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## Focus : Migration

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# Contents

# Indian Labour Migration to the Gulf: Recent Trends, the Regulatory Environment and New Evidences on Migration Costs

S. K. SASIKUMAR

*This paper examines the recent trends in Indian labour migration to the Gulf countries. It analyses the regulatory structure governing low-skilled labour migration in conjunction with the mapping of the recruiting landscape. The paper provides evidences on migration costs in the India-Saudi Arabia migration corridor based on a primary survey undertaken by the World Bank-led Global Knowledge Partnership on Migration and Development (KNOMAD). It provides policy recommendations in relation to three core aspects of international labour migration from India: improving the information base on international labour migration; restructuring the regulatory environment for international labour migration; and reducing migration costs borne by workers to obtain overseas employment.*

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## I. Introduction

For developing economies like India undergoing rapid structural transformation, low-skilled international labour migration has assumed crucial importance since robust economic growth in recent decades has not translated into employment growth in the domestic secondary and service sectors. An additional driver is the rapid demographic transition in India, which has led to the rise of the largest proportion of youthful population in the world. For the country to reap the benefits of the 'demographic dividend', it needs to deploy its young labour force productively. However, the slow generation of manufacturing jobs in India threatens to stymie the efforts to fully gain the advantages from this one-time historic window of opportunity. It is in this context that low-skilled labour migration from India to the Gulf countries assumes further significance.

At both the macro and micro levels, the impact of low-skilled migration to the Gulf has generally been positive. So far as India is concerned, growing worker remittances over the last two decades have helped in stabilising its external reserves. In fact, India is currently the largest recipient of remittances in the world, receiving US $ 79.5 billion remittance flows in 2018 (World Bank, 2018). Importantly, according to the latest RBI survey on remittances to India, nearly 50 per cent of remittances received in 2016-17 by Indian migrant households originated from the Gulf Cooperation Council (GCC) countries (RBI, 2018). At the micro household level, migration has had a significant impact on reduction of poverty and improvement of the educational and health outcomes of migrant households (Sasikumar, 2014). Given the demographic structure of the country as well as the relative low skill levels of the workforce, it is imperative for India to promote

international labour migration both to maximise the demographic dividend and to improve income and livelihood structures of the relatively vulnerable sections of the population. An additional gain is the skill upgradation of migrant labour which can be harnessed once they return home.

Given the above context, what policy measures can be undertaken to improve the overall migration outcomes of low-skilled migrants? The migration process can be regarded as consisting of four major aspects or stages: (a) recruitment; (b) employment conditions and earnings; (c) remittance and transfer of earnings; and (d) reintegration after return.

Policy initiatives have been undertaken at various points in time on one or the other aspects of the migration process. The most successful one has been an international initiative to reduce remittance costs, with commitments made at the highest level of governance structures through multilateral agreements. The success of this approach involving remittance cost reduction can be largely attributed to it being based on evidence garnered through a World Bank initiative. One important feature of this initiative was to forefront remittances as a migration- and migrant-centric policy rather than as a part of the external financial flows management issue. Such an approach provides a basis for balancing equity and efficiency within the migration governance system.

While the reduction of remittance costs has boosted worker remittances with positive macro and micro outcomes, similar attention has not been paid to reducing migration costs borne by migrants. Given the large surplus labour force, high migration costs may reflect a large rent component which can be reduced alongside improvement of the efficiency of the migration system. High migration costs also have serious implications for the welfare of the migrants: financing the migration may involve the migrant household in a debt trap whereby a large portion of the migrants' earning may need to be used for debt servicing.

It is in the above context that the World Bank-led Global Knowledge Partnership on Migration and Development (KNOMAD), under its Thematic Working Group (TWG) on low-skilled labour migration, sought to identify policies to reduce migration costs of low-skilled labour migrants, and create mechanisms to facilitate cross-border movements of low-skilled labour, including labour agreements. To initiate appropriate policy measures it was deemed necessary to first generate a reliable set of data relating to migration costs across various corridors of the major migration flows. Since the focus was on low-skilled migration it was also deemed necessary to concentrate primarily on low-end construction and service jobs.

The aim of the KNOMAD migration cost survey is to build a migration cost database that is comparable across migration corridors. This would help identify the structure of worker-paid migration costs and better understand how workers finance these costs. Developing a migration cost database is the first step towards sound policy recommendations to reduce such costs and set a target for migration cost reduction that is consistent with the post-2015 development agenda. It is expected that reduced migration costs will benefit all parties involved and increase the amount of remittances to family members left behind.

The first series of the migration cost survey was initiated in 2014; it surveyed migrants in destination countries using the paper survey method. Based on the learnings from the survey in 2014, the computer-assisted personal interviewing (CAPI) method of tablet-based survey was adopted, focusing more on returnees rather than on the destination. Corridor-specific data on migration costs were collected in several corridors in 2015. The Asian migration corridors in focus were Bangladesh, Nepal, Pakistan, Philippines and India. In the Indian case the migration costs were collected for the India-Qatar migration corridor amongst returnee migrants. In 2016, the survey was expanded to several other corridors, including the India-Saudi Arabia one. This paper analyses the migration costs, according to the KNOMAD survey in the India-Saudi Arabia migration corridor, incurred by low-skilled Indian workers migrating to the Gulf.

The paper is structured as follows. Section II provides an overview of Indian labour migration to the Gulf countries in the last two decades. Section III examines the regulatory structure governing low-skilled labour migration in conjunction with the mapping of what can be termed the 'recruiting landscape'. Section IV outlines the survey methodology and sample design. Section V analyses the key findings of the survey, and Section VI highlights fundamental policy perspectives relating to international labour migration from India.

## II. Indian Labour Migration to the Gulf: An Overview

India has a long history of international labour migration dating back nearly two hundred years to the early colonial

period. It has been estimated that between 1840 and 1940 no less than 30 million Indian migrated for work across the national borders, making India the single largest country sending out migrants in the world (Davis, 1951; Mckeown, 2004). While indentured labour migration to the British sugar colonies was an important stream (nearly 2 million), the overwhelming bulk went to intra-Asian destinations around the Indian Ocean (Malaysia, Burma and Sri Lanka). A characteristic feature of India's international labour migration, which is especially relevant in the context of the present paper, is the unusually high rate of return migration, or what we may term temporary or circular migration. Of the 30 million who migrated abroad in the period 1840-1940, no less than 24 million returned. This temporary or circular migration characteristic is overwhelmingly present in the late 20th century Indian labour migration to the Gulf countries.

Migration to the Gulf region from India is of long standing. Organised labour migration to the region began in the mid-1920s with the establishment of the Bahrain Petroleum and Kuwait Petroleum Companies so that by 1950, some 8000 Indian workers were enumerated as employees of oil companies involved largely in construction and manning of rigs and in administrative positions (Sasikumar, 1995). But the real upswing in migration began in the 1970s. The oil price boom in 1973 following the establishment of the Organization of the Petroleum Exporting Countries (OPEC) provided the impetus for large-scale migration from India. The construction boom that followed led to sharp increases in Indian labour migration to the region. With periodic swings determined largely by changing demand or shocks like the Iraq war, the overall trend of Indian migration has been generally upwards.

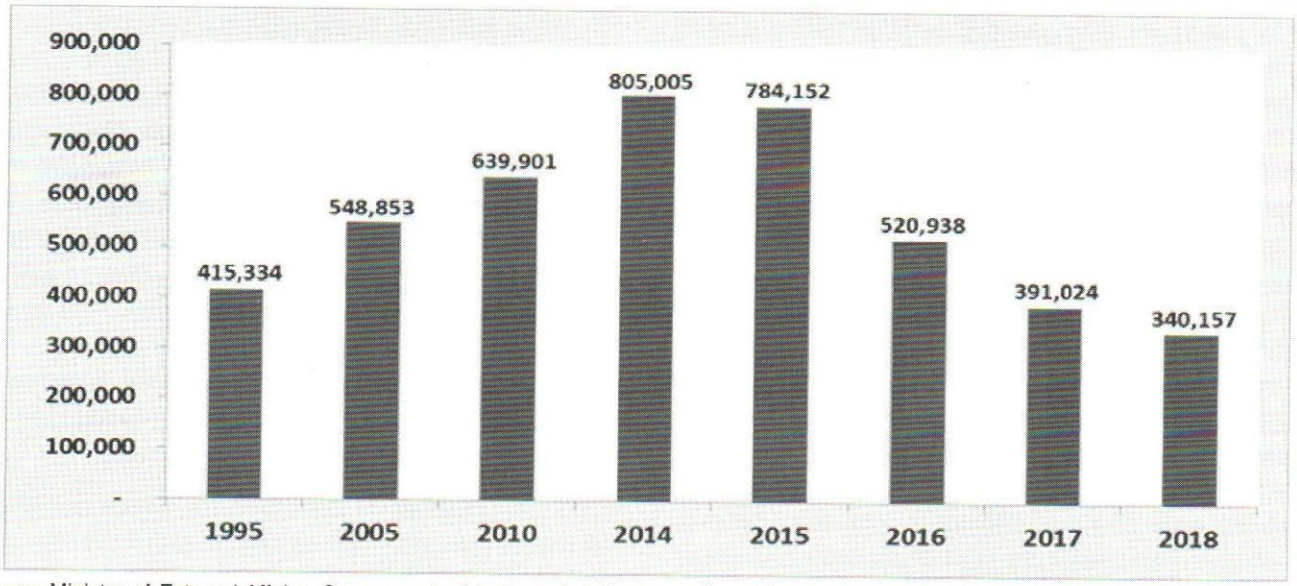
Annual flow figures are notoriously deficient, yet the limited data about unskilled labour migration from India (on the basis of emigration clearances granted by the Protector of Emigrants, Government of India) easily establishes the increasing trend, especially in the last two decades. As a result of such rising flows, the stock of Indian migrants in the GCC countries, which was 0.5 million in 1979, grew to 1.96 million in 1990, 2.7 million by 2000, 6.4 million by 2010 and 8.9 million by 2017 (UNDESA, 2017). The largest stock of Indian migrants is in the UAE (3.31 million in 2017) followed by Saudi Arabia (2.27 million in 2017). Indian migrants constitute more than 30 per cent of all migrants in the GCC countries in 2017 and their share in total migrant stock ranges from 19 per cent in Saudi Arabia to 43 per cent in Bahrain.

The data of destination-specific annual migrant flows from India is available, as noted earlier, only from records of the emigration clearances issued by the Protector General of Emigrants, Government of India. The emigration clearance requirement originated from the desire of the government to protect unskilled and low-educated Indian migrants from exploitation (a residue of the bitter experience of the indentured labour system of the 19th century). The Emigration Check Required (ECR) is currently applicable for migration to 18 countries and has an educational qualification bar which makes it mandatory for persons below a certain level of education to seek a clearance before emigrating for employment.

The number of countries for which emigration clearance is mandatory has been reduced over the years and the educational bar has been progressively lowered from the 1980s; today, the ECR is mandatory only for migrants with below senior secondary school (matriculation) certificate education. While emigration clearance data does not capture the gamut of the Indian labour migration flow, it is a fair indicator of the trend of unskilled/low-skilled labour migration, especially to the Gulf region (which in any case accounts for more than 90 per cent of all emigration clearances issued by the Indian government).

In the last two decades, the annual emigration clearances have exhibited a cyclical trend, peaking during 2014-2015 (Figure 1).The impact of the slump in oil prices can be directly seen in the sharp decline of total emigration clearances issued during 2014-2018. It is not without significance that the sharpest decline is to be found in clearances issued for Saudi Arabia where the peak of clearances issued occurred in 2012 and 2013.

A noticeable trend is in the rapid change in the catchment areas within India for low-skilled labour migration to the Gulf. While the southern states of Kerala and Tamil Nadu were the major sources of the ECR category of workers in the 1990s, constituting more than 50 per cent of all emigration clearances issued in 2000, the northern states of Uttar Pradesh and Bihar (which are also among the poorest states in India) have accounted for more than 40 per cent of emigration clearances issued in recent years. This shift in the source of labour migration is more visible in labour outflows to Saudi Arabia, with Uttar Pradesh and Bihar accounting for more than half of the emigration clearances granted to migrate to that country.




*Source*: Ministry of External Affairs, Government of India and eMigrate, retrieved from the website <http://emigrate.gov.in>.

**Figure 1: India: Total Emigration Clearances Issued, 1995-2018**

Of the Gulf countries, Saudi Arabia has easily been the largest importer of foreign labourers in general and low-skilled workers in particular. As the Saudi economy has grown and diversified over the years, Indian labourers have continued to be employed mainly in construction and a range of low-end service sector activities. While for Indian migration flows Saudi Arabia has been the foremost destination, amongst the countries supplying labour to Saudi Arabia India has consistently held the premier position. Remittances from Saudi Arabia therefore have been an important constituent of total remittances to India. In addition, the overwhelmingly low-skilled nature of labour migration to Saudi Arabia is of crucial importance for a labour surplus economy like India and, as noted above, especially for the poorer northern states of India.

It is obvious that the slump in migration flows to Saudi Arabia since 2013 is of great significance for these states. Therefore, both because of the magnitude and fluctuation of the labour flow (and consequent financial flows) and the nature of labour migration, the India-Saudi Arabia migration corridor has an important place from a policy perspective that seeks to maximise migration outcomes by overall reduction in migration costs.

## III. Regulatory Environment and the Recruitment Landscape

The regulation of migration from India is of old standing, beginning with the colonial government's attempt to regulate labour migration to the overseas colonies under the indenture system after abolition of slavery in 1833. A series of legislations was enacted beginning in 1838 focusing mainly on transportation and recruitment of labour for overseas British colonies. The emphasis was on regulation through licensing of recruiting agencies, the main aim being to ensure that labour was recruited by fair means and recruitment abuses were penalised. The institution of Protector of Emigrants was also established to ensure the health and welfare of emigrants on long sea voyages. After more than 80 years of its functioning, under which more than 2 million Indians were sent to various colonies to work as indentured labourers, the system was abolished under strong nationalist opposition in 1917. Indian nationalists opposed emigration under indenture contract mainly because they saw it as a means through which Indian men were forced to work in near slave-like conditions and women were sexually exploited. The colonial government enacted the Indian Emigration Act VII of 1922 which severely restricted and regulated emigration of unskilled labourers and single women. This Act remained the main regulatory instrument till 1983 when, after the surge in Gulf migration, a new Act was instituted in 1983 to facilitate and regulate migration from India.

### Some important features of the 1983 Act:

a) The provisions of this Act are applicable only in the case of migration of unskilled and low-skilled work (this is clear from the definition of work and

employment in the Act) and for those who attract the provision of ECR (which emanated from the Passport Act of 1967).

b) The Act sought to regulate recruitment for employment overseas through the process of registration and licensing of recruiting agencies (which can also recruit non-ECR category, high-skilled migrants, such as doctors and engineers) and provided penalties for fraudulent recruitment. The recruitment fees chargeable by the recruiting agencies were also fixed and agencies were prohibited from charging above the prescribed fee.

c) The main function of the Protector of Emigrants, according to the Act, is to grant emigration clearances to the ECR category after verifying the employment contracts and travel documents of the migrants.

d) The migration of unskilled workers under the Act can happen only through sponsoring of the migrant by an employer who bears the cost of travel and repatriation, and has obtained a work permit/ employment visa from competent authorities in India and the destination country. The migrant must have an employment contract specifying the terms and conditions of work, wages and repatriation provisions.

e) A migrant can be recruited under the Act either: (i) directly by the foreign employer; (ii) through a licensed recruiting agent representing the employer; or (iii) by Indian project employers undertaking projects in the destination countries.

Over a period of time the provisions of the Act have been amended and liberalised. In 1983 emigration clearance was required for all emigrants whose education levels were below a bachelor's degree or equivalent. The requirement was progressively lowered through amendments to the Act, and by 2006 the ECR was required for emigrants who had education below a higher secondary school degree and in 2009 below a secondary school degree. The 1983 Act regulated licensed agents' recruitment fees, fixing it initially at Rs. 2000 for unskilled labourers, Rs. 3000 for semi-skilled and Rs. 5000 for skilled labourers. These financial ceilings for the fees of recruiting agencies were changed to a maximum of Rs. 20,000 for all categories in 2009. In the 1983 Act, the clause relating to the recruitment agency fees does not specify any specific component, such as agency fees, compliance costs and transportation costs. A recent executive order has clarified that Rs. 20,000 is the maximum cost to be incurred by emigrants till he or she arrives at the place of employment.

The Emigration Act of 1983 and the accompanying Emigration Rules form the keystone of unskilled labour migration from India. The focus of the regulations, however, is overwhelmingly on eliminating recruitment abuses at the origin rather than encouraging or facilitating migration. The regulations are also inadequate in addressing issues arising from the terms and conditions of work at the destination. These lacunae have been partially addressed by the Government of India entering into country-specific bilateral agreements which lists out the responsibilities and obligations of the governments in ensuring the protection of migrant workers and enhancing compliance with the laws and regulations applicable in both countries.

A second instrument of regulation of labour migration and conditions of work is the Executive Orders by the Government of India issued from time to time. A significant development in this context is the adoption of the 'minimum referral wage' system since 2010 under which the Indian embassies in the destination countries announce wage rates which serve as guidelines for engaging Indian workers (Sasikumar and Sharma, 2016). In fact, presently minimum referral wage rates are fixed for nearly 2300 job categories in the ECR countries. In recent years, with the introduction of the e-migrate system through which all emigration clearances are granted online, the government has made it mandatory for the wage rates in the employment contracts to minimally correspond to the referral wages fixed in the identified occupational category. In the case of Saudi Arabia, minimum referral wages are currently announced for low-skilled, semi-skilled and skilled workers, ranging from 1500 Saudi Riyal (SR) for low-skilled occupations to 3500 SR for computer programmers (www.indianembassy.org.sa).

As noted earlier, unskilled and low-skilled migrants can be recruited from India in three ways: directly by foreign employers, through licensed recruitment agencies and by Indian project employers. The bulk of the low-skilled labour migrants from India are presently recruited through licensed private recruiting agents. We now turn to the operation of the licensed recruiting system to understand the ways in which it impacts migration flows and costs of migration.

Regulation of recruiting agencies through licensing was part and parcel of the indenture system under which Indian unskilled labour migrated to overseas colonies during the colonial period. The 1922 Act that ended the indenture system and disallowed unskilled labour migration from India, except to certain countries and under specific conditions, retained strict governmental control over the recruiting agencies and emigration agents. Registration and licensing and compliance with government rules were made mandatory for these designated agencies. The growth and proliferation of the recruiting agencies in recent years are to be traced to the oil price boom of 1973. Thousands of Indian labourers were recruited, often outside the purview of the 1922 Act and by unregistered/unlicensed recruiting agencies which sprouted mainly in the city of Bombay. Increasing reports of recruiting abuses led to the enactment of the 1983 Act under Supreme Court directions. As noted earlier, the 1983 Act had a much greater focus on regulation of the recruiting agencies through the licensing and registering provisions of the Act.

