

India in a Middle-Income Trap: Policies and Strategies

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Abstract

The notion of a ‘middle income trap’ has gained currency in recent years. Some emerging economies like India have already attained the status of a ‘middle income nation’ according to the World Bank classification based on GNI per capita. The worry is that whether India will be able to graduate to the ‘high income nation’ thus escapes the middle income trap or remain in the trap. Its fear is not completely baseless.

This paper makes an attempt to examine what is this notion of middle income trap and what are its characteristics? Why India can remain in this trap. If India has to escape this middle income trap what are the key policies and strategies that India needs to adopt and design? Do social sectors like health, education play any important role for India to escape this trap?

The Research methodology involves in-depth analysis of the concepts and characteristics of the middle income trap and uses the graphical approach to understand the scope of middle-income trap with respect to India. Since GNI per capita is a broad indicator of locating whether a country is in middle income or high income, therefore it is necessary that we look at GNI per capita along with other dimensions such as the level of education and healthcare and how they impact gross national income (GNI) of India and to what extent these factors influence India’s scope of escaping the trap or remain in the trap. While taking this approach as a part of research methodology, certain variables have been used where in, total expenditure on health, carbon emissions and numbers of educational institutions are the independent variables, and GNI is the dependent variable. A regression analysis has been carried out to gauge the impact of different dimensions.

The findings suggest that there is a significant relationship between GNI and expenditure on health. It can be said that better the health of people in the economy, better would be the GNI per capita. With 1% change in expenditure on health in the total GDP, the GNI per capita in India is changing by 15.524% in the same direction. The paper further found out that with 1% change in number of educational institutions, the GNI per capita in India is changing by 0.0154%, in the same direction. Also, with 5% level of significance, the p-value for number of educational institutions is 0.038, which is less than 0.05, thus stating that there is a significant relationship between GNI and number of educational institutions in the country. Factor like carbon emission is not significantly impacting the change in GNI per capita in the Indian economy. The paper makes certain recommendations such as focus on indigenous innovation, increased level of investments, incentive for pro-poor early stage technology development, skill development and digital India are some of the important initiatives which can gravitate India to the next level and possibly help India to escape the middle income trap.

Key words: middle income trap, GNI per capita, social sector, innovation

JEL classification: I3, O1, O2, O3

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Introduction

Current global economy is showing some signs of recovery. Registering a 3.1 per cent of growth in 2015, it is expected that world growth would inch forward to touch 3.4 per cent in 2016 and 3.6 per cent in 2017.¹ Amid such unimpressive but modest recovery in world growth, Indian economy was comfortably ensconced by registering 7 per cent plus growth in 2015 and will continue to register 7.5 per cent in 2016-17.² India has emerged as the fastest growing major economy in the world. This was possible due to considerable improvement in India's economic fundamentals such as strong governmental economic and financial reforms; central bank's astute handling of inflation, resilience shown by India's services sector, the support extended by benign global commodity prices and easy management of foreign exchange reserves.

India is currently recognised a bright spot. India's gross domestic product (GDP) at factor cost at constant (2011-12) prices 2015-16 is Rs 113.5 trillion (US\$ 1.668 trillion), as against Rs 105.5 trillion (US\$ 1.55 trillion) in 2014-15,³ registering a growth rate of 7.6 per cent. The economic activities which witnessed significant growth were financing, insurance, and real estate at 11.5 per cent and trade, hotels, transport, communication services at 10.7 per cent. According to a Goldman Sachs report released in September 2015, India could grow at a potential 8 per cent on average during fiscal 2016 to 2020 powered by greater access to banking, technology adoption, urbanization and other structural reforms.

All these economic indicators are extremely encouraging for an emerging economy like India. But ,what about its social indicators? Are they as encouraging as economic indicators? When one looks at the data, it is noticed that India's rank remains unchanged in the Human Development Report (HDR) 2014, at 135, out of 187 countries, despite some acceleration made on its road towards achieving the sustainable development goals (SDG).⁴

Instead of having a significantly higher gross national income than other countries in the region like Bangladesh (142) and Pakistan (146), India's ranking remained low because of poor social indicators. While it still managed to remain marginally above the two countries, India suffered the ignominy of having the lowest life expectancy (66.4 years) and the lowest mean years of schooling (4.4 years) in the South Asian region.⁵

According to the UN HDR 2014 India also has the lowest Human Development Index (HDI) among all BRICS nations, with its life expectancy only higher than South Africa which is still

¹ World Economic Outlook Update, IMF, at <http://www.imf.org/external/pubs/ft/weo/2016/update/01/> accessed on May 22, 2016.

² Economic Survey 2015-16, Ministry of Finance, Government of India

³ Central Statistical organization, Ministry of Statistics and Programme Implementation, Government of India

⁴ Earlier it was known as millennium development goals (MDG). On September 25th 2015, countries adopted a set of goals to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years.

⁵ UNDP, HDI Report 2014

grappling with second generation HIV-AIDS patients. Russia, Brazil and China are in the high HDI category with rankings of 57, 79 and 91 respectively.

A look at the social indicators suggests that India's performance has been abysmal compared to its neighbours. India is currently placed in middle income group. As of July 2015, low-income economies are defined as those with a GNI per capita, calculated using the *World Bank Atlas* method, of \$1,045 or less in 2014; middle-income economies are those with a GNI per capita of more than \$1,045 but less than \$12,736; high-income economies are those with a GNI per capita of \$12,736 or more. Other neighbouring nations such as Bangladesh, Bhutan, Myanmar, and Pakistan are also in the same category, despite having their economic indicators much lower than India's and economically much weaker than India.

Then, why such a paradox in the case of India? Many emerging economies in Africa and South Asia are found to be in the middle income group. Will these countries including India graduate to a higher income group or will they continue to remain in the middle income category, otherwise known as 'the middle income trap'⁶?

The notion of a 'middle income trap' has gained currency in recent years. Serious academic attention has been drawn on the policies that facilitate economic growth in middle income countries. Region like East Asia which is home to a number of economies have managed to graduate from middle-income status to be classified into the high income group of economies. Japan, South Korea, Taiwan and Singapore all have caught up to technologically advanced countries. These people enjoy high incomes and high consumer satisfaction.

Yet world-wide only 13 out of 101⁷ middle-income countries have been able to move to high-income status since 1960. China and other countries in Southeast Asia have succeeded in emulating rapid catch-up growth out of poverty but have yet to make the transition to high income. Thailand and Malaysia appear stuck in the middle. India, the Philippines and Indonesia are at a lower level of development but are growing fast. Policymakers are already beginning to contemplate how they can join the ranks of the world's advanced economies.

This paper aims to examine why India is stuck in the middle? If India has to escape middle income trap what are the key policies and strategies that India needs to adopt and design? What is middle-income trap; and what are the characteristics of middle-income trap? What factors led India to rise from low-income to middle-income nation? How would India energise the social sector, i.e. health, education and other social schemes to empower the citizens to develop long term employment and sustainable livelihood?

Review of Literature

⁶ The term "middle-income trap" was apparently first used by Gill and Kharas (2007); see also Commission on Growth and Development (2008). "Middle-income economies" are defined in accordance with the World Bank's classifications by income group, as given by <http://data.worldbank.org/about/country-classifications>.

⁷ the World Bank (2012) estimates that of 101 middle-income economies in 1960, only 13 became high income by 2008—Equatorial Guinea, Greece, Hong Kong SAR (China), Ireland, Israel, Japan, Mauritius, Portugal, Puerto Rico, the Republic of Korea, Singapore, Spain, and Taiwan, China

A number of studies have been conducted on the issue of middle income trap and how countries are stuck in the middle. What kind of impact it has on human development. How different governments have acted upon certain key policies and strategies to accelerate the growth of the economy so that countries can escape the middle income trap and reach the high income status. Some of the studies conducted have highlighted the impact of economic growth on socio-economic factors such as health, education, employment, sanitation, which otherwise become huge challenges for the country to escape this middle income trap.

