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# Economic Growth – Time to Have a Long-Term Global View

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**ABSTRACT:** Two primary drivers have provided a prolonged growth of the world economy. They are [1] development of the underdeveloped countries, and [2] the impact of science and technology. The free market economy facilitated this growth. It has been postulated that in the next 15-20 years these two drivers of the economy will run out of steam and the world economic growth will be next to zero or very minimal. The hypothesis postulates that the effect on the world economy will be slow but not easily reversible. The author advocates the phrase MEGA-Economics to emphasize: "*study of the global economy and its dynamics over a period of a century or longer time frame"*. The author also discusses other socio-political factors that are likely to make this challenge even more formidable. Finally, the author suggests that his qualitative scenario should further be analyzed quantitatively so that we are well prepared with future challenges in the world economy.
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## I. BRIEF HISTORY OF HUMAN DEVELOPMENT(GRIFFIN 2000)

It is estimated that humans, biologically speaking*Homo sapiens*, evolved about 1 million years agoon the earth, which itself is about 4.6 billion years old in a universe that is roughly 10 billion years old. Out of 1 million years on earth, humanswere confined to Africa for most of the time. It was about 100,000 years back when humans venture out of Africa and spread throughout the world (Stringer 2012). In this journey of about 1 million years,humans have many remarkable achievements but two of them stand out. The first is the ability of humansto live in large groups, communities, states, nations, and a community of nations. Although this can not be claimed as an exclusive achievement of humans, as it is also found to lesser extent in other animals. This single most attribute has made Man distinct from other animals. The second most remarkable achievement of mankind is his ability to think – scientifically. Ability to think is there in animals but scientific thinking is mankind's very unique achievement which has completely transformed human development and along with this his surroundings. The economy became a necessity as we organized ourselves in larger communities, and scientific thinking gave us few guidelines for the organization of the economic activities.

### Agriculture Development

The first measurable achievement attributed to the thinking and learning was development of agriculture. The domestication of plants and animals started simultaneously at many places in the world around 10,000 BC. A variety of different plants and animals were domesticated and cultivated in the respective regions which was also a period when people started to settle in locations and a system of stable organized communities started developing catalyzedby agriculture activities. Science-based knowledge led to the development of irrigation, crop rotation, fertilizers,etc. although it was more recent,about 200 years back. Along with agricultural development, the roots of the economy were already planted(Grigg 1992; Goñi& Pinilla 2019).

### Industrial Development

Here what I mean by industry is organized large mechanized units linked with manufacturing and sales that required labor force to run it. Although the definition of the industry would evolve in the subsequent era, the

conditions of laborers and their exploitation led to the concept of socialism.Another reason for the development of socialism was the polarization of wealth. Subsequently, labor laws were developed to protect the labor force andlabor unions became an important stakeholder. With industrial development, concepts of the economy gained increasing importance. It can be suggested that agriculture initiated the concepts of economy, it was industrial growth which can be attributed to the development of modern economics [Chenery 1960].

**Growth of Capitalism**

Ideas from the modern science, converted into technologies required a mechanism to reach to the vast a growing global human population (Kakkar 2019; Wikipedia, 2020a). Western countries where modern science was fast developing in the 18th and 19th century, realized that thefree market and capitalism were the best way for development in the growing market. However, they also realized that the safety net is essential for people who are unable to effectively participate in the economy. Although the Western countries are known as capitalist countries, they have incorporated many good elements of socialism and yet kept the market place free and competitive. The development of the West is attributed to this meaningful combination, along with good governance with democracy.

**Growth of Socialism**(Itoh 1995)

Although the initial concept of a socialistic society might have been as ancient as civilization, the modern framework developed on ideas of Karl Marx and Frederic Engels in 1848. The initial phase of industrialization raised rightful concerns in many people and opinion-makers. Free market and capitalism were seen as brutal for mankind as it leads to a polarized society of super-rich and poor. The underlying idea of socialism was that the economy, commerce, industry etc. should be for the ultimate benefit of the people and the society, and not only for the capitalists. Karl Marx, Lenin and others were the thinkers and leaders who mobilized people and advocated socialism as a better system than capitalism. Two popular models of socialism at the national level were USSR and China. During the first half of the 20th century when the socialistic systems were at the peak, it divided the world into two camps: Free market capitalist democracies – includedthe US, Western Europe. Socialist block – Russia, China, and Eastern Europe. At that time, socialism was appealing to many under- or undeveloped countries, and directly or indirectly, it continued its influence on the governments(Editors of History.com, 2019).

