

## Efficiency in the Economics of Management and Ways to Improve it

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### Abstract

The paper presented the analyses of one of the enigmas as set forth by the managerial economics. In analysing it, the paper formulated ways of resolving the enigma. The paper developed the theorem, which uncovered the essence of the two-dimensional measuring the indicators of the balanced economic growth in a developing economy. The outcomes of the analyses, carried out by the study, are expected to put a halt to the ineffective and inefficient use of natural material, capital and labour resources in any given developing economy. To that end, the results of the analyses will help open up the path leading to the effective green economy and will help maximize on the cost saving in the use of natural resources. The findings of the analyses will contribute to the development of the managerial economics and will be essential assets in measuring the balanced economic growth in developing countries. The novice of the paper is that the solution to the problem set as explained in this paper has ever been uncovered before.

**Keywords:** Two-dimensional measurement; Balanced growth; Resources; Cost efficiency

### Introduction

#### Solving of the Baye enigma

In his book titled *Managerial Economics and Business Strategy*, Michael R. Baye configured the subject matter of his research in the light of the following developments: in the late 20<sup>th</sup> century, a member of government of Japan characterized American workers as 'lazy and unproductive' [1]. Such outright description of the then American workers productivity entailed from the timing spent by a Japanese Honda company worker in manufacturing a Civic model car, which equalled to 10.9 hours while at the same time an American worker of Ford company spent 16 hours to produce an Escort model car. Such obvious disproportion raised serious concerns amongst stakeholders of the giant car manufacturing corporations, including General Motors, Ford, and Chrysler. Furthermore, the situation was aggravated with the fact that in the early 90s the big three suffered from dramatic losses. To that end, shareholders figured that the low worker productivity was the main cause of companies' losses.

#### Methodological principles suggested by American corporations as applied to the solution of the Baye problem set

The managers of the American corporations eventually made stakeholder concerns on the inefficiency of the American automobile industry sooth down, – noted M. R. Baye in his article published in the *Automotive News Journal*. The article quoted an hourly pay to an American worker, which was 2 dollars less compared to the 18 dollars per hour payment received by a Japanese worker. Thus, the American hold on the above-quoted payments differences threw the light on the essence of labour productivity that stemmed from the compensation of the labour spent for manufacturing a unit of production, not the labour costs.

#### Methodological principles as applied to the solution of the Baye problem set on the suggestion of Japan (according to M. Baye)

Let us re-iterate to the issue of just a positioning of the productivity of the American and Japanese workers, – wrote M. R. Baye. Thus, the Japanese Honda company spent 10.9 hours to manufacture a car while the American Ford company 16. Those figures were obtained

by dividing the total amount of workers time spent by the company's workers (labour units) by the total amount of cars manufactured (volume of production). From today's perspectives, it is obvious that the resulting figures are, in fact, the reverse values of the average productivity of the American and Japanese workers in the automobile industry. To be more specific, those relate to the average productivity of the two car manufacturing corporations. If we recalculate these figures in the reverse order, we will obtain the average productivity of a Japanese worker to be:  $1/10.9=0.09$  while that of his American counterpart will equal to:  $1/16=0.06$ . In my opinion, Michael R. Baye unveiled the inner essence of the methodological principles that had been applied by Japan. It was done by means of the assessment of the labour productivity through the direct labour intensity of production.

#### The theorem formulated by N. A. Nazarbayev relating to the Fifth Path of the development of a national economy. Application of the Fifth Path Model in constructing a generic market equilibrium model

Theorem: For the reason that the causes of any of global crises and the act of defining ways of exiting it are hidden in the knot of non-resolvable contradictions that arise between the rates and the levels of the technological, monetary-and-financial, and socio-political development in each of world countries, a clear definition of the three 'layers' of the innovation acquires an increasing importance in discovering the very self of the innovation [2].

#### The aim of constructing the Fifth Path-derived generic market equilibrium, based on the definition of true costs of goods and services

The aim of developing a generic market equilibrium model is to ensure unity of the key indices of economic growth in the system of

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national accounts in such a manner that they be adequate to the stage of the development of innovations in the technical-and-technological, fiscal-and-monetary and socio-political set-ups of the national economy of every country of the world, as a whole, in line with the Nazarbayev Fifth Path Theorem.

From the methodological perspective, this model includes the real GDP index, which is centred on the technological 'layer', from out of the three 'layers' defined in the theorem.

The GDP growth index by final consumption is also incorporated in the methodology. It reflects the socio-political 'layer' of the development of innovations. It also incorporates the nominal GDP growth index, which reflects the rate of changes in the fiscal-and-monetary 'layer' of the development of innovations in any given world country.