Pierre-Richard Agénor, Otaviano Canuto, and Michael Jelenic (2012) in a seminal work has observed, since the 1950s, rapid growth has allowed a significant number of countries to reach middle-income status; yet, very few have made the additional leap needed to become high-income economies. Rather, many developing countries have become caught in what has been called a middle-income trap, characterized by a sharp deceleration in growth and in the pace of productivity increases. It further opines that ‘middle-income traps’ are stable low-growth economic equilibriums where talent is misallocated and innovation stagnates. Policies that can counteract middle-income traps are a number of public policies that governments can pursue, such as improving access to advanced infrastructure, enhancing the protection of property rights, and reforming labour markets to reduce rigidities—all implemented within a context where technological learning and research and development (R&D) are central to enhancing innovation. Such policies not only explain why some economies—particularly in East Asia—were able to avoid the middle-income trap, but are also instructive for other developing countries seeking to move up the ladder and reach high income.

In another important study by Barry Eichengreen, Donghyun Park, and Kwanho Shin (2011) where they explained rapidly growing economies slow down significantly, in the sense that the growth rate downshifts by at least 2 percentage points, when their per capita incomes reach around US\$ 17,000 in year-2005 constant international prices, a level that China should achieve by or soon after 2015. In some circles, the assumption is pervasive that China will continue to grow rapidly. Equivalently, it is assumed that China will be able to avoid the middle-income trap and jump to upper-middle-income-country status. But it is worth recalling that only a small group of countries successfully completed this transition in the second half of the 20th century, whereas a much larger group, in Latin America for example, are still struggling to escape the middle-income trap. Given China’s huge size and daunting array of structural challenges, completing this transition will be rather difficult.

Dani Rodrik (1999) argues that domestic social conflicts are a key to understanding why growth rates lack persistence and why so many countries have experienced a growth collapse since the mid-1970s. It emphasizes, in particular, the manner in which social conflicts interact with external shock on the one hand, and the domestic institutions of conflict-management on the other. Econometric evidence provides support for this hypothesis. Countries that experienced the sharpest drops in growth after 1975 were those with divided societies (as measured by indicators of inequality, ethnic fragmentation, and the like) and with weak institutions of conflict management (proxied by indicators of the quality of governmental institutions, rule of law, democratic rights, and social safety nets).

In another important study entitled “Schumpeterian Analysis of Economic Catch-up: Knowledge, Path-Creation, and the Middle Income Trap”, Lee (2013) argues despite economic development, aid, and policy changes in line with the prescription of Washington Consensus some countries are unable to catch up with the advanced countries’ development. Poverty remains the main hindrance and is widening year after year. Reason why good policy prescription like opening up and integration with the world economy is somewhat failing is due to poor institutional conditions such as lack of corporate governance, insecure property rights and absence of rule of law. Lee further highlights the significance of ‘second generation’ reforms which are somewhat redefined as augmented Washington Consensus and replacing the old Washington Consensus. They include anti-corruption law, social safety nets, financial codes and standards, independent central bank functioning, inflation targeting etc.

Some of the studies indicate that countries that escaped middle income trap and made it into the upper-middle income group had a more diversified, export basket at the time they were about to jump than those in the lower-middle-income trap today, like South Korea and Japan. Korea was able to gain comparative advantage in its balance of trade significantly and was well connected to Malaysia and the Philippines which are major importers of electronics from South Korea.

A study on “Tracking the Middle-income Trap: What Is It, Who Is in It, and Why?” by Jesus Felipe, Arnelyn Abdon and Utsav Kumar (2012) states that the median number of years that countries spent in the lower-middle-income and in the upper-middle-income groups are 28 and 14 years, respectively, before graduating to the next income group. It also stated that a country that becomes lower-middle-income has to attain an average growth rate of per capita income of at least 4.7 percent per annum to avoid falling into the lower-middle-income trap and emphasized upon encouraging exports of commodities with comparative advantage to move up to next income category. However, the paper didn’t focus on any other criteria avoid the middle income trap, and reduce the duration of staying at same income category, once average growth rate of per capita income of 4.7 % is attained.

A study on “equity and health sector reforms” by Margaret Whitehead, and Timothy Evans (2001) emphasized on problems related to development of health sector in low and middle income nations. It specifies the introduction of user fee in public services and growth of out-of-pocket expenses for services posing a major threat of poverty trap. But, these elements can impact the growth of per capita income at macro level, causing a problem for the nation to move to higher income category.

A study on “confronting the middle income trap” by Eva Paus (2012), talks of a ‘capability approach’ that suggests growth can be attained only when it is undergirded by the development of technological capability that results in broad-based upgrading. It further underscores the need for exports of commodities of comparative advantage, but has moved a step forward to encourage exports of skill based commodities which is possible on developing capabilities approach.

Further, there are debates to include other parameters in world developments indicators database. Kaushik Basu⁸, chief economist, World Bank is of the opinion that it is important to include in it the preliminary estimates of purchasing power parities, Gross Domestic Product(GDP), balance of payment, military expenditure, CO2 emissions, air traffic, foreign direct investments, etc.

While one has dealt with a plethora of literature to find out why some of the countries remain in so-called middle income trap for long, it is not easy to locate answer to such problem. Not many studies have been carried out especially in relation to India to explain why India will remain in the middle income trap for some time or how it can attain higher economic status to escape this trap. The issues that are deeply concerned to this challenge are not straight jacketed or simple rather they are extremely complex and intricate in nature. Analysing this body of literature, it is apparent that it's not just unleashing favourable or complementary economic reforms or designing polices or opening up to the outside world, and reforming country's trade policies or external sector or financial sector reforms that allow the country to move to a higher economic status and thus escape this middle income trap. Rather it has several factors such as level of education, healthcare facilities, GNI per capita, infrastructure and social policies that could play a pivotal role in determining a country's social and economic status and thus allow an economy to reach the next level of development or escape from the middle income trap. Challenges therefore are many and varied, and could be far-fetched.

This paper therefore makes an attempt to examine the questions that are raised earlier in specific relation to India and seek to find out some suitable answers that can throw some light on this issue of middle income trap.

Research Methodology

The Research methodology involves in-depth analysis of the concepts and characteristics of the middle income trap and uses the graphical approach to understand the scope of middle-income trap with respect to India. The study tries to analyse by taking into account the level of education and healthcare and how they impact gross national income (GNI) of India, which is considered as a key indicator for judging a country's economic status. While taking this approach as a part of research methodology, certain variables have been used where in, total expenditure on health, carbon emissions and numbers of educational institutions are the independent variables, and GNI, is the dependent variable. In addition, analysis will be carried out to examine the relevance of various suggestions and policy initiatives that are undertaken to avoid the middle income trap and aim for higher growth.

