Department of Economics

Ramakrishna Mission Residential College (Autonomous)

Narendrapur

Semestral Project Submission, 2020

Paper- XVI, Semester VI

The following students of Economics Honours (semester VI) have submitted their projects on 30.6.2020.

Serial Number	Name	Roll Number	Title of the Project
1	Deepraj Chaudhuri	ECUG/084/17	Formalisation of the Informal Economy: Is it the way out of Informality
2	Purbayan Mukherjee	ECUG/203/17	Land Acquisition in India
3	Sabarna Choudhury	ECUG/148/17	Demonetisation: Challenges for Indian Economy
4	Avijit Ghosh	ECUG/011/17	Analysis of Determining Factors for Female Labour Force Participation in India
5	Akashdeep Ghosh	ECUG/210/17	India's Population Growth and Economic Development
6	Bishal Debnath	ECUG/186/17	Role of Women in the Development of Human Capital
7	Arijit Gupta	ECUG/187/17	Population Ageing in Developed

			Countries: Causes and Effects
8	Subhajit Roy	ECUG/014/17	A Note on the Theory of Rationality
9	Dhrubajyoti Chakraborty	ECUG/018/17	Impact of Micro-Finance in the Realisation of Financial Inclusion and Women Empowerment in India
10	Suvroneel Saha	ECUG/038/16	Economics of Travel and Tourism
11	Dwaipayan Mukherjee	ECUG/005/17	Understanding Social PhenomenaThrough the Lens of Evolutionary Game: An Exploration

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Certificate of Completion of Project

This is to certify that Mr. Deepraj Chaudhuri (ECUG/084/17), a student of Department of Economics, has submitted the semestral project as part of the B.Sc Economics Honours Course (Sem VI, Paper XVI)titled: "Formalisation of the Informal Economy: Is it the way out of Informality" on 30.06.20.

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FORMALIZATION OF THE INFORMAL ECONOMY: IS IT THE WAY OUT OF INFORMALITY

TERM PAPER SUBMITTED AS A PART OF THE MANDATORY PROJECT WORK OF SEMESTER- VI

BY:

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Abstract:

The majority of the total workforce of the world is constituted by the informal workers. It exists in such proportion that more than 90% of the workforce in India comes under informal employment. Informality comes in variety of forms in different countries, and is increasingly evident in the formal economy. The informal economy poses serious threat towards the rights of the workers and thus the need of the hour is to address the problems of the informal workers of the economy. In this paper, we discuss those problems associated with the informality and we attempt to give a brief account of the formalization as recommended by the ILO. We discuss whether informality is the new normal.

Keywords: informality, informal economy, informal sector, formalization

JEL: E26, I38, J01

INTRODUCTION:

"Unorganized workers consist of those working in the unorganized sector or households, excluding regular workers with social security benefits provided by the employers and the workers in the formal sector without any employment and social security benefits provided by the employers".

(Definition of informal employment recommended by the NCEUS)

Despite high levels of economic growth during the past two decades the informal economy of India still accounts for more than 80% of non-agricultural employment. (ilo.org). While the informal sector contributes around half of the GDP of the country, its dominance in the employment front is such that more than 90% of the total workforce has been engaged in the informal economy.[1] Informality is found in both the traditional informal economy and-increasingly –through the growth of informality in the formal sector. Limited employment creation in the formal economy means that for many people the only alternative is to seek employment in the informal economy. (ilo.org)

Informality has risen all over the world in the wake of recent protracted economic disasters such as the Asian crisis of 1990s and the global financial crisis in 2008-09, in which business contraction and reductions in public sector employment provoked a rise in informal employment.[2]

Although now about 92% of the total workforces of India are informal workers, this high incidence of the informal economy in all its aspects is a major challenge for the rights of workers, their social and legal protection at their workplaces.

The International Labour Organization and a few other concerned bodies all over the world are advocating the "transition of workers and economic units from the informal to the formal economy, and discourage informalisation of formal economy firm and jobs and has undertaken different projects in this regard.

The present paper can be broadly divided into three sections-the first gives us an account of the informal economy and the reasons behind its prevalence in India, followed by the discussion of the problems posed by the informality in the Indian economy. In the second, we discuss the need of formalization programmes recommended to cope up with the challenges of the informal economy. The most recent development in the employment scenario of India is discussed in the third part which ends with the conclusion.

In all these discussions, we decide not to delve deep into the matters as some of these would be beyond our level of understanding. We try to present a brief overview of the informality and ideas related to it in this paper as a part of our attempt to learn about the informality scenario of the world's workforce.

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1) Report on Employment in Informal sector and Conditions of Informal Employment (2013-14), Vol.-IV, Ministry of Labour and Employment, Govt. of India.
2) Lund,2009; Jutting and Laiglesia, 2009; King and Sweetman, 2010; Stavropoulou and Jones , 2013

Literature Review:

Predominance of informal employment has become one the central features of the labour market scenario in India. There is an increasing interlinkage between the informal employment and the formal sector apart from the informal sector employment. This plays a pervasive role in the economy and the livelihoods of the people. (Report, Vol.–IV, Ministry of Labour and Employment).

Due to the oversupply of cheap labour, employers are granted a large scope to disregard laws and ethics in their relationship with the respective casual employees. The constant influx of menial migrant labourers also makes the nation susceptible to the expropriation of its workers' surplus value. (Kris Punia, ORF).

Thus the contribution of the workers in this scenario, because of lack of recognition in law and practice, often goes unrecognized although they significantly contribute to the local economy. The lack of legal and social protection compels them to remain in poor working conditions and they struggle to get out of poverty. (WOI, ilo.org).

It is thus extremely important to: provide legal recognition to the informal economy workers, extend social protection, support their organization. (Aya Matsuura, Chief Technical Officer, WOI, South Asia).

A recommendation was adopted in the 104th session of the general conference of the International Labour Organization, in 2015, which states, "The decent work deficits- the denial of rights at work, the absence of sufficient opportunities for quality employment, inadequate social protection and the absence of social dialogue in the informal economy" affirms that "the transition from the informal to the formal economy is essential to achieve inclusive development". (Recommendation No. 204, ILO 2015).

The Recommendation 204, though provides guidance to 'facilitate the transition of workers and economic units from the informal to the formal economy', "most fundamentally (it) notes that informal livelihoods should not be destroyed in the process of formalization". (Chen, 2016)

And as there are pros and cons of almost every programme, formalization programmes are also not without problems. Green jobs expert Peter Poshen from the ILO said that he would strongly defend formalization on what was being needed. But he added a note of caution, saying that unless formalization is appropriate, it could do more harm than good. (Sian Lewis, 2016, iied.org).

Informal Sector:

The term "Informal Sector" was introduced by Keith Hart. He distinguished formal and informal (both legitimate and illegitimate) income opportunities on the basis of whether the activity entailed wage or self-employment. (Hart, 1973). Although Hart's concept of informal sector was limited to small self-employed individual workers, the introduction of this concept made it possible to incorporate activities that were previously ignored in theoretical models of development and in national income accounts. (Swaminathan, 1991).

Although the term 'informal sector' gained currency after ILO evolved a conceptual framework of the informal sector, there has not been any unique definition of informal/ unorganized sector in India. The different organizations in India like NSSO, DGET etc. used varying definitions depending on the specific requirements of each organization. Keeping in view the absence of a uniform definition of the informal sector in India, the NCEUS formulated harmonized definitions of *informal/unorganized sector unemployment* and *informal/unorganized employment.*

The definitions recommended by the NCEUS (National Commission for Enterprises in the Unorganized Sector) are given below:

Informal Sector: "The unorganized sector consists of all unincorporated private enterprises owned by individuals or households engaged in the sale and production of goods and services operated on a proprietary or partnership basis and with less than ten total workers".

Informal worker/employment: "Unorganized workers consist of those working in the unorganized sector or households, excluding regular workers with social security benefits provided by the employers and the workers in the formal sector without any employment and social security benefits provided by the employers".

Informal economy: The informal sector and its workers plus the informal workers in the formal sector constitutes the informal economy.

Besides the definitions of the informality provided by the NCEUS, the 17th ICLS (2003) also took into account the notion of informality based on the nature of work or job. Accordingly, they recommended a definition of informal employment.

The 17th ICLS defines the 'Informal Employment' as to consist of self-employed workers and employees with informal jobs defined as follows: (a) employees are considered to have informal jobs if their employment relationship is, in law or in practice, not subject to national labour legislation, income taxation, social protection or entitlement to certain employment benefits (advance notice of dismissal, severances of pay, paid annual or sick leave, etc.); (b) self-employed, own-account workers and unpaid family helpers.

In practice, estimates of informal jobs are computed as those that do not receive social protection or entitlement to certain employment benefits, perhaps as this is more easily reported by the worker in labour force or household surveys. (Unni, 2018).

Historically, there were many reasons for the growth and persistence of informality in India's labour force, which were the result of factors affecting both the demand and the supply of labour.

Factors affecting the demand for labour which explain the rise of informality:

1) Pattern of India's growth as the outcome of the Import Substitution Industrialization (ISI) strategy which could not rapidly absorb surplus labour in agriculture. Due to this, the surplus labour migrated away from agriculture to be inevitably absorbed in the traditional; service in rural and urban areas, or in the unorganized manufacturing, where social insurance was unavailable.
2) Reservation of manufacture of non-durable consumer products for the small-scale sector. Medium-sized firms or large corporates were disallowed from entering this sector. This resulted in perverse incentives to remain small, with inevitable loss in terms of economies of scale. Due to the protection given to the small-scale industries, the small enterprises had no incentive to grow and absorb more workers in their manufacturing units, thus exacerbating a problem.
3) Plethora of central and state government labour laws: On the one hand, hardly any labour laws were applicable to the small enterprises. On the other hand, the larger enterprises, whether medium or large, became gradually subject to a number of laws passed by state or central governments, which protected the workers in the organized sector. While social insurance (in the form of employee provident fund and health insurance) was mandatory, the growing number of laws covering organized workers meant that employers tended to

adopt technologies that often limited the number of workers. Organized sector jobs grew slowly, and most non-agricultural employment continued to grow in the always unorganized sector in micro-enterprises, with workers employed without any hope of social insurance.

Quality of labour supply explaining the rise of informality:

We note that 30% of the workforce of 485 million in 2012were illiterate. An additional 52% of the labour force are those with only up to secondary level education. Barely 3% of the workforce has technical education at tertiary level, and another 7.2% had general academic education at tertiary level. As recently as 2017-18, only 2.4% of the workforce has formally acquired any vocational training. With a labor force that has relatively poor levels of education, it is not surprising that most of them have been absorbed, if they are not in agriculture, in traditional services, or construction, or unorganized manufacturing. In none of these areas does employment come with social insurance. (Mehrotra, 2019).

Informality has multiple causes, including governance and structural issues. Apart from these reasons there are other types of social, political, economic or geographical reasons behind the rise and persistence of informality in India which we choose not to discuss here as it would go beyond the scope of this present paper.

Challenges posed by the informal employment:

The informal economy is full with problems. The name "informal" itself suggest that the system of employment so considered is insufficiently covered by formal arrangements. The definitions of the informal sector or the informal employment as given by NCEUS mark them as consisting of unincorporated enterprises, or employment which is not subject to labour law legislations, income taxation or else the workers are self-employed, own-account, or unpaid family members without social security benefits. The characteristics which define the informality are themselves synonymous to or implies the problems of the informality. "The high incidence of the informal economy in all its aspects is a major challenge for the rights of workers, including the fundamental principles and rights at work, and for social protection, decent working conditions, inclusive development and the rule of law, and has a negative impact on the development of sustainable enterprises, public revenues and governments' scope of action, particularly with regard to economic, social and environmental policies, the soundness of institutions and fair competition in national and international markets."(Recommendation No. 204, ILO).

Most people enter the informal economy not by choice but as a consequence of a lack of opportunities in the formal economy and in the absence of other means of livelihood and suffer from the decent work deficits such as:

- Lack of recognition in law and practice for which their contribution often goes unrecognized in the economy, although they contribute significantly to the local economy.
- Labour laws exclude them for which they are not recognized as real workers and thus their work is grossly undervalued , poorly regulated, and have poor working conditions-low pay, long hours of hazardous work.
- Lack of access legal and social protection without which the informal workers struggle to come out of poverty or remain in poverty.
- Lack of representation and voice as they are not organized, despite having major share in the workforce.

The above listed challenges of informal employment are not exhaustive and are different in different countries. The problems described above are just the generalized challenges (common problems) observed in the informal sectors across different countries.

In response to the problems pose by the informality, the 104th General Conference of the International Labour Organization adopted the Recommendation No. 204 titled, namely, "RECOMMENDATION CONCERNING THE TRANSITION FROM THE INFORMAL TO THE FORMAL ECONOMY", which shows the increasing concern worldwide regarding the deprivation of the informal workers and the problems of the informal economy. The Recommendation affirms that "the transition from the informal to the formal economy is essential to achieve inclusive development and to realize decent work for all".

Formalization: The Way Out of Informality

Following and maintaining the approach of the Integrated Decent Work Strategy for the Informal Economy of the ILO, a 5-year project was launched in mid-2012. The project named WAY OUT OF INFORMALITY: FACILITATING THE FORMALIZATIUON OF THE INFORMAL ECONOMY IN SOUTH ASIA, financially supported by the Government of Japan, used the first two policy areas of the seven interconnected policies of the Integrated Decent work Strategy, i.e. *job-rich growth strategies in the context of an enabling regulatory environment*. The project covered the countries of India, Nepal, and Bangladesh and was sought to be implemented through the following components:

1. The regulatory and policy environment

2. Local level strategy and assistance

3. Knowledge management.

The ILO has been in the forefront of the debate on formalization of the informal economy as an extension of its earlier decent work agenda. The Recommendation No. 204 adopted by the ILO provided guidelines to members to:

"(a) facilitate the transition of workers and economic units from the informal to the formal economy, while respecting workers' fundamental rights and ensuring opportunities for income security, livelihoods and entrepreneurship;

(b) Promote the creation, preservation and sustainability of enterprises and decent jobs in the formal economy ...; and

(c) Prevent the informalization of formal economy jobs".

With respect to formalizing informal enterprises, it guides members to enable entry into the formal economy through reduction in registration and compliance costs, promote access to public procurement including training for the same, access to financial services and improve coverage of social security. (ILO, 2015).

'The reaction of the worker unions and associations to the ILO Recommendation 204 has been positive. On behalf of formal trade unions, Tate and Burrow (2016) report "International Labour Organization Recommendation 204 is a global standard that provides a legal framework for action.... ILO Recommendation 204 is about social inclusion, social justice and real, dynamic social change in action". Chen (2016), as a representative of informal workers, states that the recommendation "recognizes that informal workers…need protection and promotion in return for regulations and taxation". It acknowledges that regulated use of public space and access to natural resources is essential to their livelihoods.

Moreover, we may note that the guidelines provided by the Recommendation also advocates for the prevention of informalization of formal economy jobs. This is in response to the increasing inclination of the formal economy to involve in the outsourcing of production and the increased use of contract laborer's as informal workers in the formal sector.

The hope of these wage and self-employed worker organizations hinges on the fact that the recommendation on formalization of informal workers and enterprises recognizes the role of the informal economy and need for social protection and promotion of livelihoods of the workers.'

India has taken a number of initiatives to address informality, including targeted schemes for promotion micro, small, and medium enterprises and legislative measures such as the Unorganized Workers' Social Security Act, 2008; Contract Labour (Abolition &Regulation) Act; The Code on Social Security, 2019 and Workers' welfare boards.

According to Economic Survey 2017–2018, "Informality or rather a formality can be defined in at least two senses. First, when firms are providing some kind of social security to employees. In India, the government provides this for its employees, and the Employees' Provident Fund Organization (EPFO) provides it to private sector employees in respect of pensions and provident funds; and the Employees' State Insurance Corporation (ESIC) in respect of medical benefit. The second definition of formality is when firms are part of the tax net. Since new data on the GST is available, one can define tax formality as firms having registered under the GST."

The Government of India thus recognizes two forms of formalizing the informal economy. Formalizing enterprises through the tax net and formalizing workers through the social security route.

Although there are a lot of evidences all over the world for the success of the formalization programs, the formalization programs are not without problems.

Criticism of the formalization

Though the international organizations like ILO are advocating the transition of the informal to the formal economy, the formalization programs undertaken in various parts of the world are having their own problems. What makes for 'appropriate' formalization is the nub of the problem. As green jobs expert Peter Poshen from the ILO said that he would strongly defend formalization on being what was needed. But he added a note of caution, saying that unless formalization is appropriate, it could do more harm than good.

For example, if "formalization equals jobs" – that nations can shift informal workers by creating more formal employment-is just a pipe dream. According to Poshen, there is no conceivable pattern of growth that can create the number of jobs required to achieve this.

Economist Louise Fox from the University of California, Berkeley agreed," Transformation to a waged economy is simply not going to happen in this generation or the next".

Similar arguments could be put forward for every possible way to depict formalization-be it about collecting tax, or licensing for the informal workers. Regarding the legal protection as a means of formalization, "if legality is just an added cost, it will never solve the problem of any informal workers." (Sian Lewis, 2016).

Thus, formalization programs would require a well-planned strategy set based upon the political, structural, economical and other factors of the target region. The policymakers should take into account that there is no 'one size fits all' strategy regarding the formalization programs and thus devise the strategies of formalization according to the needs and problems of the target groups.

Is informality the new normal?

Informality remains a pervasive challenge. On average, 7 in 10 non-farm workers in countries in sub-Saharan Africa and Southern and South-East Asia are in the informal economy, and the scale of the challenge has been increasing in many regions.

Predominance of informal employment has become on of the central features of the labour market scenario in India. Contrary to the longstanding predictions the traditional informal sector would shrink as petty trade, small scale production and casual jobs become absorbed into the modern, formal economy, informality has not only persisted but continued to emerge in new, unexpected areas. (Chen, 2012, ILO & WIEGO, 2013). There is an increasing inter linkage between the informal employment and the formal sector apart from the informal sector employment, such that now about 92% of the total workforce of India are informal workers, both in the traditional sector and, increasingly in the formal sector. The deregulation of labour markets which aimed to increase the flexibility and competition, or reduce labour and production costs, has led to increased labour casualization as formal enterprises outsource production to informal workers. (Chen et al. 2006, Chant & Pedwell, 2008). The share of contract labour in organized manufacturing increased from 15.6% at the end of the 1990s to 37.7% in 2011-12. 79% of nonagricultural wage workers had no written contract.

Globally, the statistics suggest that women are about equally represented in informal employment relative to men – though in low-income countries they are overrepresented in the non-agricultural informal workforce by nine percentage points (ILO, 2017: 13,15). However, Charmes (2016: 31) observes that 'Female employment in the informal economy continues to be widely underestimated, especially because their secondary activities in processing agriculture and food products in rural areas are not well captured.' Hence, we can say informality has a gender bias. Women are somewhat more likely to be engaged in the informal economy. According to the quinquennial survey of NSSO in 2004-05, in rural areas, the share of informal sector workers in each population segment recorded more than 90% and the share of female workers (94.50%) is more than the male workers (90.34%).

Informality has also risen in the wake of different economic disasters such as the Asian crisis of 1990s or the global financial crisis in 2008-09, in which business contraction and reductions in public sector employment provoked a rise in informal employment.

Formally employed workers may also react to such crises by taking on additional informal work to supplement their incomes. (Amir and Berry, 2012). The WESO 2020 shows that there is still shortage of employment for the younger generations which suggests that a large number of workforces all over the world is bound to enter into the informal employment to sustain livelihoods. Increasing amount of platform or gig economy in many countries like India will further add up to the informal employment numbers.

A lot of researches and evidences in this direction show that instead of coming to a halt, the share of informality is increasing day by day. If this trend continues, informality is going to be the new normality.

Conclusion:

In the paper, we have discussed an overall picture of the informality, its cause, its challenges, and way out of it, and the recent trend of the informal employment in the workforce. We observed the need of formalization of the informal economy so that the rights of decent work can be ensured to the workers in the informal employment. But, formalization programmes often comes with their own problems. The large number of informal workers and the limited potential of the formal sector, under current circumstances, would mean that for most of the informal workers, the benefits of full formalization may be unreachable.

Although formalization provides a hope for the betterment of the informal economy workers, Poshen suggests that 'unless formalization is appropriate, it could do more harm than good'. (Sian Lewis,2016)

Moreover, there is another compelling reason for the informal economy to be accorded due attention, informal really may be the new normal. In developed countries, traditional labour markets are evolving quickly, but, in developing countries, these will not have existed in the first place in many instances, making change likely to be more rapid. While fear of automation in developing countries may be overplayed (Gelb and Khan, 2016), the gig economy is already expanding exponentially in some developing countries (e.g. by 60% month on month in India (Hunt and Machingura, 2016)). Some jobs or tasks may never be formalized in the manner that the term is currently conceived, and the informal economy may only grow in importance.

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Certificate of Completion of Project

This is to certify that Mr. Purbayan Mukherjee (ECUG/203/17), a student of Department of Economics, has submitted the semestral project as part of the B.Sc Economics Honours Course (Sem VI, Paper XVI) titled: "Land Acquisition in India" on 30.06.20.

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TERM PAPER SUBMITTED AS A PART OF PAPER XVI IN SEMESTER VI

PROJECT NAME: LAND ACQISITION IN INDIA

BY: PURBAYAN MUKHERJEE

ROLL NO.: ECUG/203/17

REGISTRATION NO.: A03-1112-0203-17

DEPARTMENT OF ECONOMICS

COLLEGE NAME: RAMAKRISHNA MISSION RESIDENCIAL COLLEGE (AUTONOMOUS), NARENDRAPUR, KOLKATA

DATE OF SUBMISSION: 25/06/2020

CONTENT

ABSTRACT:-

Government acquires land and administers it as public lend by delegating authority through its agencies with the aim of ensuring the best utilization of land in the interest of the citizens. Some of the problems that affected the process include: **EMINENT DOMAIN, LAGISLATIVE CHANGES, MONETARY COMPENSATION, NEGOTIATION** and **DELAYED PROJECTS**. The Land Acquisition Act of 1894 which was imposed in India since the time of British Rule, allowed the government to acquire any land as it wishes to, in the name of "public purpose". The British had never defined the words "public purpose" in a straightforward manner, which meant that in theory as well as in practice, a government could acquire land for any purpose they wanted, and term their purpose "public purpose". During 1947 till 1991, most of these acquisitions had been done by agencies or units in the public sector. After 1991, when liberalization had taken place, most of the land acquisition was done by the government to provide land for the private sector, either for private sector projects but also for housing projects. There is a legislation pertaining to land acquisition which, through amended several times, has failed to serve its purpose. Under the 1894 Act, displaced people were only liable for monetary compensation linked with market value of the land in question, which is still quite minimal considering circle rates are often misleading. In 2013, the Land Acquisition Act got amended and changed to Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. The object of this project is to examine the process and problems of land acquisition, and also to describe the proposed amendments and alternatives.

INTRODUCTION:-

- What is Land Acquisition and how it was initiated in India?

Land Acquisition in India refers to the process by which the union or the state government in India acquires private land for the purpose of industrialization, development of infrastructural facilities or urbanization of the private land, and provides compensation to the affected land owners and their rehabilitation and resettlement.

Land acquisition in India is governed by The Right to Fair Compensation and Transparency in Land Acquisition, rehabilitation and resettlement Act, 2013(LARR) and which came into force from 1st January 2014. Till 2013, the land acquisition in India was governed by Land Acquisition Act of 1894. On 31st December 2013, the president of India put about an ordinance with an official mandate to "meet the twin objectives of farmer welfare; along with expeditiously meeting the strategic and developmental needs of the country". An amendment bill was then introduced in Parliament to endorse the ordinance. Lok Sabha passed the bill but the same is still lying for passage by the Rajya Sabha. On 30th May 2015, President of India promulgated the amendment ordinance for third time. Union Government of India had also made and notified the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules, 2014 under the Act to regulate the procedure.

ISSUES:-

Some of the important issues surrounding the Land Acquisition are discussed below. The major land acquisition and conflicts happen in the densely populated areas of the countryside.

A. EMINENT DOMAIN:-

The power to take property from the individual is rooted in the idea of eminent domain. The doctrine of eminent domain states, the sovereign can do anything, if the act of sovereign involves public interest. The doctrine empowers the sovereign to acquire private land for a public use, provided the public nature of the usage can be demonstrated beyond doubt. In the history of modern India, this doctrine was challenged twice once when land reform was initiated and another time when Banks were nationalized.

The constitution of India originally provided the right to property (which includes land) under Articles 19 and 31. Article 19 guaranteed that all citizens have the right to acquire, hold and dispose the property. Article 31 stated that "no person shall be deprived of his property save by authority of law". It also indicated that compensation would be paid to a person whose property has been taken for public purposes (often subject to wide range of meaning). The 44th amendment of 1978 deleted the right of property from the list of fundamental rights with an introduction of a new provision, Article 300(A) which provided that "no person shall be deprived of his property save by authority of law" (Constitution 44th amendment, w.e.f. 10.6.1979). The amendment ensured that the right to property "is no longer a fundamental right but rather a constitutional/legal right/as a statutory and in the event of breach, the remedy available to an aggrieved person is through the High Court under Article 226 of the Indian Constitution and not the Supreme Court under Article 32 of the Constitution. State must pay compensation at the market value for such land, building or structure acquired Act, 1964, the same can be found i6n the earlier rulings when property right was a fundamental right. Elsewhere, Justice, Reddy, O Chinnappa ruled (State of Maharashtra v. Tale on 7 July

1983) that the fundamental right to property has been abolished because of its incompatibility with the goals of "Justice" social, economic and political and "equality of status and of opportunity" and with the establishment of a "a socialist democratic republic, as contemplated by the Constitution".

In India, with this introduction of 'social' elements to the property rights, a new phase had begun. K.K. Mathew, justice of Kesavananda Bharati vs State of Kerala stated this precisely: "Property of consumable goods or means of production worked by their owners (use aspects of property) was justified as necessary condition of a free and purposeful life; but when property gave power not only over things but through things over persons also, it was not justified as it was an instrument of servitude rather than freedom".

B. LEGISLATIVE CHANGES:-

The 2013 Act focuses on providing not only compensation to the landowners, but also extend rehabilitation and resettlement benefits to livelihood looser from land, which shall be in addition to the minimum compensation. The minimum compensation to be paid to the land owners is based on a multiple of market value and other factors laid down in the Act. The Act forbids or regulates land acquisition when such acquisition would include multi-crop irrigated area. The act changed the norms for acquisition of land for use by private companies or in case of public-private partnerships, including compulsory approval of 80% of the landowners. The Act also introduced changes in the land acquisition process, including a compulsory social-impact study, which needs to be conducted before an acquisition is made.

The new law, also has some serious shortcomings as regards its provisions for socioeconomic impact assessment and is has also bypassed the constitutional local self governments by not recognizing them as "appropriate governments" in matters of land acquisition.

Purpose of LARR As per the Act, the union or state government can acquire lands for its own use, hold and control, including for public sector undertakings and for "public purpose", and shall include the following purposes:

- For strategic purposes relating to naval, military, air force, and armed forces of the Union, including central paramilitary forces or any work vital to national security or defense of India or State Police, safety of the people.
- For infrastructure projects as defined under the Act.
- Project for affect families.
- Project for housing for such income groups, as may be specified from time to time by the appropriate government.
- Project for residential purposes to the poor or landless or to persons residing in areas affected by natural calamities, or to persons displaced or affected by reasons of the implementation of any scheme undertaken by the Government, any local authority or a corporation owned or controlled by the state.

The land can be acquired for private bodies for certain purposes:

- For public private partnership projects, where the ownership of the land continues to vest with the Government, for public purpose as defined in the Act.
- For private companies for public purpose.

C. MONETARY COMPENSATION:-

Major Indian infrastructure projects such as the YAMUNA EXPRESSWAY have paid about ₹2800 crore (US$500 million) for land, or over US$25000 per acre between 2007 and 2009. For context purposes, this may be compared with land prices elsewhere in the world:

- According to The Financial Times, in 2008, the farmland prices in France were Euro 6000 per hectare ($2430 per acre; ₹109350 per acre).

- According to the United States Department of Agriculture, as of January 2010, the average farmland value in the US was $2140 per acre (₹96300 per acre). The farmland prices in the US varied between different parts of the country, ranging between $480 per acre to $4690 per acre. Due to unfavourable agricultural conditions in many states of India, peasants looked for monetisation of their own property, the land to protect their future generations.

A 2017 report by Government of India, on labour whose livelihood depends on agricultural land, claims that, the all-India annual average daily wage rate is ₹176/day. The new rates came into effect from June 1, 2017. This wage rate in rural India study included the following agricultural operations common in India: ploughing, sowing, weeding, transplanting, harvesting, winnowing, threshing, picking, herdsmen, tractor driver, unskilled help, masonry, etc.

D. DELAYED PROJECTS:-

Delayed projects due to mass unrest have caused a damping effect to the growth and development of companies and the economy as a whole. Earlier states like Maharashtra, Tamil Nadu, Karnataka, and Andhra Pradesh had been an attractive place for investors, but the present day revolts have shown that land acquisition in some states pose problems.

CONSEQUENCES:-

The consequences of land acquisition in India are manifold. The empirical and theoretical studies on displacement through the acquisition of land by the government for development projects have so far focused on the direct and immediate adverse consequences of land acquisition. Most of the analytical as well as the descriptive accounts of the immediate consequences of land acquisition for development projects draws heavily from Michael Cernea's 'improvement risk model', which broadly enumerated eight 'risks' or 'dimensions' of development-induced displacement. These eight risks are very much direct and basic in natures which are,

I. Landlessness,
II. Joblessness,
III. Marginalization,
IV. Loss of access to common property resources,
V. Increased morbidity and mortality,
VI. Food insecurity,
VII. Homelessness,
VIII. Social disarticulation.

L. K. Mahapatra has added 'loss of education' as another impoverishment risk in situation of displacement (Mahapatra 1999).

But apart from these direct and immediate effects of land acquisition there are more subtle and indirect effects of this coercive and centralized legal procedure, which have a bearing on various decentralized and participatory democratic processes, and institutions of state power. Land reforms and the panchayati raj institutions are the two most important areas, which are being vitiated by land acquisition. Of all the states of India, the consequences and controversies around land acquisition in West Bengal had gained a lot of attention from national and from international as well. The peasant resistances against governmental land expropriation in Singur and Nandigram has finally led to the fall of the communist party(Marxist) led government in West Bengal, which ruled the state through democratic election for 34 years. The communist led left front government of West Bengal under the economic liberalisation policy adopted by the Central/Union government of the country shifted from its pro-farmer policy and took to the capitalist path of industrial development, which at the micro-levels endangered the food security of the small and marginal farmers as well as sharecroppers who formed the vote bank of the left front government of West Bengal. The new anti-communist Trinamul Congress led government of West Bengal which came to power in the state in 2011 through a massive electoral victory is yet to develop any comprehensive resettlement and rehabilitation policy for the thousands of families affected by various development projects. The new government enacted a law on 14th June 2011, in the West Bengal assembly named 'Singur Land Rehabilitation and Development Act, 2011'. With this law, the West Bengal government has reacquired about 1000 acres of farmland from the Tatas which was given to the company for building a small car manufacturing factory in 2006 by the then Left Front government. The Trinamul government's intention was to return 400 acres of farmland to the 'unwilling' farmers around whom the agitation against the Left Front government was organised by the Trinamul Congress Party. However, the whole issue seems to have fallen into a long legal battle between the present state government and the Tatas, as the latter has challenged the 'Singur Land Rehabilitation and Development Act' in the court. In 2016, the Supreme Court quashed the West Bengal government's acquisition of 997 acres of agricultural land for Tata Motors and ordered its return to 9117 landowners. In another case of governmental land acquisition for housing at North 24 Paragnas district of West Bengal, the farmers began to cultivate their farmland which were acquired but remain unutilised. According to media report these farmers were assured by the Trinamul Congress Party leaders before the election that their land, which is about 1687 acres, would be returned to them if the party could come to power. However, these farmers are turning their backs to the Trinamul Congress, since the party has not kept its pre-election promise (The Statesman, 11th February 2012). Under the above disturbing episodes, it may be worthwhile to narrate the glaring incident of the opposition levelled by Mamata Banerjee, the present chief minister of West Bengal to the draft Land Acquisition

Bill 2007 in the Lok Sabha. At that time Miss Mamata Banerjee was the Railway Minister of the Central Government. She opposed to a clause of the bill which empowered private companies to acquire up to 70% land directly from farmers and landowners. The remaining 30% could be acquired by the state government. Miss Banerjee wanted private companies to buy 100% of the land, according to a report (The Statesman, 26th July 2009). It seems that Miss Banerjee would have allowed the amended bill to be passed if the Lok Sabha agreed to modify the 70/30 proportion to 100% purchase by the companies under the principle of willing-buyer-willing-seller.

Eminent domain doctrine has been widely used in India since the era of independence, with over 21.6 million people in the period of 1951-90. They have been displayed with large-scale projects like dams, canals, thermal plants, sanctuaries, industrial facilities, and mining. These occurrences are generally categorized as "development-induced displacement".

The process of land acquisition in India has proven unpopular with the citizenry. The amount reimbursed is fairly low with regard to the current index of prices prevailing in the economy. Furthermore, due to the low level of human capital of the displaced people, they often fail to find adequate employment.

The draft of the government's National Policy for Rehabilitation states that a figure around 75% of the displaced people since 1951 is still awaiting rehabilitation (The Hindu, Chennai, India. 10th June 2011). However, displacement is only being considered with regard to "Direct Displacement". These rehabilitation policies do not cover fishermen, landless labourers, and artisans. Roughly one in ten Indian tribals is a displaced person. Dam projects have displaced close to a million Adivasis, with similar owe foe displaced Dalits. Some estimate suggests 40% of displaced people are of tribal origins.

There have been a rising number of political and social protests against the acquisition of land by various industrialists. They have ranged from Bengal, Karnataka, and Uttar Pradesh in the recent past. At least a decade before the Singur episode, similar events occurred in West Bengal, although the opposition parties and other civil society organisations remained silent at that time. Similarly, the Sardar Sarovar Dam project on the river Narmada was planned on acquired land, though the project was later cancelled.

The Land Acquisition Act of 1894 allowed the government to acquire private lands. It is the only legislation pertaining to land acquisition which, though amended several times, has failed to serve its purpose. Under the 1894 Act, displaced people were only liable for monetary compensation linked with market value of the land in question, which was still quite minimal considering circle rates are often misleading. Land acquisition related conflicts during the post-reform period in India have shown three distinctive tendencies;

I. Technology and Bundle of Rights,
II. Power-Land Regulation Nexus,
III. Disappearing Commons.

Table of Displaced Tribals:-

PROJECT	STATE	DISPLACED POPULATION	TRIBAL PERCENTAGE
Karjan	Gujarat	11600	100
Sardar Sarovar	Gujarat	200000	57.6
Maheshwar	Madhya Pradesh	20000	60
Bodhghat	Madhya Pradesh	12700	73.91
Icha	Bihar	30800	80
Chandil	Jharkhand	37600	87.92
Koel Karo	Bihar	66000	88
Mahi Bajaj Sajar	Rajasthan	38400	76.28
Polavaram	Andhra Pradesh	150000	52.90
Maithon & Panchet	Jharkhand	93874	56.46
Upper Indravati	Odisha	18500	89.20
Pong	Himachal Pradesh	80000	56.25
Ichampalli	Andhra Pradesh	38100	76.28
Tultuti	Maharashtra	13600	51.61
Daman Ganga	Gujarat	8700	48.70
Bhakra	Himachal Pradesh	36000	34.76
Masan Reservoir	Bihar	3700	31
Ukai reservoir	Gujarat	52000	18.92
Tamnar	Chhattisgarh	59999	

Source: Singh, Satyajit (1997). Taming the Waters. Oxford University Press.

PROPOSED AMENDMENTS:-

The current Prime Minister Narendra Modi led National Democratic Alliance government driven Land Acquisition Bill in the Lok Sabha on 10th March 2015 has seen a tough resistance from key position parties in India who have called the proposed amendments "anti farmer" and "anti poor". The proposed amendments remove requirements for approval from farmers to precede with land acquisition under five broad categories of projects. While the bill was passed in Lok Sabha, it still needs the approval from the Rajya Sabha, where the current government does not have a majority, for the proposed amendments to become effective.

The following are the main "disputation points":

- The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (Land Acquisition Act, 2013) defines 'consent' clause as "land can only be acquired with approval of the 70% of the land owners of PPP projects and 80% for the private entities". But the proposed amendments by the Namendra Modi government do away with consent clause for industrial corridors, Public Private Partnership Projects, Rural Infrastructure, Affordable housing and Defence projects.
- Land Acquisition Act, 2013 states that land not utilised for 5 years should be returned to the owner, but the amendment proposed by the NDA government intends to change to 5 year or any period specified at the time of setting up the project.
- While the Land Acquisition Act, 2013 allows private companies to acquire land but the proposed amendment allows any private entity to acquire land.
- According to the new amendment if any government official conducts any wrongdoing he or she cannot be prosecuted without prior sanction from the government.
- Land Acquisition Act, 2013 mandated the social assessment before land acquisition but the NDA government's proposed bill does away with this requirement.

The government came under heavy attack from opposition parties and farmer organisation for the proposed Land Acquisition bill amendments. They claim that the amendments are aimed at "benefiting the large corporate houses".

The opposition, including the Indian National Congress, has opposed the bill in and out of Parliament. Sonia Gandhi, the chairperson of the United Progressive Alliance and Indian National Congress, called the bill "anti-poor" and "anti-farmer". She alleged that the bill will "break the backbone of India".

Not only the opposition parties but also other organizations that traditionally supported Bharatiya Janta Party (BJP) such as Mazdoor Sangh, Bhartiya Kisan Sangh and Akhil Bhartiya Vanvasi Kalyan Ashram have come heavily against the amendment proposed by the present government. As per the Bhartiya Kisan Sangh, the Modi government's land ordinance tweaks the fundamentals of The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 passed by the UPA government and supported by the BJP two years ago.

ALTERNATIVES & CONCLUSION:-

One of the alternative proposals to land acquisition is leasing the land from landowners for a certain lease period. Proponents cite how land acquisition policies by Governments unwittingly encourage rampant land speculation making the projects expensive since huge portion of investment would be need to be allocated for land acquisition cost. According to them, policies of land acquisition gave way to political cronyism where land is acquired cheaply by securing favours from local governments and sold to industries at steep market prices. Leasing land, may also support sustainable project development since the land need to be returned to the landowners at the end of the lease period in a condition similar to its original form without considerable environmental degradation. When the land is leased then anybody who has to otherwise give up land or livelihood will be compensated for its growing valuation over time. In this model, the landowner lends his land to the government for a steadily-increasing rant, or through an annuity-based system as currently practiced in Haryana and Uttar Pradesh.

Some industries already follow the model of leasing lands instead of acquiring it. Energy development projects such as oil and gas extraction usually lease lands. Renewable energy projects such as Wind Power farms projects often lease the land from landowners instead of trying to acquire the land which could make the projects prohibitively expensive.

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Certificate of Completion of Project

This is to certify that Mr. Sabarna Choudhury (ECUG/148/17), a student of Department of Economics, has submitted the semestral project as part of the B.Sc Economics Honours Course (Sem VI, Paper XVI)titled: "Demonetisation: Challenges for Indian Economy" on 30.06.20.

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Economics Term Paper

Demonetisation: Challenges for Indian Economy

Name: Sabarna Choudhury

Roll No: ECUG/148/17

B.Sc 6th Semester

Economics (Honours)

Ramakrishna Mission Residential College, Kolkata

CONTENTS

Abstract

Demonetisation is defined as a process by which currency units loses the status of legal tender as it will be withdrawn from circulation. Demonetisation is a gallant step taken by the central government to change national currency unit. India has experienced demonetisation thrice so far and the most recent on 8th November 2016. India has been amongst the highest level of currencies in circulation at 11.55% of GDP which consists of 87% of ₹500 and ₹1000 notes or roughly 14 lakh crores. Demonetisation is a serious action taken to tackle the menace of counterfeit currency, to control inflation; to discourage cash transaction, to mobilize digital cash transfer and reduce tax evasion. It has a twofold objective of – firstly, choke the funding channels of militancy, stop fake currency production, reduce tax evasion and secondly, digitizing the mode of transactions of the citizens. This study includes the interpretation of the motive of demonetisation with a vivid description of consequences of demonetisation in the Indian economy. It takes into account the positive as well as negative impacts of demonetisation in the developing Indian economy. This paper captures the pattern of the economy of India since demonetisation and evaluates major fiscal and monetary variables and their trends during pre and post demonetisation period.

Introduction

On 8th November 2016, the Prime Minister of India announced in late evening that currency notes of two denominations - ₹500 and ₹1000 would cease to be legal tender from midnight onwards. The government took several steps to promote inclusive economic growth in all sections of society. But the existence of corruption, incidence of black money, terrorism and fake currency overshadowed these efforts to remove poverty and bring about a sense of parity in the society. Demonetisation was said as the strong and decisive action against these continuing ills. As the economy and people grappled with the consequences of this sudden move, a support of digitalised nation was built and there were no restrictions on non-cash payments by cheques, demand drafts, debit or credit cards, electronic fund transfers.

The expectations from demonetisation were:-

1. Decrease in corruption.
2. Curbing black money and stopping black money to come in the main stream economy.
3. Destroying counterfeit currency.
4. Reduction in terror funding.
5. Increase in liquidity in bank.
6. Fall in real estate prices.
7. Decreased housing loan and other loan rates.

Objectives of Demonetisation

The Demonetisation was a massive step taken by the Govt. of India to curb the deliberate use of black money from the nation. The basic ideology of the policy was to create a short term impact for long term purposes and to suppress corruption from the prevailing system and economy. It was also a step taken to curb terror-funding, counterfeit currency. As time passed a list of justifications for demonetisation grew such as creation of cashless economy, curbing real estate prices and broadening of the tax payers' base. Though it is generally understood that black money is generated through corruption and illegal cash transaction, one must also bear in mind that "all black is not cash and all cash is not black". Liquid money or Cash is widely used in India's informal sector that contributes over 45% of GDP and 90% of employment. It is extensively used as the medium of transaction in the agricultural sector.

Thus in short the objectives of demonetisation are to prevent:-

1. Accumulation of Black money through income that was not declared to tax authorities.
2. Corruption.
3. Use of high denomination currency for funding terror activities.
4. Production of counterfeit currency.

What is Black Money?

Black Money is the money earned through any illegal activity usually received in cash from underground economic activity that are not taxed.

White money is the earning after paying taxes according to the Government rules.

In India, black money is the fund earned in the black market on which income and other taxes have not been paid; it also includes the unaccounted money that is concealed from the tax administration. According to the Director of Central Bureau of Investigation, in Feb 2012, India had US$500 billion of illegal funds which increased to US$1500 billion by March 2018. The root cause for the increasing rate of black money in the country is the lack of strict law enforcements for the punishment of the offenders as it is seen that criminals pay bribes to the tax authorities to hide their corrupt activities.

Earlier effects of Demonetisations in India

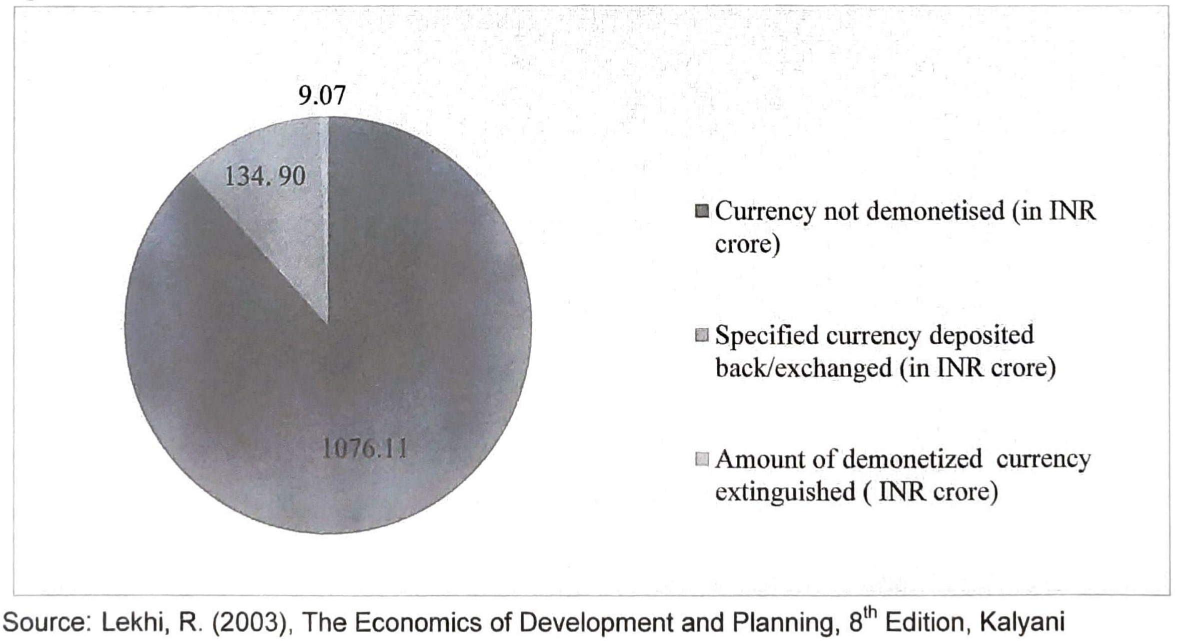
1. Demonetisation of 1946 :-

The rationale of this demonetisation was recorded in the History of RBI in the following words – "Soon after the war, while Governments were giving attention to ways and means of averting the expected slump, thought was also given to black market operations and tax evasion, which have known to have occurred on a considerable scale".

To implement the first demonetisation ever witnessed by India, the government of India promoted an Ordinance on 12th January 1946. According to the Ordinance, currency notes of ₹500, ₹1000 and ₹10,000 were demonetized with a directive of exchange of them within 10 days. By the end of 1947, out of a total of ₹143.97 crores of high denomination notes, notes of the value ₹134.9 crores had been exchanged. Thus notes worth ₹9.07 crores were not exchanged indicating that the action was not really a success. The action of demonetisation was summed up by the first Governor of RBI, Sir Chintaman D. Deshmukh as, "It was really not a revolutionary measure and its purpose as a minatory and punitive gesture towards black marketing was not effectively served".

Another limitation to this measure was that the currency notes exchanged by some native states which were not a part of British India were not questioned. However in the year 1954, the denominations of ₹1000, ₹5000, ₹10,000 were further introduced.

Figure 2: Demonetisation of 1946 - Total currency in circulation: INR 1,220.08 crores

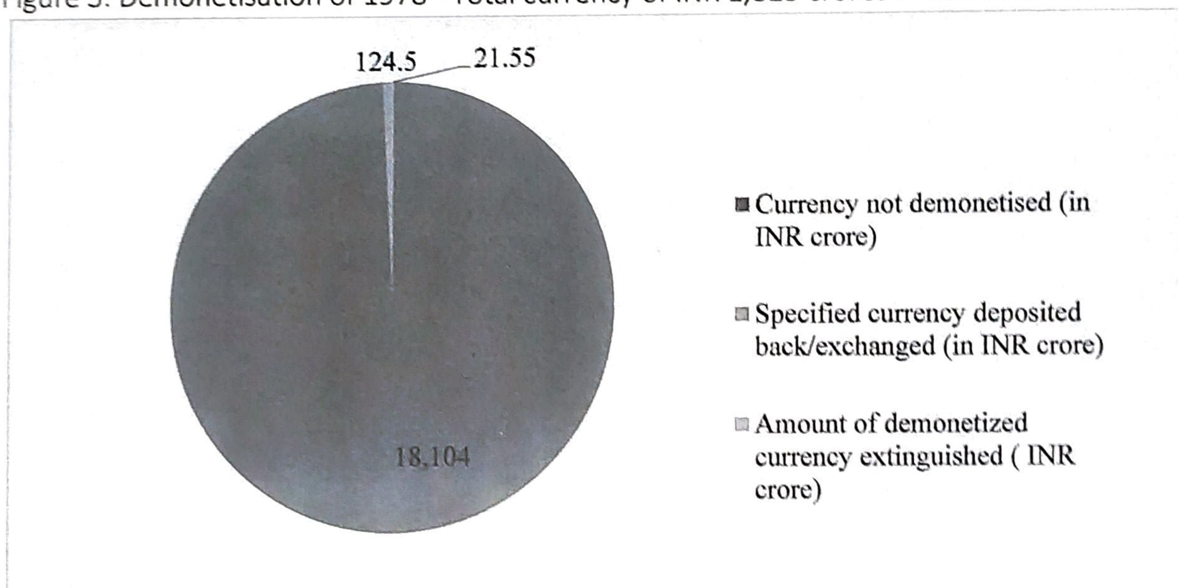


Source: Lekhi, R. (2003), The Economics of Development and Planning, 8th Edition, Kalyani Publications, Delhi.

2. Demonetisation of 1978 :-

After the general elections of 1977, the first non-Congress government of India underwent another demonetisation drive whose objective was to declare illegitimate black money normally held in high denomination currency notes. The government demonetized ₹1000, ₹5000 and ₹10,000 currency notes on 16th Jan, 1978 under the High Denomination Bank Notes Ordinance, 1978. During this demonetisation program, out of ₹146 crores of demonetized notes, ₹124.45 crores were exchanged and a sum of ₹21.55 crores that is about 14.76% of the demonetized currency notes were extinguished. Currency Notes of ₹500 were reintroduced in 1987 and those of ₹1000 in 2000. On this regard the then Governor of RBI, said that "such an exercise seldom produces striking results" since people having black money rarely keep them in cash. Black money holders can easily find agents to convert notes through a number of smaller transactions for which there would be no explanations and thus it is very tough to find them out.

Figure 3: Demonetisation of 1978 - Total currency of INR 1,825 crores in circulation

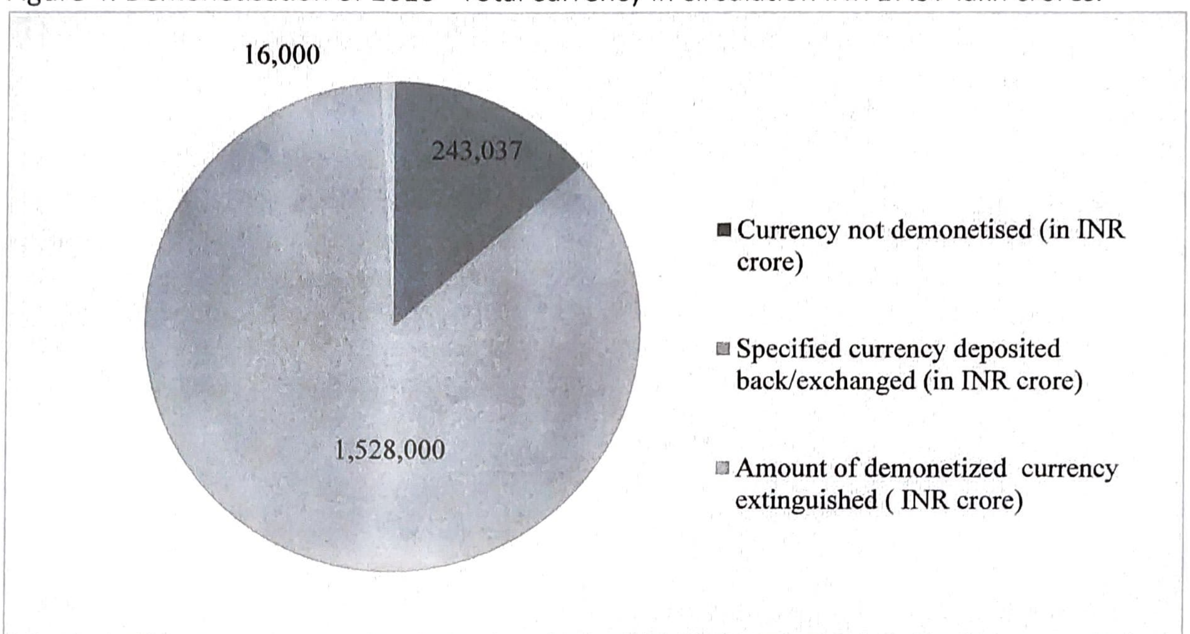


Source: Lekhi, R. (2003), The Economics of Development and Planning, 8th Edition, Kalyani Publications, Delhi

3. Demonetisation of 2016 :-

A total of 9,026.6 crores (90.266 billion) currency notes in volume valued at ₹17, 97, 46,000 crores (₹17.97 trillion) were in circulation as of 4th November 2016. Of these currency notes, ₹500 numbering 1,650 crores and valued at ₹8.25 lakh crores (₹8,250 trillion), and currency notes of ₹1000 numbering 670 crores valued at ₹6.70 lakh crores were demonetised on November 8, 2016. It has been extensively reported that these Specified Bank Notes (SBN) that were demonetised amounted to INR 15.44 lakh crores or 86.4% of the currency in circulation. As on December 12, 2016, the total specified currency notes deposited with the RBI was ₹12.44 lakh crores. The official final figures of SBN deposited suggest that the RBI informed the Public Accounts Committee of the Parliament that SBNs valued at ₹15. 28 lakh crores had returned to the RBI treasury. Therefore, only currency worth ₹16,000 crores or 1.03% of the demonetised currency was extinguished.

Figure 4: Demonetisation of 2016 - Total currency in circulation INR 17.97 lakh crores.



Source: Lekhi, R. (2003), The Economics of Development and Planning, 8th Edition, Kalyani Publications, Delhi

Status Prior to 8th November, 2016

Let us assess the condition of Indian economy before Demonetisation was declared.

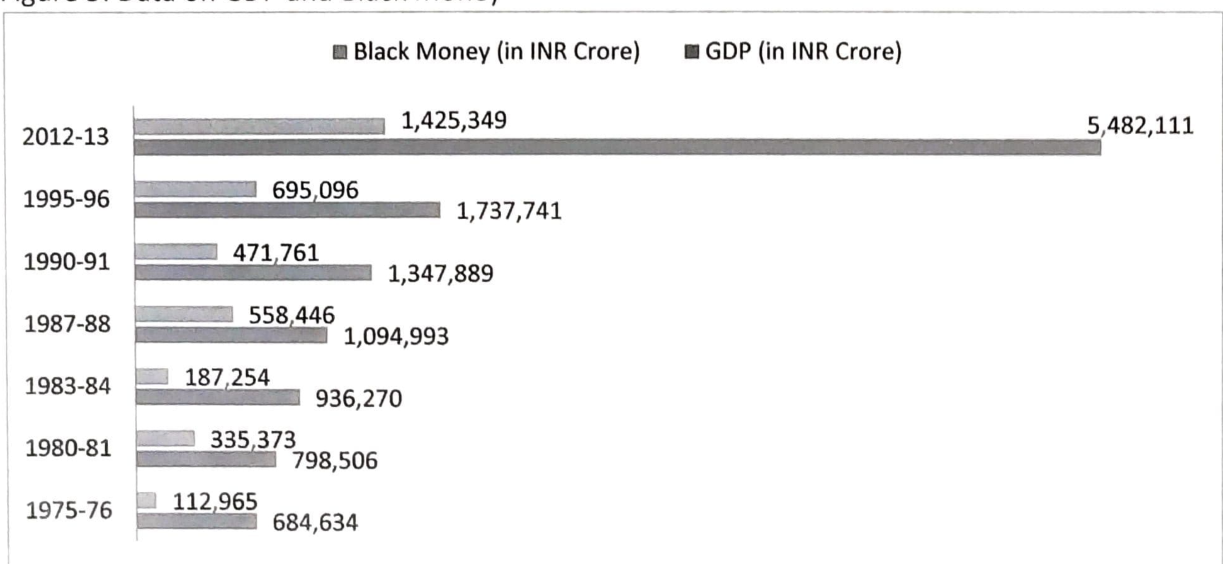
1. Counterfeit currency :-

According to the Annual Report of RBI, fake currency notes valued at ₹27 crores were seized primarily by the banks during the financial year 2015-16. These notes were alleged to have been smuggled in and were being used to fund illegal activities throughout the country. A confidential study is said to have been carried out by the security agencies along with the Indian Statistical Institute which pegged the value of counterfeit notes at ₹400 crores. It was also reported that higher rate of occurrence of Fake Indian Currency notes (FICN) in India, estimated to be around 250 pieces per million. Attempts were also made to push about ₹70 crores in Indian Economy every year of which only 1/3rd was seized.

