the quantitative side of economic activity (the increase of results, of quantities, of sizes), development has a larger scope, including qualitative changes that take place in economy and society (Haller, 2012).

Kindleberger (1977) has given the differences between growth and development as; "Growth may well imply not only more output and also more inputs and more efficiency, i.e., an increase in output per unit of input. Development goes beyond to imply changes in the structure of outputs and in the allocation of inputs by sector".

Therefore development is a qualitatively higher step of macro-economic evolution. However it should be noted that in the mind of people of different countries, the word of development is reminding economic development.

According to theory of Schumpeter, we need tools to bring up innovators like social background, technical knowledge, needed capital, low intervention of government, raw resources, new markets, financial supporter and so many factors that we cannot focus on it as development theory (Galooyek et. al., 2013, Schumpeter, 2011) and we are supposed to shift to productivity theory as managerial perspective and highlight the role of human capital and labor as a smart and productive agent.

Productivity

Productivity theory starts with the simple concept of output per unit input to produce the growth accounting framework and many more detailed approaches. But broadly defined, productivity is the relationship between outputs produced and one or more of associated inputs used in the production process (National Research Council, 1979). On the one hand productivity is related to utilization of resources, on the other hand productivity is related to the creation of value (Rutkauskas and Paulavicien, 2005).

In the management science literature, productivity and performance measurement have traditionally been concerned with some factors (inputs and outputs), processes, or subsystems rather than the organizational whole.

The economic theory of productivity measurement goes back to the work of Tinbergen (1942) and independently, to Robert Solow (1957) and Productivity can be evaluated with respect to growth rate. High productivity level represents good use of resources and high returns. High growth rates indicate a dynamic and growing economy.

A glance at the productivity literature and its various applications quickly reveals that there is neither a consensus as to the meaning nor a universally accepted measure of productivity.

Attempts at productivity measurement have focused on the individual, the firm, selected industrial sectors, and even entire economies; the intensity of debate over appropriate measurement methods appears to increase with the complexity of the economic organization under analysis (Attar et al., 2013).

Productivity is strongly linked to the creation of value. Thus, high productivity is achieved when activities and resources in the system transformation process add value to the produced products and it can be effectively raised if it is managed holistically and systematically.

Eventually High growth rates indicate a dynamic and growing economy or organization with great potential.

The concept of productivity is linked closely with the issues of efficiency and encompasses several efficiency elements such as price efficiency, allocative efficiency, technical efficiency and scale efficiency. The overall productivity level of an organization depends on all these elements. In order to better understand the productivity, it is useful to consider Practical implications of it.

The five most widely used productivity concepts are: (Attar et al., 2013)

1. Labor productivity, based on gross output.
2. Labor productivity, based on value-added.
3. Capital-labor MFP, based on value-added.
4. Capital productivity, based on value-added.
5. KLEMS Multi-factor productivity. It is the most appropriate tool to measure technical change by industry because it fully.

An emerging literature also provides evidence that both institutions and human capital exert a positive effect on long run economic growth (Bhattacharyya, 2009; Dias and Tebaldi, 2012) and today, we don’t mention to “capital” and “labor”, but we talk about “management” and “labor”.

Labor productivity is a revealing indicator of several economic indicators as it offers a dynamic measure of economic growth, competitiveness, and living standards within an economy. It is the measure of labor productivity (and all that this measure takes into account) which helps explain the principal economic foundations that are necessary for both economic growth and social development (OECD, 2001).

Systematic reviewing economics literature reveals two measures of productivity are generally used: average labor productivity (ALP) and total factor productivity (TFP). By focusing on labor productivity there are two ways of increasing GDP per person:

1. To have a higher level of employment or hours, so that the total labor input in the economy increases

2. To increase the amount of output each person produces: that is, increase their productivity

Basically, improvements in productivity can be caused by five different relationships (Misterik, 1992):

- Output and input increases, but the increase in input is proportionally less than the increase in output.
- Output increases while input stays the same.
- Output increases while input is reduced.
- Output stays the same while input decreases.
- Output decreases while input decreases even more.