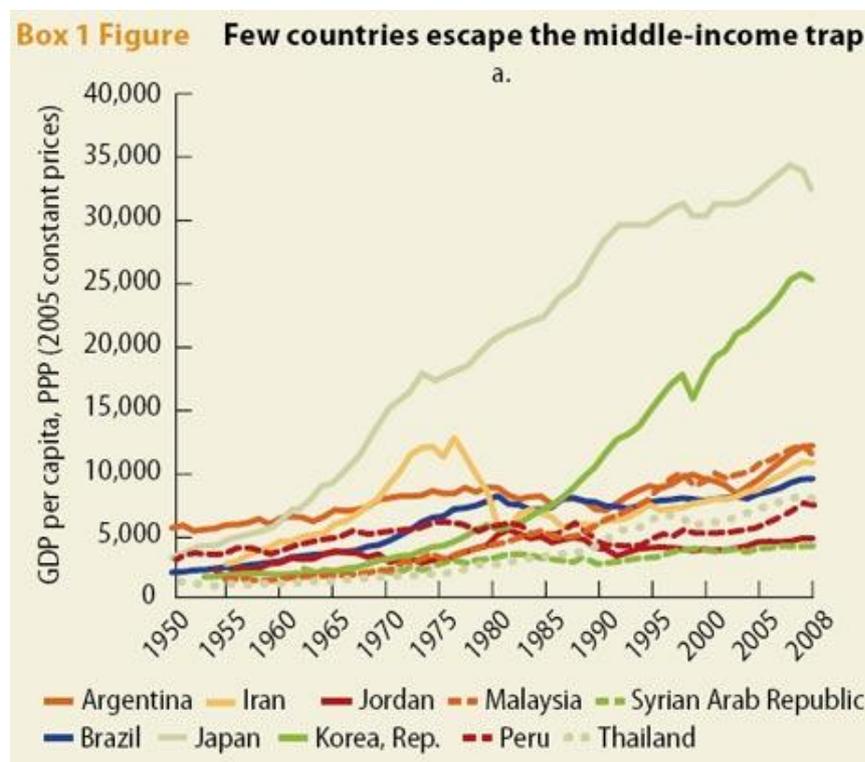
Since it is difficult to cover every other aspect of the economy that impacts GNI, the scope of the study is limited to examining only a few variables. The paper draws certain primary

⁸ <http://www.climatechangenews.com/2015/01/07/world-bank-urges-leaders-to-use-oil-crash-to-slash-subsidies/>

information from the government sources, but adequately depends on secondary sources such as data, based on which, further inferences and interpretations have been made. As education forms an important variable, attempt has been made to include educational institutions such as universities, colleges, secondary institutes and research centre. However, primary and middle schools are not included as part of analysis.

Issues & Challenges: An In-depth Analysis

Post World War II witnessed some countries managing to reach middle income status easily while only few experienced high income status.⁹ Middle income countries reached certain level of standard of living, but they were not able to fully breakthrough to the fully developed and fully wealthy countries. Box 1 below shows the countries that attained middle and high income status in post-World War II phase. The graph explains that there has been an increase in the GDP per capita of different nations since 1950 till 2008. It shows that Japan and South Korea have substantially broken through to fully wealthy nations group.



But, many other countries reach up to a certain level, and more or less remain within that level, as their growth rates have slowed down after the initial increase it witnessed hence, these countries could not fully become developed and reach higher income. This has happened because many of them witness growth slowdown and remained in the middle income trap. These growth slowdowns are due to reduction in productivity whereby 85 per cent of the slowdown in the rate of output growth. This is explained by a slowdown in the

⁹ Middle-income economies” are defined according to World Bank’s classifications by income group, as given by <http://data.worldbank.org/about/country-classifications>.

rate of total factor productivity growth—much more than by any slowdown in physical capital accumulation (Eichengreen, Park, and Shin 2011). Middle income traps hence are not simply the natural implication of decreasing marginal rate to investment in physical capital as a simple neoclassical growth model would suggest.

Growth slowdown in developing economies can be commonly attributed to the Lewis¹⁰-type of development process. Countries tend to grow fast initially when they the world economy is in a boom and they efficiently employ their advantages in terms of capital, labour and technology. Once they reach high growth, no doubt their per capita income goes up, but many of them find it difficult to sustain such growth because their initial advantage vanishes and countries require new sources of growth.

In a paper “When Fast Growing Economies Slow Down” by Barry Eichengreen, Donghyun Park and Kwanho Shin dated 14 March 2011, they used specific statistical figures and found that, by the time countries get to the general range of US\$17000 per capita in a year, the growth rate is, on an average, falling from 5.6% to 2.1%. They also found that is especially likely for societies, getting older and for countries, which have earlier generated growth from artificially real low exchange rates.

There is not any good scientific understanding of middle income trap, but there are number of plausible hypotheses which explain what exactly goes wrong with the economies and they are unable to get out of this handicap. Some of these factors are discussed below.

- **Rise in wages** – As a nation becomes wealthier, the level of wages rise, and the country is no more able to compete in world market and remain simply a place having abundance in cheap labour.
- **Labour migration running dry** - Countries are able to generate a substantial proportion of economic growth by transferring labour resources for quite unproductive countryside to productive cities. This is simply a transfer of human capital, but this transfer cannot go on forever. It’s even costly to transfer labour to cities and make them much more productive, than to simply transfer people from countryside to city.
- **Slowing demographics**- There is also a possibility that there is a shift in population from working class to retired class, as people get older. Thus, there is lesser number of energetic and young people entering the labour force.

¹⁰The dual-sector model is a model in developmental economics which is commonly known as the Lewis model. It explains the growth of a developing economy in terms of a labour transition between two sectors, the capitalist sector and the subsistence sector. The Lewis dual economy model is widely recognised in development economics for its profound explanatory power and applications in economic development. It is detailed in the publication, “*Economic Development with Unlimited Supplies of Labour*” by Arthur Lewis in *The Manchester School*.

- **Moving up the value chain-** A nation can somehow shift the potential of growth from one sector to other, but it is very difficult for the nation to become the next innovator to the same product. Since, it remained dependent on other alien suppliers; its inability to move up the value chain can lead to middle income trap.
- **Innovation-** An economy can get wealthier, but it depends increasingly on innovation, but innovation is much harder than imitating what other already developed nations do, but at lower wage levels. As McKinsey stated in a survey, that the success of innovation can be seen through its impact on productivity, as it is the only sustainable engine of wealth and job creation.

As of 1 July 2015, low-income economies are defined as those with a GNI per capita, calculated using the *World Bank Atlas method*,¹¹ of \$1,045 or less in 2014; middle-income economies are those with a GNI per capita of more than \$1,045 but less than \$12,736; high-income economies are those with a GNI per capita of \$12,736 or more. There is a list of 107 nations included in the category of middle income nations, of which 53 are lower middle income nations, with GNI per capita in the range of \$1045 to \$2012; and 54 upper-middle income nations, with GNI per capita in the range of \$2012 to \$12736 as per year 2014. India comes into the category of lower middle income nations with GNI per capita of \$1570 in year 2014, as per World Bank statistics.

Generally, the problem of getting stuck into middle income comes for the nations whose GNI per capita has crossed \$4000. There have been talks of India facing a middle income trap, even when the Indian economy is placed in the category of middle-middle income group.¹² Indian economy has been growing at the rate of above 5% per annum since last 5 years; and it has also moved up in global competitiveness ranking from 71 to 55.

There are many factors which Indian economy needs to pay serious attention to, but pays scant attention, due to which it may face middle income trap. Some of these factors are discussed in detail below.