2. Black Money :-

Black money is mostly generated in the informal sector, real estate sector and in international transactions. Existence of black money is one of the crucial reasons for low taxpayer's base. Various studies have estimated the size of the unaccounted economy. According to the National Institute of public Finance and Policy under the Ministry of Finance, in 1975-76 it was estimated to be 15%-18% of GDP; while between 1980-81 it was 18-21% of GDP and between 1983-84 it was 19-21% of GDP. A study by Prof. Arun Kumar (2006) estimated it at 40% of the whole economy in 1995-96.In 2013, a McKinsey & Company report estimated India's shadow economy to be 26% of the GDP. This report suggested that prevalence of cash often allowed the presence of a shadow economy.

Figure 5: Data on GDP and Black Money



Source: Extracted from Ministry of Finance (2012), White Paper on Black Money, Central Board of Direct Taxes, Department of Revenue, Ministry of Finance, New Delhi.

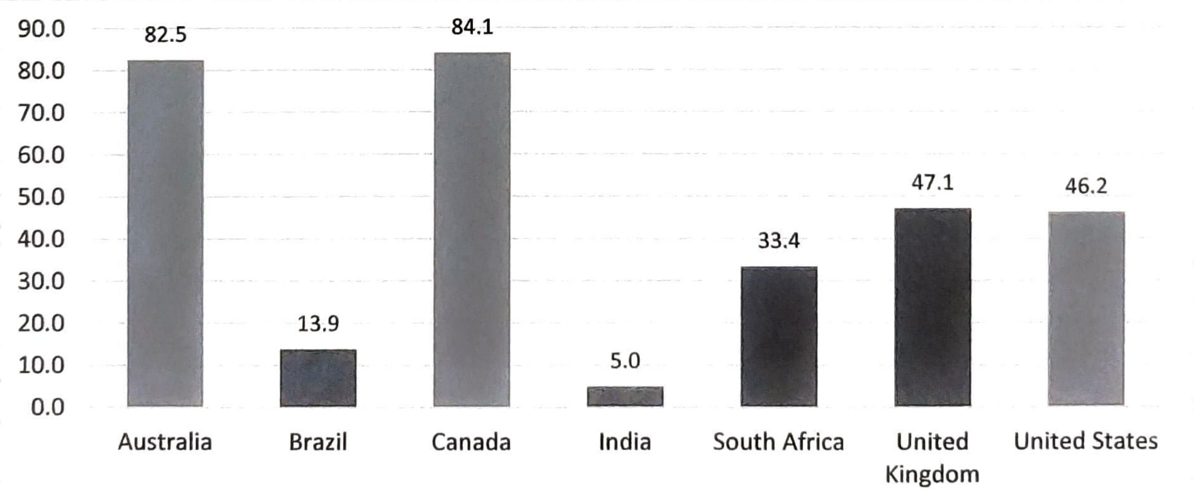
3. Corruption :-

Corruption is an issue that adversely affects the country's economy, the credibility of its governments at the central, state, and local levels. The Corruption Perception Index 2016 ranks India 79th out of 176 countries, with a score of 40, on a scale of 0 to 100. Corruption and black money are connected as former is the generator of the latter and this has held back the economy from its desired development. Spreading its tentacles deep, corruption has become rife amongst politicians, bureaucrats, and businessmen and has affected the basic fabric of Indian society.

4. Low Taxpayers' Base :-

In 2015-2016, of the total population of 129 crore, only 5.70 crore were taxpayers which accounted for only 4.4% of the population. This number included both categories of people, those who have filed their returns of income as well as those in whose case tax has been paid or deducted but no return of income has been filed. During the period 1990-1991 to 2015-2016, the percentage of effective number of taxpayers in the total population of the country grew from 0.85% to 6.6%. Though the growth in number of taxpayers in relation to total population is a positive development, the present number of taxpayers is not satisfactory when compared with other countries around the world. Data from a few successful tax administrations around the world shows that 84.1% of the population of Canada, 46.2% of the population of USA, and 47.1% of UK's population filed tax returns during calendar year 2015. In that year only 3.3% of India's population had filed returns, proving that India's position was the worst even amongst the BRICS nations. In South Africa, 33.4% of the population and 13.9% of Brazil's population were taxpayers.

Figure 6: Active Individual Taxpayers as a percentage of citizen population, 2015



Source: OECD (2017), Tax Administration

5. Cash in Circulation :-

India mainly runs on cash. The flow of cash comes with a set of problems, the most prominent of which is the generation of black money, which fuels the nation's shadow economy and is used to evade taxes. The magnitude of cash in circulation is directly linked to the level of corruption. It has a direct effect on the purchasing power of the poor and the middle class. High circulation of cash also strengthens the illegal trade which is directly linked with illegal activities.

Impacts of Demonetisation

The Demonetisation of 2016 had both positive and negative effects on Indian economy. The effects are stated as follows:-

Positive effects of Demonetisation:-

1. Changed Saving Habits :

Demonetization played an important role in transferring cash to financial markets. It changed saving habits of people. After the demonetisation Gross financial savings has increased from 10.9% of Gross National Disposable Income (GNDI) in FY16 to 11.8% of GNDI in FY17. People started investing in mutual funds and bond market. The mutual fund investment data reveals that it has increased by 155% in a year and reached ₹3.43 lakh crores with a 46% increase in collection of premium of insurance policies.

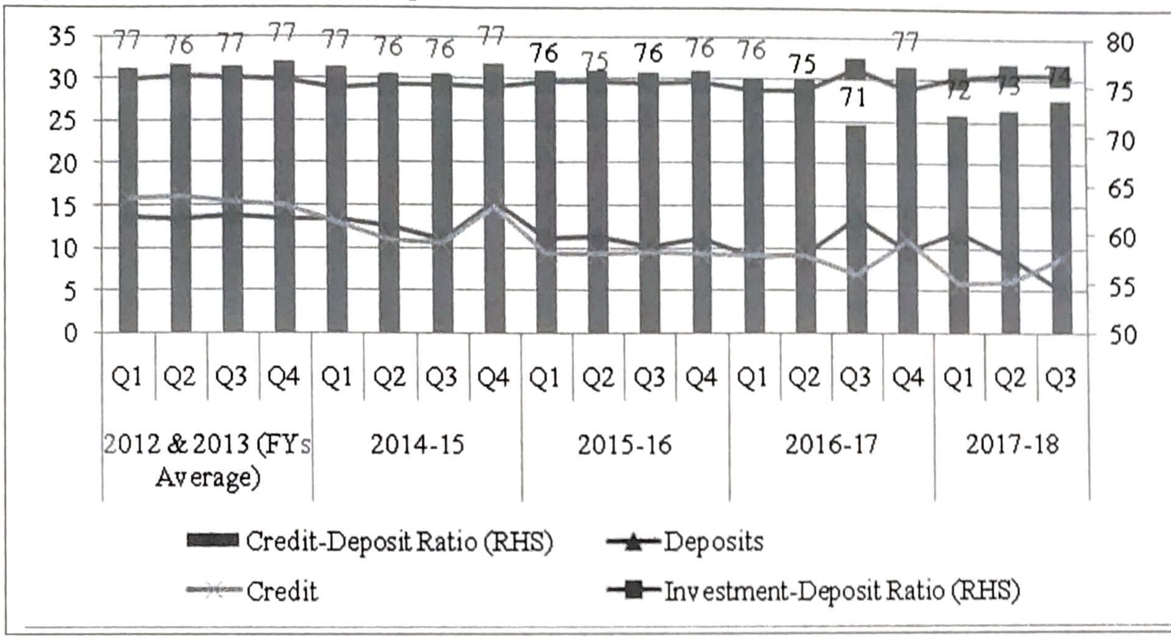
2. Real Estate Cleansing :

The amount of black money involved in the real state sector is enormous. An estimate tells us that in Delhi-NCR at least 40 percent of real estate deals are made in illegal ways. Demonetisation has reduced the flow of unaccounted money into the real estate sector. This will help in curtailing the use of black money in real estate sector which in turn result in the reduction of the prices of land and property.

3. Financial sector :

As per the monetarist view, the effect of demonetisation on economic activities and stock market is related to the fall in interest rates. However, the real side impact of any demonetisation move will also depend upon the relative share of connected and unconnected sectors of the economy. Demonetisation has led to increase of cash flows in the banking system. An event study utilized the daily data of BSE 200 stock index and revealed a 9% reduction in the shareholders' wealth during eight trading days immediately after the announcement of demonetisation. The market perceived the move negatively. Figure 7 presents the behaviour of interest rates, credit extended, deposit received and investment utilized for the period 2012-18. The growth rate in deposit has been around 14 percent during 2012-13 (measured on left axis of figure 7), but the same came down to 8 percent in Q3 of 2017-18 with a rise of 14 percent during demonetisation period. Surprisingly, the credit growth was to the tune of 16 percent during 2012-13 but came down to around 6 percent in 2017-18. Notably the credit growth has slowed down post- demonetisation except in Q4 of 2016-17, just immediately after the demonetisation period. The behaviour of interest rate coincides with the flow of money supply as there was much growth in broad money during 2012-13, but it slowed down thereafter. This phenomenon indicates that high growth in money supply might have created inflationary pressures. In this sense the argument of demonetisation to curb the asset bubbles seems partly justified. The credit-deposit ratio (measured on right hand side in figure 7) has remained stable in past couple of years. Similar behaviour is noticed for investment-deposit ratio as well.

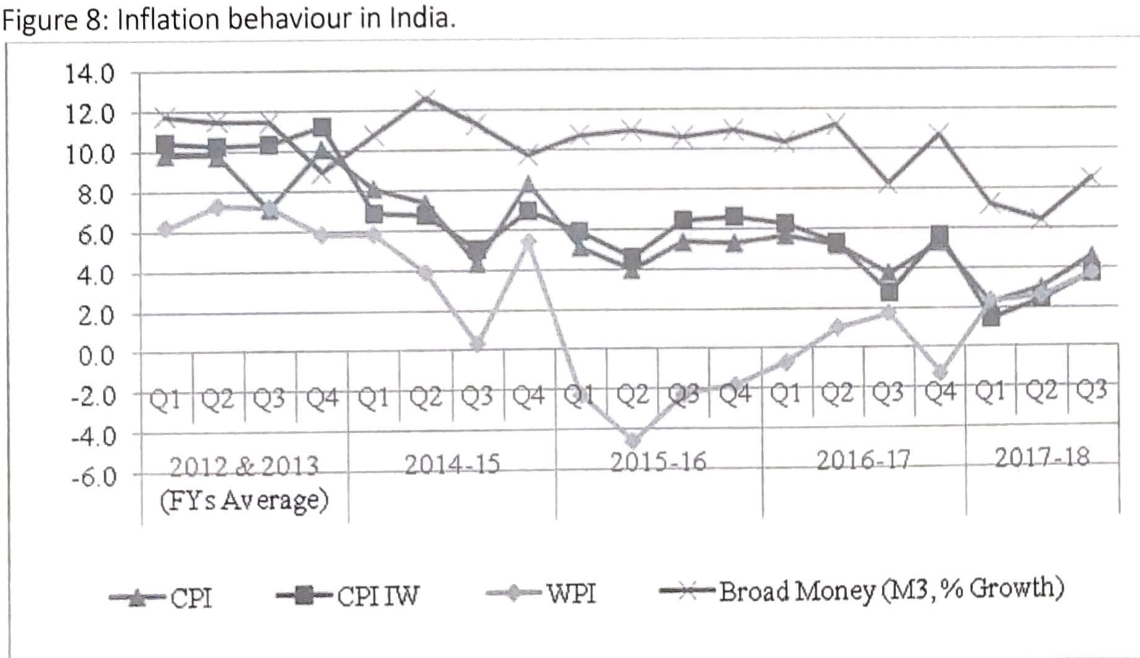
Figure 7: Growth rate of banking indicators.



Source: Monthly Bulletin of RBI, Ministry of Finance

4. Inflation :

Figure 8: Inflation behaviour in India.



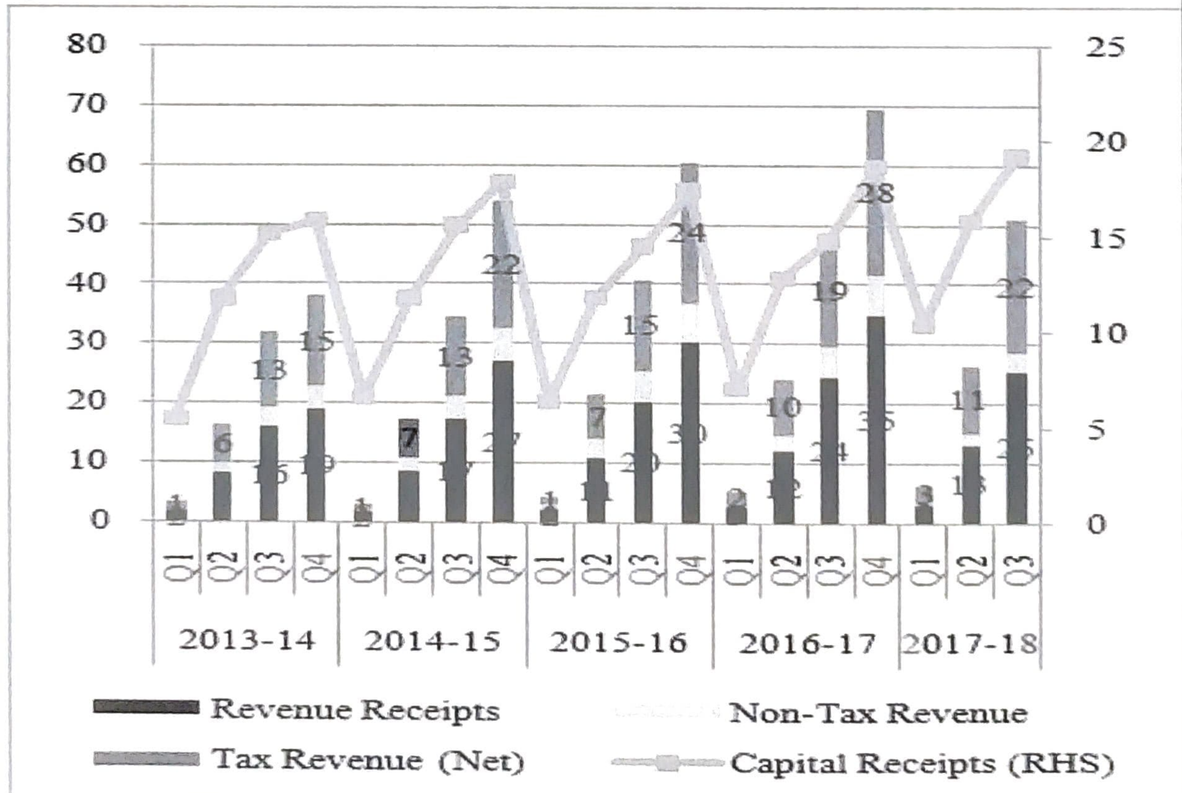
Source : Monthly Bulletin of RBI, Ministry of Finance.

The growth rate in consumer price index (year over year) for aggregate level is presented in figure 8.It is evident that inflation measured through Consumer Price Index (CPI) and CPI for Industrial Workers (CPI-IW) has remained around 10% during the 2012-13 and reached around 4% in the Q3 of 2017-18. The figure clearly shows that inflation level has eased after the demonetisation move. The inflation scenario coincides with the trend in money supply, as slowdown in money growth has eased the inflation partly. Based on these statistics, it can be inferred that higher money supply might have created asset bubbles and demonetisation along with other monetary policy measures, have helped curb these bubbles. The year-on-year comparison states that WPI showed negative growth during 2015-16 and reported positive growth after the demonetisation move.

5. Government Balances :

The impact of demonetisation on the Union Government accounts is mainly perceived on the tax revenue collection. Figure 9 presents the values of different components of government accounts. The blue bars of the of figure 9 shows that tax collection was ₹24 billion in Q4 of 2015-16 and the same has increased to ₹28 billion in Q4 of 2017-18 (next quarter to the demonetisation move). One observation can be made that the tax revenue in absolute terms over corresponding quarters of every year is rising that means the economy is expanding its base over a period of time.

Figure 9: Union Government Account.



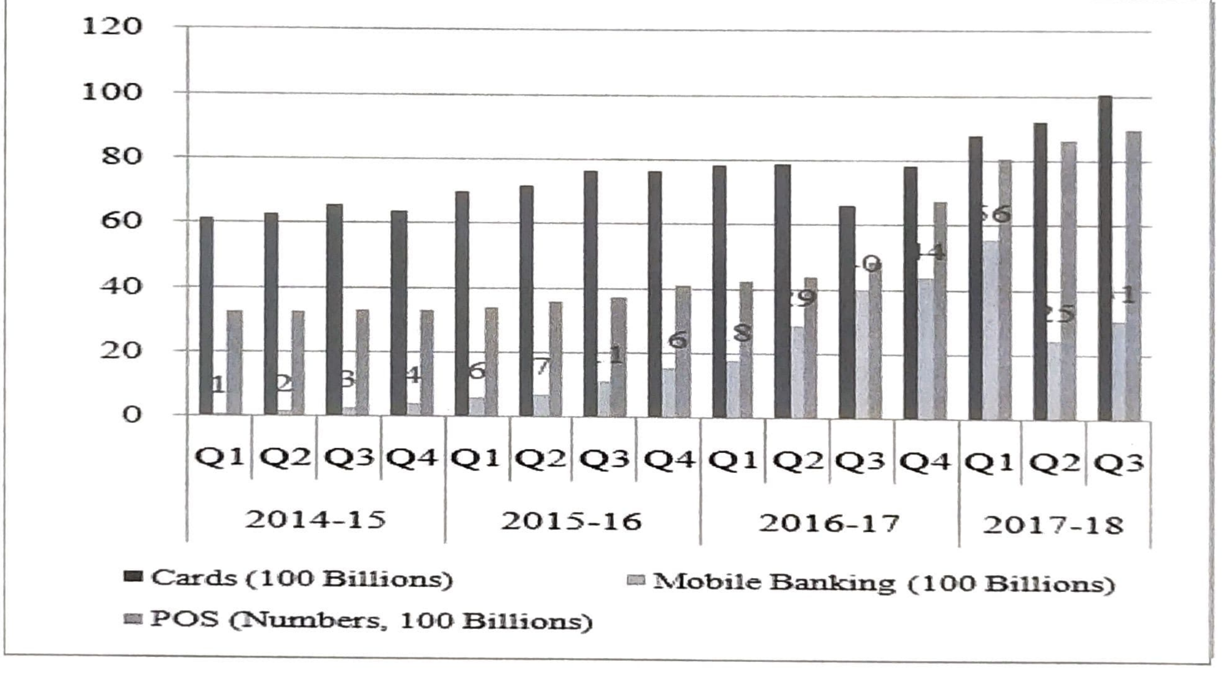
Source: Monthly Bulletin of RBI, Ministry of Finance.

The revenue expenditure also exhibits the tendency of gradual rise over different quarters. The growth pattern tells that the tax revenue has improved which favors the positive impact of demonetisation.

6. Digital Economy :

Demonetisation has pushed India towards a more digital economy. From figure 10, it is evident that digital transactions gained momentum in the quarter immediately after demonetisation and then stabilized. The impact of demonetisation was apparent in the volume of card payments which slowed down in Q3 of 2016-17, amid the withdrawal limit, but thereafter card payments increased voluminously. Even during demonetisation there was a large increase in mobile banking which slowed after the first quarter of 2017-18. The numbers of Point of Sale (PoS) machines have also increased significantly. The launch of goods and service tax could be a primary factor for the same. It can be concluded that demonetisation appears to have resulted in increase in digital transactions.

Figure 10: Digital Transactions: card payments and mobile banking.



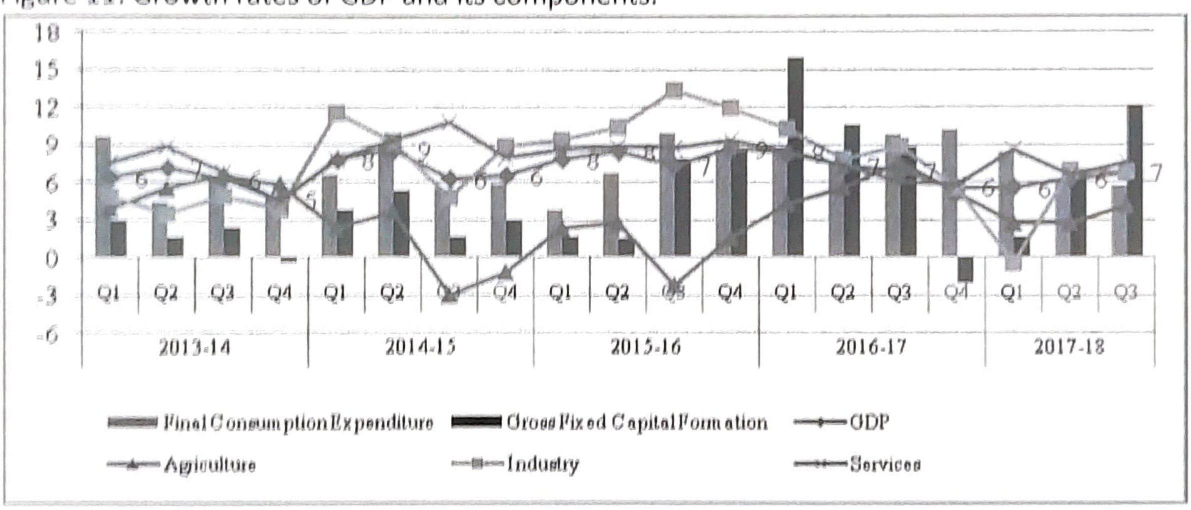
Source: Monthly Bulletin of RBI, ministry of Finance.

Negative effects of Demonetisation:

1. Economic Growth:

In order to assess the impact of demonetisation on economic growth (through GDP) the fourth quarter values of different years are compared in figure 11. Growth rate was 9 percent in Q4 of 2015-16 and came down to 6 percent in Q4 of 2016-17 and growth has remained stable at 6 percent thereafter. In terms of aggregate growth, it can be argued that the demonetisation move has slowed down growth pace of the economy. The adverse impact of demonetisation move is apparent for the industrial sector with its growth coming down to 0% in Q1 of 2017-18 which generally had been about 10% in Q1 for each of the past three years 2014-17. Services sector has remained unaffected and reported stable growth. The investment growth measured through gross fixed capital formation was about 10% during Q2 of 2016-17, a period before the demonetisation move, but came down to negative in Q4 of the same financial year and about 2% in Q1 of 2017-18. However, investment growth revived during Q2 and Q3 of 2017-18. Consumption expenditure growth has remained stable in the past couple of years even during demonetisation period.

Figure 11: Growth rates of GDP and its components.

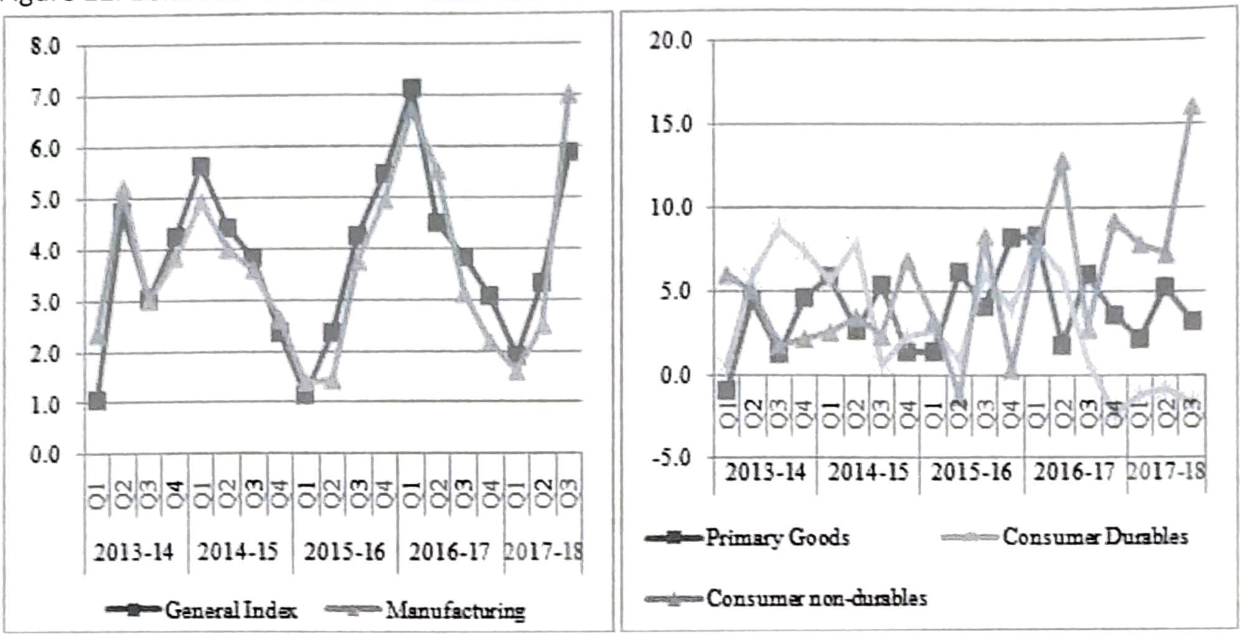


Source: Monthly Bulletin of RBI, Ministry of Finance.

2. Industrial Sector :

The Index of Industrial Production is a demand side indicator of the economy. The behaviour of the Index of Industrial Production (IIP) at the aggregate level is given in figure 12. In terms of year-on-year growth in IIP in aggregate, the Q1 growth for year 2017-18, a period immediately succeeding demonetisation noticed a significant fall and revival thereafter. In fact, a fall in the growth of IIP in Q1 was witnessed in the year 2012-13 and 2015-16 as well. Specifically, the fall in growth of IIP in Q1 in 2017-18 is attributed to demonetisation but the index recovered to its previous level immediately.

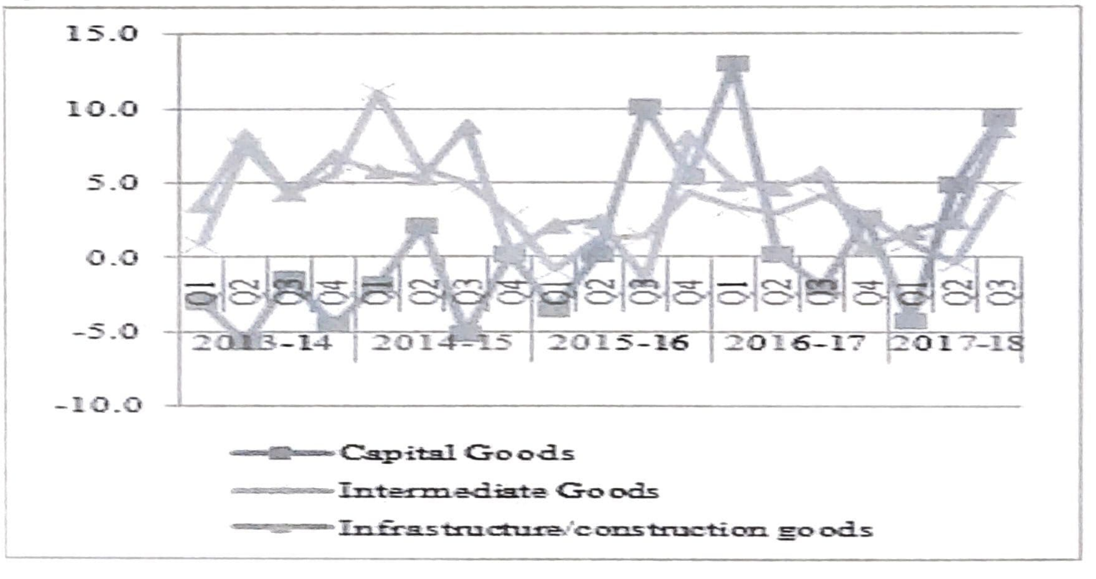
Figure 12: Behaviour of Index of Industrial Production.



Source: Monthly Bulletin of RBI, Ministry of Finance

The impact of demonetisation was mainly offset by upsurge in consumer non-durable goods. However, durable goods saw a significant dip in the post-demonetisation period. In terms of use based classification, primary goods index remained stagnant with minor fluctuations.

Figure 13: Behaviour of Capital, Intermediate and Infrastructure goods (in terms of IIP).



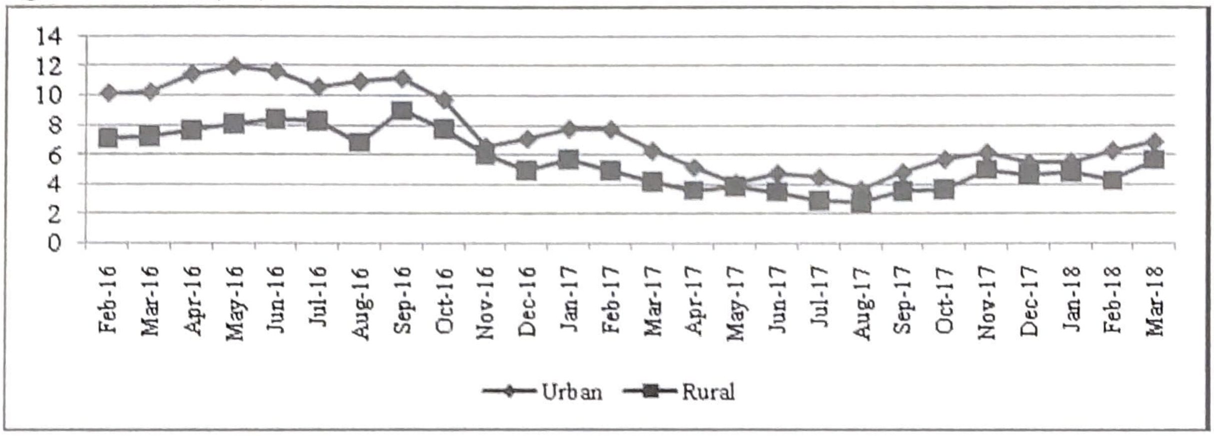
Source: Monthly Bulletin of RBI, Ministry of Finance.

In terms of impact on productive capacities, it is observed that IIP for capital good saw a significant dip in Q2 of 2016-17, a quarter before the demonetisation move. With marginal rise in Q4 of the demonetisation year, the index fell down in Q1 of 2017-18, but had significant growth in Q2 (second half) of 2017-18 as in figure 13.

3. Rural and Informal Economy :

The impact of demonetisation was also seen in the rural and informal economy. As per the report of India Ratings and Research Private Limited, borrowers were unable to meet their dues as earning members lost on average, one to three- months wages or income due to demonetisation in FY2017. In an estimate Fitch Group Company, indicated that aggregate collection efficiency of majority of Micro Financing Institutions stood at 75-80 percent in May 2017 compared with a low of 50 to 60 percent in December 2016. The unemployment rate inched marginally during demonetisation period but came down thereafter (Figure 9). However, there is a marginal increase in unemployment rate since mid-2017 in India and that may be attributed to slowdown in the industrial pace amid indirect tax reform of GST.

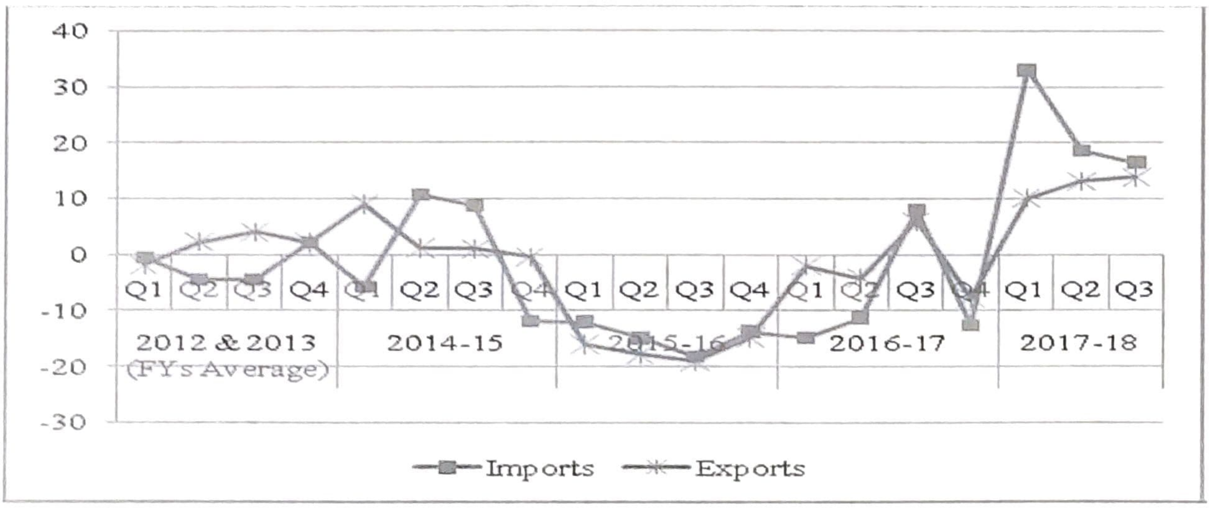
Figure 14: Unemployment rate.



Source: Centre for Monitoring Indian Economy (CMIE).

4. External Sector :

Figure 15: Exports and Imports growth rates.



Source: Monthly Bulletin of RBI, Ministry of Finance.

The trend analysis for Indian exports and imports over the past five years as shown in figure 15 says that growth rate of imports has been higher than the exports growth in Q2 of 2014-15. For year 2015-16, the exports as well as imports growth rates have appeared negative, however shown positive growth during the period of demonetisation. In the quarter following demonetisation, the growth has fallen down drastically but later it has revived.

Conclusion

The magnitude of the decision by the Government to go in for demonetization is enormous. It involved criticism from all quarters and major inconvenience to the public at large. There was a considerable drop in economic activity through decrease in GDP immediately after demonetization and on account of currency squeeze, even during remonetisation period there was an impact on several sectors of the economy though for a brief duration.

In sum, the effects of demonetisation on the economy can be said to be neutral. Initially the economy suffered hiccups and the informal sector was largely affected. But the positive effects of demonetisation far outweigh the negative outcomes. This was akin to the resistance capacity exhibited by the Indian economy during global financial crisis. As per the Moody's, Demonetization will strengthen India's institutional framework by reducing tax avoidance and corruption. It would result in efficiency gains through greater formalization of economic and financial activity, which would help broaden the tax base and expand usage of the financial system.

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Certificate of Completion of Project

This is to certify that Mr. Avijit Ghosh (ECUG/011/17), a student of Department of Economics, has submitted the semestral project as part of the B.Sc Economics Honours Course (Sem VI, Paper XVI)titled: "Analysis of Determining Factors for Female Labour Force Participation in India"on 30.06.20.

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ANALYSIS OF DETERMINING FACTORS FOR FEMALE LABOUR FORCE PARTICIPATION IN INDIA

TERM PAPER SUBMITTED BY –

AVIJIT GHOSH

ROLL NO. – ECUG/011/17

REGISTRATION NO. – A03-1112-0011-17

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➢ ABSTRACT:-

Diversification of economic activity of women is important for growth and development of an economy. Rise in quality of education, decline in fertility rate, infrastructure facilities and other various factors are expected to reduce the demand for women's time spent in domestic works and other non marketed activities and increase their opportunities to participate in the labour market and get paid job. In this paper various determining factors that lead women to participate in the labour force or job market either formal or informal sectors are analyzed with empirical evidences. A wide share of female employment is in the so-calledfemale-centric jobs in developing countries. In this paper some empirical evidences are presented to discuss the difference between male and female labour force participation.

➢ INTRODUCTION:-

Participation of Women in labour force and get paid job in market in developing country,is overlooked, under reported and even underappreciated due to various factors. Women are often homebased and contribute to non market activities whose benefits are limited to household. Greater labour force participation of women is important for inclusive growth in the economy. Women's empowerment may be driver by poverty or economic necessity or may be result of increasing educational attainments, available job opportunities. The rise is the overall female participation rate does not always reflect a good scenario and depends on the nature of job either formal or informal at which the participation rate increases. Ultimately, understanding the nature and identifying the female labour force participation requires taking into account various socio-economic religious cultural factors the macro-level and the micro-level or household level. This include educational attainments, social status, income level, presence of children, labour market status of household members especially husband as critical factors at the household level and, available job opportunities, cost of job searching , infrastructure, fertility rate etc at the macrolevel. Change in the structure of the economy of developing country like India, lead to the change in the pattern of demand for labour. Women's Employment is a critical factor in their progression towards economic independence and also considered as an indicator of their overall status in society. In this paper various driving forces of female labour participation are analyzed based on literature, basic statistics, and econometric techniques.

➢ Literature Review:-

Women's labour force participation and access to decent work are important and necessary elements of an inclusive and sustainable development process. Investing in women's full economic potential is critical to increasing productivity and economic growth. Moreover, reducing gender barriers to decent work is fundamental to promoting women's economic empowerment. Gender inequalities are not only rooted in socio cultural norms of countries, they are also entrenched in the policy and institutional frameworks that shape the employment opportunities of country's female labour force (Ruchika Chaudhury, Sher Verick 2014). In the contexts of India it is felt that 'autonomy' is a class bound concept and refers to the right and privileges enjoyed by some upper middle class and rich women in shaping there career and future life. In the case of poor women 'survival' is the foremost criterion for migration and realization of 'self-worth' or improving one's own status and unrealizable dreams (K.Shanthi,2006). Women experience a range job multiple challenges relating to access to employment, choice of work ,working conditions, employment securities, wage parity, discrimination and balancing the competing burdens of work and family responsibilities (Ruchika Chaudhury, Sher Verick 2014). U Curve of Women's employment by educationlevels is caused by a mixture of economic and cultural factors. The standard norms for housewives are adapted for poor women , who often have a double or triple burden of work, and for rich women belong to higher social groups, who can employ others to assist them whilst still being the manager of household (Wendy Olsen, Smita Mehta).the urban nature of stratum of women is also important as their socio-economic characteristics and supply pressures more importantly compulsions are different from the women of a different income levels, socio economic strata and sector, which needs to be brought out. For certain employment categories employment may be less significant like the informal-sectors. In the present employment structure, unless there is a demand and available opportunities to absorb the educated women, the positive relationship between education and their entry into the labour market cannot be predicted (Shahnaz Hamid).

➢ DRIVING FORCES:-

The decision of women to participate in the labour market is influenced by own preferences with her household and family circumstances, job opportunities in locality, type of job available, the probability of participating in the labour force is modeled as a function as several factors used as explanatory variables split into categories –

- Individual & Household
- District
- State

• INDIVIDUAL & HOUSEHOLD CHARACTERISTICS:-

1) HOUSEHOLD INCOME:-

One of the highly influencing factors of women's labour is household income. The U shaped relationship between family-income the higher the probability of women entering in the job market. The low subject substitution effect in terms of home-goods production and market works and a high elasticity for "non market goods Status on leisure" is attributed to the importance of status production. In lower income group participation of women in the labour force may be cyclical depending on family income i.e. when family income rises women may stay out of job market or labour force and vice-versa. This can depend on type of jobs e.g. harvest or other job of opportunities for family members. Improving overall job creation is likely to reduce marginal employment among poor women. The house-hold income depends on various factors like nature of husband's jobs, wage rate of husband, number of adult male earner. Occupational status of husband, wage of husband or the others earning male members of family reduce the participation of women in the job market. On the other hand greater number adult female members in the family, higher the probability of participation in the job market.

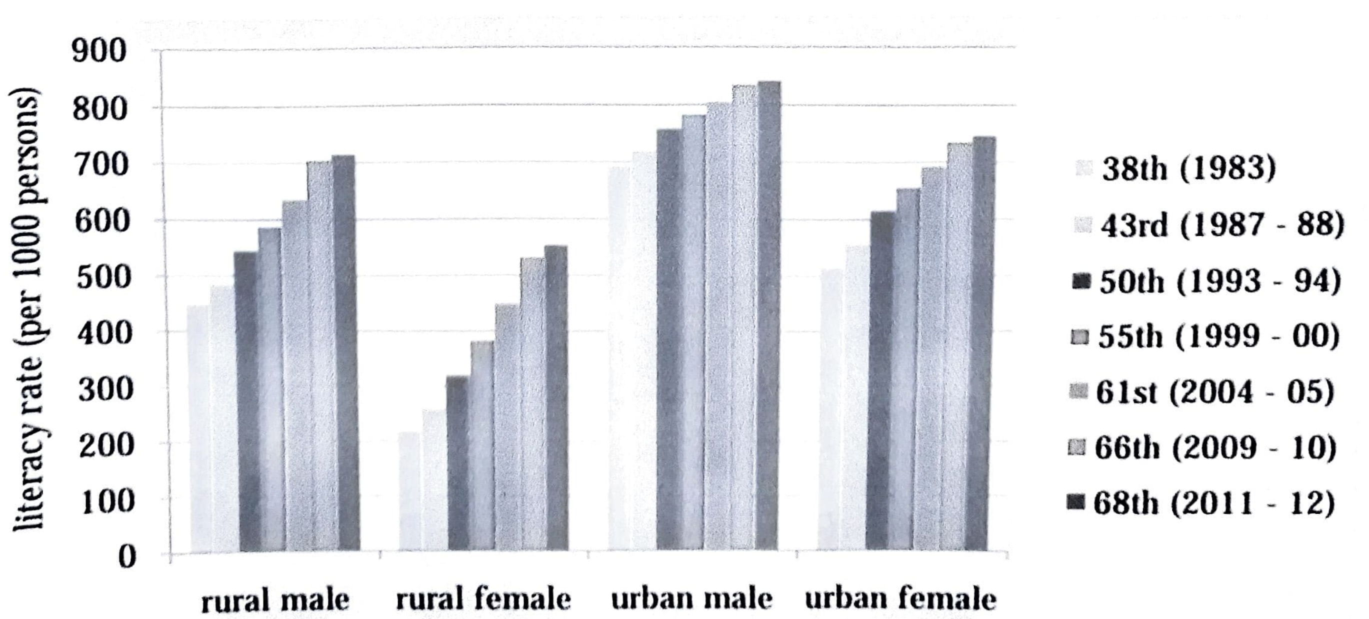
2) HOUSEHOLD HEAD EDUCATION:-

Education of the household head may be used as a proxy for wealth and status. The impact of under employment among male household members is rather volatile, changing sign and significance and magnitude across regions and education levels. In rural areas it is found consistently negative across levels of education but only begins to gain importance from primary education onwards in urban regions. However the magnitude is greater with each additional level of educations attainment for urban regions. While in rural areas household head with higher the level of educational attainment lower the probability of participation of female household member in the family compared to the illiterate household head. If only self employed worker in rural area are concerned, the level of education of household head has minimum impact on female participation in the labour force. Most of the self employees are found low skilled and working for necessity. Higher status leads to more restriction on women and greater wealth decreases the need for female household member to work. Thus the education level of household-head has a inverse relationship with female labour force participation. But mostly in urban areas household heads with university degree may have modern attitude toward participation of women in economic activity and become an earning member of family.

3) OWN EDUCATION:-

The classic U shape relationship between education level and female participation in the labour force is the probability of participation decreases from the illiterate up to the individuals with secondary education and increases onwards. The effect of education on participation is negative expect at the graduate level and lightly stronger on lower or primary education levels. In most cases having the university degree increases the probability of being in the job market in urban regions. Thus rationale behind U shape relationship can reflect income and status. Least educated or illiterate and poor women are forced to involve in earning activity and get wage to survive. Poor households have a reduced tendency to have a working purely within the home as a domestic worker. Most of their poor women have a double burden of domestic and paid work and also involve in farming activity in subsistence level among the highly educated, high wages can attract women into job market. Self selection is another factor to take into account. The choice of pursuing higher studies maybe linked to the willingness to work of many women. The level of educationa reduces the adverse socio-economic attitudes and reduce the negative influence of religious factors. Despite a potential negative short term impact on female participation, education will overtime counter the socio-economic, religious factors working against women's interest to take advantage of economic opportunities.

Figure No.1:-Literacy Rate (Per 1000 persons) for different categories of persons during 1983 to 2011-12.



Data Source:- NSS report no. 554: Employment and Unemployment situation in India , 2011-12.

4) SOCIAL & CUTURAL FACTORS:

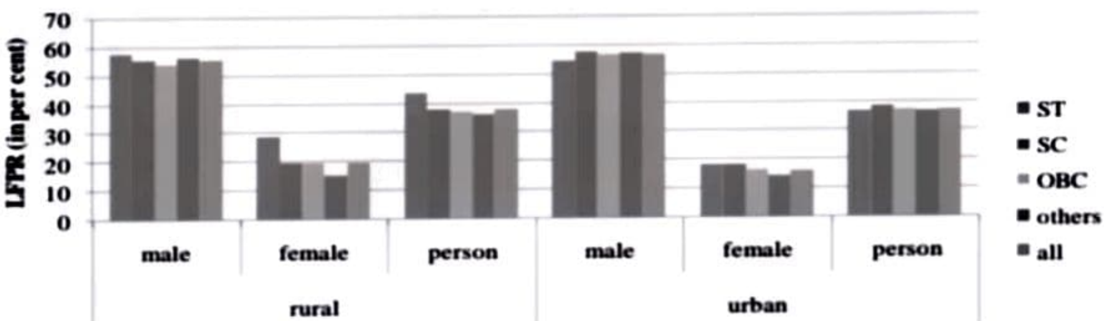
Social religions norms in India are assumed to have a strong impact on to work for the survival of her family which belongs to poor group. Those households which are able to pulls themselves out of poverty are more likely to withdraw the female member from job market, if any this is seen mostly in higher social groups. Women's withdrawal from me job market is viewed as couples economic success which reflects patriarchal nature of the society the risk of exposure to other males outside the home is high in traditional societies. This becomes barrier to the female member to participate in earning activity. Thus self employment within the home may be a way to reduce their risk and can increase the participation of women in labour market. Some authors mention the potential role of "Sanskritization", the customs of upper castes is the process of demonstrating honorable roles for women, e.g. as the provider of refreshment at functions and the unflappable member in family. Women who do farming work often seen as helpmeet of the male household and works as a unpaid worker. Many people want women to play submissive role and to be differential toward old members of family. Most of the time their work is considered as helping work even if it would be classified as employment or self-employment if done by a male household earning of female members of family often seen as "Pin Money" as temporary as nonessential. Presence of parents in law in household negatively affects the married women's labour force participation rate in both rural and urban regions. Labour force participation rate may differ across social classes such that women belong to lower classes or castes have higher chance of being in the labour market. Overall the impact of socio-economic and cultural religious factors about female participation in labour force may be stronger in urban areas than rural areas. Parents or parents in law are responsible as determining factor for the participation of female household member in labour market as the traditional and hierarchical attitude in Indian societies. Mostly women stay out of the job market to take care of elders in the family.

Table no. 1:- LFPR (In Percent) according to usual status (PS+SS) for different social groups in PLFS (2018-19)

social group	rural			urban			rural+urban		
	male	female	person	male	female	person	male	female	person
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
				PLFS (2018-19)					
ST	57.3	28.7	43.3	54.3	18.4	36.5	57.0	27.6	42.5
SC	55.1	19.5	37.7	57.2	18.4	38.4	55.6	19.2	37.9
OBC	54.1	19.6	37.1	56.4	16.6	36.9	54.8	18.7	37.0
others	56.1	15.1	36.1	57.0	14.5	36.5	56.5	14.9	36.3
all	55.1	19.7	37.7	56.7	16.1	36.9	55.6	18.6	37.5

Data Source:- Annual Report : PLFS, 2018-19

Figure no.2:- LFPR (In Percent) in usual status (PS+SS) among persons of different social groups during 2018-19.



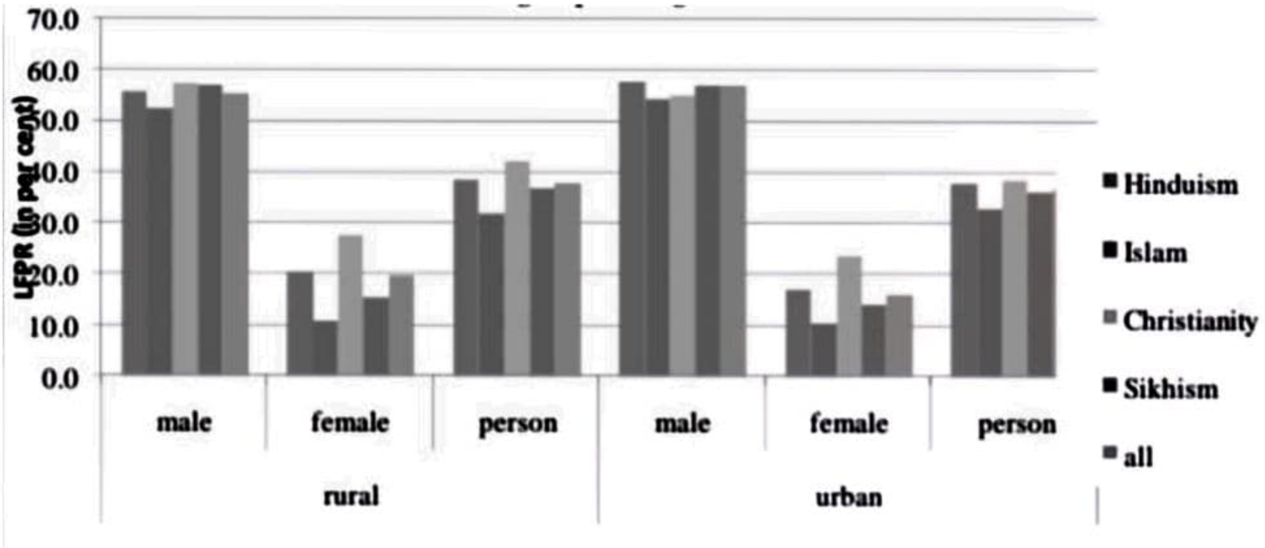
Data Source:- Annual Report : PLFS, 2018-19

Table no.2:- LFPR (In Percent) In usual status (PS+SS) among persons of major religious groups during 2018-19.

major religious groups	rural			urban			rural+urban		
	male	female	person	male	female	person	male	female	person
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
				PLFS (2018-19)					
Hinduism	55.4	20.5	38.3	57.4	17.1	37.9	56.0	19.5	38.2
Islam	52.4	11.0	32.0	54.1	10.4	32.9	53.1	10.8	32.3
Christianity	57.1	27.6	42.0	55.0	23.8	38.5	56.3	26.1	40.7
Sikhism	56.9	15.4	36.9	57.0	14.1	36.3	56.9	15.0	36.7
all	55.1	19.7	37.7	56.7	16.1	36.9	55.6	18.6	37.5

Data Source:- Annual Report : PLFS, 2018-19

Figure no.3 :- LFPR (In Percent) In usual status (PS+SS) among persons of major religious groups during 2018-19.



Data Source:- Annual Report : PLFS, 2018-19

5)MARITAL STATUS:-

In both rural and urban regions there may be negative effect of marriage on participation in the labour market for women. Impact of marriage in labour force participation depends on the socio-economic position of the family of women. It is inversely related with the social status of family. The probability of labour force participation after marriage is lower in urban areas than in rural areas. Rural women are often employed within the household in agriculture works. In urban areas share of household employment is very low due to very low agricultural work as oppose to rural areas, so, the negative effect of marriage in participation of women in labour market. In a household the husband i.e. male household head has greater potential to bring income. Widowed household in absence of any other male household earner becomes female headed household. Absence of male earning member in family drag women into labour market for economic survival. So the proportion of female earners rises as the number of female headed or widowed household.

6) FERTILITY AND CHILD CARE:-

Fertility rate is one of the main determinants of female labour force participation rate. Fertility rate and labour force participation rate are inversely related. The impact of fertility rate in female job market may differ among rural and urban areas. Fertility rate also differ among the socio-economic and religious groups and so the labour force participation of women. The presence of young children in a household has anegative effect on mothers' job market participation. Having a younger child less than five years old lowers the possibility of being in the job market for urban women than in rural women has more women in rural areas have to work out of necessity. The presence of children more than six year old may have less significance in urban areas but has positive impact in rural areas as older children potentially look after their young siblings. But in urban areas there exist more nuclear families so the possibility of looking after of small children by family members is less. So, the presense of small children have negative impact in female labour force participation.

Table no.3:-Indian fertility rates

Indian- Historical Fertility Rate		
Year	Fertility Rate	Growth Rate
2020	2.2	-0.90%
2019	2.22	-0.89%
2018	2.24	-1.37%
2017	2.271	-1.35%
2016	2.302	-1.37%
2015	2.334	-1.31%
2014	2.365	-1.29%
2013	2.396	-3.23%
2012	2.476	-3.13%
2011	2.556	-3.03%
2010	2.636	-2.95%
2009	2.716	-2.86%
2008	2.796	-2.41%
2007	2.865	-2.35%
2006	2.934	-2.27%
2005	3.002	-2.25%
2004	3.071	-2.20%
2003	3.14	-2.15%
2002	3.209	-2.08%
2001	3.277	-2.06%
2000	3.346	-1.99%
1999	3.414	-1.98%
1998	3.483	-1.97%
1997	3.553	-1.93%
1996	3.623	-1.90%
1995	3.693	-1.86%
1994	3.763	-1.83%
1993	3.833	-2.22%
1992	3.92	-2.15%
1991	4.006	-2.13%
1990	4.093	-2.06%
1989	4.179	-2.04%
1988	4.266	-1.91%
1987	4.349	-1.87%
1986	4.432	-1.86%
1985	4.516	-1.80%
1984	4.599	-1.77%
1983	4.682	-1.22%
1982	4.74	-1.23%
1981	4.799	-1.19%
1980	4.857	-1.20%
1979	4.916	-1.17%
1978	4.974	-1.72%
1977	5.061	-1.69%
1976	5.148	-1.68%
1975	5.236	-1.63%

Figure no. 4 :- Indian Fertility Rate Tread

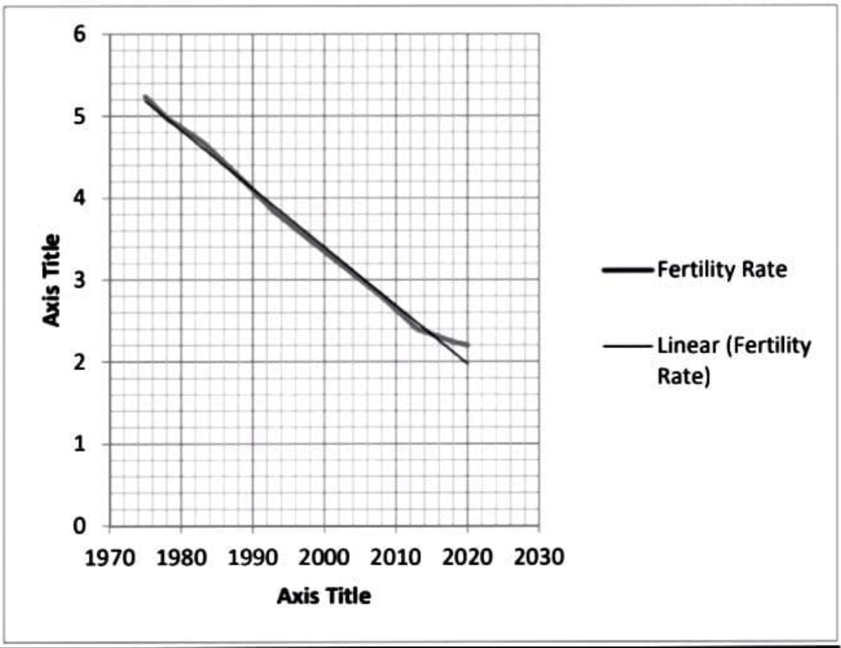
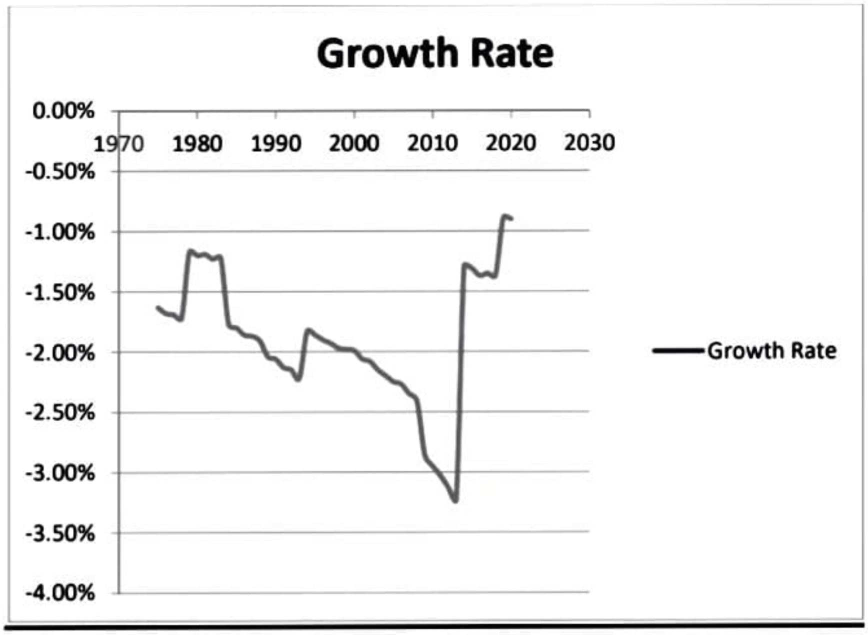


Figure no. 5 :- Growth rate of Indian fertility rate trend



Data Source:- United Nations- World Population Prospect.