Their unity of those three 'layers' is currently being ensured by employing and further developing various analyses models under the Keynesian economic policy and the Friedman monetary policy. The first of those models has been geared to equalize one pair of the rates of growth, namely, technical-and-technological and socio-political development in any given economy.

The second model is to balance the rates of growth of the other pair, namely, the fiscal-and-monetary and technical-and-technological development in any given country.

In fact, the first model does not take into account the fiscal-and-monetary 'layer' of the innovations. The second model does not account for the technical-and-technological 'layer' of the innovations. Besides, one of them derives from the methodological principles of the short-term development of commodity markets, while the other – on financial markets. Removal of the above-noted deficiencies of existing models of market equilibrium requires resolving the following tasks.

**The first task relates to the necessity of assessing the input made by the scientific and technological potential in the sustainable development of an economy**

Resolving the first task by definition of true costs of goods and services ensures market equilibrium between the indicators at the macroeconomic level and those at the microeconomic level:

The product of the direct labour intensity of produce (t) in man-

hours of worker time spent for materializing the aggregate expenditures of production of goods and services, in their money form (X=C+V+M) equals to the product of full labour costs (T) in man-hours of worker time and the annual income, in their money form (Y=V+M):

$$t^*X=T^*Y \tag{A}$$

The main outcome obtained from applying formula (A) is in defining the function of the scientific and technological potential (STP) in its dependence from the efficiency in the use of material, labour, capital and natural resources  $c=\mu/(1+\mu)$ .

In the first instance, the function of the STP is  $c = \mu /(\mu+1)$  that in the course of growth of production of intermediate products  $\mu$  (Figure 1. line a) acquires the value within the range of 0.08 to 9.0 along the ascending line, which at point  $\mu= 2.0$  acquires value about 0.7 and, at point  $\mu$  equals to  $\mu= 8.0-0.89$ .

In the second instance, which is ideal for us, where the function of the STP  $c = \mu/(\mu+1)$  that in the course of production the intermediate product  $\mu$  (Figure 1. line b) acquires values from 0 to 9.0. We assume that it will move along the descending line, which at point  $\mu= 0$  acquires value 0.89 and at point  $\mu= 9.0 - 0.7$ .

The other two potentially viable instances have been marked in Figure 1 by the lines that go parallel to the axis, which indicates the productivity of the product of intermediate consumption  $\mu$ . The first of those two lines characterize the real time situation in developing markets given that the STP coefficient remains stable. Thus, the instance where  $c=0.6$  for any  $\mu$  has been reflected in Figure 1, line k. The second line, which is parallel to the axis of the productivity of the product of intermediate consumption, transcends the crossing points of both of the curves. Above that line, the parameters of the balanced growth of advanced markets are reflected as line d.

**The second task is linked to the necessity of defining the function of true costs of goods and services**

The second task of defining the function of true costs of goods and services (pc), as the reverse value of the purchasing power of national currency units (pp): $pc=F(pp)=pb/c$ . It is based on the two dimensional measurement of capital, in its money form, and capital, in its commodity form.

Owing to the two-dimensional measurement of the indicators of

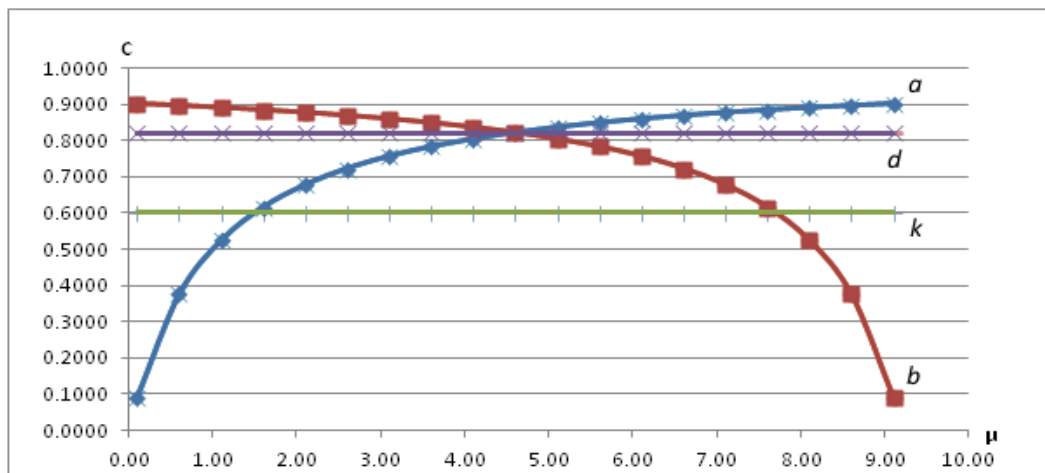
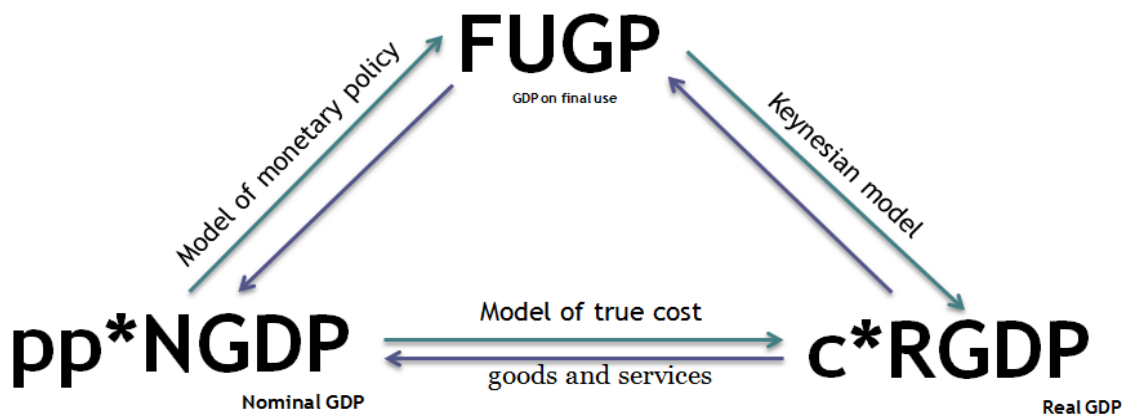