At present, licensed recruiting agencies are of two types: private recruiting agencies and a few state government agencies. The latter were set up in the states of Kerala, Andhra Pradesh and Tamil Nadu, which were the major source for Gulf migration, especially in the 1980s-1990s. However, these state agencies never became major suppliers of unskilled labour. Currently there are about 1700 private recruiting agencies who have obtained license to undertake recruitment for overseas employment. Of these 1500, the bulk of whom are located in Delhi and Bombay, about 300-400 are very active in recruiting while the rest (though they possess licenses) are either small players or act as service providers for larger agencies. Many of the agencies have evolved over time to specialising in supplying labour for certain destinations and specific occupational categories. There is also a tendency towards concentration and cartelisation among the agencies.

While sub-agents are legally not permitted under the 1983 Act, it is very well known that licensed recruiting agencies operate through a wide network of such agents spread across major recruiting areas of the country. The role of the chain of sub-agencies in recruiting is one of the most under-researched areas in migration studies. However, there is no doubt that they play a crucial role in connecting the prospective migrant to the main recruiting agents and also in facilitating procedural compliance (obtaining passports, organising medical tests, etc.).

## IV. Migration Cost Survey and Analysis of Migration Costs

The KNOMAD survey was based on administering a structured questionnaire developed by the KNOMAD TWG on low-skilled migration to a prefixed sample size of 400 returnee Indian migrant workers, either currently working in Saudi Arabia or who have worked there between 2012 and 2015. The survey was limited to Delhi Airport primarily because the overwhelming bulk of Saudi migrants since the 2000s, especially since 2008, have been from north Indian states such as Uttar Pradesh, Bihar, Punjab, Rajasthan, Jharkhand and Haryana; for these migrants Delhi is the most important arrival point.

The survey was carried out in two overlapping stages. The first stage of the survey involved a broad profiling of migrant workers returning from Saudi Arabia to India at Delhi Airport. The profiling included both current emigrants (those travelling to India on vacation who would return to Saudi Arabia within a short time) and return migrants (those returning after completing their contractual period).

The purpose of the profiling was to obtain basic information about the migrants to select the final sample. During the profiling, the following information was obtained: contact details including age and origin state; year of last migration and occupation; whether current or return migrant; and willingness to be part of the survey. The aim at this stage of profiling was to find those respondents who fit the criteria of low-skilled workers in construction and whose most recent contract of employment dated not earlier than 2011 or later than 2015.

The second stage, which was often completed immediately after the profiling, was based on the survey administrators choosing those who fit the criteria of occupational niche and period of contract. A third criterion was to have fair representation of the geographical origin of the migrants. This mode of choosing the respondents called for the survey administrators to use their judgment more compared to when respondents are pooled and the survey is administered after a sample is drawn from the pool fitting the pre-determined criteria. Ultimately 439 total respondents were administered the questionnaire, of which 30 were rejected because of insufficient/incomplete information or mainly because they did not fit the criteria of inclusion; the final sample size was of 409.

The total sample of 409 returnees was overwhelmingly dominated by migrants from Bihar (44 per cent) and Uttar Pradesh (36 per cent). This is fairly representative of the

overall low-skilled labour flows from the northern Indian states to Saudi Arabia, with these two states not only providing more than half of the total labour flows to that country but constituting the overwhelming majority amongst the north Indian states.

The bulk of the sample was drawn from first-time migrants (81 per cent) while 19 per cent had migrated more than once (Table 1). An overwhelming proportion of the migrants were from the prime age groups 25-39 (88 per cent) while the only nine returnees (2.2 per cent) were in the age group 20-24 and 9 per cent of the sample was above 40 years. This is quite typical of the circular migration pattern of Indian labour to the Gulf. More than 93 per cent of the sample was married and only 7 per cent had not married. Again quite characteristically of low-skilled labour, more than half the sample was either illiterate or with education only up to the primary level (56 per cent). Given that the sample was drawn exclusively from low-skilled migrants of the ECR category (which necessarily implied below secondary education), it is still indicative of the extremely skewed nature of skill and education levels of the migrants that more than half are illiterate or barely literate.

How did the surveyed sample get information about the jobs in Saudi Arabia? Again typically it was through the licensed recruiting agencies that most migrants (71 per cent) got this information (Table 2). Interestingly, however, nearly one-fourth of the sample got information about the jobs from friends and relatives, which points to the significant role of chain migration in the labour flows to Saudi Arabia. There is also a significant trend of younger migrants depending more on friends and relatives compared to older migrants. Notably, it seems those who have had some sort of skill-based education (technical) are less dependent on licensed recruiters; they depend equally on private recruiters, employers and friends for their job information.

As to their modes of recruitment, most respondents (80 per cent) seem to have been overwhelmingly recruited by individual agents or what we know as the extensive network of sub-agents and visa brokers who ultimately channel the labour flow through the licensed agencies (Table 3). Only about 2 per cent was recruited directly by licensed recruiting agencies. While 30 per cent of the respondents had got their job information from friends and relatives, 18 per cent of them had been recruited through relatives. In this case the relatives or friends directly acted as the agents of the employers in Saudi Arabia with a power of attorney and employment sponsorship visa.

**Table 1: Sample Characteristics**

(in %)

| Characteristics | Total |
|---|---|
| **State of Origin** | |
| Bihar | 44.5 |
| Uttar Pradesh | 36.19 |
| Others | 19.31 |
| **Age Group** | |
| 20-24 | 2.20 |
| 25-29 | 23.96 |
| 30-34 | 40.59 |
| 35-39 | 23.96 |
| 40 & above | 9.29 |
| **Marital Status** | |
| Married | 93.40 |
| Not Married | 6.60 |
| **Level of Education** | |
| None | 6.11 |
| Primary | 50.62 |
| Secondary | 42.54 |
| Post-Secondary | 0.73 |
| **Frequency of Migration** | |
| More than Once | 18.58 |
| First Time | 81.42 |
| | **(N = 409)** |

*Source*: KNOMAD Survey on Migration Cost in India – Saudi Arabia Migration Corridor.

Before we analyse the migration costs and its drivers, it is important to understand the immediate context from which the migration impulse emerges. One, of course, is the earnings of the migrants prior to their migration (especially in understanding the wage wedge as a driver); a second relevant factor is the family size and dependents that the migrant is supposed to support.

Table 2: Job Search Patterns (Information about Jobs)

| Indicators | Licensed Recruiting Agents | Newspaper Advertisement | Direct from Employer | Relatives/ Friends | Total |
|---|---|---|---|---|---|
| **State of Origin** | | | | | |
| Bihar | 71.98 | 0.55 | 2.20 | 25.27 | 100.00 |
| Uttar Pradesh | 70.95 | 1.35 | 2.03 | 25.68 | 100.00 |
| Others | 68.35 | 0.00 | 3.80 | 27.85 | 100.00 |
| **Age Group** | | | | | |
| 20-24 | 22.22 | 0.00 | 0.00 | 77.78 | 100.00 |
| 25-29 | 65.31 | 2.04 | 4.08 | 28.57 | 100.00 |
| 30-34 | 74.10 | 0.00 | 1.81 | 24.10 | 100.00 |
| 35-39 | 76.53 | 0.00 | 2.04 | 21.43 | 100.00 |
| 40 & above | 68.42 | 2.63 | 2.63 | 26.32 | 100.00 |
| **Marital Status** | | | | | |
| Married | 72.51 | 0.79 | 2.36 | 24.35 | 100.00 |
| Not Married | 48.15 | 0.00 | 3.70 | 48.15 | 100.00 |
| **Level of Education** | | | | | |
| None | 80.00 | 0.00 | 0.00 | 20.00 | 100.00 |
| Primary | 62.80 | 0.97 | 1.93 | 34.30 | 100.00 |
| Secondary | 79.89 | 0.57 | 2.87 | 16.67 | 100.00 |
| Post-Secondary | 33.33 | 0.00 | 33.33 | 33.33 | 100.00 |
| **Total** | **70.90** | **0.73** | **2.44** | **25.92** | **100.00** |

*Source*: KNOMAD Survey on Migration Cost in India –Saudi Arabia Migration Corridor.

All migrants in the sample were employed prior to their migration, which is not surprising as open unemployment is very low in India, especially in the rural areas. The weighted average earnings of the migrants prior to migration was $149 per month and varied within a narrow range ($165- $122) across various groups (Table 4).[1] The highest pre-departure earnings were of those who have had some level of technical education (post-secondary technical education incomplete) and the lowest was among the youngest age group of migrants (20-24 years).

Younger migrants had lower earnings than the older groups, though there is no linear relationship of earnings

**Table 3: Mode of Recruitment**

(in %)

| Indicators | Individual Broker | Recruitment Agency | Relatives/ Friends | Total |
|---|---|---|---|---|
| **State of Origin** | | | | |
| Bihar | 80.66 | 2.21 | 17.13 | 100.00 |
| Uttar Pradesh | 79.05 | 2.70 | 18.24 | 100.00 |
| Others | 78.21 | 1.28 | 20.51 | 100.00 |
| **Age Group** | | | | |
| 20-24 | 66.67 | 0.00 | 33.33 | 100.00 |
| 25-29 | 82.65 | 1.02 | 16.33 | 100.00 |
| 30-34 | 80.00 | 1.82 | 18.18 | 100.00 |
| 35-39 | 80.41 | 2.06 | 17.53 | 100.00 |
| 40 & above | 71.05 | 7.89 | 21.05 | 100.00 |
| **Marital Status** | | | | |
| Married | 80.79 | 2.11 | 17.11 | 100.00 |
| Not Married | 62.96 | 3.70 | 33.33 | 100.00 |
| **Level of Education** | | | | |
| None | 83.33 | 0.00 | 16.67 | 100.00 |
| Primary | 75.85 | 1.93 | 22.22 | 100.00 |
| Secondary | 83.82 | 2.31 | 13.87 | 100.00 |
| Post-Secondary | 66.67 | 33.33 | 0.00 | 100.00 |
| **Total (in %)** | **79.61** | **2.21** | **18.18** | **100.00 (N=409)** |

*Source*: KNOMAD Survey on Migration Cost in India –Saudi Arabia Migration Corridor.

with the age of the migrants. Similarly, even though migrants without any education earned the least and those with technical education the most, strangely, those with primary education earned more than those with secondary education. An explanation for this non-linear relationship between education levels and monthly earnings perhaps lies in the earlier entry into labour market of those who dropped out after primary education. Earnings prior to migration were a composite of skill levels and date of entry into the labour market. The difference in earnings between those who had migrated more than once and first-timers (the latter earning more than the former) is more difficult

**Table 4: Earnings in India Prior to Migration**

| Indicators | Per Day (in Rs.) | Per Day (in USD) | Monthly (in Rs.) | Monthly (in USD) |
|---|---|---|---|---|
| **State of Origin** | | | | |
| Bihar | 373.03 | 5.98 | 9,698.78 | 155.48 |
| Uttar Pradesh | 345.59 | 5.53 | 8,985.34 | 143.78 |
| Others | 343.12 | 5.51 | 8,921.12 | 143.26 |
| **Age Group** | | | | |
| 20-24 | 294.44 | 4.69 | 7,655.44 | 121.94 |
| 25-29 | 339.42 | 5.41 | 8,824.92 | 140.66 |
| 30-34 | 373.47 | 5.96 | 9,710.22 | 154.96 |
| 35-39 | 354.61 | 5.72 | 9,219.86 | 148.72 |
| 40 & above | 354.82 | 5.79 | 9,225.32 | 150.54 |
| **Marital Status** | | | | |
| Married | 360.85 | 5.79 | 9,382.10 | 150.54 |
| Not Married | 307.41 | 4.89 | 7,992.66 | 127.14 |
| **Level of Education** | | | | |
| None | 341.80 | 5.47 | 8,886.80 | 142.22 |
| Primary | 371.37 | 5.97 | 9,655.62 | 155.22 |
| Secondary | 342.11 | 5.47 | 8,894.86 | 142.22 |
| Post-Secondary | 400.00 | 6.34 | 10,400.00 | 164.84 |
| **Frequency of Migration** | | | | |
| First Time No | 340.35 | 5.51 | 8,849.10 | 143.26 |
| More than Once Yes | 361.20 | 5.78 | 9,391.20 | 150.28 |

*Source*: KNOMAD Survey on Migration Cost in India –Saudi Arabia Migration Corridor.

Table 5: Migration Cost across State of Origin, Age Group of Migrants, Levels of Education and Frequency of Migration

(in US$)

| Indicators | Compliance Cost | Recruitment Cost | Transportation Cost | Total Cost (in 2014) |
|---|---|---|---|---|
| **State of Origin** | | | | |
| **Bihar** | | | | |
| Mean | 208.75 | 779.46 | 317.11 | 1309.61 |
| SD | 48.97 | 332.90 | 16.13 | 358.07 |
| **Uttar Pradesh** | | | | |
| Mean | 210.37 | 807.67 | 311.80 | 1332.89 |
| SD | 54.54 | 362.14 | 25.47 | 399.04 |
| **Others** | | | | |
| Mean | 209.49 | 875.90 | 312.73 | 1394.15 |
| SD | 73.28 | 371.70 | 19.92 | 409.25 |
| **Age Group 20-24** | | | | |
| Mean | 274.52 | 847.05 | 291.72 | 1371.49 |
| SD | 176.37 | 472.07 | 10.33 | 557.55 |
| **Age Group 25-29** | | | | |
| Mean | 209.83 | 840.74 | 310.09 | 1369.84 |
| SD | 59.44 | 338.15 | 16.34 | 360.87 |
| **Age Group 30-34** | | | | |
| Mean | 210.45 | 793.01 | 316.80 | 1322.36 |
| SD | 51.61 | 355.39 | 24.27 | 388.86 |
| **Age Group 35-39** | | | | |
| Mean | 205.37 | 811.57 | 318.71 | 1336.43 |
| SD | 40.99 | 338.80 | 16.97 | 372.37 |
| **Age Group 40 & above** | | | | |
| Mean | 199.53 | 773.77 | 308.70 | 1281.20 |
| SD | 37.75 | 388.22 | 19.19 | 412.14 |
| **Level of Education** | | | | |
| Mean | 192.65 | 779.63 | 317.42 | 1289.18 |
| SD | 33.92 | 332.82 | 12.36 | 359.55 |

| | | | | |
|---|---|---|---|---|
| **Primary** | | | | |
| Mean | 202.48 | 785.13 | 310.53 | 1299.21 |
| SD | 61.56 | 341.53 | 18.56 | 375.40 |
| **Secondary** | | | | |
| Mean | 217.16 | 833.77 | 318.66 | 1373.67 |
| SD | 37.06 | 357.33 | 23.33 | 378.54 |
| **Post-Secondary** | | | | |
| Mean | 387.24 | 1167.93 | 302.05 | 1857.23 |
| SD | 247.18 | 780.04 | 11.76 | 936.24 |
| **Frequency of Migration** | | | | |
| **First Time** | | | | |
| Mean | 197.60 | 839.17 | 304.94 | 1344.87 |
| SD | 46.10 | 394.31 | 32.37 | 428.37 |
| **More than Once** | | | | |
| Mean | 212.19 | 801.25 | 316.49 | 1331.97 |
| SD | 58.03 | 342.20 | 16.38 | 373.44 |
| **Total** | | | | |
| Mean | 209.48 | 808.30 | 314.34 | 1334.36 |
| SD | 56.24 | 352.26 | 20.77 | 383.71 |

*Source*: KNOMAD Survey on Migration Cost in India –Saudi Arabia Migration Corridor.

to explain, even as the difference perhaps is not significant ($150 versus $143).

The total migration cost consisting of three major components (compliance costs, recruitment costs and transportation costs) varied considerably, with a mean of $1334 and standard deviation of $384 (and thus a coefficient of variation of 0.29) (Table 5). Yet it is interesting that the bulk of the variation in total cost is accounted for by the high variation of recruitment cost (mean $808, SD = 352 and CV = 0.44) while there are only small variations in the transportation and compliance costs. This high variation in the recruitment cost component of the total migration cost bears closer analysis.

But before this analysis, it is important to indicate the extent of the economic burden of migration cost for the migrants. One indicator is the number of months' earnings required to pay for migration. Using this indicator, it would seem that the average migration cost was no less than nine months' average earnings for the migrants in India. Given that most migrants are from the poorest states of India it is imperative to lower the cost of migration for migrants. The recruitment cost alone (the fees paid by the migrants to the recruiter, erroneously called visa fees) constitutes nearly six months' earnings for the migrants. It is also important that even though compliance costs and transportation costs are relatively invariant across groups, there is ample scope for reducing these costs too.

Analysis of the migration cost, mainly the recruitment cost, shows that there is a significant inverse relationship of migration and recruitment costs with age. Younger migrants pay a larger sum than older migrants. Given that

most of the younger migrants are recent migrants it would seem that recruitment costs have increased significantly in recent years with the oil price slump and consequent fall in the demand for labour. However, there is a significant direct relation between educational attainment and migration costs, i.e. the migration costs increase with the educational levels of the migrant, with those with some sort of technical education paying the highest ($1857). It is evident that skilled workers expected to be paid higher salaries and thus were willing to shell out nearly one year's earnings in India as migration costs.

It would appear that migration costs were not significantly reduced if friends and relatives instead of professional recruiters or visa brokers were the intermediaries. We have noted earlier that the youngest age group of migrants as well as those with technical and post-secondary education tended to be mostly recruited by relatives/friends; these groups seem to pay the highest recruitment and migration costs.

What was, however, counterintuitive is that the average migration costs paid by migrants who had migrated more than once were higher than those for first-time migrants. It is possible that the frequent migrants (18 per cent of the sample) were paying higher costs for better-paid skilled jobs with higher pay.

**Table 6: Monthly Earnings**

(in US$)

| | Earnings in India Prior to Migration | First Month Gross Earnings in Saudi Arabia | Current/Last Gross Earnings inSaudi Arabia |
|---|---|---|---|
| Mean | 162.44 | 325.18 | 375.85 |
| SD | 93.78 | 59.54 | 61.57 |

*Source*: KNOMAD Survey on Migration Cost in India –Saudi Arabia Migration Corridor.

**Table 7: Promised Monthly Salary and Actual Salary in Saudi Arabia**

(in Saudi Riyal)

| | Amount Promised in Saudi Arabia | Salary in Saudi Arabia | | | | Remittances |
|---|---|---|---|---|---|---|
| | | First Month Gross Earnings in Saudi Arabia | First Month Net Earnings in Saudi Arabia | Current/Last Gross Earnings in Saudi Arabia after deduction | Current/Last Net Earnings in Saudi Arabia after deduction | |
| **Mean** | **1683.20** | **1219.78** | **1167.19** | **1428.88** | **1374.55** | **817.48** |
| **SD** | **269.95** | **223.52** | **219.53** | **234.06** | **230.82** | **216.12** |

*Source*: KNOMAD Survey on Migration Cost in India –Saudi Arabia Migration Corridor.