- **DISTRICT CHARACTERISTICS:-**

The suitability of different sectors to female employment can be captured by district level employment shares. Keeping the share of other sectors on district employment the same a higher share of agriculture relative to manufacturing slightly decreases the probability of female participation. This suggests the socio economic factors override type of work available for women participation. The share of graduates as a proxy for supply of skilled labour has a negative correlation with female participation in rural regions due to shortage of demand for high skilled labour in rural sectors with its low share of non agricultural employment. In the urban regions the result is different. Availability of sanitary facilities in household and outstanding credit per capita represent proxies for district stage development.

1)ACCESS TO FINANCIAL SERVICES:-

Access to financial resources is often seemed as factor promoting women's financial independence and ability to participate in the job market. Number of accounts in bank owned by female household, district level credits are used as measures of financial depth. Availability of initial finance of projects is frequently considered as one of the reasons why women stay out of labour force. Greater financial depth should promote participation through increases opportunity of credit. Having an own bank account has been found to promote female economic independence within household. Financial independence of the female member in the family positively influence her possibility of entering the labour market. The availability of banking services increases the participation rate more in rural than urban areas. Ability to get funding for small scale businesses is significant. Banking services is not only important with respect to providing financial services, but in promoting gender equality. Having a bank account independent from their husband and son increases women's independence within family.

Table no. 4 :- Population Group wise Deposits of Scheduled commercial banks.

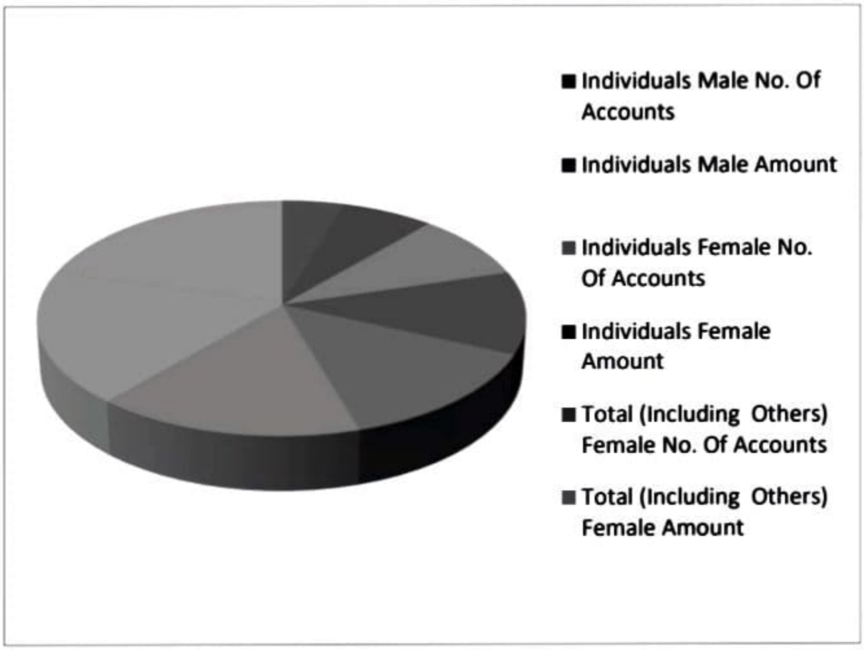
As on March 2017

No. of Accounts in thousand, Amount in Rs. Crore

Group	Individuals				Total (Including Others)		%Female to Total Individuals	
	Male		Female					
	No. Of Accounts	Amount	No. Of Accounts	Amount	No. Of Accounts	Amount	No. Of Accounts	Amount
1	2	3	4	5	6	7	8	9
Rural	370374	69212.6	217845	323835.7	642225	1209786.5	37	31.8
Semi- Urban	357000	1012893	179375	447256	568454	1851368.6	33.4	30.6
Urban	202940	1081204	104104	546024.8	327038	2437497.6	33.9	33.6
Metropolitans	225163	1932681	120429	985360.2	373787	5935798.2	34.9	33.8
All India	1155477	4722991	621753	2302477	1911504	11434451	35	32.8

Data Source:- Basic Statistical Returns of scheduled, commercial banks in india ;NSSO, Women and Men in India (2019).

Figure no. 5 :- Chart of population group wise deposits of scheduled commercial banks.



Data Source :- Basic Statistical Returns of scheduled, commercial banks in india ;NSSO, Women and Men in India (2019).

2)INFRASTRUCTURE:

Female's time availability between home and earning activity is influenced by infrastructure and technology. Access to water and electricity in the household positively affects women's time available for her to involve in economic activity. Consistently India is making large investments in accumulationof social-capital like roads as indicated by the large increase in construction activity. Electricity is reaching more households and businesses. In rural areas electricity is supplied in subsidized rates. Infrastructure measured by corduroyed roads and access to water, availability of public transport are significant in influencing female labour force participation in both urban and rural areas. Improved access to various infrastructure facilities generates time savings that potentially be reallocated to economic activities. Safety concerns have risen for women and more safe and cheap public transport can improve opportunities to work. Improving infrastructure accumulation of social capital in India has many win-win benefits not only in increasing female labour force participation also for removing overall growth bottlenecks. The average marginal effects of the infrastructure variables at district level vary greatly.

- **STATE LEVEL VARIABLES:**

1) WAGE DIFFERENTIAL:

Great wage difference between men and women can reduce the incentive of women in engaging in job activity and thus decreases female labour force participation. Large wage difference increases the value of women's home good production compared to market work. Female labour force participation rise substantially in rural employment of female labour through National Rural Employment Guarantee Act(NREGA) programme as it provides equal pay with men. Fort the self employed which constitutes a major portion of the female labour force wage information is not available. A number of studies have emphasized the importance of NREGA in increasing female labour force participation and reducing wage inequality. This act was enacted in 2005 and guarantees 100 days of work per year, for a minimum salary fixed by the state for all members of rural household willing to work as unskilled manual labour with quotas for women. In various literatures, it is mentioned that, this programme has had a great impact on rural employment increasing both public and private employment. Moreover some studies have shown that this programme brought significant benefits for women, including improvement in their food security and ability to avoid hazardous work. Among the women who participated in NREGA programme many have relatively low education and low technical or vocational training and majority of them belong to lower socio-economic groups e.g.scheduled castes and scheduled tribes. Labour force participation rate is often seemed higher for women whose family members participate in the programme than who do not.

2) **LABOUR MARKET REGULATIONl:**

Labour regulations in India are considered highly restrictive in nature. They are set at the state level with considerable variations among states. Various complex laws protects organized or formal sector employees which consist significantly low proportion as compared to informal sectors, leads to lower elasticity of demand for labour in manufacturing and lowers the productivity. Moreover these laws negatively affect marginal workers and tends to exclude women from the job market. The rigidity of employment protection legislation is evaluated with restrictiveness index that indicates whether the state labour law is pro-worker and rigid or not. Index of labour reforms reflects the reforms that were made to limit transaction cost-by limiting the scope of regulation, providing greater clarity and simplifying procedures for each state, the index summaries the reforms that were made concerning 8 specific areas; Industrial Dispute Act(IDA), Factories Act, State Shops and Commercial Establishments Act, Contract Labour Act, The role of Inspectors, The maintenance of registers, the filling of returns and union representation. This index takes the values between 0 and 100. The past reforms of existing labour regulations and laws are found significant and positively correlated with both men's and women's employment; but are found stronger for men and in specific sectors e.g. services especially white collar and blue collar jobs respectively. Reforms are also found correlated positively with wage inequality between male and female labourers and the fact is that the ratio of what a female labourer earn compared to male labourer is decreasing with reforms of labour as suggested by various literature. This suggests that new job creation especially in organized sector favour mens' employment more. Rigidity of these labour laws is expected to deter female labour force participation rate. According to various literatures labour regulations and stringency of 'pro-worker' laws are burden for female employment by cutting low wage workers off the job market and recent reforms of the regulations seem to have done too little to raise female participation. Thus reforms of labour regulations do have different impact on labour force participation of men and women although often men benefit more than women.

Table no.5 :- Age Group wise LFPR (In Percent) In Usual status (PS+SS) During 61st (2004-05), 66th (2009-10), 68th Round (2011-12) and PLFS (2017-18).

Age- Group (in years)	Rural			Urban			Total		
	Male	Female	Person	Male	Female	Person	Male	Female	Person
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2017-18 (PLFS)									
15-29	58.9	15.9	38.1	58.5	17.5	38.5	58.8	16.4	38.2
15+	76.4	24.6	50.7	74.5	20.4	47.6	75.8	23.3	49.8
All ages	54.9	18.2	37.0	57.0	15.9	36.8	55.5	17.5	36.9
2011-12									
15-29	64.9	27.1	46.4	60.7	18.1	40.5	63.6	24.4	44.6
15+	81.3	35.8	58.7	76.4	20.5	49.3	79.8	31.2	55.9
All ages	55.3	25.3	40.6	56.3	15.5	36.7	55.6	22.5	39.5
2009-10									
15-29	68.0	30.2	49.6	61.0	16.8	40.1	65.9	26.3	46.8
15+	82.5	37.8	60.4	76.2	19.4	48.8	80.6	32.6	57.1
All ages	55.6	26.5	41.4	55.9	14.6	36.2	55.7	23.3	40.0
2004-05									
15-29	77.2	42.8	60.2	68.3	21.7	46.6	74.6	37.1	56.4
15+	85.9	49.4	67.7	79.2	24.4	53.0	84.0	42.7	63.7
All ages	55.5	33.3	44.6	57.0	17.8	38.2	55.9	29.4	43.0

Data Source:- NSSO, Women and Men in India (2019).

Table no.6 :- Unemployment rates (In Labour Force) according to usual status.

Round	Year	Rural		Urban	
		Female	Male	Female	Male
(1)	(2)	(3)	(4)	(5)	(6)
27th	1972-73	0.5	1.2	6.0	4.8
32nd	1977-78	2.0	1.3	12.4	5.4
38th	1983	0.7	1.4	4.9	5.1
43rd	1987-88	2.4	1.8	6.2	5.2
50th	1993-94	0.9	1.4	6.1	4.1
55th	1999-00	1.0	1.7	5.7	4.5
61st	2004-05	1.8	1.6	6.9	3.8
66th	2009-10	1.6	1.6	5.7	2.8
68th	2011-12	1.7	1.7	5.2	3.0
PLFS	2017-18	3.8	5.8	10.8	7.1

Data Source:- NSSO, Women and Men in India (2019).NSSO 68th Round, July 2011-June 2012; PLFS, NSO July 2017-June 2018.

➢ THE MODEL OF FLFP:-

- **THE MODEL:-**

The probability that i th woman be in labour force can estimated separately as :

$$P_i = F(\alpha_{st} + \beta_i X_i + \gamma_i Z_i)$$

Where **F** is the cumulative distribution function of standard normal distribution and α_{st} captures the state effect.

$X_i$is a vector of explanatory variables on individual or household levels. The income of household excluding the respective women's own income is taken into account. Income has been established as important determinant for female participation and so-called income hypothesis claims that in the initial stages of development ; increasing income 1st makes women withdraw from the labour force, and only the later the participation increases again with rising importance of services a narrowing gap in education.

Whether women live in the household headed by her parents in law, underemployment of male household members(whether a man from the household was seeking employment for longer than one month in the preceding year), no. of young children upto 5 years old, no. of children 6-14 years old and the marital status of women are also considered. Children, especially the younger once, are essential drivers of women's decision whether to participate in the labour market. Providing child care especially for the young, is crucial in promoting the female labour participation.

The effect is assumed to be negative and diminishes as older child don't require so much attention and enroll into education system; eventually freeing women's disposable time. Moreover older children in developing countries can some time take care of their younger siblings and can therefore have positive impact of labour force participation of women in the household.

Household level controls also include the religious and social group of the household, own education and the education of the household, i.e. wealth or income additional to total wage earnings presuming that higher social status is associated with lower female participation in the labour market, as in the higher education level of the household head should negatively influenced female participation.

Other variables having an impact on participation are the regulatory framework effecting labour or capital access to bank account or credit etc.

$Z_i$is the vector of district level of variables. It comprises of labour supply and demand factors: district unemployment rate, shares of employment in agricultural work, construction, manufacturing & services including white collar and also consider the shares of graduates in district labour force as proxy for high skilled labour supply. This vector also encompasses the district share of households with access to tap water, water on premises, electricity and water closet. Theseare included to account for in the theoretical effect on time disposal of women for outside work. All of the three should reduces the time required for household duties and therefore allow for higher participation in the labour market activities. Availability of water closet serves as a proxy for the development stage of a district.

- **METHODOLOGY:-**

Estimates of regression model provide measures of the degree of association or correlation between any given explanatory variable and the dependent variable with all other factors held constant. Search an association is not necessarily the outcome of a genuine casual relationship: is could originate as well from a mutual correlation with an omitted variable; from a casual relationship the inverse direction or even from a sheer coincidence. Tests for casualty were not under taken as it is difficult to be sure that all underline hypothesis of the model are true and all that confounding variables are controlled for. As the data saved is extremely reach in quantity and representativeness of observation and equality and diversity of explanatory variables, the statistical power of the result is naturally increases. The use of control variables also enhances the accuracy of the measures of participation decision by women.

In addition descriptive statistics and cultural analysis were used to assess the potentially valid relationships. As the subject of study is of great complexity any method or approach has its strengths and weaknesses can provide at most provisional, partial and conditional explanation. Therefore the robust relationships can only be clarified through overview of the research in the area in question and the confluence of the diverse streams of evidence in other words, the statistical result should be interpreted with caution and in light of all evidence or knowledge available.

If different castes have different determinants of FLFP and different average marginal effects of determinants of FLFP and there is a huge gap between two groups with respect to the shares of population belonging to the different castes, the difference of these shares can bias the results.

Data limitation in India is important which naturally can effects the robustness of the results. For example lack of wage data for the self employed that make half of the female labour force is a limiting factor. On the other hand, the large sample tents to raise the robustness of the results.

- **CONCLUSION:-**

India as a developing country is going through substantial structural socio-economic changes. India is experiencing rapid economic growth accompanied by high rates of urbanization and increasing overall literacy rate and educational level. India has seen steady fall in fertility rate. Indian society is divided in various social classes and income levels and inequality of wealth is high. Here is existhuge gapof educational level among social classes especially in women. In various recent researches it is found that economic activity of women is falling and U shaped relationship between economic development and women's employment is not clear in India. Economic growth in India has not been found employment intensive. Overtime various public policies and programmes are initiated by government to increases the female labour participation rate. Various policies that incentives growth in sectors in which it is easy for women to being employee are critical for increasing women's participation in job market.

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Certificate of Completion of Project

This is to certify that Mr. Akashdeep Ghosh (ECUG/210/17), a student of Department of Economics, has submitted the semestral project as part of the B.Sc Economics Honours Course (Sem VI, Paper XVI)titled: "India's Population Growth and Economic Development"on 30.06.20.

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INDIA'S POPULATION GROWTH & ECONOMIC DEVELOPMENT

THE TERM PAPER SUBMITTED IN SEMESTER VI (B.Sc.), AS A PART OF A MANDATORY PROJECT WORK, BY

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Date of submission : 29th June, 2020.

Abstract

Population has crossed the optimum limit in India and has become a liability. Rapidly increasing population is a result of prevailing high birth rates and a large decline in the death rate. Overpopulation raises aggregate consumption in the country which in turn leads to a decline in aggregate savings and investment and thus hampers capital formation. The number of jobless people is on the rise in India due to economic depression and slow business development and expansion activities. At the same time, the economy is not necessarily infinitely expandable even if the population grows. Thus the problem of population explosion in India has proved to be a big hindrance in the success of economic planning and development.

This paper deals with how the population growth affects the economic development of India and also suggest some measures to control population explosion so that economic development may not be hindered. Moreover, it highlights the causes of overpopulation in India as well as the theories of population growth.

Keywords : Overpopulation, Unemployment, Poverty, Illiteracy, Family Planning, Women Empowerment, Economic Development.

JEL Classification : O15, H51, H52, H53, O1, O2, O4, O11.

Introduction

India is the second most populated country in the world with nearly a fifth of the world's population. Population of India increased from 555 million persons in 1970 to 1366 million persons in 2019 growing at an average annual rate of 1.86%. India is projected to be the world's most populous country by 2024, surpassing the population of China.

57 billionaires control 70% of India's wealth. This economic inequality leads to poverty, lack of free medical assistance, lack of social security and bad living conditions. Unemployment, shortage of food grains, rapid depletion of natural resources, loss of ecosystems, increased level of air and water pollution, high infant and child mortality rates as well as extreme poverty are some of the effects of overpopulation in India.

Rapid population growth is found to have exercised a significant negative impact on the pace of aggregate economic growth in India. The standard of living decline in the sense poor families cannot provide adequate education and better living conditions for their children. This causes them to lead a deprived life while at the same time exhausting the family's capital resources.

However, with improved public health facilities, there was marked decline in mortality rate that gradually raised life expectancy from under 40 years to over 60 years. The consequences of population growth on economic development have attracted the attention of several economists ever since Adam Smith wrote in his book "**An Inquiry into the Nature and Causes of the Wealth of Nations**". It was only Malthus and Ricardo who created an alarm about the effect of population growth on the economy. However, it is sometimes argued that a growing population helps in economic development of a country by providing an expanding markets for goods. But it is an erroneous view.

This project has been broadly divided into five sections :

Section A : The first section describes the causes of overpopulation in India.

Section B : The second section describes the theories of population growth which helps in analyzing the pattern of growth rate in population over time.

Section C : The third section enlists the various effects and consequences caused by population growth on the economic development of India.

Section D : The fourth section deals with the population control measures to be adopted so that the economic development of the country is not hindered.

Section E : The last section describes the conditions essential for promoting economic growth in the country.

Literature Review

Kothare (1999) investigated the relationships between population growth and economic development of the Indian economy from 1988 to 1998. He concluded that India is one of the world's fastest growing economies, primarily due to the rise in population growth creating a positive effect on its long run economic growth.

The literature of economic demography drew attention to two main relationships by which population growth affects the economy. The relationships may be classified as the 'saving effect' and the 'composition of investment effect'.

The 'saving effect' argues that savings are reduced by population growth because of the so-called burden of dependency. With high fertility and decline in mortality in younger and older age groups, the population acquires an increase in the proportion of people in the non-working age groups as compared to those in the working age group. In the absence of increasing output per worker, saving per head must fall. Even if productivity is increasing, savings are less than they would be with a smaller number of dependents per worker. The 'composition of investment effect' states that due to increasing population, a share of investible resources has to be devoted to reproducing for additional people unproductive facilities, duplication of social services which would be unnecessary if population were not growing.

In a number of studies starting with Coale and Hoover, it has been shown that through the comparison of high and low fertility paths, there has been greater growth of Gross National Product (GNP) with the lesser rate of population growth. Robert Cassen has raised doubts regarding the validity of the saving and investment effects. His argument is that if bulk of savings in poor countries come from small wealthy class whose fertility is low and if cost of additional children is met out of consumption rather than saving, the saving cost of additional children would be quite insignificant.

Similarly regarding the composition of investment effect, Cassen observes that as long as a society can increase agricultural output by mainly labour using means, the chief resource to feed the growing population is provided by the population itself. The composition of investment argument is quite general in the sense that wherever population growth requires increase in production which in turn require investment, a lesser rate of population growth would release investible funds for use elsewhere.

According to K. Sundaram, the implications of growing demographic pressures in India for the process of development in general and the progress towards poverty eradication become very much clearer after focusing on the labour force consequences of population growth.

The classical model of demographic transition postulates a link between a desire for fewer children and change in macro developmental variables such as urbanization, industrialization, literacy and education and the status and role of women (Coale, 1973; Friedman, 1982). A United Nation's (UN) study (1963) has added means of communication to the list.

Section A : Causes of Overpopulation

In recent years, overpopulation has become a pressing problem in India. The causes of the overpopulation can be attributed to various factors which are described as follows -

1. **Prevalence of Child Marriages :**

   The origins of child marriages in India were deeply rooted into its historical and cultural background. Child marriages are widespread because they create economic and social relations among families in the sense that the only chance of survival of a poor family is to make their young daughters marry so that they can have one less mouth to feed. Young married women, having more reproductive period and high fertility rate, give birth to many causing overpopulation in the country.

   A study conducted in India by the International Institute for Population Sciences (IIPS) and Macro International in 2005 and 2006 showed high fertility, low fertility control and poor fertility outcomes data within child marriages. 23.90% of young married women reported of having a child within the first year of marriage; 17.30% reported of having 3 or more children over the course of the marriage and 23% reported a rapid repeat child birth. 15.20% reported an unwanted pregnancy.

2. **Poverty and Illiteracy :**

   In India, poverty is the second biggest factor for the overpopulation phenomenon. Poverty has a direct relationship with population growth. Extremely poor people give birth to kids and often force them to beg or work at a very tender age so as to earn and support the family. They believe that more kids mean more hands for begging and work and thus more money.

   Families struggle to have a male child. Therefore, they tend to produce as many children as it takes until one of them will be born a male. As a result, the families are enlarged rapidly without taking into consideration the economic issues regarding their welfare.

   As the family size continues to grow and the supply of land remains fixed, more people are to be fed on the produce of that small farmland, thereby lowering both the efficiency and the family's per capita income. In order to achieve the necessary self-sufficiency levels, many people choose to migrate from the rural to the urban areas.

   Another cause of overpopulation is the lack of proper education and high rate of illiteracy. Many children are not being sent to school due to poverty and also for the lack of necessary educational infrastructure which is negatively influenced by the high birth rate.

3. **High Birth Rate and Low Death Rate :**

   India's population is rapidly increasing due to high birth rate and comparatively slower death rate among the masses. The factors that contribute to the high birth rate and declining death rate should be analysed properly.

The main causes that lead to India's high birth rate are –

- Early marriage among its population. When the women are married at an early age, they have a long reproductive period in their lives.
- The poor and uneducated masses in the country do not have knowledge and advantage of family planning and as a result there is high birth rate.
- The age and sex composition of the population and the fertility of women during their child-bearing age are also responsible for rapid population growth.

The main causes that lead to decline in death rate are –

- The improved and widespread medical and healthcare facilities.
- The improved means of transport and communication system in India controlled the occurrence of famines which caused many casualties earlier.
- Many dreaded diseases like malaria and TB are controlled now. Also diseases such as small pox and chicken pox have been eradicated completely. The supply of pure drinking water to the people has reduced the incidence of water borne diseases like diarrhea, cholera.

4. Illegal Immigration to India :

The Citizenship Act, amended in 2003, declares that an illegal immigrant in India is a foreigner who came to India either without valid documents or who initially had valid documents but overstayed in India even after the expiry date of permitted time. These people are not eligible for citizenship by registration.

However, as reported, the exact numbers of illegal immigrants are currently not available with the appropriate authorities.

Section B : Theories of Population Growth

Notably speaking, there are two theories of population growth which are of much importance for economists today. The theories are The Malthusian Theory of Population and The Optimum Theory of Population.

The Malthusian Theory of Population –

Two centuries ago, Thomas Robert Malthus (1766-1834), an English clergyman, put forward a theory of the relationship between population growth and economic development that is still relevant today. In his famous book "**Essay on the Principle of Population**" published in 1798 by drawing on the concept of diminishing returns, Malthus proposed a universal tendency for the population of a country to grow at a geometric rate, doubling at every 30 to 40 years, if remained unchecked by dwindling food supplies. At the same time, owing to the diminishing returns to the fixed factor (land), food supplies expanded roughly at an arithmetic rate. As each individual would have less land to work, his or her marginal contribution to food production would actually decline. Since the growth in food supplies could not keep pace with the growing population, per capita incomes would have a tendency to fall so low as to lead to a stable population existing barely at or slightly above the subsistence level.

According to the theory, periods, marked by the absence of changes in the level of technology or in the availability of land, were characterized by a stable population size as well as a constant per capita income. In contrast, technological progress, land expansion and favourable climatic conditions brought about temporary gains in per capita income, triggering an increase in the size of the population which eventually led to a decline in the per capita income in the long run. Due to the positive adjustment of population to an increase in per capita income, differences in technologies or in land productivity across countries resulted in cross-country variations in population density rather than in the standard of living.

The Basic Structure of the Model –

We consider an overlapping-generations economy in which activity extends over infinite discrete time. In every period, the economy produces a single homogeneous good using land and labour as inputs. The supply of land is exogenous and fixed over time whereas the evolution of labour supply is governed by households' decisions in the preceding period regarding the number of their children.

Production :

Production occurs according to a constant-returns-to-scale technology. The output produced at time t, Y_t, is

$$Y_t = (AX)^{\alpha} L_t^{1-\alpha} \quad ; \qquad \alpha \in (0,1), \qquad (1)$$

where, L_t and X are, respectively, labour and land employed in production in period t and A measures the technological level. The technological level may capture the percentage of arable land, soil quality, climate, cultivation and irrigation methods as well as the knowledge required for engagement in agriculture. Thus, AX captures the effective resources used in production.

Output per worker produced at time t, $y_t \equiv Y_t / L_t$, is therefore :

$$y_t = (AX/L_t)^{\alpha}. \qquad (2)$$

Preferences and Budget Constraints :

In each period t, a generation consisting of L_t identical individuals joins the workforce. Each individual has a single parent. Members of generation t live for two periods. In the first period of life (childhood) $t-1$, they are supported by their parents. In the second period of life (parenthood) t, they inelastically supply their labour, generating an income i.e., equal to the output per worker, y_t, which they allocate between their own consumption and that of their children.

Individuals generate utility (u^t) from consumption and the number of their (surviving) children :

$$u^t = (c_t)^{1-\gamma}(n_t)^{\gamma} \quad ; \quad \gamma \in (0,1), \qquad (3)$$

where c_t is the consumption of an individual of generation t and n_t is the number of children of generation t.

Members of generation t allocate their income between their consumption, c_t , and expenditure on children, ρn_t , where ρ is the cost of raising a child. Hence, the budget constraint for a member of generation t (in the second period of life) is :

$$(\rho n_t + c_t) \leq y_t. \qquad (4)$$

Optimisation :

Members of generation t allocate their income optimally between consumption and child rearing, so as to maximize their intertemporal utility *function* (3) *subject to the budget* constraint (4). Hence, individuals devote a fraction (1-γ) to consumption and a fraction γ of their income to child rearing :

$$\left.\begin{aligned} c_t &= (1-\gamma)\, y_t \\ n_t &= \gamma y_t \,/\, \rho \end{aligned}\right\} \qquad \textbf{Appendix 1}$$

Thus, in accordance with the Malthusian paradigm, income has a positive effect on the number of surviving children.

Testable Predictions :

The Malthusian theory suggests that, during the agricultural stage of development, there was surplus of production beyond the maintenance of subsistence consumption which ultimately led to population growth. The theory can be tested in two dimensions. The first dimension pertains to the assertion that population density during the Malthusian phase was largely constrained by the insufficient resource supply at the time. The second dimension is concerned with the role of socio-economic development in enhancing total factor productivity thereby leading to an expansion of effective resources over time.

In particular, since resource constraints were slacker for regions naturally blessed by a higher agricultural productivity of land, these regions would have sustained larger populations, given the level of socio-economic development. Moreover, societies that enjoyed more advanced stages of development, with higher land productivity due to the use of agricultural technologies, would have sustained higher population densities.

The theory also predicts that regional variation in population density in the long run would reflect variations in land productivity and bio-geographic attributes. Greater land productivity, manifested in a higher arable percentage of land, better soil quality, and a favourable climate would enable society to sustain a larger population. Further, for a given land productivity, auspicious bio geographic factors such as proximity to waterways, absolute latitude, and a greater availability of domesticated plant and animal species, would enhance population density through trade and the implementation and diffusion of agricultural technologies.

Beyond the Malthusian predictions for population density, the theory also suggests that, at a given point in time, societies should have been gravitating towards their respective Malthusian steady states, determined by their respective land productivities and their levels of socioeconomic development at that point in time. Particularly, conditional on the natural productivity of land for agriculture and the level of socioeconomic development, a society with a higher population density in a given period would have exhibited, consistently with convergence, a relatively slower rate of population growth.

Criticisms of the Malthusian Model :

The Malthusian model was right, in the first place, to assume that the land was in limited supply. But his assumption was proved incorrect when it became clear that though the availability of land remained the same, its quality was enhanced by technological advancements. The Malthusian theory can be rejected on the ground that the theory do not accept the fact that technological progress was conspicuous in changing the scenario of the country.

Secondly, Malthus argued that per capita income is closely related to national rates of population increase. But this also was found to be baseless as research on LDCs indicate otherwise. This theory is based on ideas only. It cannot be proved logically and no clear evidence of correlation is found between population growth rates and levels of per capita income. Due to the improvement of healthcare programmes in the LDCs, modern medicines were available to masses resulting in falling death rates. Birth rates have shown that there is no relationship with per capita income. The theory has no consistent or fixed pattern when it wrongly focuses that the per capita income is the main determinant of population growth rates. The microeconomics of family size decision making is the main factor which makes an individual to decide how many children he should have.

The Optimum Theory of Population –

This theory (also called The Modern Theory of Population) was propounded by Prof. Edwin Cannan in his book **"Wealth"** published in 1924 and popularized by Robbins, Dalton and Carr-Saunders. Unlike the Malthusian theory, the Optimum theory does not establish relationship between population growth and food supply. Rather it is concerned with the relationship between the size of population and production of wealth and is considered to be more realistic.

Statement of the theory –

"Given the natural resources, stock of capital and the state of technical knowledge, there will be a definite size of population with the per capita income. The population which has the highest per capita income is known as optimum population".

Optimum Population :

Prof. Cannan defined optimum population as "knowledge and circumstances remaining the same, there is what may be called maximum return when the amount of labour is such that both increase and decrease in it would diminish proportionate return".

Overpopulation :

If the actual population in a country is above the level of optimum population, there will be too many people to work efficiently and produce the maximum goods and the highest per capita income. As a result, the per capita income tends to become poorer than before.

Assumptions of the theory :

The optimum theory is based on two important assumptions –

1. The proportion of working population to total population remains constant as the population of the country increases.
2. As the population of a country increases, the natural resources, the capital stock and the state of technology remain unchanged.

Diagrammatic Presentation of the theory :

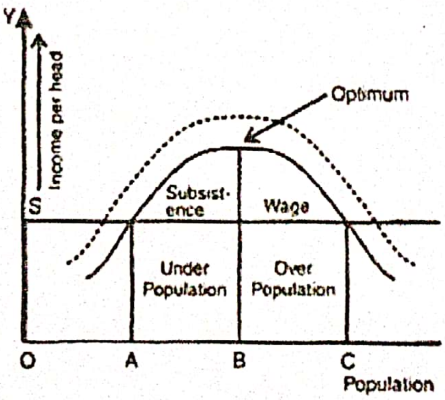

Fig. 1

In the above figure, population is shown along the horizontal axis and income per head along the vertical axis. OS is the income per head which gives only subsistence wage rate to the population and is considered as the minimum limit to the income per head.

The subsistence income per head prevails with two levels of population.

i. When population is too small to exploit the country's resources with maximum efficiency, this is the level of OA population.

ii. When population is too large and the efficiency falls to provide only a subsistence income to the labour force, this is the level of OC population.

OB shows the optimum level of population which exploits the available resources to give the maximum income per head. If the population is less than OB, income per head increases with the increase in population. If the population is higher than OB, income per head will increase with the decrease in population through preventive measures.

The dotted curve shows the level of income per head with technological improvement or expansion of foreign trade. This will help to raise the income curve and generate population growth until wages are once again equal to the subsistence level.

Dalton's Formula :

Prof. Dalton expresses the theory in the form of a formula as

$$M = \frac{A-O}{O}$$

where, M stands for deviation from optimum population,
A stands for actual population
and O stands for optimum population.

If M is 0, population is optimum. But if M is +ve, it is overpopulation. When M is –ve, it is under population.

So optimum population is neither fixed nor rigid. It is rather variable and related to resources and technology.

Benefits of the theory :

The theory is a landmark in the science of demography. It explains both the problems of overpopulation in a comprehensive manner from the production side as well as the relationship between productive efficiency and production. The theory is also pragmatic in approach i.e., it is concerned with practical results. This theory provides more detailed analysis as it considers over and under population and brings out the evils of both.

Criticisms of the theory :

The optimum theory of population is not free from defects. The criticisms are as follows –

- Difficult to determine optimum population – It is difficult to determine the optimum population of a country at any point of time since many factors like technological knowledge, stock of capital, per capita income and natural resources have to be taken into consideration.

- A static theory – The optimum theory is considered to be a static short period theory as it ignores changes in natural and human resources which affect per capita income. The theory is also silent about the important determinants of population growth.

- Neglects biological and sociological factors – This theory has not taken into consideration the biological and sociological factors which govern the size and growth of population. It simply explains the state of population with respect to per capita income.

- Only economic factors considered – This theory takes into account only economic factors which determine the optimum size of the population of a country. It should also take into account social, political and other non-economic factors.

- Distributional aspect neglected – This theory simply considers population to income per head and neglects the distributional aspects. The increase in population and national income cannot be useful to a country if the increased national income is not properly and equitably distributed among the various sections of the society. The theory should consider income distribution as a factor in determining the optimum population.

Section C : Effects and Consequences of Overpopulation

Overpopulation exerts a tremendous amount of pressure on natural resources, which result in a chain reaction of problems as the economy expands. On the other hand, it is more rational to argue on the macroeconomic level that excessive population growth does undermine a nation's economy in the sense that an increase in the number of people leads to an increase in the number of mouths to feed. The increase in demand for food leads to a decrease in natural resources which are needed for a nation to survive. Other negative effects of overpopulation specifically include poverty caused by low per capita income, famine and disease.

The main effects of population explosion are as follows –

1. Population Growth and Rate of Saving and Investment :

Economic growth requires increasing supplies of capital goods. A higher rate of economic growth can be achieved by accelerating the rate of capital formation. Increasing supplies of capital goods become possible only with higher rate of investment which in turn is possible if the rate of savings is high. Increase in population tends to raise consumption and therefore lowers both saving and investment.

Coale and Hoover explained that saving rate was reduced by population growth because of increase in burden of dependency.

Thus rapid growth of population by causing lower rate of savings and investment tends to hold down the rate of capital formation and therefore the rate of economic growth in developing countries like India. Population growth actually hinders economic development rather than facilitating it.

2. Lower Growth of Per Capita Income :

A high rate of population growth swallows up a large part of the increase in national income so that per capita income or living standards of the people does not rise much. While the aggregate national income of India went up by 3.60% per annum in the first plan period and 4.10% per annum in the second plan period, per capita income rose by only 1.80% and 2.00% per annum respectively. The annual growth in per capita income has been much less than the annual growth rate in the national income because of the rapid population growth.

3. Population Growth and Marketed Surplus of Foodgrains :

Another way in which population growth is hindering economic development in India is its effect on marketed surplus of foodgrains.

Marketed surplus of foodgrains is defined as the difference between the output of foodgrains by the farmers and their consumption. Thus,

Marketed surplus of foodgrains = $(O - C_f)$

where, O stands for output of foodgrains
and C_f stands for consumption of foodgrains by the farmers themselves.

The marketed surplus of foodgrains is a prerequisite for expansion in non-agricultural employment and output. When a country grows and accelerates its pace of industrialization, it requires foodgrains to feed its people. If enough surpluses of foodgrains are not available, this acts as an important constraint on the industrial development which, in turn, prevents the standard of living to rise rapidly. The growth in population has an adverse effect on the marketed surplus of foodgrains and this act as a drag on the growth of output and employment and also food security of the nation.

In order to overcome the shortage of foodgrains and to prevent the occurrence of famines in the country, India was forced to import foodgrains and spend a good amount of foreign exchange on them. This worsened the Balance of Payments problem of the country. As a result, sufficient amount of foreign exchange to import materials, machines and equipment for our industries could not be met and this obstructed the growth of industrial output and thus hampered the economic development.

4. Unproductive Investment :

As the population grows rapidly, the Government has to double the existing expenditure on social welfare facilities and as a consequence the investment on resources for productive type of capital such as machines for industries, irrigation and fertilizers for agriculture, important basic goods such as steel, coal, electricity generation will be affected to a great extent. Thus due to population growth, productive capital expenditure will be reduced considerably.

5. Unemployment :

Rapid population growth is the leading cause of unemployment in India. Economic development requires that employment should increase adequately so that unemployment can decrease. In our country, particularly in rural areas, the population is increasing rapidly which has adversely affected the unemployment situation in two ways.

Firstly, the growth of population encourages unemployment by making large addition to the labour force as the rate of job expansion is not as high as the rate of population growth.

Secondly, the rapid population growth indirectly affected the unemployment situation by reducing the resources for capital formation. Any rise in population means increase in additional expenditure on food, clothing, shelter, electricity, medical and educational facilities. This has reduced the opportunities of diverting a larger proportion of incomes to saving and investment.

As a result of this explosive increase in labour force, demographic pressure on the economy has increased which in turn has resulted in an increase in the backlog of unemployment.

6. **Pressure on Environment :**

Rapid population growth is contributing to many serious environmental problems in India. These include pressure on land, forests, habitat destruction and loss of biodiversity, air pollution, global warming, water scarcity and water pollution.

India faces the most acute pressure on agricultural land with every million hectares of land supporting 7.27 million people annually. The size of arable land has decreased due to population pressure and inheritance patterns.

Section D : Population Control Measures

The GoI has adopted the following measures to keep the population under control -

1. **Family Planning Programme :**

Extensive family planning has become a priority in an effort to curb the huge population. Family planning in India is based on efforts largely sponsored by the GoI. The Ministry of Health & Family Welfare (MH&FW) is the government unit which formulates and executes family planning in India. In addition to the efforts of the government, improved healthcare facilities, increased education for women and higher participation among women in the workforce have helped lowering fertility rates in many cities of the country.

Women in India were not fully educated on contraceptive usage. However, the modern contraceptive methods have been rising gradually in India. Experts believe that increased female literacy leads to a decline in fertility. Female literacy level, which is improving slowly, may be regarded as the primary factor in helping population stabilization. Sterilisation was still the most preferred method of birth control among less educated women. Educated women had lower birth rates due to delay of getting married and childbirth.

The family planning programme benefits not only parents and children but also the society and the nation as a whole by keeping the number of new births under control which leads to less population growth. The limited population growth will allow for more resources and will benefit longer life expectancy and better health.

From 1965-2009, contraceptive usage has more than tripled (from 13% of married women to 48%) and the fertility rate has halved (from 5.70 births per women in 1966 to 2.40 births per women in 2012).

According to Family Planning 2020, around 13.66 crores women in 2017 used modern method of contraception and this prevented around 3.92 crores unintended pregnancies, around 1.20 crores unsafe abortions and 42000 maternal deaths due to family planning.

2. Abolition of Child Marriages :

Child marriages are prevalent in India. Most child marriages involve underage women, many of whom are in poor socio-economic conditions.

The United Nations International Children's Emergency Fund (UNICEF) suggested that each year, at least 1.50 million girls under 18 years get married in India, which makes it home to the largest number of child brides in the world – accounting for a third of the global total. While the prevalence of girls getting married before the age of 18 years has declined from 47% during 2005-2006 to 27% during 2015-2016, it is still too high. Nearly 16% adolescent girls aged 15-19 years are currently married.

The significant progress in the reduction of child marriages in India may be attributed to various factors such as increased literacy of mothers, better access to education for girls, strong legislation and migration from rural areas to urban centres. Proactive government investments in adolescent girls and strong public messaging around the illegality of child marriage and the harm it causes are also the reasons for this reduction.

Child marriage was outlawed in 1929, under the Indian law.

i. **The Child Marriage Restraint Act (also called the Sarda Act) -** It was enacted on 1st April, 1930 and extended across the whole nation excepting Andhra Pradesh and Jammu & Kashmir. Its objective was two-fold : to eliminate the dangers placed on young girls who could not handle the stress of married life; to avoid early deaths.

ii. **The Prohibition of Child Marriage Act, 2006 -** The GoI brought the prohibition of Child Marriage Act (PCMA) in 2006 and came into effect on 1st November, 2007 to address and fixed the shortcomings of the Child Marriage Restraint Act.

Several states of India have introduced incentives to delay marriages e.g., the state of Haryana introduced the so-called "*Apni Beti, Apna Dhan*" programme in 1994, which means "My daughter, My wealth". It is one of India's first conditional cash transfer programmes dedicated to delaying young marriages.

3. Eradicate Poverty :

Poverty reduction, or poverty alleviation, is a set of measures, both economic and humanitarian, that are intended to lift people permanently out of poverty. Poverty occurs in both developed and developing countries throughout the world. Economic growth leads to poverty alleviation as a result of simultaneous increases in employment opportunities and labour productivity. Poverty alleviation involves improving the living conditions of the poor.

The five year plans, introduced after independence, emphasized on poverty alleviation through the following sectoral programmes :

- Jawahar Gram Samridhi Yojana (JGSY) – Jawahar Rozgar Yojana (JRY) was launched in April 1989 whose primary aim was to provide an assured employment to at least one member of every family living below the poverty line in the rural areas for 50 to 100 days in a year. A modified and comprehensive version of the JRY was the JGSY which was started on 1st April, 1999. The main objective of this scheme was the development of rural areas. This scheme ensured sustained wage employment to BPL (below poverty line) families.

- National Old Age Pension Scheme (NOAPS) – This scheme was started on 15th August, 1995. Old people without any means of subsistence above the age of 65 years were paid a monthly pension of Rs 200/- by the central government. The panchayats and municipalities were assigned the responsibility of implementing this scheme in the states and union territories. It had been a successful venture.

- Annapurna – This scheme was started by the government during 1999-2000 to provide food to senior citizens who are unable to take care of themselves and are not under the NOAPS and who have no one to take care of them in their village. According to this scheme, 10 kg of free food grains would be provided a month for the eligible senior citizens.

- Indira Awaas Yojana (IAY) – The main aim of the programme is to provide financial assistance for construction, upgradation of houses to BPL rural households. This scheme is funded on a cost-sharing basis of 75:25 between the Centre and the States. However, in the case of North-Eastern States, the funding pattern has been revised to 90:10.

- Integrated Rural Development Programme (IRDP) – The IRDP, launched during 1978-1979 and extended all over the country during 1980-1981, was essentially conceived as an anti-poverty programme. Under the Sixth Plan, the IRDP aimed at covering 15 million families in all the blocks of the country. Under the Seventh Plan, the IRDP identified families with income less than Rs 4,800/- per annum to provide them a mix of subsidy and bank credit. The IRDP and allied programmes have been restructured into a single self-employment programme called Swarnajayanti Gram Swarojgar Yojana (SGSY) from April 1999.

- Pradhan Mantri Gramin Awaas Yojana (PMGAY) – This programme aimed at creating housing for every individual, and was initiated in 1985. It created 20 lakh housing units out of which 13 lakhs were in rural areas. Started during 1999-2000, the scheme would give out loans to people at subsidized rates to make houses. This scheme was a major boost for the income of the rural Indian population. To augment wage employment opportunities, specific guaranteed wage employment were provided every year through this scheme to adult persons in a household. It also extended a security net to the people and at the same time created durable assets to remove poverty.

4. Women Education and Empowerment :

Women constitute half of the human resource in the country. Therefore, women education in India plays a very important role in the overall development of the country. Educated women not only tend to promote education of their girl children, but can also provide better guidance to all their children. Moreover, educated women can help in the reduction of infant mortality rate and growth of the population. Women empowerment means acquiring knowledge and understanding of gender relations and the ways in which these relations can be changed thereby developing a sense of self-worth.

Education is not available to all women equally. Women with higher education have lower rates of fertility due to the delay of getting married. Employment opportunities enhance women's familial decision making power through the acquisition of an alternative social and economic role, which helps them to adopt birth control practices, space their children and limit family size. Women play an important role in the process of progress in a society. Greater gains could be achieved through an investment in women's education and employment.

Section E : Conditions for Promoting Economic Growth in India

Economic growth is about investment in capital and labour and improving the productivity of these factors through the processes of innovation and technological upgradation. Common binding constraints that need to be addressed are as follows :

- Physical Capital – Growth requires investment in physical capital (e.g., plants, machineries) that are essential for production. India can achieve sustainable growth through a significant increase in the levels of both domestic and foreign investment as a percentage of GDP.

- Human Capital – Investment in education and skills are as important as investment in plant and machinery in promoting economic growth. Investment in this 'human capital' is absolutely necessary as it directly leads to improved human development as well as helping to drive growth.

- Competitive Markets – Competition typically ensures that consumers are able to obtain more goods at lower prices than under a monopoly. It is vital to ensure that businesses are able to enter and exit markets with relative ease and that there are opportunities for business innovation. By this route firms and industries can increase their productivity, which in turn drives long term growth.

- Macroeconomic Stability – Investors make decisions based on the rate of return they expect to receive and the riskiness of the investment project. A stable macroeconomic environment includes monetary policy with low and stable inflation, effective management of government tax and spending to deliver public services as well as an exchange rate regime that is not excessively volatile. This stable macroeconomic environment is crucial to reducing the risks associated with investment and also helps in promoting economic growth.

- Infrastructure – Investors need good access to knowledge, to inputs of capital and to markets. This requires a well developed transport and communication infrastructure which is crucial in disseminating information about prices and markets across a wide area. In this respect, the spread of mobile communication has been revolutionary.

- Openness to Trade and Investment – India cannot grow on a sustained basis without successfully integrating into global markets. There are two facets to this : integration into goods markets and integration into input markets. Openness of a country's goods market enables growth, facilitating technology transfer, increasing competition and benefitting consumers. By following a policy of import substitution can be harmful for a country's growth.

- Increased Agricultural Productivity – India is primarily an agrarian country. Productivity increases in agriculture often serve as the catalyst for growth as well as having strong effects on reducing poverty. Adapting advanced technologies and improving agricultural markets for seed, fertilizer and agricultural outputs will help in this process.

Conclusion

Overpopulation is a serious threat to our own existence. It creates a great obstacle in the way of national development. Excessive population makes all plans to improve a country's infrastructure, medical facilities and social welfare schemes ineffective.

Population explosion aggravates poverty, worsens the employment situation, reduces per capita income and hampers capital formation. Development of infrastructural facilities is unfortunately not keeping pace with the growth of population. The rapid increase of human population is putting extraordinary pressure on our natural resources available e.g., land, water, ecosystem, etc. Inflation is the major consequence of over population. The institutions of child marriage, extreme poverty and illiteracy among some sections of the population are hindrances to the development of the country.

Some of the most effective measures which can be adopted to control population growth are abolition of child marriages, availability of optimum medical facilities, strict legislative actions and access to proper education. Fertility reduction is not a sufficient condition for economic growth but may well be a necessary condition in the sense that government can invest more per capita in education and health thereby developing the human resource of the country. With fewer children to care for and raise, families can improve their prospects for escaping the poverty trap.

The appropriate authorities should initiate a bold population policy so that the economic growth of the country can keep pace with the demands of a growing population. By increasing public awareness and enlisting strict population control norms will definitely lead the way for the country's economic prosperity and control of population.

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Appendix 1

The given problem is :

$$\underset{c_t, n_t}{Max}\ u^t = (c_t)^{1-\gamma}(n_t)^{\gamma} \quad \textit{subject to}\ (\rho n_t + c_t) \leq y_t$$

The Lagrangian function can be written as

$z \equiv (c_t)^{1-\gamma}(n_t)^{\gamma} + \lambda\,[y_t - (\rho n_t + c_t)]$, where λ is the Lagrangian multiplier.

The first order conditions are

$$\frac{\partial z}{\partial c_t} = (1-\gamma)\,(c_t)^{-\gamma}\,(n_t)^{\gamma} - \lambda = 0 \qquad \text{(a)}$$

$$\frac{\partial z}{\partial n_t} = \gamma\,(n_t)^{\gamma-1}\,(c_t)^{1-\gamma} - \lambda\rho = 0 \qquad \text{(b)}$$

$$\frac{\partial z}{\partial \lambda} = y_t - \rho n_t - c_t = 0 \qquad \text{(c)}$$

From (a), we have $\quad \lambda = (1-\gamma)\,(\frac{n_t}{c_t})^{\gamma} \qquad$ (d)

From (b) and (d), we have $\quad \lambda\rho = \gamma\,(\frac{n_t}{c_t})^{\gamma-1}$ or, $(1-\gamma)\,(\frac{n_t}{c_t})^{\gamma}\rho = \gamma\,(\frac{n_t}{c_t})^{\gamma-1}$

or, $(1-\gamma)\,\rho = \gamma\,(\frac{n_t^{\gamma-1}}{n_t^{\gamma}})\,(\frac{c_t^{\gamma}}{c_t^{\gamma-1}}) = \gamma\,(\frac{c_t}{n_t})$ or, $(\frac{1-\gamma}{\gamma})\,\rho\, n_t = c_t \quad$ (e)

From (c) and (e), we have $\quad y_t - \rho n_t - (\frac{1-\gamma}{\gamma})\,\rho\, n_t = 0$ or, $y_t - \rho n_t\,(1+\frac{1-\gamma}{\gamma}) = 0$

or, $\frac{\rho n_t}{\gamma} = y_t \qquad$ or, $\boldsymbol{n_t} = \frac{\gamma y_t}{\rho} \qquad$ (f)

From (e) and (f), we have $\quad c_t = (\frac{1-\gamma}{\gamma})\,\rho\,\frac{\gamma y_t}{\rho}$ or, $\boldsymbol{c_t = (1-\gamma)\,y_t}$

Here, second order conditions (SOCs) are satisfied.

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Certificate of Completion of Project

This is to certify that Mr. Bishal Debnath (ECUG/186/17), a student of Department of Economics, has submitted the semestral project as part of the B.Sc Economics Honours Course (Sem VI, Paper XVI)titled: "Role of Women in the Development of Human Capital" on 30.06.20.

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Role of Women in the Development of Human Capital

Project submitted as a part of mandatory coursework in Semester- VI,

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Abstract

Human capital consists of the knowledge, skills, and health that people accumulate over their lives, enabling them to realize their potential as productive members of society. In this paper it is shown that women have a significant role in the development of human capital. Studies on women show that women have some unique characteristics and they possess different savings and consumption habits and these things help to the process of development of human capital. And if women are given opportunities to the same extent of men, it would result a greater accumulation of human capital. This paper aims to establish a relationship between human capital and gender inequality.

I. Introduction

Human capital is a central driver of sustainable growth and poverty reduction, policy makers sometimes find it hard to make the case for human capital investments. After all, the benefits of investing in people can take a long time to materialize. Building roads and bridges can generate quick economic—as well as political—benefits. But investing in the human capital of young children will not deliver economic returns until those children grow up and join the workforce.

Women play a dual role - producers of goods and services as well as their domestic chores and wives and mothers - yet their contribution to economic development has been neglected. Valuing girls and women is critical factor in making societies more prosperous. Studies have found that where women's share of income is relatively high, there is less discrimination against girls, and women are better able to meet their own needs as well as those of their children. When household income is marginal, virtually 100% of women's income is contributed toward household nutritional intake.

Schultz (Schultz, 1984) argues that mother's education can influence child health in five ways: (I) Education may lead to a more efficient mix of health goods used to produce child health; (2) Better educated mothers may be more effective at producing child health for a given amount and mix of health goods; (3) Schooling can affect parents' preferences in systematic ways—for example, educated mothers tend to opt for fewer but healthier children; (4) More schooling should raise family incomes, either through higher wages or increased productivity in self-employment, which should improve child health status; and (5) Education raises the opportunity costs of time, which tends to increase the time mothers spend working outside the home and thus reduce time for child care—this effect of schooling could reduce child health by reducing both maternal time devoted to child care and duration of breastfeeding. All these things contribute to the improvement of human capital. Mothers have often shaped our world from the cradle by rocking, nurturing and instructing children who grow up to make life-changing and history making accomplishments.

This paper tries to establish that when the women are deprived from their usual rights; the decision making about family planning, children's education, it creates a great loophole in the accumulation of human capital. So women play a significant role in the development of human capital.

II. Literature Review

According to a World Bank (2001) report, "research from around the world has shown that gender inequality tends to slow economic growth and make the rise from poverty more difficult". Clearly, a country's economy will be in jeopardy if the female half of its population does not gain equal access to the economic contribution process. The economic costs of gender gaps thus are high, given that not only do they decrease the women's welfare but also tend to reduce that of males and children and in the process hinder economic development.

In the same vein, Blackden et al. (2006) develop a model in which gender inequality has an adverse effect on asset accumulation and factor productivity and thus impacts economic growth. This is because excluding highly qualified girls from the educational process results in a reduction in the overall average amount of human capital. In addition, restricting female education causes a reduction in the human capital of the next generation as women's educational attainment tends to substantially lower child mortality and fertility. Most of the empirical studies on the causal effect of gender gaps on economic growth or per capita income have found a significant negative impact of gender gap inequality on economic growth. The findings of these macroeconomic studies are also consistent with those of the microeconomic literature (see, for example, Hill and King (1995); World Bank (2001); and King, Klasen, and Porter (2008)).

On the other hand, Barro and Lee (1994), Barro and Lee (1996), and Barro and Sala-i-Martin (2003) find that the inclusion of male and female primary and secondary schooling results in the coefficient associated with female schooling being negative. They attribute this negative sign to a reflection of a large gap in schooling between genders, which in turn may be viewed as a proxy for backwardness. They also identify problems such as the high collinearity between male and female education as well as the endogeneity of the last two variables, among others. Review of Economics & Finance ~ 93 ~ Using different measures of the gender gap, Dollar and Gatti (1999) find that female secondary education does positively and nonlinearly affect growth while the impact of male education is both insignificant and negative. In countries at low levels of development, i.e., predominantly agricultural, the effect of raising female education is neglible while in more developed ones, it is significant.

