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Development Strategy of Uzbekistan: Modernization Versus Innovation?

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Abstract: The article investigates the strategic management tools and economic – organizational mechanisms of the entrepreneurial structures of the Republic of Uzbekistan on the macro level. The research results revealed that for fulfilling the Strategy Actions it's necessary to redirect the strategy from modernization to innovations, and also economical – organizational mechanisms of the entrepreneurial structures and systems as measures for their sustainable growth and innovative development. In this process transformation is the aim, innovative development is the tool, and effective and sustainable development of business structure and systems is asymptotic equilibrium. On the macro level, an optimal innovative level of business units was identified by formulating a mathematic equation. In the equation, the dependent variable is labour productivity, while independent variables include material and intellectual production factors.

Keywords: Innovation, Labour productivity, Sustainability, Structure, Entrepreneurship

1. Introduction

Successful implementation of the Development Strategy for five priority areas of the Republic of Uzbekistan in 2017 - 2021 has yielded positive results. 2018 is marked as a year of active entrepreneurship support, and the year of innovative ideas and technologies. Progress was made in the implementation of integrated actions towards the introduction of modern scientific achievements, innovative ideas and technologies in economic, social and state administration domains. As much as 76000 projects amounting to 21 trillion sums and one billion U.S. dollars were implemented in 2018. Under the "Each Family is an Entrepreneur", "Youth is Our Future" programs, job opportunities for the unemployed were created, and living conditions of young families were improved.

New edition of the Tax Code of the Republic of Uzbekistan was introduced at the beginning of 2020. The Tax Code is aimed at stimulation of economic development, improving the business environment, attracting investment, and rising available incomes while decreasing the tax burden for businesses. The approved Government Program of 2019 provided implementation of projects intended for addressing five spheres of the development of the Republic of Uzbekistan, amounting to the sum of 16,9 trillion sums and 8,1 billion U.S. dollars. Particularly, projects were initiated for addressing the economic development and active attraction of investments. The fundamental tasks for achieving growth include ensuring macroeconomic stability, arranging the necessary conditions for healthy competition, further improvement of the business environment and investment climate, an essential reduction of the state intervention in the economy, high rates stability of economic growth, counteraction against "shadow economy" and cardinal reduction of its value, proceeding to the liberalization of currency regulation2.

The article introduces mathematical techniques for researching factors and sources of innovative development. Taking into account the level of the Entrepreneurial Structures, its objective is the practical application of appropriate mechanisms for ensuring the simultaneous management

of competitiveness and innovative sustainable development. The optimal management condition is a priority for the development of innovation, followed by labour productivity.

2. Literature Review

Economic Growth Models in traditions of Robert Solow and Paul Romer, represented in the form of production functions are equally criticized by Phelps Brown (1957) and P. Samuelson (1979) [9]. They reprehended that the calculation of production functions is some "hands-on exercise". The reason for that, under their statement, is that that the total output and used labour and capital assets associated with national accounting, and in the final analysis, an identity predetermines value of the coefficient of the regression equation. Jesus Felipe and John McCombie (2019) objected that the identity helps to overcome two illusions; namely, that the calculated total factor productivity by design is the weighed value of fixed capital per worker (capital-labour ratio) in dollars; secondly, testing of regression equation coefficients is possible in models. If the model is adequate, then R2 approaches to unity and calculated elasticity coefficients characterize a value of factors of production, which should be equal to unity. A general comprehension of the economic growth models of the type of production function is positive as they are functional designs. Therefore, the results of the calculations, assumptions and forecasts can be tested using statistical data. We consider Entrepreneurship to be an economic category in the unity of all its components [5]: entrepreneurial activity as an implementation process of economic actions aimed at profit-earning; entrepreneurial structures - economic entities (enterprises) bearing the initiative risk business to make a profit; entrepreneurial systems are sets of economic entities which are carrying out initial risky business to make a profit and the economic entities creating possibilities for conducting entrepreneurial activity at micro-, middle-and macro-levels; entrepreneurial environment as conditions and factors influencing entrepreneurial activity and requiring elimination or adaptation administrative decisions.

