



Стопански
факултет

Социално- икономическу а н а л и з и

Книга 2/2020 (18)

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GLOBAL ECONOMIC CONSEQUENCES AND POSSIBLE SOLUTIONS TO COVID-19

Abstract: The purpose of the study is to determine the impact of the self-isolation regime due to the pandemic on the world economy and the economies of economically developed and developing countries, as well as the prospects for the development of GMO technologies and human wastes into biogas and electricity to obtain positive effects in the socio-economic and environmental spheres of society. Countries can use a new polices and new technologies such as (Genetically Modified Crops, Animals Cloning and Turning the human wastes into biogas and electricity) that can help us to face and overcome this recession and increase the GDP in a short time. Research methods include: historical approach to the object of research, methods of quantitative statistical analysis. Conclusions and results of the study include: comparison of the economic situation under the influence of coronavirus in Russia and Egypt showed the similarity of problems due to the similar structure of the economy, the high role of the state in solving crisis economic situations; to ensure the availability of food products in the conditions of constantly decreasing consumer solvency of the majority of the world's population with low and middle income, the authors presented the achievements and advantages of GMO products in crop and livestock production and – the authors justify a set of measures to implement the policy of support and development of the production of GMO goods and services at the global and national level and human wastes into biogas and electricity.

Keywords: Genetically Modified Crops; Animal Cloning; Energy from Human Excreta; COVID-19.

Introduction

While the rapid development of the technologies nowadays, most of economies have traditional ways of dealing with the economic crises that happen and usually the procedures taken have a bad effect on its economy.

The modern technologies nowadays present great solutions for us to solve our problems with low costs. Economics was built on one problem which is scarcity of resources compared to the unlimited needs of people and the population in the whole world increases, on the other side the resources are decreasing not to meet the needs of increasing number of people so we must use some specific methods and technologies or we will face a great starvation in the whole world. So, the country has to be self-sufficient in food.

In addition, according to the theory of Clark-Fisher, the economy consists of three sectors of activity: the extraction of raw materials, the manufacturing sector and the service sector. At the same time, the more developed the service sector, the more economically developed the country is. Our task is to use this rule correctly in the context of a pandemic, adapting it to the current conditions. After all, at this moment of time, when people are in the mode of self-isolation and remote work, it is necessary to care-

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fully review the composition of the service sector, introduce elements of digitalization, automation, and their remote provision, as well as analyze what types of services are dying out in the current conditions and how to deal with the problem of lack of jobs¹.

Current trends in the modern world economy – the growth of the services sector, the lack of resources, a high level of international competition for markets for their products, the active introduction of digital technologies in the economy and the GMO system – they require justification and proof of the safety and economic security of such technologies as GMOs in agricultural activities (clashing national interests of food security, availability of goods for consumers, on the one hand, and the biological safety of the GMO technology itself for humanity, on the other hand) and human wastes into biogas and electricity to increase the achievability of a sustainable economy format with minimal withdrawal of natural non-renewable resources and maximum recycling of waste².

On the example of the economy of Egypt in accordance with the author's method according to the data on the structure of the country's economy in 1998.

– in 1998, the following structural indicators were obtained for the Egyptian economy: for 1 monetary unit produced in the agricultural sector of the national economy, there were almost 2 units produced in industry, which is typical for industrial countries; the service sector also outperformed the industrial sector by 85%³.

– despite the reduction in the share of agricultural sector in GVA of Egypt, 14.9% in 1998 to 11.9% in 2016 and decline in the share of the industrial sector from 28.3% in 1998 to 27.5% in 2016, the main trend was the increase of the services sector, including the state, ensuring the growth of public satisfaction in the consumption of available and sought-after benefits⁴.

That is, for the Egyptian economy, losses in the service sector must be compensated by activating the most economical and affordable technologies for recycling waste against the backdrop of an important state task – providing the country's population with food at affordable prices. This is also true for most countries of the world⁵.

Discussions

1. The Economic situation

1.1. Russia

On April 24 on the TV channel “Russia 1” Russian Minister of economic development Maxim Reshetnikov said that in the current situation, the Russian Federation loses about 100 billion rubles a day in GDP losses⁶.