Klasen (2002) and Klasen and Lamanna (2009), on the other hand, are able to estimate both the lower and upper bounds of the impact of gender inequality on growth. The upper bound is estimated when male education is used as a proxy for average level of education as the implicitly assumed specification is that the gap may be narrowed when girls are more intensively educated while keeping boys' educational level the same. On the other hand, the lower bound is estimated under the assumption that increases in female education may only be obtained at the expense of less male education. An indirect way in which gender inequality may affect economic growth is through its impact on fertility, and hence population growth. Many studies have shown that women in developing countries with less education tend to have high fertility which leads to high population growth. This is turn acts as an impediment to economic growth (see, for instance, Hill and King (1995), Klasen (1999), Murthi, Guio, and Drèze (1995), Schultz (1994), and World Bank (2001)). A joint publication by the Food and Agriculture Organization of the United Nations (FAO) (2010), the International Fund for Agricultural Development (IFAD), and the International Labour Office (ILO) estimates that agricultural output in developing countries could be increased by as much as 2.5 to 4 percent as a result of an equalization of access to productive resources for female and male farmers, while output per worker may rise by 13 to 25 percent after elimination of barriers preventing women from entering certain sectors or professions (see Cuberes and Teignier Baqué (2011) and Hurst et al. (2011)). Given today's integrated and competitive world, these are significant gains considering that even small improvements in the efficient use of resources can have large effects on economic growth.

Some Indian eminent economists Ashwini Deshpande, Debraj Ray has done significant works on gender development. Their works focus on gender biased on wage, employment and the effects of these on human capital and other living parameters.

Do, Levchenko, and Raddatz (2011) argue that in a world of open economies the economic cost of gender inequality has become larger since it reduces a country's ability to compete on the international scene—especially when such country has a comparative advantage in the production of goods and services that male and female workers are equally suited to produce. They also find that those industries that are more dependent on female labor thrive more in countries with more gender equality. As populations in developing countries such as China or in regions such as Eastern Europe age rapidly, fewer workers will be supporting increasing numbers of elderly in the medium run. As a result, having more women in the work force can lessen the effect of declining working-age populations. Building upon the first priority area for policy going forward of the reduction in gender gaps in human capital, namely those addressing female life expectancy, in this paper we wish to empirically analyze the effect of these gaps on the growth rate of GDP per capita using a sample of seventy-eight developing countries. We first formulate a model relating the change in gender gap in human capital to the growth of income. We rely on the traditional process of introducing gender gap as a input in the production function with the stipulation that the greater the gap the smaller the output as the gap may be viewed as a less than efficient use of resources. We then specify the statistical model to be estimated while giving the theoretical underpinnings for the inclusion of explanatory variables. Empirical results are presented in a subsequent section. The final section gives concluding remarks as well as policy implications.

III. Why does gender equality matter in the development of human capital?

Gender equality is intrinsically linked to sustainable development and is vital to the realization of human rights for all. The overall objective of gender equality is a society in which women and men enjoy the same opportunities, rights and obligations in all spheres of life. Gender equality is beneficial as it contributes to the economic gains of a country. Many studies have found that when some development and welfare programs are launched and implemented through the women, have better results than implemented through men. Women possess unique consumption habits, saving styles. It is seen that in which family women work, their children have better education and better health. In developing countries women workforce is significantly less than men workforce. And it is evident from data of developing countries that they have high child mortality rate, high dropout rates from school, malnutrition of children. As in most of the developing countries women have less bargaining power to the decisions of family, women can't contribute to the betterment of family. When an extra income is given to women they completely spend it on children's education or for better food hat where as it case of men they spend the money other way. So the marginal spending on family expenditure of women is 100 whereas for men it is significantly less than 100%. Also it is seen that in most of the developing countries, women work in informal sector with relatively low wage from men and it happens because of the structural discrimination and gender norms. Equality between men and women exists when both sexes are able to share equally in the distribution of power and influence, have equal opportunities for financial independence through work or through setting up businesses; enjoy equal access to education and the opportunity to develop personal ambition, interests and talents; share responsibility for the home and children and are completely free from coercion, intimidation and gender-based violence both at work and at home. Within the context of population and development programs, gender equality is essential because it will enable women and men to make decisions that impact more positively on their own sexual and reproductive health as well as that of their spouses and families. Decision-making with regard to such issues as age at marriage, timing of births, use of contraception and resource to harmful practices (such a female genital cutting) stands to be improved with the achievement of gender equality. So the greater control women have in family, the better the condition of the children in that family as fewer children are likely to get more food, more care and better education compared to large number of children(where family planning is not controlled by women). It is told that mother is the first teacher of a child. And it is evident from data that mother's education has a greater impact on children's education and health. Children with educated mothers are likely to get better primary education and health compared to children with illiterate mothers.

IV. Defining Human Capital Index

The HCI has three components:

1. *Survival*: This component reflects the fact that children born today need to survive until the process of human capital accumulation through formal education can begin. Survival is measured using the under-5 mortality rate.

2. *Expected years of learning-adjusted school:* Information on the quantity of education a child can expect to obtain by age 18 is combined with a measure of quality: how much children learn in school based on countries' relative performance on international student achievement tests. This combination produces the expected years of learning-adjusted school. By adjusting for quality, this component reflects the reality that children in some countries learn far less than those in other countries, despite being in school for a similar amount of time.

3. *Health*. This component uses two indicators for a country's overall health environment: (1) the rate of stunting of children under age 5; and (2) the adult survival rate, defined as the proportion of 15-year-olds who will survive until age 60. The first indicator reflects the health environment experienced during prenatal, infant, and early childhood development. The second reflects the range of health outcomes that a child born today may experience as an adult.

A country in which a child born today can expect to achieve both full health (no stunting and 100 percent adult survival) and full education potential (14 years of high-quality school by age 18) will score a value of 1 on the index. Therefore, a score of 0.70 signals that the productivity as a future worker for a child born today is 30 percent below what could have been achieved with complete education and full health. If a country has a score of 0.50, then the gross domestic product (GDP) per worker could be twice as high if the country reached the benchmark of complete education and full health.

V. Defining Gender Inequality Index

A composite measure reflecting inequality in achievement between women and men in three dimensions: reproductive health, empowerment and the labour market. The GII has five components:

1 .Maternal mortality ratio: Number of deaths due to pregnancy-related causes per 100,000 live births.

2. Adolescent birth rate: Number of births to women ages 15–19 per 1,000 women ages 15–19.

3. Share of seats in parliament: Proportion of seats held by women in the national parliament expressed as a percentage of total seats. For countries with a bicameral legislative system, the share of seats is calculated based on both houses.

4. Population with at least some secondary education: Percentage of the population ages 25 and older that has reached (but not necessarily completed) a secondary level of education.

5. Labour force participation rate: Proportion of the working-age population (ages 15 and older) that engages in the labour market, either by working or actively looking for work, expressed as a percentage of the working-age population.

The Gender Inequality Index (GII) reflects gender-based disadvantage in three dimensions: reproductive health, empowerment and the labour market—for as many countries as data of reasonable quality allow. It shows the loss in potential human development due to inequality between female and male achievements in these dimensions. It ranges from 0, where women and men fare equally, to 1, where one gender fares as poorly as possible in all measured dimensions.

VI. Regression and Rank Correlation

Now, it is intuitively convincing that gender inequality has something to do with human capital. So, we have tried to find empirical evidence on this. We already have defined the methodology and components of Human Capital Index (HCI) and Gender Inequality Index (GII). We will consider HCI to represent the strength of human capital of a particular country and GII to represent the gender based inequality of a particular country. Now, we are interested to know if there is any significant relationship between these two variables.

We have taken 116 countries' HCI and GII values from relevant sources.

Country	Human Capital Index[1]	Gender Inequality Index[2]
Singapore	0.899	0.065
Korea, Rep.	0.852	0.058
Finland	0.848	0.050
Sweden	0.815	0.040
Netherlands	0.813	0.041
Slovenia	0.811	0.069
Canada	0.808	0.083
Australia	0.805	0.103
Germany	0.802	0.084
Czech Republic	0.800	0.137
Austria	0.798	0.073
Denmark	0.789	0.040
United Kingdom	0.789	0.119
Norway	0.788	0.044
Portugal	0.785	0.081
New Zealand	0.785	0.133
Estonia	0.783	0.091
Russian Federation	0.783	0.255
Poland	0.781	0.120
Kazakhstan	0.780	0.203

Italy	0.774	0.069
Switzerland	0.774	0.037
Latvia	0.773	0.169
Serbia	0.771	0.161
Belgium	0.766	0.045
Lithuania	0.761	0.124
Cyprus	0.759	0.086
Iceland	0.758	0.057
Spain	0.757	0.074
United States	0.757	0.182
Croatia	0.747	0.122
Malta	0.731	0.195
Hungary	0.729	0.258
Slovak Republic	0.718	0.190
Bulgaria	0.707	0.218
Luxembourg	0.707	0.078
Bahrain	0.699	0.207
Greece	0.694	0.122
Ukraine	0.686	0.284
Chile	0.682	0.288
China	0.674	0.163
Oman	0.657	0.304
Qatar	0.654	0.202
Malaysia	0.645	0.274
Georgia	0.643	0.351
Albania	0.637	0.234
Argentina	0.632	0.354
Turkey	0.630	0.305
Romania	0.628	0.316
Bosnia and Herzegovina	0.627	0.162
Costa Rica	0.621	0.285
Mexico	0.620	0.334
Ecuador	0.619	0.389
Thailand	0.614	0.377

Saudi Arabia	**0.612**	**0.224**
Colombia	**0.609**	**0.411**
Moldova	**0.603**	**0.228**
Iran, Islamic Rep.	**0.602**	**0.492**
Kuwait	**0.599**	**0.245**
Armenia	**0.593**	**0.259**
Peru	**0.589**	**0.381**
Jordan	**0.589**	**0.469**
Philippines	**0.579**	**0.425**
Jamaica	**0.558**	**0.405**
Indonesia	**0.550**	**0.451**
Nicaragua	**0.550**	**0.455**
Macedonia, FYR	**0.548**	**0.145**
Algeria	**0.545**	**0.443**
Panama	**0.544**	**0.460**
Lebanon	**0.537**	**0.362**
Paraguay	**0.535**	**0.482**
Tunisia	**0.530**	**0.300**
Tajikistan	**0.529**	**0.377**
Tonga	**0.523**	**0.418**
Guyana	**0.521**	**0.492**
El Salvador	**0.512**	**0.397**
Morocco	**0.511**	**0.492**
Dominican Republic	**0.510**	**0.453**
Egypt, Arab Rep.	**0.505**	**0.450**
Honduras	**0.502**	**0.479**
Bangladesh	**0.492**	**0.536**
Myanmar	**0.490**	**0.458**
Guatemala	**0.469**	**0.492**
Gabon	**0.468**	**0.534**
Haiti	**0.463**	**0.620**
Lao PDR	**0.462**	**0.463**
India	**0.451**	**0.501**
Ghana	**0.446**	**0.541**

Botswana	0.446	0.464
Senegal	0.428	0.523
Iraq	0.412	0.540
Congo, Rep.	0.411	0.655
Gambia, The	0.410	0.620
Tanzania	0.410	0.539
South Africa	0.408	0.422
Togo	0.408	0.566
Benin	0.403	0.613
Cameroon	0.393	0.566
Papua New Guinea	0.393	0.740
Rwanda	0.388	0.412
Burundi	0.387	0.520
Ethiopia	0.386	0.508
Pakistan	0.384	0.547
Congo, Dem. Rep.	0.370	0.655
Yemen, Rep.	0.363	0.834
Afghanistan	0.363	0.575
Burkina Faso	0.360	0.612
Angola	0.358	0.578
Mauritania	0.357	0.620
Sierra Leone	0.351	0.644
Nigeria	0.338	0.647
Liberia	0.325	0.651
Côte d'Ivoire	0.323	0.657
Mali	0.315	0.676
Niger	0.312	0.647
Chad	0.289	0.701

Source: 1. World Bank, Human Capital Index – 2018

2. United Nation Development Programme, Human Development Report - 2019

From the above data, we will inspect the correlation between Human Capital Index (HCI) and Gender Inequality Index (GII). Using STATA, we have found the regression line taking GII as independent variable and HCI as dependent variable.

Consider the regression model:

$HCI_i = A + B^* GII_i + u_i$; where, GII_i: Gender Inequality Index for a particular country

HCI_i: Human Capital Index for that particular country

u_i: Residual

All we have to do here is to estimate the A, the intercept term and B, the coefficient term using OLS method. And here the sign of B will denote the nature of association between these two.

To find those values, we have used STATA and the table below, extracted from STATA is showing in details the correlation between Human Capital Index and Gender Inequality Index for 116 countries.

Source	SS	df	MS			
				Number of obs	=	116
				F(1, 114)	=	867.05
Model	2.61886711	1	2.61886711	Prob > F	=	0.0000
Residual	.344329564	114	.003020435	R-squared	=	0.8838
				Adj R-squared	=	0.8828
Total	2.96319668	115	.025766928	Root MSE	=	.05496

HCI	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
GII	-.7314581	.0248409	-29.45	0.000	-.7806678	-.6822485
_cons	.8415528	.0099663	84.44	0.000	.8218096	.861296

So, from the above table, what we have found is:

_cons = A = 0.842 and B = coef. of GII = -0.731

So, the coefficient of GII is negative then clearly there is a negative relationship between Human Capital Index and Gender Inequality Index.

Now, we have to do the significance tests for our findings and there after we can conclude that what we have found is significant.

From the above table we can see the t- values for the coefficient and constant term.

For the constant term, A, the t- value is 84.44 which is greater than the 95% confidence interval value. That implies it rejects the null hypothesis H_0: A = 0, so the result is significant.

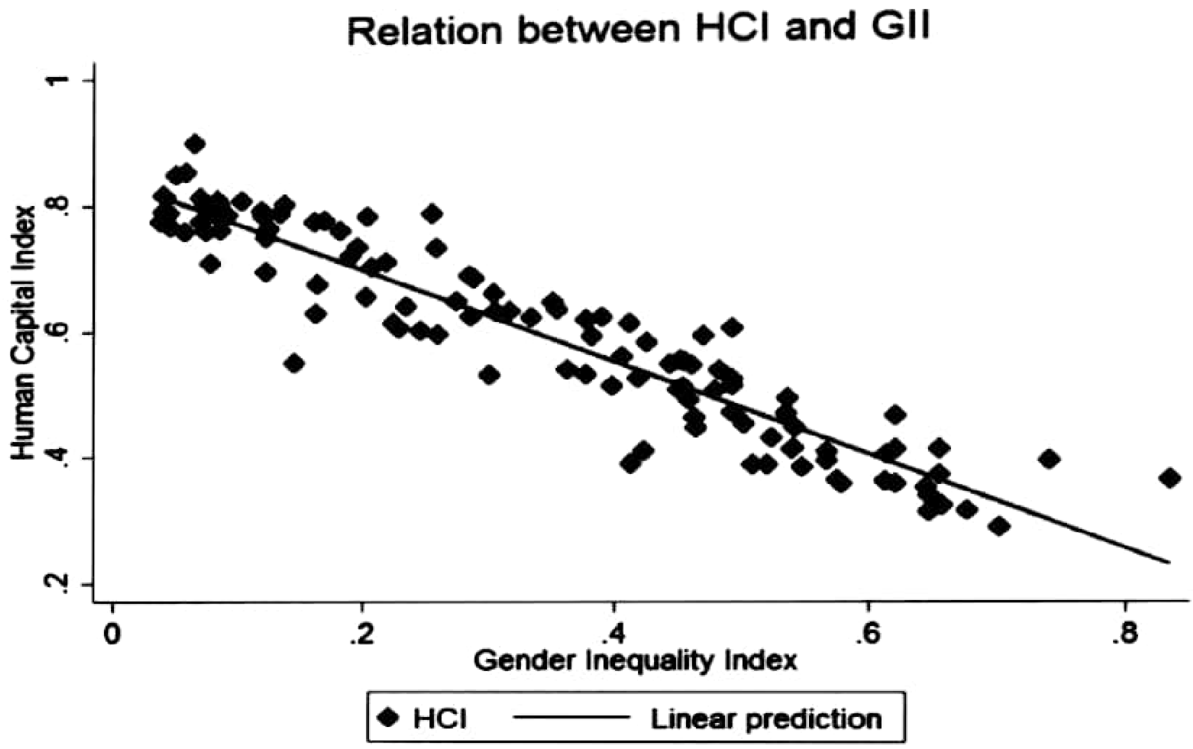
For the constant term, B, the t- value is -29.45 which is greater than the 95% confidence interval value. That implies it rejects the null hypothesis H_0: B = 0, so the result is significant.

So, the predicted line becomes:

$$\mathbf{HCI_i = 0.842 - 0.731 * GII_i + u_i}$$

Now, it is important to see the coefficient of determination which describes how good the fitting is. Here the coefficient of determination(R- squared) value is 0.8838 which is significantly large and close to 1. So we can conclude that it is a good fit and our model is appropriate.

From the above result we can conclude that countries with high gender inequality have developed low human capital.



The above scatter diagram is also showing a negative relationship between Gender Inequality Index and Human Capital index.

The red line in the diagram is the fitted line which we have obtained from OLS method.

Spearman's Rank Correlation between HCI and GII

```
 Number of obs =       116
Spearman's rho =        -0.9414

Test of Ho: HCI and GII are independent
    Prob > |t| =         0.0000
```

From the above data, we have found that the spearman's rank correlation is **-0.9414** and the above table, obtained from STATA are showing that it is rejecting the null hypothesis: HCI and GII are independent. So, there is a significant negative relationship between HCI and GII.

VII. Conclusion

So we can tell that gender inequality affects human capital adversely. After the analysis what we have got strongly suggests that women have a great role in the development of human capital. Women are significantly important in an economy and also the data are suggesting us that the developed nations always take care of their female population, they believe in women empowerment and as a result they get more success in terms of future income and current income compared to the underdeveloped nations, which deliberately neglect the importance of women.

So, all the nations should give importance to their female populations, at least our analysis is suggesting that. The countries, where gender inequality is high should frame their policies for the welfare of their female population. Also, those countries should encourage the idea of women empowerment through campaigning or by other convenient ways. Women must be exposed to equal opportunities in those countries, like the other developed countries also are practicing and getting better results.

The most important thing throughout our paper is that we are concerned about the future and the present mothers can create better future. The better human capital will lead the economy in future to a better economy. Today's children are the future workforce and their quality matter the most in an economy. So, empowering women implies we are shaping our futures better. Sometimes, we do not have short-run impacts of our policies but in long-run they compensate everything. This is the way; women empowerment can benefit our economy.

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Certificate of Completion of Project

This is to certify that Mr. Arijit Gupta (ECUG/187/17), a student of Department of Economics, has submitted the semestral project as part of the B.Sc Economics Honours Course of (Sem VI, Paper XVI)titled: "Population Ageing in Developed Countries: Causes and Effects" on 30.06.20.

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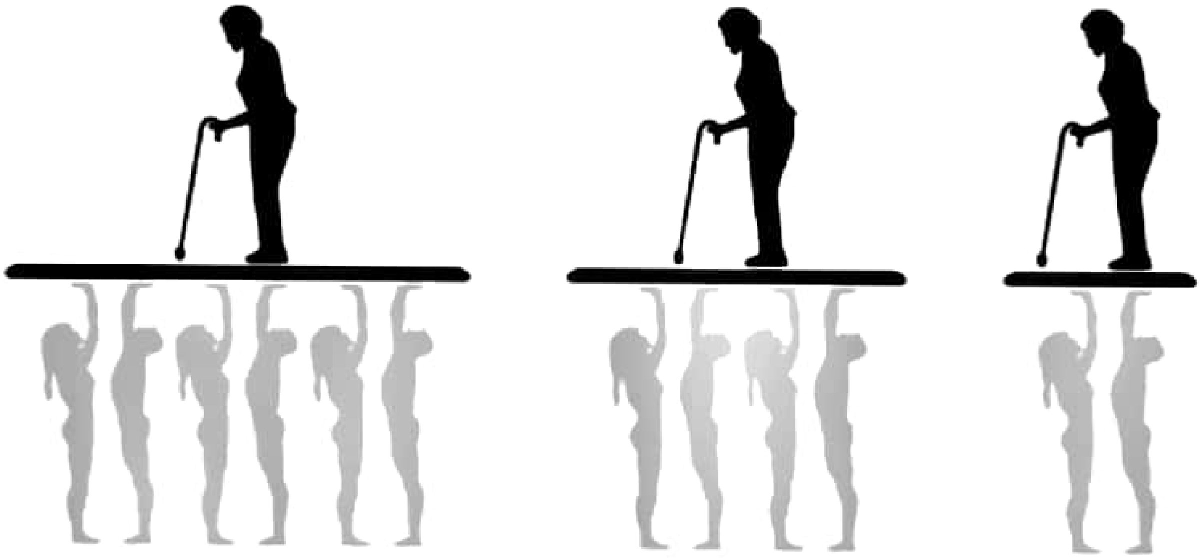
POPULATION AGEING IN DEVELOPED COUNTRIES: CAUSES AND EFFECTS



TERM PAPER SUBMITTED AS A PART OF PAPER XVI IN SEMESTER VI (2020)

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Contents

ABSTRACT:

This paper tries to find the causes behind population ageing in the developed world now in days. Population ageing is a concerned topic for the most of the developed world due to high life expectancy and low declining fertility rate. In the further discussion details studies are done to find the main reasons behind the life expectancy and declining fertility rate and to observe the low replacement rate of the population of the developed world so that it can't be able to replace elder population. As a result proportion of the elder population is increasing and it leads to situation of population ageing. Impacts of the population ageing are further discussed in the following section. Some conclusions are highlighted according to these effects and it is tried to find how much actually harmful the population ageing is for the developed world.

INTRODUCTION:

Age structure of a country is an important aspects pertaining to their many socio economic aspects. Population ageing refers to changes in age structure such that there are an increment in number of the old persons i.e. persons having age of 65+. The developed world has already fall into an era of this demographic change or transition. Population growth is declining as well as the longevity is rising. Both will lead to increase the share of the elderly population and demographic changes. This demographic changes can be attributed by consider population pyramid which is discussed in details in the following section. Population pyramid of the developed world continuously tends to be rectangular which implies higher share of the elderly population in the developed world. This demographic change is related to many aspects of any country such as economic growth, current account balance, fiscal stability, labor force participation etc. Since population ageing is an important topic and a critical situation to developed world, it is well practiced topic among researchers. In this paper, it is tried to investigate reasons for this population ageing by theoretically and also by empirical findings which further would help to find the effects and policies to handle this situation. As a result, this population ageing has prompted many to predict a gloomy future caused by an unprecedented economic burden of population aging. By considering this, industrialized nations will need to implement effective social and economic policies and programs.

LITERATURE REVIEW:

Work done by Malthus on the topic of the increase o population is necessarily limited by adverse economic conditions and labor market uncertainties; there has been lots of scope to find reasons and outcomes of population ageing in the developed world. Great theorists (e.g. Keyfitz 1968; Coale 1972) saw issues of population ageing as of prime importance. Recently, a new generation has looked at some critical theoretical questions (e.g. Preston 1986, 1988; Wachter 1988; Horiuchi 1995), but these initiatives are relatively sparse and spasmodic in occurrence compared to many other population questions addressed by the demographic community. The substantive issues, again excluding ageing, have also not been analyzed as frequently as they deserve. Fortunately, however, this is starting to change, and the result is the appearance of some papers on the patterns, correlates and effects of age-structural transitions (including cohort changes) on a diverse range of factors, all of which have policy implications (e.g. Dittgen 2000; Fair and Dominguez 1991; Higgins and Williamson 1997; Lindh and Malmberg 1999; Loriaux 1990; Macunovich 1999). Further research of Nico Keilman showed various ways to infer mortality levels in a population from information about the age structure, and changes therein. The age structure cannot be used independently for such a purpose. Additional data, or assumptions, are necessary. This further would help to predict expected elderly population in a particular country. Demographers have been working for many decades on the problem of producing long term stochastic population projections and to predict population in a correct manner so that this can be attributed for policy implications. In recent years this work has intensified (Sykes 1969; Keyfitz 1981; Stoto 1983; Alho and Spencer 1985; Cohen 1986; Alho 1990; Lee and Carter 1992; Tuljarpurkar 1992; Lee 1993; Lee and Tuljapurkar 1994; McNown and Rogers 1992; Pflaumer 1988; Lutz et al. 1996). An extensive review is provided in Lee (1999). A variety of approaches have been taken, including the use of expert opinion, ex post analysis of projection accuracy, Monte Carlo methods and statistical time series analysis. In this paper, we build on the earlier work by Lee and Tuljapurkar (1994) to generate stochastic projections based on age distributed vital rates that are driven by statistical time series models fit to historical data. There has also been increased interest in long term budget projections, with work by Auerbach and Kotlikoff (1994) and long term projections of the Congressional Budget Office (1996) and (1997). Ronald Lee showed in his work that population ageing would also have dramatic effects through other programmes such as Medicare, Medicaid, SSI and other retirement programmes, particularly as ageing interacts with rising medical costs per enrollee. Growth in OASDI costs account for at most 31% of the total increase in public expenditure associated with ageing, while the responsibility of rising costs of health care is nearly twice as great. Expenditures on the elderly are projected to rise from 9.5% today to 21.4% by 2070, or by 125%. Ageing in the industrialized countries has stimulated much work on the economic effects of demographic change. The economic setting for such analyses, beginning with Yaari (1965) and Blanchard (1985), is a general equilibrium model with overlapping generations. Published work on the effects of population ageing in such models has typically sacrificed the details of age-dependent mortality in order to make analytical progress. The first assumes that all persons die at a fixed age and studies the effect of increases in this age of death, as in Futagami and Nakajima (2001). The second follows Yaari and Blanchard in assuming a fixed age-independent death rate, as in Kalemli-Ozcan et al. (2000). A more realistic two-parameter survival function was used by Boucekkine et al. (2002). Apart from the finding reasons behind the population ageing and forecasting there are many works pertaining to policy of population ageing in the developed world. Most recently, Aksoy, Basso, Smith, and Grasl (2015) emphasize that changing ageing patterns may contribute to reduced output growth and real interest rates across OECD economies. In the light of the zero lower bound, low and declining real interest rates pose crucial challenges for the conduct of monetary policy and macroeconomic stabilization, as suggested byCarvalho,Ferrero,andNechio(2016).Followingthesecular stagnation hypothesis, Ferr ero et al. (2019) and Goodhart and Pradhan (2017) report similar findings. Duval et al. (2017) examine the links between employment protection legislation reforms and labor market outcomes using a dataset of 26 advanced economies, over the period 1970–2013. In this context, Adsera (2004) explores the relationship between the demographic transformation during the last few decades and female labour force participation rates across 23 OECD nations. Institutional features pertaining to the structure of the labor market turn out to be highly influential. Family policies also matter for demographic developments (Luci-Greulich & Thévenon, 2013). Bloom, Canning, and Fink (2010) examine the effects of population ageing on economic growth and distinguish between advanced and developing countries. Empirical estimates for developed countries reveal the adverse impact of population ageing on income per capita primarily via declining labour supply caused by the reduction in the share of working age population. Finally, Basso and Jimeno (2018) find that population ageing delivers lower GDP per capita growth due to a trade-off between innovation and automation.

A Brief about Age Distribution and Population Pyramid:

Age distribution or age composition generally refers to proportion of persons belong to successive ages or age groups in a particular geographic domain between a particular period of time. Age structure of a country is important component to understand the demographic analysis. Age structure generally comprises of different age groups rather than individual ages because it is relevant to say that old aged persons of a country belongs to an age group of 65+ years.

Population pyramid is a graphical illustration consisting of proportion of the population with respect to different age groups. Proportions of the population generally are generally plotted in the horizontal axis and different age groups are plotted in the vertical axis. Actually vertical axis divides the total population in two parts. Left part indicates the proportion of males belonging to a particular age group and right part indicates the proportion of females belonging to a particular age group. It is easy to interpret the whole population scenario from the population pyramid. For example, the population of a country with rapid growth has a triangle-shaped population pyramid with a greater proportion of younger individuals who are at or close to reproductive age. Again more or less rectangular shaped population pyramid indicates less population growth. Let take an example of following population pyramid:

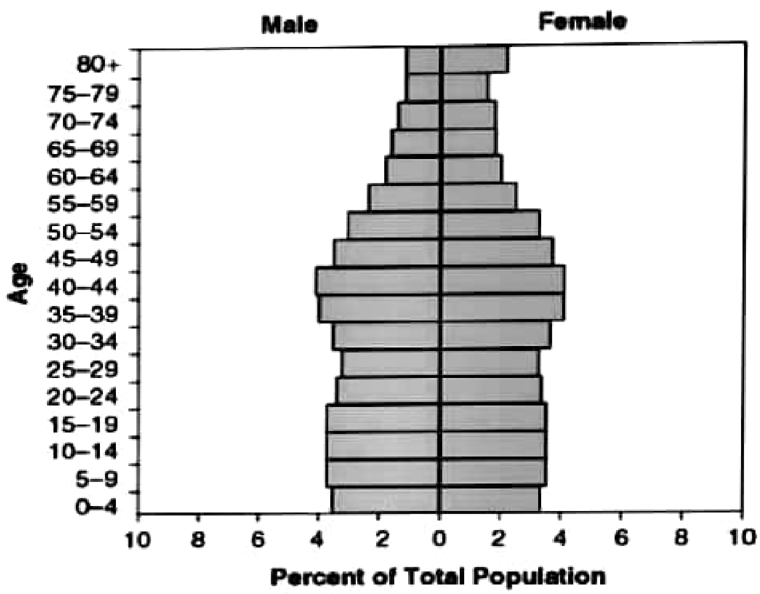


Figure 1: Example of Population Pyramid

Source: Google

Consider the above population pyramid is of some country 'A'. From the diagram it is easily interpreted that how much of population proportion belongs to different age group such as 0-4, 5-9, 10-14 and so on. The shape of this pyramid is like rectangular so this country experienced a slow population growth. If the query is to know the percentage of the male population belonging to age group of 35-39 years, it is easy to tell that it is about nearly 4% of the total population.

Population Ageing and changing the Population Structure of the Developed World:

A large majority of the world's countries are experiencing significant change in the age structure i.e. shifts from youthful populations to older population. The transition can be divided into three main phases. These three phases are: i) when mortality falls but fertility remains high, the age distribution shifts towards younger ages as the share of children increases owing to the greater proportion of infants and children who survive through early childhood, ii) fertility also begins to decline, reducing the number of children and youth as a proportion of the total population, iii) if a lower level of fertility is maintained over many decades, the numbers of children, youth and working-age adults all decline as a proportion of the total, while the number and the proportion of older persons continues to rise. Lesser level of fertility rates over decades, lesser the new children and due to low level of mortality rates older population continues to rise. There will be lesser numbers of children to replace the population uniformly. Then proportion of older populations will increase substantially. The gradual shift from a younger to an older population age structure is known as "population ageing". Most of the developed countries in the world are in the last phase. The population ageing can be captured by many factors which will be discussed in the following:

The most fundamental factor which can easily capture the population is fertility rate. As fertility rate declines the number of new children declines and less number of children are supposed to replace the youth population. Now in a day, declining fertility rate of developed world leads to population ageing.

Next the changing pattern of median ages easily captures that population will be going towards older population. Median age provides an important single indicator of the age distribution of a population. It provides the age 'midpoint' of a population; there are the same numbers of people who are older than the median age as there are younger than it. This implies higher the median age higher the proportion towards old population.

Then the declining death rate at old age of the developed world implies the higher the chances of live more years. With the lower fertility rate and declining death rate led to the situation of population ageing.

The structure of the population of the developed world changes substantially. From the following figures it can be observed for the case of case Europe that from the year of 1970 to the year of 1930(projected), population pyramid becomes more rectangular. It implies the increasing proportion of old age population and decreasing proportion of youth population.

Figure 2: Population Pyramid of Europe 1970

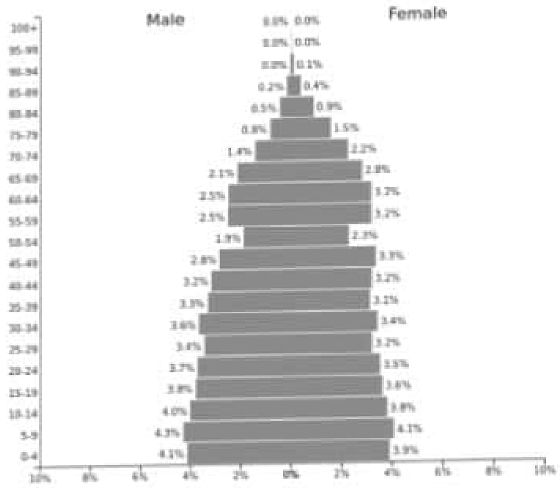


Figure 3: Population Pyramid of Europe 1990

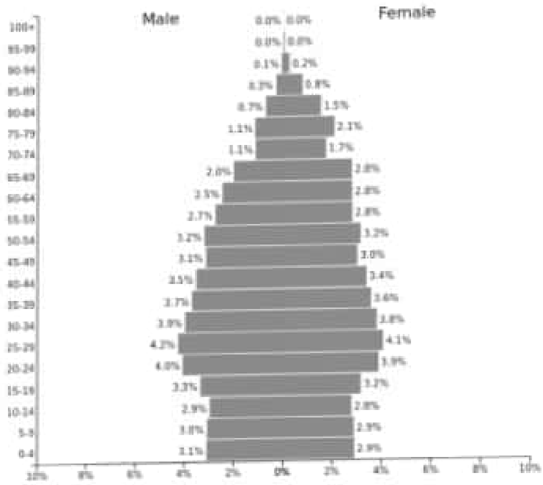


Figure 4: Population Pyramid of Europe 2010

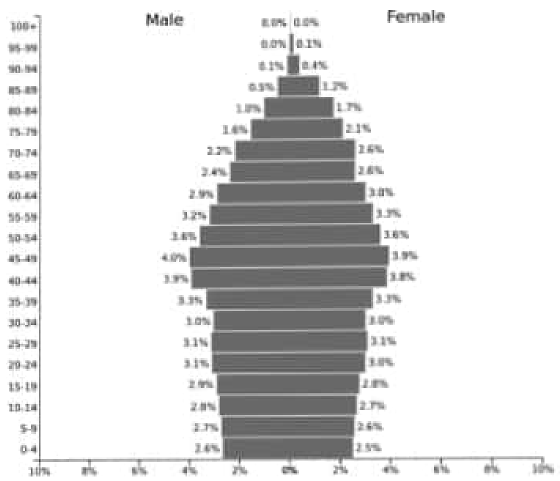
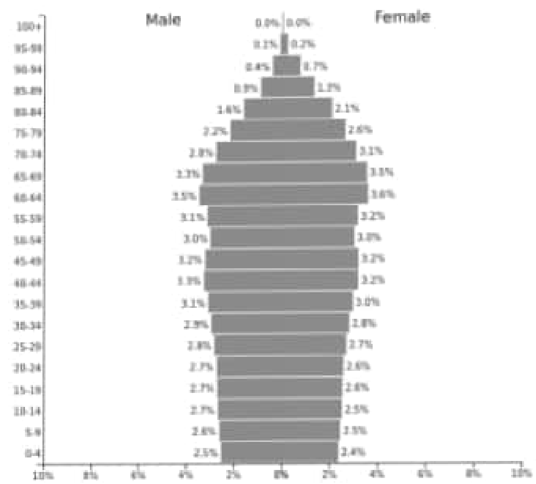


Figure 5: Population Pyramid of Europe 2030



Source: https://www.populationpyramid.net

In the following part, the drivers of the population ageing and the effect this in the developed world will be investigated.

Drivers of the population ageing:

This remarkable phenomenon of the population ageing is being driven by declines in fertility and improvements in longevity. With fewer children entering the population and people living longer, older people are making up an increasing share of the total population. The dramatic increase in average life expectancy during the 2oth century ranks as one of society's greatest achievements, especially more in the developed world. Increase in life expectancy in both at birth and at 65 years would easily lead to a situation of falling death rates which further leads to high aged population. Here is the rising pattern of life expectancy at birth in some selected developed countries.

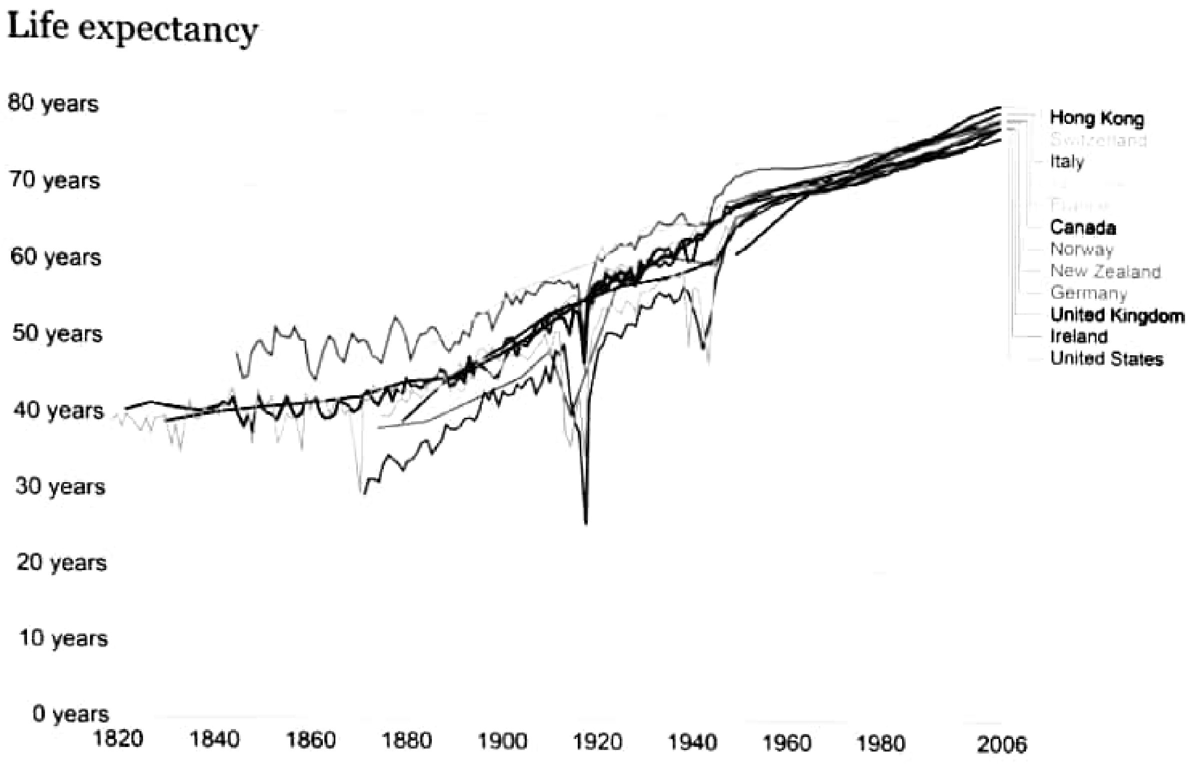


Figure 6: Life Expectancy and Time in Years for some selected countries

Source: Our World in Data

If we again look upon overall life expectancy of Europe and America rather than some developed countries, this trend is also rising.

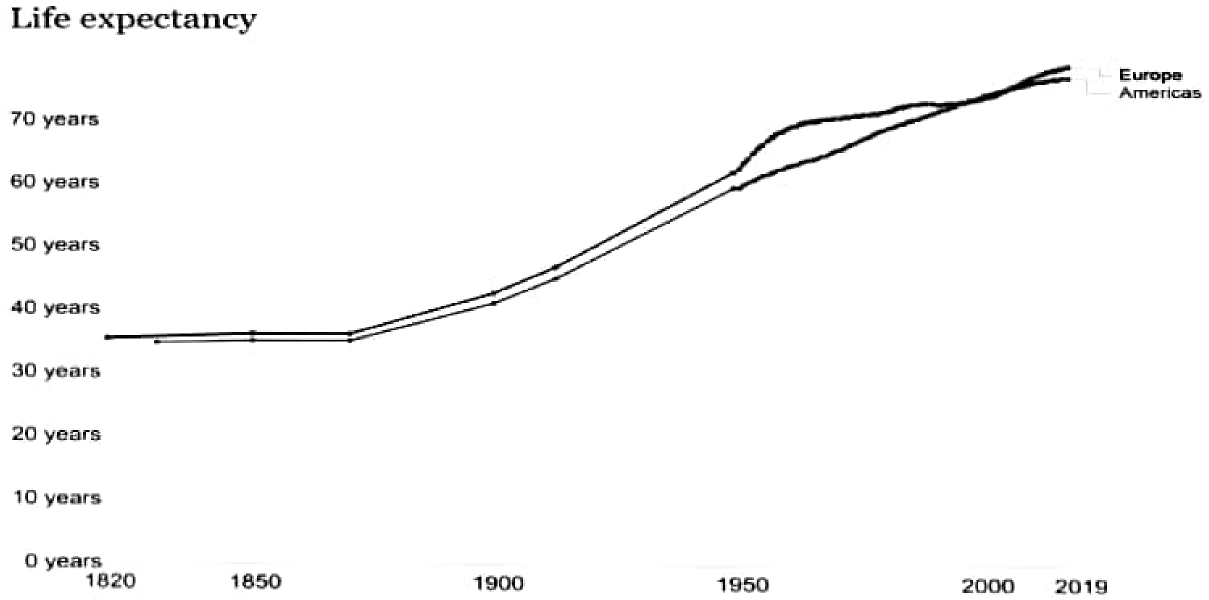


Figure 7: Life Expectancy and Time in Years for Europe and Americas

Source: Our World in Data

It's often argued that life expectancy across the world has only increased because child mortality has fallen. But this story is not true at all. Life expectancy has increased at all ages. The average person can expect to live a longer life than in the past, irrespective of what age they are. Here is the data of England and Wales which indicate the increasing life expectancy at all ages.

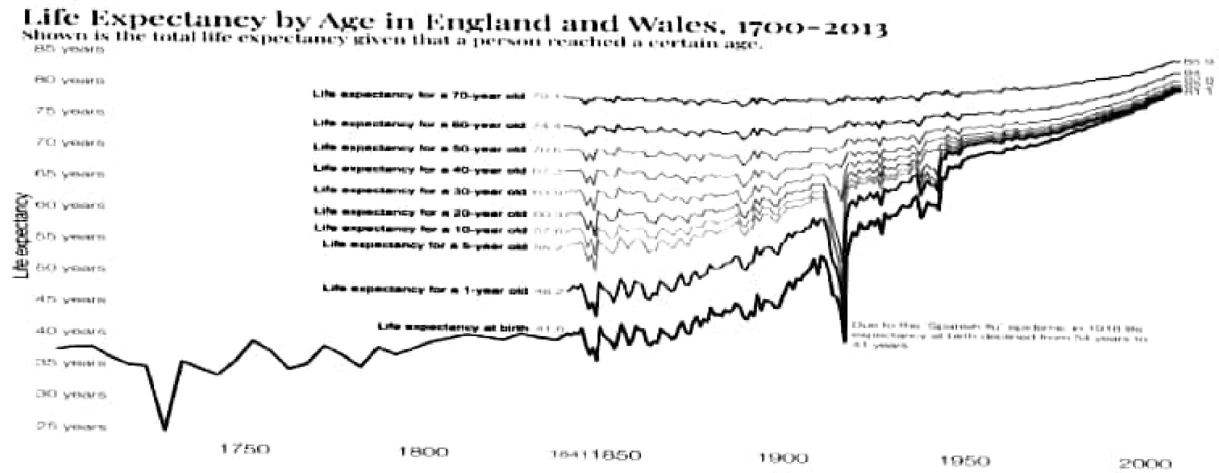


Figure 8: Life Expectancy by ages

Source: Our World in Data

Many aspects had to change for life expectancy to double. Innovations of prohibitions of infectious diseases like smallpox and malaria to non-communicable diseases like cancer increase substantially the life expectancy and not just specific medical innovations, like vaccinations or antibiotics, but also public health interventions – improved public sanitation and publicly funded healthcare – were crucial. In the following part many reasons will be discussed for the same.

One of the important factors behind this is the medical innovation. People died painfully, mostly in infancy or childhood, primarily from diseases such as tuberculosis, pleurisy, typhus, tonsillitis, cholera and dysentery. The average lifespan at 17th century was around 35 years. Over the last 200 years, U.S. life expectancy has more than doubled to almost 80 years with vast improvements in health and quality of life. Discoveries of vaccines helped much more to cure the deadliest diseases. Beginning with an attempt by Edward Jenner in 1796 to use inoculations to tame the infamous smallpox virus, the usefulness and popularity of vaccines grew very quickly. Throughout the 1800s and early 1900s, various vaccinations were created to combat some of the world's deadliest diseases, including smallpox, rabies, tuberculosis, and cholera. In the year of 1846 William T. G. Morton made history by being first in the world to publicly and successfully demonstrate the use of ether anesthesia for surgery. Further anesthesia would help to execute painless operations and hence it is a blessing in medical history. Before the discoveries of 'germ' theory the widely believed theory was that disease was caused by 'spontaneous generation'. In 1861, French microbiologist Louis Pasteur proved through a simple experiment that infectious disease was a result of an invasion of specific microscopic organisms - also known as pathogens - into living hosts. This new understanding marked a significant turning point in how diseases were treated, controlled and prevented, helping to prevent devastating epidemics that were responsible for thousands of deaths every year, such as the plague, dysentery and typhoid fever. Alexander Fleming's penicillin, the world's first antibiotic, completely revolutionized the war against deadly bacteria. The drug greatly weakens the cell wall and causes bacteria to die, allowing a person to recover from a bacterial infection. These medicinal advancements helped lot to improve life expectancy as well as decrease death rates at all ages. Following table shows the results of vaccines in United States.

Disease	Baseline 20th century annual morbidity	1998 provisional morbidity	% Decrease
Smallpox	48,164	0	100%
Diphtheria	175,885	1	100%
Pertussis	147,271	6,279	95.7%
Tetanus	1,314	34	97.4%
Poliomyelitis	16,316	0	100%
Measles	503,282	89	100%
Mumps	152,209	606	99.6%
Rubella	47,745	345	99.3%
Influenza (B)	20,000	54	99.7%

Table 1:Morbidity from the diseases with and without vaccines -- United States.

Source: https://www.cdc.gov/

Next reason which easily can draw the attention for increasing life expectancy in developed countries is that GDP. GDP is an important factor for the countries. It explicitly and implicitly leads to higher life expectancy of life which further leads to longevity. Following diagram is plotted for developed OECD countries, independent variable as GDP and dependent variable as life expectancy for the year from 1960 to 2010. We can see a positive relation between the GDP and life expectancy this is because higher GDP implies that higher spending on health care expenses, sanitation etc which implicitly increases the longevity of life.

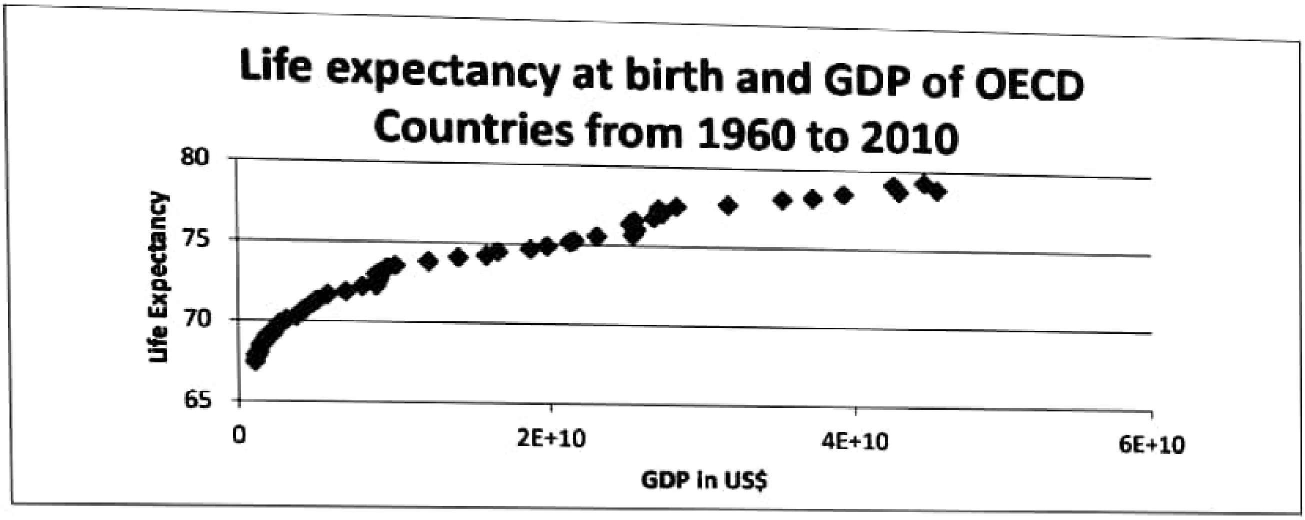


Figure 9: Life Expectancy and GDP for OECD Countries

Source: Data - World Bank, Plotting - Own Calculation

Next if we looking for how higher GDP would lead to high life expectancy then health care expenditure is an important factor. It is an obvious factor to improve life expectancy. Health care is the most important input to health. Many researchers suggest that more per capita health care expenditure, more life expectancy. According to studies of OECD, Countries spending more on health had higher life expectancies. While higher health spending per capita was generally associated with higher life expectancy at birth, this relationship is less pronounced amongst countries with higher health spending per capita. There may thus be diminishing returns to health spending on this measure.

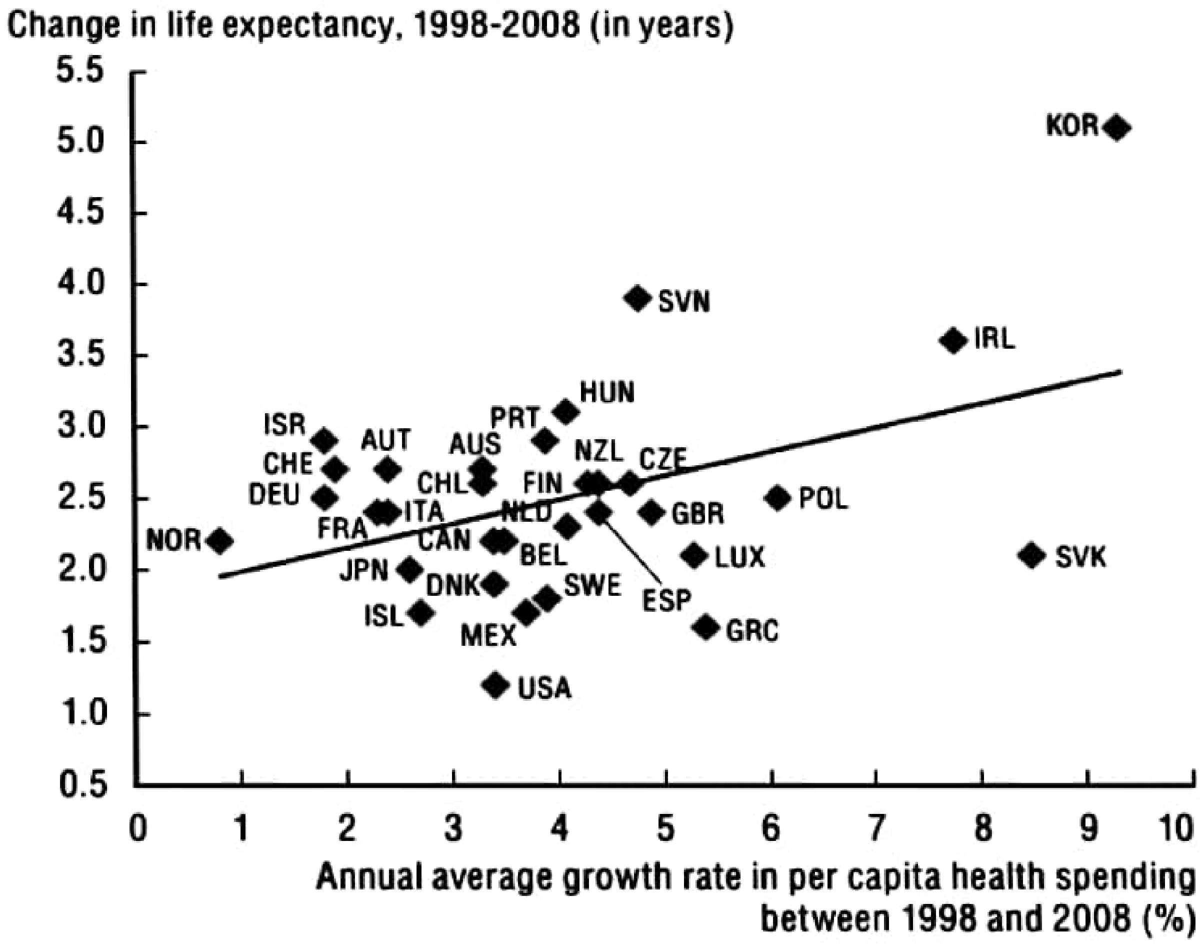


Figure 10: Life Expectancy and Per capita health spending

Source: Data - World Bank

From the above figure, it can be interpreted that the fact – higher growth in health care expenditure leads to higher life expectancy and it is true for the OECD countries mentioned above. Although it is not the only determinant of the life expectancy it must depend on many other factors also and in general these can be observed. Apart from these higher GDP also leads to advanced food system, advanced public sanitation system which would increase the longevity of the lives in developed country.

Next an important finding by researchers (NCBI) that the reduced habit of smoking in the developed world in the letter half of the last century decreases mortality of old population as well as increases life expectancy. It Tobacco smoking is one of the world's largest health problems. Over the course of the 20th century, it killed around 100 million people, most of them in today's rich countries. The health burdens of smoking are now moving from high-income to low-to-middle income countries and death rates of the high income countries relatively reduced from the amount of earlier. Death from smoking is more vulnerable to old people but in the last century smoking consumption of old population is decreased substantially in the countries of Europe and America and as well the death rates also decreased.