3. Methodology

Characteristic of innovative sustainable development of business structures and systems, in our opinion, is the implementation of the complex positive changes conditioned by the implementation of various innovations at all operational levels, as this allows for high adaptability and harmonization Entrepreneurial Structures' interests. There is a necessity for innovation in the business sphere, given that:

1. Innovations promote intellectualization of human activity by raising its scientific content and serving as a channel for realizing human potential and achieving scientific-and-technological progress;
2. Innovations lead to the broadening of goods and services production cycle; enhancement of quality, which in turn satisfies the demands of society members and increases their satisfaction;
3. Innovations allow for bringing in new production capacities, thus reducing the labour input requirement for output products and services, also reducing the consumption of energy and materials.
4. Innovations in all spheres help in ensuring enterprise competitiveness by conforming internal production structure to changed external conditions.

Economic innovative development implies consecutive production equipment and technology upgrading/modernization by harnessing cognitive potential and workers' creative abilities in delivering consumers with high-quality products.

The theory of entrepreneurship and competitive advantage formation witnessed the transformation of central cause-and-effect relations in the end of the last century, whereby the stability of Entrepreneurial Structures which was historically conditioned by different sources

(material, financial, human) but nowadays refers to non-material resources (intellectual, organizational, client, etc.) came in the picture.

Following the various authors' definitions (M.Porter, P.Drucker, F.Kotler, et al.), by sustainable development of the Entrepreneurial Structure, we assume its ability to generate greater public welfare (public benefit or added surplus value) at lower costs of resources and time. Nowadays, the dynamics of the entrepreneurial activity is, first and foremost, associated with the general economic growth, and this is demonstrated through addressing the state and local authorities to create favourable conditions for conducting the entrepreneurial activity. Following the Development Strategy of the Republic of Uzbekistan in 2017-2021, entrepreneurship [2, 3] is considered to be one of the significant mechanisms of innovation commercialization, technology modernization and research of new economic management forms and methodologies. Developing small business and private enterprises are considered a means for the creation of employment and social tasks. Currently, sustained innovative economic growth of the Republic of Uzbekistan relies on the use of intellectual capital, given that intellectual capital decreases the material capital value in total investments, as well as effects the investment multiplier in increasing GDP for innovations [6, 7]. It is well-known that □ intellectual products contain an added value that forms their value by considerably exceeding their production expenses. System analysis of the interconnection of an institutional and competitive environment, and innovations is presented below [6]:

The business environment depends on the market structure (perfect competition, monopoly or oligopoly) in which a company operates. If a company operates under the ideal market assumption, this influences its survival strategy and causes it to introduce innovation.

Enterprise performance could be measured by the economic growth rate of its development, understood by its dual nature, as growth rate and economic development.

The growth rate is a quantitative indicator; the latter is a qualitative measure showing the business unit's adaptation to a changing environment. It's essential to ensure the sustainability of a business unit. Sustainability measures include the set of necessary supportive economic conditions [5].

Entrepreneurial Structure's functioning depends on the great number of external and internal factors. For the requirements of the research on economic growth factors and sources; we carried out the preliminary qualitative analysis and descriptive analysis of the GDP dynamics. Actual rates relating to the increase of the Republic's GDP grew after 2005, and during recent years they stabilized at the annual level of 5 %. As follows from the chart during recent years, a clear correlation between labour productivity growth rates and rates of increased investment into capital assets is observed. The annual rate of increase of productivity exceeded the rates of investments in the capital asset, and this is considered to be the positive moment represented in the following Figure (Figure 1).