Growth in GDP per capita is often used as the measure of economic progress of a country, indicating the rate at which living standards are changing. Growth of GDP per capita can be described as a combination of the growth of labor utilization and the growth of labor productivity.

Labor productivity also reflects the impact of increased capital investment as well as the impacts of skills, technology and management practices and the firm level and the impacts of transport and infrastructure at the aggregate level. Labor productivity is a residual measure with captures other productivity drivers in addition to actual labor productivity.

Labor productivity and development

Growth and productivity are on the policy agenda in most OECD countries. OECD work has highlighted large diversities in growth and productivity as well as a range of policies that could enhance them (OECD, 2001a, 2003a, 2003b).

It is widely acknowledged that economic growth is a main driving force behind poverty reduction over the long run, and that labor markets provide the main transmission channel for this process, because the poor depend on labor income.

Deming's approach to total quality management showed direct impacts on productivity enhancement as well. Among Deming's 14 points are key elements to improve productivity, including institute training and retraining, institute leadership, break down barriers between staff areas, and drive out fear (Walton, 1986).

From the continuous quality improvement movement, Juran made a concrete connection between quality improvement and productivity improvement and asserted

that “Thus the improvement in quality results directly in an increase in productivity” (Gryna, et. al., 2007).

In this regard it should be noted economic development and productivity growth result from an educated workforce. More specifically, among various components of human development that have a distinct impact on economic growth; Education has a strong effect on labor productivity.

In general, productivity signifies the measurement of how well an individual entity uses its resources to produce outputs from inputs.

Today, the prerequisite to economic development and improved competitiveness is a knowledge-based reforming public administrative and restructuring of the economy. Productivity is the most common measure of competitiveness (Russell and Taylor 2000). Competitive dynamics is an important driver of growth at the level of the economy, however the role of competition as a driver of creative destruction is not straightforward (Aghion and Griffith, 2008).

Contemporary Theories of Economic Development, specially “New Growth Theory” notes that technological change has not been equal nor has it been exogenously transmitted in most developing countries (World Bank, 2000) and new growth theorists (Romer, 1986; Lucas, 1988; Aghion and Howitt, 1992) linked the technological change to the production of knowledge.

Method

Quantitative and qualitative methods, as well as analytic methods have been used in this research. To answer the question one, several indicators have been selected such as GDP, GDP per capita, employment to population ratio, labor force participation and Labor productivity. The data source is World Bank.

The research is focused to examine the relationship between GDP and labor behavior at all and its pattern type.

11 countries plus United State and China have selected and the level and economic behavior have compared to economic situation of Iran. The countries of our sample were selected according to two criteria. 1) Have remarkable economic performance and 2) Operate in a competitive environment.

Theoretical model to answer to second question and to identify the role of driving forces (effective factors) behind labor productivity was built.

Confirmatory Factor Analysis (CFA) is performed followed by Structural Equation Modeling to examine the model.

Data for qualitative section were collected through a web-based survey to answer the second question and to identify driving forces behind the growth of labor productivity according to the productivity situation in Iran. Before evaluating and running the model, questionnaire was reviewed with 15 academic and professionals' persons. The

survey was offered to 250 managers and employees form different sectors. A total of is 203 usable responses were received.

The applicability of the results to other countries must be determined through further study involving perception of countries productivity culture but This model would be practical and useful for those government that seek a competitive solution for succeeding in labor productivity. Finally the results of the investigation offer valuable insights to decision and policy makers tasked with the responsibility of improving the micro and macroeconomic impacts of Human resource strategies.

Data sources and comparability

The standard method to measure productivity is the Solow Residual, which assigns any Change in output not explained by changes in factor inputs to changes in total factor productivity (Solow, 1957). Okun (1962) also uses a similar method by assuming that capital and labor is utilized at normal rates whenever the unemployment rate corresponding to potential GDP prevails.

