DISCOVERING OF ADAM SMITH'S 'INVISIBLE HAND'

Dr. Alexander A. Antonov*

Abstract

It is shown that Adam Smith's 'Invisible Hand' in the economy is the human factor. Due to the human factor, the modern economy is described with parametric differential equations with coefficients in the form of random functions of time. This is why it is unpredictable, and economic crises are inevitable. In order to make the economy controllable, crises-proof and rapidly developing, the influence of the human factor has to be minimized. New economic tools are offered to solve the given problem. The implementation of the given recommendations will allow quickly developing a prosperous economy.

Keywords: economic crisis, economic reform, crisis-free economy, 'invisible hand', 'goods-money-goods', human factor

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* Director of Research Centre of Information Technologies "TELAN Electronics", Kiev, Ukraine.

1. Introduction

Seafaring is still considered a dangerous occupation with hardly ever predictable outcome. Development of the national economic policy of a state is an even more complicated and less predictable task than seafaring. The question of making a crisis-proof, sustainably developing economy is a top priority for many national leaders. However, this question still lacks an answer.

Although, it is already known that abstract socialism, being a completely regulated economy, and abstract capitalism (laissez faire), being a completely non-regulated economy, both have their shortcomings and advantages:

- socialist economy develops very slowly, but does not have any economic crises;
- capitalist economy develops much faster, but economic crises happen.

This is why, at present, all nations are looking for a medium way of economic development, in the form of a certain variety of regulated (i.e., with elements of socialism) capitalism. However, many existing economic scientific schools (Bannock & Baxter, 2009; Barber, 2009) can not come to an understanding of this medium way. This is why different countries choose different ways. The knowledge base necessary for any national leader to make a justified choice of an economic way is still lacking.

The present research suggests a new approach to solving this problem, which will allow quickly developing a prosperous post-capitalist economy (Gibson-Graham, 2006; Drucker, 2009; Schweickart, 2011).

2. 'The Invisible Hand'

Economists often use a specific term 'the invisible hand' (Cannan, 1976) offered by Adam Smith (1776), when they suddenly discover a manifestation of powerful mysterious forces taking the society in an unpredictable direction, often despite the efforts of state heads and managers of the economy.

For instance, in 1929 – 1930 the gross national product of the USA suddenly dropped to 67% compared to the previous years. This event came to be the national economic tragedy, which went down in history as the Great Depression.

Just imagine. Both in 1928 and in 1930 the US economy had approximately the same amount of workers and approximately the same capital assets. However, in 1928 it experienced a huge upturn of production (share quotations were surprisingly high), whereas in 1930 the stock market collapsed, and a 33-per-cent downturn of production was registered. Over the year, the country suffered neither wars, nor natural disasters, nor epidemics. Just all of a sudden, one and the same economy worked well in 1928, and deteriorated in 1930. What was the reason? What drastic changes occurred in the US economy in 1930? No rational explanation has so far been offered for the Great Depression (McConnell *et al.*, 2011).

Indeed, in accordance with the Cobb-Douglas production function (Jesus & Adams, 2005) $Q = AL^{\alpha} K^{\beta}$, the production quantity Q depends on the two slowly changing factors of production: L (labor inputs) and C (capital inputs). Therefore, any national economy is supposed to experience no crises at all, and the production volume is supposed to increase gradually every year, following population growth (1-2% per year) and capital assets growth (3-4% per year). However, something unexpected always happens in economic development, and short-term sustainable growth is rather an exception than a rule.

This state of affairs implies only one thing – there is the third, more powerful factor, which plays the role of the router for progress or regress. This unknown third factor turns out to be the most important one and determines the nature of the development process. However, despite all efforts aimed at revealing it, it still remains unknown to the modern economic science.

Therefore, the primary and pressing task of the theory of political economy still lies in revealing the 'third factor', in identifying the mysterious 'invisible hand', which plays such a prominent part in the development of the global economy.

3. The Human Factor

However, if the long-term research of the objective circumstances which influence economic processes did not allow revealing the third factor, it is possible to assume that it is subjective, or, in other words, it is the human factor. Indeed, research presented in (Antonov, 2010a; 2010b; 2011a) allowed arriving at this conclusion.

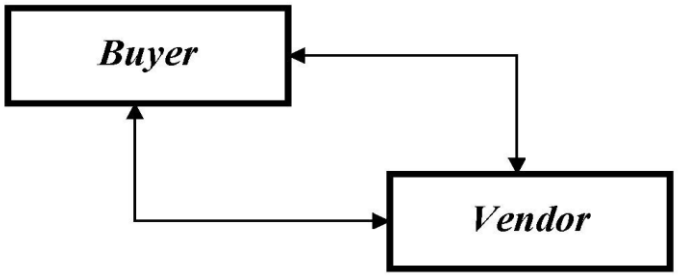

Fig. 1: Idealized functional scheme of the simplest link of the commodities market

These works demonstrate that, in the simplest market link (Fig. 1), the goods-money-goods process is mathematically described with a linear differential equation

$$T_V T_B \frac{d^2 M_B(t)}{dt^2} + M_B(t) = 0 \qquad (1)$$

where $M_B(t)$ is the current expenses (the amount of the current assets) of the buyer;

T_B is the useful life of goods purchased by the buyer;

T_V is the production time of goods manufactured by the vendor.