¹ **Perepelkina, E.I.** Влияние экспортной специализации на структурные изменения в экономике (Sectoral structure improvement in an economy with raw material exports specialization). *Российский внешнеэкономический вестник*, 12, 2017, с. 105–111. (in Russian), Retrieved at: <https://cyberleninka.ru/article/n/vliyanie-eksportnoy-spetsializatsii-na-strukturnye-izmeneniya-v-ekonomike/viewer>

² **Buletova, N. E., Stepanova, E. V., Sergany, M.** Structural Analysis of Egyptian Economy: Trends in Service and Digitalization. *Advances in Economics, Business and Management Research*, vol. 83. 2nd International Scientific Conference on ‘Competitive, Sustainable and Safe Development of the Regional Economy’ (CSSDRE 2019), pp.16–21. DOI: <https://doi.org/10.2991/cssdre-19.2019.4>

³ **Buletova, N. E., Stepanova, E. V., Sergany, M.** Structural Analysis of Egyptian Economy: Trends in Service and Digitalization. *Advances in Economics, Business and Management Research*, vol. 83. 2nd International Scientific Conference on ‘Competitive, Sustainable and Safe Development of the Regional Economy’ (CSSDRE 2019), pp.16–21. DOI: <https://doi.org/10.2991/cssdre-19.2019.4>

⁴ **Buletova, N. E., Stepanova, E. V., Sergany, M.** Structural Analysis of Egyptian Economy: Trends in Service and Digitalization. *Advances in Economics, Business and Management Research*, vol. 83. 2nd International Scientific Conference on ‘Competitive, Sustainable and Safe Development of the Regional Economy’ (CSSDRE 2019), pp.16–21. DOI: <https://doi.org/10.2991/cssdre-19.2019.4>

⁵ **Buletova, N. E., Stepanova, E. V., Sergany, M.** Structural Analysis of Egyptian Economy: Trends in Service and Digitalization. *Advances in Economics, Business and Management Research*, vol. 83. 2nd International Scientific Conference on ‘Competitive, Sustainable and Safe Development of the Regional Economy’ (CSSDRE 2019), pp.16–21. DOI: <https://doi.org/10.2991/cssdre-19.2019.4>

⁶ RIA Novosti Website [The Ministry of Economic Development estimated the loss of the economy due to coronavirus], retrieved at: <https://ria.ru/20200424/1570539138.html>

According to the international rating agency “S&P Global Ratings” Russia’s GDP in 2020 will decrease by 4.8% due to falling external demand and negative dynamics of domestic demand⁷.

To support business the state can introduce not only tax holidays, but also allow companies that pay their employees’ salaries to avoid paying contributions to extra-budgetary funds while fighting the virus.

To stop charging rent in cases where the state or municipality is the lessor – this is another possible support measure⁸.

Unlike normal crises, epidemics hit both demand and supply at the same time. For example, we can consider such a key industrial sector as the production of automobiles. We can see how demand decreases during a pandemic in the example of China. In February, due to the spread of the virus, car sales decreased by 5 times. Car factories cannot produce “for the future” because of fears for the lives of employees. In addition, they do not have enough components produced in other countries of the world. However, it is necessary to try to get out of even such a difficult situation. For example, manufacturers can start to produce devices for artificial lung ventilation. The industry has experience in this reorientation: during the Second World War, American car factories produced planes, tanks, army trucks and automatic weapons. So, one of the ways for the auto industry to stay afloat is to abandon the production of expensive cars and completely switch to new technologies of electric cars, single-seat mini cars for industrial movement.

Another consequence of the coronavirus is the fall in stock markets. So, the stock markets in China, Hong Kong, India and Australia collapsed even more than the European ones⁹.

Due to the coronavirus, the New York stock exchange and the London metal exchange have completely switched to remote trading since March 23¹⁰.