Productivity is commonly defined as a ratio of a volume measure of output to a measure of input use (OECD, 2001).

To assess the relationship between labor productivity and level of GDP, at first labor productivity based on the World Bank definition was calculated. GDP per person employed (labor productivity) is gross domestic product (GDP) divided by total employment in the economy. Then the levels of selected country indicators to Iran were examined and their behavioral patterns were drawn.

Table 1: GDP and labor Productivity of selected countries to Iran (2014-2015)

Indicator	GDP per capita to Iran		labor productivity to Iran	
Country/ Year	2014	2015	2014	2015
Australia	11.4	9.9	8.1	7.3
Canada	9.2	7.6	6.4	5.4
China	1.4	1.4	0.8	836.4
Germany	8.8	7.2	6.8	5.8
India	0.3	0.3	0.2	0.2
Japan	6.6	5.7	5.5	4.9
Korea Rep.	5.1	4.8	3.5	3.3
Malaysia	2.1	1.7	1.4	1.3
Russian Federation	2.6	1.6	1.6	1.1
Singapore	10.3	9.2	6.3	5.8
Turkey	1.9	1.6	1.8	1.6
United kingdom	8.5	7.6	6.4	6.1
USA	11.4	9.9	7.5	7.6

Source: World Bank data

Figures 1 and 2 show similar pattern and strong relation between labor productivity and GDP growth. Two important observations can be drawn from the figures. First, in all selected countries, whatever the level of labor productivity has increased, as a result, GDP also increased. In fact, their behavior and changes adapt together.

Second, population and GDP per capita growth without focusing on productivity, have a poor relation. Because the cost of producing outputs will increase and have negative impact on competitiveness situation of country.

Figure 1: relation between GDP per capita and labor productivity (2014)

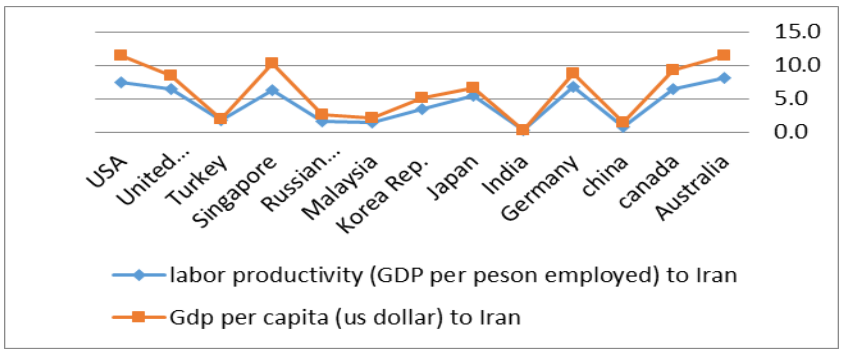
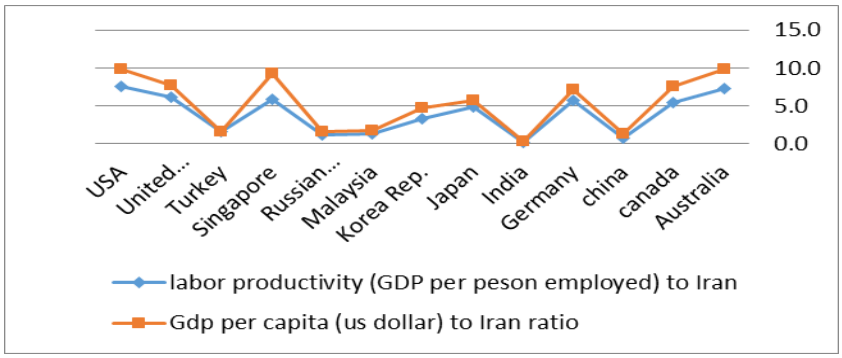


Figure 2: relation between GDP per capita and labor productivity (2015)



In general there is another fact about the importance of productivity due to limited resources and capacity of environment. Through reality of competition, every agent (country) can account for a significant portion. Therefore increasing the share and portion of one means less of the others.