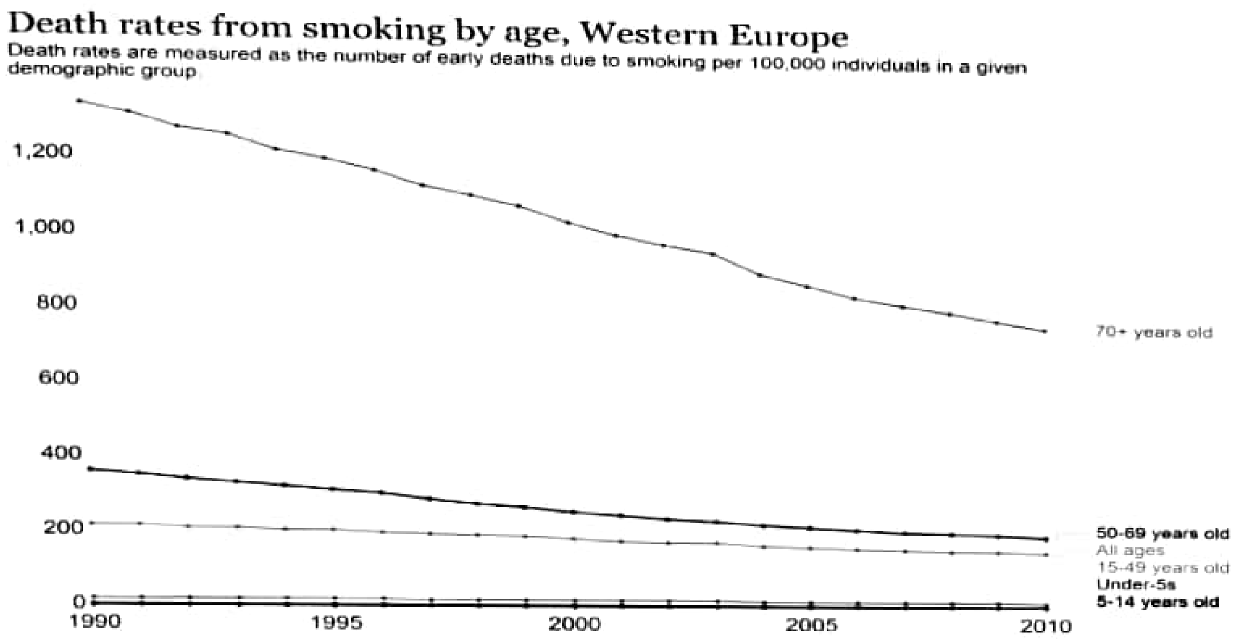


Figure 11: Death rates by age and time in years, Western Europe

Source: Our World in Data

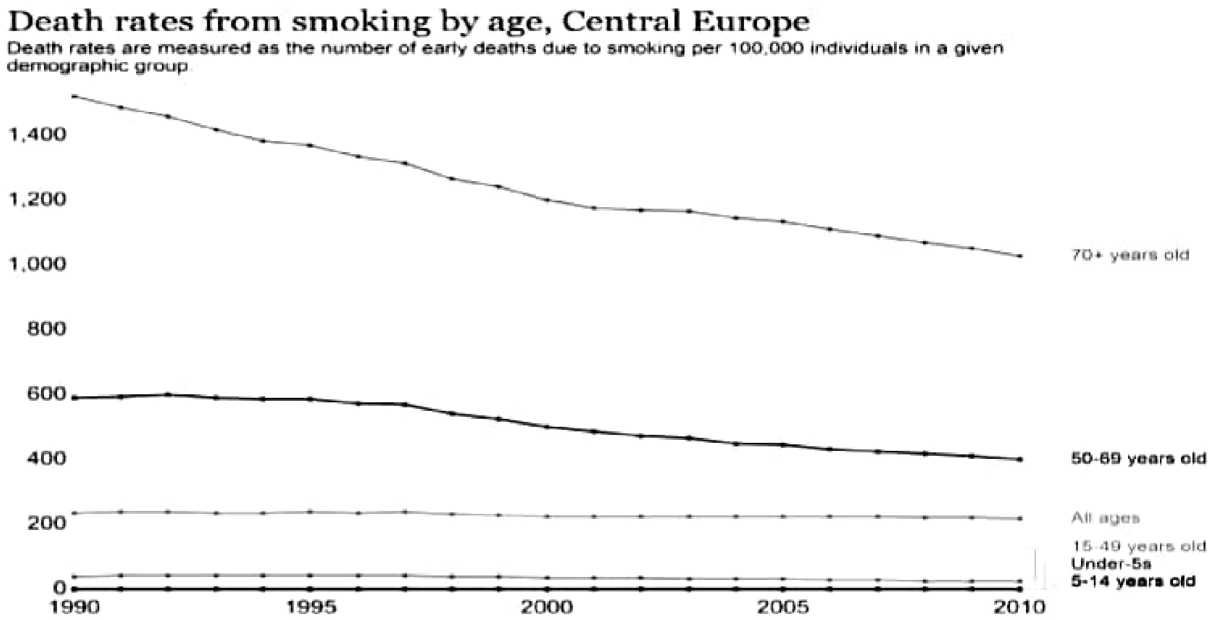


Figure 12: Death rates by age and time in years, Central Europe

Source: Our World in Data

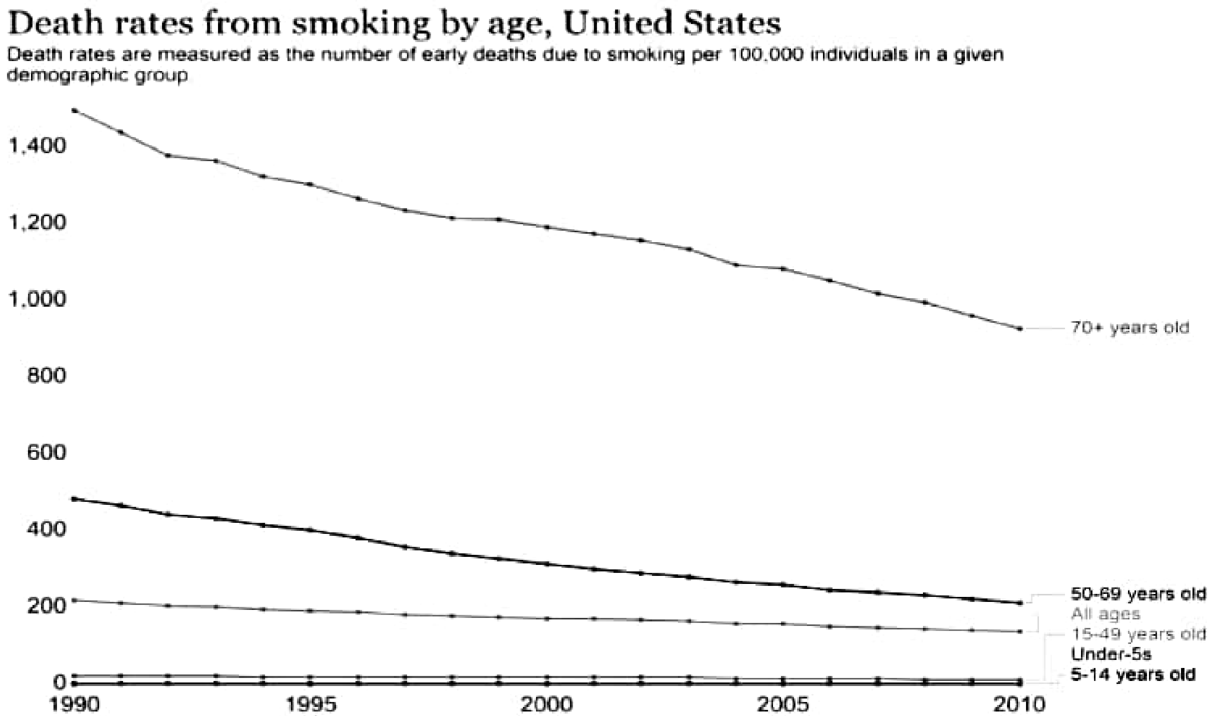


Figure 13: Death rates by age and time in years, United States

Source: Our World in Data

From the above diagram we can see that death rates from smoking of 70+ years old people have decreased substantially. It directly leads to increase the longevity of old population in these high income countries. This is how the changing pattern of smoking habit leads to a situation of population ageing.

From the above analysis we found some reasons for increasing longevity and life expectancy at birth and at old age. The increases in life expectancy that occurred in the first half of the 20th century in developed countries were the result of rapid declines in mortality due to those reasons. This helps to establish an important reason of population ageing i.e. high longevity and life expectancy. But with the high life expectancy, it is also true that declining fertility rate in developed country would lead to situation of population ageing. In the following parts the reasons for declining fertility rates will be discussed.

Fertility rate is generally measured by average number of children per women. The global average fertility rate is just below 2.5 while the fertility rate of developed world is 2.1 which is less than half of the pre modern era.

From the graph below, we can see the heavy declination of the fertility rate of the most developed region of Europe and America. This declination is heavily effecting and causing the population ageing because low fertility rates imply less number of children. Sometimes less number of children is better for the society while this will also create population pressure but in case of developed world the number is significantly low that new children is not enough to replace the population at a fixed rate so old age population proportion is increasing while the younger population proportion is decreasing.

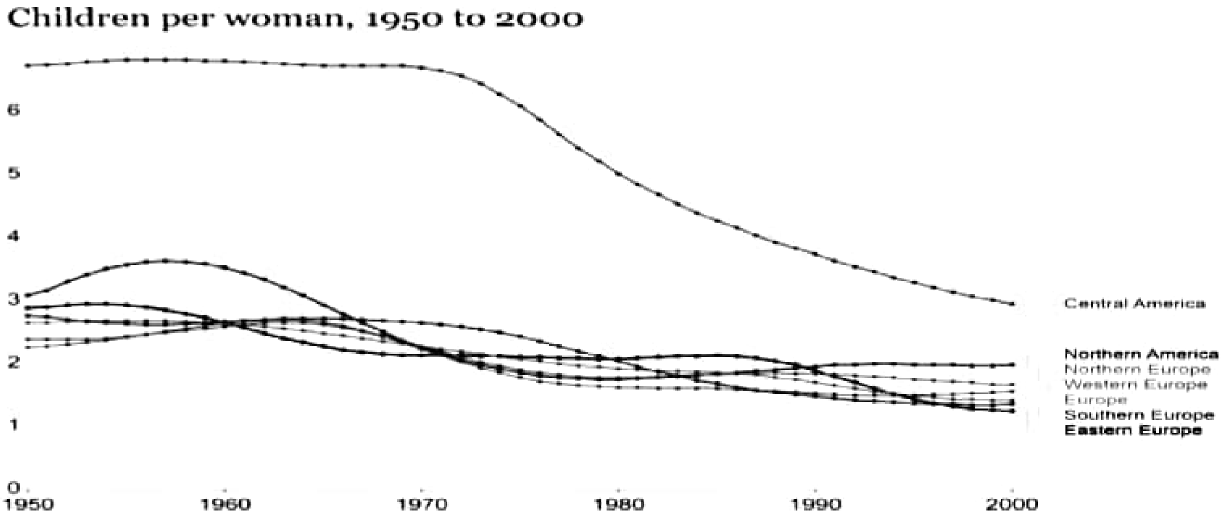


Figure 14: Child per Woman and time in years

Source: Our World in Data

From the graph mentioned in below, if we look are looking for some developed countries then result is same that number of child per woman is decreased substantially.

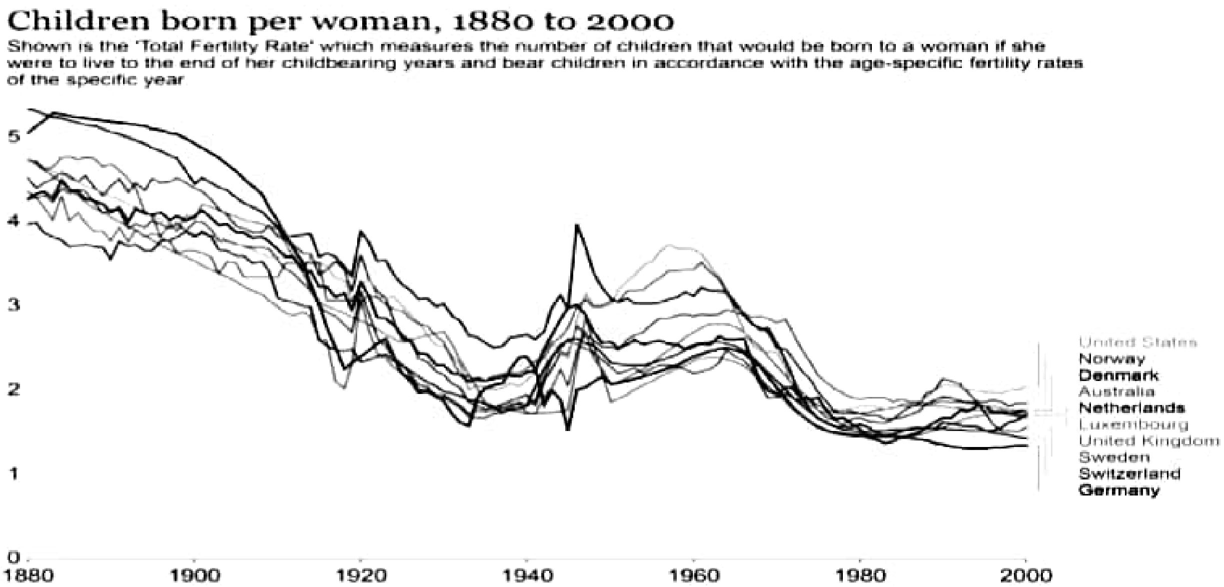


Figure 15: Child per Woman and time in years

Source: Our World in Data

Higher well being and status and children are a very important factor of declination of fertility rates. To account this fact, we have to consider decision of a family for having children is depended upon the expected future mortality rate of the child. Higher child mortality causes higher fertility rates. It is not the only reason but research and empirical work suggest that there is an important direct and causal effect of declining mortality – particularly of children – on the number of children parents are having. In an environment of high mortality rate parents are thinking about more numbers of children than they actually want to have. Here two concepts are important i.e. actually, Child Replacement and Child Hoarding. Child Replacement refers to a concept that if parents experienced a death of child then they might deliberately decide for an additional birth in order to replace the child that has died one. Child Hoarding refers to a concept of expectation, i.e. actually, family decides to have more children when they expect future possibility of the mortality of their children in a high mortality situation. Of these two effects child hoarding simply can explain that why a decline of fertility follows a decline of child mortality. In the last century of modernization there were lots of improvements of health care system, medical advancements that reduced the child mortality rate. With having this knowledge, families want to have the children what they actually want. This phenomenon occurs generation after generation which implies substantial decrease in fertility rate. If we consider the following graph for some developed world we can easily interpret that higher the child mortality rate higher the fertility rate.

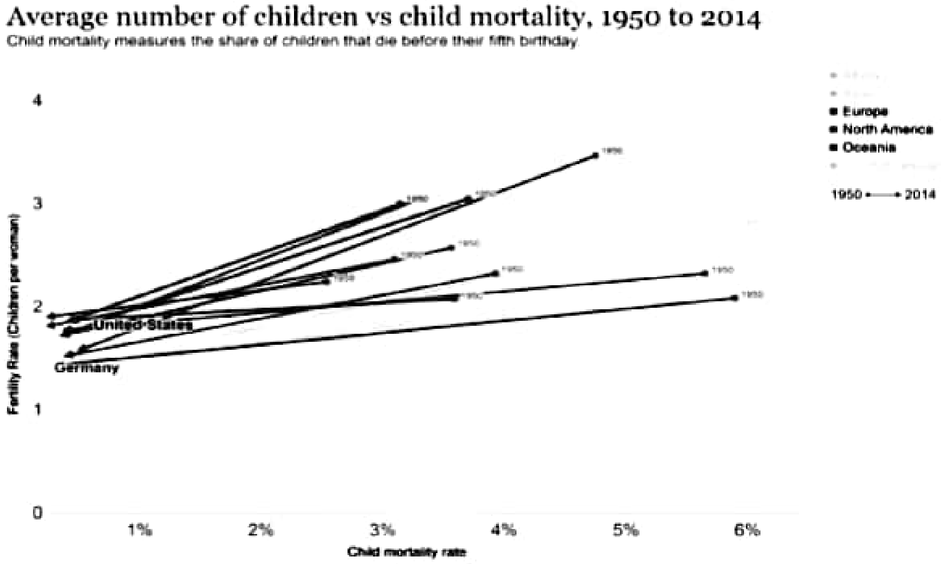


Figure 16: Average number of children vs child mortality Source: Our World in Data

Next we move to analysis women's empowerment which can explain this declination of the fertility rates. To account this reason we have to consider opportunity cost of having children. According to model of Gary Becker, demand for the children is depended upon its price. In this framework, price does not mean only monetary value it has actually much broader notion. It directly includes the schooling expenses, child care expenses etc which will be discussed further and indirectly includes opportunity cost of having children. Opportunity cost of having children implies that the time which is forgone and can be used in other purpose but this is used for the child in terms of pregnancy and upbringing the child. Generally mothers are spending more times with their children than fathers so opportunity cost is paid mainly by mothers. Having better education, better chances for work, efficient working sector for female enhances the opportunity cost, i.e. having these facilities women have to pay more cost for having child. Relations between these facilities and low fertility will be discussed in the following.

Education of women carries an important implication for having less number of children. It can be realized by idea of opportunity cost and also by empirical evidences. Education directly increases the opportunity cost of women. Opportunity cost of educated women is higher than less educated women. So in general higher the educational qualification lesser the numbers of children wants to have. Educations not only directly increase the opportunity cost but there are some factors which are enhanced by education and these will lead to have fewer no of children. Better education of mother gives a positive effect on better health and lower mortality of the children. These together substantially help to decrease the fertility rate. Better education also enhances the awareness and knowledge of contraceptives which will further lead to low fertility. Education cost in developed world is effectively higher so education of mother will also helps to understand that lesser the numbers of children higher the chances of better education. So in a way, better education leads to low fertility and low fertility also allows for better education. If this is occurred by generation wise then it will impact for lowering the fertility rate. Now if we come to check empirical evidence or data of women education and numbers children for European countries and North America, then we can see a negative correction between these two variables over time. Graphs are in a decreasing pattern for all countries. This empirical studies help to support our proposition of relation between education of women and numbers of children.

Women's educational attainment vs. number of children per woman, 1950 to 2000

Shown on the x-axis is the average number of years of schooling of women in the reproductive age (15 to 49 years). On the y-axis you find the 'total fertility rate' – the number of live births per woman in reproductive age.

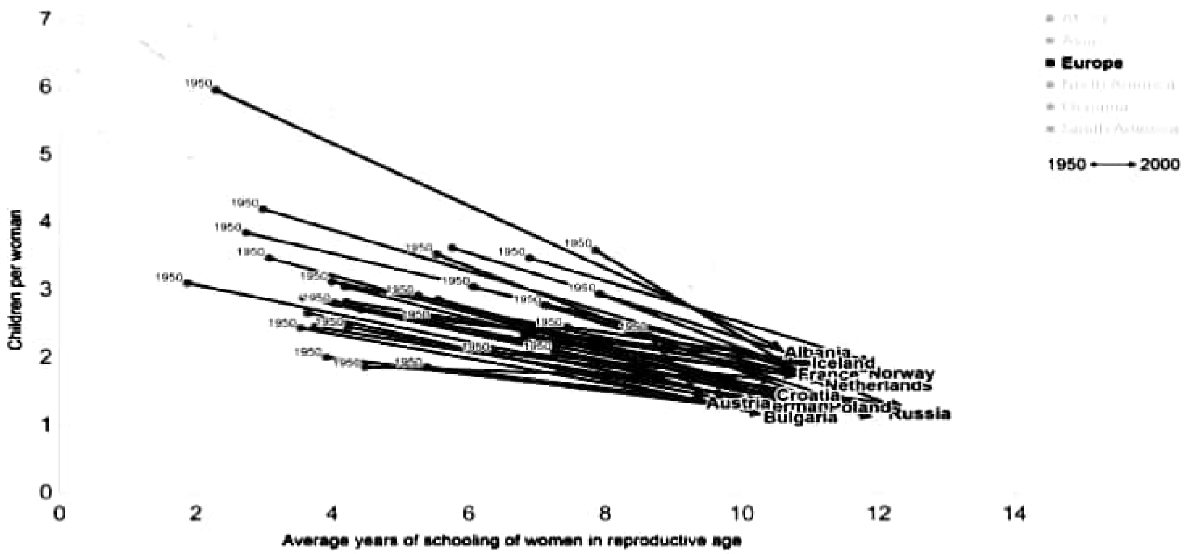


Figure 17: Women's Education and Number of Children

Source: Our World in Data

Women's educational attainment vs. number of children per woman, 1950 to 2000

Shown on the x-axis is the average number of years of schooling of women in the reproductive age (15 to 49 years). On the y-axis you find the 'total fertility rate' – the number of live births per woman in reproductive age.

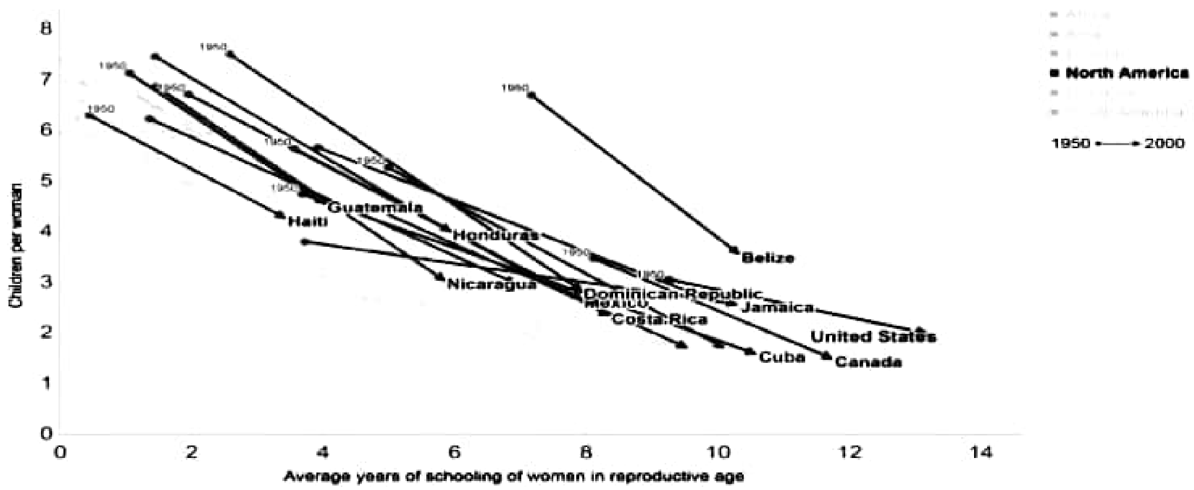


Figure 18: Women's Education and Number of Children

Source: Our World in Data

Next we further look into others factors which are responsible for lowering the fertility rates. Education is necessary to increase but opportunity arises from the various working sector for women. So participation of women in services is an important factor and responsible in some ways to lower the fertility rate. The theoretical aspects of this argument mainly relies on higher the participation of women in labor market lesser the child they want to have. Because having the child they forgo their income from doing work and bear this opportunity cost for having child. Increasing labor force participation of women leads women to have fewer children, and reverse in also true. This tow way relationship leads to a cycle which can enforce itself. As women decide to have fewer children and are increasingly participating in the labor market. Women's labor participation increased for several reasons. Before experiencing industrialization in developed world there were main need of agricultural workers or workers who were able to do hard work. Male has comparative advantages in doing these types of works. But industrialization and technological development changes the scenario. Demand for labor increased in many sectors where women can comfortably doing their work

Following graph is showing the increasing trend of the female labor participation of most of developed countries. Next we will try to find the impact of this increasing female labor participation on fertility rate and find out relation between them.

Figure 19: Female Labour Force Participation Rates

Source: Our World in Data

Empirical findings of this suggest that a negative relation between women's participation and number of children they want to have which is shown in below for Europe and North America. Form the graph we can also see that participation increases over time and fertility decreases along with. This finding can help to conclude a reason for lower fertility rate in developed nation.

Fertility and female labor force participation, 1960 to 1990

The labor force participation rate corresponds to the proportion of the population ages 15 and older that is economically active. Fertility corresponds to the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with the age-specific fertility rates of the specific year.

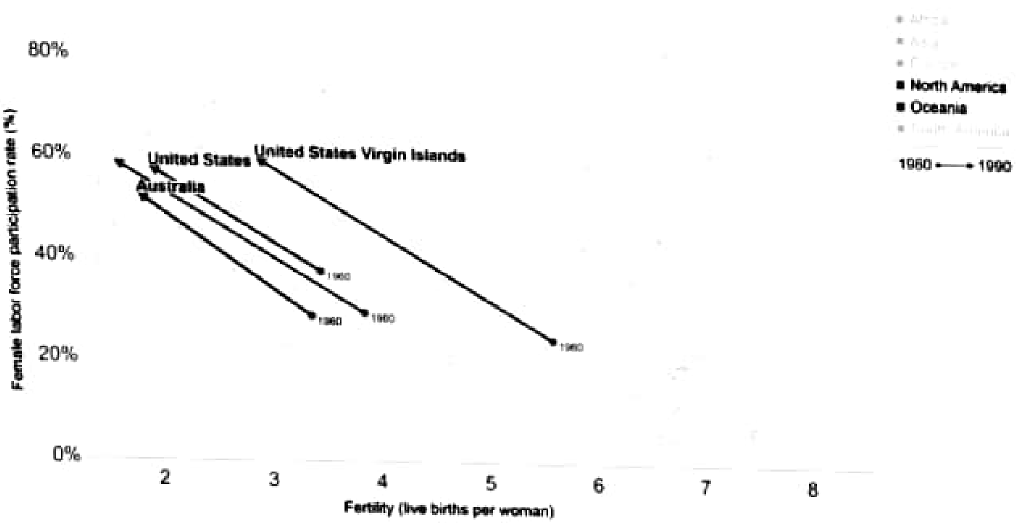


Figure 20: Fertility and Female Labour Participation Source: Our World in Data

Fertility and female labor force participation, 1960 to 1990

The labor force participation rate corresponds to the proportion of the population ages 15 and older that is economically active. Fertility corresponds to the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with the age-specific fertility rates of the specific year.

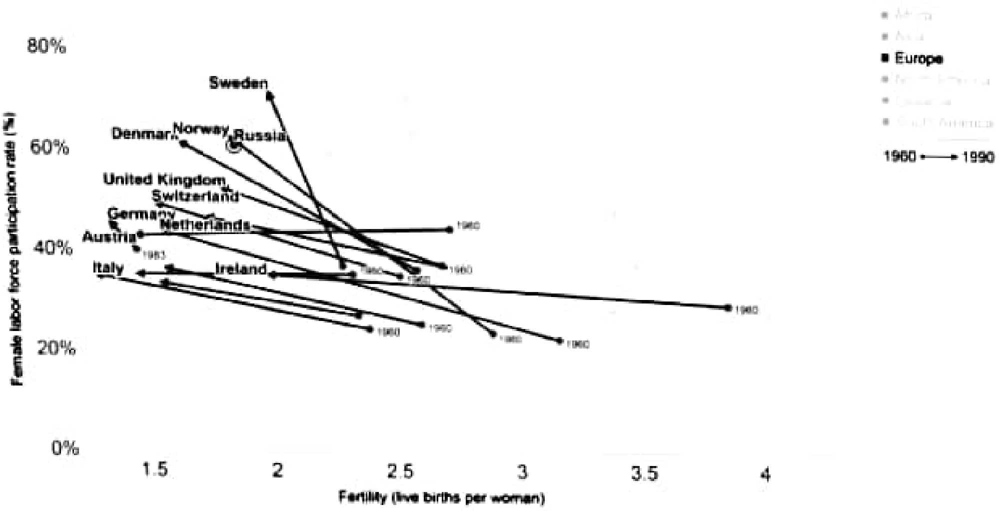


Figure 21: Fertility and Female Labour Participation Source: Our World in Data

Since the responsibility of child-birth and upbringing of children is borne by women, then it is not surprising that fertility rates tend to be high where women have a lower education, social status and few opportunities outside the household. This is not the scenario o the developed world as there are lots of opportunities. Women's better education and women's increased employment opportunities both changed the role of women in society and increased the social status of women in society in a developed world. With more working opportunities the total fertility rate declined. This can lead to virtuous cycles since lower fertility rates give women the freedom to do things other than childbearing and this in turn leads to a decline of fertility rates.

Another important economic factor is wage of women. Wage or female income in developed country has increased this resulting lower fertility rate. By the theory of Macunovich, by the relation between relative income and the female wage, she believes that an increase in the male's relative income will cause a rise in fertility while an increase in female wages will produce downward pressure on fertility. Wage actually increases the opportunity cost for having child. That is, a rising female wage will have a negative effect on fertility and vice versa. But in developed country, female and male wage ratio increases over time so it reflects to lower fertility rate. Following diagram represents the female and male wage ratio for United States which is in increasing pattern.

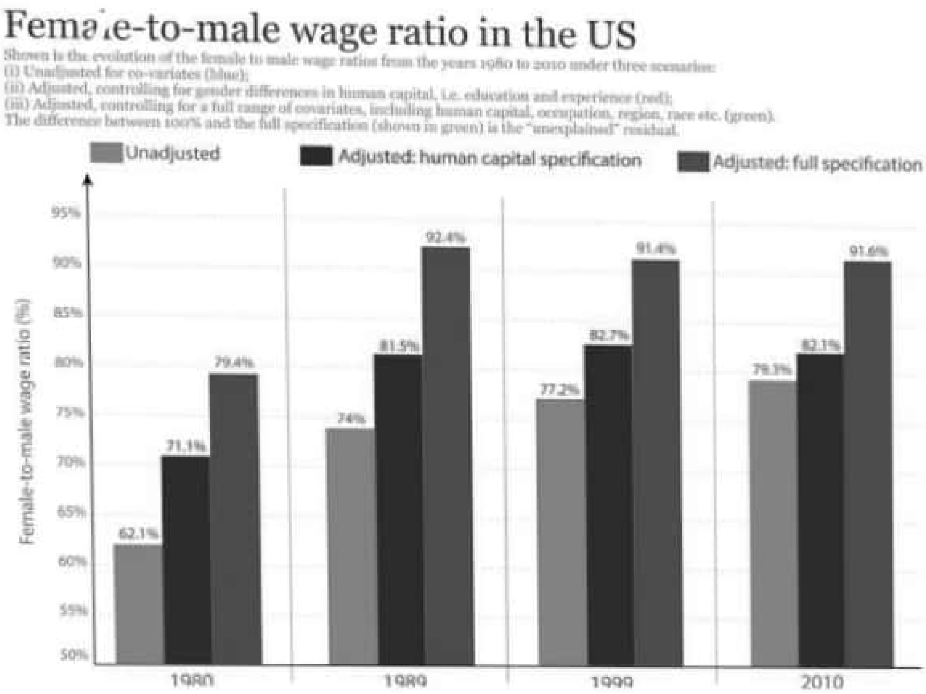


Figure 22: Wage Ratio in the US Source: Our World in Data

Marriage is an obvious factor responsible for fertility. But in second half of the last century marriage rate more prominently crude marriage rate decreases substantially along with increment of divorce rate in developed world which is responsible for the declination of the fertility rate. Now we can consider the following data for some selected developed countries:

Country	1970		1985		1995	
	Crude Marriage Rate (per 1000)	Fertility Rate	Crude Marriage Rate (per 1000)	Fertility Rate (Total birth per women)	Crude Marriage Rate (per 1000)	Fertility Rate
Australia	9.3	2.86	7.3	1.92	6.1	1.82
Austria	7.1	2.29	5.9	1.47	5.4	1.42
Belgium	7.6	2.25	5.8	1.51	5.1	1.56
Canada	8.8	2.26	7.3	1.67	5.5	1.64
Denmark	7.4	1.95	5.7	1.45	6.6	1.8
France	7.8	2.55	4.9	1.86	4.4	1.74
Germany	7.4	2.03	6.4	1.37	5.3	1.25
Italy	7.4	2.38	5.3	1.42	5.1	1.19
Luxembourg	6.3	1.97	5.4	1.38	5.1	1.7
Netherlands	9.5	2.57	5.7	1.51	5.3	1.53
New Zealand	9.2	3.16	7.6	1.93	5.6	1.99
Norway	7.6	2.5	4.9	1.68	5.0	1.87
Russia	10.1	1.99	9.7	2.05	7.3	1.33
Sweden	5.4	1.92	4.6	1.74	3.8	1.73
Switzerland	7.4	2.1	6.0	1.52	5.8	1.48
United Kingdom	8.5	2.44	7.0	1.79	5.6	1.71
United States	10.6	2.48	10.1	1.84	8.8	1.98

Table 2: Crude Marriage and Fertility Rate

Source: United Nations and World Bank

From the above table it is observed that crude marriage rate is decreasing over the year and fertility rate is also declining along with this. Following scatter plot will help to clear about this idea. Scatter plot is plotted against different years i.e. 1970, 1985, 1995 and in each plot we consider marriage rate as an independent variable and fertility rate is dependent variable for different countries.

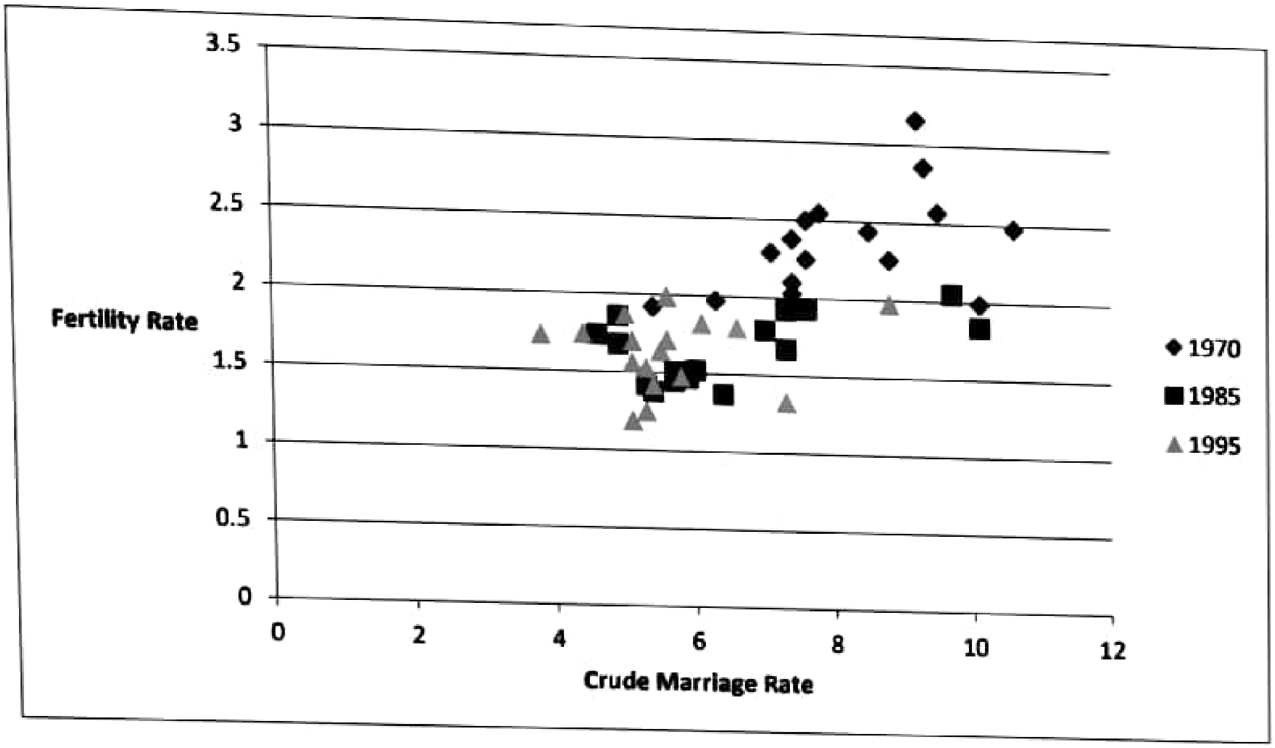


Figure 23: Fertility Rate and Crude Marriage Rate

Plotting: Own Calculation

From the above plot it is observed that a positive correlation exists for the variable crude marriage rate and fertility rate. It is also an obvious point that lower marriage rate implies lower fertility rate.

From the above discussion, various reasons for declinations of the old mortality rate and fertility rate are discussed in the context of developed countries. Both are the reasons which are mainly responsible for the population ageing in the developed world. Low mortality rate leads to increase old population and due to low fertility rate there is less population which should be expected to replace this old population. So as a result, old population proportion increases substantially in the developed world which would further generate many consequences in the society. It leads to a rectangular shape in population pyramid.

Following table and scatter plots indicates that old dependency ratio is increasing over time and young dependency ratio is decreasing over time. It directly implies that old population is increasing and young population is decreasing and leads to a situation of population ageing. Scatter diagrams are plotted for following mentioned countries listed in the table keeping time as an independent variable and dependency ratio as a dependent variable over time.

Country Name/Year	1970	1975	1980	1985	1990	1995	2000
Australia	13.17	13.80	14.79	15.48	16.54	17.81	18.45
Austria	22.74	23.77	23.64	20.87	21.90	22.64	22.70
Belgium	21.33	22.04	22.08	20.36	22.35	24.07	25.72
Canada	12.97	13.02	13.90	14.98	16.53	17.67	18.40
Denmark	19.09	20.96	22.28	22.72	23.16	22.61	22.28
France	20.62	21.55	21.86	19.63	21.30	23.22	24.69
Germany	21.57	23.40	23.79	20.96	21.56	22.67	24.30
Italy	17.33	19.14	20.66	19.41	21.66	24.20	27.13
Luxembourg	19.26	19.97	20.18	19.12	19.35	20.56	21.01
Netherlands	16.13	16.68	17.16	17.42	18.43	19.17	19.99
New Zealand	14.18	14.20	15.49	15.89	16.94	17.66	18.05
Norway	20.51	21.87	23.34	24.41	25.27	24.81	23.56
Russia	11.68	13.29	15.09	14.58	15.43	18.26	17.95
Sweden	20.93	23.59	25.47	26.75	27.74	27.51	26.92
Switzerland	17.32	19.12	20.95	20.54	21.33	21.70	22.69
United Kingdom	20.75	22.49	23.34	23.03	24.12	24.58	24.42
United States	16.25	16.70	17.57	18.31	19.22	19.38	18.70

Table 3: Old Dependency Ratio

Source: World Bank

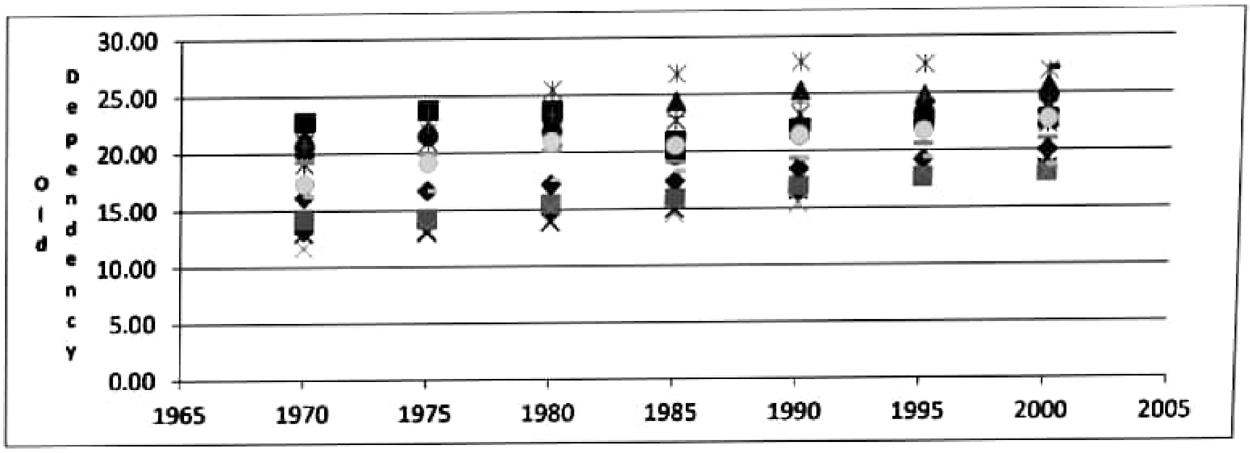


Figure 24: Old dependency ratio and time in years

Plotting: Own Calculation

Country Name/Time	1970	1975	1980	1985	1990	1995	2000
Australia	46.57	43.24	38.88	35.72	33.04	32.40	31.26
Austria	40.01	37.61	31.92	26.75	24.84	26.41	24.83
Belgium	37.39	34.88	30.79	27.61	26.72	27.03	26.79
Canada	48.72	40.07	33.55	31.08	30.41	30.11	28.07
Denmark	36.16	35.29	32.18	27.69	25.28	25.77	27.70
France	39.81	38.43	35.22	32.20	30.48	29.96	29.07
Germany	36.98	34.11	28.23	22.93	23.07	23.82	23.10
Italy	38.39	37.93	33.98	28.26	24.00	21.92	21.26
Luxembourg	34.02	30.97	27.75	24.73	25.06	27.25	28.28
Netherlands	43.89	39.75	33.68	28.36	26.36	26.82	27.18
New Zealand	53.05	48.82	43.15	37.88	35.39	35.16	34.70
Norway	39.09	38.06	35.15	31.13	29.24	30.15	30.86
Russian Federation	39.68	33.90	31.64	33.30	34.28	32.16	26.32
Sweden	31.83	32.24	30.57	28.11	27.90	29.60	28.66
Switzerland	36.42	34.86	30.26	26.12	24.92	26.07	25.92
United Kingdom	38.48	37.63	32.83	29.15	29.05	30.11	29.25
United States	45.43	38.91	34.47	32.60	32.99	33.70	32.90

Table 4: Youth Dependency Ratio

Source: World Bank

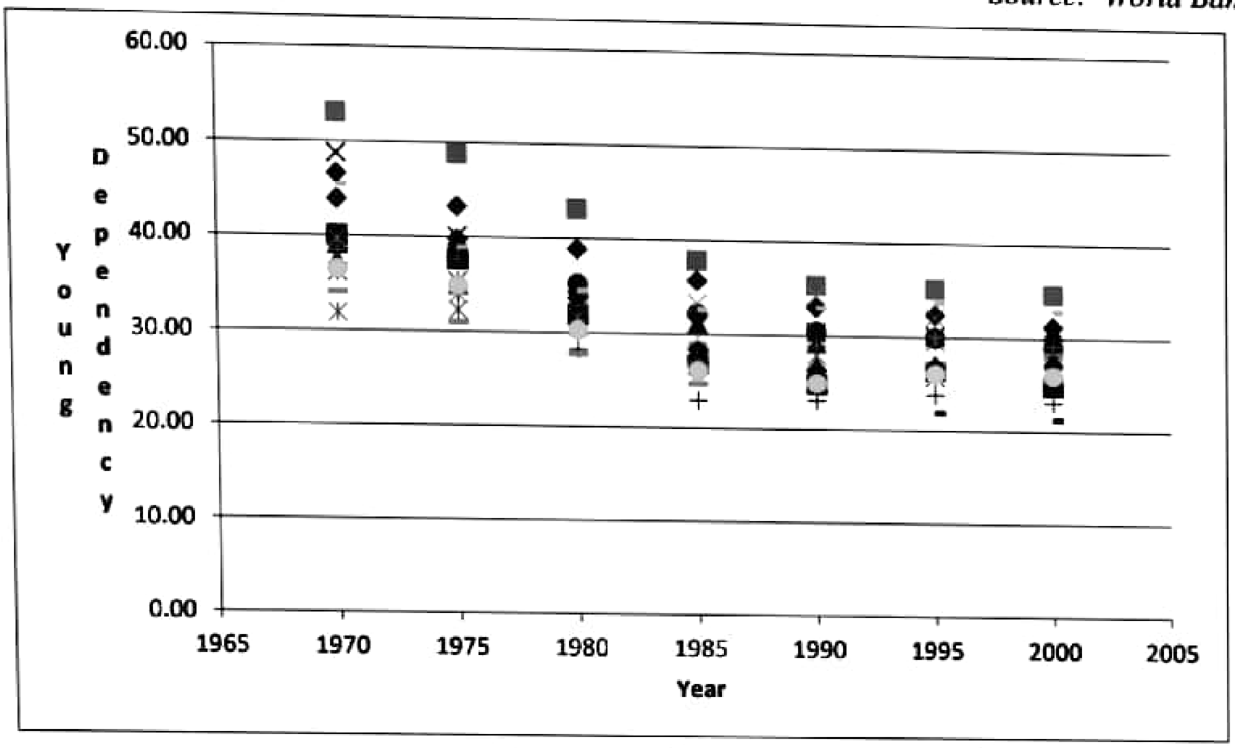


Figure 25: Youth dependency ratio and time in years

Plotting: Own Calculation

Effects of Population Ageing:

The effects of the population ageing are an important discussion and it is also an implicit and explicit problem for developed world. They will have older people than children and more people at extreme old age than ever before. As older people and longer life both are increasing at a increasing rate, so there is a questions of good health, a sustained sense of well being, extended periods of social engagement and productivity and health and social cost arise. These effects are very crucial and should be properly accounted to design any policy. These are discussed briefly in below:

An important effect of population ageing is labor productivity. Some studies based on the seminal work by Mincer (1974) have established a positive relationship between income and years of experience. But behind this relation there is also another relation between age and labor productivity. Concept of age specific labor productivity is important here. In the young ages labor productivity is low because lack of experience. But with the increase in age experience will increase and also productivity will increase. At the average age of 50, labor productivity is max in most of the cases. After that there is declination in labor productivity with the increasing ages. If we measure labor productivity in terms of wages then research of Ross Guest suggests that in the case of New Zealand curve which depicts the relations between labor wage and age exhibits a U shape pattern.

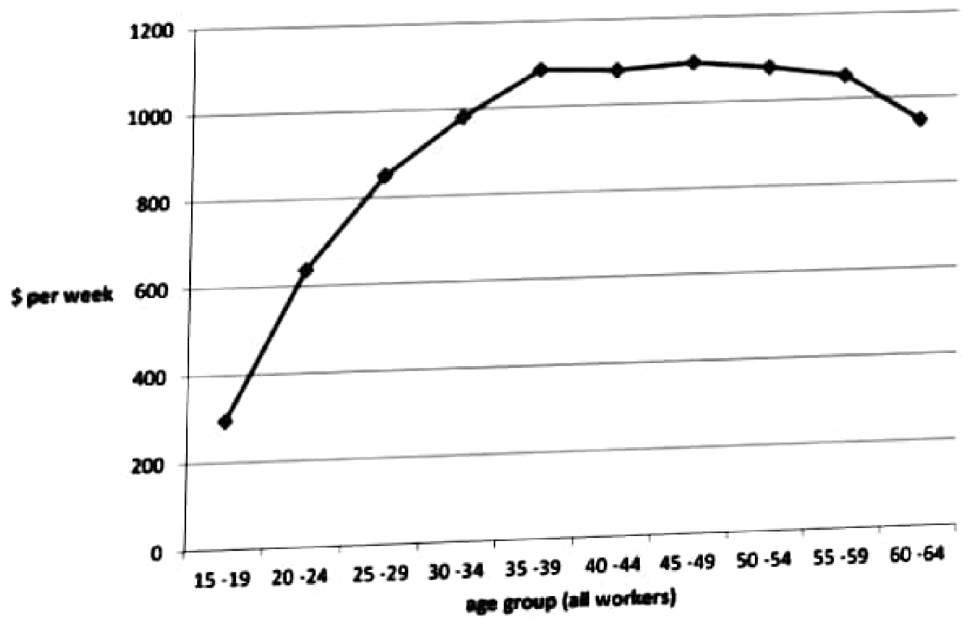


Figure 26: Age group and Earnings Source: treasury.govt.nz

Another research of Department of Economics, University of Duesto, Spain estimated a result for European Union. The result is that 1% increase in the workforce between the ages of 55 and 64 is significantly related to a 0.165% decrease in annual growth in labor productivity growth. So if the ageing is the problem of developed world then value of productivity actually deviates from the actually value without ageing and significant replacement of new children.

Another effect of population ageing is on savings ratio. Generally young people either do not earn or earn only a small amount so they save as well as small amount. But middle age workers are experienced and they earn more than young workers and this extends the possibility of accumulating savings. Also for the middle age workers there are incentives to save more or their old ages. But in the case old age either they earn less than middle age workers or they rely on only their pensions and there are lots of medical expenses for the old age person. This is because there are fewer chances to accumulate savings. This is how savings ratio varies by different ages. Current research of Wicksell and other researchers suggest that with the increasing population ageing saving ratio will fall significantly. They establish that ex-ante desire to invest may fall but less than less than ex-ante desire to save. This will effect to decrease the real interest rates. Savings effect investment which is an important part of a good economy. It may be harmful for the countries with higher aged population and lower savings.

According to the research of Global Economic Dynamics ageing of the population effects on the economy of a country like this manner. Ageing of the population with less replacement with young population implies increasing proportion of the population of aged population as well high numbers of retired people and relatively less supportive low numbers of young people. This will affect the domestic production of the country and imports will increase and as a result trade balance will fall which implies lower growth of the GDP of a country.

Another concerned effect of population ageing is high pension spending as a percentage of GDP. Governments have to spending substantial amount of pensions for old proportion of the population. As a result it must substitutes some productive investments. On the other hand tax collection form this proportion of population is also low. So increasing in proportion of the spending and lower collection of taxes affects government policy and governments should account the problem of population ageing in the time of policy design and budget allocation.

Following figure shows the increasing trend of spending on pension as a proportion of the GDP for the selected developed countries facing severe problem of population ageing.

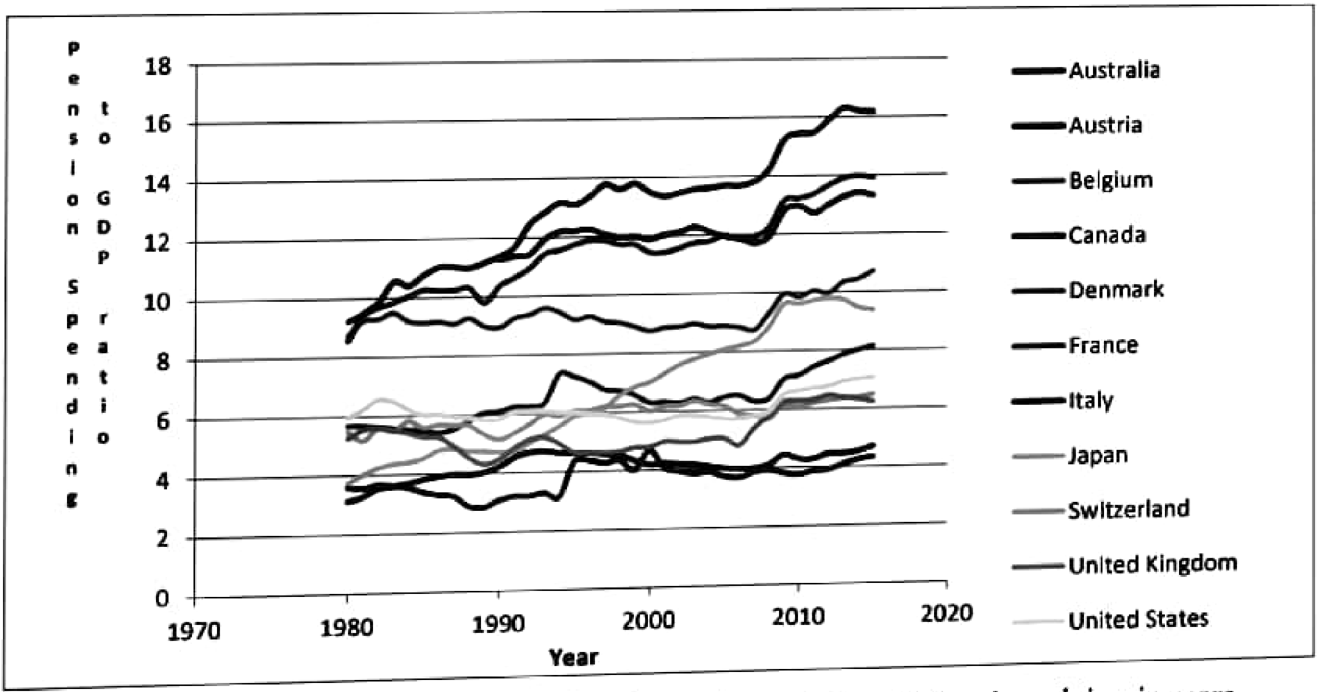


Figure 27: Pension Spending to GDP ratio and time in years

Plotting: Own Calculation

In the developed countries, government provides health care expenditure for aged population as it include in the social system in those countries. Higher the aged population proportion, higher the government spending on health care. Because in most of the developed countries a proportion of aged population live long time but lives of them are not sustainable. As a result government has to support by health care expenditure. It affects the government budget and leads to raise a question of fiscal stability. Government should account this to their budget allocation. As time increases this spending on health care also increase as a percentage of GDP. Form the following figure it can be easily interpreted that for the developed country such as Australia, Canada, EU, Japan, Italy, Germany, United States, and United Kingdom etc health care expenditure in increasing over time.

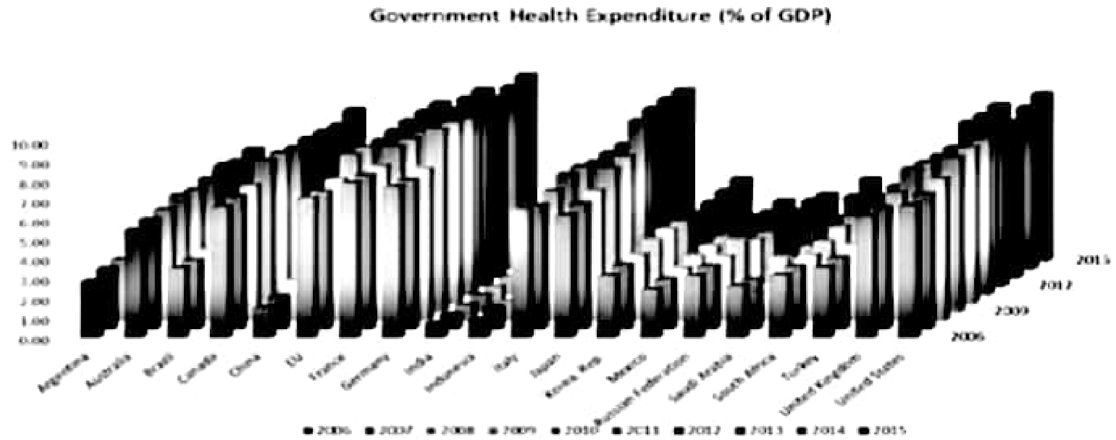


Figure 28: Government Health Expenditure for different countries over time

Source: World Bank

Apart from these effects, there are many other effects of population ageing found by researchers on macroeconomic variables such as real GDP growth, inflation, labour force participation etc. The decline in new population implies a reduction in the supply of labor over time, and a change in its composition. The reduction in the actual supply of labor is expected to be offset by an increase in the participation rates of the working-age population. But if this is not the case then productivity tends to decline in the countries facing population ageing. Only participation is not the solution if aged populations do not have the experience which is required to offset the declination of new labor supply. There are not only supply-side effects of a declining population. There are another possibility that there may also be demand-side effects, such as reduced stimuli to radical product innovations, which would reduce the rate of invention of new products, and the frequency of starts of new product cycles. Demand tends to the products for aged populations. This reduced rate of product innovation might not compensate for the saturation of the more mature product cycles. If we consider the long-run growth process as the result of subsequent starts of different product cycles, the reduction in the start rates implies a reduction in the long-run growth.

Population ageing leads to change in a nation's age structure can have significant effects on its economic growth. If most of a country's population falls within the working age group, then country has higher economic growth. In contrast, countries with a high proportion of children are likely to devote a large part of resources to their care, which tends to depress the pace of economic growth. Is a country can sustain economic growth when a large proportion of a country's population consists of the elderly? When the proportion of the elderly is large in the total population, a large share of resources is needed by a relatively less productive segment of the population. If this negative effect is large and enough power to offset positive effect such as advantages from aged population, then countries with a high elderly dependency rate can thus have slower rates of economic growth.

Conclusion:

In the above parts of this paper it was tried to find the reasons for population ageing and then some of the effects were briefly discussed. By considering this discussion, concluding finding should tend to some policy implication to recover and handle this population ageing. First of all government of those countries should carefully consider tot their budget allocations and effectively manage spending on health care expenditure and pensions. If government revenue is not sufficient for financing and managing this expenditure, then government should change tax system, more specifically increase tax rates for aged population. If savings rate is falling especially for the elder population then design of a savings incentive scheme would help to save more and it can be converted to a part of investment. If number of new labours are not enough because for declining fertility rates which is needed to substitute the old labour then retirement age should be increased and this helps to at least increase the labour force participation. But still there is a question that would elder populations capable for high productivity taking advantages of their experience. If not then it may harm the growth of the countries then immigration would help to reach a better solution than this situation. Adverse demographic developments continue exerting downward pressures on inflation; to improve the situation more accommodative monetary policy stance shall be needed to meet the inflation target and to mitigate the negative influence of ageing on inflation, a monetary policy response is of high priority for policymakers. Some key points of concern from the analysis we get that fiscal stability as to handle pension and health care expenditure burden, effective tax system, policy for savings with incentive, monetary stability as to control inflation, balancing the labor supply by either high retirement age or increase the numbers of effective labors or immigrations.