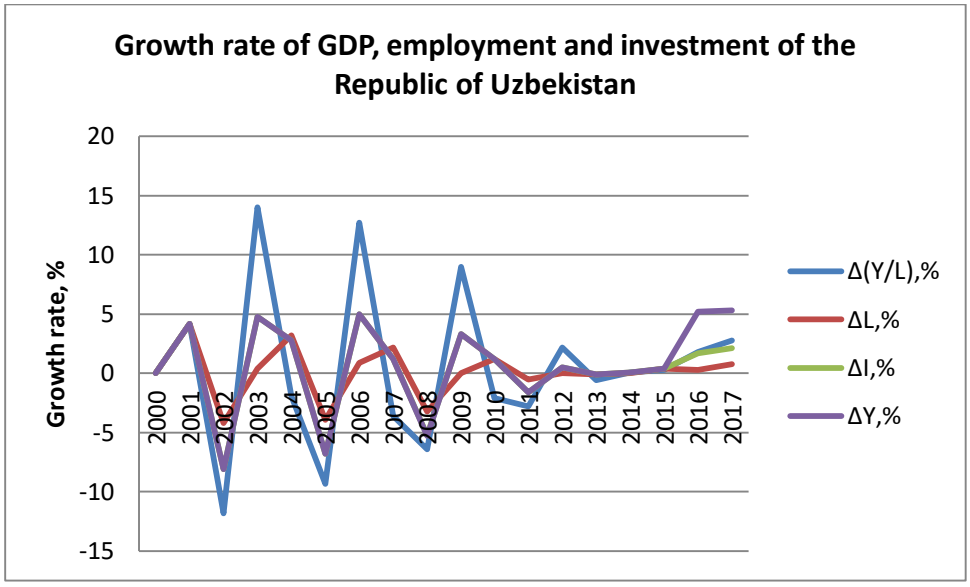

Figure 1: Growth Rate of GDP, employment and investment of the Republic of Uzbekistan

So-called "Schumpeterian" models of economic growth (Aghion, Howitt, Pareto, Dinopoulos, and Thomson) are well-known in the economy. The standard form they take can be represented as:

$$g_a = \Delta TFP_t / TFP_{t-1} = \Delta A / A = \lambda \cdot (X/Q)^{\sigma}$$

Where λ - parameters of the R&D sector efficiency, X/Q - the theoretical intensity of the researches, X - cost-cutting per unit of output from accumulated knowledge in the R&D sector, σ - diffusion of available technologies. In new models of economic growth of the Cobb-Douglas and Solow technological development type is reflected in "Solow residual". For calculation of the "Solow residual" the following expression is used:

$$\frac{\Delta A}{A} = \frac{\Delta Y}{Y} - \alpha \frac{\Delta K}{K} - \beta \frac{\Delta L}{L}, \quad \alpha + \beta = 1$$

or, $TFP(t) = \frac{\Delta Y(t)}{Y(t)} - \alpha_k(t)\frac{\Delta K(t)}{K(t)} - \beta_l(t)\frac{\Delta L(t)}{L(t)}$, $\alpha_k + \beta_l = 1$

When inserted into the model of the influence of the human capital, then[1]:

$$\frac{\Delta A}{A} = \frac{\Delta Y}{Y} - \alpha \frac{\Delta K}{K} - \beta \frac{\Delta L}{L} - \gamma \frac{\Delta H}{H}, \quad \alpha + \beta + \gamma = 1$$

or, $TFP(t) = \frac{\Delta Y(t)}{Y(t)} - \alpha_k(t)\frac{\Delta K(t)}{K(t)} - \beta_l(t)\frac{\Delta L(t)}{L(t)} - \gamma_h(t)\frac{\Delta H(t)}{H(t)}$ $\alpha_k(t) + \beta_l(t) + \gamma_h(t) = 1$

where: $\frac{\Delta A}{A}$ - "Solow residual" (*TFP*-total factor productivity - cumulative efficiency of factors);

$\frac{\Delta Y}{Y}$ - average annual rate of the increase of GDP, $\frac{\Delta K}{K}$ - average annual rate of the rise in the capital, $\frac{\Delta L}{L}$ - average annual rate of the increase of the employment, $\frac{\Delta H}{H}$ - average annual rate of increase of the human capital, α - a share of capital in the GDP, β - wages share in the GDP, γ - a share of the human capital in the GDP. Based on these parameters, it is possible to determine the level of innovative development.