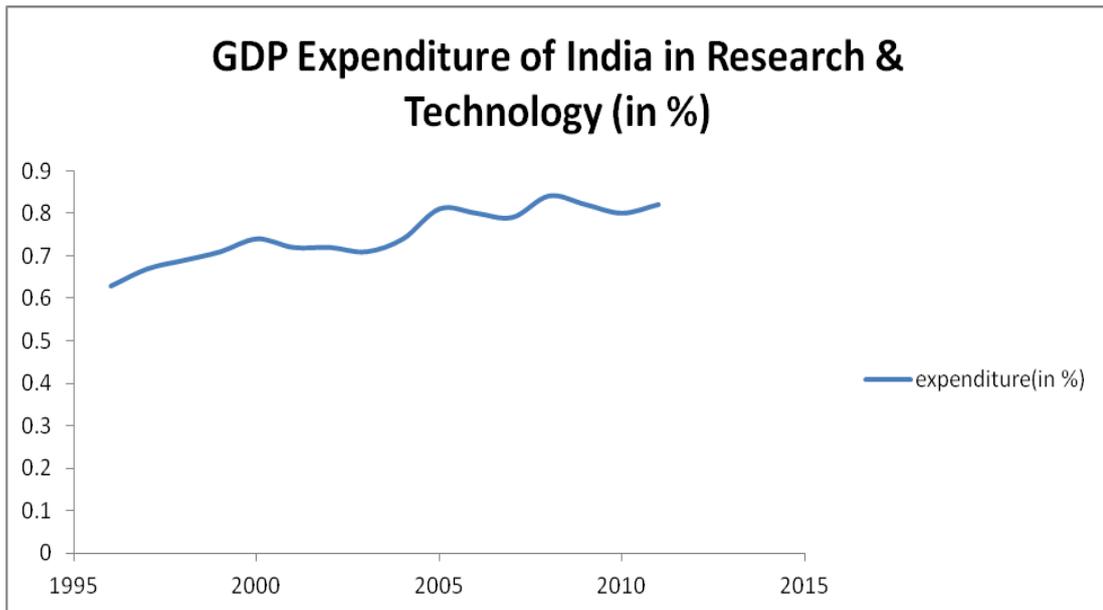
- **Lack of focus on innovation-** Around \$1.4 trillion were spent globally on R&D, of which India's contribution was only 2.1 per cent compared to over 12.6 % by China. Also, no Indian university figures in the list of top 200 universities of the world. Not even one per cent of students pursuing higher studies opt for research-oriented courses, besides, about 75-80 per cent of India's R&D spending comes from public enterprises, while in OECD countries, more than 75 per cent comes from private

¹¹ The Atlas conversion factor for any year is the average of a country's exchange rate for that year and its exchange rates for the two preceding years, adjusted for the difference between the rate of inflation in the country and international inflation.

¹² Lee, Jong-Wha, and Kiseok Hong. 2010. *Economic Growth in Asia: Determinants and Prospects*. Unpublished manuscript. Manila: Asian Development Bank and Ewha Women's University.

enterprises.¹³ Why there is not much focus on innovation? A variety of factors are responsible for such dismal level of innovation in India.

Going by the different statistics, between 2004 and 2012, Indian gross domestic expenditure on research and development (GERD) to GDP stagnated at around 0.9%. Such low investment in R & D has crippled many of the imagination that young demographics in India have aspired for. This conservative mind set and uninspiring policies have resulted in aspiring minds to look for better opportunities in foreign land.



(Source: World Bank Data)

This development has led researchers as well as scholars to migrate to advanced countries such as USA and Europe. The nation faces serious brain drain whose loss is resulting in India's global ranking and scientific discovery. Whereas having similar demographics China¹⁴ has wisely invested in R&D and its investment in R&D has been increasing consistently. R& D to GDP ratio in China is more than India's. India's investment in GDP remained almost stagnant or rather reduced.

Further, socio-political issues of corruption, bureaucratic inefficiency, rising infrastructural deficit, inadequate fiscal initiatives for intellectual property (which is a major driving factor for innovation) have limited the scope of innovation. It can be supported by the fact, that India is ranked 29 out of 30 countries (ahead of only Thailand) in the 2015 Global Intellectual

¹³<http://www.businesstoday.in/opinion/perspective/india-jumps-in-the-global-competitiveness-index-reasons/story/224285.html>

¹⁴ China spent US\$409bn in 2015 and has 2.1% of its GDP, whereas India spends US\$72bn and has 0.88% of its GDP, available at <http://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS>

Property Centre index.¹⁵¹⁶ India's education system is failing to close the gap between industry and academia. Very few PhD theses in technical institutes are linked to industry and innovation, according to S. Srinavasa Murthy, professor, IIT Delhi.¹⁷

Though these issues are now being taken seriously under various schemes of the New NDA government, a marginal sign of improvement is visible.

- **Incompatibility in rise in productivity and wages-** The share of real wages has been rising slowly since 2007. A host of factors might be responsible for such issue. However an important factor, among them is the development of NREGA. Under the scheme of NREGA, the women participation in the labour force has gone up which subsequently has pushed up rural wages, but has not helped much in productivity. On the other hand, it could have aided industrial wages to register possibly higher industrial productivity. “While the government’s plan to increase the minimum wage will be welcomed by workers and trade unions, if not matched by increases in productivity, this could hit overall employment growth, which is already quite poor.” Considering the present statistics in apparel export Sector, countries like Bangladesh and Vietnam are doing better than India. Bangladesh and India have roughly the same levels of productivity, but its wages are much lower and workers are allowed double the overtime India allows.¹⁸ But the share of productivity has been considerably constant owing to its ‘sticky’ nature compared to the volatility of profits in the post boom era¹⁹.
- **Low investment ratio-** In 2015 the investment to GDP ratio for India has been 33.2.²⁰, which is lower than developing Asia by 5 percentage points. Data are based on individual countries' national accounts statistics. Investment was lower because the world economy was largely witnessing a lower global growth prospects and a lack of structural confidence related to business environment was contributing to low investment. This led not only to lower the short-term interest rates, but also lower the long-term interest rates. Currently Indians save more and spend less as a result the economy experiences low productivity. Referring to such preference by people, RBI governor, Dr. Raghuram Rajan referred to ‘the helicopter drop of money’²¹ which can directly be invested in public projects or can be distributed among the public. However, the gap in savings and investments has led to a current account deficit, which is USD 0.3 billion in the first quarter of year 2016. This not only reflects

¹⁵ measures commitment to innovation via IP protection efforts

¹⁶[https://www.pwc.in/assets/pdfs/industries/education/publication/india-higher-edu-sector-\(251012\).pdf](https://www.pwc.in/assets/pdfs/industries/education/publication/india-higher-edu-sector-(251012).pdf)

¹⁷ <http://www.ncee.org/wp-content/uploads/2013/10/India-Education-Report.pdf>

¹⁸ measured in standard allowed minutes (SAM) — according to a study by the Boston Consulting Group (BCG)

¹⁹ www.undp.org/content/dam/india/docs/human-development/exclusion-and-inclusive-growth.pdf

²⁰ http://www.economywatch.com/economic-statistics/economic-indicators/Investment_Percentage_of_GDP/

²¹ The Economic Times, May 8, 2016- Helicopter drop of money' is used as a metaphor for an unconventional monetary policy tool that typically involves central banks printing large sums of money and distributing it directly to the public or investing in public projects.

downward revised growth potential, but also poses serious challenges for central banks across the world to grapple with problems of low productivity and low investments.²²

- **Slow manufacturing growth**- Manufacturing output is seen declining 0.2 per cent in 2013-2014 compared with 1.1 per cent growth the previous year, dragging down the overall economy. Production of consumer durables such as refrigerators and washing machines declined in the December quarter from the previous three months. Production of machine tools has also fallen, indicating lower capital expenditure.