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Certificate of Completion of Project

This is to certify that Mr. Subhajit Roy (ECUG/014/17), a student of Department of Economics, has submitted the semestral project as part of the B.Sc Economics Honours Course (Sem VI, Paper XVI) titled: "A Note on the Theory of Rationality" on 30.06.20.

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A Note on the Theory of Rationality

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Abstract

The aim of this paper is twofold. In the first few sections I have presented the basic idea of rational choice theory as put forward by Arrow and Sen. This is purely a normative approach towards modeling individual behavior. I did not delve into the specific problems of utility maximization, as faced by a rational consumer, or the profit maximization problem faced by a firm. I have attempted to represent the idea of rationality, keeping intact the general structure in mind. The treatment of rational choice theory as made by Arrow and Sen is a general one in the sense that the results obtained can be successfully applied in case of any rational agent facing a decision problem.

A large portion of economic theory treats the axioms of rational choice as a suitable description of individual choice. However, practical experiments reveal that there is a significant difference between the normative and the positive approach, as shown by Kahneman, Tversky et al through their illuminating studies of individual behavior, while confronting with uncertain situations. I have presented one such model, proposed by them. Richard Thaler has also provided certain instances where individuals significantly deviated from rational behavior. I have also presented the idea of bounded rationality, as introduced by Herbert Simon, the torchbearer of behavioral economics. By presenting these studies I wanted to highlight the need to amend the economic theories by incorporating the behavioral assumptions, so as to bridge the gap between *Homo economicus* and *Homo sapiens,* as far as possible. I have also shown that this descriptive power comes at a cost, which sometimes proves to be so formidable that the descriptive power of the model has to be compromised with. Therefore, effective economic models, possessing a fair amount of predictive and descriptive power must borrow from both worlds (positive and normative). The optimal combination however, is a challenge to be overcomed by the theorist.

Introduction

Rationality is perhaps the most widely invoked concepts in economics. In this section I attempt to represent the idea of rationality, in the context of individual choice. An individual is said to be rational, in a somewhat broader sense of the term, if she chooses the alternative that is 'optimal' towards the attainment of the underlying objective of the individual. For example, let us consider an individual who wants to reach point say, B starting from his initial position say, A. If it is in the interest of the individual to reach her destination as quickly as possible, one can predict that she would be taking the shortest path connecting the two points A and B. But, if it happens to be the case that she has ample amount of time at her disposal, and wants to enjoy some leisure, then one might predict that she would most likely take a longer path, maybe the one that has a park on the way. In both cases, while forecasting the behavior of the individual, one assumption, however subtle that might be, is that the individual optimizes his choices so as to fulfill his aspirations. In other words we have been assuming the individual's behavior to be rational.

To put the whole idea in a more formal sense, the act of making a rational choice involves a binary relation defined over the set of all possible alternatives, from which the individual chooses from the set of alternatives available to her, or in other words what is called the 'opportunity sets', faced by the individual. In the last example, the individual while trying to reach point B as quickly as possible, may have taken the bus having full knowledge of the fact that taking a cab would have been more time saving. However, taking a bus would be rational if the cab ride is not affordable to her, or in other words the cab ride is not in the opportunity set of the individual, while both the bus, and the cab ride being in the set of alternatives faced by the individual. A binary relation in the context of rational choice means that the individual is able to weigh each available alternative against all others, taking two at a time. This act can be compared to the working of a beam balance, where each available alternative, taken two by two, acts as the respective weights.

Two questions that arise here are: Under what circumstances will the individual decision maker, be able to make a rational choice, while facing a set of alternatives that is available to her?

What does it mean when we say that the individual chooses the 'optimal' alternative?

I will expand on these questions in the later sections, including the notion of binary relations in the context of rational choice. I will be following the generalized treatment of rational choice theory as made by Arrow and Sen.

The notion of 'Optimality'

In this section, I shall clarify, what we mean when we say that a rational individual would optimize her choices so as to meet her self interest. There are mainly two notions of optimality namely, maximality and greatness. To explain these two concepts I shall again take help of the above example. Supposing that there are three routes that lead from point A to point B and the individual has to reach point B in the shortest amount of time as possible. Here, I am assuming that walking is the only mode of commuting available to her, and she is aware of the time taken to reach B by each of the three alternative routes. In such a scenario, the route which takes the smallest amount of time, such that no other route takes any lesser amount of time is the 'maximal' element of the set. In other words an element is called the maximal element if no other element in the set is strictly preferred more than that element. In our case, there are no other route which is more preferred than the shortest route, since our decision taker minimizes the commuting time between A and B, and therefore it is the maximal element.

In the above example, the shortest distance is also at least as good as all the other three routes. All this means is that, the shortest distance, when compared with the other two alternatives, taken one by one, the individual finds it as good as the other alternatives, if not more. Then we say that the shortest distance is also the 'greatest' element. In other words the greatest element in a set of alternatives is that element which is as pleasing to the decision taker as all the other elements, if not more.

Maximality and greatness, although appearing similar to the naked eye, is far from so, owing to one subtle nuance in logic. Again I am taking refuge of the mentioned example, with one little modification. Supposing that the individual, who is again facing the choice between same three routes, is again trying to minimize commuting time, but here she possesses the following information: "One route will surely take the most time as it goes through a crowded market, but she is not sure about the other two". In this case the routes other than the one through the market are the maximal elements, since there are no routes that are strictly preferred to the ones that we claim to be the maximal elements. But in this case there is no element which is the greatest. This is because we are sure that the non-maximal element cannot be the greatest element, but the individual cannot compare between the maximal elements, and is not sure whether they are at least as good as the other or not. Therefore, the maximality is a weaker condition than greatness, and not only that; the greatest set is a subset of the maximal set. The concept of greatness is proves to be useful when an individual maximizes utility, or a firm maximizes its profits, whereas, the concept of optimality under the maximality principle proves to be helpful in case of Pareto optimality.

Binary Relations

Consider the relation say R defined by: "is taller than", over the set of all mountains in the world. This relation is a binary relation defined over the set of all mountains in the world. In other words, since Mt. Everest is taller than Mt. Kanchenjunga, then Mt. Everest is R related to Mt. Kanchenjunga, but the converse is not true. To put this into formal language, a binary relation is a subset of the Cartesian product of two non empty sets, and since Cartesian products are non-commutative in general, then the statement "a is R related to b" does not necessarily mean that "b is R related to a", as portrayed by the example. What this all means is that, in case of a binary relation, the comparison over the elements of a particular set is done by taking two elements at a time, hence the name "binary". According to Arrow and Sen's treatment of rational choices, the act of choosing rationally is nothing but a binary relation defined over the set of alternatives, where the relation, R is defined as: " at least as good as".

Now would be the time to introduce an abstract structure known s an "ordering". An ordering, as defined by Sen, is a binary relation that possesses three properties namely: "completeness", "reflexivity" and, "transitivity". A binary relation is said to have the completeness property, if for any pair of elements say, 'a' and 'b' (taken from the set of alternatives), either a is R related to b, b is R related to a, or both holds true. Reflexivity property involves the fact that each element in the set of alternative is R related to itself. Lastly, R is said to be transitive if for any three elements, 'a', 'b', and 'c'; if a is R related to b, b is R related to c, then a must be R related to c.

Sen has proved that any preference relation, which is also an ordering, must have a greatest element. To prove this statement it would be helpful to introduce the notion of a choice function, as defined by Sen. A choice function is a function that gives the greatest element for any given se of feasible alternatives. Now I will prove the following lemma.

Lemma: If R is an ordering defined on a finite set of alternatives X, then a choice function C(S,R), exists, for all possible set of feasible alternatives S, which is necessarily a proper subset of X.

Proof: Let us consider any two elements a, and b in X. Since R is complete, then either a is R related to b, b is R related to a or both. Without loss of generality, assuming that a is R related to b. Then we name a as x. Next, comparing x with another element say c in X. Whichever is more preferred, between c and x is renamed as x. Assuming c is R related to x, then c is also preferred to b (transitivity). In such a case we rename c as x otherwise keep x fixed, and repeat the process. Since X is finite, the process will surely terminate, and x would belong to the greatest set, and therefore, a choice function C(S,R) exists.

From previous analysis it is clear that, for an individual to be able to make a rational choice, she must be able to choose the best among the alternatives made available to her, or in a more formal language: The existence of choice functions ensures ones choice to be rational. The above lemma shows us that under what circumstances we can be sure that such a choice function exists. The ability of an individual to draw a comparison between any pair of alternatives made available to her is indispensible in the whole process that is, completeness is a necessary condition to ensure the existence of rational choice. The axiom of reflexivity and transitivity, on the other hand are both invoked for logical consistency. As a result the notions of completeness, reflexivity and transitivity, are regarded as the three most coveted axioms, while modeling individual choice, be it the preference based approach made by Hicks, or the choice based approach made by Samuelson, Hansen et al. Although, both approaches are parallel in consequence, but are separated by their spirits. Neumann and Morgenstern's treatment of rational choice under uncertain contingencies also borrow from these ideas. The profundity of Arrow and Sen's approach to rationality therefore lies in its generality.

The Money-Pump argument and Transitivity

In this section I will be making the case in favor of transitivity, and show in the due course, why is it so important. To achieve this objective I shall take refuge of the money-pump argument put forward by Davidson, McKinsey, and Suppes (1955).

Let us consider the following example: an individual is faced with the following three alternatives (a,m), (b,m), and (c,m), where a, b, and c are three different commodities and m is the amount is money amount given to each individual. Supposing that the individual has the following preference over the given set of alternatives:

$$(a,m) > (b,m)$$
$$(b,m) > (c,m)$$
$$(c,m > (a,m)$$

Moreover, a > b, b > c, and c > a. (Here '>' denotes the strict preference relation.)
Let us also assume that, there exists a small amount of money, say 'e', such that:

$$(a,m\text{-}e) > (b,m)$$
$$(b,m\text{-}e) > (c,m)$$
$$(c,m\text{-}e) > (a,m)$$

That is, the individual is willing to pay more than e to get a, when a, and b is offered, and so on for the next two cases.

This forms a 'uniform continuity' of preferences, where each change is bounded away from zero. With such preferences, one can claim that:

$$(a,m\text{-}3e) > (b,m\text{-}2e)$$
$$(b,m\text{-}2e) > (c,m\text{-}e)$$
$$(c,m\text{-}e) > (a,m)$$

In general, it can be concluded that,

$$(a,m\text{-}3ne) > (b,m\text{-}2ne)$$
$$(b,m\text{-}2ne) > (c,m\text{-}ne)$$
$$(c,m\text{-}ne) > (a,m)$$

One can clearly claim from the above statements that, an indefinite amount of money can be pumped out of the consumer. This argument is completely based on the occurrence of preference cycles in case of a consumer, which is inconsistent with rational behavior.

This situation can be avoided by invoking the assumption of transitivity in the consumer's preferences. One can also notice that, the occurrences of preference cycles, such as the one in the above example can also be avoided by weaker conditions of quasi-transitivity, or acyclicity.

A preference relation is said to be 'quasi-transitive', if for any set of three alternatives, a, b, and c, taken from the set of available alternatives, a > b, and b > c, implies a > c. In a way one can say that transitivity holds, but only for strict preferences. On the other hand, preferences are said to be acyclic, if for any set of three alternatives, a, b, and, c, belonging to the opportunity set of an individual, if a is weakly preferred to b, b is weakly preferred to c then c cannot be weakly preferred to a. It is now clear that, the occurrence of a money pump situation can be averted by weaker restrictions on individual preferences, than that of transitivity. Therefore, it can be said that, the conditions of transitivity, quasi-transitivity, or acyclicity are sufficient conditions for rational choice.

Before, leaving this section, I think it would be necessary to also make a case against transitivity, and show why it poses to be a burden on the individual rationality. To make my case I shall quote the problem of "just perceptible differences". If an individual is asked to differentiate between two very similar (but not at all the same) shades of grey, she might not be able to tell the difference. Next, if the same individual is offered a choice between two lighter shades of gray, than before, but which are again very much similar, the individual would not be able to make out the difference. But if she is offered a choice between the lightest of the four shades already offered, and the darkest, the individual would most likely be able to tell the difference and prefer one of them. This behavior certainly violates transitivity. To make the case against transitivity even stronger, one interesting example would be the "framing" problem, taken from Kahneman and Tversky (1984). The problem is framed in such manner:

> "Imagine that you are about to purchase a stereo for 125 dollars and a calculator is on sale for 5 dollars. The salesman tells you that the calculator is on sale for five dollars less at the other branch of the store, located 20 minutes away. The stereo is the same price there. Would you make the trip o the other store?"

It turns out that more people tend to accept the 20 minutes inconvenience to save 5 dollars on the calculator. But if the problem is framed such that the 5 dollar savings is made on the stereo, which now costs 120 dollar in the next branch, and the price of the calculator remains the same, more people tend to buy from the first store, although savings is the same in both cases. But if an individual is rational, the she has to be indifferent between the two situations. To make the violation of transitivity clear, I am considering the following three alternatives:

a- Travel to the other store, and avail the 5 dollar discount on the calculator.
b- Travel to the other store, and avail the 5 dollar discount on the stereo.
c- Buy both items at the first store.

From the majority of responses, one can conclude that 'a is preferred to c', and 'c is preferred to b', but 'the individual is indifferent between a and b'. Hence, transitivity is violated.

What is Rationality?

From the vantage point of the previous analysis, a behavior can be referred to a rational, if the individual's behavior is construed towards the pursuance of selfish interest. One thing has to be made clear in this context which is, rational preference does not necessarily require the three stated axioms of completeness, reflexivity and transitivity, they merely ensure the occurrence of a 'best' choice. Therefore, it is fairly clear that why individuals demand a commodity in order to maximize their utility, or firms maximize profits and individuals maximize their expected utility while facing uncertain contingencies. Economists invoke all the above analysis on the behavior of an economic agent by assuming the individual to be rational.

Bounded Rationality

The analysis presented so far has been solely normative in nature. The main focus was how an individual ought to behave, provided that she is rational. However, there is a significant gap between how individuals should behave, and how they actually behave. Rationality, according to Herbert Simon, is a kind of behavior that is appropriate to the decision taker in order to attain some specified goals, maybe under certain constraints imposed on the decision taker. Economic theory only considers the constraints that arise outside the skin of the decision taker, for example taxes imposed by the government on the consumer, or technological constraints faced by the firm. By the way, in all of the forthcoming arguments, a firm would mean a monolithic entrepreneur, which is the only centre of decision-making. Technological constraints faced by the firm are therefore, constraints that are outside the skin of the decision-taker, i.e. the entrepreneur. Economic theory by and large, ignores the constraints within the skin of decision taker, by assuming the individual to be rational. In reality, the picture is far from so. Simon identified the existence of the internal constraints or limitations of the actor herself and named it 'bounded rationality'. In the words of Herbert Simon,

> "The capacity of the human mind for formulating and solving complex problems is very small compared with the size of the problems whose solution is required for objectively rational behavior in the real world or even for a reasonable approximation to such objective rationality."

Considering the classic problem of profit maximization problem faced by a competitive firm. The firm first has to identify the market price of the commodity that it is going to sell and then identify its own cost function. Finally, it has to equate the market price, and the marginal cost, so as to maximize profits (assuming the second order condition holds and, shut-down condition does not). However, the situation is not so straightforward in real life. For example, the estimation of the cost function might involve certain difficulties. There may be some externalities generated as a result of the production process, like pollution, which may be hard to measure with absolute accuracy. There also may be several factors of production, like human capital which is hard to identify and measure. The production process may also involve certain uncertain contingencies, for example machine failure, that are hard to manage. All of these scenarios undoubtedly increase the complexity of the problem of profit maximization faced by the firm, which may be hard to manage for the firm, if not impossible. As a result the firm may produce a certain level of output that does not optimize its profits.

Optimizing and Satisficing

Recognizing the difficulties faced by the actor to act rationally, a second approach, known as 'satisficing' is introduced towards rational behavior, in addition with optimizing. Under the given external and internal constraints it is hard, sometimes intractable, to approach a real world problem and provide the best possible outcome, or which is sometimes called the globally rational outcome. There are two broad ways to handle such problems. One is to simplify the original problem, to a level of complication that can be managed by the decision-taker, and then solving the simpler version for the optimal and approximate this optimal to the original solution. A second attempt would be to settle for an outcome that is satisfactory to the decision taker. This approach is known as satisficing. There is no definite superiority of one approach over the other. Their suitability varies with the problem at hand.

Satisficing however poses its own challenges. In case of a satisficing model, the decision-taker has to rationally justify the outcome that is satisfactory to the individual. To illustrate this situation considering an econometric problem that involves the estimation of the consumption function for an economy. Assuming that the statistician adopts the OLS estimators for estimating the parameters involved, one has to first identify the variables that affect consumption. There are several variables that affect consumption, for example income, taxes, wealth, liabilities such as loans, expected incomes to be generated in the future etc. Therefore it is extremely difficult to approximate the actual consumption function, since there are too many variables involved, some of which are very difficult to calculate, for example expected future income and requires too much information to be gathered. As a result the statistician can resort to satisficing. She can collect the optimal amount of information by comparing the marginal productivity of information gathering, and the marginal cost incurred. To elaborate this statement; the statistician can compare the amount of knowledge regarding the economy's consumption habits that is generated for each extra variable included in the model with the cost incurred in gathering that information. The optimal amount of information thus obtained can be employed to derive a satisfactorily accurate consumption function for the economy.

A Descriptive Approach Towards Individual Choice

The last two sections have revealed that individuals have good reason to deviate from the behavior that is expected of them. The normative models of choice does under certain situations provide significant predictive power, especially when the situation is tractable to the decision taker. Taking the example of left and right shoes, which is a classic example of perfect complements. It is expected of an individual to demand them in 1:1 ratio, as predicted by rational choice theory. But, in many cases individuals do not conform to the normative models, and their deviation is not only significant, but systematic. The last sections have accused the decision-takers of deviating from their predicted rational behavior, only due to cognitive limitations of the human brain. In this section, I will be representing some interesting examples due to Thaler, Kahneman, and Tversky et al to show that the normative theory fails to hold under complicated situations.

Prospect Theory:

Kahneman and Tversky carried out a series of experiments designed to reveal anomalies in the behavior of individuals facing an uncertain situation, by showing significant deviations from the von Neumann and Morgenstern's expected utility theory.

An ordered 4-tuple (x,p;y,q) represents a gamble, where outcome x has a probability of occurring, p and outcome y has a probability of occurring, q, and if y and q are not present then q=0. A number of individuals were given to choose (I have selected four outcomes from the original experiment which are enough to reveal the significance) between the following prospects (the number within the brackets below each prospect shows the percentage of responders favoring that prospect over the other):

1) (1000,.5) and (500,1) (70 respondents)
(16) (84)

2) (-1000,.5) and (-500,1) (68 respondents)
(69) (31)

3) (3000,.002) and (6000,.001)
(27) (73)

(66 respondents for both 3 and 4)

4) (-3000;.002) and (-6000,.001)
(70) (30)

Prospects in experiment 1 and 2 have the same expected returns, the only difference is that 1 provides an expected gain whereas 2 gives an expected loss, both 500 in magnitude. But the responses reveal that in case of an expected gain in 1, individuals tend towards certain situations. On the other hand in case of prospect 2 when people expect to lose the same amount, they tend towards the risky situation, in order to avail the 50% chance to lose nothing.

From the surveys Kahneman and Tversky deduced three generalizations which can be termed as axioms. They are as follows:

1) Gains are treated differently than the losses, which can be clearly seen from the experiments 1 and 2. Whereas, experiments 3 and 4 shows, that it is only in the case of very small probabilities, that risk aversion is observed for gains, and risk seeking is observed for loses.
2) Certain outcomes are overweighed than uncertain outcomes.
3) Structure of the problem may affect choices.

Kahneman and Tversky used the concept of subjective probability to model the perception of the subject's perception of the chances of realization of a particular state. That s the probability 'p' of the occurrence of a state s perceived by an individual as a function f(p). Moreover, to incorporate the treatment of gains to be different from the losses, they introduced the concept of 'value function'. The value function is a function of change in initial wealth due to the realization of a particular state, unlike the Bernoulli utility function that is based in the final situations of the wealth.

Let (x,p;y,q) be a prospect and V be a value function of this prospect. Then,

$V(x,p;y,q) = f(p)v(x) + f(q)v(y)$, is the value function.

The value function is concave in case of gains and convex in case of losses. This is to capture the fact that individuals are risk averse in case of gains and risk lovers in case of loses. Furthermore, the value function is also steeper in case of gains than loses, because it is seen that gains are treated differently than loses, and loses hurt more.

Sunk Costs:

Sunk costs are costs that should not be considered by rational individuals while taking any decisions, after the costs are incurred. But there are instances (due to Thaler) where individuals do not behave rationally and take such costs into account.

Example 1: "A family pays 40 dollars for tickets to a baseball game to be played 60 miles from their home. On the day of the game there is a snowstorm. They decide to go anyway, but note in passing that had the tickets been given to them, they would have stayed home."

Example 2: "A man joins a tennis club and pays a 300 dollars yearly membership fee. After two weeks of playing he develops tennis elbow. He continues to play (in pain) saying 'I don't want to waste the 300 dollars'."

The 40 dollars paid for tickets in example 1 is a sunk cost. Rational decisions are taken by individuals by incremental cost-benefit analysis. The 40 dollars once paid cannot be redeemed and therefore should not affect the future decisions of the family. Similarly, the 300 dollars paid by the man joining the tennis club, is also a sunk cost, and cannot be redeemed once paid. It would have been rational if the family stayed at home and the player had concentrated on the ailment of his elbow. It has been observed in general, that paying for the rights to enjoy a certain commodity, increases the rate of them getting utilized. This phenomenon is termed as the 'sunk cost effect' by Thaler.

This effect although helps to explain certain anomalies in individual behavior, it is hard to measure in real life. Considering the example of the tennis player, one can also argue that only the person serious about playing tennis would consider paying 300 dollars for the membership. In other words, 300 dollars might also be a correct measure of satisfaction that the person enjoys, and it I out of pure love for tennis, the person goes on playing in spite of suffering from tennis elbow. This however might be true in some cases. Therefore, the sunk cost effect is hard to measure.

Conclusion

I hope it is fairly clear from the arguments that assuming rational behavior from an economic agent is in many cases too much demanding from the individual. An economic model has to incorporate certain systemic deviations from the normative theory of rationality as a behavioral axiom. There is certainly a tradeoff between the descriptive power and the complexity of the model. A model with a great deal of descriptive power has to allow for some greater degree of complexity. This is because incorporating more and more behavioral angles to an economic model would mean greater challenges from the measurability of those behavioral phenomenon. Therefore, it would be wise to conclude that both approaches involve certain cost-benefit analysis, and it is up to the theorist, and also the demand from the situation, to decide the level of complexity to be allowed in the model.

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Impact of Micro-finance in the Realisation of Financial Inclusion and Women Empowerment in India

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TABLE OF CONTENTS:

Chapter 1: Introduction

1.1: Background:

Ꮥndia has been the success story of the twenty-first century. The liberalization of the nineties have unlocked the potential of the Indian economy and rapid economic strides have been made in the past few decades. However, a worrying aspect of such a growth trajectory has been the concern of non inclusive development resulting in skewed distribution of wealth among different groups in the society. A reason for this phenomenon is the lack of availability of capital resources to the poorer and rural section of the country due to non-penetration of banking sector in these markets. In this context, development of microfinance institutions across the nation has addressed to some extent, the scarcity of capital among the weaker sections of the society. Loans to economically weaker sections by banks are limited due to lack of security and high operating cost. An alternative has thus been provided by microfinance with the goal of ushering financial inclusion and equality.

One of the earliest microfinance institutions in India was the SEWA Cooperative Bank initiated by Ela Bhatt in Ahmedabad in 1974. The National Bank of Agriculture and Rural Development (NABARD) played a pioneering role in development of microfinance in India. The NABARD experimented several models for offering financial services to the unbanked, especially women, and came up with a very different model, now popularly known as Self-help Groups (SHGs). In this model, small groups of women and sometimes men are aided to form their own mini bank, self-governed and managed, which act as links with banks SHGs(Self-help groups), NGOs and banks. The SHG-Bank linkage programme in place since 1992 in India, had savings accounts with 7.9 million SHGs, of which 4.6 million SHGs have outstanding loans, with approximately $2 billion in saving with the banks, and $8.9 Billion in outstanding loans, making it one of the largest microfinance program of its kind in the world as of March 2016. It consists of a network of scheduled commercial banks, regional rural banks and cooperative banks.

NABARD along with several private microfinance institutions like Annapurna microfinance, Bandhan microfinance etc. have helped invigorate the rural financial markets as well as helped the poorer section to increase their income by way of enabling micro and small scale enterprises and enriching the agricultural sector. This in turn has spurned the Indian economy and ensured development across a cross section of the society.

However, doubts still remain as to the extent of impact of micro finance. Critics have particularly targeted the concept of micro credit that is at the core of micro finance. They argue that microcredit has not resulted in increasing income rather it has increased indebtedness, in turn leading to suicides. The recent cases of farmer suicides and agriculture distress call in India prove that their concern is not unfounded. Proponents of micro finance have however dismissed such claims and linked the above problem with government apathy and poor monsoon leading to poor agriculture yield.

In this context it is very important to study the development and issues of microfinance in India to better understand the impact of such institutions in the framework of Indian economy.

1.2: Literature Review:

- According to a study by Sriram in 2010, most of the early microfinance in India happened via donor and philanthropic funds. These funds accumulated in the pockets of non-profit organizations. However as the activities increased, it was necessary to move to a commercial format. Eventually got prominent the implications of the transformation process, how it resulted in the personal enrichment of the promoters of MFI as well its ramification on governance. Sriram questions the moral and ethical fabric of some of the largest microfinance institutions and ends by answering a set of questions that may emanate out of such discussion.The paper concluded that there was no ideal path for spin-off. Regulatory changes were needed to allow MFOs to graduate to other legal forms as they grow organically. NGOs must be permitted to invest in the equity of MFOs, as was the case in Bolivia and Africa. Norms for setting up MFOs under current legal forms should not be eased. Regulations should ensure that they help genuine MFOs and not others masquerading as MFOs.

- Jayasheela, Dinesh P.T and Basil Hans in their paper of 2008 examine the role of micro finance in the empowerment of people and the realisation of financial inclusion in India. They are of opinion that despite reservations about the efficiency of MFIs in handling public money, their growth and achievements demand attention and appreciation. With rising demand for rural finance, and the inadequacies of formal sources, the MFIs have assumed great significance in the new avatar of micro credit in India. They however feel that the management of MFIs should be better scrutinized in the wake of recent experiences and for qualitative growth.
- A study(2010) by Imai, Arun and Anna Examines whether household access to microfinance reduces poverty. By using national household data from India, they have employed the treatment effects model to estimate the poverty-reducing effects of MFIs micro credits for productive purposes, such as agricultural investment or non-farm micro and small businesses, on household poverty levels. Despite some limitations, arising from potential unobservable important determinants, they find significant positive effect of MFI productive loans on welfare indicators. They also find that impact on such loans on poverty reduction is much higher in rural areas than urban areas.
- R Swain in his 2009 paper studies the impact of MFIs in women empowerment. He sees that despite microfinance programmes like the Self Help Groups(SHGs) inIndia being increasingly promoted for their positive economic impact and empowering women, only a few studies rigorously examine the link between microfinance and women's empowerment. Using quasi-experimental household sample data collected from five states in India for 2000 and 2003 his findings strongly demonstrate that on average, there is a significant increase in the empowerment of women in the SHG members group. However the members of the control group don't display any such significant change.
- Rajarshi Ghose in her study in 2005 examined the evolution of the Microfinance phenomenon in India and concluded it as a powerful tool for poverty alleviation and women empowerment. She asserts that where traditional finance failed Microfinance delivered, but the outreach is still too small. There is a big question mark on the viability of the Microfinance Institutions. She believes that there exists a need for an all round effort to help develop and sustain the fledgling Microfinance revolution while tackling the trade off between outreach and sustainability.

- In their paper published in 2008 Ashok Rai and S Ravi studied how health insurance and microfinance interact. They found that there is indeed no gender difference in the claims pattern of male and female borrowers, however female spouses of male borrowers are significantly less likely to opt for health insurance than husbands of female borrowers. Moreover non-borrowing spouses are in general less likely to lay claims than the spouses who borrow. They believe that these differences of behaviours arise due to variations in female literacy across the breath that the micro finance provider operates in. We also conclude that households that have participated in the microfinance program after the micro insurance coverage was extended are less likely to lay claims than pre-existing borrower households. Their experience with microfinance programs may have made borrower households better informed about insurance coverage and new borrowers and their spouses may simply lack this knowledge. Or recent participants may indeed have lower health risks than existing borrower households, showing that adverse selection may be less of a concern in these markets.
- Reddy and Manak in their paper published in 2005 has outlined several areas of working with Self Help Groups to magnify their impact on society. They however feel that the ability of SHGs to effect such change is directly linked to their financial sustainability, any external intervention to SHGs should bear this issue in mind. Their research has found that SHGs' financial management is average or weakThus, it is vitally requisite that both government and NGOs linking them to banks work while bearing all the costs in mind to make them sustainable otherwise the Self Help Groups will be overburdened and would be destined to failure. Government regulations and intervention could help manage the risk and increase the emphasis on sustainability of these programs. There are key areas of concern relating to the SHG financial management, they need to be improved such as internal controls, accounting, management stewardship, organizational efficiency and others. The government needs to enact policy that would regulate the quality of governance of SHGs and tie this to their eligibility for SHG Bank Linkage, this would help bring about a more measured and responsible growth to the SHG movement.
- Naik and Rodrigues in their paper (2017) argue that the participation of women in SHGs has increased their income, savings, and led to their empowerment. The involvement of the women in these groups considerably contributes towards the betterment and improvement in their quality of life, social status and boost

confidence of the members, the SHG in the areas studied are taking the lead and playing an important role in ushering social transformation as well as infrastructure building and welfare activities. The Self Help Group scheme is one of the most significant schemes the implementation of which has led to empowerment of women, in terms of better leadership, decision making, utility, and skill harnessing. Considering the large number of poor, discriminated and deprived women that still exist in society there is need to encourage more women to become entrepreneurs in their own right. The agenda of SHFs driven by women should be to work towards the empowerment of the members and also other underprivileged poor women in the society.

- Mahajan and Ramanaargue in their study(2004) agriculture being the major livelihood means in rural areas in India, micro financing have to get into agricultural financing in a bigger way. Since the banking system is not able to adequately equip farmers and the cooperative credit system is nearly defunct MFI s have to play a major role. MFIs will have to learn to design new financial services and get themselves accustomed to repayments at harvest time, not weekly or monthly as is generally the case. They need to learn to experiment with new channels such as farmers' groups, input suppliers and output buyers. New methods should be devised for risk mitigation such as weather based crop insurance and the use of commodity derivatives . MFIs will have to implement a credit plus approach. In order to ensure repayment MFIs need to facilitate the farmers to increase their productivity and reduce the risks. They will have to encourage locals in the concept of value addition through initiating the process of lending to agro processing enterprises, many of which may not be categorised as "micro". They need to learn to increase the farmers' ability to get higher prices for their products by investing in newer areas such as warehouse receipt and commodity derivatives. Both of the above would require organising farmers into groups or clusters and a well designed institutional development support service. Organising these community based institutions who would take responsibility for their members and capacity building of these institutions which are engaged in livelihood promotion become inevitable.
- Rajat Dasgupta in his 2005 paper opines that one of the reasons for the lacklustre and discouraging performance of both public and private sector banks in extending credit to weaker and marginalized sections of the society is their high level of Non Performing Assets .While credit under the government sponsored Swarna Jayanti

Gram Swarozgar Yojna scheme across all the states had been extended in proportion to the poor in the state's population, this is not the case when it comes to the self self help group (SHG) credit that had been growing at an impressive rate of 120 per cent per annum. However, growth in SHG credit has been uneven with southern states being seen as SHG-developed states while states like Bihar and Madhya Pradesh are among those characterised as SHG-backward. He also opines that besides the SHG model in extending credit to weaker sections, there exist other different models for extending micro credit to the poor and weaker sections of the society.

- A 2003 study by Murdoch and Rutherford discussed the issues with microfinance in India. They opine that the poor households face numerous limitations in attempting to spare, contribute, also, secure their employment. They take budgetary intermediation genuinely and commit significant exertion to finding serviceable arrangements. The greater part of the arrangements are found in the casual area, which, up until this point, offers low-pay households comfort and adaptability unmatched by formal go-betweens. The microfinance development is endeavouring to coordinate the comfort and adaptability of the casual segment, while including unwavering quality and the guarantee of coherence, and in a few nations it is now doing this on a huge scale. Getting to this point – contacting poor individuals on a monstrous scale with well known items on a persistent premise – has included reconsidering essential suspicions . One by one, the catchphrases of the 1990s – ladies, gatherings, graduation, microbusinesses, and credit – are offering a path to those of the new century – accommodation, dependability, progression, and an adaptable scope of administrations. They portray the components that we feel have contributed most and that are most important for India.
- Shastri in his 2009 paper observes that making independent work openings is one method for alleviation of poverty and taking care of the issues of joblessness. There are more than 24 crore individuals beneath the poverty line in our country. The scheme of Micro-finance has been found as a viable instrument for lifting the poor over the line of poverty by giving them expanded independent work openings and making them credit compatible. An essential innovation of a decade ago, the microfinance targets in India has come at top direct comparative toward Bangladesh. With some changes considerable advancement can be made in taking MFIs to the same circle of importance and sustainability. There is a need of designing monetarily feasible models and increment effort and scale up jobs for the

poor in India. Individuals belonging outside the urban areas are as yet uninformed about financial approaches and credit framework. So NGO ought to impart to them and offer their view with rural folk. Banks should change over and incorporate my proficient framework with the social financial framework for the poor. Legislature of India and state governments ought to likewise offer help for limit building activities and guarantee straightforwardness and upgrade believability through exposures.

1.3: Objectives:

- To study the impact of micro credit on the development of the agricultural sector of India as well as its contribution , if any , on the growth of micro and small scale industries in the country.

- To examine the role of micro finance institutions on women empowerment through programmes like SHGs and the realisation of financial inclusion and poverty alleviation in India.

- To study other issues relating to the proliferation of microfinance in India and to assess the net impact the micro finance institutions have had on the country's economy.

1.4: Methodology:

The project is based on descriptive research. Data and information relevant for the project have been piled up from secondary sources and works of other authors. The study therefore relies on secondary data, viz.,thesis papers, articles published in reputed journals and annual reports published by relevant authorities.

1.5: Limitations of the Study:

The study being done on the basis of secondary data can be susceptible to sampling errors, authors bias and selective analysis on the respective author's part. Such limitations are inherent in studies relying on secondary information and, therefore, can not be dispensed with.

Chapter 2: Conceptual framework

2.1: Definition of Microfinance:

The Microfinance Services Regulation Bill of India defines microfinance benefits as *"giving money related help to an individual or a qualified customer, either legitimately or through a gathering instrument for:*

- *a sum, not surpassing rupees fifty thousand in total for each person, for little and modest endeavour, farming, unified exercises (counting for utilization motivations behind such individuals.*
- *a sum not surpassing rupees one lakh fifty thousand in total for each person for lodging purposes.*
- *Such different sums, for any of the reasons referenced at things (I) and (ii) above or different purposes, as might be endorsed."*

The bill further characterizes Microfinance Institution as *"an organisation or association of people including the following in the event that it is created carry on the business of expanding microfinance services:*

- *a society enrolled under the Societies Registration Act, 1860,*
- *a trust made under the Indian Trust Act,1880 or open trust enrolled under any State institution overseeing trust or open, religious or beneficent purposes,*
- *a cooperative society/shared advantage society/commonly supported society enlisted under any State sanctioning identifying with such social orders or any multistate agreeable society enrolled under the Multi State Cooperative Societies Act, 2002 however excluding :*

An agreeable bank as characterized in statement (cci) of area 5 of the Banking Regulation Act, 1949 or a cooperative society occupied with farming tasks or modern action or buy or clearance of any products and ventures."

Microfinance establishments have seen tremendous development all through recent few decades.The Consultative Group to Assist Poor (CGAP)2 under UN has given eleven key protocols of microfinance. These are as per the following:

2.2: Key standards of Micro account:

1.Poor individuals need an assortment of money related administrations, not simply advances.

2.Microfinance is an incredible asset to battle poverty.

3.Microfinance methods building money related frameworks that serve poor people.

4.Microfinance can pay for itself, and must do as such in the event that it is to achieve extremely expansive quantities of needy individuals.

5.Microfinance is concerned with building local financial organisations or groups which can pool resources from locality, convert them into loans and other financial services to the poor and underprivileged.

6.Microcredit isn't generally the appropriate response. Other sorts of help may work.

7.Interest rate ceilings hurt individuals by making it harder for them to get credit.

8.The role of government is to empower money related administrations, not to give them straightforwardly.

9.Donor assets should supplement private capital, not contend with it.

10.The key problem is the deficiency of solid organizations and leadership.

11.Microfinance works best when it measures and disclosed its performance.

2.3: Objectives of microfinance:

The associations attempting to advance microfinance foundations in various pieces of the world decide different targets to microfinance. The imperative among them are recorded as pursuits.

- Promote financial improvement at the grass root level through network based methodology
- Develop and reinforce social orders' called Self-Help Groups and encourage practical improvement through them
- Provide business preparing to impede populace.
- Promote exercises which have a network interest and sharing of obligations
- Promote projects for the handicapped
- Empower and standard ladies
- Promote economical horticulture and biologically stable administration of characteristic assets
- Organize and facilitate systems administration of grass root level association
- Get advantages by decreasing consumption and making utilization of nearby assets as contributions for work exercises
- Increase the quantity of pay days and salary at family unit level.

2.4: Major Models of Microfinance activities:

The writing on microfinance recorded 12 different models of microfinance foundations working in various nations. This arrangement is based on administrative structure and operational strategies. Scarcely any models are not basic in worldwide dimension and few others are complimentary. NGOs and self improvement gatherings are models. A large portion of the self improvement gatherings have an advertiser NGO. In the meantime numerous NGOs have direct microfinance chains. Like that business banks are executing microfinance tasks through its SHGs. In these cases two models are cooperating to serve the poor. A few models are working in the casual division as it were. Significant models associate- bank guarantees, community banking, co-operatives, Grameen Bank Model, credit union, financial intermediaries, self help groups (SHGs), commercial banks, NBFCs, Association of persons, nidhi model, network banking, NGOs and ROSCAs.

The most important model is the NABARD sponsored Self Help Group (SHG) which has spiralled into the biggest microfinance system in the world employing mostly women in groups who create a common self interest for the mutual benefit of the members.

The SHG program is a major focus of this study due to sheer volume of this initiative and has been the subject of most studies on the field of micro finance.

2.5: Need for Financial Inclusion:

'Financial inclusion is a key enabler to reducing poverty and boosting prosperity'- The World Bank.

Financial exclusion of the poor and underprivileged is very much a reality in India. Financial inclusion is therefore a priority at the moment for all parties at stake.Financial inclusion is needed for all and sundry, and especially the world's poor population working in the informal sector. The inclusion helps individuals to make daily payments reliably. It helps them to access credit which can be invested in their small-scale income-generating activities. It also helps people save their cash so that they can make future investments or respond to unforeseeable risks.Financial inclusion improves access to insurance products and services which are critical towards addressing vulnerabilities in any type of business.The objective of financial inclusion is to provide credit to people who depend upon informal sources for their financial needs and are often at the receiving end of unfair and unjust treatment.

India has a wide network of institutions who specialises in giving credit including commercial banks. Scheduled commercial banks, public sector banks and non banking financial institutions have developed a tremendous domestic presence with a number of branches spread across the length and breadth of the country. From 49000 branches in 2005 these institutions now have 90000 branches in different parts of the country. More than 60 percent of these branches are in places which can be characterized as semi urban and rural areas.Moreover, commercial banks being the principal vehicles of the efforts at financial inclusion provided a vividly planned structure. The Plans capture self-set targets of the banks on parameters such as the number of outlets (branches and Business Correspondents(BCs)), Basic Savings Bank Deposit Accounts(BSBDAs) opened by branches or BCs, overdraft facilities availed in those accounts,transactions in Kisan Credit Card availed in those accounts(KCC), General Credit Card(GCC), accounts and transactions through the BC-ICT channel.

From 1960-80, Government sponsored credit programs went along with the intent of subsidised interest rates targeting the rural mass.Its evident for India since 1977 that for every branch that a bank opened in the city had to open four additional branches in the rural locations that did not have a bank. Moreover, banks were directed to lend 40% of their portfolios to the 'priority' sector: small firms, agriculture, co-operatives and the like.Robin Burgess and Rohini Pande showed as a consequence of this policy poverty decreased faster,in those rural regions where new branches were opened up.

It is a widely recognised fact that poor people can largely improve their life if they can get easier access to financial services like savings account, loans and insurance coverage. However despite this reason and the spread of institutional credit disbursing services, Indian financial establishment lacks physical infrastructure and has failed to reach the poor. Moreover, perceived lack of security from loans given to the poor has also resulted in institutions taking a conservative approach while approving loans to this section of the society. Default rates were staggeringly high (around 40% during the 80's), in many cases political priorities stood important over economic needs while lending, vote bank politics was found responsible for the pre-election concern of flooding with loans, and the money used to land in the hands of local elites.

Table: 1

Census	Rural	Urban	Total
Total households(in million)	168	79	247
Households without access to financial services(million)	75	28	102
As a % against total households in respective category	46%	32%	41%

As a % against total households	75%	25%	------

A large portion of the rural population of India doesn't have access to banking systems.

Source: Indian census.

Over the years the Government of India and RBI has made a concerted effort to improve financial inclusion. Introduction of programs like Swarna Jayanti Swarozgar Yojna or the more recent Pradhan Mantri Jan Dhan Yojna have improved the lot of the poor when it comes to provision of financial services. However the most important role in ushering in financial inclusion have been played by microfinance institutions which have provided a steady flow of capital to marginalized sections of society which was hitherto not available to them . The credit thus provided have been utilised for entrepreneurial activities which have not only benefited the participants but has also given good returns to the micro finance institutions themselves. The success story of Self Help Group is a case in point.

2.6: Self Help Group Bank Linkage program- a rural revolution:

The Self Help Group-Bank Linkage Program (SBLP) was begun in 1992 at the behest of NABARD. The fundamental thought of the SBLP is to link the unorganised area of our populace to the formal financial division. As is self-evident this segment of society is from the poor and marginalized who used to meet their monetary needs through constrained casual sources, for example, cash loans from informal money lenders, dealers, family and companions and so forth. So it was a noteworthy initiative of the Government to give banking facilities to the more underprivileged and backwards populace that needed access to formal banking. That in turn stood in bridging the gap between two for their mutual benefit.

2.7: Development of self improvement gathering:

Self help groups are the gatherings formed by 10-20 ordinary women or men between 18-40 yrs. from lower salary fragments associated with employment exercises like making candles, artificial jewellery, street sellers, vendors, fitting occupations, retail shops, domesticated animals raising, and so on. When the group is shaped, the individuals from the gathering are urged to add to a common fund of the group from the sum conveniently spared out of their profit. The reserves so made by the individuals are utilized to loan to the members for meeting their income generating exercises and developing credit needs at such rate of intrigue, time of advance and different terms as the group may choose.

2.8: SHG Bank linkage program(revisited):

Under SBLP, SHGs so shape get connected to banks by means of NGOs generally known as Self Help Promoting Institutions (SHPI), by opening investment accounts. According to operational rules of NABARD, SHGs might be authorized funds connected advances by banks (shifting from a sparing to credit proportion of 1:1 to 1:4). In any case, in the event of all around created SHGs, banks may allow credits past the farthest point of multiple times the investment funds according to the circumspection of the bank. The points of confinement are endorsed by the banks on examination of the exercises of concerned gathering in regard to normality of gatherings, investment funds, pivot of assets opposite recuperation of cash inside loaned, pay age, upkeep of books of records, and so on. Each bank lending to SHGs will have a state credit plan, locale credit plan, square credit plan and branch acknowledgment plan as an indispensable piece of the bank's corporate credit plan. The lead banks in their individual gathering like Block Level Bankers' Committee (BLBC), District Consultative Committee (DCC), State Level Bankers' Committee (SLBC), talk about the issue in all parts of SHG-bank linkage with the other budgetary organizations and screens branch shrewd accomplishment of SHG credit status of each bank. For SHG-bank linkage, SLBCs will have a sub-board of trustees comprising individuals from all banks working in the State, RBI, NABARD, CEO of SRLM, agents of State Rural Development Department, Secretary-Institutional Finance and Representatives of Development Departments. The sub-advisory group meets once in a month with a particular plan of survey, execution and observing of the SHG-Bank linkage and the issues/requirements in accomplishment of the credit target.

According to the RBI's most recent Priority Sector Lending standards (May 2016), bank credit to individuals from SHGs is qualified for priority sector loans under separate classes viz., Agriculture, Micro, Small and Medium Enterprises, Social Infrastructure and Others. The financing cost appropriate to credits given by banks to Self Help Groups/part recipients would be left to their discretion.

Chapter 3: Data and Analysis

3.1: Financial Inclusion:

3.1.1: *Financial Inclusion and Its need in India:*

The banking industry has demonstrated enormous development in volume and multifaceted nature amid the most recent couple of decades. In spite of making critical enhancements in every one of the zones identifying with money related practicality, gainfulness and intensity, there are worries that banks have not had the capacity to incorporate huge portion of the populace, particularly the underprivileged areas of the general public, into the overlay of fundamental financial administrations (Thorat, 2007). Along these lines, this led to the rise of for Financial Inclusion as a methodology to convey alleged excluded individuals into the standard. Monetary consideration is conveyance of banking administrations at a reasonable expense to the huge areas of impeded and low-salary gatherings. As banking administrations are in the idea of open great, it is basic that accessibility of banking and installment administrations to the whole populace without separation is the prime target of the open arrangement (in the same place). In spite of the fact that credit is the most essential segment, monetary consideration covers different money related administrations, for example, investment funds protection, installments and settlement offices by the formal budgetary framework to the individuals who will in general be barred (Mahendra S, 2006).

In India, the drive for financial inclusion, started by the Reserve Bank of India, has up to this point included guaranteeing access to no less than one zero minimum balance 'no frills investment funds financial balance to each family unit. In this specific circumstance, something like one region in each state has been brought under the domain of this drive with open division banks in the area leading the pack to open somewhere around one financial balance for every family in the region.

Importance FIPs in Indian context-

- Being unable to access financial services, requires a lump of cash to carry out transactions for the necessaries, fails to ensure safe deposit for precautionary purposes.
- Without any financial intermediation inadequate saving avenues securing minimal rate of returns or often nil, stands behind providing a disincentive to save.
- Deficient savings often leads the poor households to rely on unregulated external sources of funds that usually seek inconceivable rates at borrowing, which in turn results in increased default risk.
- Substantially scarce credit products hinders capital investments by small scale enterprises often hamplering it to grow.
- Unsatisfactory remittance products lead to money transfers, ponderous and risky and lack of insurance products fails *'wealth smoothening'*.

3.1.2: *Micro finance as a solution to financial exclusion:*

After independence, the structure of rural credit institutions, with co-operative bank and home loan banks obliged short term and long term credit needs separately. The appraisal of execution of co-operative by All India Rural Credit Survey Committee in 1954 brought the way that the volume of credit provided by the agreeable development was inconsequential, bookkeeping just 3 percent of the all borrowing of cultivators. It uncovered that the offer of Institutional offices, involving the Government, the co-employable and business banks in financing the borrowings of rustic family was just 7.3per cent in 1951-52 relating to the offer of private cash loan specialists was high as 68.6per cent (Lalitha, 1998).

The Nationalization of SBI in 1955 had led to rural banking. In any case, other commercial banks avoided it. The All India Rural Credit Review Committee delegated by RBI under the director, B. Venkatappaih presented its report in 1969, demonstrating the insufficiency of co-operative framework alone to meet the credit necessities of the rural sector. Board arranged the multi office way to deal with the rural fund. It was just with social banks in late 1960's and Nationalization of 14 commercial banks in 1969, followed by 6 more in

1980, that country's introduction of business banks began deliberately. (Lalitha, 1998) In 1980-81 the Government started Integrated Rural Development Program (IRDP) with the goal of guiding sponsored advances to poor independently employed individuals through the financial part.

The financial sector created in India by the late 1980s was condemned to a great extent for its target and supply driven policies. High default rates, defilement and high level of doubt among financiers about the credit value of poor individuals were the significant highlights of the time. Reserve funds items were rigidly and improperly structured and proper protection items rare. On the credit side the, while in the provincial getting provided by casual sources tumbled to 40 percent in 1991, family units with the least resources were unmistakably progressively reliant on casual sources (Mahajan, 2000, referred to in Sriram and Fisher). Borrowers confronted high exchange expenses to verify sponsored advances, making their genuine cost 22 to 33 percent.

Fisher Sriram et al opines up that formal money related areas were unable to perceive the disparity between the chains of command of credit needs and credit accessibility. The outcome is the unfavourable utilization of credit. Credit use begins for utilization reasons, which are just being met, through casual sources at staggering expense. Higher requirements come into play when the lower needs are fulfilled. Anyway credit (frequently sponsored rate) is generally accessible for new endeavours (for example for expansion). Cash is fungible, credit in this way taken for enhancement yet utilized in lower rungs of chain of command. This suggests any examination of credit isn't regarded as bringing about the unfavourable utilization and henceforth antagonistic reimbursement execution (Fisher and Shriram, 2002).

The accomplishment of few Non Governmental Organizations (NGOs) like Mysore Resettlement and Development Agency (MYRADA) in-aggregate loaning, made the legislature in moving the procedure of ladies improvement and strengthening. A work in progress of Women and Children in Rural Areas (DWCRA) program through gathering based methodology (Rajshekar, 2004). Consequently assembly based methodology began in an unobtrusive way. Anyway the principal enthusiasm for casual gathering loaning fit as a fiddle amid 1986-87 on the activity of NABARD. This zenith bank for rustic improvement, took an exploration venture on SHGs as a channel for conveyance of small scale money in the late 1980s. Among these MYRADA supported research ventures on *'Investment funds and credit the board'* of SHGs was halfway subsidized by National bank for Agriculture and Rural Development (NABARD) in 1986-87. In the exceptionally one year from now, in relationship with Asia Pacific Rural and Agricultural Credit Association (APRACA), the bank (NABARD) attempted a study of 43 NGOs in 11 states, to think about the working of smaller scale account Self Help Groups (SHG) and their cooperation conceivable outcomes with the formal financial framework. Both these exploration ventures hurled the empowering conceivable outcomes and NABARD started a pilot venture called SHG-bank linkage venture (Satish 2005, NABARD 1991).

In 1991, the full scale financial conditions pushed the administration to present basic changes in the economy, usually alluded to as monetary changes of 1991. Karmakar commented that the prompt effect of change to the budgetary area became essential by the 1990's and from numerous points of view compounded the situation for the needy individuals. There has been exceptional fall in country credit. The offer of provincial credit in the absolute credit dispensing by business banks, which developed from 3.5 to 15 percent structure 1971 to 1991, has now declined again to 11 percent in 1998 (SaDhan, 2004).

Indeed, even after the institutional account came into being as the banking division developed, the requirement for *'smaller scale'* credit distinctively for the poor segment of the general public was neglected by the formal financial part. The idea of formal financial area, with its accentuation on *'security based loaning'* couldn't provide food the requirements of littler borrowers, particularly ladies, who were commonly asset poor and had irrelevant advantages for offer as guarantee. Given the male ruled rustic culture, preceding 1990s there were not really any credit plans intended for country ladies (Karmakar, 2002).

All these advances brought about a fall in the accessibility of credit from formal money related framework, leaving casual sources just as SHGs and MFIs to fill this hole (Fisher and Sriram, 2002). Indeed, even the administration arrangements are additionally gazed centering from advancement towards strengthening of ladies through gathering based methodology.

3.1.3: *Impact of Micro finance on financial inclusion:*

The linkage between *"self help groups"* and banks has been exceedingly effective in advancing financial inclusion. The collaboration between the formal financial framework and small scale account associations has likewise been empowering. Microfinance (MF) in the ongoing past has developed as a potential instrument for poverty eradication and women empowerment. MF mediation alludes to arrangement of access to small advances without physical insurance to poor people, particularly the women, while urging them to spare normally so as to consolidate thrift and self employment for their very own empowerment. MFIs consist of Refinance Institutions, Banks, Non Government Organizations and Self Help Groups managing little credits and stores in country, semi urban or urban territories empowering individuals to raise funds, beneficial ventures and along these lines their way of life (Nadarajan and Ponmurugan, 2006).

As of now let one know of the manners by which access to formal financial administrations has been given in all respects effectively since the mid 90s is through the linkage of Self Help Groups (SHGs) with banks. SHGs are gatherings of for the most part ladies who get together and pool their investment funds and offer advances to individuals. As a rule there is a NGO that advances and supports these gatherings. National Bank for Agriculture and Rural Development has assumed a noteworthy job in supporting gathering arrangement, connecting them with banks as additionally advancing accepted procedures. The SHG is given credit against certification of gathering individuals. The recuperation experience has been extremely great. Banks give credit to such gatherings at sensible rates of premium. Anyway the measure of advances is very little and utilized for the most part for utilization smoothening or extremely independent companies. In some SHGs, credit is accommodated farming exercises and different vocations and could be a few times the stores made by the SHG.

Microfinance has attracted regard for a whole area of borrowers who had been beforehand ineffectively served by the formal monetary segment - and MF has shown how to make loaning to this segment a feasible recommendation. Anyway the rates of intrigue charged are very high, commonly 12 to 30 percent, predominantly by virtue of the high exchange cost for the normal advance size that can be very little. Contrasted with the casual segment, maybe the rates are lower, however issues are raised whether these rates are moderate - in the sense whether they would leave any surplus in the hands of the borrowers and lead to more elevated amounts of living.

For business banks, the lower cost of financing, favorable circumstances of size and scale gives scope for cross appropriation and their loan fees are progressively aggressive contrasted with the MFIs, yet they have not been as fruitful in managing the last mile issue. The banding together with SHGs and MFIs with sensible expense of financing by the banks has been viewed as an increasingly ideal methodology till now (Thorat, 2007b).

The monetary incorporation achieved through SHGs is manageable and adaptable by virtue of its different positive highlights. One of the unmistakable highlights of the SHGBLP has been the high recuperation rate. Anyway the spread of SHGs is extremely uneven and is progressively moving in southern states. This provincial irregularity should be redressed and exceptional endeavours in such manner may be made by NABARD. SHGs additionally expected to move on from insignificant suppliers of credit for non-beneficial purposes to advancing smaller scale endeavours. Nonetheless, there is no compelling reason to give loan cost appropriation to the SHGs. Banks do give them credit at a sensible rate of premium (Rangarajan, 2007).

There have been a few institutional developments in money related administrations by including common society. Pursued by the accomplishment of SHG-BLP and Bangladeshi Grameen demonstrate, a significant number of the NGOs have taken to monetary intermediation by receiving inventive conveyance approaches. MFIs have been assuming an imperative job in substituting moneylenders and decreasing the weight on the formal budgetary foundations. With the goal of guaranteeing more noteworthy money related incorporation and expanding the effort of the financial segment, banks have been permitted to utilize the administrations of NGOs, SHGs, MFIs and other common society associations as go-betweens in giving monetary and banking administrations using business facilitator and reporter models. Arrangement for this sort of budgetary intermediation has opened new and different roads to address the issue of money related incorporation by banks (S. Mahendra, operation. cit.).