Regression equation data analysis enables us to formulate a hypothesis concerning the ratio of labour productivity and investment support for capital assets. It can be asserted that the increase, with other conditions being equal, for one per cent of a capital-labour ratio is accompanied in the economy of the Republic of Uzbekistan by a labour productivity increment of 0,291 per cent. However, it does not ensure normal innovative development. Normal innovative development is reached when the rate of increase in productivity exceeds the capital-labour ratio growth, and the rate of increase in the intellectual capital exceeds the rate of labour productivity. By representing a ratio of in tempo-indicators of economic system developmental factors, the innovative normal thereby characterizes a system's economic potential, its development and use, as well as explains the considerable increase in GDP at nominal rates of increase of capital assets and labour productivity.

For the research of E.S. functioning at macro-level, we used two-factor macro models of the Republic's Entrepreneurial Structures which enabled us to determine both particular and cumulative resources efficiency and influence on its level of the certain applied factors. Economic efficiency of the resource in factor models is determined by the ratio of output to the production value of factor (or factors). In the multifactor model, particular indicators of economic efficiency index are the increase in output per unit of increase of corresponding production factor, while cumulative is the increase in the production per unit of total costs of production factors [8, 9].

The macroeconomic production function is of the form:

$$Y_t = A_t K_t^{\alpha} L_t^{\beta}$$

where, Y – Republic's GDP (at comparable prices of 2017, million sums), or in a million dollars when World Bank data are applied,

K -Investments is a capital asset, million sum, or a million dollars.

L – Average Annual Number of Employed, thousand people,

A, α , β - statistical parameters calculated by the least-squares method.

As a result of data processing of the Uzbekistan economy dynamic number in standard program EXCEL, the "analysis of data" for 2000-2018 production function was drawn up:

LnY = 0.8449222 LnL + 0.2923189 LnK; R^2 = 0.937

(33.32) [1] (10. 96)

[1]Under coefficients in brackets are represented t - values

Following from the above-stated table, the model is accurate and maintains all criteria of model test for adequacy. Consequently, for the analyzed period, economic increase for one per cent of labour recourses, other conditions being equal, was accompanied by an increase in GDP by 0.84492 per cent, and additional attraction of investments into capital assets for one per cent promoted in average the increase of the GDP for 0.2923 per cent. This limiting efficiency of the resources enabled us to determine optimal combinations of factors for the output of the production rate of gross output.

Average annual rates of the increase in GDP(y) for the specified period made up 5.3 %, capital (k) 11.2 % and labour (l) 2.1 %. Limiting efficiency of each resource calculated as the first derivative for each resource:

$$MPK = \frac{change\ in\ y}{change\ in\ k}$$ or, MPK = f (k+1)-f (k

If increase rates of the capital (k) and the Gross Domestic Product (y) are constant, then Solow Ratio is true, Δk = s*f(k) – δk = 0 …, or s*f(k) = δk**,**where k* determines balanced economic growth.

In our model, the assumption is that the saving rate is s =0.3, amortization rate is 0.1. Consequently, 0.3 $\kappa^{0.2923}$ = 0.1 κ.So, $\kappa^{0.7077}$ =3.κ =4.723. At this conjecture of the economic growth, at current rates of increase in GDP, a balanced rate of the annual increase in the capital should make up 4. 7 %. Underutilization of the key production assets resulted in capital surpluses (more than "golden rule"), and therefore actual rates of capital increase exceed the actual level twice.

Furthermore, by dividing the macroeconomic function into both parts into; Average annual number of employed (L) analyzed ratio of labour productivity (Y/L) to fixed capital per worker (capital-labour ratio) (I/L).