The obvious solution of this equation is an oscillation process, since current assets must circulate between the buyer and the vendor. However, this oscillation process has nothing in common either with the Elliott waves (Poser, 2003), or the seasonal fluctuations of business activity (e.g., in agriculture), or the economic cycles of Kitchin, Juglar, Kuznets or Kondratiev (Zarnowitz, 1996), and it is in no way connected with economic crises.

Moreover, this oscillation process in economics is still unknown, since the conditions for its implementation were never created, and they cannot (see below) be created by chance. Taking into account that the simplest link of the commodities market given in Fig. 1 is in fact idealized, it is appropriate to make a conclusion that for this reason it is only potentially an oscillation link.

Actually, this oscillation link (Fig. 2) always includes not only the buyer and the vendor, but the 'invisible hand', as well – the corresponding human factors introduced by them. Indeed, actual market participants are common people. Therefore, they are not always reliable, sometimes they are forgetful, very often they are subject to emotions, diseases, other random

factors. As a result, in the real link of the commodities market the process will be described not by a linear (1), but by a parametric differential equation

$$H_V(t)T_V T_B \frac{d^2 M_B(t)}{dt^2} + H_B(t)M_B(t) = 0 \qquad (2)$$

where $H_V(t)$ is the human factor which takes into account the behavior of the vendor,

$H_B(t)$ is the human factor which takes into account the behavior of the buyer.

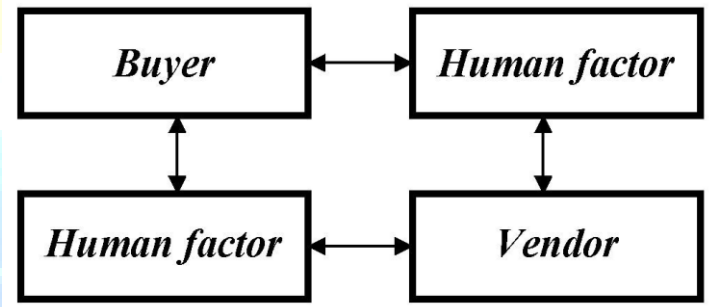

Fig. 2: Real functional scheme of the simplest link of the commodities market

Since in the differential equation (2) the coefficients $H_V(t)$ and $H_B(t)$ are different random functions of time, its solution is also a random function of time. Thus, due to the existence of the human factor, processes in the real capitalist economy which contains many similar interconnected links are basically unpredictable and uncontrollable, which makes economic crises inevitable.

It turns out that the situation in the global economy depends on the rapidly changing human factors $H_V(t)$ and $H_B(t)$ to a much greater degree than on the slowly changing factors of production $L(t)$ and $C(t)$ mentioned above.

The influence of the human factor explains the phenomenon of the Great Depression.

The above also fully explains why there were no economic crises in the Soviet Union. The plan-based Soviet economy involuntarily provided for the conditions minimizing the influence of the human factor $\lim H_V(t) \to const$ and $\lim H_B(t) \to const$, i.e., the functions $H_V(t)$ and $H_B(t)$ turned into basically constant values.

4. Ways of Reforming the Market Economy

Thus, to avoid economic crises in the capitalist economy, it is also necessary to minimize the influence of the human factor, i.e., to provide for the conditions $\lim H_V(t) \rightarrow const$ and $\lim H_B(t) \rightarrow const$ to be fulfilled. However, it has to be done in a different way from the Soviet Union.

In order to understand how to implement this, let us specify that the human factor can be internal and external.

The internal human factor is the spontaneous unpredictability of behavior of market participants, determined by their unreliability, illnesses, forgetfulness, tiredness, imperfection of written and oral agreements governing their activities, rumors, panic, and other similar reasons.

The external human factor is the unpredictability of behavior of market participants conditioned by the external influence of third parties – aggressive competitors, criminal organizations, dishonest public officers, and other similar reasons.

Thus, obviously, in order to minimize the influence of the human factor in the market capitalist economy, new economic tools are necessary, since the available economic instruments so far have failed to do so. Moreover, in order to minimize the influence of the internal and the external human factors, these economic tools have to be different.

4.1. Minimization of the Internal Human Factor

Let us refer to the new economic tool used to minimize the internal human factor as the business-interface (Antonov 2011a), by analogy with the similar term used in computer engineering. In this respect, let us recollect that in computer engineering an interface is understood as the hardware-software means of connecting different units. It is clear that if the corresponding units have different sockets or even if the sockets are the same, but non-matching signals are applied to the same pins, a computer will not work. Therefore, all interfaces in computer engineering are regulated in detail.