In general, the securities market has always been speculative, which means that the current situation shows the great role of the state as never before. So now is a good time to change the rules of the game and reallocate resources. China is an example for many, because there is a combination of strategic planning, state control of Finance, as well as market competition and private enterprise. The authorities simultaneously support business, ensure stable prices for energy and transport services, and invest in infrastructure. In China, public interests are higher and more important than the interests of individual mega-magnates¹¹.

Even at the end of winter, G20 policy makers were confident that the growth curve during the coronavirus period would take the form of a V: a sharp but brief drop in economic activity, followed by an equally sharp rebound and recovery. However, they now see that there will be no form V. At best, there will be something closer to U – with a long period “at the bottom” before growth begins.

The entire service sector is under threat, from restaurants and film studios to universities and taxis. Big sport lost billions of dollars in revenue from broadcasts and ticket sales. Even oil and gas companies, discouraged by the collapse in demand and oil prices, lined up for subsidies¹².

Another threat caused by the coronavirus is unemployment. 25 million of the 72 million working Russians, or more than a third of the workforce, are under attack, according to Vladimir Gimpelson, Director of the HSE center for labor research.

⁷ RIA Novosti Website [The Ministry of Economic Development estimated the loss of the economy due to coronavirus], retrieved at: <https://ria.ru/20200424/1570539138.html>

⁸ Forbes Website [How can Russia avoid a catastrophe in the economy due to coronavirus?], retrieved at: <https://forbes-ru.turbopages.org/s/forbes.ru/biznes/395625-kak-rossii-izbezhat-katastrofy-v-ekonomike-iz-za-koronavirusa>

⁹ RBC Website [S&P has changed the forecast for the global economy from growth to decline due to the virus], retrieved at: <https://www.rbc.ru/economics/16/04/2020/5e98b6eb9a79470f1f9b6d7b>

¹⁰ BBC Website [Coronavirus has undermined the global economy for many years, OECD warns], retrieved at: <https://www.bbc.com/russian/news-52004489>

¹¹ RBC Website [Glazyev noticed once a century the state of resonance], retrieved at: <https://www.rbc.ru/rbcfreenews/5e9745b49a794771e943c5c8>

¹² BBC Website [The world is getting poorer because of the coronavirus. Who and how much will pay for it?], retrieved at: <https://www.bbc.com/russian/features-51878034>

Experts of the rating Agency S&P Global Ratings concluded that the world economy due to the coronavirus pandemic by the end of 2020, not only will it not show growth, but it will go down by 2.4%¹³.

1.2. Egypt

Planning and Economic Development Minister Hala El-Said said that the government has cut its GDP growth forecast for the fiscal year ending in June 2020 to 5.1% from 5.6%¹⁴.

The President Al-Sisi called for increasing income tax exemption cap for all employees with salaries ranging from EGP 8,000 to 15,000 annually¹⁵.

He further directed the government to introduce a new tax bracket 2.5 percent lower for whose income is less than EGP 35,000 to help low-income household¹⁶.

The Egyptian Stock Exchange market (EGX) indicates lost about EGP 175 billion in 3 months, including a loss of about 134 billion in March alone a coronavirus hit the global markets¹⁷.

The government has also introduced a one-time-off cash payment to irregular workers impacted by the COVID-19 outbreak, targeting 1.5 million workers with EGP500/month for three consecutive months starting April 13, 2020. It has also introduced exceptional wage and pension increases (of 14% starting next FY), revised tax exemption thresholds, and raised the minimum wage¹⁸.

2. The New Technologies

2.1. Genetically Modified Crops

Firstly, The GMO is allowed in some countries like Egypt (can make it inside) and prohibited in the other like Russia (can't make it inside but can import it from outside).

The country has to use Genetically Modified Engineering in food like (tomato – carrots) and use the cloning in cows and sheep (evidence and its methods down).

– In a paper published in 2007 in Middle East Journal of Scientific Research said that “the correlation study suggested that the important characters like number of leaves at flowering ,number of fruits at harvesting showed positive association with fruit weight i.e. increase of leaves at flowering, number of flowering and total number at harvesting reflects yield increase“ and “on the other hand, positive associations with these characters indicate that vegetative tall and vigorous plant stature with more flowers produce more fruits ,thus these characters are important yield attributes to be recorded in the selection criteria for improvement. “So, that means if we changed in the genes of tomato with specific way, this change with increase in the yield of tomato and its weight¹⁹.

