Measuring the Energy of Economics (): Theoretical Framework

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Acknowledgment: I would like to dedicate this paper to my mother Ms. Graciela Edelmira Estrada Orellana (1949-2009). A great and sweet woman of my life…I love you mum with all my hearth, soul and mind…

Abstract

This paper proposes the application of the special theory of relativity by Professor Albert Einstein in economics. It is based on the measurement of the energy of the economics (Ë). The construction of the energy of the economics (Ë) request the uses of two economic variables into the special theory of relativity follow by: The unemployment growth rate and the technological development speed.

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JEL: E60

1. Introduction

Before we start to explain how to measure the energy of economics (Ë), we like to give a general brief about the special theory of relativity and how this theory works. Initially, we can mention that the great contribution of Albert Einstein (1952) is the establishment and development of the special theory of relativity. It is based on join two fundamentals laws in physics into a single law. This single law is called the special theory of relativity, where the law of conservation of energy (C^2) and the law of conservation of mass (M) were joined together into a single equation identified by $E=MC^2$.

According to Einstein the special theory of relativity, he said "If followed from special theory of relativity that mass (M) and energy (E) are both but different manifestations of the same thing. A somewhat unfamiliar conception for the average mind; Furthermore, the equation Energy (E) is equal to

MC^2, in which energy is put equal to mass (M), multiplied by the square of the velocity of light shows that very small amounts of mass may be converted into a very large amount of energy and vice-versa. The mass (M) and energy (E) were in fact equivalent according to the formula mentioned before this was demonstrated by Cockcroft and Walton in 1932, experimentally" (Einstein, 1952). Finally, this paper try to use the special theory of relativity to measure the energy of economics and demonstrate that is possible to apply the formula $E=MC^2$ into the economics analysis. We are using two variables the unemployment growth rate (U) and the technological development speed (T^2) to measure the final energy of economics (Ë). We like to say that the measurement of energy of economics (Ë) can be an alternative approach to analyze the economics behavior from a different point of view.

2. Introduction to the Energy of Economics (Ë)

Initially, we suggest the application of the equation $E=MC^2$ to measure the energy of economics (Ë). Hence, we suggest to replaces all the original variables from $E=MC^2$ by two economic variables to measure the energy of economics (Ë). The Energy (E) we like to replace by the Energy of Economics by (Ë); the mass (M) is replaced by the unemployment growth rate "U" (See Expression 1) and the C^2 will be replaced by the technological development speed represented by "T^2" (See Expression 2). Initially, we suggest to calculate first the final unemployment growth rate between two years, in our case we apply partial differentiation based on time, we have two periods of time divided by the past year (t) and the next year (t+1).

$$(1)\quad \delta U_{t+1}/\delta U_t \equiv U$$

On the other hand, the construction of the technological development speed (T^2) , we need to start by build the final technological output "δV" that is based on the total sum of three large integrals under the uses of the total sum of patents registered ($\int\Sigma\alpha_i$) plus the total sum of the technologies sells ($\Sigma\int\beta_j$) plus the total sum of all projects related to R&D ($\int\Sigma\theta_k$) (See Expression 3). Hence, the variable "t" represents time, in our model we calculate time based on a growth rate between two years. To measure the technological development speed (T^2), we suggest to apply the original formula of speed that is equal to distance divided by time (D/t); but in our case we replace distance by the final technological output "δV". We assume that the technological development speed (T^2) is not a constant variable into our equation such as the speed of the light is explained into the formula $E=MC^2$. We suggest that to measure the energy of economics (Ë) to keep the technological development speed (T^2) variable because the constant challenges of research, development and innovation (RDI) always can generate a constant transformation in the production of new goods and services into the market. Secondly, why the T^2 need to be variable is because natural phenomenon can be measure with accuracy based on experimentation such as the speed of the light (C^2), but in the case of social phenomenon such as economics cannot be measure with accuracy based on the experimentation at the same level that the natural phenomenon, it is the case of the technological development. However, another reason about why the technological development speed (T^2) is exponential square, it is because we assume that the technological development speed can generate a double spillover effect on the final amount of energy of economics (Ë) in the short and long term. In this part of our model, we request the application of the partial differentiation into the measure of the δV and δT (See Expression 4 and 5).

$$(2)\quad T^2 \equiv (\delta V/\delta t)^2$$

$$(3)\quad V = \int^{\infty}\alpha_i + \int^{\infty}\beta_j + \int^{\infty}\theta_k$$

$$(4)\quad \delta V = \delta V_{t+1}/\ \delta V_t$$

$$(5)\quad \delta T = \delta T_{t+1}/\ \delta V_t$$

Finally, the formula of the Energy of Economics (Ë) is equal to:

$$(6)\quad \ddot{E}=UT^2$$

The formula of the energy of economics (Ë) can show four possible scenarios follow by:

First scenario, if we have low rate of unemployment (U) multiply by high technological development speed square (T^2) then UT^2 together can convert into a very large amount of energy of economics (Ë).

Second scenario, if we have high rate of unemployment (U) multiply by low technological development speed square (T^2) then UT^2 together can convert into a very small amount of energy of economics (Ë).

Third scenario, if we have high rate of unemployment (U) multiply by high technological development speed square (T^2) then UT^2 together can convert into a very small amount of energy of economics (Ë).

Fourth scenario, if we have low rate of unemployment (U) multiply by low technological development speed square (T^2) then UT^2 together can convert into a very small amount of energy of economics (Ë).

In the case to measure the Energy of Economics (Ë), we request the application of the *Omnia Mobilis Assumption* (Ruiz, Yap and Shyamala, 2007) translated from Latin means "everything is moving". The *Omnia Mobilis assumption* gives the freedom to our equation of energy economics (Ë) to use less ceteris paribus assumption into our modeling. Simultaneously, we assume also that the market always keep in a "*Constant Dynamic Imbalanced State*" (Ruiz, 2008) under non control and highly vulnerable. In fact, the concept of *equilibrium* in the economic modeling of energy of economics (Ë) is considered as a leak momentum of balance among unemployment growth rate (U) and the technological development speed (T^2) that can appear any time, but we cannot predict when exactly this synchronized balance is going to be appeared. From a graphical perspective, we suggest the application of surfaces to visualize the behavior of the four possible scenarios into the energy of economics equation explained by $\ddot{E}=UT^2$.

3. Conclusion

This paper concludes that the energy of economics (Ë) shows that keep low unemployment growth rates (U) and high and fast expansion of the technological development speed (T^2) in the short and long term, it can generate a large amount of economics of energy (Ë) into any country. Now, we are available to observe the dynamic behavior of any economy based on the application this alternative economic indicator.

4. References

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