**Table 8: Monthly Earnings and Remittances**

(in US$)

| | Earnings in India Prior to Migration | Current/Last Gross Earnings in Saudi Arabia | Remittances |
|---|---|---|---|
| Mean | 162.44 | 375.85 | 215.03 |
| SD | 93.78 | 61.57 | 56.85 |

*Source*: KNOMAD Survey on Migration Cost in India –Saudi Arabia Migration Corridor.

It is evident from the above analysis that migration cost is a major burden, constituting on an average nine months of earnings in India of the migrants. However, how does the migration cost compare with the earnings at the destination economy? On an average the monthly earning in Saudi Arabia for the migrants was double the average earnings of migrants in India (Table 6). So the average migration cost ($ 1334) was 4.5 months of the initial earnings of the migrants in Saudi Arabia ($ 325). Yet perhaps the most critical aspect of migration to Saudi Arabia is the absolute gap between what the migrants were promised in their contract and what they received in Saudi Arabia (Table 7).

The Indian emigration laws and the e-migrate system initiated by the Government of India stipulates that the employment contract would have the referral wage as the minimum necessary for the validation of the contract. Despite the glaring violation of both Indian and Saudi laws, emigrants seem to have reconciled themselves to the fact of illegality (as evident from the focus group discussion) and 'contract substitution'. Some even said that they had been informed of this discrepancy by the recruiting agents. It is interesting that on an average the migrants managed to remit two-thirds of their earnings (817 SR) home (Table 8).

## V. POLICY PERSPECTIVES

The policy perspectives related to international labour migration may be situated at three core levels:

1. ***Improving the information base on international labour migration:*** It is widely acknowledged that the information base on international labour migration from India is weak and does not facilitate effective migration management. Emigration clearance data, which is partial, has often being used to highlight the trends in international migration and also evolve adhoc policies. There are many ways in which the information base on international labour migration can be strengthened. First and foremost, we must evolve a reliable database on all categories of Indians migrating for overseas employment. This can be accomplished by making registration of Indian nationals migrating for overseas employment compulsory. Effective use of digital technology, including online registration, can make this process simple and transparent. We also need to create a database on return migration using the same technology platform to elicit relevant information for effective reintegration of migrants and efficient use of the skills acquired by them while working abroad. Such a database across gender, age groups, skill, states, etc. can be a catalyst for evolving promotional and protective policies pertaining to international labour migration.

2. ***Restructuring the regulatory environment for international migration:*** The regulatory environment is primarily based on the Emigration Act 1983. This Act was legislated in a particular context of the sudden boom in migration to the Gulf countries in the 1970s and the need to tackle unscrupulous private recruiting agents engaged in exploiting the migrant workers. Some key aspects to be considered while restructuring the regulatory framework include: achieving a proper balance between the promotion of international labour migration and the protection of migrants; making pre-departure orientation programmes mandatory for all low-skilled migrants; creating incentive structures for private recruiting agencies to comply with legal stipulations and engage in facilitating safe and orderly migration; bringing sub-agents involved in the recruitment landscape under the ambit of the emigration regulations; and making the provisions of the regulation gender neutral.

3. ***Reducing migration costs:*** Research studies clearly show that the major portion of the costs borne by the migrants relates to the fees paid to the private recruiting agencies. As noted earlier, incentivising the private recruiting agencies to comply with the legal stipulations (such as grading the recurring agents, offering fiscal concessions, etc.) could have an impact on reducing the migration costs. Advocacy programmes aimed at empowering the potential migrants through aspects such as legally stipulated fees, vulnerabilities that can arise if migrating through illegal sub-agents, etc. must be organised in major migrant sending states on a regular basis. Strengthening the cooperation between origin and destination countries, especially through bilateral agreements aimed at protecting the interests of migrant workers, can also be an effective tool to reduce migration costs. Promoting direct recruitment by reputed foreign employers will also reduce migration costs considerably.

## Notes :

[1] Kerala migration survey is a series of surveys conducted by Centre for Development Studies on Migrants from Kerala over the past 20 years. It collects demographic and socio-economic characters of migrants and calculates the remittance as well.

[2] Under the Norka Department Project for Return Migrants (NDPREM) Scheme by Norka roots.

[3] Interview conducted on March 7th 2019 at Malappuram.

[4] Interview conducted on 7th March 2019 at Malappuram.

[5] Experts from the interview conducted with the Deputy Development Commissioner of Cochin Special Economic Zone on 6th March 2019.

[6] Interview conducted on 6th March 2019 at Cochin Special Economic Zone.

[7] The attempts to train return migrant as entrepreneurs are majorly carried out by lead banks in each district based on lead bank scheme by reserve Bank of India. But those programs are scientifically built.

[8] Interview conducted on March 11th 2019 at Norka Headquarters, Thiruvananthapuram.

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*"The premature migration of very large numbers of people from rural areas to urban areas can give rise to a lot of strains to the urban infrastructure, which can also create problems of crime - law-and-order problems."*

*– Manmohan Singh*

Focus

# Climate and Weather Induced Agricultural Distress and Migration: Characteristics and Evidence

K.S. KAVI KUMAR, BRINDA VISWANATHAN AND P. DAYAKAR

*This paper provides a comprehensive review of the literature examining the three-way linkage between weather/climate variability, agricultural productivity and migration. Highlighting low elasticity of migration to agricultural productivity in India, the paper explores potential reasons behind low rural-urban/inter-state migration rates. The paper further provides evidence on short-term migration in India and discusses a potential manifestation of the same in the form of feminization of agriculture. The paper argues for enabling policies that enhance non-agricultural rural livelihood options as well as policies that facilitate greater participation of women in agricultural management.*

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## 1. Introduction

Response strategies to global climate change crucially depend on its potential impacts on several climate sensitive sectors. In particular from developing country perspective, for designing adaptation strategies it is important to not only know the overall impacts, but also the factors that could in principle play crucial role in bringing down the impacts due to climate change. Among other things, migration has received significant attention as a potential response strategy to climate change induced impacts. Migration could be in the form of within country migration or emigration. Similarly it could be short-term (or temporary) migration and long-term (or permanent) migration.

While migration as a potential adaptation strategy is obvious in the context of sea level rise, climate calamities and inhospitable climatic conditions (e.g., heat stress) (McLeman and Smit, 2006; Perch-Nielsen *et al.*, 2008), its role in the context of weather/climate variability induced agricultural distress has gained significant interest in the literature and policy discussions only in the recent past. The literature in this context explores both the direction and extent of influence of weather/climate variability on migration operating through the agricultural channel. The policy relevance of the empirical literature hinges on the rate of urbanization and stage of development of the country under consideration.

It is well documented that rapid urbanization in developing countries like India could result in a wide range of infrastructural constraints with clear environmental consequences. Yet, it is also often observed that the rate of urbanization in developing countries – especially India and other South Asian countries – has not been fast in comparison to that observed in Latin American countries

and China. In other words the rate of growth of employment opportunities in non-agricultural sectors in urban areas of these countries has been relatively slow resulting in a large number of households loosely attached to the agriculture sector for want of other livelihood options. It is against this backdrop the relevance of migration response to the agricultural distress should be analysed in developing countries such as India. Thus the study of migration as a response strategy aims to inform policy to ensure food security as well as facilitate sustainable urban growth.

The rest of the paper is structured as follows: the next section reviews the literature examining the three-way linkage between weather/climate variability, agriculture and migration and draws broad inferences in global and Indian context. The subsequent section discusses the migration patterns in India and discusses potential reasons for low inter-state migration rates. The fourth section discusses the relevance of short-term migration in the Indian context. The last section presents concluding observations and areas for further research.

## 2.0 Weather/Climate Variability, Agriculture and Migration Linkage

A large number of studies have analysed the productivity of major crops under climate change conditions. Aggarwal et al. (2019) carried out meta-analysis of studies that assessed the impacts of climate change on crop yields over the past four decades across the globe. Aggarwal et al. (2019) analyse the national "hotspots", which combine production gaps (i.e., differences between supply and demand) with the severity of impacts of climate change on wheat, rice and maize when farmers adopt practices and technologies such as improved varieties, planting at optimal times, and improved water and fertilizer management.

Available evidence suggests that for wheat, countries such as Ethiopia and South Africa show moderate production gaps with relatively small effects of climate change on production until the 2050 s, once adaptation is factored in. These countries might then focus more on strengthening their food supply through trade and promoting incremental adaptation at local scales. In contrast, countries such as India, Pakistan and Peru need to address problems of likely substantial production gaps due to increasing demand coupled with large and negative climate change impacts on wheat yields. These countries may need to combine technology growth with transformative actions in terms of use of high-yielding and stress-tolerant varieties, if they are to remain wheat secure from a self-sufficiency perspective. The situation is the same for maize in many countries of Sub-Saharan Africa and South Asia – that is, increasing production gaps and substantial effects of climate change on maize productivity thereby, highlighting the need for widespread transformative adaptation in both commercial and small-scale sectors. In case of rice, the climate change impact at the global level could be minimal but significant in a few major rice producing countries.

In view of the potential productivity implications of climate change on major crops, several studies have also analysed the implications of observed weather and climate variability on crop yields. One such recent study explored how productivity shocks have influenced the prevailing migration patterns within and across countries to understand the role of migration as a coping and/or adaptation strategy to ameliorate the climate change impacts (Falco *et al.,* 2018).

The literature exploring the three-way linkage between weather/climate variability, agriculture and migration has attempted to examine both the direction and extent of influence. Tables 1a and 1b provide an overview of some of the recent studies exploring this three-way linkage. Table 1a is the summary table based on econometric analysis using structural features of the relationship between variables and Table 1b is a summary based on those that are from direct linkages. The broad findings from these studies are as follows:

- Weather/climate variability leads to increase in out-migration, operating among other channels, through agriculture channel.
- Extent of impact on out-migration depends on prevailing migration rate, nature of weather/climate variability analyzed, nature of agriculture variable considered for analysis, and the methodology used. Two commonly used methodologies include: structural approach – linking migration with (endogenous) agricultural variable; and non-structural approach – linking migration with weather/climate variables and agricultural variables.
- Elasticity of migration to agricultural productivity is relatively low among developing countries (e.g., Viswanathan and Kumar, 2015) compared to the developed countries (e.g., Feng *et al.,* 2010,2013; Falco *et al.,* 2018).

- Agricultural distress could lead to different pathways of migration including, (i) rural to urban followed by emigration (Marchiori *et al.,* 2012); and (ii) either rural to urban migration or emigration directly out of rural areas (Feng *et al.,* 2010; Cattaneo and Peri, 2016).
- Emigration response could be more prominent among lower and middle-income countries, while very poor countries may face liquidity constraints and hence exhibit low rate of emigration (Cattaneo and Peri, 2016; Falco *et al.,* 2018).
- Evidence from India suggests that weather/climate variability induced agricultural distress could also lead to rural-rural migration (Dallmann and Millock, 2017) and short-term migration (Kumar and Viswanathan, 2013).

In sum, the studies based on structural approach provide estimation of elasticity of migration response to agricultural distress caused by weather/climate variability. Studies listed in Table 1a differ in terms of migration stream, weather/climate variables considered and agricultural variables analysed. Among them, the studies based on internal migration streams in the US and India is comparable. The results suggest that a 1% reduction in crop yield (corn and soybean in case of the US and rice and wheat in case of India) would lead to 0.3 to 0.4 percentage points increase in migration of adult population from the county in the US, whereas in case of India the percentage increase in out-migration from the state is as low as 0.0048 to 0.0076[2]. Such low elasticity could suggest that migration may not be an important adaptation strategy under climate change conditions in India. However, it is important to understand the nature of migration pattern in India and the reasons behind its low rate of inter-state mobility in India. Some of the constraints acting against the rural-urban/inter-state migration in the Indian could ease out in future and make migration an effective adaptation strategy.

In any discussion on internal migration, it is also important to take note of the underlying demographic changes. While in developed countries the discussion on the three-way linkage between migration-agriculture-climate is happening in a phase where the rural population growth rates are already negative, such discussion in developing countries is taking place in a phase where the rural population growth rates are far from negative. There are significant differences across developing countries also. Figure 1 indicates that the annual rural population growth rate in India is likely to go below zero only by 2025-30, whereas China achieved this by 1990-95.

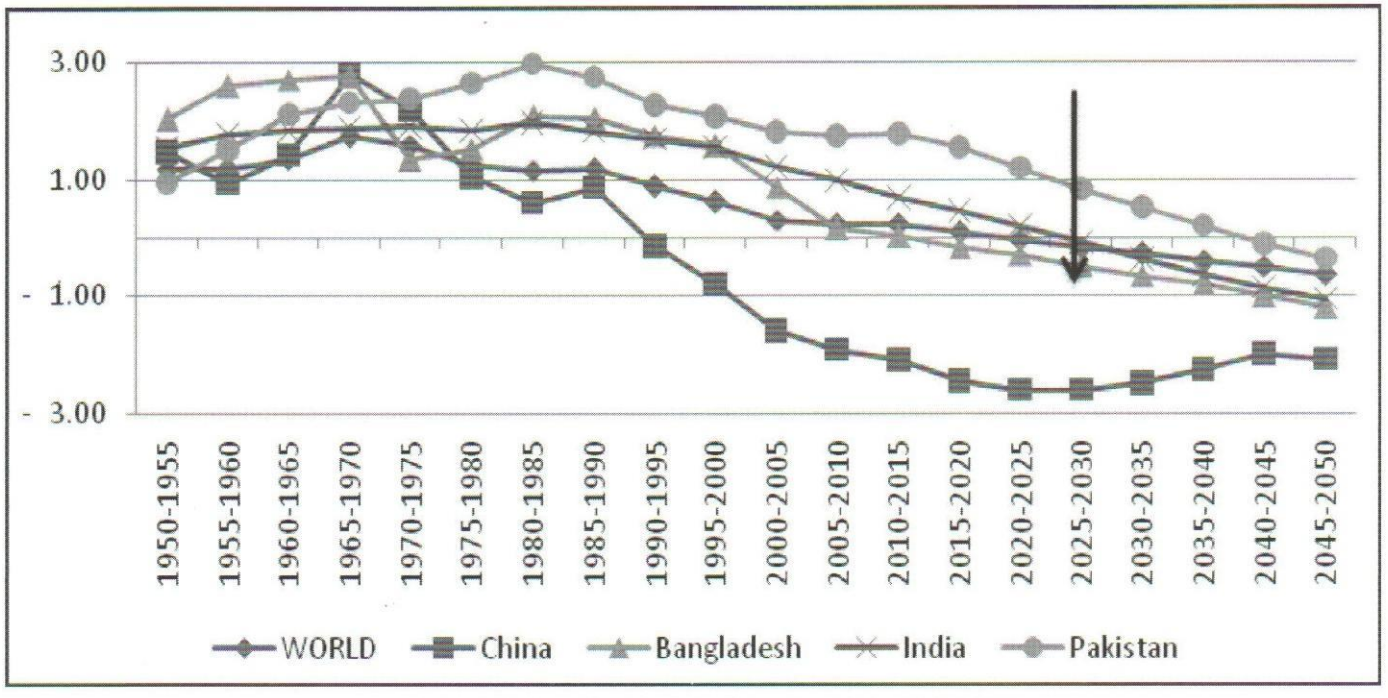



**Figure 1: Annual Growth of Rural Population: 1950-2050**

**Table 1a : Selective Evidence on Weather/Climate-driven Changes in Agricultural Productivity and Migration: Structural Approach**

| Sl. No. | Country, migration type and Study Period | Climate Variables | Agricultural Variables | Methodology | Elasticity of Migration to Agricultural Productivity | Reference |
|---|---|---|---|---|---|---|
| 1 | Mexico-USA Cross-country; 1995-2005 | Annual precipitation, annual mean temperature, and summer mean temperature | Corn and wheat yields | 2-stage least squares (2SLS) linking emigration with (endogenous) yields | Semi-elasticity: -0.2 (i.e., a 1% reduction in crop yields would lead to an additional 0.2% of population to emigrate) | Feng *et al.* (2010) |
| 2 | USA Internal; County-level; 1970-2009 | Growing season degree days, growing season total precipitation | Corn and soybean yields | 2SLS linking migration with (endogenous) yields | Semi-elasticity: -0.3 to -0.4 (i.e., a 1% reduction in crop yields would lead to an additional 0.3 to 0.4% of adult population to leave the county) | Feng *et al.* (2013) |
| 3 | India Internal; State-level; 1971-2001 | June-September mean temperature, October-November mean temperature, standard deviation of January-March precipitation | Wheat and rice yields | Limited Information maximum likelihood (LIML) linking migration with (endogenous) agriculture variable | Semi-elasticity: -0.0048 to -0.0076 (i.e., a 1% reduction in crop yield would lead to an additional 0.0048 to 0.0076% increase in out-migration from the state) | Viswanathan and Kumar (2015) |
| 4 | Bangladesh Internal; District-level; 1974-2000 | Mean and standard deviation of temperature and rainfall of agricultural seasons | Per-capita agricultural revenue from six crops | 2SLS linking migration with (endogenous) agricultural variable | One standard deviation weather-induced decrease in agricultural productivity induces 1.4 to 2.4% increase in the net out-migration rate from a district | Iqbal and Roy (2015) |
| 5 | Pakistan Internal; District-level; 1971-1998 | Mean and standard deviation of temperature and rainfall of agricultural seasons | Per-hectare agricultural revenue from major crops | 2SLS linking migration with (endogenous) agricultural variable | 1% weather-driven decrease in the crop revenue per hectare induces a 2 to 3% decrease in the *in-migration* rate into a district | Lohano (2017) |
| 6 | Bilateral migration between 115 countries; 1960-2010 | Annual mean temperature and precipitation | Mean annual agricultural output and agricultural roductivity | 2SLS linking migration with (endogenous) agricultural variable | 1% reduction in agricultural productivity leads to an increase of about 2% in the out-migration; this inverse relationship is prominent among lower and middle-income countries, and not among very poor and rich countries. | Falco *et al.* (2018) |