Figure 1: The function of STP.



**Figure 2:** The equalizing scheme of SNA indicators (3) defining true costs of goods and services driven by the precise definition of the 3-layers innovations development function.

economic development, there emerges an opportunity to effectively manage limited resources in any given individual country. It can be realized by using not only the Leontief model, which was expressed in the monetary form, but also, the new law that helps to balance supply and demand at the macroeconomic level [3]:

$$FUGP = pp * NGDP = c * RGDP \quad (B)$$

where FUGP, NGDP and RGDP are the actual consumed final product, the nominal GDP and the real GDP, and  $c = pb/pc$  is the rate of growth of the scientific and technological potential while  $1/c = T/t$  denotes the level of clustering of the goods and services markets,  $pc = 1/pp = pb/c$  - the rate of growth of true costs of goods and services is defined in its direct correlation to the GDP deflator. It is reversely correlated to the rate of growth of the scientific and technological potential of any given individual country. Assessment of the American and Japanese methodological principles using the methods of the precise definition of the three 'layer' innovation: for simple instances, the test calculations may be carried out on the basis of the input data pertaining to the Baye problem set. In this, one can find immediate answers to all quests posted by this research. This can be done by using the Nazarbayev theorem of the three layered innovation.

Thus, since the product releases in the US and Japan were measured by the use of labour productivity, we may take them as the ones that are equal to one another:

$$X(A) = X(J) = 1 \quad (C)$$

Let the direct labour intensity of manufacturing of one car in the US be  $t(A) = 16$  and in Japan  $t(J) = 10.9$  man-hours. The size of the hourly worker pay is \$16 in the US and \$18 in Japan. Here, we may derive the compensation of the 16 hour labour of 1 worker in US to be equal to  $t^*1 = 16 * 16 = \$256$ . The same indicator for Japan will equal to  $t^*1 = 10.9 * 18 = \$196.2$ .

The annual income for the period 1995-1997, which corresponds to the time series as mentioned in the Baye-quoted example, stood at the annual average of 36%. Accordingly, given the income of  $Y = 0.36X$ , full expenditures in the US equalled to  $T = 256 / 0.36 = \$711.1$  at the \$16 hourly rate. Accordingly, in Japan, the same indicator equalled to  $T = 196.2 / 0.38 = \$516.3$ .

### Correlations, deriving from formula (A) in the Leontief-Dmitriev input-output model

The company income on every car manufactured equalled to \$711.1 in the US vs. 516.3 in Japan while a worker's labour compensation in the US made \$256 vs. \$196.2 in Japan.

For the US, the quantitative supply and demand model derived on the basis on of the macro-and-microeconomic indicators has been defined by the following equation:  $256 * 1 = 711 * 0.36$ . For Japan, the corresponding model, using the macro-and-microeconomic indicators, has been defined as follows:  $196.2 * 1 = 516.3 * 0.38$ .

For both the countries, the target STP coefficients for the period 1995-1997 equalled to  $c(US) = 0.55$ . In Japan, it equalled to  $c(Japan) = 0.531$  in the proportions of full labour costs.

Taking the STP coefficient  $c(Japan) = 100.0\%$  as the basis, we may define the scientific and technological potential as follows:  $c(US) = 0.55 / 0.531 * 100 = 103.6\%$ .

Likewise, the corresponding GDP deflator will equal to  $pb = 103.5\%$  in the US and in Japan it will equal to  $pb = 102.3\%$ .