For example USA has 24 percent of GDP of the world in 2015 but it has 4.4 % of the world population. It means USA will benefit from global population around 5.5 % and Japan with the portion of 1.7 % of global population, will appropriate 5.6 % of world GDP. It means the portion of Japan from GDP is around 3.3 % of world population. Herein Iran with 1.1 % of world population has a 0.6 % of world GDP. It demonstrates the portion of Iran from world GDP based on its Population is just 0.54 %.

These differences refer to the level of their productivity, specially their labor productivity. Due to speed of world technology transfer, productive and creative human resources of countries are their competitive advantage (Figures 3 and 4).

Table 2: The share of the world GDP and population (2014-2015)

Indicator	GDP to World ratio %		population to world ratio %	
Country	2014	2015	2014	2015
Australia	1.9	1.8	0.3	0.3
Canada	2.3	2.1	0.5	0.5
China	13.3	14.8	18.8	18.7
Germany	4.9	4.6	1.1	1.1
India	2.7	2.8	17.8	17.8
Japan	5.9	5.6	1.8	1.7
Korea Rep.	1.8	1.9	0.7	0.7
Malaysia	0.4	0.4	0.4	0.4
Russian Federation	2.4	1.8	2.0	2.0
Singapore	0.4	0.4	0.1	0.1
Turkey	1.0	1.0	1.1	1.1
United kingdom	3.8	3.9	0.9	0.9
USA	22.4	24.4	4.4	4.4
Iran, Islamic Rep.	0.5	0.6	1.1	1.1

Source: World Bank data

Figure 3: The share of world GDP and population (2014)

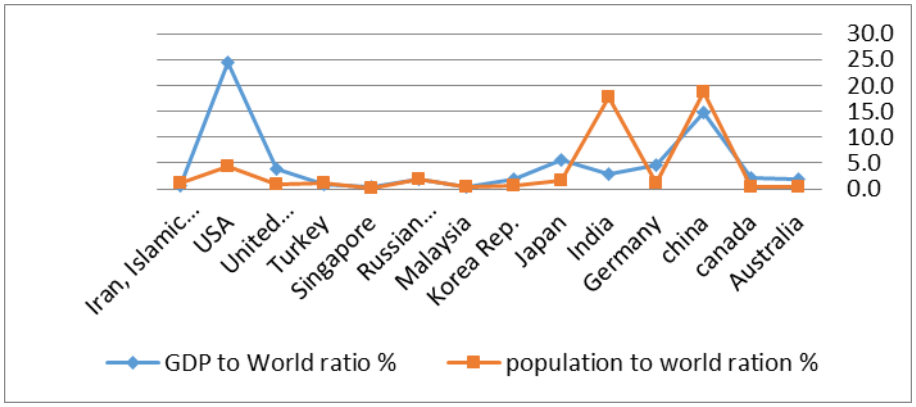
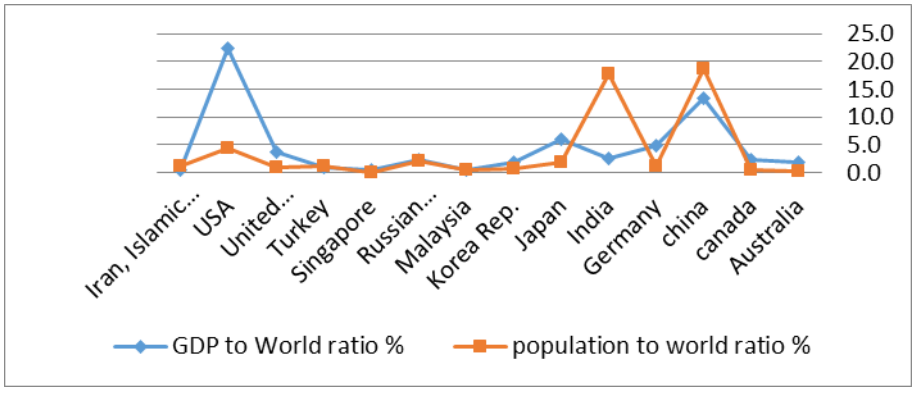


Figure 4: The share of world GDP and population (2015)



Labor participation is another concept that related to labor productivity. It has two different dimensions.

