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Whack of Next Manufacturing Revolution

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Introduction:

When I was listening to an economics lecture in school on production function, my attention was drawn to think of the future of global economic structure due to interventions of technologies in every sphere of life and, in particular, in manufacturing. The political ideologies and socio- economical principles are mostly dependent on the participation of citizens and reaping the benefits of productivity.

If we briefly examine the industrial revolution we can evaluate the behavior of societies due to induction of technologies. In an attempt to think and extrapolate the future of global economic trends, a detailed examination of story of manufacturing revolutions and stages of inputting technologies have been collected and an inference is derived from the data and trends available.

A production function is a simple mathematical expression to define the relation between input factors and output production of goods or services. O=f(i1,i2,i3……in.) where O is output, f is functional relationship and i1,i2,i3……in are the inputs needed for O. As per classical economics the Marginal productivity and Total productivity is calculated by varying one of the inputs that exists since the beginning of the productivity cycle. Today the rapid input of technologies has increased. The input technologies keep changing and doing massive disruption to the entire production function graph.

Issues with Global Growth:

Growth is not increasing productivity. The pic 1 explains that the labor productivity is decreasing over timeline of industrial revolution. It can be inferred that the induction of technology is reducing the productivity per hour worked. As the time passes on human role is becoming negligible in the productivity due to automation. As per pic 2 the growth is not growing, which is a cause for concern. Over a period there will be zero employment and minimum productivity. This shall create social tensions and conflicts. The question arises now on how to handle such a situation? If we see the history of the growth, the times of big growth is always initiated by big manufacturing revolution. It happened three times in every fifty to sixty years during 20th and 21st century.

The steam engine in the 1920, mass production model in the beginning of 20thcentury, first automation wave in 1970s. The manufacturing revolutions created huge growth in our economy because they have huge productivity improvements. More we put into economy more the productivity. The global economies have changed due to unavailability of manufacturing revolutions. In search of cheap labor in the production function, the classical business economics have driven the production to the eastern countries. It has eventually changed the social and geopolitical situation of the world. The reduction in the cost of logistics, latest communication technology and availability of cheap labor forces has made the south east a destination for both services and manufacturing.

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There was a look out for cheap production functions such as, mass production, cheap labor and land, increased size of factories etc. On the other hand, the successful and transformative information revolution had been used in logistics, analytics, CRM tools, enterprise resources enhancement, communication, and ease of life. This powerful tool has to be concurred with the manufacturing technology. The emergence of technologies like, Internet of Things, Robotics, Artificial Intelligence, Communications and computation tech and 3D printing etc have paved the way for another manufacturing revolution. This is a big boom. The convergence of existing manufacturing and technological innovations is emerging as the fourth manufacturing revolution.

Influence onGeo political, Socio- economics:

The new disruptive technologies have created a second economy, a virtual and autonomous one, and this is certainly true. I believe the main feature of this autonomous economy is not merely that it deepens the physical one, but that it is steadily providing an external intelligence in business. This intelligence is not about human workers but externally aided by virtual economy's algorithms and machines. Business and engineering and financial processes can now draw on huge "libraries" of intelligent functions and these greatly boost their activities—and bit by bit render human involvement obsolete.

I argue that this is causing the economy to enter a new and different era. The economy has arrived at a point where it produces enough in principle for everyone, but the means of access to these services and products, jobs, is steadily tightening. The new manufacturing revolution is removing the limitations of production but the real issue of distribution of production and wealth is predominantly increasing. Everything from trade policies to government projects to commercial regulations will in the future be evaluated by distribution. Politics will change the Keynesian economic thought, free-market beliefs will change, and social structures will change.

The more technological entanglement in manufacturing results to lesser the compensations. (Pic3) The gap between the productivity and real compensation started widening from the technology driven boom times. The advanced robots will complement workers by 2020. It has already started, Amazon is using robots for logistic works. Last year was the biggest online shopping ever in US history. Additive manufacturing, 3D printing are another area. For example Aerospace manufacturing is complex one and capital intensive. Now aerospace industry is doing this with 3D printing which is resulting in 40% growth of production of the highest quality.

Conclusion:

Every industrial revolution has definitely replaced existing working labor but at the same time it created new employment and new rich and perhapsneo rich classes in some societies .The economic inequalities have widened especially in the third world. But in this revolution the rate of replacement of labor force is more since technologies are replacing human in repetitive jobs as well as intuitive jobs. The good news is that the future technologies are cheaper and create smaller factories. This shall facilitate the western countries to take back manufacturing from the third world because manufacturing in the same geographical area can give a customized product with high efficiency and cheaper price.

It should not be problem to the third world too because the third world has to serve its large domestic demands. The demands in third world shall abnormally increase due to large production at very lower prices. This shall transform geopolitics and global economics. The governments which cannot manage it by imparting new manufacturing technologies may face civil unrest due to loss of jobs because of the mismatch of skill-sets with that of the future requirements. This new revolution shall bring monumental change in urbanization, technology, demographics, and globalization.

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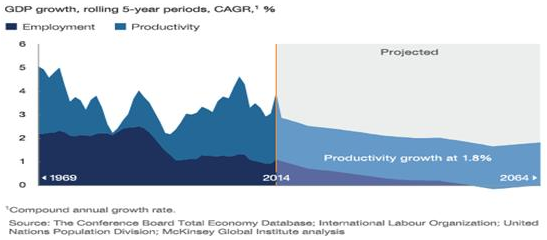
The political-leadership challenge triggered by these trend breaks is made even more urgent by the growing number of outlets for public expression and participation. The demand on governments for efficient public services in shorter time frames, of consistent quality, and often at lower cost, is rapidly increasing. In times of tightening budgets, short election cycles, and instant feedback loops, the room for error by public-sector leaders is small. There is a big challenge to the future political leadership to face public demands caused by the fourth manufacturing revolution.

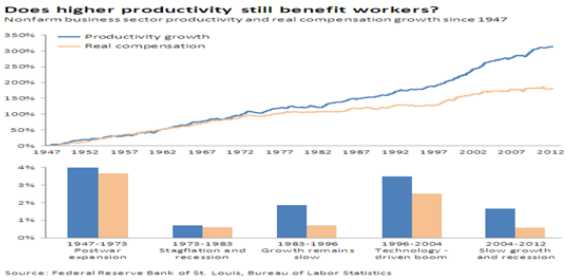
There shall be geo political challenges and the global economic structural challenges, employment and re-employment challenges, civil unrest due to unavailability of work and free availability of cheap products and services. The concept of Universal Basic Income may become inevitable in all societies. Governments and citizens have to brace themselves for technological disruptions. Global communities have to take note and prepare the citizens, educate and encourage them towards creativity side.

Even robots need maintenance and repairs, design improvement, customization etc. So, maybe it's time to focus to newer human ambitions like inter planetary engineering and exploitation of quantum mechanic technologies for better human life in this planet and colonies coming up in the inter planetary systems.

PIC 1



PIC 2



Pic 3