**Table 1b : Selective Evidence on Weather/Climate-driven Changes in Agricultural Productivity and Migration: Non-Structural Approach**

| Sl. No. | Country, migration type and Study Period | Climate Variables | Agricultural Variables | Methodology | Elasticity of Migration to Agricultural Productivity | Reference |
|---|---|---|---|---|---|---|
| 1 | 163 origin countries to 42 OECD countries; Cross-country; 1980-2010 | Annual temperature and precipitation | Cereals yields; share of agriculture value added in GDP | Gravity-type model with reduced form specification | Each 1°C increase in temperature implies a 5% increase in outmigration from the top 25% agricultural countries; this result does not prove that agriculture is the main channel behind temperature-migration relationship. | Cai *et al.* (2016) |
| 2 | 163 origin countries to 42 OECD countries; Cross-country; 1980-2010 | Annual temperature and precipitation | Cereals yields; share of agriculture value added in GDP | Gravity-type model with 2SLS specification | An increase in migration outflow is detected when the agriculture share goes down due to climate shock; use of agriculture share in GDP does not facilitate establishing clearly whether the effect of climate shock operates through agricultural channel, or through its impact on the overall economic condition. | Coniglio and Pesce (2015) |
| 3 | Bilateral migration between 115 countries; 1960-2000 | Annual temperature and precipitation | Share of agriculture in GDP | Reduced form specification between climate variables and emigration/urbanization | Decline in rural income can lead to either emigration or rural-urban migration (in contrast to sequential/ linked outcomes argued by Marchiori et al., 2012)Probability to emigrate is higher in middle-income countries – that too, those with higher dependence on agriculture; warming is less likely to increase emigration among poorer countries due to liquidity constraints. | Cattaneo and Peri (2016) |
| 4 | India Internal; State-level; 1991-2001 | Frequency, duration and magnitude of drought based on Standardized Precipitation Index (SPI) | Per-capita agricultural income | Reduced form specification between migration rate and SPI | Drought frequency and magnitude contributes to increase in inter-state (including rural-rural) migration – more so in case of states with greater dependence on agriculture. | Dallmann and Millock (2017) |
| 5 | India Internal; District-level; National Sample Survey Data; 2007-08 | Mean and standard deviation of annual temperature and monsoon rainfall | Employment in agricultural sector | Reduced form specification between probability of migration and weather variables | Temperature variability contributes towards permanent migration, whereas precipitation variables leads to temporary migration | Kumar and Viswanathan (2013) |

## Migration Patterns in India

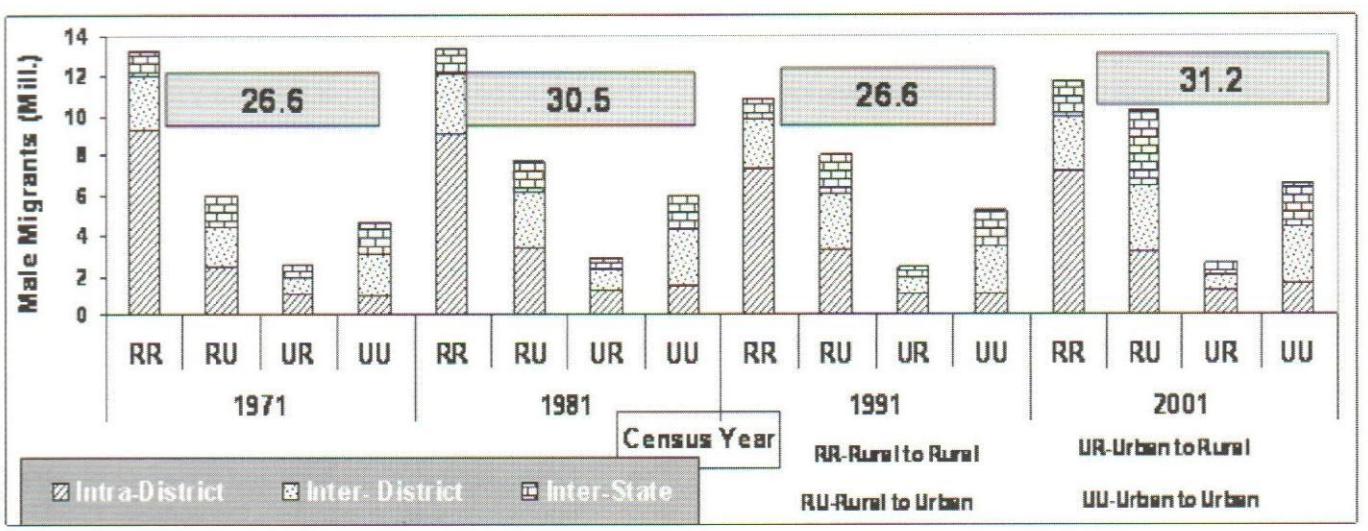
Migration in India is primarily documented in two databases: Census data and National Sample Survey (NSS) data. Since emigrants from India are less than one percent of the total number of migrants within and outside the country, most studies focus on trends in internal migration. During the three decades (1971-2001) of the declining/non-increasing migration rates, the absolute numbers of migrants have grown except for the period between 1981 and 1991 as shown in figure 2.

Since, for administrative purposes, India is subdivided into states and further into districts within each state, the nature and type of migrant movement can be further classified into (a) *intra-district* movement capturing within district movement from one village to another, (b) *inter-district* movement capturing movement between districts within a state, and (c) *inter-state* movement capturing movement between the states of India. Figure 2 juxtaposes these types of movement within each segment of rural-urban combinations.

In the case of males, intra-district rural to rural movement over time is being replaced largely by inter-state rural to urban and, to some extent, by urban to urban movement with a marginal contribution from inter-district movement. Kundu and Sarangi (2007) observes that more developed states like Maharashtra, Punjab and Gujarat registered high levels of in-migration between 1991 and 2001 while backward states like Bihar, Uttar Pradesh, Orissa and Rajasthan either reported net out-migration or very low in-migration. Based on NSS data, Ozden and Swadeh (2010) observe a similar pattern of migration corridors drawing people from the economically lagging states to the economically leading states due to differentials in the per capita domestic product of the states.

Overall the existing internal migration rates in India are relatively low compared to other countries at similar stage of development. Bell et al. (2015) observe that in the first decade of 2000s, India ranks last in a sample of 80 countries in terms of internal migration. This has been the case despite significant rural-urban wage differential in India compared to other fast developing countries. Munshi and Rosenzweig (2016) note that China and Indonesia report higher internal migration than India despite significantly lower rural-urban wage differential – about 10% in case of China and Indonesia in 2006-07 versus 45% in India in 2004. Ozden and Swadeh (2010) through an analysis based on India argue that socio-cultural and policy induced barriers could be responsible for low rural-urban migration rates. While multiple languages could form part of socio-cultural barriers, the policy induced barriers could include state-specific welfare programs which are not accessible once a household migrates to a different state.

More recently Munshi and Rosenzweig (2016), Kone *et al.* (2017), and Bhavnani and Lacina (2017) provided




Note: Numbers inside the figure denote the total inter-censal migrants in millions.

**Figure 2: Absolute Number of Internal Male Migrants in India: 1971-2001**

further explanations for the low rural-urban/inter-state migration rates in India.

- ***Social Insurance:*** Munshi and Rosenzweig (2016) argue that in the absence of well-functioning formal insurance and credit markets, smoothening of consumption (during shocks) happens through transfer from social networks in rural areas of India. Such social insurance could serve as constraint against migration. Using data from ICRISAT and REDS databases Munshi and Rosenzweig (2016) show that wealthier households are more likely to have at least one permanent migrant member and households facing greater variability in income tend to migrate less to avail benefit from the social insurance.
- ***Non-portability of Welfare Programs:*** Extending the arguments of Ozden and Swadeh (2010), Kone et al. (2017) point that non-portability of welfare benefits across states and home state quotas in jobs and educational institutions act as constraints against inter-state migration in India. Using district-to-district migration between 585 districts of India as per 2001 Census, they show that in the states with well-functioning PDS, the share of unskilled inter-state migrants is lower. In other words, larger the share of unskilled population that rely on PDS, the higher the tendency for potential emigrants to choose home-state destination over out-of-state destination. Similar trend is observed with regard to state quotas in jobs and educational institutions.
- ***Partisan Politics:*** Bhavnani and Lacina (2017) examined the degree to which exogenous, long-term migration prompts redistribution of central fiscal resources in India. Based on migration data and monsoon shocks, they show that increase in migration are met with greater central transfers (to the states receiving the migrant population), but such flows are at least 50% greater if the political parties in power are aligned at the Centre and the state. It is argued that such politicization of transfers may explain why Indian states maintain barriers to internal migration despite knowing the developmental costs of not doing so.

**Inter-state Migration: Recent Evidence**

The *Economic Survey: 2017* (GoI, 2017) argued that the inter-state migration in India has increased significantly in the recent past. It has based its arguments on both conventional and unconventional data sources. The Census data (2011) suggests that based on place of last residence, a total of 139 million have undertaken migration in India internally. Considering that usually 13 per cent of total migrants are inter-state migrants, the Census data indicates that about on an average 1.8 million per year have migrated from one state to another between 2001 and 2011. Using Cohort-based-Migration-Metric (selected states), *Economic Survey: 2017* on the other hand argued that inter-state migrants in the age-group of 20-29 years between 2001-2011 (1991-2001) were about 11 million (6 million). Considering that 20-29 age-groups constitutes 20 to 32 per cent of all migrants (as per Census and NSS data, respectively), *Economic Survey: 2017* estimates the average annual inter-state migrants over the period 2001-2011 to range between 3.4 to 5.5 million. Using unconventional data sources – unreserved railway passenger ticket dataover the period 2011-2016, *Economic Survey: 2017* further argues that annual inter-state migrants could be as high as 9 million in India.

The robustness of these claims can be established only after the detailed data from 2011 Census is made available. Further, the agriculture-migration and weather/climate-agriculture-migration linkage in these statistics are unclear. Few commentators (e.g., Sainath, 2011) have attributed the increase in migration from rural areas to distress conditions in agriculture, though the cause for distress has not been explicitly studied.

**4.0 Coping through Short-term Migration in India**

In addition to the long-term migration discussed so far, there could be short-term or temporary migration as well as rural-rural migration of unskilled/landless labour and marginal farmers. This could serve as effective coping strategy for addressing weather/climate variability induced agricultural distress. Census data doesn't capture short-term migration effectively, but NSS data (2007-08) provides some insights about the characteristics of short-term migration in India:

- Rural out-migration is higher from poorer households and poorer states;
- Casual labour (agricultural and non-agricultural) and unemployed are more likely to migrate;
- Larger households have higher probability to send out a member for temporary migration probably due to availability of surplus labour within the household;

- Individuals with lower as well as higher land holding are less likely to be temporary migrants compared to those in households with 0.4 to 1 ha of land.

Analysis based on NSS data further highlights that weather has significant role in explaining temporary migration, but relatively lesser influence on permanent migration. Temperature, rainfall and their variability are important determinants of temporary migration, while the permanent migration is broadly influenced by temperature and its variability alone (Kumar and Viswanathan, 2013). The temporary migration of men in search of livelihood options has increased the role of women as cultivators and agricultural labourers. For example, Bhandari and Reddy (2015) showed for the hill state of Uttarakhand that little or no capital formation on farms managed by women of the migrant household, resulted in a significantly higher burden on women, by comparison to women of non-migrant households. Pattanaik *et al.* (2017), through an analysis of 1981-2011 Census data, reports an increasing trend of women working as agricultural labourers in most states. They note that this adds to the existing heavy work load of most rural women. In the context of what is being referred in the literature as 'feminization of agriculture' (Slavchevska *et al.,* 2016) it is pertinent to explore the extent to which decision making capacity of women increase in the absence of men, and the productivity implications.

The literature suggests that the empowerment and decision making capacity of women in agricultural activities depends on social structures and socio-economic conditions of their families. In a study of agricultural families in eastern Uttar Pradesh, Paris *et al.* (2005) examined the incidence, patterns and impact of labour out-migration on the livelihood of rice farmers and the women left behind, and show that migration has increased women's decision making capacity. The patriarchal society practices predominantly influence whether women can participate in the decision making process of agricultural investment, in crop selection and practices. Evidence from Nepal suggests that male labour out-migration does increase women's labour participation in agriculture, though more significantly so in those cases where the left-behind women are de-facto household heads than in cases where they live with their in-laws. The position of the migrant's spouse in the domestic arrangement also plays a significant role in the effect of male out-migration on women's role in decision-making. Women, who in the absence of their husbands live with their in-laws, continue to remain under patriarchal control. On the contrary, women who are de-facto head of households can exercise more autonomy in decision-making and control over their mobility (Gartaula *et al,* 2010).

Distinguishing 'feminization of agricultural labour' and 'feminization of farm management', Chandrasekhar et al. (2017) argue that short-term migration (of male farmers) increases the probability of a women being associated with decisions pertaining to input use, cropping decisions, and sale of produce. However, since women operate under considerable constraints including limited educational qualifications and lack of ownership on land, feminization of agriculture may have adverse implications for agricultural productivity.

Migration of men results in increased pressure on women due to drop in labour supply and this in turn could have adverse effects on agricultural productivity. The effects of rural to urban migration on food production may be amplified as a result of the way family labour is divided by gender and age. Men may not be available for ploughing and other male dominated tasks which are both time and energy intensive. For women, this translates into a marked increase in agricultural work. With a diminishing supply of labour for male, women must either depend on hired labour (which many cannot afford) or resort to limiting agricultural operations. Hence, it leads to less agricultural production (Paris *et al.,* 2005). However, literature also argues that when women have access to inputs, information, and new technologies, there is no reason that they cannot produce at levels equally as efficient as those of men (de Brauw *et al.,* 2012).

## Conclusions

The following conclusions can be made with regard to migration in the context of weather/climate variability operating through agricultural channel:

- ***Global context:*** The cross country migration associated with sea-level rise, climate extreme and repeated drought conditions presents geo-political challenges, but such migration could be inevitable in climate change context. Further, weather/climate variability induced agricultural distress and resultant emigration could get enhanced due to climate change. Both these aspects need global climate policy attention on priority basis.
- ***Indian context:*** Internal migration, particularly in Indian context, presents several challenges. There is low rural-urban and inter-state migration at present

from a standard development perspective. Weather/climate variability induced agricultural distress may act as an additional facilitating factor to 'push' the migration rate in the desired direction. Even at the current rates of migration, poor infrastructure and limited/low-quality employment opportunities in the urban sector are contributing to inadequate levels of well-being of the migrant population. The weather/climate variability induced agricultural distress may exacerbate this problem.

Based on the above observations, Table 2 summarizes various migration streams along with weather/climate trigger, socio-economic aspects, and the agricultural context.

If migration were to be considered as an important adaptation/coping strategy, the following standard development response measures need reiteration from the climate change community:

- Measures to enhance agricultural productivity, including strengthening of welfare programs such as NREGA to improve rural infrastructure and better management of natural resources. Such measures would ensure: (i) that food security is not compromised due to climate change; and (ii) creation of additional non-agricultural rural livelihood options;
- Strengthen access to formal sector credit and insurance markets;
- Recognition of the role of temporary migration as an effective coping strategy in the medium term future; and
- Recognition of 'feminization of agriculture' and greater emphasis on policies that support women farmers.

**Table 2: Migration Streams, Triggers and Constraints**

| | Migration Stream | Climate/Weather Trigger | Socio-Economic Context | Agriculture Context |
|---|---|---|---|---|
| Development Policy Context | Short-term Internal | Climate extremes – e.g., drought, flood etc. | Needs relatively less investment<br><br>Language differences may act as barrier | Temporary abandonment |
| | Long-term Internal; intra-state | Minor climate variability – e.g.,rainfall variability; drought conditions | Needs moderate investment<br><br>Non-portability of welfare schemes and social insurance (of rural areas) may act as barriers; the latter limits rural-urban migration | Alternative places for cultivation<br>Alternative livelihoods |
| | Long-term Internal; inter-state | Major climate variability – e.g., increasing maximum temperature | Needs high investment<br><br>Possible only after language differences are crossed and welfare schemes are portable<br><br>Social insurance (of rural areas) may still act as barrier for rural-urban migration | Alternative livelihood options |
| Climate Policy Context | Emigration | Climate variability may not be the main trigger, especially in Indian context | Needs very high investment<br><br>Political and legal constraints<br><br>Capacity constraints – e.g., lack of skill and education | No direct agricultural connection |

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*"Migration is an expression of the human aspiration for dignity, safety and a better future. It is part of the social fabric, part of our very make-up as a human family"*

*– Ban Ki-moon*

# Reintegration of Return Migrants and State Responses: A Case Study of Kerala

S. IRUDAYA RAJAN AND C S AKHIL

*Countries of Origins are witnessing increasing rate of return migration of temporary labour migrants in the past decade. This paper analyses the process of reintegration of return migrants in Indian context by examining Kerala as a case study and portrays the existing state responses towards return migrants. Kerala is selected because of the rich tradition of international labour migration and the existence of a state-run institutional mechanism to manage migration. The study uses Kerala Migration Survey to create a profile of the return migrants to the state. The reintegration process has been analysed using semi-structured interviews with government officials and returnees followed by the analysis of policy documents. The basic profiling of return migrant clearly shows that majority of them are unskilled and semi-skilled workers returning due to loss of job because of the ongoing recession and nationalisation policies in the Gulf countries. The poor savings rate of return migrants and lack of employment opportunities in the state show that reintegration of return migrants would not happen without the support of the state. Even though Kerala has a well-developed migration management system compared to other Indian states, it is not enough to meet the demands of return migrants. The paper urges national government to create a comprehensive framework for return migrants by collaborating with state governments, which involves effective management of the skills earned by migrants in the host country and long-term financial assistance for reintegration.*

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## Introduction

Managing migration has become a complex challenge all over the world in recent decades. Both countries of origin and destinations are searching for ways to manage the seemingly ever-increasing mobility of migrants and refugees. Similar to managing emigration and immigration, management of return migrants also remains a comparably important aspect of international migration management.

In a globalised world where countries and capital prefer short-term mobility of labourers, employers in host country and host country government create such short-term labour programs which involve repatriation of migrants after a stipulated period of time. This practice leads to a stream of return migration, especially from developed countries to developing and underdeveloped countries (Costa and Martin, 2018) whose resources and infrastructural abilities to sustain them are evidently limited. Simultaneously, from many countries, especially within the Gulf, workers must return to the country of origin after retirement. There is no universally accepted definition for 'Return migrants' or 'Returnees' (Debnath, 2016). Here, the term 'return migrant' refers to a migrant who returns to the country of origin after retirement or those who return due to loss of job caused by policies and programs of the host country like nationalisation programs, sponsorship issues, etc. Regardless of the skill, the temporariness remains a common feature of international migration.

The reintegration/rehabilitation of migrant labourers continues to be a challenge for policy makers in international migration. It becomes important to understand how the major sending countries manages the reintegration of migrant workers. Attention is mostly dedicated to long-term migrants who return permanently after long years of

service in the country of destination (Battistela, 2018). In major countries of origin, policies for integration return migrants is still in its infant stages. Countries mainly attempt to extract benefits from migrants by channelizing remittances and creating atmosphere for investment (Gamlen, 2006).

The large-scale return of high, semi and low skilled migrants from the Gulf in the past 10 years have increased to the country (Rajan and Zachariah, 2019). Nationalisation measures in Gulf countries and the economic crisis they face become causes behind the increase in return migration. In this context it is important to see how India responds to the quest for reintegration by return migrants. As one of the major player along with the Philippines and other south Asian countries, the Indian government is supposed to frame explicit reintegration policies. However, policy-makers repeatedly emphasise that as a country with a federal system, reintegration is the duty of provincial states.

For analysis, we choose Kerala as a case study, a provincial state in India where 44 percent of households have direct migration experiences. Unlike at the national level, state response to migration in Kerala has been compared with that of countries with well-managed migration policies. It has a rich history of migration to Gulf countries after the oil boom in 1970's. The skill composition of migrants also changed over time from unskilled to semi and high skilled migrants. Simultaneously, in recent years due to aforementioned causes, the state also receives a large number of returnees every year. Majority of migrants are currently not returning after retirement or achieving their targets - instead, the 'forced return' from host countries compel returnees to search for income generating opportunities in the state.