### Balancing of the real and financial sectors in the US and Japanese economies based on true costs of goods and services

The purchasing power of the US and Japan's national currency units equalled in the US:  $pp = c/pb = 103.6 / 103.5 * 100 = 100.1\%$ . The same indicator in Japan equalled to:  $pp = c/pb = 100 / 102.3 * 100 = 97.8\%$ . The reverse values of costs of national currencies, price indices on goods and services in the US decreased by 0.1%. On the contrary, those in Japan increased by 2.3% -  $pc = 102.3\% (100 / 97.8 * 100)$ .

The final supply and demand market equilibrium has stabilized in the US under:

$$pp = 100.1 \text{ and } c = 100.6: 100.1 * NGDP = 103.6 * RGDP \quad (D)$$

The corresponding market balance in Japan has been stable at

$$pp = 97.8 \text{ and } c = 100.0: 97.8 * NGDP = 100.0 * RGDP \quad (E)$$

In both instances, given the quantitative values of the nominal GDP at market prices one may easily assess the real GDP and final use GDP by deriving from the final use of true costs of goods and services.

## Recommendations on Solving the Baye Problem Set Relating to the Assessment of True Costs of Goods and Services

The outcomes of the analyses were not in favour of Japan although the assertions, in this regard, of the American corporations who favoured the US economy's efficiency and of Baye who supported the Japanese standpoint, differed. The Baye statement turned out to be advantageous for Japan in the proportion of 1:1.5.

The model, which is designed to define true costs of goods and services under the Nazarbayev methodology, as formulated in the Fifth Path, allows confirming the efficiency of the US economy. It also enables to present the correct solution of the Baye problem set.

## Conclusions relating to the Realization of the Fifth Path Principles and Recommendations

Under the conditions of the market economy, the criterion that governs innovations in the real sector of every economy serves the interests of profit maximizing at commodity markets. The lead methodology, currently in use, defines market efficiency under the methodology of John Maynard Keynes. Assessment of the risks that are associated with market activities would be advised to carry out by means of the multipliers of effective use of material and capital resources, including investments in fixed capital. Thus, this paper recommended that the methodological governance guide for the development of industries in an economy be primarily assigned to government.

### Recommendation No: 1

Under the conditions of economic liberalization and full transparency in managing businesses, the criterion of governing the financial sector is the maximal 100 interest rate on securities, which materializes at money markets. Therefore, the financial sector should be governed by the methodologies of the monetary policy. Assessment of market risks is to be carried out by the indicators of fiscal and monetary policies.

### Recommendation No: 2

The methodological governance guide relating to the regulation of the development of the financial market should be vested upon a central or national bank. As applied to Kazakhstan's realities, the National Bank of Kazakhstan (NBK) shall interact with the Government. The prerequisite for this recommendation has been outlined in the Message of the President of Kazakhstan to the people of Kazakhstan of 31 January 2017.

### Recommendation No: 3

The functions of monitoring the real economy, namely, in its financial sector, are being recommended herewith to be via the generic model of the precise definition of true costs of goods and services. The methodological governance guide relating to the sustainable development of a national economy should be vested upon public associations under relevant ministries and state agencies. Similarly,

these public associations may function under the coordination of a country's parliament and/or public chamber. As applied to Kazakhstan's specific realities, such function shall be assigned after the Association of Public Council.

### Recommendation No: 4

In his article entitled "The Clues to Crises", which was published in the "Russian Newspaper" in February 2009, President of the Republic of Kazakhstan N.A. Nazarbayev noted that "the current order of emissions and turnovers of world's currencies does not meet the criteria of the rule of law, democracy, competitiveness, efficiency, and control on the side of end users." [4]. The article entitled "The Fifth Path" outlined the concrete ways of defining true costs of goods and services. Following its recommendations, sustainability in managing the national economy will be ensured: first, by the equilibrium of aggregate expenditures (natural, material, capital, and labour) and of final use outcomes of production in the real sector of an economy. Second, by the equilibrium of the rate of the development of the real sector, reflecting the rates of growth of the technical and technological 'layer' of innovations, and financial sector, which reflects the growth rates in the fiscal and monetary 'layers' of innovations, and thirdly, by the equilibrium of the rate of development of the socio-political 'layer' of innovations, and the rate of growth in the final use GDP. Thus, the methodology of defining true costs of goods and services is fully aligned with the principles as formulated in the Fifth Path. It reveals the above-noted costs that had been noted by Keynes, the purchasing power theory and national currencies valuation and quantitative theory of money [5]. By using the above described methodology, it becomes possible to put a halt to ineffective use of natural, material, capital and labour resources. Thus, the right path has been paved to the development of the green economy and saving of natural resources.

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