The SHG-Bank Linkage Program propelled by NABARD in 1992 keeps on being the overwhelming Micro-Finance (MF) show in the nation. It speaks to the association of the financial framework involving general society and private division business banks, Regional Rural banks (RRB), and Co-usable Banks with a few associations in the formal and semiformal areas to encourage the arrangement of money related administrations to countless customers. It is a demonstrated strategy for budgetary consideration, furnishing un-banked rustic customer base with access to formal monetary administrations from the current financial framework. Amid the year 6, 86,408 new SHGs were credited with banks as against 6, 20,109 amid 2005-06, taking the aggregate number of credit connected SHGs to 29, 24,973. The exceptional effort of the program has empowered an expected 409.5 lakh poor family units to access MF from the formal financial framework as on 31 March 2007, enrolling a development of 24.2 percent over the earlier year (NABARD, 2007).

In any case, one must be extremely careful about the endeavours being made by the vested interest groups to substitute the requirement for development of formal financial structure to the up to this point un-banked regions with SHGs and NGOs, where grievances of high loan fees charged from extreme borrowers and instances of intimidation are not very immaterial (Mitra, 2007).

The Reserve Bank of India has identified extensive gaps in the interest and supply of credit to poor people and proposes the dire need to enlarge the degree, effort and size of money related administrations to cover the un-achieved masses. Evaluations uncover that the credit support for poor family units in India is of the request of Rs.450,000 crore. Some small scale level investigations demonstrate that the poor still keep on relying upon casual wellsprings of credit, up to 60 percent of the family unit requests. These activities, which were begun as an effort program, planned to advance thrift and credit as well as made huge commitment towards strengthening country ladies (The Hindu Business Line, 2007).

Micro finance still assumes an modestrole in India. At the All India Level under 5 percent of poor rural family units approach microfinance funds (when contrasted with 65 percent in Bangladesh) with critical variety exists over the states (Basu and Srivastava, 2005).

There is skewed development of SHGs over the regions. The year 2006-07 saw the spread of the MF program in resource poor areas of the nation while showing a marked move from its underlying fixation in the southern region. The aggregate offer of non southern areas ascended from 29 percent as of March 2001 to 48 percent as of March 2007. This is mostly a result of the essence of the expansive number of NGOs working in the South Region.

Table 2: Growth of Credit Linkage of SHGs- Regional Spread

Region	Number of SHGs Credit Linked			
	2000-01	Cumulative	2006-07	Cumulative
Northern	4,221	9,012	48,921	1,82,018
North Eastern	160	477	29,237	91,754
Eastern	11,057	22,252	1,31,530	5,25,881
Central	8,631	28,851	64,814	3,32,729
Western	6,911	15,543	1,04,193	2,70,447
Southern	1,09,218	1,87,690	3,07,713	15,22,144
Total	1,40,198	2,63,825	6,86,408	29,24,973

Table 3: Region Wise Spread of SHG-BLP Up to 31'st March 2006

REGION	Percentage
SOUTHERN REGION	58
NORTHERN REGION	5
NORTH EASTERN REGION	2
EASTERN REGION	17
CENTRAL REGION	12
WESTERN REGION	6

Source: NABARD Annual Report 2005-06

Khandker, while evaluating the effects of small scale funds on reserve funds and borrowings found that micro credit increases automatic investment funds, yet additionally actuates wilful investment funds (Khandker, 1998). Aside from monetary administrations Micro finance Institutions (MFIs), engaged with giving, preparing and conferring education. Hence smaller scale funds today are treated as formative apparatus (Ledgerwood Jonna, 2000) Insurance is another part of small scale money, which has been joint effort with microfinance generally. Since microfinance bundles are helpful for small savers, MFIs include Insurance in order to suit the needs of poor, who are frequently rejected from such money related facilities.

Amid the most recent few decades there has been a profile development of voluntary associations in India. The primary drivers for such expansion are; the expansion in the quantity of individuals underneath the poverty line, the expansion in the stream of assets for this sector from different sources and the expansion in the quantity of unemployed in the nation. From the above depiction it could be expressed here that, arrangement of SHGs in country regions through NGOs has aroused a new desire for change and advancement in the status and job of women and poor, who are generally weak and underprivileged individuals from the general populace. Presently they can develop financially and socially as individuals have additionally acknowledged the changed employment scenario of the women and more often than not they are strong to them. Likewise they can get monetary help from women society, which were unrealistic previously (Patil, 2006).

Table 3 above unmistakably demonstrates that there are tremendous credit varieties among the areas. Among the locales, the southern zone is the best area in financing SHGs. According to the 2006-06 NABARD Report in the southern area 856,769.21 million rupees were distributed among the SHGs. By that the execution of eastern zone, central zone and western zone is moderate and the credit dispersed to the areas is 93542.04, 80500.85 and 52513.95 million rupees individually. The northern and north east areas are similarly poor and they have disseminated 39844.13 and 16569.97 million rupees individually. While considering the quantity of gatherings the local southern, focal district, eastern areas have enlisted more SHGs.

There is, at present, a high level of fixation in the southern states with only two states, Andhra Pradesh and Tamil Nadu representing more than 66 percent of the SHGs getting advances through bank linkage, with the distribution in Andhra Pradesh being almost 53 percent of all out SHGs (March 2005). These states have a background marked by women entrepreneurs, more elevated amounts of education and solid agreeable foundations. SHG-bank linkage has not up 'til now had an effect in the poverty belt of the northern, central and eastern zones.

3.1.4: *So is it a lost cause?*

It is becoming progressively clear that tackling financial exclusion will require a comprehensive methodology with respect to the banks in making mindfulness about monetary items, instruction, and guidance on cash the executives, obligation directing, reserve funds and moderate credit. The banks would need to advance explicit techniques to extend the effort of their administrations so as to advance monetary consideration. One of the manners by which this can be accomplished in a savvy way is through fashioning linkages with microfinance establishments and neighbourhood networks. Banks should give wide exposure to the office of no nonsense record. Innovation can be a truly important apparatus in giving access to banking items in remote regions. As indicated by Prof. M.S. Swaminanthan, the prominent rural researcher, *"SHGs, will be that as it may, become feasible just on the off chance that they have in reverse linkages with innovation and credit and forward linkages with handling and advertising associations"* (Swaminanthan, 2006). ATMs money apportioning machines can be changed appropriately to make them easy to use for individuals who are unskilled, uneducated or don't know English. The banks need to upgrade their business procedures to consolidate explicit designs to advance monetary incorporation of low pay aggregate treating it both as a business open door just as a corporate social obligation. They need to make utilization of every single accessible asset including innovation and ability accessible with them just as the MFIs and NGOs. NGOs have assumed an estimable job in advancing SHGs and connecting them with banks. NGOs, being nearby initiators with their low assets, are thinking that it's hard to extend in different regions and areas. There is, subsequently, a need to advance a motivator bundle which ought to inspire these NGOs to expand into others in reverse zones.

Our financial framework must be set up to arrangement with the chances of higher development, and the difficulties of guaranteeing progressively impartial development. In managing the requirements of country endeavours and of little and medium undertakings in urban regions, banks need to search for new conveyance instruments. These must conserve on exchange costs and give better access to the presently under-served. To serve new provincial credit needs, imaginative channels for credit conveyance should be found. A key necessity of more prominent *"money related consideration"* would be a decrease of exchange costs. Till now, micro financing has been a hazy area in the finance part as the present laws permit just the elements listed with RBI to raise stores and loaning exercises. In perspective on the rising micro-financing exercises in the nation, a need has been felt to manage the unregulated business in this part and furthermore give lawful structure to encourage the credit stream in rustic zones (Tiwari, 2006). The Micro Financial Sector (Development and Regulation) Bill 2007 has been postponed in the Parliament (The Hindu Business Line, March 2007).3 MFIs dread that guideline may smother development, yet experts state that it is essential to put them under checking (Patnaik, 2006). Micro-protection is a key component in the monetary administrations bundle for individuals at the base of the pyramid. The poor face a greater number of dangers than the wealthy. It is progressively certain that micro-protection needs a further push and direction from the Regulator just as the Government.

3.2: Microfinance as an important tool for women empowerment:

3.2.1: *Why should the focus be on Women?*

Global guide contributors, governments, researchers, and other improvement specialists have given much consideration to microfinance as a system equipped for achieving women and including them in the advancement procedure. The microfinance business has made incredible steps toward recognizing hindrances to women's entrance to monetary administrations and creating approaches to conquer those boundaries. A 2001 study by the Special Unit on Microfinance of the United Nations Capital Development Fund (SUM/UNCDF) of 29 microfinance foundations uncovered that around 60 percent of these establishments' customers were women. Six of the 29 concentrated altogether on women.

Among the rest of the 23 blended sex programs, 52 percent of customers were women. The examination additionally appeared, be that as it may, that those projects offering just individual credits or generally high least advance sums would in general have lower rates of women customers. These discoveries insist the significance of planning suitable items for women.

In the U.S. for example, as per USAID's yearly Microenterprise Results Report for 2000, around 70 percent of USAID-upheld MFIs' customers were women. Significant variety among the areas was seen, nonetheless, with rates of women customers going from 27 percent in the Near East to 87 percent in Asia. In Eastern Europe, where USAID has customarily upheld singular loaning programs, the level of women customers dropped as low as 48 percent in 1999 preceding ascending to 54 percent in 2000, when USAID started to help more gathering loaning programs offering littler credits. Despite the fact that the UNCDF thought about finding that bigger projects would in general have lower rates of women customers, information gathered by the Microcredit Summit Campaign found no measurably huge relationship between the quantity of extremely poor customers served by every organization and the level of those customers who were women.

Microfinance organizations around the globe have been very imaginative in creating items and administrations that keep away from obstructions that have generally shielded women from getting to formal money related administrations, for example, security prerequisites, male or salaried underwriter necessities, documentation necessities, social boundaries, restricted versatility, and proficiency. All things considered, in various nations and regions few or no establishments offer monetary administrations under terms and conditions that are ideal to women. Together, these discoveries affirm that the sort of items offered, their states of access, and the conveyance of an establishment's portfolio among various items and administrations influence women's entrance to money related administrations. They likewise recommend considerably more should be possible to serve poor women in certain social and financial settings.

Should MFIs care about women empowerment?

"Empowerment of women and gender balance are essentials for accomplishing political, social, monetary, social, and natural security among all people groups."

As this announcement from the Fourth United Nations World Conference on Women and a significant part of the proof introduced so far in this paper have appeared, women's empowerment is a basic piece of reasonable advancement. However microfinance's incredible potential to engage poor women to a substantial degree regularly goes undiscovered. Despite the fact that reviews demonstrate that microfinance can and empowers women, it can possibly enable some increasingly, significantly more extraordinarily.

Objection to a Focus on Empowering Women

Given the support that numerous contributors and specialists have extended for the empowering capability of microfinance, for what reason are numerous MFIs hesitant to concentrate on women's empowerment when structuring their frameworks and projects? This basically comes from the conviction that empowerment will happen normally because of a decent microfinance program and the worry that focusing on empowerment will preoccupy MFIs and their supervisors from running their establishments economically. It is therefore needed to conduct study in these matters to effectively deal with the concern.

3.2.2: Does Access to Credit Automatically Leads to Empowerment?

The essential hypothesis is that microfinance engages women by placing capital in their grasp and enabling them to win an autonomous pay and contribute monetarily to their family units and community. This financial empowerment is required to create expanded confidence, regard, and different types of empowerment for women recipients.

Contribution in fruitful salary producing exercises ought to convert into more noteworthy control and empowerment. Closer examination demonstrates us, notwithstanding, that this condition may not generally remain constant and that lack of concern in these presumptions can lead MFIs to disregard the two chances to enable women all the more significantly and disappointments in empowerment.

The capacity of a woman to change her life through access to money related administrations relies upon numerous components—some of them connected to her individual circumstance and capacities, and others subordinate upon her condition and the status of women as a gathering. Control of capital is just a single element of the complex and consistently changing procedure by which the cycles of neediness and feebleness recreate themselves. Women additionally face inconveniences in getting to data, informal communities, and different assets they have to prevail in business and throughout everyday life. Just by assessing the necessities of women will a MFI have the capacity to augment its empowerment potential.

3.2.3: *The SHG revolution- changing lives:*

While no authoritative date has been resolved for the real origination and spread of SHGs, the act of little groups of rural and urban individuals banding together to frame an investment funds and credit association is entrenched in India. In the beginning times, NGOs assumed a significant job in improving the SHG demonstration and in actualizing the model to build up the procedure completely. During the 1980s, arrangement producers paid heed and worked with improvement associations and financiers to talk about the likelihood of advancing these funds and credit gatherings. Their endeavours and the straightforwardness of SHGs spread the development the nation over. State governments built up rotating advanced finances which were utilized to support SHGs.

By the 1990s, SHGs were seen by state governments and NGOs to be something beyond a money related intermediation yet as a typical premium gathering, taking a shot at different worries too. The plan of SHGs included social and political issues too.

The spread of SHGs drove likewise to the arrangement of SHG Federations which are a progressively refined type of association that include a few SHGs shaping into Village Organizations (VO)/Cluster Federations and afterward eventually into more elevated amount leagues (called as Mandal Samakhya (MS) in AP or SHG Federation by and large). SHG Federations are formal organizations while the SHGs are casual. A significant number of these SHG alliances are enlisted as social orders, shared advantage trusts and commonly helped agreeable social orders. SHG Federations brought about a few key advantages including:

- Stronger political and promotion capacities
- Sharing of learning and encounters
- Economies of scale
- Access to more noteworthy capital

Structure of SHG

A SHG is a gathering of around 10 to 20 individuals, typically women, from a comparative class and district, who meet up to frame investment funds and credit associations. They pooled money related assets to make little enthusiasm bearing advances to their individuals. This procedure makes an ethic that centers around investment funds first. The setting of terms and conditions and bookkeeping of the credit are done in the gathering by assigned individuals.

SHG Federation

As referenced beforehand, SHGs have additionally unified into bigger associations. In Figure 1, a realistic outline appears of a SHG Federation. Commonly, around 15 to 50 SHGs make up a Cluster/VO with it being possible that a couple of delegates from each SHG. Contingent upon topography, a few groups or VOs meet up to shape a zenith body or a

SHG Federations. In Andhra Pradesh, the Village Organizations, SHG Clusters and SHG Federations are enlisted under the Mutually Aided Co-usable Society (MACS) Act 1995.

At the inter and inter branch level, there are between gathering borrowings, exchange of thoughts, sharing of expenses and discourse of normal interests. There are regularly different subcommittees that manage an assortment of issues including credit accumulations, bookkeeping and social issues.

As effectively depicted, SHG Federations have exhibited some key advantages to SHGs because of their more noteworthy scale. Progressively, SHG Federations are being viewed as a key interface with the SHG development as a result of their formal enlistment under the MACS and acknowledgment from brokers. In any case, notwithstanding the advantages of SHG Federations, there are a few downsides, or requirements, that ought to be noted.

A SHG Federation is a formal gathering of casual regular intrigue gatherings. Because of its somewhat casual individuals, there are inward requirements that it faces. Specifically, it has a poor limit with regards to self-administration, normal to low quality administrators and frameworks and procedures are poorly characterized. Further, there is noteworthy monetary expense to arranging and enlisting a SHG Federation which has been assessed to be about Rs 7,000 for each SHG part. To connect these inward imperatives requires sharp outside help and there are not many great quality NGOs to give this help to a prospering number of SHG Federations.

SHG Bank Linkage

A most remarkable achievement in the SHG development was when NABARD propelled the pilot period of the SHG Bank Linkage program in February 1992. This was the principal occurrence in the development SHGs that were directly financed by a commercial bank. The casual thrift and credit gatherings of the poor were perceived as bankable customers. Before long, the RBI exhorted commercial banks to consider lending to SHGs as a major aspect of their regulated credit tasks therefore making SHG Bank Linkage.

The connecting of SHGs with the financial institutions was useful for the two sides. The banks had the capacity to take advantage of an expansive market, to be specific the low-salary households, exchanges costs were low and reimbursement rates were high. The SHGs had the capacity to scale up their activities with additional financing and they approached more credit items.

A study in 2003 by APMAS examined certain aspects of a SHG – bank linkage in Andhra Pradesh covering an example of 400 bank connected SHGs. The investigation unmistakably showed that the reimbursement rates were high and that the bank linkage made a difference in the lives of the SHG individuals. Notwithstanding, the study likewise called attention to specific issues that require consideration. These incorporate ampleness of advance size, auspiciousness of credit and furthermore the requirement for branch administrator or the advertiser undertaking a rating before the SHG is bank connected. Following were the significant discoveries of the study:

- Average Savings per SHG – Rs. 23,000, normal advance size Rs. 31,000.
- 50% of SHGs practice level with dispersion of bank advance.
- Only half SHGs felt that the credit estimate was satisfactory and 54% considered SHGs were first time connected.
- 69% of SHGs got RLF, some got from different sources.
- It takes over four months for a SHG to get a bank credit.
- No post linkage followed up by investors and others.
- 66% of bank connected SHGs are an evaluation according to CRI.
- Only 22% of bank connected gatherings are evaluated by investors, and so on.
- IIdle store of bank connected SHGs normal – Rs. 5,300
- Leaders are overwhelmed and have 30% advance on them.
- 12% SHG default to banks – reimbursement issue.
- 10% SHGs detailed that they were compelled to take advance.
- High level of SHGs take an interest in Government Programs.

- Bankers frame of mind is as yet an issue.

State of SHG- an unorganised house

Financial Management:

The money related administration of SHGs has been observed to run from weak to average. In particular, internal controls at SHGs and SHG Federations are deficient. Internal controls refers to the frameworks and procedures that deal with the everyday exchange stream and guarantee that jobs and duties are characterized and executed to defend resources. Field ponders have shown that these frameworks and procedures have been badly characterized and poorly executed by individuals.

Notwithstanding internal controls, how SHGs are dealing with their money streams is particularly vital. Since SHGs are getting to outside borrowings through SHG Bank Linkage and after that loans these assets to its individuals, there have been instances of poor income of the executives to reimburse obligations remotely as well as inside. The danger of overleveraging SHGs is high.

Governance:

Since SHGs are a causal association and a SHG Federation is an arrangement of casual gatherings, there is poor administration and the limit of the individuals to institute great administration is feeble. The individuals from SHGs don't have much involvement with building up formalized checking and audit works or following legitimate guidelines. With the developing size of the credits being made to SHGs, a solid administration framework is expected to guarantee that there is responsibility.

Human Resources:

While the accomplishments of the women individuals to frame basic intrigue gatherings to help themselves is wonderful, there is far to go to assemble the limits of the staff of SHGs. The job of NGOs to offer help is basic to numerous SHGs examples of overcoming adversity. The help required extents from accounting and bookkeeping, hierarchical structure, administration and different territories.

Impact of SHG- a Comprehensive Overview

With the structure and model of SHGs and SHG Bank Linkage settled, the nature of the effects of SHGs can be all the more intently inspected and assessed. The most recent distributed appraisals from NABARD express that, to date of March 31, 2005, 1.6 million SHGs have profited by around Rs 69 billion in financing (NABARD, 2005). There is no uncertainty that there has been a more prominent effort of monetary administrations to the poor through SHGs. Obviously the effort has been great in South India. Be that as it may, their effort has been restricted in the remainder of the nation. Notwithstanding the monetary investigation of SHGs, the non-money related regions, for example, standardized savings and gender elements are additionally affected by the SHG Movement. Without a doubt, destitution decrease is substantially less an issue of numbers but instead thoughts and ideas. Coming up next is an examination of the non-money related effect of SHGs.

Political

Political commitment incorporates dynamic contribution by SHGs in government including neighbourhood congregations, Lok Sabha or Panchayati Raj Institutions (PRIs) .One of the key advantages of SHGs is women's strengthening and this can be seen with the quantity of women associated with open issues. While the quantity of women really engaged with legislative issues is still exceptionally low, inquire about has demonstrated that of those women that represent decisions, over 70% have won their seat . Furthermore, the female commitment to common issues ranges from issue of apportion cards, laying of pukka streets, working of school, guaranteeing arrangements in empty positions in schools and wellbeing focuses, recuperation of stream bank lands from encroachers and laying of drinking water channels. As referenced, the quantity of women associated with governmental issues is low. However, the pattern is unquestionably climbing. A minor 5 years back, the probability of women challenging panchayat decisions was very low. Their quality today is influencing the impression of women and their job in the political field. They are being perceived as a vital gathering with genuine concerns. The job of SHGs is both as a motivation and as a financer. Ruined women create more noteworthy language and monetary aptitudes through the SHG which gives the structure squares to larger amounts of certainty to connect with the world. Additionally, the SHG some of the time finances the battle of its individuals that represent decisions. SHGs engage its individuals as well as employ an amazing political job as a gathering too. At nearby town gatherings, the pioneers of SHGs are frequently welcomed to visit and speak.

Social Harmony

Broadly characterized, social harmony includes the balance and uprightness of connections between various social gatherings. To outline the accompanying investigation, SHGs regularly comprises of the accompanying social gatherings:

- Schedule Caste (SC)
- Scheduled Tribe (ST)
- Minorities (MN)
- Backward Caste (BC)
- Other Caste (OC)

The creation of SHGs are some of the time only one specific social gathering or a blend. The effect of SHGs on social harmony has additionally been blended. While it has been seen that gatherings with blended participation had amassed pioneers that originated from an assortment of the social gatherings. In most cases, bunches pioneers were only from the prevailing social gatherings' class. This exhibits an absence of equity and solidarity crosswise over standing divisions. Given the generally youthful history of SHGs, it is not out of the ordinary that their effect on crossing over hundreds of years old divisions would be moderate.

Social Justice

Social justice is the presence of good and moral ethics in territories that are verifiably embodied within poor and downtrodden traditions. There have been a few events of SHGs settling debate among individuals and the community on the whole. These cases include engaging lawful activity, discretion, separation and others. While there has for quite some time been question goals systems in cities, in the past it was constrained by men. Presently, there are cases of women, SHG individuals, being associated with settling questions. Regardless of whether the women are working for their very own advantages or for the situation for justicevaries, regardless SHGs' effect on the political field is surely being seen likewise in social justice, yet in a moderate and developmental way.

Community

Being a gathering based association of individuals from comparable standing and topography, the community assets that are shared by are influenced by the SHG. Late examination has demonstrated that the effect that SHGs have on the network everywhere have been minor. There have been not many occurrences of noteworthy commitments from SHGs to training, family arranging, annihilation of kid work and cleanliness. To translate these discoveries further it ought to be noticed that such community issues are regularly extensive money related duties which SHGs essentially don't have the ability to bear. Likewise, of the few cases where there have been critical commitments from the SHGs to the community, the SHG exhibited a reasonably influential position and revitalized the help of the whole town. This exhibits given the chance, SHGs, expecting they have the limit, can go about as a medium of community improvement.

Livelihoods

Livelihoods, which means a people's financial movement, is a zone that is imperatively critical to SHGs. The advances that SHG individuals get are proposed to improve their vocations so they can get more noteworthy and increasingly steadier money streams. In provincial zones, employment extends from horticulture cultivating, creature farming, dairy and different merchandise and ventures exercises. Experience has demonstrated that SHGs have had improved employments to the degree of giving the utilizing expected to begin a venture. Nonetheless, the meditations to present new jobs or refine existing ones that could yield better monetary outcomes were finished by outer offices.

3.3: Agriculture Finance and Microfinance Institutions:

Agriculture added to 23 percent of India's GDP in the year 2003 which is a vast division of GDP by world principles. Agribusiness is an essential employment for a large number of families in India. Approximately 60 percent of India's families, or around 600 million individuals rely upon agriculture for their job. Reliance on farming for business in India is significantly higher. 76.1% of the country workforce relies upon agribusiness.

One more element of the issue is guaranteeing maintainability of an extensive number of family units relying upon agriculture with normal land holding size under two hectares. The National Sample Survey information data on land holding distribution for 1992-93 demonstrates that 74.1 percent of the families had a land holding under two hectares.

Agricultural Finance can be comprehensively arranged into:

- Crop credit
- Term advance for land and water assets improvement, motorization of farming and yield expansion, for example, manor, cultivation.
- Post harvest speculation on capacity, exchanging, preparing and transport.

In the course of the most recent three decades cultivating has turned out to be capital serious. The utilization of information sources and cost of data sources have expanded. The offer of bought inputs (manures, pesticides, power, diesel and water system) expanded from 39 percent in 1970-71 to 87 percent in 1995-96. Subsequently, rancher's credit needs and reliance on formal and casual credit offices has expanded.

The Reserve Bank of India and the Government of India have attempted cognizant endeavours to give money related administrations to the country families. Nationalization of 27 business banks, foundation of 197 Regional Rural Banks and the worry to resuscitate agreeable credit structure are markers of the Governments' intention to give monetary administrations the cultivating and non cultivating families in the rustic regions. In excess of 150,000 rural credit outlets were built up and the populace overhauled per provincial credit outlet is 5000 for every branch, an easily sensible dimension.

However, Commercial banks, Regional Rural Banks and registered credit establishments have experienced significant issues of low or negative net edges, abnormal state of overdues (from 20-half, contingent upon locale and year) prompting 10-20% non-performing resources collecting on the bank's books. They are neither ready to meet the developing credit needs nor the nature of money related administrations presently being given by them is palatable. Thus it creates the impression that smaller scale money establishments (MFIs) can venture in to fulfil the expanding need for provincial credit. In any case, it is difficult. Horticulture is dangerous because of vulnerability of precipitation, with in excess of 70 percent ranchers still occupied with downpour sustained cultivating and changes in market costs. Additionally, MFIs have restricted involvement in financing farming. At long last, just financing isn't sufficient and a scope of help administrations are required.

Agricultural Lending by MFIs –Problems

The present loaning of MFIs is for the most part towards landless family units and the advances are to a great extent given for trivial exchanging and little animal creation. All around infrequently are MFIs occupied with loaning for horticulture and when they do, it is restricted to credits for yield creation to peripheral and little ranchers. Advances are basically never given by MFIs for long haul speculations on creating land, water, power and post gathering framework are to some degree made by the saved money with the Government and other improvement offices. MFIs don't regularly do farming loaning for the accompanying reasons:

- The high nearness of nationalized business banks, provincial country banks and credit cooperatives, which are all claimed or constrained by the legislature, has prompted a circumstance where there is no institutional space for MFIs in rural loaning.
- The administration control likewise converts into standards, with banks ordered to loan at least 16 percent of their complete advances to agribusiness. It additionally prompts misleadingly low financing costs (at present 9 percent for each annum, or around 200 premise indicates above loaning rates AAA companies), with no thought of expense of assets, working expenses and hazard. MFIs can't support themselves at these rates.
- Poverty (read landless) centre is one of the causes. Most MFIs were built up to stretch out credit to poor people and in provincial regions, the less fortunate family

units are landless families. at that point turns into a paradigm for determination of borrowers and it naturally blocks ranchers. For instance, all Grameen Bank replicators utilize the paradigm that if a family unit claims more than 0.5 sections of land (0.2 hectare) of land, it can't turn into a part.

- Seasonality is another vital purpose behind MFIs not giving yield credits. Since the ranchers all need cash at almost a similar time for sowing the yield, it places crest requests on MFIs which they are not ready to activate.
- Lumpy reimbursements are another reason. MFIs are commonly acquainted with making credit s with week after week or month to month reimbursement plans. In rural advances, since reimbursement is unimaginable till the yield is gathered and sold, the normal technique for gathering week by week or month to month reimbursement does not work.
- High co-variation hazard because of climate and vermin assaults is another reason. A disappointment in precipitation, unseasonal downpours, twisters, hailstorms, high temperature spells, and moreover, bug assaults, influence crops unfavourably and sway every one of the ranchers in a locale. Since MFIs work in geologically minimized territories, they can be seriously influenced by the high co-variation hazard that crop credit borrowers face.
- Lack of commonality is another critical reason and this turns into a chicken and egg issue for most MFIs to get into horticultural loaning.

BASIX Model:

BASIX has pioneered in the field of agriculture finance through its. Joint Liability Groups (JLGs). BASIX broadly utilizes Joint Liability Groups (JLGs) of country makers to commonly promise each other's credits. This technique utilizes the rule of shared assurance by a gathering of borrowers for one another's advances. Bank for Agriculture and Agricultural Cooperatives (BAAC), Thailand utilizes this technique widely. BASIX presented this idea in India. Under this technique:

Five to six individual borrowers are approached to shape into a gathering. The gathering is framed by their shared decision. The advancing establishment does not partake in the gathering development. In contrast to the Grameen or SHG strategy, where the gatherings meet routinely, with critical accentuation on the gathering forms, in this technique the gatherings meet just when required. Aside from ensuring the advances to one another, and in this manner presenting peer observing, there are no other huge gathering forms included.

Thegroup individuals are of a comparable financial profile with not in excess of two relatives. Every one of the individuals from the gathering commonly ensure the credits given to different individuals from the gathering and remain mutually and severally in charge of the reimbursement of the considerable number of advances. Credits are given to singular borrowers. Credit adds up to various individuals from a JLG can shift. BASIX gathers a money security equivalent to 10 percent of the advance measure of every borrower, from all the individual borrowers. This sum is returned to the individual borrowers just when every one of them has paid back the sums due. Rehash credit isn't authorized except if every one of them five reimburse their prior advance

The following are the fundamental purposes for advancement of JLG ideas-

- **Ensure self-evaluation of credit recommendations:** JLG makes every one of the individuals evaluate each other's advance recommendations and deny advances to the individuals who are not financially sound and furthermore decrease the sum on the off chance that a few ranchers have made proposition which the others figure they will be unable to make great utilization of, before prescribing to BASIX for advance.

- **Ensure appropriate use of loan availed from BASIX:** Since every one of the individuals have assumed the liability for reimbursements, the individuals will in general observe that each part utilizes the advance as proposed. Data about redirection comes to BASIX from numerous channels and remedial moves can be made early with the goal that the recuperation happens in a smooth way.

- **Group risk and companion weight:** All the gathering individuals assume liability together or and severally against each credit reached out to each individual. Since every one of the individuals are associated with the comparative action and liable to have money streams amid a similar period, the recuperation of advances ends up smooth. JLG with individuals originating from a similar family are not successful in applying weight. The joint risk is a substitute for co-commitment or guarantee.

• **Ensures normal advantages to individuals:** Since individuals structure into casual gatherings there is a probability that they infer benefits like sharing encounters, securing materials in a mass amount at lower value, advertise the product in mass to get benefits as far as transportation and cost. BASIX can likewise encourage specialized help to individuals from JLG in a viable way.

• **Less transaction cost:** In JLG approach, the exchange cost to the organization and borrowers is less, when contrasted with unadulterated individual loaning.

As on March 31, 2004, BASIX has built up more than 6000 JLGs including 2500 for yield advances and 3500 for non-ranch advances. The yield advance item is intended for reimbursement of principal in a couple of single amount portions, commonly a month after the collect is normal. This gives the ranchers time to showcase their produce.

BASIX has kept up a high portfolio nature of agricultural advances. The on-time reimbursement rate fluctuates from as high as 100 percent in certain years and branches to as low as 85 percent in others. The higher numbers are recorded in great precipitation years and in branches where the precipitation is more than 800-1000 mm and all the more consistently appropriated. The lower numbers are recorded in dry spell years and in branches situated in extreme dry season inclined locales, for example, the Rayalaseema area of southern Andhra Pradesh (AP). Indeed, even in these territories, ranchers reimburse their past due credits amid the next year, when they get a decent harvest. Along these lines the long haul advance misfortune is under 3 percent. This is for the most part contributed by districts which have seen downpour disappointment for three progressive years, for example, Anantapur in AP. At times, the defaults were additionally brought about by erroneous determination of JLG individuals and over-financing, contrasted with what the ranchers could utilize, prompting redirection. Regardless of this, the general involvement of 97 percent reimbursement for horticultural credits is unmatched by any formal money related organization in India.

The way forward

Agriculture being the significant employment in country territories in creating nations, MFIs need to get into agrarian financing beggarly. This is even more valid as the financial framework can't sufficiently achieve ranchers and the agreeable credit framework in a great deal of nations is about old.

- For MFIs to be effective in rural financing, to be through MFIs, requires an adjustment in the methodology of MFIs. MFIs should figure out how to plan new monetary items and get acclimated with reimbursements at gathering time, not week after week or month to month. They should figure out how to try different things with new channels, for example, ranchers' gatherings, input providers and yield purchasers. They should devise techniques for hazard alleviation, for example, climate based yield protection and the utilization of ware subordinates.
- MFIs should adopt a credit in addition to strategy. So as to guarantee recuperation of credits MFIs need to encourage the ranchers in expanding their profitability and lessen the dangers. MFIs should energize nearby esteem expansion through loaning to agro processing ventures, a large number of which may not be *"small scale"*.
- MFIs should figure out how to improve the ranchers' ability to show signs of improvement cost for their produce by using new items, for example, stockroom receipts and ware subsidiaries.
- Both of the above require sorting out ranchers into gatherings/coops and an all around structured institutional improvement bolster administration. Sorting out network based organizations to assume this liability for their individuals and limit working of the establishments occupied with employment advancement become inescapable.

Just if MFIs can gain the ability to offer these items/administrations should they get into farming financing. In any case, on the off chance that they do, a colossal business opportunity anticipates them.

3.4: Microinsurance as a micro finance product:

Numerous households in our country are particularly defenceless against wellbeing dangers. Financing sudden welfare costs is difficult and can push family units into destitution. For example, Peters et al gauge that a fourth of all Indians that are hospitalized fall underneath the poverty line as an outcome. In such a circumstance, the arrangement of medical insurance has tremendous potential yet in addition faces something like two requirements:

1. Giving medical coverage to poor families regularly in provincial zones customarily rejected from medicinal services is a test. Notwithstanding unfriendly choices and good danger concerns, the exchange's expenses of such micro-insurance can be especially high.
2. Medical coverage independent from anyone else may not be sufficient insurance against sick wellbeing. There is impressive proof that men and women differ in their wellbeing looking for conduct, for example by they way they see their manifestations and make an interpretation of that observation into treatment dependent on the social and social setting These gender disparities in wellbeing looking for are identified with women empowerment inside the family unit (Basu , Bloom et).

One promising way to deal with medical coverage to the poor is in organization with micro finance establishments. Such projects can save money on exchange costs by utilizing their current rustic systems. Further, since an objective of micro finance is to enable ladies, we may expect that micro finance can lessen the sex difference in wellbeing chasing. Numerous noticeable micro finance foundations in South Asia over medical insurance schemes related to their credits (Roth et al). Regardless of its potential in any case, this ongoing advancement in micro-insurance has been little studied.

Institutional Background

The Indian government has played a proactive job in stretching out micro insurance to underserved territories. Since 2002; the legislature has required private insurance firms to sell a small amount of their insurance arrangements in rural areas and imposed fines if the firms did not comply. Therefore a few private insurance firms have set up organizations with micro finance establishments (MFIs) to meet the legislature forced amounts (Roth et al,) In these courses of action, the insurance firms subcontracts the selling of insurance and the preparing of cases to the MFI. The insurance firms bear the hazard; the MFI assumes the regulatory expenses of conveying insurance in country territories.

The medical insurance program was begun in May 2005 and was considerably reached out in May 2006: All borrowers between the ages of 18 and 55 who took credits after May 1; 2005 were required to pay a medical coverage premium in return for unobtrusive hospitalization costs. The maximum benefit levels were fixed Rs 1500 for as long as 5 days spent at the emergency clinic, Rs. 10,000 for basic ailment and Rs. 25;000 for lasting mishap (the exchange rate was 45 rupees for every dollar). The yearly premium was fixed paying little heed to borrower age, sex or wellbeing history (since the insurance was offered as a groupinitiative).

Beginning May 1, 2006 insurance inclusion was likewise required for life partners of any beneficiaries. At the end of the day, borrowers who took a credit after May 1; 2006 and their mates were both required to convey medical coverage (if they met the age prerequisites). The premium for every individual was Rs. 76 (1:7 US dollars). The benefit levels were unaltered yet inclusion was reached out to

(a) spread certain previous conditions that had been barred at first and

(b) spread first year exceptions.

The MFI disallows a family unit from taking various advances so a spouse or his significant other may take an advance, yet not both. Note that borrower family units are required to buy medical coverage (if they are age qualified). This insurance program isn't available to non-borrower families.

Gender wise pattern in micro insurance coverage

In a 2008 study by Ravi and Rai some important perspectives were brought into the micro insurance coverage scenario. They studied how health insurance and microfinance interact and how gender differences also impact behaviour of claimants and borrower or borrower spouses. They concluded that there is no gender variation in the claimed behaviour of male and female borrowers, however female spouses of male borrowers are much less likely to use health insurance than husbands of female borrowers.

Further they found that spouses who were non-borrowing are in general much less likely to file claims than the spouses who are borrowers. They also find that these variations stem from differences in female literacy across the sectors that the micro finance provider operates in. Their results confirm that either empowered women become borrowers themselves (a selection device) or that microfinance empowers women borrowers (a treatment effect). On the other hand wives of male borrowers lack empowerment by contrast. Another interesting observation was that households that have participated in the microfinance program after the coverage was extended are significantly less likely to file claims than already existing borrower households. There exist both health-seeking and morbidity explanations for these results.

For instance they claim that experience with microfinance finance initiatives may make borrower households better informed and knowledgeable about insurance coverage while on the other hand new loan recipients and their spouses may simply lack this information. It may also be so that recent participants may indeed have lower health risks than already existing borrower households and consequently less affinity with health insurance products, suggesting that adverse selection may be less of a concern in these particular markets. They however leave for future research fuller exploration and comprehensive study on the effect of adverse selection in this insurance market.

CHAPTER 4: Conclusion

4.1: Summary of Research:

After analysis of all the data and after studying various researches on various aspects of micro finances, what can be said about the net effect of the program? The primary findings are that:

- Microfinance has diminished the frequency of neediness through increment in pay, empowered the poor to fabricate resources and along these lines lessen their helplessness.
- It has empowered families that approach it to spend more on instruction than non-customer families. Families taking an interest in the program have revealed better school participation and lower dropout rates.
- It has engaged ladies by upgrading their commitment to family pay, expanding the estimation of their benefits and by and large by giving them better power over choices that influence lives.
- In specific territories it has diminished youngster mortality, improved maternal wellbeing and the capacity of the poor to battle malady through better nourishment, lodging and wellbeing – particularly among ladies and kids.
- It has added to a diminished reliance on casual cash loan specialists and other non-institutional sources.
- It has encouraged noteworthy examination into the arrangement of budgetary administrations for poor people and aided in structure 'limit' at the SHG level.
- Finally it has offered space for various partners to advance, learn and imitate. Thus, a few NGOs have added micro-protection items to their portfolios, two or three organizations have explored different avenues regarding undertaking occupation exercises and grain banks have been effectively incorporated with the SHG show in the eastern locale. SHGs in certain territories have utilized neighbourhood bookkeepers for keeping their books and IT applications are currently being investigated by practically for better MIS, bookkeeping and inward controls.

4.2: Key learnings Given this scale and effect:

What has been the key learning we have derived from this study ?

• The primary point is that the *"poor are bankable"*. Sounds straightforward, but, when we see this in the setting of the attitudinal requirements which characterised financiers on the eve of the linkage program, one understands what a gigantic realizing point this has been. Be that as it may, for this, we would in any case have been in the 'medieval times'.

• The second point is that poor people, composed into SHGs, are prepared and willing to accomplish standard money related foundations, and put money on their part to discover their SHG portfolios 'safe' and 'performing'.

• The third point is that in spite of being contra natural, the poor can and do spare in an assortment of ways and the inventive tackling of such funds is a key plan highlight and achievement factor.

• The fourth point is that fruitful projects are those that bear the cost of chance to partners to add to it alone terms. At the point when this occurs, the odds of achievement duplicate complex. This has been conceivable in the SHG-Bank Linkage Program by virtue of the space given to each accomplice and the collaboration worked in the program between the casual division containing poor people and their SHGs, the semi-formal segment including NGOs, and the formal part involving banks, government and the improvement organizations.

• Yet another learning point has been that when a program is based on existing structures, it uses all qualities. In this way, in light of the fact that the SHG-Bank Linkage Program is based upon the current financial foundation, it has deterred the requirement for the production of another institutional set-up or presentation of a different lawful and administrative system. Since monetary assets are sourced from ordinary financial channels and individuals' reserve funds, the program sidesteps issues identifying with guideline and supervision. In conclusion, since the Group goes about as a guarantee substitute, the model flawlessly addresses the bothersome issue of arrangement of insurance by poor people.

• The last learning point is that national banks, zenith improvement banks and governments have a critical job in making the empowering condition and setting fitting arrangements and intercessions in place which empower fast upscaling of endeavours steady with prudential practices. Be that as it may, for this opportunity, no advancement can occur.

4.3: Challenges:

Regional Imbalance: The main challenge is the skewed conveyance of SHGs crosswise over states. About 60% of the absolute SHG credit linkages in the nation are moved in the southern states. Be that as it may, in states which have bigger offers of poor people, the inclusion is similarly low. The skewed appropriation is ascribed to: • The over passionate help reached out by a portion of the State Governments to the program; • skewed circulation of NGOs and • neighbourhood societies and practices.

From credit to big business: The second test is that having shaped SHGs and having connected them to banks, how might they be actuated to graduate into developed dimensions of big business, how might they be prompted to factor in occupation expansion, how might they increment their entrance to the store network, linkages to the capital market and to suitable creation and preparing innovations. A turn off of this test is the manner by which to address the speculation capital necessities of developed SHGs, which have met their utilization needs and are currently on the edge of taking off into 'big business'. The SHG-Bank Linkage Program needs to introspect whether it is adequate for SHGs to just meet the budgetary needs of their individuals, or whether there is likewise a further commitment on their part to meet the non-money related prerequisites fundamental for setting up organizations and endeavours. In my view, we should meet both.

Nature of SHGs: The third test is the manner by which to guarantee the nature of SHGs in a situation of exponential development. Because of the quick development of the SHG-Bank Linkage Program, the nature of SHGs has gone under pressure. This is reflected especially in pointers, for example, the poor maintenance of books and records and so on. The decay in the nature of SHGs is clarified by an assortment of variables including: • The meddling association of government offices in advancing gatherings; • lacking long haul impetuses to NGOs for supporting them on a maintainable premise; and • reducing ranges of abilities on part of the SHG individuals in dealing with their gatherings. In my appraisal, a huge monetary venture and specialized help is required for meeting this test.

Effect of SGSY: Imitation is the best type of flattery – yet not generally. The achievement of the program has inspired the Government to obtain its plan and consolidate them in their neediness mitigation program. This is unquestionably welcome yet for the way that the Government's program (SGSY) has an inbuilt appropriation component which will in general draw in linkage gather individuals and cause movement for the most part for the wrong reasons. Additionally, micro dimension considers have raised concerns in regards to the procedure through which bunches are framed under the SGSY and have remarked that as a rule individuals are actuated to meet up not for self improvement, however for endowment. I would encourage a discussion on this, as there is a need to determine the strain among SGSY and linkage program gatherings. One way out of the impasse is to place the appropriation component in the SGSY program with NABARD for best usage of backhanded sponsorship support for purposes, for example, sensitisation, limit building, introduction visits to effective models, and so forth.

Role ofState Governments: A subordinate of the above is maybe the need to stretch out the above discussion to comprehend and characterize the job of the state Governments versus the linkage program. Let's get straight to the point: from one viewpoint, the program would not have accomplished its effort and scale, yet for the proactive association of the state Governments; then again, many state Governments have been enthusiastic to accomplish scale and access without a basic appraisal of the labour and ranges of abilities accessible with them for framing and supporting gatherings and handholding and keeping up them over time.

Emergence of federations: The development of SHG Federations has hurled another test. From one viewpoint, such leagues speak to the total of aggregate haggling power, economies of scale, and are a discussion for tending to social and monetary issues; then again there is proof to demonstrate that each extra level, notwithstanding expanding costs, will in general debilitate the primaries. There is a need to examine the accepted procedures in the zone and develop an arrangement by gaining from them. Before proceeding onward, let me utilize this chance to sound two notes of alert. One, that while we are playful about the achievement accomplished and the potential that the SHG-Bank Linkage Program offers, we should be practical and not to see this instrument as a one-stop answer for every single formative issue. SHGs are nearby organizations having an inborn potential to blossom as a decentralized stage for improvement, yet different desires could over-burden them and hinder their long haul maintainability. Second, in concentrating on the poor let us not overlook the rest. The rustic division is an expansive field and even today the requirement for good old-fashioned country credit and interest in agribusiness and framework proceeds with a similar thoroughness as yesterday.

4.4: The Road Ahead:

Upon arriving at the conclusion of this project it is clear that the key players are banks as banks, banks as partners in the SHG-Bank Linkage Program and developing MFIs. Banks through their rural branches have played and keep on assuming an imperative job in giving financial services to the poor on an independent platform. Banks need to introspect on the quality and inclusion of these portfolios. Further as key partners in the SHG-Bank Linkage Program, they together with different partners need to take forward the great work they have been doing.

The SHG-Bank Linkage Program has progressed admirably, has made a huge commitment to 'scale' and is on a high development path. Nonetheless, the program is up against numerous difficulties and these should be tended to through properly organized arrangements and methodologies. As far as MFIs are concerned it is perceived that they hold critical potential. Be that as it may, MFIs should be tested to make an expanding commitment to 'scale' predictable with cost, manageability and effectiveness of tasks. Given these and different difficulties installed in the microfinance setting, this gathering has been composed so we would all be able to ponder on the issues included and think of suitable proposals for an arrangement plan.

We are living through a challenging and confident period. However any individual who has worked in the field of development knows the *'highs'* and *'lows'* of working in this segment. Once in a while when we take a view at the tremendous apathy and lack of motivation, the assignments fixed, done halfway or done ineffectively, when we factor in the powers of detachment and existing conditions, when we perceive how slowly things move when in truth they ought to move quickly we feel a feeling of misery – an acknowledgment that at last human undertaking is vulnerable and that the distance among action and accomplishment is without a doubt long.

However when someone takes any initiative it is better to believe in its success rather than on its supposed failure, only then can a society strive hard to make it a success instead of getting demoralised. Failure if MFIs shouldn't come in the way of accepting the try potential of micro finance. On this note of trust in a superior tomorrow and with a feeling of earnest gratefulness for each one of those working in the division – experts and approach producers, specialists and controllers and academicians and activists, this study concludes.

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Certificate of Completion of Project

This is to certify that Mr. Suvroneel Saha (ECUG/038/16), a student of Department of Economics, has submitted the semestral project as part of the B.Sc Economics Honours Course (Sem VI, Paper XVI) titled: "Economics of Travel and Tourism" on 30.06.20.

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ECONOMICS OF TRAVEL & TOURISM

Term paper submitted as a part of a mandatory project work in Semester VI by,

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Date: 30/06/2020

CONTENTS

ABSTRACT

Tourism industry acts as a powerful agent of economic change. It stimulates employment and investment, alters structure of an economy, contribution to foreign exchange earnings and maintains favourable balance of payment. The money spent by the tourists in a country is turned over several ties in process; the total income earned from tourism is a number of times more than actual spending. Marketing and promotion are of vital importance in tourism sector due to the competitiveness of tourism industry both within and between tourism generating nations. It produces a vast employment from highly qualified and trained managers of star hotels to room boys, sales girls and artisans. With its faster growth new horizons of employment opens up for youths in developing countries.

In this paper we will discuss about the positive impact of tourism and negative impact of tourism. Although economic impact of tourism industry development are usually held to balance tourism economic benefits, however negative economic impacts are also apparent and significant which cannot ignored , particularly a likely increase in demand for imported goods once tourists begin to appear, revenue leakages out of the economy, over dependence on tourism and land value inflation.

Keywords: Travel & Tourism, Economy, Impact, Employment, Foreign exchange earnings, Balance of payment, Development, Growth

INTRODUCTION

Travel and tourism, which is one of the world's largest economic sectors creates jobs, drives export, and generates prosperity across the world. The sector comprised of wide range of industries, aims to serve and support domestic, international business and leisure visitors. Companies, large and small, in industries ranging from accommodation and transportation to food and beverage, retail and culture and sports & recreation, all strive to create products and services that bring people together, support communities and celebrate the wonders that our world can offer.

But with development of tourism industry, negative impacts of tourism occur when the level of visitors use is greater than the environment's ability to cope with these uses within acceptable limits to change. Uncontrolled conventional tourism poses potential threat to many. Tourism activities take place in a natural and manmade environment, which is extremely complex. The man made environment consists of economic, social and cultural processes and factors and natural environment is made up of the natural landscapes, climate, flora, and fauna in a certain space.

WHY TRAVEL & TOURISM?

- Travel & tourism have contribution of US $8.8 Trillion to the global economy in 2018 which equates to 10.4% of global GDP.
- The sector grew 3.9% in 2018, faster than the global economy's growth of 3.2%. It outpaced overall economy growth for eight consecutive years.
- Travel & tourism was the second fastest growing sector in 2018, only marginally behind manufacturing, which grew by 4.0.
- Across the world more than 319 million people's jobs are supported by Travel & tourism. This represents 10.0% of all employment, or one in every ten jobs worldwide. This sector has accounted for one in five for all net new jobs crested across the world over past five years.
- Forecasts of WORLD TRAVEL AND TOURISM COUNCIL show that there will be 100million additional jobs created across the world over the next ten years in travel and tourism. This means that one in every four jobs will be created by the sector over the next decade.
- In terms of travel & tourism GDP in 2018, Asia-Pacific was the strongest growing region, followed by Africa. China alone contributed one quarter of global travel & tourism growth last year.
- USA and China remained the largest Travel & tourism GDP in 2018, together accounting for 35.2% of world's total Travel & tourism GDP, followed by Japan, Germany, and UK.
- The world fastest growing countries in terms of travel and tourism GDP are dominated by emerging and developing countries. In effect, Ethiopia (+48.6%), Ecuador (+21.6%), St. Kitts and Newis (+16.8%), Egypt (+16.5%) and Turkey (+15.0%) led the world for Travel & Tourism GDP growth in 2018.

TABLE 1: The characteristics of tourism development stage

Stage	Beginning	Growth	Maturity	Decline
Number of Visitors	Small number of tourists(annually less than 5% of the peak year)	Tourists equal or exceed the residents	Heavy reliance on repeat visitation	No vacationers, but a day trip and weekend trip
Market	Irregular visitation pattern	Well defined tourist market	Frequent change in ownership	Property turnover is high
Attraction and Facilities	Non-visitors attracted by natural features No specific facilities	Natural attraction supplemented by manmade facility Up-to-date facility for visitor accommodation	Well established but no longer fusion Surplus beds available	Tourist facilities disappear Hostels become condominiums, retirement homes or apartments for the elderly
Economic significance of tourism	Little significance to economic and social life of the residents Limited amount of receipts	High contact between locals and tourists Positive and growing travel balance	Capacity level reached; onset of environmental, social, economic problems Rapid growth of tourism imports	Negative travel balance
Involvement of organization	Low	Heavy advertising	Needed new development	Likely increase
Examples	Canadian Arctic Latin America		Costa Brava	Miami Beach

Source: These data were abstracted from Butler (1980); Haywood (1986); Plog (2001); Toh, Khan & Koli

Stages of Gradual Development of Travel & tourism

According to the table 1 given above, travel & tourism can be classified into four stages which are as follows:-

Beginning Stage: Butler (1980) suggested that exploration is characterized by small number of tourists, allocentries and explorers who make individual travel arrangements and follow irregular balance pattern. Tourists can also be expected to be non-local visitors who have been attracted to an area by its unique or considerably different features.

Growth Stage: According to Butler (1980), the growth stage reflects a well defined tourist market area, shaped in part by heavy advertising in tourist generating areas. As this stage progresses, local involvement and control of development decline rapidly, and some locally provided facilities will disappear, being superseded by larger, more elaborate, more up to date facilities provided by external organizations, particularly for visitor accommodation.

Maturity Stage: As the area enters into the maturity stage, the peak number of visitors will have been reached or exceeded, with attendant environment, social and economic problem. The area will be well established but will no longer be in fashion. According to Haywood (1986), at this stage the growth rate of visitors in between -1/2 and +1/2 the standard deviation of annual growth. Natural and genuine cultural attractions will probably have been superseded by imported artificial facilities.

Decline Stage: Butler (1980) describes decline stage in many ways.

Firstly, the area is not able to compete with newer attractions and so faces a declining market, both spatially and numerically.

Secondly, the area no longer appeals to vacationers but is used increasingly for weekend or day trips because it is accessible to large number of people.

Thirdly, the property turnover is high (e.g. major tourist facilities are replaced by non-tourist related structures, as the area moves out of tourism). Hotels become condominiums, convalescent or retirement homes, or conventional apartments, since the allocations of many tourists area make them equally attractive for permanent settlements, particularly for elderly. Then, more tourist facilities disappear as the area becomes less attractive to the tourists and the vialibility of other tourists become more questionable.

TOP 20 LARGEST TRAVEL & TOURISM ECONOMIES, 2018

TABLE 2: TOP 15 LARGEST TRAVEL & TOURISM ECONOMIES, 2018

NAME OF COUNTRY	2018 RANK	2018 T&T CONTRIBUTION TO GDP(US$ BN)	2018 T&T % OF COUNTRY GDP	2018 T&T GDP GROWTH (%)
USA	1	1595	7.8	2.2
CHINA	2	1509	11.0	7.3
JAPAN	3	368	7.4	3.6
GERMANY	4	345	8.6	1.2
UK	5	311	11.0	1.0
ITALY	6	275	13.2	3.2
FRANCE	7	266	9.5	4.1
INDIA	8	247	9.2	6.7
SPAIN	9	211	14.6	2.4
MEXICO	10	209	17.2	2.4
AUSTRALIA	11	154	10.8	3.2
BRAZIL	12	153	8.1	3.1
CANADA	13	111	6.4	2.9
THAILAND	14	110	21.6	6.0
TURKEY	15	96	12.1	15.0
PHILIPPINES	16	81.5	24.7	8.9
RUSSIA	17	78.6	4.8	4.2
AUSTRIA	18	70.4	15.4	3.6
SAUDI ARABIA	19	65.2	9.0	-1.3
HONG KONG	20	63.3	17.4	7.5

SOURCE: World Travel & Tourism Council annual report 2019

ECONOMIC IMPACTS OF TRAVEL & TOURISM

The development of tourism industry led to the development of localities by increasing the income of the people as a result of the increase in the tourist expenditure. Tourism contributes to the development of other sectors of the economy and also encourages the cultural exchange in the locality. As a result the impacts of tourism are varied. Generally they are divided into Economic Impacts, Social & Cultural Impacts and Environmental Impacts. The most important impact created by tourism is upon the economic impact created by tourism is upon the economic condition of the economy. The economic impacts of tourism upon the economy can be classified into positive impacts and negative impacts.

The major positive economic impacts are:-

1. Contribution to GDP
2. Generation of employment
3. Contribution to government revenues
4. Contribution to foreign exchange earnings
5. Balance of payment/ Trade account balance
6. Stimulation of capital investment
7. Contribution to local economies

The major negative economic impacts are:-

1) Inflation
2) Opportunity cost
3) Seasonality
4) Leakage
5) Economic dependency
6) An increased propensity to import
7) Foreign capital investment
8) Displacement effects

POSITIVE IMPACTS OF TRAVEL & TOURISM

1) Contribution to GDP: The contribution of travel &Tourism to GDP in 2018 was USD 2,750.7 billion (3.2% of GDP). The forecast of Travel & Tourism says a rise of contribution to GDP by 3.6% to USD 2,849 billion in 2019. This primarily reflects the economic activity generated by industries such as hotels, travel agents, airlines and other passenger transportation services. The contribution of Travel & Tourism to GDP is expected to grow by 3.6% per annum to USD 4,065 billion (3.5% of GDP) by 2029.