1) Participation rate indicates the proportion of the population engaged in the labor force, whether they are currently fully employed or not. The high rate of this index means the capacity of country to increase its productivity and thus increase the country's share of the global economy.

2) Increased labor productivity has also led to increased levels of unemployment. Fewer workers are needed to produce the same amount of goods and services. So finally, unemployment will result in low rate of labor participation.

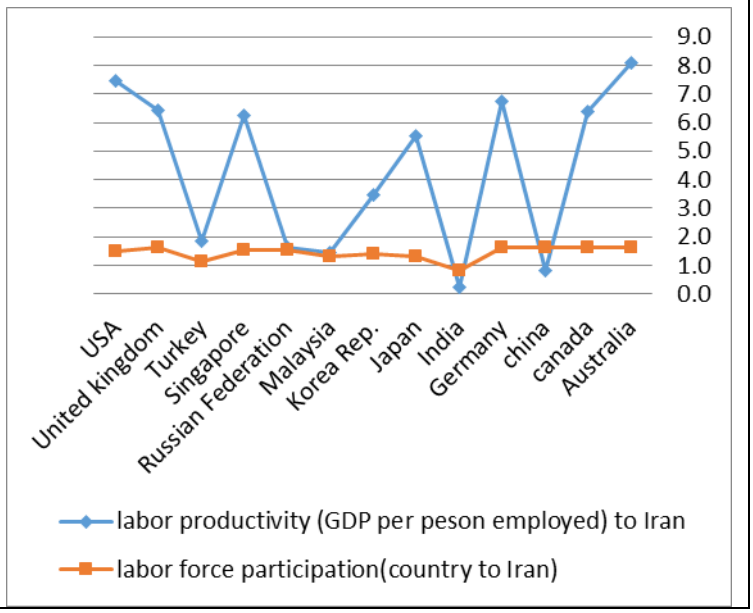
Here government has a main role to make decision and polices. Government should manage and develop competition between all economic actors (public sector, private sector, NGO's and people) by creating an atmosphere of entrepreneurship and help them to discover new opportunities.

Figure 6 shows Iran has a lowest Labor force Participation to world ratio among selected countries. So it is time to find a solution to increase its level by focusing on labor training and managing the path of labor productivity to create new areas of activities.

Table 3: ratio of labor participation and productivity (2014)

Country	Labor force Participation to Iran	labor productivity to Iran
Australia	1.6	8.1
Canada	1.6	6.4
china	1.6	0.8
Germany	1.6	6.8
India	0.8	0.2
Japan	1.3	5.5
Korea Rep.	1.4	3.5
Malaysia	1.3	1.4
Russian Federation	1.5	1.6
Singapore	1.6	6.3
Turkey	1.1	1.8
United kingdom	1.6	6.4
USA	1.5	7.5

Figure 5: Labor participation and productivity to Iran (2014)