This paper analyses how return migrants to Kerala are reintegrated into society and the local workforce, and how the state responds to it. The study uses Kerala Migration Survey to create a profile of the return migrants to the state. The nature of reintegration has been analysed using semi-structured interviews with government officials and returnees followed by the analysis of policy documents.

## Conceptualising Return and Reintegration

This section analyses existing empirical and theoretical explanations on return and reintegration of migrants followed by a brief explanation of existing state responses in the global and Indian context.

Several attempts to categorise return migrants and nature of return migration have already been done. (Battistela, 2018) identified four different types of return migrants based on the reasons of return. They are as follows:

- Return of achievement (voluntary return) – After completing the purpose of visit, mostly short-term labour exchange programs or projects.
- Return of completion (Involuntary return) – This is meant for those workers who are forced to return to country of origin after the completion of contract.
- Return of setback (voluntary return) - The migrant returns before the end of the migration process, for various reasons, including unsafe workplace, loss of payments, experience of trafficking. It is a setback from the perspective of the original migration project.
- Return of crisis: (forced) - It can be due to political or economic instability in the host country. In addition, the forced repatriation of irregular/illegal migrants also comes in this category.

However, the first section of returnees is mostly high-skilled migrants and rest of the categories are applicable to all sections of migrants regardless of skill sets.

A set of explanations emerged in the past few decades on return migrants and development of country of origin. Dumont and Spielvogel (2008) categorised the reasons for return from the perspective of home country advantages and disadvantages to host country. A broad categorisation on the factors that influence return has been done by Koser and Kuschminder (2015). They have classified factors into individual, structural and policy related factors. All these typologies are interlinked in one way or another.

The return of emigrants to home country and its impact on development is also a widely discussed aspect of international migration. The major benefits of migration are measured in terms of economic benefits including flow of remittances. The development impact of return migration is identified as transfer of skills gained from destination countries to countries of origin, carrying financial capital in terms of savings, contribution to social capital and finally acting as social change makers (Debnath, 2016) as well. Several studies (Dumont and Spielvogel, 2008; Gubert *et al.*, 2007) have identified that return migrants who possess a skill are better off placed labour market of the country of origin. Moreover, a set of studies found that returnee

migrants with capital turn to entrepreneurship and are expected to play a significant role in the local markets of major countries of origin (Mesnard, 2004; Jonkers, 2008).

Among the major countries of origin, few countries have policies for reintegration of international migrants. Some countries attempt to foster the return of skilled migrants via a set of policy initiatives to encourage voluntary return. China, Taiwan, South Korea and others have clear-cut long-term migrant return strategies to use acquired skills from the host country for the development of the origin state (World Bank, 2005). Several Latin American countries also followed the same strategy to fill the lack of scientists and medical experts in their country Voluntary return is normally based on the standards of living and other factors of socio-political stability in countries of origins. But the major vacuum of state intervention is visible when forced return occurs.

In Indian scenario, the state's attempt to attract return migrants was not as successful compared to China and other countries (Jonkers, 2008). However, the creation of special economic zones and related pro-industry policies helped the state attract return migrant entrepreneurs. The major stream of return migrants to the country are from Gulf, mostly unskilled and semi-skilled workers, and the involuntary or forced nature of return of these labour migrants are often neglected by the national government.

As a state, which experience constant flow of return migrants with a world-renowned migration management system, the reintegration process and response of the state is an interesting case to examine. The next section describes the current scenario of return migrant using Kerala migration survey.

**Profile of Kerala return migrants**

In this section a basic profiling of return emigrants can be done using the Kerala Migration Survey (KMS)[1], 2018. Kerala migration surveys point out that, about 90 per cent of Kerala migrants leave for the Gulf for temporary contract employment and the Gulf does not provide citizenship and all of them have to return back to Kerala once their contract expires (Rajan and Zachariah, 2019).

An attempt to portray the situation of return migrants in Kerala context has been done previously based on the first KMS survey in 1998. Zachariah et al., (2001) describes how the return migrants come back and reintegrate when majority of the migrants where low-skilled workers and when state support was completely absent in the state level. According to the study, Out of the return emigrants who are gainfully employed after return, most (44 percent) are self-employed. Almost an equal proportion of the emigrants are casual workers. Only 14 percent are in regular employment (Zachairah et al., 2001).

According to the survey, the number of return migrants is 1.29 million and is 60 percent of total emigrants. Even though there is an increase in the absolute number of return migrants, the percentage increase is declining (Table 1).

Among the return migrants, 97.5 percent of them were working in six Gulf countries. This underlines the temporary nature of Gulf migration. Out of six Gulf countries, Saudi Arabia and UAE sent back 71.5 percent of return migrants. These numbers are proportionate to the number of migrants in these countries. When it comes to the occupation of return migrants in host countries, 11 percent of them worked in construction sector, 3.3 percent workers were painters and 8.5 percent of them were

**Table 1: Return migrants to Kerala based on various round of KMS**

| Year | Return Migrants | Percentage increase |
|---|---|---|
| 1998 | 739245 | ——— |
| 2003 | 893942 | 17.3 |
| 2008 | 1157127 | 22.7 |
| 2011 | 1150347 | ——— |
| 2013 | 1252471 | 7.6 |
| 2018 | 1294796 | 3.3 |

*Source:* Rajan and Zachariah, 2019

Table 2: Major occupations of the return emigrants

| Major Occupations in the host country | Percentage of return migrants |
|---|---|
| Salesman | 12.6 |
| Construction worker/labourer | 11.1 |
| Motor vehicle driver | 8.5 |
| Electrician | 4.3 |
| Mechanic | 4.1 |
| Machinery Repair worker/welder | 3.3 |

*Source :* Kerala Migration Survey, 2018

drivers. As table 2 shows, almost 50 percent of the return emigrants are unskilled or semi-skilled workers.

The data on industries where return emigrants were employed also prove that most of them are low-skilled workers. 50 percent of the workers were in construction, retail and transportation sector in host countries. When we analyse the reasons for return, it was revealed that 29.4 percent of them came back after losing their job or laid off from work and 14 percent of them returned due to illness. Unsurprisingly, only 3.8 percent of the people came back after accomplishing the goal of migration and 7.8 percent of the return migrants wanted to come back and work in Kerala. Among the return migrants, 93.5 percent of them have monthly income less than Rs.50000. Out of the 93.5 percent, 51.4 percent of the workers were receiving salary below Rs.20000. It is a clear indication of the savings and capital return migrant possess when they come back to Kerala.

These numbers give a clear picture of return emigrants to the state where most of them are unskilled-semi-skilled workers who came back after losing their jobs in the host country. Considering the average monthly income they receive, rehabilitation of these workers would not happen without the backing of the State or external agents. The following section attempts to describe the process of reintegration in the state.

## Process of reintegration

Process of integration before institutionalizing the migration management was a different phenomenon. Zachaira et al (2001) points out that the only one fifth of the return migrants gain new skills when they return back to Kerala. Moreover the saving and financial situation of most of the return migrants were poor those days. They spent part of their savings on purchasing of land, construction of buildings, marriage or higher education. The foreign savings of the other half were entirely used for subsistence, loan repayment and the cost of migration was also relatively high during that time. It underlines the fact that majority of return migrants are not able to reintegrate themselves due to various reasons including financial situation, lack of employment opportunities, poor health conditions and so on. So, this section discusses how the situation has changed in the state after the state intervention in reintegration/rehabilitation of migrants.

Lack of data, which captures the post-return life of emigrants makes the life difficult for academia to understand processes of reintegration in the home state. A small sample survey of the return migrants who registered with Kerala Pravasi Welfare Board had been conducted. This has been followed by narratives from a few bureaucrats and return migrants to portray the reintegration of migrants. Using these data we attempts to portray the current situation of re-integration in the state.

Due to the large-scale migration especially to Gulf, the rate of return migrations is high. The data also underlines this fact. Historically, as a state with very minimal secondary sector growth, industrial opportunities are limited even for the Keralites within the state. Simultaneously, most of the returnees are unskilled and semi-skilled workers who cannot be easily absorbed into the domestic labour market.

A survey has been conducted among 25 return migrants who availed loans as part the state government's

rehabilitation programme[2]. All of them were engaged in construction-related activities in Gulf countries and came back without much savings. 80 percent of the workers lost their job after the introduction of nationalisation policies in Gulf.

Sunil (not real name), a respondent shared his experiences thus:

*"I have been working in Saudi Arabia for the past 12 years and managed to serve the needs of my family. As a driver in a construction company, I was not able to save much from my salary. Once I lost job, I could not find any other opportunities in neighbouring countries due to lack of demand for my job. So I decided to come back and work in Kerala. However, it is difficult to find a job where the driver gets salary equivalent to Rs.40000. So, I decided to start a "Chappathi- making Unit" with a loan from a commercial bank. Now I am struggling to repay the debt."*[3]

Sunil's case is representative of a cross-section of unskilled and semiskilled workers. They do not find the salary of the same job they were doing in Gulf, sufficient to meet their needs. Thus, most of them try their luck on small-scale industries. Among the respondents, 64 percent availed loan either to start a new small-scale venture or to repay debt. 20 percent of them began small scale farming and the rest of them wanted to meet family needs including the marriage of their daughters and health expenses.

Regarding the skills they earned in the host country, 40 percent of them claimed that their skills improved and they learned new methods and usage of modern machinery which are completely absent in the construction sector within Kerala. At the same time, 20 percent of the people who worked in retail sector had a different opinion. Even though, they have gained modern management skills from retail sector in the Gulf, workforce in the retail sector of Kerala also gained the same skill sets after the retail boom in recent years. In addition, 20 percent of the respondents were mechanics or automobile related workers.

Shahul, who was an automobile mechanic in a well-known international brand, explained:

*"I am aware about the lack of opportunities in Kerala for a return migrant. But those who acquired skills, which are impossible to be gained in India still have demand in our job market. I was confident about getting a decent job in Kerala with my experience and expertise in the specific car servicing. So, I only had to wait for three months to get the same job, but with a 25 percent salary cut. Since my counterparts are struggling to get a job, I accepted the job offer without any hesitation. I have two days off from work every week. So, I thought I will start a small-scale food processing unit."*[4]

His narrative shows that there are jobs in the market, which demand the skills acquired from abroad in Kerala. But majority of return migrants either do not acquire enough skills or do not find suitable jobs.

Since the respondents were unskilled or semi-skilled workers, it is important to understand how high-skilled/ rich return migrant reintegrate back to the home society. As the KMS data shows, the rate of return among high-skilled migrants or rich business men is comparatively less. However, a set of migrants always come back to the home country due to several reasons including familial ties, illness and other obligations. Majority of high skilled migrants look for better opportunities in developed countries during their tenure in the Gulf . Whosoever returns to Kerala holds decent savings and financial capital to secure their future life. A common tendency of return migrants is to start a new business venture. It can be a small-scale industry, retail shop, export firm, etc.

A few in-depth interviews conducted with successful NRI businessmen and officials of special economic zones could be useful to portray the present situation of financially sound return migrants. Around 99 percent of the return migrants approach financial institutions or special economic zones with a proposal for an export unit[5]. Most of them acquire basic understanding about the market demands in the host country where they worked over a period of time. This tendency of return migrants was well-narrated by Mr. K.K. Pillai, who runs an export-oriented firm for the past 30 years.

*"I was a senior official in a well-known bank for more than 10 years and due to recession I was asked to resign. By that time, I felt that I had earned enough money to either start a business or to live a peaceful life back in my home country. As an NRI who lived in the Gulf and the USA where lots of Indian live, I know what Indians demand in the host country market. So, I developed a detailed understanding about export opportunities to the Gulf. It is the same situation with an average return migrant till date. They want to earn the same or more than what they earned abroad. It is ideal for them to start business and by using the familiar market conditions and contacts as an advantage, they jump into export business. Some succeed*

*and some don't. Even engineers or other high-skilled people are also preferring to start business rather than continuing their profession'*[6]

It clearly shows that the skills and expertise learned by return migrants from the host countries are mostly invested in business. The lack of industries or other options where they can earn a salary equivalent to the earnings in the previous host country is a major reason for this phenomenon. Another reason for choosing other pathways different from their profession can be due to the difficulties in reintegrating to home societies (Faini, 2005) and one cannot ignore the possibility of skill deterioration as well due to the poor and heavy working conditions in countries where labour laws are absent.

Keeping aside the tendency of return migrants to earn more, the existing state policies at both national and state level could be a reason for the lack of interest by return migrants to join the local workforce or to start industries where they can apply their skills to improve the quality of production. The next section analyses the existing state policies both at national and state levels for the reintegration of return migrants to the host society.

**Existing state policies for return migrants**

Many countries which receive large amounts of return migrants every year have national level reintegration policies for migrants. The return of migrants is considered as a boost to the growth and development of the home country. The approach of the government of the origin country is important for productive return of migrants. China is the most recent example where highly skilled professionals returned to their home country after gaining adequate skill sets in different industries. The government provides various incentives to attract the return of Chinese skilled migrants from abroad including favourable research and development infrastructure and industrial zones (Sun, 2013). Several other countries including South Korea and Taiwan followed the similar strategy to incentivise the return of migrants (Cervantes and Guellec, 2002, Saxenian et al., 2002 ).

But as a country receiving the largest volume of remittances in the world and as one of the largest recipients of return migrants, India does not have an explicit strategy to manage or encourage the return of migrants (Zachariah et al., 2001). Attempts to attract investment from diasporas and rich migrants abroad in the beginning of the 21st century cannot be considered as a strategy for return migrants (Rajan and Kumar, 2015). Simultaneously, efforts including incentives for diasporas to start business, land ownership rights and citizenship rights did not bring expected investments due to the scepticism prevailing about government regulations in the country. The only which received a positive response is the IT industry. However, it is mainly due to the transnational nature of IT outsourcing (Upadhyay, 2004). There are no explicit approaches for encouraging investment of return migrants even by Ministry of Micro, Small and Medium Enterprises (MSME). The provisions and incentives of MSME are not known among return migrants due to lack of awareness.

The state should prioritise awareness programs for return migrants to ensure better reintegration of migrants. Another relevant stakeholder who can involve in reintegration efforts is commercial banks. They have been constantly involved in attracting NRI deposits via different methods. The same intensity is lacking in providing low-interest rate loans and other incentives to return migrants.[7] Even after the revamp of migration management in the beginning of the 21st century, rehabilitation/reintegration is identified as the responsibility of the provincial governments by the Indian government.

When it comes to the provincial governments, Kerala, Punjab and Andhra Pradesh have notable migration management system. Among them, Kerala has the oldest and comprehensive systems for managing international migration. Department of Non-Resident Keralites Affairs implements a set of reintegration initiatives through its field agency NORKA-ROOTS. A financial assistance programme was conceptualized essentially to ensure the welfare of the return migrants. 'Santhwana' is a distress relief fund set up for NRKs with the object of providing financial assistance to the NRK returnees. Through this scheme, financial assistance is provided to NRK returnees having a minimum period of service of two years and having an annual family income below Rs. 100000. The number of beneficiaries under this scheme during the period 2011-15 is 7293 and it is hailed one of the more successful initiatives by NORKA due to massive response from the emigrants.

Another major initiative to utilise the skills of return migrants productively for the development of the state is the initiation of a separate project called 'Norka Department Project for Return Migrants (NDPREM)'. It helps return migrants to develop sustainable business models for livelihood and offers a subsidy of 15% of the total project cost up to 0.3 million INR. During 2015-16, banks have

disbursed a total amount of 6.69 crores for 167 beneficiaries and a subsidy amount of 2.23 crores released. But the increasing rate of default and lack of mechanism to evaluate the viability of the programs remains as a major challenge for this initiative.

Based on the Non-Resident Keralites Welfare Act, the Kerala Non-resident Keralites Welfare Board was established. The board is meant to deal with the welfare and rehabilitation of return migrants. According to 2015-16 data, 42000 return migrants are registered as members of the welfare board. But the board do not encourage or help the return migrants to find a suitable job opportunity nor do they assist entrepreneurs who need both financial and other operational help. Even though, loan scheme by Norka-roots attracts interest from a set of return migrants. But the lack of monitoring after the financial support is the major drawback of the scheme. Majority of the projects are not viable and number of beneficiaries use the loan for various household purposes as well.

According to Hari Krishnan Namboothiri, The CEO of NORKA-roots:

*"Norka and Welfare Board is always available to help return migrants. But the lack of co-ordination between the centre and state governments in sharing data of return migrants is the basic problem. We do not know who came back with what skill set to the state. In addition, the news is widely spread that Kerala is not-industry friendly due to various reasons. It does not help the state reintegration programs. Further, combining efforts of both governments and financial institutions can only solve the lack of financial support for the return emigrants. Finally, the state is planning to form a data bank of return migrants with various skill sets and it will be shared among various employers in the country"*[8]

It is evident from the words of a top bureaucrat that the provincial government which is considered the best in managing migration also struggles to deal with the question of reintegration of return migrants. Without a doubt, one could say that the state is performing well in various stages of migration including pre-departure, during the stay in host country and return. But poor reintegration efforts remain as an outlier even in the context of Kerala. Since many of the migrants work in Gulf countries where return is a must, the state should consider reintegration of return migrants as a matter of immediate relevance.

As KMS data shows, the return of unskilled and semiskilled migrants fuelled by the nationalisation policies in Gulf cannot be dealt with the existing organisation structure of NORKA. A decentralised approach, for which Kerala is known for, is needed to be introduced to implement various reintegration schemes.

Another pitfall in creating a comprehensive reintegration strategy is the lack of definition of 'return migrants' and who all come under the purview of the definition. Moreover, the national government also should consider 'reintegration' as a responsibility of the central government and associate with state governments in implementing the programmes and data exchange and cost sharing of schemes. The newly formed Skill India Ministry can also be effectively used to capture the improved skill sets of the semi-skilled and high skilled return migrants.

**Notes :**

[1] Kerala migration survey is a series of surveys conducted by Centre for Development Studies on Migrants from Kerala over the past 20 years. It collects demographic and socio-economic characters of migrants and calculates the remittance as well.

[2] Under the Norka Department Project for Return Migrants (NDPREM) Scheme by Norka roots

[3] Interview conducted on March 7th 2019 at Malappuram

[4] Interview conducted on 7th March 2019 at Malappuram.

[5] Experts from the interview conducted with the Deputy Development Commissioner of Cochin Special Economic Zone on 6th March 2019.

[6] Interview conducted on 6th March 2019 at Cochin Special Economic Zone.

[7] The attempts to train return migrant as entrepreneurs are majorly carried out by lead banks in each district based on lead bank scheme by reserve Bank of India. But those programs are scientifically built.

[8] Interview conducted on March 11th 2019 at Norka Headquarters, Thiruvananthapuram.