TABLE 3: TRAVEL & TOURISM CONTRIBUTION TO GDP

COUNTRY	2018 T&T CONTRIBUTION TO GDP(US$ BN)	2018 T&T GROWTH (%)	DOMESTIC SPENT,% SHARE OF TOTAL,2018	INTERNATIONAL SPEND, % SHARE OF TOTAL, 2018	LEISURE SPEND, % SHARE OF TOTAL, 2018	BUSINESS SPEND,% SHARE OF TOTAL, 2018
USA	1595	2.2	81.2	18.8	71.3	28.7
CHINA	1509	7.3	85.8	14.2	81.4	18.6
JAPAN	368	3.6	82.5	17.5	68.5	31.5
GERMANY	345	1.2	85.2	14.8	83.1	16.9
UK	311	1.0	84.4	15.6	65.9	34.1
ITALY	275	3.2	76.2	23.8	79.1	20.9
FRANCE	266	4.1	65.7	34.3	80.5	19.5
INDIA	247	6.7	87.2	12.8	94.3	5.2
SPAIN	211	2.4	44.8	55.2	88.5	11.5
MEXICO	209	2.4	85.2	14.8	94.1	5.9
AUSTRALIA	154	3.2	76.1	23.9	84.4	15.6
BRAZIL	153	3.1	93.8	6.2	87.9	12.1
CANADA	111	2.9	76.3	23.7	63.7	36.3
THAILAND	110	6.0	19.8	80.2	90.6	9.4
TURKEY	96	15.0	38.6	61.4	87.4	12.6

(SOURCE: World Travel & Tourism Council annual report 2019)

2) GENERATION OF EMPLOYMENT: Travel & Tourism generated 122,891,000 jobs directly in 2018(3.8% employment) and this is forecast to grow by 2.2% in 2019 to 125,595,000 (3.9% of employment). This includes employment in hotels travel agents, airlines and other passenger transportation services. Jobs in Travel & Tourism particularly support women, youth and other, often marginalized, group of society. Travel & Tourism was a major contribution to net job creation in countries where the sector is particularly important to the economy. In Greece, Portugal and UAE, it created a remarkable 71%, 60% and 47% of all NW jobs respectively.

TABLE 4: TRAVEL & TOURISM EMPLOYMENT

(TOP 10LARGEST COUNTRIES RANKED IN TERMS OF TRAVEL & TOURISM TOTAL CONTRIBUTION TO EMPLOYMENT)

COUNTRY	**REALTIVE TERMS- T&T as % of all jobs**	**Net jobs created by T&T 2018-29 (in 000s)**
1) China	10.3	41,515
2) India	8.1	10,327
3) USA	9.2	2,658
4) Indonesia	10.3	5,530
5) Mexico	17.8	2,728
6) Philippines	20.2	2,250
7) Brazil	7.5	1,316
8) Thailand	15.9	2,240
9) Germany	12.0	127
10) Japan	6.9	408

(SOURCE: Oxford Economics for World Travel & Tourism Council annual report 2019)

3) CONTRIBUTION TO GOVERNMENT REVENUES: The government through the travel & tourism department also collect money in more for reaching and indirect way that are not linked to specific parks or conservative areas. User fees, income tax, tax on sales or rental of recreation equipment, and license fees for activities such as rafting and fishing can provide governments with fund needed to manage natural resources. Such funds are used for overall conservation programs and activities, such as park ranger salaries and park maintenance. Increased retail activity from restaurants and tourists will add state and local sales tax revenue. Lodging tax revenue to the city (or state) should increase since travelers account for virtuality all lodging tax receipts. Increased tax burdens to expand infrastructure and public services will be passed on to property owners through increased property tax.

4) *FOREIGN EXCHANGE EARNINGS:* Tourism industry is an important source of foreign exchange earnings. This has favourable impacts on the Balance of Payment of the country. Foreign Exchange earnings from tourism is the result of consumption expenditure i.e. payments made for goods and services by foreign visitors in the economy from the foreign currency brought by them. The investments on hotels, air transport, basic infrastructure and facilities system contribute to foreign earnings. The tourism industry in India generated about US $100 billion in 2008 and that is expected to increase to US $300 billion in 2020at a 9.6% annual growth rate.

Table 5: Contribution to Foreign Exchange Earnings in India

YEAR	*FOREIGN EXCHANGE EARNINGS IN CRORE*	PERCETAGE CHANGE OVER PREVIOUS YEAR	FOREIGN EXCHANGE EARNINGS(MILLION US$)	*PERCENTAGE CHANGE OVER PREVIOUS YEAR*
2000	15626	20.6	3460	15.0
2001	15083	-3.5	3198	-7.6
2002	15064	-0.1	3103	3.0
2003	20729	37.6	4463	43.8
2004	27944	34.8	6170	38.2
2005	33123	18.5	7493	21.4
2006	39025	17.8	8634	15.2
2007	44360	13.7	10729	24.3
2008	51294	15.6	11832	10.3
2009	53700	4.7	11136	-5.9
2010	64889	20.8	14193	27.5
2011	77591	19.6	16562	16.7
2012	94487	21.8	17737	7.1
2013	107671	14.0	18445	4
2014	123320	14.5	20236	9.7

SOURCE: Ministry of Tourism, Government of India

5) CONTRIBUTION TO BALANCE OF PAYMENT/TRADE ACCOUNT BALANCE: It is very essential to focus on tourism industry. Travel receipts are principally determined by the number of foreign tourists visiting India during the period, social and political environmental of the country in India and abroad, cost conditions and so on. Even though gross receipt from travel and tourism has shown a steady rise, there has been a deceleration in the rate of net receipts. This is because of arising in payment under Balance of Payment account. This could be attributed to the fact that more and more people are taking up foreign travel. The receipts from Travel & tourism in India have shown steady increase from the year 2007 onwards. In the year 2007 Travel and tourism receipts was US$ 2878 million and which rose to US$ 6495million in 2015. Payment on travel and tourism in India was to US$ 858 million in 2007, which rose to US$ 5510 million in the year 2015. Net receipt from travel and tourism in the year 2007 was US$ 2020 million on, which was reduced to US$ 985 million in the year 2015. This is because rise in payments under Balance of Payment account. This could be attributed to the fact that a number of Indians area also taking up foreign travel. (Source: RBI bulletin)

TABLE 6: India's Net Receipts from Travel & Tourism on Balance of Payment

Year	Receipts(million US$)	Payments(million US$)	Net
2007	2878	858	2020
2008	2914	1437	1477
2009	2993	1743	1250
2010	3036	2139	897
2011	3497	2804	693
2012	3137	3014	123
2013	3312	3341	-29
2014	5037	3602	1435
2015	6495	5510	985

Source: RBI Bulletin, various issues

6) CONTRIBUTION TO LOCAL ECONOMIES: Tourism also contributes to the transformation of unknown villages into internationally known places. These known villages were initially characterized by depressed economic activities and initiated by traditional rural focks. Later the introduction of tourism contributes to the international recognition and higher economic development.

7) STIMULATION OF CAPITAL INVESTMENT: Tourism tends to encourage the development of multiple infrastructures that benefits the host community, including various means of transport, health care facilities and sports centre, in addition to the hotels and high end restaurants that cater to foreign visitors. The capital investment has in turn induced the development of other directly productive activities. So, capital investment have impacts on tourism industry which help through the generation of national income, generation of foreign exchange, raising the tax revenue, expansion of employment opportunities and transformation of regional economy

TABLE 7: Capital Investment in Travel and Tourism Industry in Leading Countries World Wide in 2019

Rank	Country	Capital Investment (in billion US$)
1	USA	209
2	CHINA	169.9
3	INDIA	51.6
4	FRANCE	40.7
5	JAPAN	39.3
6	GERMANY	34.7
7	UK	27.6
8	SAUDI ARABIA	27.5
9	SPAIN	21.7
10	BRAZIL	19.8

Source: World Travel & Tourism Council Report 2019

NEGETIVE IMPACTS OF TRAVEL AND TOURISM

!) INFLATION: Inflation relates to the increase in prices of land, houses and even food that can occur as a result of tourism. Moreover, during the high tourist season, the prices for essential goods are exceptionally high than in other places. While it's good for businessmen, but this can negatively affect the locals. During the high tourist season, the prices of essential goods rise, making them less affordable for the locals. Often small business owners have to shut the businesses because they simply can't afford to pay an increased rent. Some applies to young businesses that would like to open a store/ café in tourist area, but just can't afford rent. Instead, foreign investors came and purchase the land and business, leaving locals with nothing. However, a boom atmosphere at a destination frequently leads to over investment in accommodation stock; and later usually a fall in some business prices.

2) ECONOMIC DEPENDENCE: It occurs as the market is often beyond the control of national government. If is a place is heavily dependent on tourism, it's not a situation for that economy. Anywhere, whether a town or country is, is on economically vulnerable position when it is dependent on the health and vigour of one industry. This also applies when tourism is the principal industry (Mathieson and Wall 1982). Indeed, tourism revenues may fluctuate, for more than just seasonal reasons, beyond a destination or attrition's ability to predict and manage such a situation.

3) SEASONAL EMPLOYMENT: Revenue and income flows usually vary with the seasons. Peak seasons visitor members can at same destinations and attractions exceed their quietest period's attendance figure by many times. This can even seen by the factor of more than a hundred between cold, wet UK January day(9 visitors) and a sunny UK mid-summer day (1500+ people),(David PT Harcombe, 1997). Consequently the decision as to what attraction or a tourist facility should cater for is a different one, especially for large holds and theme parks- because of seasonal demand and the need to ensure an adequate return on their investment.

Too few beds or restaurant tables etc may even mean customers turned away in the high season. All the same time, successive over capacity is the low season mean near empty premises- even though the organization still faces substantial fixed costs.

4) LEAKAGE: Leakages can be of two types a) Import Leakages and b) Export Leakages.

<u>Import leakage</u> commonly occurs when tourists demand standards of equipment, food and the products that the host country cannot supply (or its supply is not in owner's interest) so much of the income from tourism expenditures leave the country again to pay these imports. This also happens in developed regions where demand for local products exceeds local supply. <u>An export leakage</u> arises when overseas investors who finance the resorts and hotels take their profits back to their country of origin. A 1996 UN report evaluating the contribution of tourism to national income found significant leakage associated with, a) Imports of materials and equipments for construction b) Imports of consumer goods particularly food and drinks c) Repatriation of profits earned by foreign investors d) Overseas promotional expenditures and e) Amortization of external debt incurred in the development of hotels and resorts.

5) OPPORTUNITY COST: Every item of tourism expenditure in theory could have been spent on same other project, inevitably raising the question of which is more important e.g. the new hotel, or a new stretch of road, a hospital, or a school, etc. Similarly, the production of goods and services for tourism purposes requires the allocation of resources which could also have been used for other, perhaps more socially laudable purposes. The opportunity cost in such situations is the cost of using resources for tourism, either as consumption or development, as opposed to using the money for alternative, perhaps more socially preferable purposes.

6) AN INCREASEED PROPENSITY TO IMPORT: Growing tourist members may lead to increasing import requirements. According to Mathieson and Wall (1982), the demands by some tourists of their home comforts while on overseas holidays, especially for food and drinks from their home country, can impose extra cost on host countries by requiring them to import these items for resale to the visitors. This is eventually so with small island economies which often do not produce locally what the tourists want- not just the food and drinks brands that the visitors prefer, but also luxury purchases such as jewellery, camera and photographic equipment, etc.

7) FOREIGN CAPITAL INVESTMENT: Investment in tourism and transport (e.g. airport, roads, railway, hotels, etc) can be very expensive, and may require foreign investment. However profits will almost inevitably look out, in such cases, to investors in investing countries unless- quite understandably- they can be sure they can redeem their profits in or sell their business there for, hard currency.

8) USE OF EXPATRIAT LABOUR: In some newly emerging economies, where there is strongly perceived need for rapid economies and social development, the management of many of the new tourism facilities may initially be by expatriate stuff (Mathieson and Wall, 1982). But the purpose of working there may be to expatriate most of their savings from the work, back to their home countries- another form of leakage. Additionally, the expatriates may not always train local people adequate enough for them to take over, so perpetuating the foreigner's presence.

A problem that sometime emerges, especially in the gulf countries, is that tourism may be reasonably high status occupation9because of the fun element to it), but hospitality may not be. Consequently, the educated local elites may be unkeen to learn hotel and catering work. Instead they may prefer to receive the profits from the hospitality business they own, while employing foreign stuff to do the actual work.

CONCLUSION

Travel and Tourism sector is one of the fastest growing sectors in the world. Tourism clearly provides a significant number of beneficial economic impacts to any country or locality which receives a steady flow of visitors. International visitors are available source of currency.

At the same time, spending on both domestic and foreign visitors produces a cascading effect of new money through the economy via the multiplier effect. Enterprise is stimulated and new jobs are created, together contributing to increased government revenues.

But at the same time there are some negative factors which are also to be considered. These particularly concerned leakages of expenditure out of the economy, pressures for increased imports, and new utility and infrastructural costs. Also relevant are possible inflationary effects, the problems of over dependency on a major industry (i.e. tourism) and also, initially at least on expatriate labour, as well as issues relating to foreign capital investment, seasonality and opportunity cost.

Though the effects of tourism on the economy are common in nature, but the intensity or magnitude of these problems vary from one tourist destination to another. Therefore it is necessary to handle these problems in such a way which leads to minimize the negative impacts and boast the positive impacts of tourism.

Tourism's environment and socio-cultural impacts are usually considered to have a number of positives to offset some, at least, of travel's allegedly negative effects. However, they may not always be able to do so with the same confidence that tourism's economic impact categories where most of the two impact categories which are leveled at tourism can be found.

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Certificate of Completion of Project

This is to certify that Mr. Dwaipayan Mukherjee (ECUG/005/17), a student of Department of Economics, has submitted the semestral project as part of the B.Sc Economics Honours Course (Sem VI, Paper XVI) titled: "Understanding Social Phenomena Through the Lens of Evolutionary Game: An Exploration" on 30.06.20.

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UNDERSTANDING SOCIAL PHENOMENA THROUGH THE LENS OF EVOLUTIONARY GAME: AN EXPLORATION

SUBMITTED AS THE TERM PAPER AS A PART OF PAPER XVI, VI TH SEMESTER

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B.Sc 6TH Semester

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ABSTRACT:

This paper aims to explore the suitability of evolutionary approach in understanding the decision-making process embedded in a gaming situation encountered in different socio-economic contexts, where all the inter-player interactions are strategic in nature. Whether "dominant" strategy will help to maximize the "best-response pay-off' or "deviant" strategy will increase the "fitness and enhance the chance of survival" or whether both these dominance and deviance are two sides of the same coin is the essence of our search. The standard game-theory is based on the assumption of rationality on the part of the subjective utility maximizing agents whereas the evolutionary approach is mostly behavioral in nature where objective survivability or fitness is the ultimate reward. So, the correspondence between the two as explained by Friedman (1991, 1998) and subsequently elaborated by Kandori, Mailath & Rob (1993) are the most important pillars of this journey. This paper aims at explaining the various tools of analysis used in Evolutionary Game theory through examples and some results that connects the evolutionary steady states and static equilibria of the payoff functions. This paper also presents the reasons behind the shift from traditional neoclassical economics to the evolutionary approach as well as tries to explain the critique of Paul Krugman wherein he argues that the evolutionary approach, however hard it may try to move out of the paradigm of traditional theory, uses the concepts of the traditional theory to reach its ultimate conclusion.

[1] INTRODUCTION:

We know that there are two forces influencing population growth. The first is the Malthusian Dynamic of exponential growth of population until a limit on the resources are reached. The Malthusian argument is that population growth is essentially exponential over time but gradually slows down with the limited scarce resources being used up. So, after a time the population growth would essentially narrow down to being nearly zero. However, the other force, the Darwinian Dynamics suggests that when the scarce resources are nearly used up, innovation and adaptation by the individuals would push the limits of the limited resources and only those individuals who are able to adapt to the changing environment would be able to survive while the others would die. So the Darwinian Dynamics suggested the natural selection of the fittest individuals for survival when the environment changed. Thus, evolution refers to the survival of the fittest species as the environmental conditions change.

Biologists like Maynard Smith and Price (1973), Maynard Smith (1982) and Mathematicians Taylor and Jonker (1978) tried and succeeded in analyzing evolution in the Game Theoretic framework and named it as Evolutionary Games. However, Evolutionary Games, unlike evolution which discusses the natural selection of species, discusses the natural selection of the fittest strategies (or behavior) when individuals interact over time in a changing environment. Thus, the basis of choosing strategies here is the fitness of the strategy over time. Evolutionary Games are therefore strategic interactions in which each individual chooses a specific behavior from among its alternatives on the basis of its fitness and hence the Evolutionary Game Theory tries to analyze inter-temporally how the distribution of observed behavior in a population evolves with fitter strategies becoming more prevalent. This also implies that strategies which had been fittest previously may, as environmental conditions change over time, become less fit and may be wiped out by a fitter strategy that may evolve. This indeed raises the question of whether there is a state from which no further change in strategy happens which may be called a steady state, which is answered by the concept of Evolutionarily Stable Strategies. There arises another question about the dynamics of how fitter strategies displace unfit ones in the population, which is answered by the concept of Replicator Dynamics. Both of the concepts have been discussed in Section [5].

Extensive application of the concept of Evolutionary Games has been found in social sciences in general and economics in particular. However similar the approach might be in analyzing biological situation and economic situations, there are a few basic distinctions that the paper discusses in section [4]. Still, some important social situations where this approach is extensively useful worth mentioning are **altruism** (Fletcher and Zwick, 2007; Gintis *et al.*, 2003; Sanchez and Cuesta, 2005; Trivers, 1971), **behavior in public goods game** (Clemens and Reichmann, 2006; Hauert, 2006; Hauert *et al.*, 2002, 2006; Huberman and Glance, 1995), **empathy** (Page and Nowak, 2002; Fishman, 2006), **human culture** (Enquist and Ghirlanda, 2007; Enquist *et al.*, 2008), **moral behavior** (Alexander, 2007; Boehm, 1982; Harms and Skyrms, 2008; Skyrms 1996, 2004), **private property** (Gintis, 2007) and many more.

The question that arises now is why was a new approach to game theory required even after such an extensive framework of game theory being present? The answer to it lies in the inability of the traditional game theory to explain how players know that the Nash Equilibrium will be played as well as in the inability to determine a unique equilibrium in the presence of multiple Nash Equilibria. These discussions are done in the section [6.2] with a brief recapitulation of the traditional theory in section [6.1].

However, according to Paul Krugman, although Evolutionary Game Theory tries to move out of the paradigm of the traditional economics that considers its decision-makers to be perfectly rational and then use maximization and equilibrium as the most important tools to analyze the framework, it returns somewhat recursively to traditional neoclassical economics. The paper tries to discuss such a criticism in the section [7].

[2] LITERATURE REVIEW:

The origin of Evolutionary Game Theory dates back to 1930s with its first development by R.A. Fisher in "The Genetic Theory of Natural Selection" wherein Fisher attempted to explain the approximate equality of the sex-ratio in mammals.

The formal introduction of the concept of Evolutionary Stable strategies was brought about by John Maynard Smith in his book "Evolution and the Theory of Games" published in 1982 by Cambridge University Press, however a discussion about the concept was made in Nature magazine in 1973 by Maynard Smith and Price. The early foundation of the dynamic process in Evolutionary Games was developed by mathematicians Peter D. Taylor and Leo B. Jonker in their paper "Evolutionary Stable strategies and Game Dynamics" in 1978. From then onwards numerous papers and books have been dedicated to this topic.

This paper is primarily based on the works of Daniel Friedman (1991 and 1998) and Kandori, Mailath and Rob (1998). The works of Weibull (1992) is a self-contained introduction to the theory of Evolutionary Games and Weibull (1995) contains a more advanced treatment of the subject.

The book by Martin A. Nowak presents a comprehensive view of the entire subject of Evolutionary Theory. More advanced texts include Bomze and Pötscher (1989), Cressman (1992), Vega-Rodondo (1996), Samuelson (1997) and Fudenberg and Levine (1997). Influential early theoretical papers include Binmore (1987) and Fudenberg and Kreps (1998).

[3] WHAT IS AN EVOLUTIONARY GAME?

Evolutionary Games are basically formal models of strategic interactions over time where in strategies having a higher payoff (in term of their better fitness) tend to overthrow strategies having a lower payoff (in terms of their lower fitness to survive) as a result of which the majority of the population under consideration shifts to choosing the fittest strategy. This is directly linked to the concept of natural selection of the fittest strategies. Nevertheless, this change from a prevalent strategy to a strategy that fits best to the environment that has changed over time does not happen instantaneously. It takes time for the best-fitted strategy to overtake the whole population and overthrow the previously dominant strategy. The reason underlying this lag may be Informational imperfection, adjustment costs or bounded rationality. One more important concept regarding Evolutionary Games is that the players do not systematically attempt to influence the future actions of other players'. This characteristic distinguishes evolutionary games from repeated games with trigger strategy threats.

[4] THE COMPARISON BETWEEN BIOLOGISTS AND ECONOMISTS IN THE APPROACH OF EVOLUTIONARY GAMES:

The initial development of the Evolutionary Game theory was in the field of biology but found its way into social sciences. So the basic framework of analysis is essentially similar. Yet, at some junctions' economists and social scientists deviate from the biological approach.

The biologists consider a framework wherein they consider a large population of individuals having a behavior hard-wired to the phenotypes of their genes, so whenever the situation arises they all choose the same behavior. The biologists moreover consider that the decision-making process is happening between some individuals who have been randomly selected from the population. The behavior which is hard-wired into their genes can be successfully invaded by another behavior being hard-wired to the genes of a relatively small mutant population only if the mutant behavior has a higher payoff (or rather is more fit) than the prevalent behavior. Then, the mutant behavior is said to be an Evolutionarily Stable Strategy (ESS). Mathematicians like Taylor and Jonker (1978) have confirmed that Evolutionarily Stable Strategies are sufficient for stability under natural selection dynamics.

The social scientists and economists use essentially the same framework to analyze socio-economic situations but usually adapt and extend them more into the social framework. The most important extension is the extension from the genetic mechanism of natural selection. The social mechanisms of learning and imitation are more important than genetic mechanisms. This might be because the use of such social mechanisms might be able to encapsulate the analysis for various socio-economic behaviors; as well as, because the genetic mechanism of natural selection, which is the basis for evolutionary biology, takes a time which is much more than the long-run described by an economist.

Moreover, most of the existing biological models regarding evolutionary games consider the evolution of a single species rather than the co-evolution of various species. The economists usually extend this so that they can analyze the co-evolution of behavior in different populations. An example of this has been given later on wherein strategies of two different populations- one of buyers and the other of sellers are analyzed.

[5] THE EVOLUTIONARY GAME THEORETIC FRAMEWORK:

We have already seen that Evolutionary Games are formal models of strategic interactions in which each individual chooses a specific behavior from among its alternatives on the basis of its fitness and hence the Evolutionary Game Theory tries to analyze inter-temporally how the distribution of observed behavior in a population evolves with fitter strategies becoming more prevalent.

[5.1] *BASIC CONCEPTS OF EVOLUTIONARY GAME THEORY:*

Therefore this theory essentially answers to two basic questions:

1. Which strategy (or behavior) among the dominant and the recessive strategies in the population will evolve out as the stable strategy?
2. How fast will the fitter strategy grow in the population and thus take over the whole population throwing out the previous less fit strategy?

These two questions are answered by two concepts. The concept of Evolutionary Stable Strategy developed by Maynard Smith and Price in 1973 and more formally by Maynard Smith in 1982 answers to the first question. The second question is answered by the concept of Replicator Dynamics developed by Taylor and Jonker in 1978.

In order to understand the concepts of Evolutionary Stability and Replicator Dynamics, let us consider a simple example:

Let us consider a large population N of players, where each period a player is randomly matched with another player and they play a two player game. Each player has a "hard-wired" strategy that he plays whenever he makes a decision. The most important point over here is that rationality and consciousness regarding choosing of strategies does not come into the picture.

Suppose there are two strategies: A and B. Furthermore, in a specific period considered, a fixed number of players, say N_A, are assigned strategy A; while a fixed number of players, say N_B, are assigned the strategy B. Denoting the proportion of population playing strategy i as X_i, so

$X_A = N_A / N$ and $X_B = N_B / N$.

The state of the population can be then given by (X_A,X_B) where $X_A \geq 0$, $X_B \geq 0$ and $X_A + X_B$ =1.

Since the players interact with other randomly chosen players in the population, a players' expected payoff is determined by the payoff matrix and the proportion of each strategy in the population. The expected payoff of any strategy is the fitness of that strategy to survive and success in the game is translated as reproductive success. This implies that those strategies that do well (with respect to others) reproduce or rather grow faster, while the strategies that do poorly die out. Now, let us consider the following simple payoff matrix:

wh

		PLAYER 2	
		A	B
PLAYER 1	A	a,a	b,c
	B	c,b	d,d

The payoff (fitness) of the player who is playing the strategy A is given by $F_A\ (X_A,X_B)$ as :

$F_A\ (X_A,X_B)$ = (probability of interacting with a player assigned strategy A) x $U_A(A,A)$
+ (probability of interacting with a player assigned strategy B) x $U_A(A,B)$

so, $F_A\ (X_A,X_B) = X_A$ x (a) + X_B x (b).

Similarly, the payoff of the player who is playing the strategy B is given by $F_B\ (X_A,X_B)$ as:

$F_B\ (X_A,X_B) = X_A$ x (c) + X_B x (d).

Now, we are in a position to describe Evolutionary Stable Strategies (ESS). If we consider in the on-going example that the majority of the population are hard-wired to play the strategy B and a small portion of the population, known as the mutant population, is hard-wired to play the strategy A. Then accordingly, X_A is very small while X_B is very large. The fitness functions are:

$F_A\ (X_A,X_B)\ = X_A \times (a) + X_B \times (b)$ and

$F_B\ (X_A,X_B) = X_A \times (c) + X_B \times (d)$, with $X_B > X_A$.

Now if it is found out that $F_A\ (X_A,X_B)$ exceeds $F_B\ (X_A,X_B)$ then we say that the population having a majority of players playing strategy B will not be evolutionarily stable and the mutant strategy A will not die out but would rather successfully invade the population. Hence strategy B is not an ESS. But this does not guarantee that an evolutionarily stable state will be reached when strategy A becomes the prevalent strategy in the population. Hence, to ensure this we need to check whether the population having strategy A as the prevalent strategy can be invaded by a small population of mutants hard-wired with the strategy B.

So, let us consider that the majority of the population is hard-wired to play the strategy A and a small mutant population is hard-wired to play the strategy B. Then accordingly, X_A is very large while X_B is very small. The fitness functions become:

$F_A\ (X_A,X_B)\ = X_A \times (a) + X_B \times (b)$ and

$F_B\ (X_A,X_B) = X_A \times (c) + X_B \times (d)$, with $X_A > X_B$.

Now if $F_A\ (X_A,X_B)$ is again found to exceed $F_B\ (X_A,X_B)$, then the population with a majority of players assigned the strategy A is said to be Evolutionarily Stable. So, this answers the first question.

Now, to answer the second question we turn to replicator dynamics. We continue using the same previous example to understand the concept of replicator dynamics.

It has been pointed out that the payoffs of the players playing a strategy or rather the fitness function of a strategy is actually the rate at which the respective strategy grows if it is fitter than the other strategies or dies out if it is less fit than the other strategies.

The average fitness, F, of the entire population is the weighted average of the two fitness values. So, $F\ (X_A,X_B) = X_A \times F_A\ (X_A,X_B) + X_B \times F_B\ (X_A,X_B)$.

Now we know that, $X_A = N_A / N$.

We need to know how fast N_A grows. Let us define $\dot{N}_A = d(N_A)/dt$.

The strategy A grows at a rate $F_A (X_A,X_B)$ and initially there are N_A number of players choosing strategy A. So, $\dot{N}_A = N_A \times F_A (X_A,X_B)$.

Next we need to know how fast N grows. By the same logic, we can write:

$\dot{N} = N \times F (X_A,X_B)$.

Now, $\dot{X}_A = d(X_A)/dt = (N \times \dot{N}_A - N_A \times \dot{N}) / N^2$. Now, putting the relevant values in this equation and simplifying it algebraically we get the replicator equation as:

$\dot{X}_A = X_A \times [F_A (X_A,X_B) - F (X_A,X_B)]$.

This replicator equation tells us that the rate at which the individuals of the population are shifting from the strategy B to strategy A depends on:

I. the initial state of the population, that is, the proportion of the population who were assigned the strategy A; and
II. the fitness of the strategy relative to the average fitness of the entire population, which implies that more successful strategies grow faster.

From the replicator equation, we can state that if:

a) $X_A > 0$: which implies that the proportion of As is non-zero
b) $F_A (X_A,X_B) > F (X_A,X_B)$: which implies that the fitness of A is above average

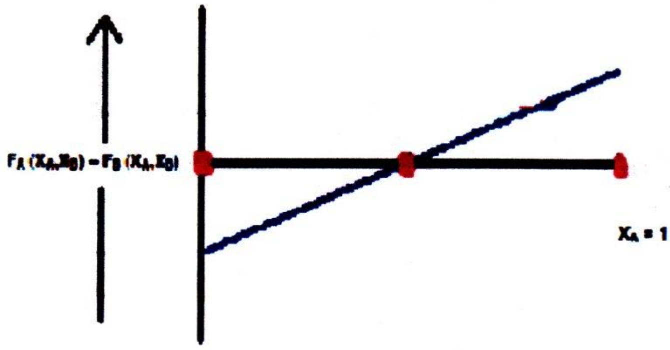
then, $\dot{X}_A > 0$, that is, the strategy A will be increasing in the population.

The replicator dynamics also indicates the Evolutionary steady states that the population achieves. In this example, the dynamics implies:

1) When $F_A (X_A,X_B) > F_B (X_A,X_B)$, then this implies that the fitness of strategy A will be more than the average fitness of the population. Thus, Replicator Dynamics suggests the Evolutionary Stable state of the population to be $(X_A=1,X_B=0)$.
2) When $F_A (X_A,X_B) < F_B (X_A,X_B)$, then this implies that the fitness of strategy A will be less than the average fitness of the population. Thus, Replicator Dynamics suggests the Evolutionary Stable state of the population to be $(X_A=0,X_B=1)$.
3) When $F_A (X_A,X_B) = F_B (X_A,X_B)$, then this implies the fitness of both the strategies A and B will be equal to the average fitness of the population. Then, the Replicator

Dynamics suggests that the Evolutionary Stable State of the population would be (X_A^*, X_B^*) for which the condition $F_A(X_A^*, X_B^*) = F_B(X_A^*, X_B^*)$ is satisfied.

This can be reproduced diagrammatically as:



Let us consider another simple example from the field of economics to understand the concepts.

Let us consider a game of interactions between two populations, called "buyers" and "sellers". Each possible seller has available two possible strategies- "honest" (H) and "cheat" (C). Similarly, each possible buyer has available two possible strategies- "inspect" (I) and "don't inspect" (D). The payoff matrix is given as:

		SELLERS	
		HONEST	CHEAT
BUYERS	INSPECT	3,2	2,1
	DON'T INSPECT	4,3	1,4

Let 'p' be the fraction of buyers who inspect while 'q' be the fraction of sellers who are honest. So, consequently 1-p is the fraction of buyers who do not inspect and 1-q is the fraction of sellers who cheat.

The populations interact in an unorganized manner in which individual buyers and sellers meet and participation in occasional so reputational effects are negligible. The fitness of a strategy depends on the population mix of the chosen strategies, for example, cheating is more attractive to sellers when more buyers are not inspecting. Otherwise, matters are as simple as possible with random matching, no externalities and risk neutrality.

Now, let us find the fitness functions of the strategies of a buyer and those of a seller. First, let us try to find the fitness of a buyer who inspects. So, this buyer will be coupled with an honest seller with a probability of q yielding him a payoff of 3 and will be coupled with a cheating seller with a probability (1-q) which would yield him a payoff of 2. So, the fitness of inspecting will be

$F_B\,(I) = q \times 3 + (1-q) \times 2 = q + 2.$

Similarly, the fitness of the strategy of not inspecting will be:

$F_B\,(D) = q \times 4 + (1-q) \times 1 = 3q + 1.$

Similarly as above the fitness of honesty in selling is $F_S\,(H) = 3 - p$ and the fitness of cheating in selling is $F_S\,(C) = 4 - 3p$.

Now from the replicator dynamic equation (discussed above in this section), the growth in inspection is given by the equation:

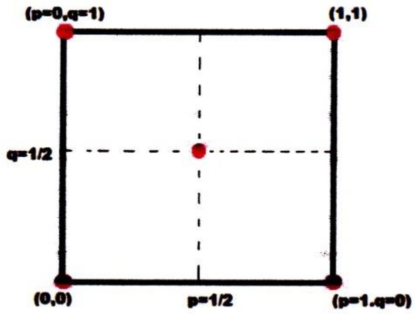
$\dot{p} = p \times [\, F_B\,(I) - F_B\,(avg.)]$, where $F_B\,(avg.)$ is the average fitness of the buyers given by:

$F_B\,(avg.) = p \times F_B\,(I) + (1-p) \times F_B\,(D) = 1 + p + 3q - 2pq.$

So, $\dot{p} = p \times [\, (q+2) - (1+p+3q-2pq)] = p(1-p)(1-2q)$ ... (I)

Similarly from the replicator dynamics, the growth in honesty among sellers is given by :

$(dq/dt) = q(1-q)(2p-1)$ ... (II)



From the differential equations, five Evolutionary Stable equilibria can be seen which are the four vertices and the central point in the above mentioned square (represented as the red dots).

[5.2] *SOME IMPORTANT RESULTS:*

Having explained the basic concepts of Evolutionary Game Theory, we now move on to some results that connect the Evolutionary stable states to the static equilibria of the payoff or fitness functions.

Let us consider the following 2-player non-cooperative game having the following payoff matrix:

		PLAYER 2		
		a	b	c
	a	2,2	0,0	0,0
PLAYER 1	b	0,0	0,0	1,1
	c	0,0	1,1	0,0

Suppose that everyone in the population was hard-wired to play strategy c. Strategy c is not dominated but nevertheless (c,c) is not a Nash Equilibrium. In particular, strategy b does strictly better against c than c does against itself. This in turn suggests that a mutation of b's will not die out if it invades the all-c population. To show this, let us consider a small mutation hard-wired to play b so that the population mix is then $(1-\varepsilon)$ playing c and (ε) playing b. The average payoff to the incumbents hard-wired to play c is then $= (1-\varepsilon)x[0] + (\varepsilon)x[1]$, while the average payoff to the mutant b's is then $= (1-\varepsilon)x[1] + (\varepsilon)x[0]$. Since ε is small, the mutant b's will do better (on average) than the incumbent c's and not die out. Thus, a population that consists 100% of c's is not evolutionarily stable.

The example elucidates the result that for a strategy to be evolutionarily stable, it has to be a Nash Equilibrium. Or conversely, if a strategy is not a Nash Equilibrium, then it is not an evolutionarily stable strategy.

However, this does not imply that any Nash Equilibrium strategy will be an evolutionary stable strategy.

This can be easily explained using a simple 2-player game where each player chosen randomly from the population has two strategies: 'a' and 'b'. The payoff matrix is as follows:

		PLAYER 2	
		a	b
PLAYER 1	a	2,2	0,0
	b	0,0	0,0

This game has two Nash Equilibria: (a,a) and (b,b). Now we want to determine the Evolutionary Stable Strategy among a and b. For this, let us consider a population in which a majority { the proportion being $(1-\varepsilon)$} being assigned the strategy b and a small mutant population { the proportion being ε} being assigned to play the strategy a.

The fitness function of the mutant strategy a is $F(a) = \varepsilon \times 2 + (1-\varepsilon) \times 0 = 2\varepsilon$.

The fitness function of the incumbent strategy b is $F(b) = \varepsilon \times 0 + (1-\varepsilon) \times 0 = 0$.

Now, since the mutant strategy is more fit than the incumbent strategy, it will not die out but rather will grow in the population. So, the incumbent strategy b is not Evolutionarily Stable since it was successfully invaded by the mutant strategy a. Now the Evolutionary stability of strategy a can be similarly checked by considering it as the incumbent strategy and trying to invade it by the strategy b. But it is not essential over here since our point is made which is that a Nash Equilibrium is not necessarily always evolutionarily stable.

So, two important results that link the evolutionary stable states with the static equilibria of the payoff functions are that:

i) if a strategy is Evolutionarily stable it has to be a Nash Equilibrium strategy; and
ii) if a strategy is a Nash Equilibrium it is not always Evolutionarily stable.

These two results also describe how the Evolutionary theory is capable of choosing the Nash Equilibrium that should be played in games where there are multiple Nash Equilibria. A bit more discussion on this has been done in section [6.2].

[6] THE SHIFT FROM TRADITIONAL TO EVOLUTIONARY GAMES:

In order to understand the shift from the Traditional approach to game theory to the Evolutionary approach, it is important for one to first need to look at the traditional approach.

[6.1] *TRADITIONAL APPROACH TO GAME THEORY:*

The games are formal models of strategic interactions having essentially three elements: players, strategies and payoffs. Complicated settings sometimes also demand the specification of additional elements such as sequence of moves and the information the player possesses when the game is played (or rather when decisions are made).

- Each decision-maker in a game is referred to as a player. These players may be individuals (as in a game of poker or bridge), firms (as in markets with few firms or rather oligopolistic markets), or entire nations (as in military conflicts). A player is characterized as having the ability to choose among a set of possible actions. Usually the number of players is fixed throughout the play of the game.
- Each course of action open to a player during the game is called a strategy. Depending upon the game being examined, a strategy may be a simple action or a complex plan of actions that may be contingent upon earlier play in the game.
- The final return to each player at the end of the game is called a payoff. Payoffs are usually measured in the levels of utility obtained by the players but for the sake of simplicity are often used in the form of monetary payoffs. More generally, payoffs can incorporate non-monetary factors such as prestige, emotion and risk preference and so on.

The most important assumption that the Traditional Game Theory assumes is that each individual decision-maker is perfectly rational and each try to maximize their payoffs by choosing the corresponding strategies.

Let us consider the game of "Prisoners' Dilemma" to understand how to represent a game in its normal-form. This game was introduced by A.W.Tucker in 1940s. The setting of the game is as follows: Two suspects are arrested and charged with a crime. However, the police lack sufficient evidence to convict the suspects, unless at least one confesses. The police hold the suspects in separate cells and explain the consequences that will follow from the actions they could take. If neither of them confesses then both will be convicted of a minor offence and sentenced to one year in jail. If both confesses then both will be sentenced to jail for six years. Finally, if one confesses but the other does not, then the confessor will be released immediately but the other will be sentenced to nine years in jail.

This Prisoners' dilemma situation can be represented in the following bi-matrix form:

		PLAYER 2	
		CONFESS	SILENT
PLAYER 1	CONFESS	-6.-6	0,-9
	SILENT	-9,0	-1,-1

This tabular representation makes it easier to be interpreted:

- The ordered pairs of values given in the cells correspond to the payoffs of the two suspects- the first value corresponding to the payoff of Suspect 1 and the second value corresponding to the payoff of Suspect 2.
- When Suspect 1 chooses to confess and simultaneously Suspect 2 chooses to confess, then each of them has a payoff of -6 (that is, six years of imprisonment).
- When Suspect 1 chooses to remain silent and simultaneously Suspect 2 chooses to confess, then Suspect 1 has a payoff of -9 while Suspect 2 has the payoff of 0.

➢ Similarly, the payoffs when Suspect 1 chooses to confess (or to remain silent) and Suspect 2 chooses to remain silent are given by (0,-9) and (-1,-1) respectively.

❖ The solution to a game theoretic problem has three different mechanisms:

1) Iterated elimination of strictly dominated strategies:

   A strategy for any player is called a dominant strategy if and only if the expected payoff from choosing that strategy is more that choosing any other strategy, whatever be the choice of strategies of the other players. Therefore, the strategy that will be least preferred (in the sense that the one which will yield the least expected payoff) is called the dominated strategy.

   The iterated elimination of dominated strategies is a method by which the equilibrium strategy of a game can be found.

Now, again referring back to the Prisoners' Dilemma game to find the equilibrium strategy of the game:

		PLAYER 2	
		CONFESS	SILENT
PLAYER 1	CONFESS	-6.-6	0,-9
	SILENT	-9,0	-1,-1

- When Suspect 1 takes the decision, he will be better off if he chooses to confess rather than remaining silent since the payoff for him choosing to confess is more than him remaining silent, whatever be the decision of the other player (Suspect 2). This is brought out by the fact that if he expects Suspect 2 to confess, then by confessing himself he will have the payoff of -6 (that is, six years of imprisonment) which is better than the payoff of -9 (9 years of imprisonment) had he chosen to remain silent. Similarly, if he expects Suspect 2 to remain silent, then by confessing he will have the payoff of 0 (no years of imprisonment) which is better than the payoff of -1 (that is, one year of imprisonment) had he chosen to remain silent. Thus, the strategy of remaining silent is a dominated strategy for Suspect 1.

  Hence, this strategy is eliminated and the resulting matrix is:

		PLAYER 2	
		CONFESS	SILENT
PLAYER 1	CONFESS	-6.-6	0,-9

- Now, Suspect 2 can choose between confessing which would yield a payoff of -6 (that is, 6 years of imprisonment) and staying silent which would yield him a payoff of -9 (that is, nine years of imprisonment). So he would be better off choosing to confess. Thus, remaining silent is now a dominated strategy.
- By deleting the dominated strategy, the equilibrium strategy for this game is that both the Suspects confess the crime. Hence the equilibrium strategy is (CONFESS, CONFESS).

2) Nash Equilibrium in pure strategies:

   If Game Theory is to provide a unique solution in the form of a strategy set to a problem of strategic interaction, then the solution must be a Nash Equilibrium. The Nash Equilibrium was formulated by John Nash in the 1950s. Nash Equilibrium involve strategic choices that, once made, provide no incentives for the players to alter their behavior further. A Nash equilibrium, is therefore, a strategy for each player given the others' equilibrium strategies.

Let us reconsider the Prisoners' Dilemma game in order to find the pure-strategy Nash Equilibrium:

		PLAYER 2	
		CONFESS	SILENT
PLAYER 1	CONFESS	-6.-6	0,-9
	SILENT	-9,0	-1,-1

- First we analyze from the view point of Suspect 1:
    - When Suspect 1 expects Suspect 2 to choose to confess, then he will be best off by choosing to confess rather than choosing to remain silent; since confessing would yield him a payoff of -6 (that is, six years of imprisonment) which is better than the payoff of -9 (that is, nine years of imprisonment) that he would have received had he chosen to remain silent. Thus, the payoff of -6 in the (first row, first column) cell is underlined to indicate the strategy chosen by Suspect 1 as a best response to Suspect 2's expected strategy of Confessing.
    - When Suspect 1 expects Suspect 2 to choose to remain silent, then he will be best off by choosing to confess rather than remaining silent; since confessing yields a payoff of 0 which is better than the payoff of -1 that he would have received had he chosen to remain silent. Thus, as before, the payoff of 0 in the (first row, second column) cell is underlined to indicate the strategy chosen by Suspect 1 as a best response to Suspect 2's expected strategy of remaining silent.
- Next we analyze from the view point of Suspect 2:

- When Suspect 2 expects Suspect 1 to choose to confess, then the best response on his part is to choose to confess since the payoff from choosing to confess is better off than the payoff from choosing to remain silent. Hence, the payoff of -6 in the (first row, first column) cell corresponding to Suspect 2 is underlined as an indication of the strategy chosen by him as the best response to Suspect 1's expected strategy of confessing.
- When Suspect 2 expects Suspect 1 to choose to remain silent, then the best response on his part is to choose to confess since the payoff from choosing to confess is higher than that from choosing to remain silent. Thus, the payoff 0 in the (second row, first column) corresponding to Suspect 2 in underlined in order to indicate the strategy chosen by him as a best response to Suspect 1's expected strategy of remaining silent.

➢ Therefore, whatever strategy Suspect 1 expects Suspect 2 to choose, it is more suitable that Suspect 1 will be choosing to confess. Arguing similarly for Suspect 2, it will be more suitable for him to choose to confess. Thus, the Nash Equilibrium strategy set is (CONFESS, CONFESS).

3) Nash Equilibrium in mixed strategies:

If we consider another simultaneous game of "The Battle of Sexes" which has the following setting: A couple wants to go out either to a boxing match or an opera. But the husband and the wife (the two players) have not decided where to meet. They have two strategies- to go to the opera denoted by 'O' or to go to the boxing match denoted by 'B'. Both play the game simultaneously (that is, both take the decision where to go simultaneously). The payoffs, in terms of utility derived, are given in the following matrix:

PLAYER 2 (WIFE)

		O	**B**	
PLAYER 1 (HUSBAND)	**O**	**1,2**	**0,0**	**p**
	B	**0,0**	**2,1**	**(1-p)**
		q	**(1-q)**	

In this particular game, there exists no dominant strategy, so the process of iterated elimination of dominated strategy cannot yield any equilibrium strategy.

Next, this game has two pure strategy Nash Equilibria (O,O) and (B,B) because:

- When Husband expects the wife to go to the opera, he will be best off by choosing strategy O than choosing the strategy B since the payoff from choosing O is higher than the payoff from choosing B. So the payoff of 1 in the (first row, first column) cell has been underlined in order to indicate strategy O of the husband as the best response to the wife's expected strategy of O.
- When the husband expects the wife to go to the boxing match, he will be best off by choosing the strategy B since the payoff from choosing B is higher than choosing O. Hence, the payoff of 2 corresponding to the husband in the (second row, second column) cell has been underlined indicating the strategy of the husband which is the best response to the wife's expected strategy of choosing B.
- Arguing similarly for the wife where she expects the decision of the husband in order to form her best response, her best responses are indicated by the underlined payoffs corresponding to the wife in the (first row, first column) cell which expects the husband to choose O and the one in the (second row, second column) cell which expects the husband to choose the strategy B.
- Thus there exists two pure strategy Nash Equilibria given by (O,O) and (B,B).

The reason why these strategies are called pure strategies is that for a player it is a complete and non-random plan for playing a game. By complete is meant that the plan allows for every possible contingency, however unlikely they might be.

A mixed strategy is a probability distribution over all possible pure strategies, some of which may get zero weight. After a player has determined a mixed strategy at the beginning of the game, a player may pick any one of those pure strategies. In a mixed strategy equilibrium, every action played with a positive probability must be a best response to the other players' mixed strategies.

Now returning to the game of "The Battle of Sexes" to find out the mixed-strategy equilibria :

Let us consider that the husband chooses to go to the opera with probability 'p' and to the boxing match with probability (1-p); while the wife chooses to go to the opera with probability 'q' and to the boxing match with probability (1-q). The same matrix representation of the game is now written with the corresponding probabilities as shown in the previous figure.

Then the expected payoff of the husband is $V^1 = pq + 0 + 0 + 2(1-p)(1-q)$

$$= 3pq - 2p - 2q + 2.$$

Similarly, the expected payoff of the wife is $V^2 = 2pq + 0 + 0 + (1-p)(1-q)$

$$= 3pq - p - q + 1.$$

Each player tries to maximize his or her expected payoff as a rational individual.

Thus, $(dV^1/dp) = 3q - 2 > 0$ as $q^* > 2/3$

$3q - 2 = 0$ as $q^* = 2/3$

$3q - 2 < 0$ as $q^* < 2/3$

This implies that : when $q > 2/3$, V^1 is maximized at $p = 1$

when $q = 2/3$, V^1 is maximized at all values of $p \in [0,1]$

when $q < 2/3$, V^1 is maximized at $p = 0$.

This is the best response function of the husband gives as BR(H).

Again, $(dV^2/dq) = 3p - 1 > 0$ as $p^* > 1/3$

$$3p - 1 = 0 \text{ as } p^* = 1/3$$

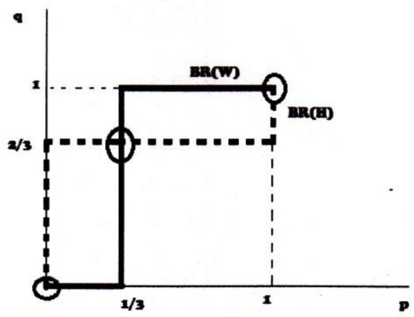
$$3p - 1 < 0 \text{ as } p^* < 1/3$$

This implies that: when $p > 1/3$, V^2 is maximized at $q = 1$

when $p = 1/3$, V^2 is maximized at $q \in [0,1]$

when $p < 1/3$, V^2 is maximized at $q = 0$.

This is the best response function of the wife given by BR(W).



Thus, there are three mixed strategy equilibria: ($p^* = 0, q^* = 0$) , ($p^*=1, q^*=1$) and ($p^*=1/3, q^*=2/3$) where only ($p^*=1/3, q^*=2/3$) is the strictly mixed strategy equilibrium.

The strictly mixed strategy Nash Equilibrium states that the husband chooses to go to the opera with probability 1/3 and the wife chooses to go to the opera with probability 2/3.

[6.2] *HOW IS THE SHIFT FROM TRADITIONAL TO EVOLUTIONARY THEORY HELPFUL?*

Despite such a rigorous theory regarding the Traditional approach being already developed, one might ask why the economists shifted to the newer Evolutionary theory. We have seen in section [6.1] that the concept of Nash Equilibrium has been used extensively in many contexts of Game Theory, Game Theory has been unsuccessful in explaining how players know that a Nash Equilibrium is being played. Moreover, the traditional theory does not explain how players know which Nash Equilibrium is to be played when a game has multiple Nash Equilibria. Traditional introspective theories that attempt to resolve this problem directly at the individual decision-making level impose very strong informational assumptions and so are widely recognized as having serious deficiencies.

As a consequence, the attention has shifted to evolutionary explanations of equilibrium. Two features of this approach distinguish it from the introspective approach and hence form the reason as to why the evolutionary approach has been helpful.

First, players are not assumed to be so rational or knowledgeable as to correctly anticipate the other players' choices. Recent developments in Experimental and Behavioral Economics have shown that such strong rationality assumptions do not describe the behavior of the real agents. Since evolutionary game theory successfully explains the predominance of certain behaviors of insects and animals, wherein the rigid and strong rationality assumption clearly fails, this suggests that rationality is not as central to game theoretic analyses as had been considered previously. Therefore, the evolutionary game theory might be more successful in describing and predicting the choices of human subjects, as it is more capable to handle the appropriate weaker yet more realistic rationality assumptions.

Secondly, in evolutionary games an explicit dynamic process is specified describing how the players adjust their choices inter-temporally as they learn about the other players' choices. Therefore this approach tries to explain how an equilibrium emerges based on trial-and-error learning rather than the introspective approaches.

[7] A CRITIQUE ON EVOLUTIONARY GAME THEORY:

The criticism of the Evolutionary Game Theory has been most appropriately portrayed by the great economist Paul Krugman in "*A talk given to the European Association for Evolutionary Political Economy*" in 1996. Rather than just pointing out the criticisms and drawbacks of the Evolutionary approach to game theory, Krugman provides vivid reasoning that where the evolutionary aspect tried to break through the traditional neo-classical economics of maximization and equilibrium, what it has actually done is just use maximization and equilibrium to get to the end of their analysis.

Krugman considers economics and evolutionary biology to be sister fields not only due to vast areas in common but also in the kind of questions they ask, the methods they use, and in terms of the way they relate to and are perceived by the rest of the world. Krugman elucidates the huge similarity in the basic approaches of the two fields. Economics, according to him, is the study of those phenomena that can be understood to be emerging from the "interactions among intelligent, self-interested individuals". Four points, according to Krugman, describe the basic formulation of the field of economics:

1. Economics is concerned about what individuals do, rather than what classes do.
2. Individuals are self-interested.
3. Individuals are intelligent: obvious opportunities for gain are not neglected.
4. Economics concern about the interactions of these individuals.

According to Krugman, the field of Evolutionary theory is about the interaction of the self-interested individuals, who are thought of as organisms trying to leave as many offspring as possible. The point where evolutionary theory widely deviates from traditional economics is that economics assumes their decision makers to be perfectly rational whereas evolutionists have no problem with their decision makers having myopic behavior.

Krugman provides a magnificent analysis of what evolution-minded economists want:

First of all, they want to disregard the idea that individuals while making decision maximize. Instead, they want the represent decisions as a result of some process of groping through alternatives, a process in which it may take a long time to reach a maximum.

And secondly, they want to get away from the notion of equilibrium. In particular, they want to have an approach in which things are always in disequilibrium, in which the economy is always evolving.

However, what evolutionary theory is actually like is nothing but neoclassical economics with the central ideas being maximization and equilibrium.

Let us first consider the question of maximization. It is a crucial point about evolution that it must proceed by small steps, which means that maxima must be approached only gradually and that one could easily be trapped on a merely local maximum. But in reality, these observations do not play a large role in evolutionary theory. in spite of evolution being necessarily a process of small changes, evolutionary theorists normally take the shortcut of assuming that the process leads to the maximum, and pay little attention to the dynamics along the way. Thus evolutionary theorists in reality end up assuming that organisms (or rather genes) do maximize; the process, the necessary caveat that they must get wherever they are going by small steps, gets put to one side.

Next let us consider the question of equilibrium. According to Krugman, the working assumption of most of the evolutionary theorists is that we should model the natural world not as being on the way but as being already there. The best known example of this preference is the widespread use of John Maynard Smith's concept of "evolutionarily stable strategies". An ESS is the best strategy for an organism to follow given the strategies that all others are following - the strategy that maximizes fitness given that everyone else is maximizing fitness, with each taking the others' strategies into account. It is actually that the concept of an ESS is virtually indistinguishable from an economist's concept of equilibrium.

To this point, the argument is that even though evolution is a theory of gradual change, of myopic dynamics, in practice most evolutionary theory focuses on the presumed end result of such dynamics: an equilibrium in which individuals maximize their fitness given what other individuals do. The reason as to why the theory has taken such a turn is the ever-present need to simplify, to make models that are comprehensible. In fact, maximization and equilibrium are astonishingly powerful ways to cut through what might otherwise be forbidding complexity - and evolutionary theorists have, entirely correctly, been willing to adopt the useful fiction that individuals are at their maxima and that the system is in equilibrium.

So according to Krugman, although Evolutionary Game Theory tries to move out of the paradigm of the traditional economics that considers its decision-makers to be perfectly rational and then use maximization and equilibrium as the most important tools to analyze the framework, it returns somewhat recursively to traditional neoclassical economics.

[8] CONCLUSION:

Various interesting economic issues can be modeled in terms of interactions among a few distinct populations, each having a few alternative strategies. If the dynamic process (such as learning) leads to the prevalence of higher payoff actions (or rather more fit actions) over time in each population, then an evolutionary game model may be appropriate. Time paths in such models, shown as the replicator equation, tend to converge to the Evolutionary Equilibria which is a subset of the Nash Equilibria for the underlying stage game. The dynamic process, together with the historically given initial state determines which evolutionary equilibrium is attained. This in turn takes economists a leap forward in understanding which equilibrium is actually played when there are multiple equilibria to a game.

Although this paper has only discussed about simple linear one and two dimensional stage games, the theory actually encapsulates games of much higher dimension as well as non-linearity. As a result, a large classification of the different types of situations studied under the evolutionary theory becomes useful to applied economists to understand directly what sort of behavior is expected in various real life game theoretic situations.

So, although critics may point out that: where Evolutionary theory was thought of as an advancement from the paradigm of traditional theory, the theory actually uses the traditional concepts in order to reach its conclusion; the theory has been extensively useful to social scientists in the understanding and predicting real life social behavior. Daniel Friedman opens his paper "On economic applications of evolutionary game theory" by saying that evolutionary games have considerable unrealized potential in modeling substantive economic issues and that evolutionary games provide much better predictions to real life situations than the traditional theory.

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