Accordingly, we shall refer to a business-interface as a commodity-money means of connecting market participants, where by analogy a vendor must supply a buyer with exactly the same goods the buyer ordered. However, this alone is not enough. In order to avoid any misunderstandings due to the human factor, business-interfaces must also be as detailed as

possible. The corresponding contracts must take into account all possible circumstances, and breach of contractual obligations must be completely ruled out. Penalties for this breach must be as severe as those used in the Soviet Union for violation of plan-based discipline. At least, they should be strict enough to prevent breach of contractual obligations even under the influence of panic similar to that during the Great Depression.

Contracts must have very clear schedules of payments and supplies. They should also take into account (although not necessarily) that the real economic system is a multilinked oscillation (at least potentially) system. Therefore, resonant processes which are widely used in engineering can also take place in the economy, and can be successfully used, for instance, to accelerate its growth rate, along with the well-known process of extended reproduction (which basically uses positive feedback, also widely used in engineering). Examples of business-interfaces with the use of oscillation processes are discussed in (Antonov 2010a; 2010b).

By the way, since an adequate mathematic description of the reformed economy with the systems of linear differential equations is very similar to the mathematic description of radio-electronic goods, economics can obviously avail itself of the automatic control theory, linear electric circuits' analysis and synthesis theory, and other well developed engineering theories. Then, the market economy should start working just as precisely and consistently as, for instance, radio-electronic devices, such as computers and TV sets.

However, in this respect a question may arise: can the use of business-interfaces have the same grave consequences as the implementation of the plan-based socialist economy? The answer is: no, it cannot. The reason is that business-interfaces should come in force only after a transaction is concluded, leaving no room for the freedom of non-performance. Only the obligation of performance will remain. If you wish, we can say that once the deal is made, partners find themselves in socialism.

However, before the transaction is closed, market participants live in capitalism. They are completely free in everything they choose to buy or not to buy, to produce or not to produce, free to choose a counterpart for a deal, free to hire and fire, free to work, live, vote, exercise their civil liberties, etc.

4.2. Minimization of the External Human Factor

In order to minimize the influence of the external human factor, we suggest an economic tool in the form of the new global information network TV•net (Antonov, 2009; 2012), which is free from all the drawbacks of the Internet.

The only currently available global information network, the Internet, is hardly suitable for business purposes due to its numerous shortcomings. Indeed:

- it does not provide for guaranteed information security, which is interestedly used by software developers who constantly supply users with anti-virus software, updates, etc., although this problem could have been radically solved a long time ago by simply abandoning packet-switched communication;
- the WWW contains almost no regularly updated, reliable and serious information necessary for business, and, on the contrary, contains a lot of trash information, and even immoral or criminal information;
- information retrieval time (do not confuse with information translation time) is too long, i.e., search engines are not efficient enough;
- copyright is constantly infringed;
- grave violations (e.g., by hackers) of the users' property interests take place.

Due to the above, as can be seen, the Internet is largely used to prevent (what else can we say about infringement of copyright and property tight?) fair capitalist business.

On the contrary, due to non-use of packet-switched communication and the use of one-way broadband (e.g., television) communication lines, the TV•net:

- allows fully solving the problem of guaranteed information security, since it has no feedback communication lines used by hackers in the Internet to obtain information from the users'PCs;
- allows nullifying the information retrieval time, since as soon as it appears, it is broadcast to the users, and then accumulated and stored in their personal databases;
- provides efficient protection of communication lines from noises due to the use of noise-reducing and cryptographic encoding;
- significantly broadens its functional abilities due to the use of numerous highly demanded services:

- the trading services (allows creating a global e-store);
- the exchange service (allows creating a universal global exchange);
- the administrative service (allows efficient management of any large organizations – ministries, banks, institutes, corporations, etc.);
- the education service (provides for mass education at the elite level);
- the analytical services (allows implementing the human super-intelligence (Antonov, 2011b), which is an alternative to the deadlocked artificial intelligence), and so on.

Use of the above services will allow manufacturers finding each other and establishing business relations faster and without intermediaries (which will provide for minimization of the external human factor). This is true both for one-time contracts (e.g., farmers selling their crops), and regular transactions (household purchases).

There is know-how.

5. Conclusion

The 'invisible hand' in the economy is the human factor. Due to its influence on the economy, it is currently unpredictable and cannot be effectively managed. Economic crises are, therefore, inevitable. In particular, the human factor accounts for the Great Depression phenomenon of 1930.

In order to gain control of the market economy, the influence of the human factor has to be minimized. To this end, new economic tools have to be used. In order to minimize the influence of the internal human factor, business-interfaces should be used. In order to minimize the influence of the external human factor, the new global information network TV•net should be introduced, as it is free from all the drawbacks of the Internet.

The economy reformed in the way discussed above with be both capitalist and socialist at the same time: before any transaction is concluded it will be capitalist, after the deal is made it will be socialist. This economy will become more transparent. It will allow reducing social tension, since the job performance will evidently depend on the quality and quantity of the worker's labor.

Last, but not least, the reformed post-capitalist economy will become manageable, and, therefore, crises-free. It will also be a rapidly developing economy.

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