**World Economy During the Past 75 years**[Krueger 2006;Jones 2016]

Later half of the 20th Century started with the bi-polar world and the period of the Cold War between NATO countries led by the USA, and USSR with the Eastern Europe. TheWestern Block countries with a technology edge, expanding economy, and better democratic governance proved superior to socialistic Eastern Block where the weaker economy andstifling government bureaucracy developed internal stress and the breakup of the USSR,demolition of Berlin Wall crumbled the Eastern Block [The Heritage Foundation 2020]. The world becomes unipolarbut that was not to last for too long. When the Eastern Block was crumbling down, there were parallel changes in other Asian countries, namely China and India which may challenge the economic monopoly of the West. China transformed itself quickly while India is taking more time to develop a sizable economy. This is perhaps the starting of an era where military might is replaced by economic might in the new game of the world's geopolitical balance.

**Economy Expansion**

Overall, the world economy has done very well since the end of World War II,and there are many reasons why this has happened (Wikipedia 2020b). In my opinion the primary two reasons as follows: [1] Much of the world which remained deprived of the fruits of industrialization started to develop and this lateral expansion of the economy is one good reason for the increase in the world economy in the past 80 years. BRICS countriesarea good example of the second wave of development that is taking place during the past 40 years. Many large and small countries realized the need for economic development and created a system where industrial expansion was now made possible. [2] The second reason for the growth of the world economy during this period is the technological revolutionduring the past 100 years.Science provided the impetus with newer materials, newer powerful machines, and even more powerful concepts. Transport, energy, construction, communication, food, cloth and textile, sectors and finally followed byICT and related technologies transformed every sector and every aspect of human life fueling the unparalleled continuous expansion of the world economy for the past 80 years.

**Global Growth Drivers**

The two important factors which have driven theeconomy so far, namely, the lateral expansion to cover underdeveloped countries, and the impetus from science and technology have been driving the growth of the

world economy. The world economicgrowth rate now is about 3%, with developed countries averaging about 2% growth or less,and the developing countries averaging about 6-8% growth per year [**Figure 1**].A similar picture also emerges when the country groups are compared [**Figure 2**]. It is quite conceivable that the larger developing economies like India, China, Brazil, etc.mayalso reach their potential in the next 15-20 years, and like developed countries will have to struggle to maintain growth rate equal to the world average [**Figure 3**].

One analyses estimated that anywhere from one to two-thirds of economic growth comes from innovation(Broughel and Thierer 2019). While there remains considerable uncertainty about the underlying causes of innovation, the consensus view today is that innovation is a key driver of growth. We have realized that technological innovation, economic growth, and overall human wellbeing are intricately linked. Researchers estimate that "the digital economy is worth $11.5 trillion globally, equivalent to 15.5 percent of global GDP and has grown two and a half times faster than global GDP over the past 15 years (Huawei & Oxford Economics2017). It is difficult to estimate effect of innovation on growth of the world economy. Technology companies like Google, Microsoft, Apple, Amazon are examples of the companies and illustrate their contribution to the world economy. Science and technology contribute to the economy in severalways. First, there will be newer sectors representing those newer technologies; Google, Facebook, etc. are examples. Second, technologies provide newer ways to do old business; the transformation of healthcare, transportation, communication sectors by ICT are the examples. Both ways it adds to the economy.

**Two Pivotal Growth Drivers – for how long?**

The world is lucky to have these key drivers of growth which havegiven perhaps the longest peace period for the economy to expand inmodern history. There are smaller and regional conflicts but by and large, peace has led tothe steady expansion of the world economy.

The question is for how long before these two drivers run out of the stream. As mentioned above, in another 15-20 years the growing economies will reach their potential – nothing grows forever. There will be other smaller underdeveloped or undeveloped countries but their growth – whenever it takes place – will not matter as the size of their economies is very very small.