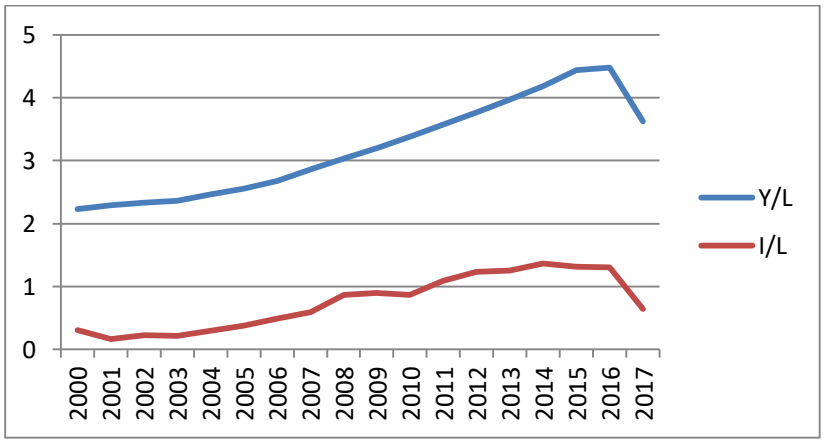

Figure.2: Trends in labour productivity and capital per worker in Uzbekistan

With the application of the suggested in [5] "innovative normal "concept, understood as the primary condition of effective formation, development and application of the economic potential of the Entrepreneurial Structures and systems, possibilities of the Entrepreneurial Structures

competitiveness increase, systematic estimate of efficiency and monitoring of the national entrepreneurial environment at macro-level' development was conducted.

The regression equation of labor productivity on capital per worker in Uzbekistan for the period 2000 – 2018:
Y/L = 1. 02258 K/L; R 2 = 0.915
t = 40. 33

p = 4.820E-15
LnY/LnL = 1, 18006 LnK/LnL; R 2 = 0, 9374
(67.985)

As stated in [8, 9], sustained innovative growth of economy depends on use of intellectual capital, for □ the intellectual capital decreases the material capital value in total investments, as well as effects of the investment multiplier in increase in GDP for innovations.

According to [5], an "innovative normal" of the national entrepreneurial environment development can be determined by comparing the rate of increase in labour productivity with rates of intellectual capital growth and rate of capital assets growth.

The above regression equation allowed us to draw a hypothesis about the ratio of labour productivity and capital investment. We can conclude that one per cent increase of capital per worker in Uzbekistan, all else being equal, leads to an 0.291 increase in labour productivity, yet this still does not ensure normal innovative development. Business units' normal innovative development occurs when the rate of intellectual capital exceeds the rate of capital per worker. We can conclude that a normal innovative development describes the system's economic potential, development and usage, by explaining the fast growth rate of GDP.

4. Conclusions and Policy Implications

1. There was a new tendency occurring from 2004 – 2018 in the Republic of Uzbekistan: increase rates concerning non-material entrepreneurial activity developmental factors drop behind the rates of increase of the capital assets. In other words, the Entrepreneurial Structures innovative development at macro-level is not ensured. The role of non-material resources in forming Economic Entities' long-term competitiveness is fundamental, therefore, to correct the state it is necessary to improve reformation directions in the national legislation regulating Entrepreneurial innovative activity in the Republic.

2. In the past years, a clear correlation between the increase in labour productivity rates and investment in the capital assets is observed. Annual rates of the increase of productivity pass ahead of the rates of investments in capital assets that are considered as a positive moment. Analysis of the regression equation data enables to formulate a hypothesis about the ratio of labour productivity and investment support of the capital assets. It can be asserted, that the increase, with other conditions being equal, for one per cent of a capital-labour ratio is accompanied in the economy of the Republic of Uzbekistan by a labour productivity increment for 0.291 per cent.

3. Productivity of the Entrepreneurial Structures is influenced by, first of all, high economic-organizing factors, presence of the creative leader and high involvement of the personnel into the planning process, that, under present-day conditions, is important, has the adaptive and preventive management based on nonlinear dynamics and strategic vision. At a meso-regional level, it is suggested to practice more widespread development of the concept of construction of territorial innovative clusters as a new model of competition ensuring innovation and stability of development of the entrepreneurial systems and to develop appropriate institutional

mechanisms of ensuring of sustainable development of the national entrepreneurial environment.

4. For sustained balanced functioning of the Entrepreneurial Structures, it is reasonable to create adequate market economic-organizing mechanisms ensuring the stability of the Entrepreneurial Structures. That means such functioning when the Entrepreneurial Structures continue to gain a guaranteed return (profit), introducing innovations, raising labour productivity, preserving the environment and bearing social responsibility.

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