– Dec10,1948 Science Magazine published a paper about the effect of coconut milk on growth of explants from carrot root and show that we can grow pieces of carrot in coconut milk (sustainable liquid media) to complete and become full mature carrots, so that means it can be increased in number easily²⁰.

But nothing in the life has advantages only, it also has risks like:

¹³ **RBC Website** [S&P has changed the forecast for the global economy from growth to decline due to the virus], retrieved at: <https://www.rbc.ru/economics/16/04/2020/5e98b6eb9a79470f1f9b6d7b>

¹⁴ **Enterprise Website**. [Egypt cuts GDP growth forecast to 5.1% from 5.6% in FY 2019-2020], retrieved at: <https://enterprise.press/stories/2020/03/29/egypt-cuts-gdp-growth-forecast-to-5-1-from-5-6-in-fy-2019-2020-13911/>

¹⁵ **Egypt Today Website**. [Sisi orders gov't to boost workers' income, raise tax exemption cap], retrieved at: <https://www.egypttoday.com/Article/1/82610/Sisi-orders-gov-t-to-boost-workers-income-raise-tax>

¹⁶ **Egypt Today Website**. [Sisi orders gov't to boost workers' income, raise tax exemption cap], retrieved at: <https://www.egypttoday.com/Article/1/82610/Sisi-orders-gov-t-to-boost-workers-income-raise-tax>

¹⁷ **Egy Sada ElBalad Website**. [EGX Indices Lose EGP 175 Bln in Q1 as Coronavirus Hit Markets], retrieved at: <https://see.news/egx-indices-lose-egp-175-bln-in-q1-as-coronavirus-hit-markets/>

¹⁸ The World Bank Website. [Egypt Overview, May 01,2020], retrieved at: <https://www.worldbank.org/en/country/egypt/overview>

¹⁹ Studies on Genetic Variability and Interrelationship among the Different Traits in Tomato (*Lycopersicon esculentum* Mill.) (A. Haydar, M. A. Mandal, M. B. Ahmed, M. M. Hannan, R. Karim, M.A. Razvy, U.K. Roy and M. Salahin) [*Middle-East Journal of Scientific Research* 2(3–4): 139–142, 2007]

²⁰ Effect of Coconut Milk on the Growth of Explants From Carrot Root (S.M. Caplin and F.C. Steward) [*Science* December 10, 1948, Vol. 108]

1. Increased herbicide use reduced in-field biodiversity that may reduce the ecological services provided by agricultural ecosystems.
2. Promotes development of Bt resistance, which will eliminate Bt as a relatively safe pesticide kills non-target caterpillars and butterflies such as monarchs (Pimentel 2000).
3. Facilitates the creation of new viruses (Hails 2000) and moves genes into nonagricultural ecosystems where the subsequent increase in fitness of weedy species could eliminate endangered species.
4. Prevents farmers from developing their own seed supplies adapted to local conditions (Conway 2000).
5. Disrupts local ecosystems if an ecologically limiting nutrient or protein is produced.
6. Adds to excess nitrogen leaching from agricultural activities degrading human health and reducing biodiversity. (The Risks²¹)

2.2. Animals Cloning

During the last 50 years there were a lot of experiments about animals cloning in attempt to increase the number of cows and sheep that we need and control it.

– Nov30 2001 Science Magazine published a paper “Cloned cattle can be healthy and normal” showed great advance in cloned cattle that they evaluated a series of 24 sexually mature cattle, cloned from non-quiescent somatic cells as described.

A total of 469 blastocysts were transferred into progesterin-synchronized recipients and 110 of 247 recipients (45%) were pregnant as determined by ultrasound 35 to 40 day after transfer.

80 of these spontaneously aborted (73% compared with 7% to 24% for vitro fertilization-derived pregnancies). 30 developed into term and 6 died shortly after birth. Necropsy results indicated that 5 of 6 deaths were due to cardiopulmonary problems secondary to placental insufficiencies and one calf died from enteric complications 149 days after birth.