The other driver – Science and Technology – has already given its best to the economy. There will be many trivial and incremental contributions from science and technology but the most is already out. I do not expect any major real revolutionary idea from science that will boost economic growth as it has been done in the past by computer and information technologies. Any minor advances in science will at best replace existing technologies and will not create a new economic sector.Even Robotics, Artificial Intelligence, space travel, etc.may alter our behavior but will not drastically alter the global economic parameters.

The effect of both the important drivers will wear out in a couple of decades. This change and its effect will be slow and gradual.This will be the time when we would have reaped the best harvest fromthe free market economy and science and technology. The free market can be credited to bring thebenefits of modern science to the world efficiently in the shortest time frame.

**The World Economy without Much Growth**

When science and technology diminish its contribution to the growth of the economy and the developing countries have developed to their respective potential,the world's economy will stop growing unless there are some newer drivers that we can not think about.Such equilibrium is very much desirable in many aspects of life as it is a symbol of peace and tranquillity. It will prove dangerous with a free market economy whose foundation is and its survival depends on growth. Free market and competitionwork wellwhen there are expansion and growth.How will they fare when there is unlikely to be growth we have seen in the past?

**Micro- and Macroeconomics**

During the past 75 years or so, the world has experienced steady economic growth during which life expectancy, literacy, prosperity, and several other parameters of human development have gone upthroughout the world, although the benefits varied globally. The prolonged period of economic expansion has led to a sense of complacency. Whenever required, a variety of micro- or macro-level interventions were introduced to boost the economic activities of either a sector or a local area for a micro-level problem or at the national level for macro-level issues. The complacency is that such intervention will fix the problem to the desired level and there is no need to think beyond that. The larger economic arrangement is expected to work forever. The system, therefore, developed concepts of Micro-, and Macro-economics, and the students as well as scholars of economics are content to confine thinking within such a framework.

**Need for Mega-Economics**

Micro- and Macroeconomics and their remedies or 'fixes' are necessary and temporarily sufficient in fixing local problems. They will work only as long as the larger economy structure has inherent ruggedness.

Therefore, there is a need to introduce the concept of Mega-economics, which can crudely be defined as "*study of the global economy and its dynamics over a period of century or longer time frame*." Two keywords are *Global* and *Long time*. Therefore, the study of Mega-economics includes human history and development, identifying historical as well as contemporary drivers of economic growth, psycho-social structure and governance as it pertains to economic activities, the role of science and technology and their limits, and evaluating the current pitfalls and future dangers – so that Mega-economic structure is sustainable.

"**MEGAECONOMICS**: Study of the global economy and its dynamics over a period of a century or longer time frame."

There are three key differences between Mega- and Macro-economics. [1] Mega-economics is truly interdisciplinary and requires input from sociology, psychology, public administration, and governance, along with science and technology. It requires input from every angle of human endeavor. [2] Mega-economics is unidirectional and cannot be reversed, as it is a long term and global. [3] Mega-economics is independent of the influence of any country – it is a collective manifestation of human function.

**Major Issues for Mega-Economy:**

[1] Infew years, maybe 10to 20, most of the developing countries with larger economies would have become 'developed' or at least reached near their respective economy potential. What will be the consequences on the economy of the world, when one of the two major drivers of the current world economy would have been neutralized or minimized. This is sure to happen, the time when it happens may be debatable.

[2]It has been estimated that anywhere from one-third to two-third of GDP is derived from innovation as discussed earlier [Broughel and Thierer 2019]. The quantum may be debated, but the role of science and technology in economic development during the past 75 yrs. is unquestionable. One may argue but science and technology have already given its best to the economy and one should only expect minor incremental advances from technology that may influence the economy. At least its contribution will not be as much as in the past. What will be its impact on the world economy, especially in the developed countries? The monopoly on the current technology would be diluted and usable newer technologies will be hard to come up with.

I think we have paid very little attention to the possibility of diminishing the value of these two prime drivers of the world economy. It is high time that we start thinking about this now and be prepared before the worst scenario sets in. We have talked a lot about the interdisciplinary approach to our problems but as far as the world economy is concerned, we have not begun yet. Better we start before it is too late.