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*"If you don't have migration you won't be able to fill important jobs to keep the economy going."*

*– Brunson McKinley*

# Competitive or Complementary: Impact of Inter-state Migration on Native Workers of Kerala

LIKHITHA. K. AND A. ABDUL SALIM

*Migration is unarguably the most influential process that has determined what the Kerala state now. That much impact the process has as far as all the fields of life in the state is concerned. This process of emigration facilitated the replacement migration of the labourers from other state of Kerala. Replacement migration is mainly due to the large scale migration of young working population along with the unwillingness of the people of Kerala to do manual works. A large number of migrant labourers got attracted to the state due to high wage rate, and better working and living conditions, which helped to reduce this imbalance between demand for and supply of labour. This labour in-migration obviously affected the economy and society to a great extent not only in positive but in negative terms also. One of the major adverse effects of in-migration is supposed to be in the labour market of the native workers. This paper examines whether the labour migration to Kerala is competitive or complementary to the native workers. This is examined in the framework of the competitive and complementary effect aspect of Borjas' theory of Immigration and supported by the evidences from the primary survey. The study finds that in-migration in the present context is not a threat to the native workers as majority of the in-migrants is unskilled or semi-skilled who are not competitive to the skilled native workers of Kerala.*

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## 1. Introduction

The failure of the domestic labour market to supply enough workers will obviously lead to the migration of labourers from outside. It may be from another part of the district, state, country or from other countries too. In the initial phases of this process of labour migration, it fills the gap between the demand and supply of labourers and leads to the increase in overall production and thus to the economic progress of the region. This migration benefits the migrants, who have comparatively higher wages in the receiving areas too. But when it becomes a situation of large influx of migrant labourers, the survival of the native workers becomes difficult. Then the replacement or displacement of the native workers increases.

Kerala is one of the most developed and progressive states in India that has achieved improvements in material conditions of living reflecting in indicators of social development which makes the state comparable even with many developed countries. The emigration from Kerala that brought about significant impact on the socio-economic spheres of the state facilitated the replacement migration of the labourers from outside in two ways; first it created a shortage of labour due to the large scale migration of young working population along with the unwillingness of the people of Kerala to do manual works. Second it accelerated the development in the state which generated high demand for labour in different spheres of economic activity especially in construction sector. A large number of migrant labourers got attracted to the state due to high wage rate, better working and living conditions which helped to reduce this imbalance between demand for and supply of labour. This labour in-migration is, obviously, able to affect the economy and society to a great extent not only in positive but in negative terms also. One of the major groups of people who are thought to be

more negatively affected by this phenomenon is the native workers of Kerala. The present study tries to analyse how far this popular conception of a replacement threat of native workers by the migrant workers is true.

## 2. Statement of the Problem

There are research evidences that view the impacts of immigration on the labour market as critically depending on the skills of migrants, the skills of existing workers, and characteristics of the host economy. Here the skills of both migrants and natives are a major determinant of the effects due to labour in-migration. The state of Kerala that is one of the most developed states in India, greatly due to the process of migration, specifically to Gulf migration, for its developmental achievements. Now the state is a major destination for workers from other Indian states. The large scale labour in-migration from these states is supposed to have some adverse effects in the labour market, especially those affecting the native workers. This paper tries to analyze how far the in-migration of labourers from other states of the country affects the native workers especially focusing on the probability of replacement of them from the labour market. Thus the broad objective of the study is to identify whether there is complementary or competitive effect of labour in-migration in Kerala.

## 3. Methodology

The impact of migrations on the labour market can be studied by the competitive and complementary effect aspect of Borjas Theory of Immigration within the framework of a competitive model of labour demand where wages are perfectly flexible (Borjas, 1995; Borjas, 2006; Edo, 2013).This model suggests that in short run, higher levels of immigration should lower the outcomes of competing workers while it increases that of complementary workers. In theory, the impacts of immigration on wages and employment of existing workers critically depend on whether and to what extent migrants' skills are complements or substitutes to the skills of existing workers, and on how immigration affects the demand for labour. Here the workers can be classified in to two broad categories of substitute and supplementary workers. Substitute workers are those who can serve in place of other workers because they have similar skills and thus compete with each other for positions. While supplemental or complementary workers need to work together in certain proportions to accomplish a task and thus they do not compete with each other for positions. As per this model when two groups of workers are skilled they can be competing workers, but if one group is skilled and another is unskilled they may be complementary workers and never creates a substitution effect. The study is based on both primary and secondary data. Primary data are collected from 384 native construction workers of Kerala through the field survey with a systematically structured interview schedule.

## 4. The question of Competitiveness: Impact on Native Workers

It is found that the shortage of manual labourers due to the high migration of Kerala youth and the investment made by the Non Resident Keralites especially in the construction sector, the most important factor that attracted the migrant workers to Kerala. Initially it was from the neighbouring states of Tamil Nadu, Karnataka, etc. and later the workers from the northern parts of the country started to become a part of our workforce. The number of migrant workers began to increase rapidly parallel to the demands in different sectors of Kerala economy. Migrant workers came to be visible in the nook and corner of many regions in the state. When the availability of better job, wage, working conditions and other services and facilities attracted the workers from outside, the Kerala people accommodated them without any hesitation due to the availability of cheap and hardworking labour (Rajan and James, 2007; Saikia, 2015). Thus the era of replacement migration began and flourished in the state.

This migrant's inflow has many impacts on both sending and receiving areas. Both areas get benefitted as well as some adverse effects also may be there. As far as the receiving area is concerned the process of labour migration helps the improvement of production in the economy through the increased supply of labour at cheap rates. In-migrants working poor working conditions and with low wages; they also work more hours with dedication (Anthony Edo, 2013). All these will prompt the employers to prefer migrant labourers to native workers. Many studies that focus on the impact of labour immigration or in-migration has analyzed this question of a threat by the migrant workers to the native workers and concluded with different results. Some of them maintain that there is only complementary effect, not any substitution between natives and migrants while some others have contradictory findings. Here the attempt is to understand the effect in Kerala.

### 4.1. Skill Level Distribution of Native Workers

To address the question regarding competitiveness, the skill level of the native workers and migrant workers is compared. Studies on labour migration to Kerala have found that the migrant workers mostly engage in the unskilled or semiskilled jobs (Saikia, 2010, 2015; Joy, 2016). At the same time, the present study observes the case of native workers differently (Table 1).

**Table 1: Distribution of Native Workers on Skill Level, 2016**

| Skill Level | No. of Workers | Percentage |
|---|---|---|
| Skilled | 300 | 78.1 |
| Semiskilled | 20 | 5.2 |
| Unskilled | 64 | 16.7 |
| Total | 384 | 100 |

*Source:* Sample Survey, 2016

The table shows that the lion share of the native workers are skilled workers (78.1 percent). Very few are unskilled (16.7 percent) and the proportion of the semi-skilled is lower still (5.2 percent). That means there is a skill level difference between migrant and native workers in Kerala. Thus there is no possibility of substitution effect in the labour market of Kerala as migrants are not equally skilled as the native workers. But we cannot make such a conclusion without checking the applicability of the above mentioned theory on the effect of in-migration. So the present study makes a pre and post in-migration period comparison of some major variables that indicates the working conditions of the native workers like their working days, job security and work satisfaction in terms of their skill level. Along with these the nature of work is also analysed based on the worker's skill level.

### 4.2 Skill Level and Nature of Work

Work can be permanent, temporary, contract basis or seasonal. Higher degree of permanency is desirable as it ensures enough earnings. Here the work nature differences in terms of the skill level are examined. First thing that should be considered is the temporary nature of the construction work which is part of the unorganised sector in our country. All the workers who are semi skilled or unskilled are temporary workers engaged in the construction sector (Table 2).

**Table 2: Distribution of Native Workers on Skill Level and Nature of Work**

| Skill Level of Employment | Category | Nature of Work | | | | |
|---|---|---|---|---|---|---|
| | | Permanent | Temporary | Seasonal | Contract Basis | Total |
| | Skilled | 42 (14.0) | 158 (52.7) | 6 (2.0) | 94 (31.3) | 300 (100.0) |
| | Semiskilled | 0 | 20 100.0) | 0 | 0 | 20 (100.0) |
| | Unskilled | 0 | 64 (100.0) | 0 | 0 | 64 (100.0) |
| | Total | 42 (10.9) | 242 (63.0) | 6 (1.6) | 94 (24.5) | 384 (100.0) |

*Source:* Sample Survey, 2016. *Note:* Percentages are shown in brackets

Table 2 reveals that the proportion of temporary workers is almost 52.7 percent in case of skilled workers. It is pity to find that all semi-skilled and unskilled workers work on purely basis. It can be under the same contractor or employer. Here it is proved that skilled workers enjoy permanency in their work compared to unskilled workers.

### 4.3 Skill Level and Working Days in Pre and Post Interstate Migration Period

The applicability of the competitive model of labour demand in Kerala labour market can be further clarified with the analysis of the pre and post in-migration working days of the native workers in terms of their skill level of employment.

Number of working days per week is very important as far as an employee, who gets paid daily or weekly as per the days he engaged in work, is concerned. Lesser the working days lower will be the earnings of that worker in a week that may threaten their very existence itself. So working days can be a matter of significant concern while analysing the impact of in-migration on the native workers. Here working days per week of the sample workers are analysed in terms of their skill level in both the periods before and after migration in order to examine the implications of substitution effect on Kerala labour market.

When we analyze the working days before migration of the workers to the state there were no one working below 5 days in the 3 categories of skilled, unskilled and semi-skilled workers. Majority of the workers with skill (skilled- 77.3 percent semi-skilled- 100 percent, unskilled- 62.5 percent) were able to find work above 5 days in the week before the arrival of migrant workers. But during the post migration period (Table 3), there is significant difference in the number of working days. All the semi-skilled and skilled workers now work below 5 days indicating a decrease in their working days as an impact of in-migration. Previously all of them were working either 5 days or above 5 days in a week. On the other hand there is not much decrease in the working days of skilled workers after labour in-migration as only 7 percent of the skilled are working below 5 days.

**Table 3: Distribution of Native Workers on Skill Level and Working Days in Pre and Post Interstate Migration Period**

| Skill Level of Employment | Category | Working days in pre and post interstate migration period | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Below 5 Days | | 5 Days | | Above 5 Days | | Total | |
| | | Pre | Post | Pre | Post | Pre | Post | Pre | Post |
| | Skilled | - | 21 (7.0) | 68 (22.7) | 167 (55.7) | 232 (77.3) | 112 (37.3) | 300 (100) | 300 (100) |
| | Semiskilled | - | 20 (100) | 0 (0) | 0 | 20 (100) | 0 | 20 (100) | 20 (100) |
| | Unskilled | - | 64 (100) | 24 (37.5) | 0 | 40 (62.5) | 0 | 64 (100) | 64 (100) |
| | Total | - | 105 (27.3) | 92 (24) | 167 (43.5) | 292 (76.0) | 112 (29.2) | 384 (100) | 384 (100) |

*Source:* Sample Survey, 2016. *Note:* Percentages are shown in brackets

From the Table 3 we can derive that skilled workers in Kerala are not affected by the in-migration justifying the view of Borjas that the migration from outside adversely affects the workers only when the skill level of both migrant and native are the same. There we can see a substitution effect only for the unskilled or semiskilled workers. Again as mentioned earlier the proportion of skilled workers is high among the native workers so that in-migration of unskilled workers is no longer a threat to native labour.

### *4.4 Skill Level and Job Security in Pre and Post Interstate Migration Period*

Another major indicator of the impact of in-migrants on the labour market of Kerala is change in the job security of native workers or the probability of the worker to keep his or her job. Low level of job security after migration points towards the adverse effect of labour in-migration. A comparison between the job security of native labour pre and post migration scenario can help this kind of an analysis.

Table 4 depicts the level of job security reported by the native workers before and after the arrival of migrants. No matter if they are skilled, semiskilled or unskilled low level of job security was felt by no worker during the pre in-migration period. The proportion of workers with high and moderate levels of job security were almost same for the skilled and unskilled workers while all the semiskilled maintained moderate level.

The level of job security of native workers, of course, got affected by the in-migrant labourers. That can be seen from the details of job security in the post in-migration period. As in case of working days only a minor proportion of the skilled workers (around 30 percent have low level now) got negative impacts on their job security. But the percentage is more than 80 for the unskilled and semiskilled

Table 4. Distribution of Native Workers on Skill Level and Job Security in Pre and Post Interstate Migration Period

| Skill Level of Employment | Category | Working days in pre and post interstate migration period | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | High | | Moderate | | Low | | Total | |
| | | Pre | Post | Pre | Post | Pre | Post | Pre | Post |
| | Skilled | 152 (50.7) | 36 (12) | 148 (49.3%) | 169 (56.3) | - - | 95 (37.7) | 300 (100) | 300 (100) |
| | Semiskilled | 0 0 | 4 (20) | 20 (100) | 0 (0) | - - | 16 (80) | 20 (100) | 20 (100) |
| | Unskilled | 37 (57.8%) | 5 ( 7.8) | 27 (42.2) | 6 (9.4) | - - | 53 (82.8) | 64 (100) | 64 (100) |
| | Total | 189 (49.2) | 45 (11.7) | 195 (50.8) | 175 (45.6) | - - | 164 (42.7) | 384 (100) | 384 (100) |

*Source:* Sample Survey, 2016. *Note:* Percentages are shown in brackets

who now reports low level of job security and it shows that a large majority of the workers those who are not skilled suffer from the decreased level of job security in the post migration period. Thus the arrival of unskilled migrant workers pose a replacement threat for these workers, but it never affects the skilled labourers who are the complementary workers to them.

### *4.5 Skill Level and Work Satisfaction in Pre and Post Interstate Migration Period*

Work satisfaction always adds to the overall condition of a worker. Higher the worker is satisfied higher will be the outcome too that he can produce. In the pre in-migration period the workers in Kerala had high levels of work satisfaction that is good and excellent levels as used in this study. None of them reported poor and fair level, however, there is a change in this as some workers now report low levels of job satisfaction (Table 5).

Majority of the unskilled workers (68.8 percent) reports poor work satisfaction and the rest has only fair level of satisfaction. All the semiskilled workers had a decrease in their satisfaction level as it reduced from good to fair. But the case of skilled workers is different. Majority of them (61.7 percent) have good levels of work satisfaction even in the post in-migration period. None of them have poor work satisfaction. At the same time none of the unskilled or semiskilled workers have good or excellent satisfaction. Thus the association between work satisfaction and skill level also make it clear that the negative impact of in-migration is mainly on the unskilled workers.

Table 5. Distribution of Native Workers on Skill Level and Work Satisfaction in Pre and Post Interstate Migration Period

| Skill Level of Employment | Category | Work satisfaction in pre and post interstate migration period | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Poor | | Fair | | Good | | Excellent | | Total | |
| | | Pre | Post | Pre | Post | Pre | Post | Pre | Post | pre | post |
| | Skilled | - | 0 | - | 100 (33.3) | 285 (95.0) | 185 (61.7) | 15 (5.0) | 15 (5.0) | 300 (100.0) | 300 (100.0) |
| | Semiskilled | — — | 0 | — — | 20 (100.0) | 20 (100.0) | 0 0 | 0 0 | 0 0 | 20 (100.0) | 20 (100.0 |
| | Unskilled | — — | 44 (68.8) | — — | 20 (31.2) | 64 (100.0) | 0 0 | 0 0 | 0 0 | 64 (100.0) | 64 (100.0) |
| | Total | — — | 44 (11.5) | — — | 140 (36.5) | 369 (96.1) | 185 (48.2) | 15 (3.9) | 15 (3.9) | 384 (100.0) | 384 (100.0) |

*Source:* Sample Survey, 2016. *Note:* Percentages are shown in brackets

## 5. Conclusion

The study was an attempt to understand the effects of the large influx of in-migrant labours to Kerala in terms of the competitive and complementary effect aspect of Borjas theory of Immigration. Kerala is one of the most prominent areas of destination for north Indian migrants. We largely depend on them for manual works especially in the construction sector that has flourished with the outcomes of emigration. But there is a popular conception, that these workers are taking away the employment opportunities of the native workers in Kerala. It is proved wrong through this article using the theoretical model of Borjas and other such authors. According to the theory the skill level differences of the natives and migrants should be taken into consideration to understand the effects of in-migration on native workers. Only the migrants with same skill levels of the native workers can create a substitution effect; otherwise there is only complementary effect on the native workers.

Majority of the in-migrant workers in Kerala are unskilled and the native workers are more skilled. So the migrants are complementary workers to the natives. This was further established with the evidences of changing working days, job security and work satisfaction that have negatively affected the unskilled or semi-skilled workers in the post migration period. But there is not that much negative effect on the skilled native workers. When the unskilled native and migrant workers compete with each other, the employers tend to prefer the migrants who are ready to take for more hours by taking any risk and they are ready to work for comparatively lower wages. Hence labour in-migration to Kerala mostly threatens the native unskilled workers in terms of lack of employment and currently it does not make any problem to the skilled workers. But it is interesting to find that migrants are gradually acquiring more skills and engaging in the skilled works too. In this context, it will have negative impact among a large majority of the native workers in Kerala.

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*"I'm a big believer that as much as possible, and there's obviously political limitations, freedom of migration is a good thing."*

*– Bill Gates*

# Male Out-migration and its Implications on the Socio-economic Status in Rural Bihar

UGRA MOHAN JHA AND NISHA VARGHESE

*The implications of migration are complex in nature and affect the economic growth of the region wherein it exists. India has witnessed more than three-fold increase in the levels of mobility from 1950 to 2011. Considering the long history of migration from Bihar, this study was conducted to examine factors influencing migration and its implication on the socio-economic status of the migrants in Bihar. Migration has resulted in several changes in the migrant households. It was found that the role of women in decision making related to various farming activities was more in case of migrant households. Migration has also resulted in diversification of the food basket.*

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## 1. Introduction

India has witnessed more than three-fold increase in the levels of mobility from 10.8 per cent of the total population classified as migrants in 1951 (Mehta, 1990) to 37.5 percent in 2011 (Census of India, 2011). Migrants from rural areas accounted for 60 percent of the total migrants in India in 2011. This reveals that there is still a strong tendency to migrate from rural to urban areas. Migration in India is primarily of two types: Long-term migration, resulting in relocation; Short-term or seasonal/circular migration, involving back and forth movement between a source and destination. It is estimated that short term migrants vary from 15 million to 100 million. As per National Commission on Rural Labour, most seasonal migrants belong to socio economically deprived groups, such as Scheduled Castes, Scheduled Tribes, and Backward classes.

Among the various states of India, Bihar has been recognized as one of the highest out-migrating states in India. Migration from Bihar has been reported since pre-independent era of 1830s with a large number of workers from Bihar going to the British colonies of Mauritius, Guyana, Trinidad and Fiji to work as labourers in the fields. After independence, in the mid-1960s and 1970s during the Green Revolution, large number of labour migrated from Bihar to Punjab and Haryana. In 1990s and 2000s, after opening of economy and post-liberalization, a significant number of migrants have also started going to several other areas to work which includes Delhi, Gujarat, Maharashtra, and Assam (Sharma *et al.*, 2005). Migration brings several socio-economic as well as political ramifications at both places from where out-migration takes place and where in-migration settles.