The paper also showed that the remaining Holstein cattle (80%) and remaining alive and healthy 1 to 4 years later (survival from birth to reproductive maturity normally from 84% to 87%).

The results of physical examination were normal for all animals and the results of abdominal palpation rectum (reproductive, gastrointestinal organs and kidneys) were normal.

At the end of this part Science prove that Genetically Modified food is normal and there isn't any danger from eating it and the cloned animals are normal and healthy and also no danger from eating them.

So, we have the solution and don't use it²².

Until now there isn't any article show any risks of animals cloning but some researchers said that the perfect cloning has not hazards and it will appear like exactly the normal, the hazards come from potential mistakes that may be happened²³.

2.3. Turning the human wastes into energy

Nowadays most of the countries in the whole world use either Oil or Natural Gas which will run out one day and far from talking about the importance of using the clean energy like (Solar Energy and Wind Energy) but we have an important source of energy we don't use and it's bad not to use it (Human Excreta).

A paper published in a conference in 2014 talking about recycling of human excreta to energy through biogas generation and showed Indonesia case: the use of waste to produce biogas not only limit-

²¹ Recent Advances in Plants Biotechnology, Peter B. Kaufman, Soo Chul Chang, Ara Kirakosyan [pp 333-346 Risks and Benefits Associated with Genetically Modified (GM) Plants]

²² Cloned Cattle can be healthy and normal (Robert P. Lanza, Jose B. Cibelli, David Faber, Raymond W. Sweeney, Boyd Henderson, Wendy Nevala, Michael D. West, Peter J. Wettstein) [Science Vol.294 30 November 2001]

²³ Rudenko, L., Mathenson, J. C., Adams, A., Dubbin, Er. and Greenless, K. J. Food Consumption Risks Associated with Animal Clones: What Should Be Investigated? *Cloning Stem Cells*, 2004;6(2):79-93, DOI: 10.1089/1536230041372427, retrieved at: <https://pubmed.ncbi.nlm.nih.gov/15268781/>

ed to the waste from nature such as agricultural waste, food waste, or cattle manure; but also use human waste hereinafter called human excreta. The use of human excreta for biogas generation considered beneficial either in the term of process or environment. It is at the same time produce energy and reducing environmental problem that caused by unmanaged human excreta. In Indonesia, the main use of biogas itself is for cooking and generating electricity²⁴.

Not only Indonesia uses the human excreta to get energy but also India, Sweden and Singapore.

If we don't use the organic wastes generally of animal or human to get energy even if with small quantity it will be bad cause that organic wastes either used in fertilizing the land for cultivation and this may cause underground water pollution by excessive use of them or wasting this source which is very important cause the demand of electricity and natural gas (or biogas) is increasing²⁵.

Policies

There are some policies we should follow to grow economy and solve economic problems if there are.

1. Government increases its spending on (planting GM Crops and turning the human excreta into biogas firms) and decrease its spending on organic crops planting (optional).

2. Decrease the taxes on (planting GM crops and turning the human excreta into biogas firms) or cancel it for number of years may reach 5 years (till have self-sufficiency in the country which will come true quickly).

3. Export the excess supply of GMO Food with the same prices (the countries allow GMO and vice versa for countries prohibit it).

4. The Central Bank stops issuing money till having price stability in the markets to avoid any potential inflation may happen.

5. Increase trade barriers on any good has genetically modified in the country or stop importing GM Food till self-sufficiency then return the trade barriers with high rates (for the countries allow GMO and vice versa for countries prohibit it).

Solutions

1. After ending coronavirus crisis The International Monetary Fund, The World Bank and all financial institutions should give aids to the countries that were significantly damaged because of coronavirus.

A special role in this financial support should also be provided by financial institutions of groupings of countries (for example, BRICS...), since this is more secure for national financial systems and increases the role of such countries ' integrality (not only economic, but also political)

2. The Government should persuade businesses owners to co-operate with them to grow the economy again by building firms for generating energy from human wastes, and all of new technologies to create millions of new job opportunities and run the market again, but on the other hand the government should stop taxes on these firms for the period of the recession after COVID-19 crisis.