It is difficult to predict the economic future of the world. What seems certain is that future will not be what it used to be. There are also few other factors which should make us very uncomfortable about the future as they are likely to complicate the situation and will take away flexibility from our response.

**[1] Our debt:**Most countries' budgetary deficit is around 3-5% of their respective GDP resulting in theaccumulated debt approximately equal to a year's GDP, and it increases every year adding to the burden of servicing the debt.(International Monetary Fund 2019). US's debt was 107% of GDP before COVID 19 pandemic. With the slowdown in the economy, reduced GDP this year, and various stimulus packages the debt is calculated to be 135% of GDP this year in the US, while the recommended limit of the national debt is 85% of GDP. IMF's Global Debt Database (International Monetary Fund 2020)shows that total global debt (public plus private) reached US$188 trillion at the end of 2018, up by US$3 trillion when compared to 2017. The global average debt-to-GDP ratio edged up to 226 percent in 2018. While some countries may have a smaller debt to GDP ratio thanthe US, the overall scenario qualitatively is very similar globally.It is not only governments, but individuals in most cases have also loan payment commitment for years to come. Accumulated debt and its servicingwill limit the flexibility of adjustment to adversity when it arises. We have seen that the temporary slowdown of the economy as during this pandemicresults in massive bankruptcies and requires massive support from the governments to keep businesses afloat.This year's pandemic of COVID-19 has exposed the venerability of our free-market economy and demonstrated that it does not take too long to weaken or even crumble the world economic framework.

**[2] Majoritarianism:**It has been a trend during the recent past that the majoritarianism in democracies or autocracy in othershas been on the rise in many countries. Such governments often exercise more power than their constitution permits and often defies many international agreements and arrangements that their predecessors had developed earlier. Examples are plenty, the USA in the past 4 years has voided many trades and security treaties developed by earlier administrations.The importance of the international forum like UNO and its agencies like WHO, in letter and spirit isdiminished, and have lesser influence ininternational affairs.

**[3] Businesses and their Philosophy:**Business houses have faced several challenges in the past few decades including fierce competition,that has narrowed their focus. Industry's focus has narrowed down to the investment return in the next quarter or at the most this year or next couple of years. To them, the global

perspective means to scan opportunity if any for the company, and social responsibility means what gives good publicity. Business houses are no longer active participants in the welfare of mankind, they are passive players looking for opportunities anywhere to earn.

**[4] Changing Social Ethos:**Market Economy has turned egalitarian society into Market Society, the price of anything has become its value. This has many consequences but for our purpose, it makes our economy less flexible to deal with unexpected adversities.

**[5] Realigning Globalization andRegionalization with local interest:** Globalization during the past few decades has helped everyone as itexpanded markets and access to technologies and their products to the rest. However, it has been seen that at times,the trend is also reversed where countries feel the need to declare "America First", "self-sufficiency or self-reliant"etc.Such practices indicate a lack of using 'collective wisdom' for collective benefit. In global economic adversity, such trends are likely to prove counter-productive.

**[6] Mother Nature:** Inthe formulation and calculations of the economy, Mother Nature is not factored in. Unknown, unpredictable natural disasterslike pandemics can strike anytime. Besides, climate change is an ever-looming crisis on the horizon.

**[7]Employment:**Employment has been at a comfortable level in most countries. The unemployment rate has been around 3-10% in most countries. This level of unemployment although it is comfortable for most countries, may not include underemployed or discouraged employment seekers. In the US this year the unemployment rate which was below 3%, jumped to 16% during the pandemic and may reach around 10% by the year-end, and may take several years to return to the pre-pandemic level.
As we go into the digital era, many of the jobs will disappear which may include sales and marketing, secretarial and office jobs, etc. We may expect that some of these categories of jobs may be shifted to other newer areas. Even if the total jobs remain the same, it is conceivable that most of the newly added jobs will be in less paying and seasonal. Impact of newer technologies like artificial intelligence on employment is uncertain but if the scenario described above plays out, in a long term there will be a significant reduction in jobs in science and technology research, in sales and marketing and several other sectors.

How such factors will influence the unfolding of the Mega-economic scenario is anyone's guess, but ignoring it is irresponsible on everyone's part.