% GROWTH OVER CORRESPONDING PERIOD OF PREVIOUS YEAR	DEC 13	DEC 12	APR-DEC 2013/14	APR-DEC 2012/13
IIP	-0.6	-0.6	-0.1	0.7
Mining	0.4	-3.1	-1.8	-1.8
Manufacturing	-1.6	-0.8	-0.6	0.6
Electricity	7.5	5.2	5.6	4.6

Source: Ministry of Statistics and Programme Implementation

- **Poor labour market conditions**- The labour market is highly segmented along gender and caste lines. There is a high demand-supply skill gap in India, e.g. the secondary and tertiary education systems are not producing graduates with the skills needed by industry. Also, there are large regional differences in the Indian labour market. Regional unemployment rates, for example, varied from 0.3% in Mizoram to 20% in Lakshadweep. With a ratio of vocational students to 15-24 year olds at 0.3%, it is lower than the average for South Asian countries.
- **Infrastructure and structural weakness**- Many Indians lack basic amenities and have lack of access to running water. Indian public services are collapsing under the strain of bureaucracy and inefficiency. Over 40% of Indian fruit rots before it reach the market. This is one example of the supply constraints and inefficiency facing the Indian economy. Preventive and primary healthcare have been marginalized, with the focus shifting to curative tertiary care, higher importance of clinical medicine, and extremely high dependence on clinical investigations. 50% of Indians don't have proper shelter; 70% don't have access to decent toilets, 35% of households don't have a nearby water source, and over 40% of these same villages don't have proper roads connecting them. The meagre budgetary allocation to arrest infrastructure problems in India has so far proved to be too little to keep pace with other areas of business development in India. Moreover, the tremendous growth of Indian IT,

²² The Economics Times, September 4, 2014, "Don't be scared of volatility; low investments a problem."

telecommunication, manufacturing, and pharmaceutical industries has consumed the limited world class urban infrastructure available in India.

Despite so much of hindrances, India has been somewhat able to move from category of low income nations to middle income nations. It can be supported by the fact that the economy has moved to 55th position in global competitiveness index, 16 positions up from 77th rank.²³

During the slowdown in world economy in year 2008 and 2009, the GNI per capita of Indian economy was still rising, which can be depicted from the figure below.

Year	GNI per capita(USD)
1995	380
1996	410
1997	420
1998	420
1999	450
2000	450
2001	460
2002	470
2003	530
2004	620
2005	730
2006	810
2007	950
2008	1030
2009	1150
2010	1260
2011	1410
2012	1500
2013	1530
2014	1570
2015	1570

(Source- World Bank.org)

This dramatic success is largely attributable to the overriding domestic consumption model that India follows and its less dependence on external sector largely on exports as followed in the last three decades by China. India's financial system was not actively integrated to world economy. These policies allowed India to remain less negatively impacted by the global financial crisis. It allowed India to remain steady in its growth prospects by lowering the cost of borrowing for industry, increasing consumer demand in domestic market and lowering home loan rates in India.

²³<http://reports.weforum.org/global-competitiveness-report-2015-2016/economies/#economy=IND>

All this helped India to remain in middle income category of nation. This also looks to an extent buoyed by the change in the government from UPA to NDA whose liberal policies and pro-business attitude and sentiments provided fresh momentum to the economy.

India has also exhibited improvement in establishing institutions that take care of the governance. The quality of India’s institutions has been judged more favourably (60th, up 10), although business leaders still consider corruption stances and lack of innovation to be the biggest obstacle to do business in the country. As per doingbusiness.org, the nation has improved its ranking from 134 to 130, for ease of doing business, but its pillar of paying taxes has worsened from 156th to 157th rank among 189 economies.

Going by the following table, it can be observed that India’s performance in the macroeconomic stability has improved (91st, up 10). This has been possible due to lower commodity prices, inflation bordering at nearly 6 percent in 2014 and fat foreign exchange reserves. The government budget deficit has gradually dropped since its 2008 peak, although it still amounted to 7 percent of GDP in 2014, one of the world’s highest (131st). Infrastructure has improved (81st, up six) but remains a major growth bottleneck—electricity in particular. These improvements indicate the factors owing to which Indian economy managed to enter in the category of middle income nations.

INDIA'S RANKING ON THE SUB-INDICES OF GLOBAL COMPETITIVENESS INDEX		
	2014-15	2015-16
Basic requirements	92	80
Institutions	70	60
Infrastructure	87	81
Macro economic environment	101	91
Health and primary education	98	84
Efficiency enhancers	61	58
Higher education and training	93	90
Goods market efficiency	95	91
Labour market efficiency	112	103
Financial market development	51	53
Technological readiness	121	120
Market size	3	3
Innovation and sophistication factors	52	46
Business sophistication	57	52
Innovation	49	42

Source: The Global Competitiveness Report 2015-2016, World Economic Forum

The fact that the most notable improvements are in the basic drivers of competitiveness, the economy needs to work on efficient usage of available resources, especially for the development of the manufacturing sector. Financial markets are a potential source of arranging funds, and play an important role in inviting investors to the country. Other areas

also deserve attention, including technological readiness: India remains one of the least digitally connected countries in the world (120th, up one); fewer than one in five Indians has access to the internet on a regular basis, and fewer than two in five are estimated to own even a basic cell phone.

It may be inferred that the economy needs to focus on some socio-economic factors such as education and health in order to avoid middle income trap and move up the value chain. This will in turn enhance the innovation index of the nation.

The human capital factor plays a crucial role to break through the middle income trap. There has been emphasis on improvements in human capital factor, through different criteria, namely, specialization, improving quality of education, produce world class large scale institutions and focus on innovation. Presence of strong core physical infrastructure and quality of human capital enhances an economy's ability to innovate and move up the value chain. Further, favourable demographics enable the reasonable, flexible and transparent business climate. This all is related to broadly 3 factors, that is, complexity, wages and competitiveness.²⁴ When an economy is growing, the rise in complexity and competitiveness is greater than wages, but there is a dramatic reversal in the situation at later stages, and this hindrance can be avoided by improved quality of human capital, which helps in moving up the value chain, as innovation is harder than shifts in the sectors.

These all factors can be utilized only if the demographics are favourable and the human capital is healthy enough to absorb the capacity and are atleast provided with resources to do so.

Analysis & Findings

To understand the impact of education and health on overall GNI per capita of the economy, a regression analysis is performed considering GNI per capita as dependent variable on 3 independent variables, namely, expenditure on health (both, public and private) by the government, carbon emissions per metric tonnes and number of educational institutions with respect to Indian economy.

These elements have been selected for a variety of reasons. The best way to measure growth of an economy is by looking at the incomes of people whether it is increasing. To achieve rising incomes for people, two things need to happen: increase in productivity and, new income generated from this increased productivity to be returned to workers (in the form of higher wages).

Evidence suggests that states that increase the level of education and improved health conditions of their workforce see greater productivity. A strong dedication on educational system can help a nation improve on slim competitive edge, which it retains in the world

²⁴ In an interview with Mr. Victor Shvets and Nazrin Hassan, regarding the possible way outs to avoid middle income trap

markets. The level of cognitive skills of the students and the young population of a nation has a large effect on its subsequent economic growth rate.

Micro economists have found extensive evidence that an individual's health is an important determinant of his or her economic performance. Various measures of poor health, including malnutrition, anaemia, and exposure to disease during childhood, have all been shown to have a negative effect on a person's mental growth and also on wages or productivity.