For example, in both Russia and Egypt: there are the privatization system and the bidding and auction system which are offered by the government to make a project or transaction between them. With these measures, the state solves the problem of employment, preserving enterprises, and restoring the most affected types of activity – in manufacturing, construction, and services. As the experience of Russia's agricultural regions shows, the conditions of the pandemic have less affected agricultural producers (only if they are highly dependent on imports), since in Russia and Egypt there is no such high dependence on foreign labor migrants and the level of support from the state is traditionally high. However, objective factors (risks of crop failure, a sharp decline in the level of fertility of agricultural land, etc.) require the development of new technologies, including GMOs in crop and livestock production.

²⁴ **Andriani, D., Wresta, A., Saepudin, A., Prawara, B.** A Review of Recycling of Human Excreta to Energy through biogas generation: Indonesia Case, *Energy Procedia* 68, 2015, 219–225. https://link.springer.com/chapter/10.1007/978-1-4419-0194-1_13

²⁵ **Mukherjee, Sacchidananda & Chakraborty, Debashis.** "Turning Human Waste into Renewable Energy: Scope and Options for India," MPRA Paper 73669. University Library of Munich, Germany, 2016.

3. The Countries prohibit creating GMO should allow import GMO food from the countries which allow it with a low prices (at the same the countries which allow it will produce a huge quantities of GMO food to low its prices to help the other countries).

Conclusion

Science and Technology are developing every day and every moment, they give us new things everyday which can make us more comfortable with low prices and its real worth is priceless.

In the discussions the authors showed just examples in agriculture and in animals but there are other several experiments which prove that other essential crops can be genetically modified to increase the number of yields and in technologies illustrated used to increase the number of animal show its ability to increase the number from other alive cells but now the scientists are doing experiments to clone from other died cells and some of these experiments have succeeded so, these technologies can develop an economy has stagflation and get it to the highest position in several categories.

In the short run all these technologies will cost the country a lot but in the long term will cost less and the country will get a lot of money without just thinking in issuing money and the country won't think in its resources like now if it wants to increase or decrease them and shift its thoughts to develop the education and medical care to increase the productive power, the scientific research, it'll get expertise in all categories and it'll help the country develop the technologies it has or invent new technologies more efficient, less costs and more productive then it'll automatically shift their thoughts to get in the category of aerospace engineering and the advanced science.

The country should market to the GM food and show that there is no difference between GM food and normal food except price and the low price of GM food is because of the large quantity is produced but the main thing is to confirm the safety of these products for the human body.

In this case we will find noticeable change in the interests of people in buying goods and services and according to the class of people it will be change in specific degree for example the first class of people may not notice any change on them and in the low class of people who are poor people, the poverty will disappear by high percentage and will consider the Genetically Modified food as a normal food that they can buy anytime and the normal food as a luxury food regardless Genetically Modified food and normal food are mostly the same with some small differences but the middle class of people percentage of them will heading to buy Genetically Modified food and the rest percentage will buy normal food and that is according to every one's education and culture. It also depends on the level of income and customer solvency.

The ideal model for getting out of the global economic crisis, in which countries continue to plunge both because of coronavirus, and for a number of other reasons (the financial crisis, the "trade" war between the US and China, difficulties in regulating the volume of carbon production, etc.) is when all countries should help each other because the international trade is intertwined, so one falls, all fall.

Nowadays we make money control the price of goods and services by increasing or decreasing in the quantity of money (control the fiscal policy and monetary policy) but in this case The Genetically Modified Crops, Cloned meats and the biogas and energy from human and animal's waste will control the price of themselves and control also the value of the national currency.

The authors intended to mention some old references to say that we have a solution and we are in another path.

Thoughts will be changed in the future due to the education and advertisement by the biotechnology industry. New research and development in this area should also be available to the global community, including technology, so the participation of supranational institutions is important to ensure a high level of such research, and their openness, accessibility and security for the economically developed and developing countries of the world.

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