**CoVid-19 Experience**:

The last couple of months of the CoVid-19 pandemic has taught us many things that are relevant in Mega-Economics. [1] Our economy is based on a very fragile framework and it is not as flexible as we anticipated. [2] At the international level, there is no collective will to fight the problem collectively. [3] A couple of months of the economic slowdown can create havoc locally as well as globally. [4] People and communities have become self-centered with no attributes of any international citizenry. [5] Two major economies are loggerheads with each other in accusing each other, as well as exploitingbusiness opportunities. [6] Perhaps the most disturbing revelation is that we are neither prepared for such eventuality nor do we fight it together.

What is good about this pandemic is that it is a short-term problem and the world will come out and recover its economy in a year or so. What is bad about it is that it came all of a sudden from nowhere without any warning. The crisis in Mega-economy that I elaborated earlier will be slow to settle in and may not be recoverable. That is the reason why this CoVid-19 pandemic should serve as a gentle preview of what could happen in the long run if we fail to be prepared.

## II. RECOMMENDATION:

If we take a mega-view of our economy during the past couple of centuries, major changes are inevitablybound to happen which will challenge the sustainability of the status quo. The free market economy which served us well will develop tremendous socio-economical strain as the economic growth ofthe world will slowly edge up to zero, and thescience-technology based imputes to the economy will dry up. Humans will have to learn that economy does not work in isolation. It is delicately intertwined with human life. The economy is a major mechanism in the organization of our society, but it is not the soul or even the purpose of our existence. We will have to understand such interdisciplinary dynamics to understand this change and its impact and possibly develop remedial alternatives. Neither free market nor socialism will be the answer. The quest for asustainable strategy will require that we understand the intricacies and intertwined dynamics of the economy, socio-psychology, governance, and other human functions. This has to be done at a global level and considering

theperiod of 50, 100 years, or more. There are no simple or clear answers now, but they will emerge when we focus atthe MEGA- level. One valuable asset that we have and that we should not underestimate it is HUMAN INGENUITY. The human race is known to solve problems – but here we have to establish that we can seemajor problems before it strikes and that we will be ready with possible answers.

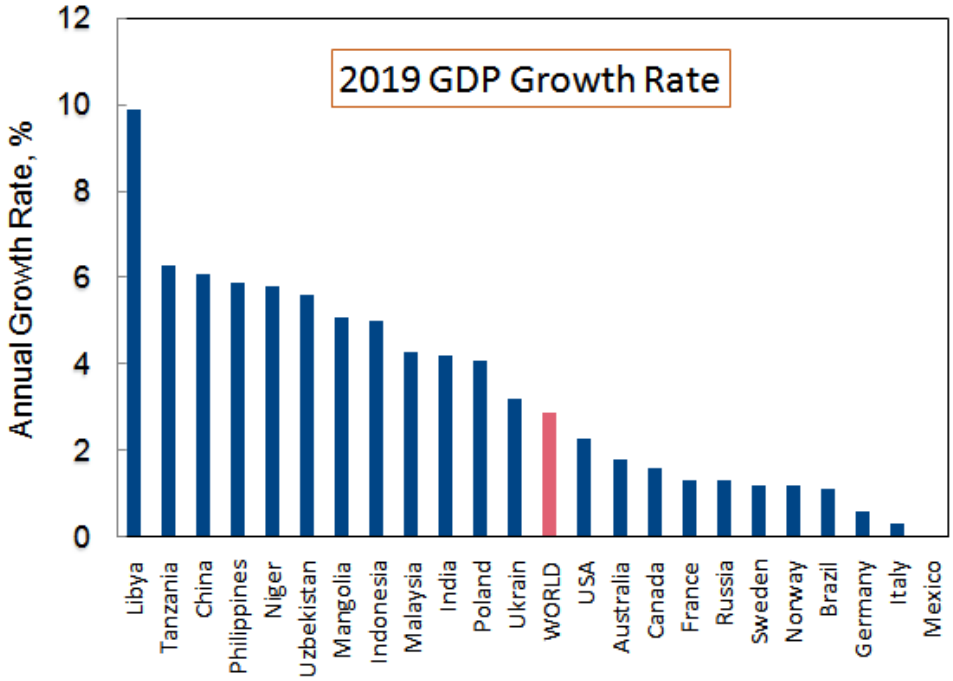


**Figure 1:** The Figure shows the annual percentage increase in GDP in 2019 as compared to 2018 for the respective countries and the world [shown in the center with a pink colored bar. The primary source of the data is the website of the IMF (International Monetary Fund: https://www.imf.org/en/Publications/]