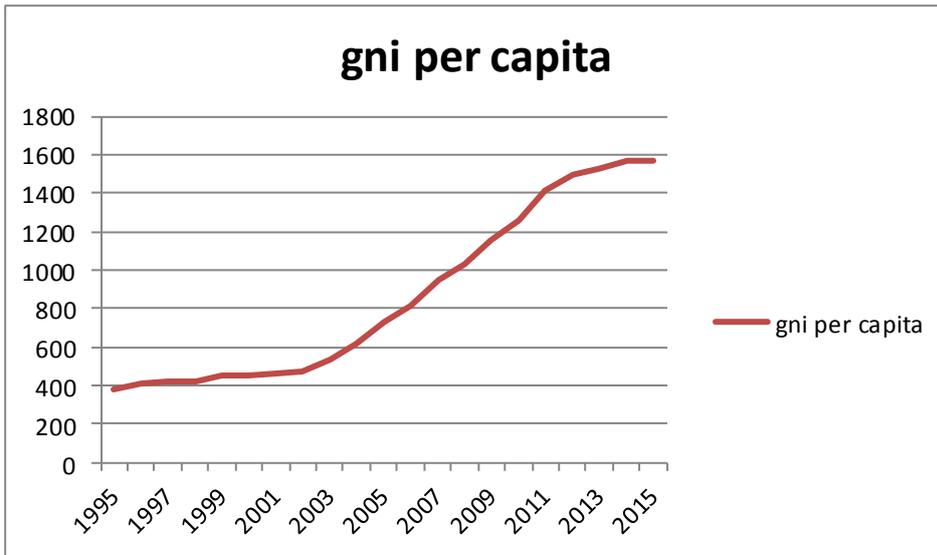
The factors like health and education become paramount to help raise quality human capital which can better human development index and productivity, thus leading to improvement in overall GDP and economic growth, and finally allowing the nation to avoid middle-income trap.

In the figure below, the data have been collected for past 20 years.

Year	GNI per capita(USD)	carbon emissions(per metric tonnes)	Number of educational institutions	Expenditure on Health(% of total GDP)
1995	380	1	7523	16
1996	410	1	8117	16
1997	420	1	8770	19
1998	420	1.1	9768	19
1999	450	1.1	9987	19
2000	450	1.1	10150	20
2001	460	1.1	10403	21
2002	470	1.1	13150	22
2003	530	1.2	14078	24
2004	620	1.2	15437	29
2005	730	1.2	17205	32
2006	810	1.3	17332	34
2007	950	1.4	20183	41
2008	1030	1.5	23505	44
2009	1150	1.6	28322	46
2010	1260	1.6	33595	54
2011	1410	1.7	33595	61
2012	1500	1.6	35494	58
2013	1530	1.6	36494	61
2014	1570	1.6	37383	66
2015	1570	1.7	38346	69

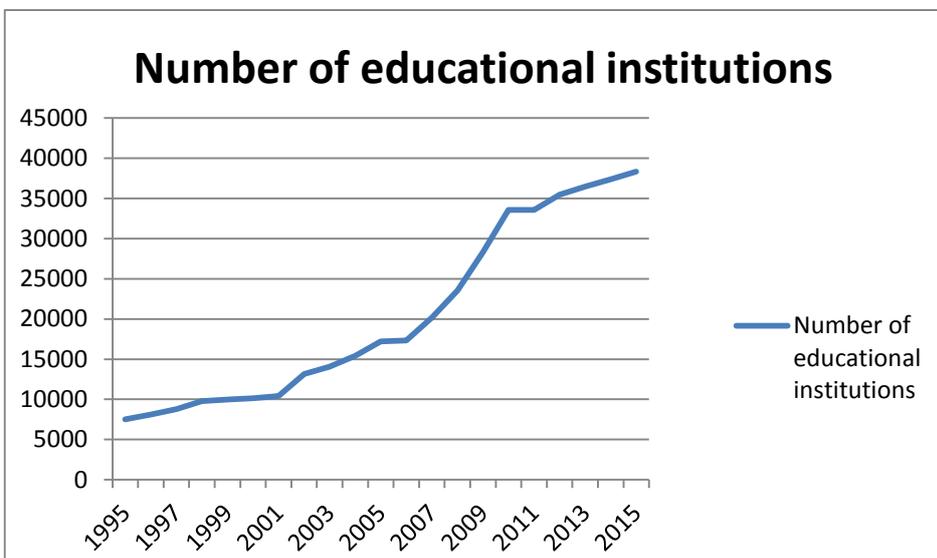
(source: World Bank.org)

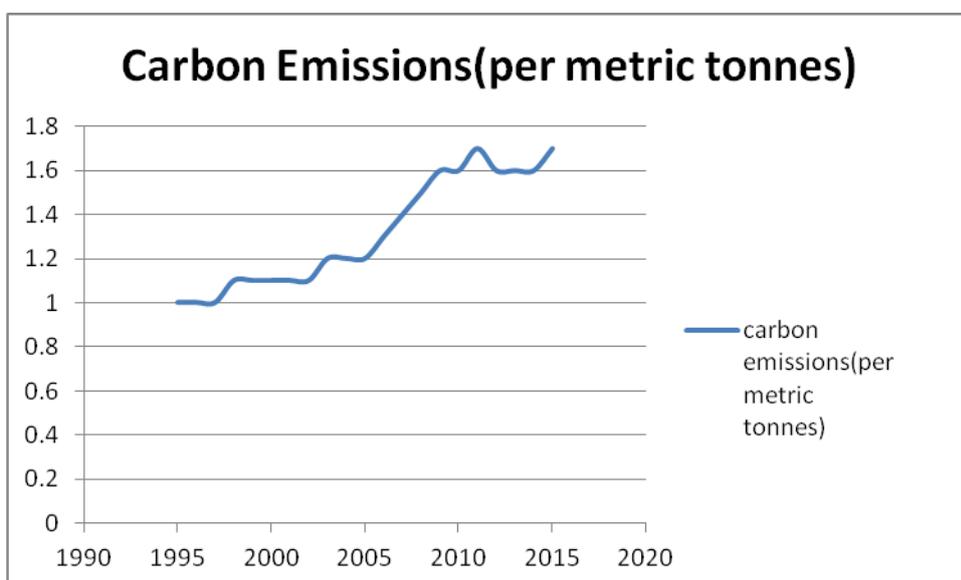
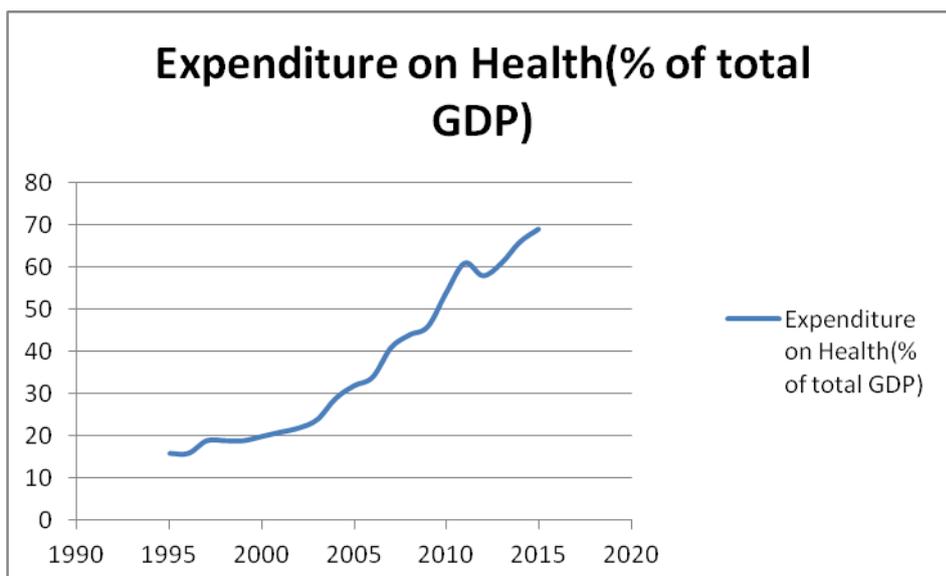
Using the graphical approach, we analyse that, over the period of time, the GNI per capita is positively related to health Expenditure and number of educational institutions in the economy. But the extent of dependency of GNI on these factors can be analysed using regression analysis.