Implications of migration are complex in nature and affect the economic growth of the region wherein it exists.

Studies on migration usually assume great importance in formulating different policies like poverty alleviation, rural development, labour policy, urban development policy, agricultural policies, employment policy etc., to achieve a balanced and sustainable growth of the economy. In the absence of explicit information, the planners and policy makers are unable to make suitable policies for the disadvantaged. Considering the long history of migration from Bihar, it is imperative to know and examine factors influencing migration and its implication on the socio-economic status of the migrants.

## 2. Methodology

Retrospective case control study design was applied in this study. The cases were 'migrants' and controls were 'non-migrants' household. Primary survey data was collected through specially structured interview schedule. For out-migrants, only those families were considered in which at least one family member had migrated to other places for working as casual wage labourers or were self employed in agricultural or non-agricultural enterprises for at least three months during last one year.

The households in which members had migrated for education purposes and marriages were not considered for the study. Similarly, for Non-migrants, only those households were considered who had less than two acre of land including landless households so as to have parity in the socio-economic conditions of migrants and non-migrants. The district Darbhanga was selected as the highest district with highest male out-migration.

For selection of district with highest male out-migration the following criteria were applied:

1. Percentage male out-migration out of total male population in the district
2. Percentage male population in the district, out of total male population of state,
3. Percentage cultivated land area in the district, out of total geographical area of the district,
4. Percentage female literacy in the district

A two-stage stratified sampling was used for selection of villages. In the 1st stage, two blocks were randomly selected from the list of all the blocks of the selected district and in the 2nd stage from each of the selected block, villages were selected from the list of all villages, based on the available information regarding migration. From each of the selected Block, 50 sample migrants and 50 non-migrants were selected (Table 1).

**Table 1: Details of Sample Selection in the Study Area**

| District | Block | Villages | No. of sample | |
|---|---|---|---|---|
| | | | Migrants | Non-migrants |
| Darbhanga | Bahedi | Kushothar, Piradi, Godiya | 50 | 50 |
| | Bahadurpur | Yoriyara, Benipatti and Balaha | 50 | 50 |

*Source:* Field Survey

To examine the factors influencing the migration, the logistic model with the most likely variables was fitted. The logistic model was estimated using the maximum likelihood method i.e., the coefficient that makes our observed change in log odds associated with one unit change in the independent variable.

The model can be specified as

$$Y = g(Z) \quad \ldots (1)$$

$$Z = F(X_1, X_2, X_3 \ldots\ldots X_K) \quad \ldots (2)$$

Where,

Y = Migration status of the household. (Y = 1 for migrant household, and Y = 0, for non-migrant households)

Z = vector of explanatory variable

$X_1, X_2, X_3, \ldots\ldots X_k$ = Explanatory variables.

The logit model postulates that P, the probability of migration is a function of an index variable Z, summarizing a set of the explanatory variables. Z is equal to the logarithm of the odds ratio, (i.e.) ratio of probability of migration to the probability of non-migration and it can be estimated as linear function of explanatory variables ($X_k$). It can be expressed as $P = 1/1+e^{-Z}$ this represents the (cumulative) logistic distribution (Gujarati, 2003).

$$1-P = 1/1+e^{Z} \text{ or} \quad \ldots (3)$$

$$\frac{P}{1-P} = \frac{1+eZ}{1+e-Z} = e^{Z} \text{ or,} \quad \ldots (4)$$

$$Ln(P/1-P) = Z = F(X_1, X_2, X_3, \ldots\ldots X_k) \quad \ldots (5)$$

Once this equation is estimated, factors influencing migration can be ascertained. The specification of the various factors and its definition are given in Table 2.

### Women Empowerment Index (WEI)

To compare the empowerment of women in terms of decision making capability on farming and non-farming activities among migrant and non-migrants households, the Women Empowerment Index was calculated. Scores were assigned on the basis of who makes the decision,

**Table 2: Specification of the Variables to be used in the Logit Model**

| Variables | Definition / Codes |
|---|---|
| **Dependant variable (Y)** | **Y = 1, Migrant**<br>**Y = 0, if non-migrant** |
| Land/capita | Acre/person |
| Size of the family | In numbers |
| Type of household | Agricultural/Agriculture and other labour/ Govt Services, |
| | Self employed and others |
| Castes | Scheduled Caste/Other Backward Caste /General Caste |
| Occupation | Skilled/Unskilled |
| Average monthly income of household | In Rs |

*Source:* Field Survey

**Table 3: Profile of Migrants and Non-Migrants in Darbhanga**

(in Percent)

| Particulars | Darbhanga | | |
|---|---|---|---|
| | Migrant | Non-Migrant | Total |
| Number of Sample Households (N) | 100 | 100 | 200 |
| Age Profile | | | |
| Up to 20 Years | 1 | 0 | 0.5 |
| 21-45 years | 73 | 45 | 59 |
| 46 to 60 Years | 25 | 52 | 38.5 |
| Above 60 Years | 1 | 3 | 2 |
| Literacy | | | |
| Illiterate | 27 | 21 | 24 |
| Literate upto primary | 49 | 34 | 41.5 |
| Secondary/Higher Secondary | 17 | 33 | 25 |
| Higher Education | 7 | 12 | 9.5 |

*Source:* Field Survey

assigning highest score when the decision was taken by spouse alone. The scores were assigned on the scale of 1 to 5. For each activity, the scores were then multiplied by the number of respondents under respective decision makers' category which were then summed up and converted on the scale of 5 and named as empowerment scores.

The Women Empowerment Index was then calculated as the average women empowerment scores for migrants/non-migrants for all activities divided by 5.

## 3. Results and Discussion

### *3.1 Profile of Migrants and Non-Migrants*

The profile of the respondents of the study shows that on an average, 73 Percent of the migrants belonged to the age group of 21 to 45 years. This clearly indicates that young men in their productive age were more prone to migration. Similar results were reported by (Rajan, 2011 and Karan, 2003). Most of the migrants were either literate upto primary level or illiterate. Generally, migrants come from the socially excluded groups with less educational status. Similar observations were recorded by (Srivastava, 2012 and Rajan, 2013). More than 70 percent of the migrants were either illiterate or literate upto primary level showing lower educational status of migrants as compared to non-migrants. Mostly the migrants are either unskilled or semi skilled and pick up menial jobs and tasks that require a lot of energy. The detailed profile of the respondents of the study is given in Table 3.

### *3.2 Identification of Factors Influencing Male Out-Migration*

The factors influencing male out-migration were identified using logistic regression model. The factors identified included per capita land holding, size of the households (number of members in the family), caste, type of household, occupation, and average monthly income of the family. Table 4 shows the results of binary logistic regression analysis.

Results show that in the study area, landless are almost 10 times more likely to migrate than those who have more than 2 acres of land. Similarly household having upto 1 acre of land are more than 3 times more likely to

**Table 4: Logistic Regression of Key Independent Variables on Dependent Variable (Migrant)**

| Characteristic (Independent variables) | Adjusted Odds Ratio (EXP(B)) | 95% Confidence Intervals (C.I) | P- value |
|---|---|---|---|
| **PER CAPITA/LAND HOLDING** | | | |
| Landless | 10.479 | 3.017-36.401 | 0.000 |
| Upto 1 acre | 3.387 | 1.211-9.476 | 0.020 |
| 1-2 acre | 3.922 | 0.895-17.191 | 0.070 |
| More than 2 acres of land | Referent | | |
| **HOUSEHOLD SIZE** | | | |
| Less than 5 members | Referent | | |
| 5 members | 0.530 | 0.247-1.135 | 0.102 |
| 6 members | 0.426 | 0.197-0.920 | 0.030 |
| More than 6 members | 0.162 | 0.069-0.378 | 0.000 |
| **CASTES** | | | |
| Schedule Caste | 2.569 | 0.923-7.151 | 0.071 |
| Other Backward Caste | 1.768 | 0.624-4.610 | 0.301 |
| General Caste | Referent | | |

| | | | |
|---|---|---|---|
| **SOURCE OF LIVELIHOOD** | | | |
| **Agricultural** | 0.127 | 0.033-.497 | 0.003 |
| **Agricultural and other labour** | 3.865 | 1.733-8.618 | 0.001 |
| **Government Services, Self employed and others** | Referent | | |
| **OCCUPATION** | | | |
| **Unskilled** | 5.646 | 2.838-11.235 | 0.000 |
| **Skilled** | Referent | | |
| **AVERAGE MONTHLY INCOME OF HOUSEHOLD** | | | |
| **<= Rs 3000** | 0.207 | 0.057-.759 | 0.018 |
| **Rs 3001 - Rs 6000** | 1.592 | 0.424-5.981 | 0.491 |
| **Rs 6001- Rs 10,000** | 3.361 | 0.854-13.229 | 0.083 |
| **>Rs 10,000** | Referent | | |

*Source:* Field Survey

migrate than those who have more than 2 acre of land. Even those having more than 1 acre of land and less than 1 acre of land are also 3.9 times more likely to migrate than those having 2 acres of land (Table 4).

Though the size of land holding of all the respondents is very less, the results of the analysis show that landless are more likely to migrate than those having small land holding. Poor households typically rely on the sale of their labour for farm and non-farm activities and they migrate as labour migrants (Roy, 2016). Those with limited access to land and other assets are more likely to migrate (Desiganker, 2004). In terms of landholdings, the probability of migration is high for the landless and for smaller landholders (Tsujita *et al.,* 2012).

The other key independent variable is size of the household. It was observed that those families having 6 members and are more likely to migrate in comparison to those having less than 5 members. With respect to caste, it was observed that Schedule Castes are 2.6 times more likely to migrate than those from General Caste category. Deshingkar and Start, 2003, in their study reported that Scheduled Tribes are several times more likely to migrate compared to upper castes, followed closely by the Scheduled Cates (SCs) who are roughly five and a half times more likely to migrate than Other Castes (OCs) and Backward Castes (BCs) who again are four and a half times more likely to migrate than Other Castes (OCs).

With respect to source of livelihood, it was observed that those involved in agriculture and labour are 3.8 times more likely to migrate than those employed in government services, self employed and others. With respect to occupation, it has been found that unskilled workers are 5.6 times more likely to migrate than those who are skilled. As far as income is concerned, it has been found that those having average monthly income less than Rs. 6000-Rs 10,000 are 3.4 times more likely to migrate than those having more than Rs 10,000 average monthly income. Studies have confirmed that skilled migrants are attracted by pull factors, whereas unskilled migrants are driven by a combination of both push and pull factors. Further, unskilled migrants are pushed out of the rural areas into urban areas, whereas skilled migrants are pulled/ attracted towards urban areas. It was also found that unskilled migrants are likely to make less than Rs 1500/month, whereas skilled migrants can make more than Rs 10,000/ month (Rajan *et al.,* 2011).

### 3.3 Implications of Migration on Socio-economic Status

#### *3.3.1 Distribution of Expenditure in Migrant Households*

The expenditure details of migrant households, both current and 10 years ago in Darbhanga are presented in Table 5.

In the past 10 years the expenditure on food has decreased among migrants in Darbhanga. The migrants have started spending more on health, clothing and house construction. There has also been a considerable amount of increase in the amount being spent on loan repayment in the recent years. It was observed that current distribution of expenditure was more diversified than 10 years ago. In the study district of Darbhanga, current expenditure on Food constitute around 40 Percent; education and medical constitute around 15 Percent, expenditure on clothing and house construction constitute around 13 Percent of total expenditure. On the other hand, 10 years ago expenditures on Food were 44.7 Percent; education and medical expenditures constituted around 12 Percent but expenditure on clothing and house construction was comparatively less (Table 5). This observation is also in the line of general perception that food accounts for a significant proportion of income especially in case of lower income group people. Also increase in income push the increase in expenditure towards household development. A similar study conducted by (Singh *et al.,* 2011) stated that food constitutes maximum share 62 percent of the income and expenditure on clothing etc. Also constitute a significant amount (13.6 Percent). Mahapatro *et al.,* 2014, in their study reported that the households receiving remittances spend less on food and more on education and health care. Increasing expenditure with remittance flow on these critical variables signifies the positive impact of remittances on household development.

### *3.3.2 Changes in Operational Land holdings among Migrant and Non-Migrant Households of Darbhanga in the Past 10 Years*

There are two types of share cropping systems followed in the study area. One is Bataidari and another is Manhunda. Bataidari system is a type of sharecropping, where a landowner lends his land to another person who spends money and labour and the produce is shared by

**Table 5: Distribution of Expenditure of Migrant Households of Darbhanga**

**(Percent)**

| Particulars | Darbhanga | |
|---|---|---|
| | Now | 10 yrs ago |
| Sample Size (n) | 100 | 100 |
| Food | 39.9 | 44.7 |
| Education | 7.2 | 8.1 |
| Medical | 7.9 | 3.7 |
| Clothing | 5.6 | 1.6 |
| House Construction | 7.1 | 2.4 |
| Tobacco Products | 1.9 | 1.4 |
| Farm Inputs | 3.2 | 2.4 |
| Social Obligation | 2.7 | 0.4 |
| Loan repayment | 11.3 | 1.6 |
| Farm Investments | 3.8 | 0.0 |
| Others | 9.4 | 33.5 |
| Total | 100 | 100 |

*Source:* Field Survey

the owner and the tenant on output sharing basis. Manhunda system is an agreement between the people for fixing a certain quantity of money or output per Bigha irrespective of loss or profit.

Among migrants, out of the landholdings being put to various uses, the percentage of land put to farming through Bataidari system increased from 8.6 percent in 2006 to 58.6 in 2016. It is also worth mentioning that in 2006, the share of combined or unfragmented land was 46.6 percent and by 2016, there was no combined land holding left. Whereas in case of non-migrants the land put to farming through Bataidari system showed a marginal increase from 11.9 percent in 2006 to 19 percent in 2016. This goes to show that due to migration of male members of families, migrant household are putting majority of landholdings under Bataidari. Whereas in the non-migrant families the male members take care of farming due to which very less landholding are put under Batadari. Share cropping is prevalent in Bihar since pre independence era. It was estimated that nearly 35% of cultivable land was under this system in Bihar (Sharma, 2005, Kumar 2012). Another study in Bihar showed that nearly 60% of the respondents have no land for cultivation. Their means of livelihood was either as labour or Bataidari (Mishra,1998). Bataidari system provided a more stable source of employment to the landless than mere causal wage labour (Prasad, 1998). The details of the changes in the operational holding status of migrant and non-migrant households of Darbhanga during the past 10 years are shown in the Figure 1.

### *3.3.3 Comparison of Decision Making Roles on Various Farming Matters of Migrants and Non-Migrants*

Decision making role of family members of migrants on various farming matters were examined. It was found that in the migrant households, the spouse of the migrant has a major role in decision making in various agricultural activities (Table 6).

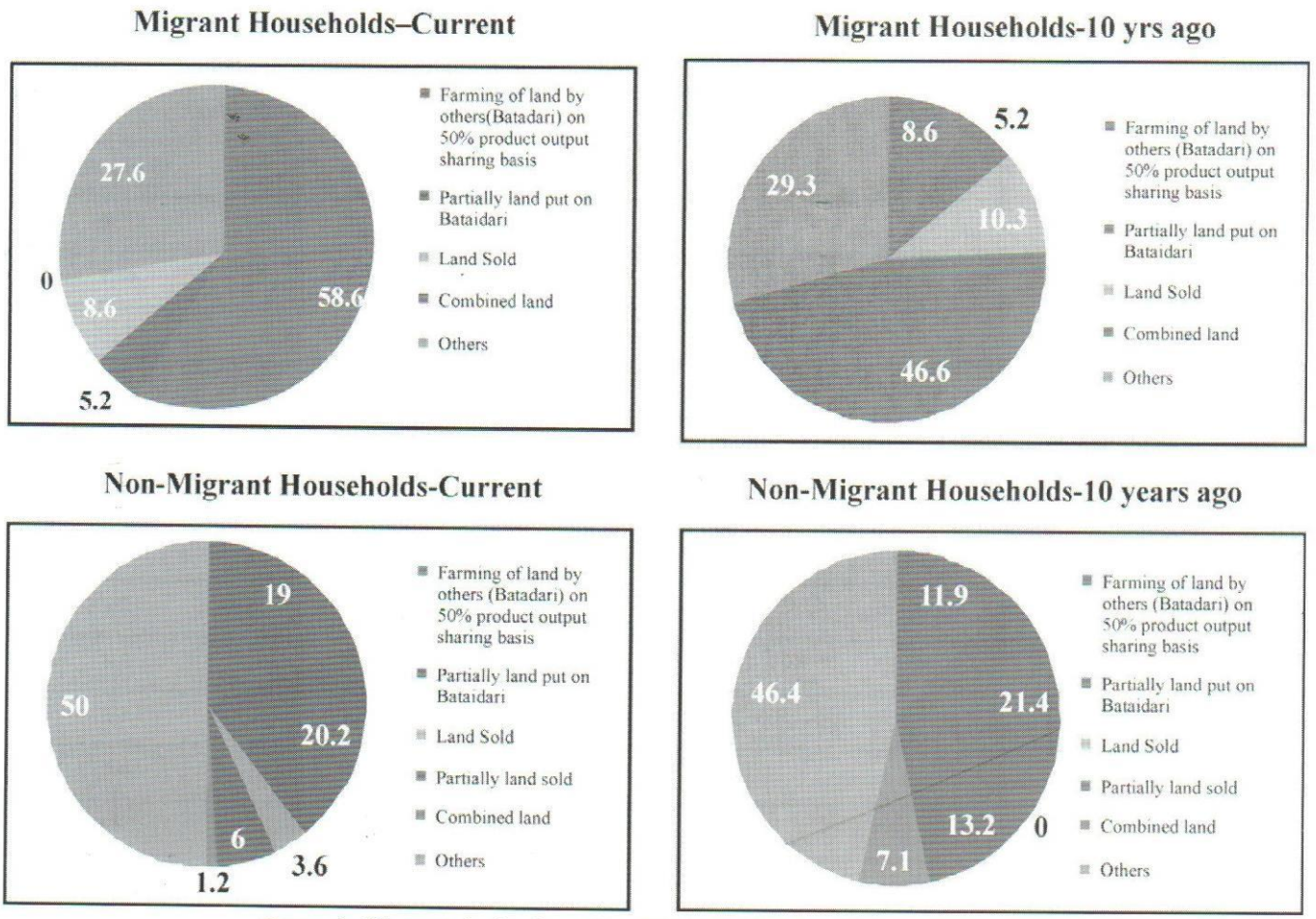


**Figure 1: Changes in the Operational Holding Status of Migrant and Non-Migrant Households of Darbhanga in Past Ten Years**

Table 6: Women Empowerment Index for Migrant and Non-Migrant Households in Farming Activities in the Study Area

| Decision Making | Migrant | Non-migrant |
|---|---|---|
| Ploughing | 5.24 | 4.28 |
| Sowing | 4.52 | 2.84 |
| Irrigation | 2.93 | 2.53 |
| Weeding | 3.56 | 2.54 |
| Application of plant protection chemicals | 2.47 | 1.61 |
| Harvesting | 4.09 | 3.16 |
| Post harvest activities- Winnowing/Threshing | 3.12 | 3.4 |
| Selling of Farm Produce | 1.92 | 1.28 |
| **Empowerment Index** | **0.87** | **0.68** |

*Source:* Field Survey

It can be seen from the score chart of women empowerment indices of migrant and non-migrant households (Table 6) that the role of women in decision making in all the farm activities including predominantly male dominant activities such as ploughing, sowing, irrigation and selling of farm produce is more in case of migrant households as compared to non-migrant households. The empowerment indices of migrant households of the study area were 0.87 as compared to 0.68 in case of non-migrant households. This is due to increased involvement of women of migrant households in various farming activities such as ploughing, sowing, harvesting etc. It has empowered women of the migrant households by increasing their say in the decision-making of many activities. This findings is in accordance with a study which stated that due to male out-migration, the women left behind in the villages assume a major role in various farm activities resulting in the so-called 'feminization of agriculture' (Singh *et al.,* 2011).