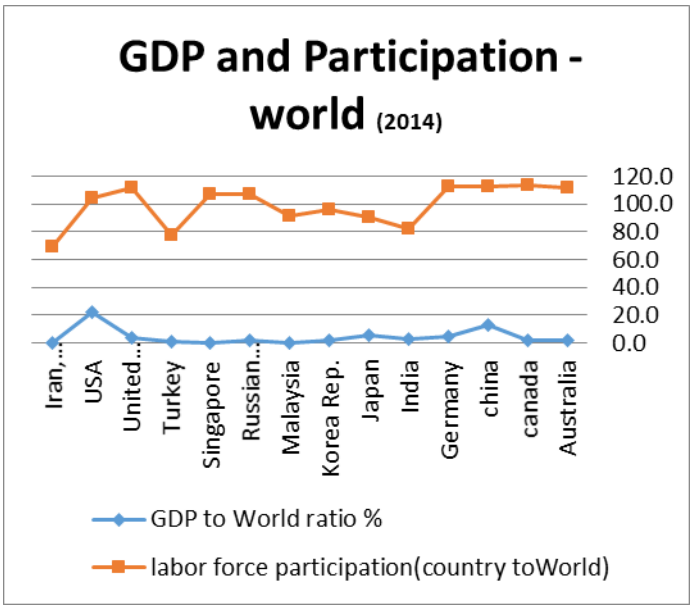


Source: World Bank data

Table 4: ratio of labor participation and productivity (2015)

Country	Labor force Participation to world ratio %	GDP to world ratio %
Australia	111.6	1.9
Canada	113.8	2.3
china	112.9	13.3
Germany	112.7	4.9
India	82.2	2.7
Japan	90.7	5.9
Korea Rep.	96.2	1.8
Malaysia	91.3	0.4
Russian Federation	107.1	2.4
Singapore	107.2	0.4
Turkey	77.9	1.0
United kingdom	111.2	3.8
USA	104.5	22.4
Iran, Islamic Rep.	69.1	0.5

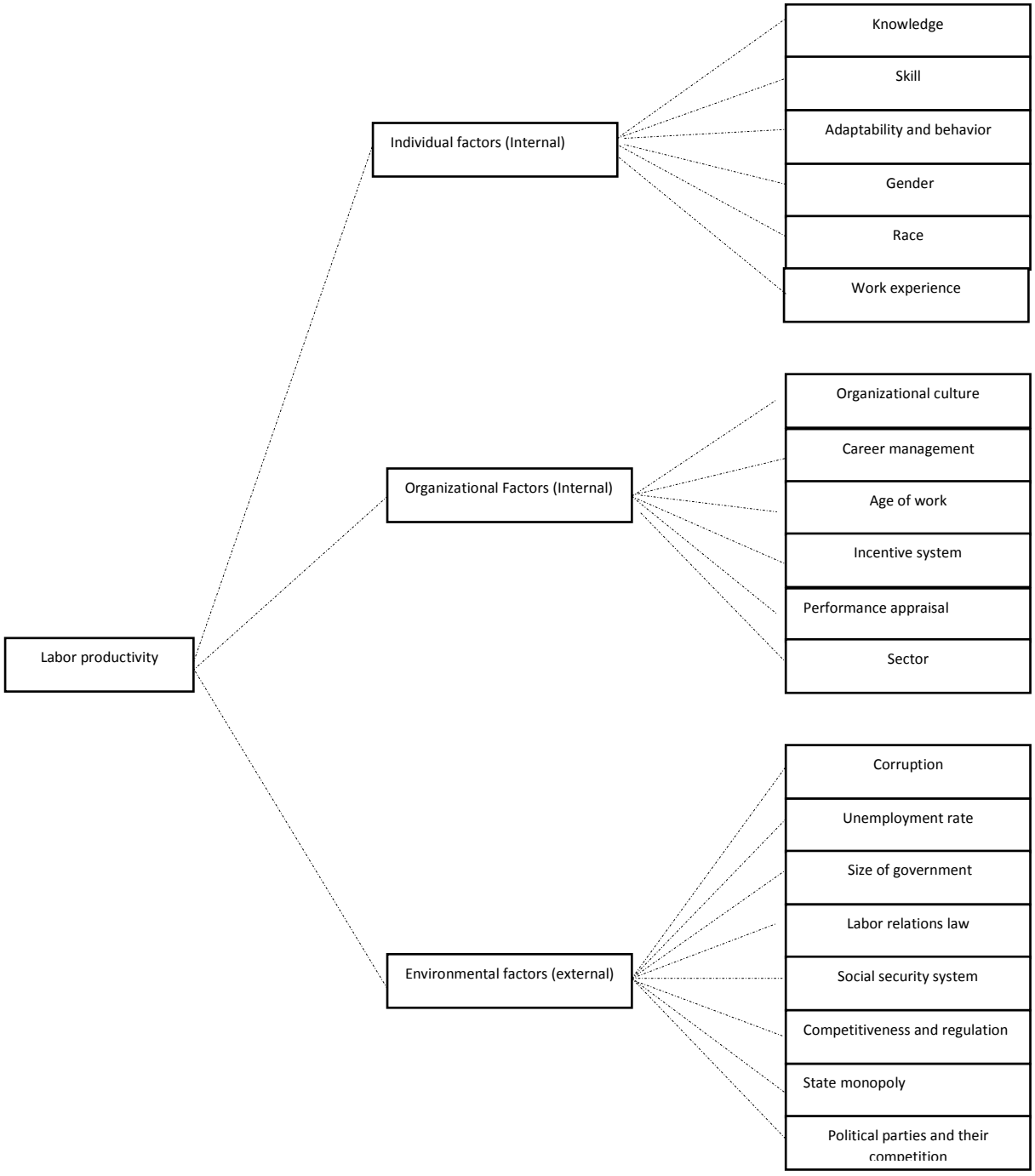
Figure 6: Labor participation and productivity to Iran (2015)