The graphical presentation of GNI per capita shows an increasing trend from 1995 to 2015. The GNI increased at a slower pace from 1995 to 2002, and then increased at a faster rate.

The graphical presentation of the trend of the three independent variables selected has been shown as follows:





The idea of including carbon emissions came from the statements made by Mr. Kaushik Basu, chief economist, World Bank, to include other parameters in world developments indicators database including preliminary estimates of purchasing power parities, GDP, balance of payment, CO2 emissions, air traffic, foreign direct investments, etc.

The information collected has been used to run a regression analysis, which has been done through Microsoft Excel. Thus, the findings and outcomes of regression analysis using Microsoft excel, are presented as follows-

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.996063228

R Square	0.992141953
Adjusted R Square	0.990755239
Standard Error	43.55712348
Observations	21

ANOVA

	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3	4072175.78	1357391.927	715.4625062	4.4080
Residual	17	32252.7911	1897.22301		
Total	20	4104428.571			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	16.4509	149.28910	0.1101953	0.9135449	-298.52151	331.42342
Carbon emissions	-29.206793	175.83553	-0.1661029	0.8700354	-400.18733	341.77374
Numbers of educational institutions	0.01542667	0.0068669	2.2465217	0.0382457	0.0009387	0.0299145
Expenditure on health	15.523534	4.2984519	3.6114244	0.0021548	6.4545935	24.592475

From the summary output obtained from regression analysis, that R^2 is 0.99214(approx). This can be observed that approximately 99.21 percent of variation in GNI per capita is explained by these 3 independent variables, that is carbon emissions, number of educational institutions and expenditure of health (both public and private).

In the analysis, the data have been analyzed for past 20 years, so the degree of freedom for total variation is 20; but when 3 independent variables have been accounted for, the degree of freedom for explained variation is reduce to 17,(20-3). Also, to validate the data, multiple R^2 is 0.99076. Multiple R^2 is R^2 adjusted for degrees of freedom, validating the data across entire population. Since, R^2 is quite close to multiple R^2 , the model is considered significant.

Standard error estimates the difference between actual values and predicted values, using the units of the response variable. The smaller the standard error, the better it is. Smaller values are better because it indicates that the observations are closer to the fitted line. In this case, the standard error is 43.57(approx), which can be considered to be acceptable.

Thus the model gives a multiple regression equation as

$$\text{GNI} = 16.45 + (29.21) X_1 + 0.0154X_2 + 15.524X_3$$

Where, X_1 = carbon emissions per metric tonnes

X_2 = number of educational institutions

X_3 = health expenditure as part of total GDP

The confidence limits set at 95%, stating that the data is 95% likely to be reliable.

In the last table, the value of intercept is 16.45, thus stating that if values of selected three independent variables are zero, the mean sum of residuals is not more than 16.45, and thus, this residual part of GNI per capita is being explained by some other variable.

Here, the hypothesis set are-

First hypothesis

H_0 : There is no significant relationship between GNI per capita and carbon emissions per metric tonnes

H_1 : There is a significant relationship between GNI per capita and carbon emissions per metric tonnes

Second hypothesis

H_0 : There is no significant relationship between GNI per capita and number of educational institutions

H_1 : There is a significant relationship between GNI per capita and number of educational institutions

Third hypothesis

H_0 : there is no significant relationship between GNI per capita and expenditure on health (percentage of age)

H_1 : there is a significant relationship between GNI per capita and expenditure on health (percentage of age)

The coefficient for carbon emissions is 29.21, stating that with 1% change in carbon emissions, the GNI per capita in India is changing by 29.21%, in the opposite direction. Also, with 5% level of significance, the p-value for carbon emissions is 0.87(approx), which is greater than the level of significance of 0.05, thus stating to accept the null hypothesis that that there is no significant relationship between GNI and carbon emissions.

The coefficient for number of educational institutions is 0.0154(approx), stating that with 1% change in number of educational institutions, the GNI per capita in India is changing by 0.0154%, in the same direction. Also, with 5% level of significance, the p-value for number

of educational institutions is 0.038, which is less than 0.05, thus stating that there is a significant relationship between GNI and number of educational institutions in the country, rejecting the null hypothesis.

The coefficient for expenditure on health is 15.524(approx), stating that with 1% change in expenditure on health in the total GDP, the GNI per capita in India is changing by 15.524%, in the same direction. Also, with 5% level of significance, the p-value for expenditure on health is 0.002, which is less than 0.05, thus rejecting the null hypothesis and accepting the alternate hypothesis stating that there is a significant relationship between GNI and expenditure on health. It can be concluded in a way that, better the health of people in an economy, better would be the GNI per capita.

So far, it has been concluded that education and health are main elements that keep an economy growing through GNI per capita, and this is proved in case of India.²⁵ Carbon emissions are not significantly impacting the change in GNI per capita in the Indian economy. This brings us to the debate about many economists associating carbon emission or pollution as a factor in the rise of poverty in the country or especially in case of India. Empirical evidences, as presented in Kyoto Protocol state that as a nation improves in its economic growth, the amount of carbon emissions also increases, proving an inverse relationship between carbon emissions and economic well-being of a nation (stated by its GNI, in the present context).

However, there can be an implicit influence of carbon emissions on GNI per capita of an economy. Increased level of pollution affects the health conditions of the people, thus leading to a fall in their learning and education. This contributes to the fall in income levels of the people, and hence lower GNI per capita in the economy. It can be argued that importance of carbon emissions can be recognised while analysing the different issues of middle income trap.

South Korea can be a case in point for India in this regard as the circumstances and general approach towards handling this middle income trap has been quite similar. South Korea faced similar problems in the 1980s and 1990s, which India is facing now. At that time, South Korea emphasized on export driven growth. But it succeeded in its experiment as it enjoyed a huge demographic dividend at that time, and invested in human capital formation at an extraordinary pace.

The policies adopted by South Korea were very specific and focused. To aid industries in adopting and developing technologies, the government created R&D institutes such as the South Korea Institute of Machinery and Metals, which worked with private industries to build a technological foundation for industrial development. Nevertheless, an important component

²⁵ The conclusion has been in line with what different economists, be it Edmund Phelps, or Victor Shvets stated in regard to human capital theory, to break through the middle income trap, and has been further proved by regression analysis of empirical data.

was a rich pool of a well -educated labor force, which was necessary to “succeed in acquiring and using technologies through informal modes of technology transfer” (Rodrik, 1995). Furthermore, South Korea’s investment in R&D was highlighted by the launch of the National R&D Program in 1982 by the Ministry of Science and Technology. The government also supported the R&D initiative by providing tax credits, lowering import tariffs and giving efficiency incentives like launching of special R&D programmes launching of R&D (Ohno, Kenichi, 2009). Such investments and incentives should be noted considering the significant differences with other Asian countries. The research expenditure percentages of GDP and patents applications are also examined to see the difference. From 1996 to 2010, South Korea’s research expenditure percentage of GDP went from 2.42% to 3.74%, shown by World Bank Data. However, countries like Thailand, Philippines and Indonesia stagnate on average around the 0.15% mark. Thailand moved from 0.12% in 1996 to 0.25% in 2010, the Philippines moved from 0.14% in 2002 to 0.11% in 2007 and Indonesia moved from 0.07% in 2000 to 0.08% in 2009. Even with such significantly low figures compared to South Korea’s, the aforementioned countries also showed no signs of improvement whilst South Korea’s expenditures kept on increasing in terms of GDP. An interesting fact was that in 1965, 0.5% of its GDP was spent in R&D, out of which 80% came from the government (Dahlman, 2007).