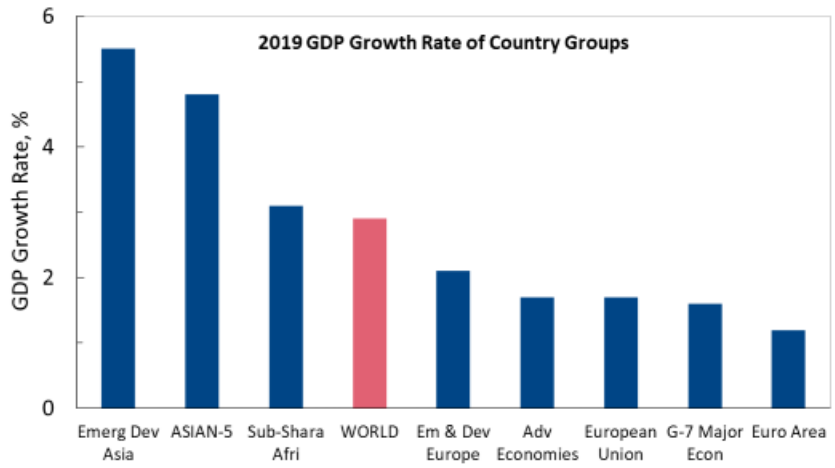


**Figure 2:** The Figure shows the annual percentage increase in GDP in 2019 as compared to 2018 for the respective groups and the world [shown in the center with a pink colored bar. The primary source of the data is the website of the IMF (International Monetary Fund: https://www.imf.org/en/Publications/]

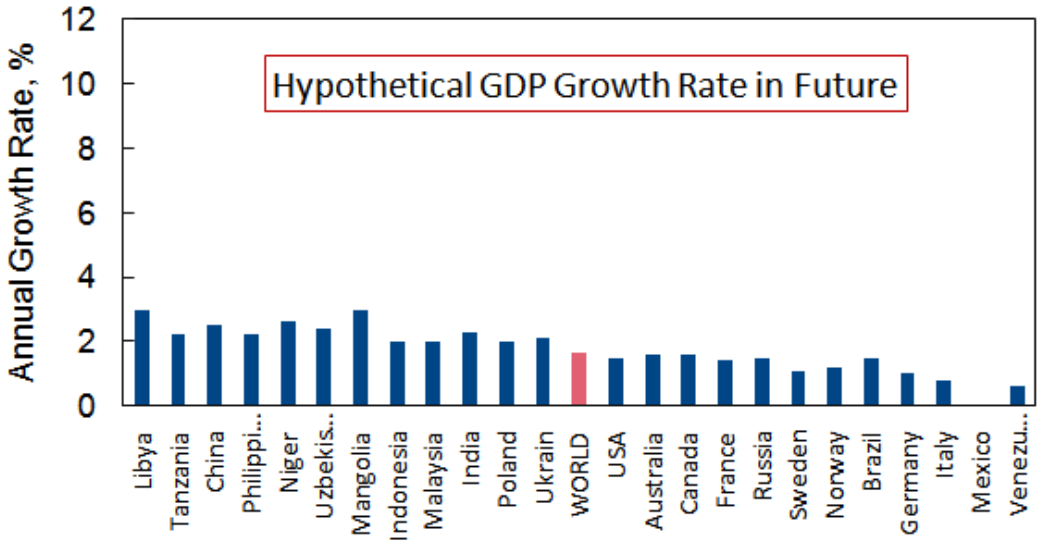


**Figure 3**: The Figure shows the hypothetical GDP growth rate of the respective countries. The numbers are not important but it is hypothecated that in the future, it maybe 15-20 years from now or sooner, the developing major economies would have developed to their potential and their GDP growth rate would be similar to the growth rate of developed countries. In short, the economic growth in most countries would have reached saturation point and their growth rate would be similar to the world average. The illustration is completely hypothetical reflecting the hypothesis presented in the paper.

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