Source: World Bank data

In this step, the complete model was run to answer to the second question. A SEM path diagram was built.

Figure 7: Portrays the path diagram of the conceptual model



The SEM output for hypothesized relationships in the proposed model is given as below.

1- Labor productivity is the function of internal and external factors related in 3 dimensions of individual, organization and environment.

2- From policy making perspective, individual factors are so limited. Among key individual variable, knowledge and power of adaptability have influence on the amount of productivity.

3- The establishment of performance management system linked to intensive system are another effective factors among organizational level. In this category, organizational culture is important.

4- corruption, unemployment, government monopoly, size of government, social security system and Competitiveness and regulation are more valid than other variables

Discussion and Conclusion

The goal of the research was to analyze the relationship between labor productivity and economic growth by focusing on Iran economic situation in the comparison with developed countries profile.

The answer to the first question is "Yes". The findings argue that there are strong relations between labor productivity and economic growth and Labor productivity is significant driver of development after period of time.

Estimation of productivity of labor is regarded crucial from the welfare point of view. This is because it measures production per unit of labor employed and a country's ability to improve its standard of living over time depends on its ability to raise its output per worker.

The results of behavior patterns analysis suggest that due to the level of labor productivity and labor force participation, the country has gained its competitiveness and development goals.

Policy intervention is thus considered necessary to influence growth in the long term. The research findings can serve an additional valuable resource for policy makers in Iran in order to make effective policy decisions and take actions on the basis of gap between labor force and work age population to decrease their gap.

In addition, instead of trying to increase the job security based on some simple variables that do not have any relations with performance such as age, work experience, formal and longtime contract; government should focus on improving labor performance and its quality. Thus the government must work to create a more productive workforce.

The findings support the fact that human resources with low productivity are major causes of resistance to economic growth and development. According to the results of this study we need to revise labor laws and regulations to reduce the size of government and create a suitable environment to improve productivity. The growth models therefore promote the role of government and public policies in complementary investments in human capital formation and the encouragement of foreign private investments in knowledge-intensive industries to improve their work abilities.

In addition based on findings and by importance of environmental factors on improving the productivity, emphasize on some policies such as the following policies are suggested.

- Reduce public ownership specially in public service delivery and reduce size of government In the field of human resources
- Ensure competition for public sector
- Increase power of all sectors based on competition and productivity improvement.
- Redesign and simplify administrative and business processes
- Comprehensive labor market reform according to change all stable relations with labors and employees
- Strengthen the audit mechanism to adjust the rules and regulations related to labor productivity
- Create linkage between all subsystems of human resource management to Environmental requirements
- Promote greater salary responsive to productivity
- Encourage entrepreneurship and facilitate the discovery of new opportunities

In summary, In order to attain long term sustainable economic growth and development, creation of employment opportunities along with promotion of higher productivity is a basic essential action.

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