A striking feature of Korean policy has been its emphasis on exports through home-grown, internationally competitive industries. Korea could effectively utilize its labour force by shifting labour from underemployment in agriculture to high-productivity employment in export-oriented manufacturing. It not only focused on supplying to the MNCs, but also attempted to manufacture products under its own brand and diversify its basket of exports. Hyundai is one of the prime examples of Korea export diversification. This was possible through combined efforts of public and private sectors in South Korean economy. The results were- sizable increases in their labour force participation, and consequently increase in output per capita. This, in turn lead to more capital available per worker and thus, increases in labour productivity.

Conclusions & Recommendations

Looking at the above analysis some policy measures can be undertaken in the context of India to escape the scope of middle income trap and keep the GNI rising.

- **Focus on indigenous innovation-** If the nation continues to depend upon any boom or outside world, it may stuck temporarily in middle-income trap, as economic policies many a times, show diminishing returns. The need is to go beyond ‘frugal’ invention and to focus on undertaking more original research²⁶. This can be undertaken at a lower cost by collaborating with research centres under universities, and encourage the culture by supporting the education system which shifts from

²⁶ By shashi tharoor at www.businessstoday.in/magazine/focus/manufacturing-sector-is-dragging-down-india-economic-growth/story/203616.html

equipping workers with basic skills to provide them with abilities to create new product. There are many examples for original research which the economy has already undertaken like e-learning, pharmaceuticals, etc. More emphasis may be put on developing indigenous brands for medicine like Ranbaxy.

- **Encourage risk taking and economic growth among entrepreneurs-**India today has 560 million young people under the age of 25 and 225 million between the ages of 10 and 19. So for the next 40 years it should have a youthful working-age population at a time when the broad industrialised world is ageing. This could be a huge demographic dividend, provided India is able to educate its youth, offering vocational training to some and university to others to equip them to take advantage of what the 21st-century global economy offers. “If we get it right, India can become the workhorse of the world,” as mentioned by Shashi Tharoor in a business weekly. Though, various initiatives have been undertaken by the government, but they are still inadequately proportionate to the population. The need is not to increase the jobs, but to create it. For that India needs to create entrepreneurial spirit and atmosphere. The era of start-ups has already begun; new generation are not so risk averse.
- **Tax breaks-** India is one of the top nations, offering generous R&D related tax incentives.²⁷ By doing just that it is not able to encourage innovation. Other areas such as collaborative R & D tax credits, made to support universities, national labs and research consortia and encouragement to commercialize innovation, rather than just research are not in place. Further, tax breaks should be offered in areas of national importance and integrity like defence, military space, aerospace, nuclear energy, etc. The only reason, the economy is not able to give much of tax breaks, is because the balances are already running in deficits and taxes are a major source of income to the government. Investors are not interested to invest substantially because of lack of complete transparency and administrative capacity. One can refer it from the fact that India still ranks 142 among 189 nations, in ease of doing business. The tax issues of Indian government with Cairn Energy, Vodafone and Shell still remain unresolved. It is therefore important to resolve the tax issues internally and/or through international arbitration.
- **Increased level of investments-** India has established its forte in IT and BPO sectors for quite some time. MNCs are investing in India and setting up R&D centres in the country, thus hoping to tap into the vast workforce of India, which is committed to making their own lives better and contributing to a better tomorrow, like GE, IBM, and Philips. However, other sectors also need to catch up as engineering and research and development has been on growth trajectory in the economy. Investment is

²⁷ www.insightsonindia.com/2015/10/12/7-which-are-the-contentious-tax-issues-in-india-that-industry-and-citizens-expect-government-to-address-discuss

required from private sector (which is insignificant at present) to embody new technology in different verticals to help India move up the value chain. To name a few are the automobiles, consumer electronics, pharmaceuticals, and biotechnology specifically.

- **Create incentive for pro-poor early stage technology development-** The time is to promote inclusive innovation in India, to recreate formal efforts to better meet the needs of economically weaker sections. It can be done by creating incentives for pro-poor early stage development. The main areas of focus here would be agricultural research and development, public R & D and university enabled initiative, financial commercialization, pro-poor intellectual property rights, and increased accountability
 - Though Indian agricultural sector face many challenges, but it has huge untapped potential for augmenting value chains through crop diversification and forward and backward integrations. It can change the pattern of food demand in the nation and tap international markets, thus generating additional exports and employment opportunities.
 - A very small proportion of India's public R&D infrastructure is agriculture and health. More efforts are required apart from NREGA scheme and efforts by CSIR, to support joint venture of public R & D infrastructure with private sector, so as to increase productivity, which is a key mechanism for poverty reduction. Agriculture is a major employment sector in the nation even today; however the poor do not suffer from an absence of work, but rather from low productivity and the resultant low remuneration.
 - Financial commercialization can be attained using bottom of the pyramid effect, as argued by C.K Prahalad.²⁸ The needs of poor and underserved can be met, while creating a viable business opportunity, as the companies can use their technological and marketing capabilities to create and deliver products. For example- mobile telephones, micro lending, hypermarkets and

²⁸ "The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits" written by C K Prahalad in 2004 , is essentially a rallying cry for big business to put serving the world's 5 billion or so poorest people at the heart of their profit-making strategies. Mr Prahalad reckons that there are huge potential profits to be made from serving the 4 billion-5 billion people on under \$2 a day—an economic opportunity he values globally at \$13 trillion a year. The win for the poor of being served by big business includes, he says, being empowered by choice and being freed from having to pay the currently widespread "poverty penalty."

cold storage supply chain for farmers, low-cost internet connectivity (in lines with digital India initiative) and other grass root innovation networks.

- Poor citizens living in traditional styles desire to protect the secret knowledge. Though this pro-poor IPR framework would require revolutionary thinking and bold experimentation in the Indian culture, both legally and administratively, but can be adopted using the goal of compensation, wherein the person sharing the knowledge, and not the one, who possesses it, will be rewarded. This will also reinforce India's image taking bold and novel ideas.
- **Innovation in select items-** India requires innovation in selected items, and which can be generated overtime. At present, the focus, should be on creation of more and more special economic zones (SEZs), supported by paperless trade. The easier for an MNC to do business in a nation is to invest in the host nation. Though 'Make in India' venture has been undertaken with some seriousness, effective results are yet to be felt.

Apart from all the measures, one major domain where the nation needs to focus upon is improvements in logistics and connectivity. India's current macroeconomic fundamentals are healthy. Prudent fiscal management, economic and social reforms and effective regulatory policies can help India to register stable growth. The nation is making judicious efforts for global and regional integration. A challenging task ahead is its increasing urbanization. A report by World Bank estimates that between 2010 and 2050, India's urban population will increase by about 497 million going by present growth trends, and above mentioned measures can be a way out, to accommodate this increased proportion of population, in the growth process.

Despite variety of issues, India has made it to the category of middle income nations. This has been possible due to some improvement in skill-set of its natives, but the benefits have not been distributed among them so far, due to simultaneous rise in absolute poverty. Though the estimates of Gross National Income per capita (GNI) continue to show improved economic performance of the nation, but there are many other factors working behind such as, income distribution, expenditure on health, etc., which can impact the overall economic growth of a nation.

The respective governments in the past have not paid enough attention required to these social issues for economic overall development and growth. Negligence of these elements

pose a threat to India to remain stuck in the moribund of middle income trap, which can further hinder its scope of improved economic performance.

There has not been any structured definition of middle income trap, but during the last two and a half decades, an important debate has arisen around the observation that some countries that managed to cross the middle-income bar some time ago have not yet been able to make it into the high-income group. As a result, such countries are considered to be stuck in a “middle-income trap.”

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