### *3.3.4 Women Empowerment in Household Decision Making*

Women empowerment has become popular in the field of development since 1980s. It is widely recognized that women empowerment is essential for sustainable economic growth and reduction in poverty in developing countries (Klasen, 1999). Migration of the male member of the households leaving behind spouse, children and the elderly parent has increased the role of women in decision making in both households and farm related matters. Though, the decision making power entrusted on the women in the migrant households is forced, it does empower women by giving them the freedom to decide on financial and family related matters. A comparative picture of the role of women among migrant and non-migrant families in various decision making activities is shown in Table 7.

It can be seen that in Darbhanga the role of women in major decisions like spending of money, large household purchases, daily household needs, healthcare etc., is more among migrants as compared to non-migrants. The overall empowerment index is 0.49 among women from migrant households as compared to 0.35 among women of non-migrant households in Darbhanga. These findings are in accordance with the observation in study (Singh *et al.,* 2013) which states that women of migrant households are more empowered in taking agricultural and other household decisions than women of non- migrant households.

### *3.3.5 Social and Institutional Changes Felt by Migrant Households*

The social and institutional changes felt by the migrant households in Darbhanga are given in Table 8. Due to male out-migration, there has been increase in demand of labour as felt by 83.5 percent of households. Male out-migration has also resulted in increase in workload due to absence of migrants (74.5 percent) and problems in hiring and supervising labour (65.9 percent). Though migration has

**Table 7: Empowerment Indices in Various Household Decisions in the Study Area**

| Activities | Darbhanga | |
|---|---|---|
| | Now | 10 yrs ago |
| Decision on how to spend money | 2.5 | 1.76 |
| Final say on large household purchases | 2.49 | 1.79 |
| Final say on daily household needs | 2.48 | 1.92 |
| Final say on own health care | 2.47 | 1.82 |
| Final say on child health care | 2.44 | 1.68 |
| Decision on visits to family or relatives | 2.43 | 1.59 |
| **Empowerment index** | **0.49** | **0.35** |

*Source:* Field Survey

**Table 8: Change Felt Including Social and Institutional Changes by Migrant Households in High Out-Migration District of Darbhanga**

**(Percent)**

| Particulars | Darbhanga |
|---|---|
| | % responses in "Yes" |
| Increase in workload due to migrants' absence | 74.5 |
| Problem in hiring/ supervising labour | 65.9 |
| Share manpower with other villagers | 53.6 |
| Increase in demand for labour in the locality | 83.5 |
| Increase in operational landholdings | 38 |
| Improvement in quality of food consumed | 80 |
| Decrease in debt after migration | 91.5 |
| Improvement in the status of family in the society | 89.1 |
| Increase in participation of the family in social activities | 64.4 |
| Come back if work is available in the village | 51.2 |

*Source:* PhD Field Survey

resulted in labour related problems as expressed by most of the migrant households, they have also accepted having reaped the benefits of migration in terms of improvements in quality of food (80 percent) decrease in debt (91.5 percent) and improvements in social status and increased participation of families in social activities. Almost half of the migrants expressed the desire to come back if there is work available locally (Table 8).

These findings are in accordance with findings of a study which stated that respondents reported increase in workload due to absence of migrants in around 81 percent of the migrant households in Bihar. It also reported problems in hiring and supervising labour in around 47 percent of the households of migrants in Bihar (Singh *et al.,* 2011).

### *3.3.6: Views of Respondents from Migrant Households on the Felt Changes in Family Welfare after Migration*

The remittances sent by the migrants do help in improving the family welfare status of migrant families. Views of the families from the migrant households on the changes in the family welfare status as indicated by three parameters of education, nutrition and health are presented in Table 9.

Respondents were given two statements related to education, six statements related to nutrition and four statements related to health status. Most of the migrants agreed to increased emphasis on girl's education after migration. Similarly increase in nutrients intake by the migrant households in terms of increased consumption of cereals, green vegetables, fruits, milk, meat and egg has been reported by the members of the migrant households. As far as improvement in health is concern, only 49 percent of migrant households in Darbhanga prefer to consult a Doctor in seasonal ailments. Around 67 percent of the migrant households of Darbhanga reported increased frequency of health problems in the Family. This

**Table 9: Views of Migrant Respondents Regarding the Family Welfare Status after Migration**

| Particulars | Darbhanga (n=100) | |
|---|---|---|
| | Agree (%) | Disagree (%) |
| **IMPROVEMENT IN EDUCATION** | | |
| Children started going to school | 83.3 | 16.7 |
| Increased emphasis on girl's education | 76 | 24 |
| **IMPROVEMENT IN NUTRITION** | | |
| Increased consumption of cereals | 81.8 | 18.2 |
| Increased consumption of green vegetables | 82.8 | 17.2 |
| Increased consumption of fruits | 74.7 | 25.3 |
| Increased consumption of milk | 70.1 | 29.9 |
| Increased consumption of meats and eggs | 73.3 | 26.7 |
| Increase in overall happiness of the family | 88.5 | 11.5 |
| **IMPROVEMENT IN HEALTH** | | |
| Increased preference to consult a doctor in seasonal ailments | 49.4 | 50.6 |
| Increased frequency of health problems in the family | 67 | 33 |
| Improved health care of older persons in the family | 91.7 | 8.3 |
| Treatment of pregnant women | 74.1 | 25.9 |

*Source:* PhD Field Survey

is probably due to the added responsibilities of the spouse of the migrant who is also the care giver of the family. Most of the migrant households also reported improvements in health of elderly persons in the family (97.1 percent) and treatment of pregnant women (74.1 percent). The findings are in accordance with the study conducted by (Singh *et al.,* 2011) which reported that improvement in health status and nutritional status secured higher Welfare Assessment Index values as compared to that in case of Migration from Bihar is generally distress migration where most of the migrants are landless or have very small land holdings and lack any formal vocational training or education needed to take-up skilled jobs in the cities. Most of the migrants from the study area had low literacy level, and were from the economically productive age-group of 21-45 years of age. Migration of male members of the families has several implications on the socio-economic welfare of the migrant families. Male out-migration has resulted in an increased proportion of operational holding of land being put to Bataidari system. The role of women in decision making related to various farming activities has also increased in case of migrant households. Migration resulted in increase in workload of family members left alone and they also found it difficult to hire labour. However, migration has resulted in diversification of the food basket of the family members. Migration improved the overall welfare of the family in terms increased emphasis on education of girl child, more diversified consumption and more care of elderly and pregnant women. The expenditure basket of the migrants is more diversified as compared to non-migrants.

## 4. Conclusion

Most of the migrants were either landless or small and marginal holders. The income earned from these holdings is not enough to sustain their family requirements, which forces them to migrate in search of higher income. Policies directed towards the needs of small holders in terms of rural non-farm employment could help curtail distress migration.

As most of migrants in Darbhangha were unskilled labour and fetched very less income even after migration, it is important to have policies directed towards skill development, especially of the rural youth. In line with the Government's National Skill Development Mission, the youth should be trained after assessing the skill needs so as to provide gainful employment to the rural youth. Efforts should be directed towards creating more urban like amenities in rural areas. Government's RURURBAN missions should be implemented fully in all rural areas so that the rural areas attract as many residents as the urban areas.

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*"Urbanization is not about simply increasing the number of urban residents or expanding the area of cities. More importantly, it's about a complete change from rural to urban style in terms of industry structure, employment, living environment and social security."*

*– Li Keqiang*

# Dual-Step Migration from a Village in Uttar Pradesh: Causes, Processes and Consequences

**BHASKAR MAJUMDER AND Md. TAUKEER**

*Cross-border migration often takes place at two levels. In the first level labourers migrate from their native places to the destination city within the national economy facilitated by their social network, and in the second level they migrate abroad for economic opportunities. The first one provides space and time to take decisions, while the second one lifts their economic status often at the cost of risks. We selected a village Inayat Patti in the district of Allahabad, Uttar Pradesh to examine migration of labourers, first to the metropolitan city of Mumbai and then to countries in the Gulf. The labourers migrated to the Gulf countries based on informed positive wage-differential. The causes, processes, and consequences of dual-step migration by selected indicators are explained in this paper. The paper pleads for a positive role of the state to safeguard the labourers migrating to the Gulf countries.*

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## An Overview

The migration of men, mostly for economic reasons, that occurs in time over space is seen as short-term short distance, long-term long distance, or short-term long distance and long-term short distance. It is analysed in rural-urban frame, intra-state and inter-state frame. This is seen as voluntary and involuntary depending on the indicators like the initial condition of the migrant at the native place, the processes and the consequences at the destination. Intra-border migration within the geographic boundary of the country is explained mostly in rural-urban frame that covers rural-rural, rural-urban, urban-rural and urban-urban.

The dual-step migration stands on both intra-border and cross-border migration. The migrant in the first step moves out of his native place where he is a permanent resident to reach the destination intra-border and after a time span takes a second step to migrate cross-border. The intra-border destination is generally a city that provides the economic space to get prepared for cross-border migration, the latter perceived as an economic uplift relative to first-step intra-border migration. This second step is taken in a condition of uncertainty. A trade off between less uncertainty-cum-low income and high uncertainty-cum-high expected income is implicitly calculated by the migrants once they decide to cross border.

The absence of carrying capacity of the home economy is not necessarily the reason why labourers cross the border. Often the home economy does not push them out, but the international domain pulls them in. The labourers may be reluctant to get engaged in manual jobs in the local geo-economy and may like anonymity. At the first step, migration from the locality to the metropolitan city protects anonymity of the individual in the labour

market. The cross-border migration of labourers fills-in the vacuum in the labour market where the native labourers may not be available for engagement in dirty and dangerous jobs (Koser, 2007).

### Migration from India to Gulf Countries via Mumbai

Migration to the Gulf is rooted in the labour history in British Empire (Oommen, 2016). We concentrate on past one century here. Following the Indian Emigration Act 1922, the oil companies of Gulf region opened their offices in the-then city of Bombay for recruitment of labourers in the Gulf countries. Anglo-Persian Oil Companies (APOC) opened first formal recruitment office in Bombay. In 1936, Protector of Emigrants, Bombay gave permission to Bahrain Petroleum Company (BAPCO) to recruit Indian labourers through formal method. Indian labourers also migrated to Bahrain through informal channels like through *Kafeel* (contractor). Kuwait Oil Company (KOC) recruited labourers through recruitment office of APOC in Bombay. The Saudi-American oil companies (ARAMCO) recruited Indian labourers through agents of APOC but later ARAMCO opened the formal recruitment office in Bombay in 1944. The Qatar Oil Companies recruited labourers through agents of APOC from Bombay. Both Qatar and Saudi Arabia did not recruit Hindu labourers from India; they preferred to recruit Indian Muslims and Christians in their Oil companies (Seccombe and Lawless, 1986). The discovery of oil in the Gulf region during early 1930s needed import of labourers. The oil companies appointed agents in the seashore cities of Mumbai and Surat for recruiting labourers from India. Other private agencies also facilitated this process in exchange of commission to supply labourers to the Gulf countries. Some firms hired private agents to penetrate into the labour abundant zone to persuade the labourers to migrate to the Gulf countries. Apart from the formal recruitment channel, many Indian labourers migrated to Gulf countries through informal channel to work in oil companies and other sectors (Kumar, 2016).

The native labourers in Gulf countries did not like to get engaged in dirty works as well as in dangerous and difficult working conditions. This vacuum increased the demand of labourers from abroad, particularly from poor countries with high population and little opportunities of jobs (Koser, 2007). The oil-rich post-1973 rent-seeking states in the Gulf created a dual labour market with home labourers engaged in high wage works with decent working conditions, while migrant labourers engaged in low wage works in dirty and dangerous conditions (Winckler, 2010). Member countries of Gulf Co-operation Council (GCC), namely, Saudi Arabia, UAE, Oman, Bahrain, Kuwait, and Qatar attracted workers first from the poor Arab countries and later from south Asian countries.

The international migration of labourers from India during the post-colonial period followed two paths, namely: (i) the migration of skilled labourers to Western countries, and (ii) the migration of semi-skilled and unskilled labourers to Gulf countries following the oil boom there. The recent large scale migration of labourers from the North Indian states, mostly from Uttar Pradesh, to the Gulf countries followed from the previous large scale migration from the southern states like Kerala, Tamil Nadu and Andhra Pradesh (GoI, 2014-15). Registered recruitment agencies and private agencies played a crucial role in export of labourers from Uttar Pradesh (UP) to Gulf countries (Thimothy & Sasikumar, 2015).

Following Census 2001, 3.8 million labourers migrated from UP, mostly to Maharashtra (0.9 million) and Delhi (0.8 million). In case of cross-border migration, 0.8 million migrated from India under Emigration Check Required (ECR) category, of which 0.2 million migrated from UP. More than 90.0 per cent of these migrants under ECR category migrated to Gulf countries (GoI, 2014-2015). The labourers who migrated from UP to Gulf countries were less educated relative to large number of educated and skilled labourers who migrated from Kerala under Emigration Check Not Required (ECNR) category (Aziz & Begum, 2009).

The labour market is segmented in the Gulf economy under *Kafala* (sponsorship) system executed by the *Kafeel* (sponsor) (Ahamad, 2010). The accelerated labour migration to Gulf countries like Saudi Arabia and Kuwait developed a dual labour market post-1973 that enabled these oil-rich GCC (Gulf Co-Operation Council) countries create a life of leisure for the native people while importing cheap labour from abroad (Winckler, 2010). The *Kafala* system ensured supply of cheap labour to the Gulf countries (Roper and Barria, 2014). However, in Saudi Arabia, the *Nitaqat* law or the nationalization of the workforce policy made it mandatory for national companies to hire one Saudi national for every ten migrant labourers (Sasikumar and Martin, 2017; Oommen, 2016). The *Kafeel* was the determinant of the working conditions and working hours of the migrant labourers engaged on contract. Migration policies in Saudi Arabia entrusted the employer with unquestionable authority (Rajan and Prakash, 2012).

Broadly, the literature on migration to Gulf countries pointed out that the *Kafeel* under the *Kafala* system imposed tyranny on the migrant labourers who enjoyed no human rights and had no access to institutions to draw attention to the violation of their rights (Rahaman, 2010). Of the total migration under ECR category from India, the share of migration to Gulf countries was above 90.0 per cent for each year during 2006-2014 (Table 1).

Of the total migration to GCC countries, the three major destination countries were Saudi Arabia, UAE and Qatar, the trio accounting for 70.4 to 80.8 per cent of total migration from India to GCC countries during 2005 to 2016 (Table 2).

Initial migration from Kerala to GCC countries followed intra-border migration to the cities like Mumbai, Delhi, and Chennai (Skeldon, 2006). Labourers migrated

**Table 1: Labour Migration from India to Gulf Countries under ECR, 2005-2014**

| Year | Total Migration under ECR Category from India | % Share of Migration to Gulf Countries in Total Migration under ECR Category from India |
|---|---|---|
| 2005 | 5,48,853 | 82.8 |
| 2006 | 6,76,912 | 91.3 |
| 2007 | 8,09,453 | 95.1 |
| 2008 | 8,48,601 | 96.4 |
| 2009 | 6,10,272 | 97.0 |
| 2010 | 6,41,355 | 95.1 |
| 2011 | 6,26,565 | 96.2 |
| 2012 | 7,47,041 | 96.6 |
| 2013 | 8,16,655 | 96.1 |
| 2014 | 8,04,878 | 96.3 |

***Note***: ECR -Emigration Check Clearances. There are 18 ECR (only in respect of ECR passport holders) required countries of which the members of Gulf Co-operation Council (GCC) are Saudi Arabia, United Arab Emirates, Oman, Qatar, Bahrain, and Kuwait; the other members are Afghanistan, Indonesia, Iraq, Jordan, Lebanon, Libya, Malaysia, Sudan, Syria, Yemen, Thailand.

***Source***: Government of India, Ministry of Overseas Indian Affairs, Annual Reports, 2010- 2011 & 2014-2015.

**Table 2: Migration of Labourers from India to Selected Countries of GCC by ECC, 2005-2016**

| **Countries (% of Total)** | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Saudi Arabia | 22.0 | 21.6 | 25.3 | 28.0 | 47.4 | 45.0 | 47.9 | 49.5 | 45.1 | 42.5 | 40.5 | 32.2 |
| U.A.E. | 42.7 | 41.2 | 40.5 | 42.7 | 21.9 | 21.4 | 23.0 | 19.5 | 25.7 | 28.0 | 29.8 | 32.2 |
| Qatar | 11.0 | 12.0 | 11.4 | 10.1 | 7.8 | 7.4 | 6.9 | 8.7 | 10.0 | 9.7 | 7.8 | 6.0 |
| **Sub-Total** | 75.7 | 74.8 | 77.2 | 80.8 | 77.1 | 73.8 | 77.8 | 77.7 | 80.8 | 80.2 | 78.1 | 70.4 |
| **Total GCC** | 454088 | 618256 | 770510 | 818315 | 592299 | 610409 | 603159 | 722139 | 785291 | 775862 | 758,684 | 507296 |

*Note* : ECC: Emigration Clearance Category.

*Source* : Government of India, Overseas Employment Division, Ministry of External Affairs, Annual Reports.

to these cities for job-search because of poverty and unemployment at their native places; later they migrated to Gulf countries assisted by their relatives and friends who had work experience in the Gulf countries (Prakash, 1978). Tendency of the youth to migrate to the metropolitan cities was replaced by migration to Dubai, Kuwait, Saudi Arabia for high wage jobs (Zachriah & Rajan 2012). Migration of labourers from India to Gulf countries under ECR initially was Kerala-centred; Uttar Pradesh started exporting labourers much later but accelerated by percentage of total labourers migrating from India that compensated the percentage decline for Kerala to show total percentage of these two major labour exporting states rising during 2005-2014. The percentage share of these two states in India ranged between 26.8 and 40.1 during the decade (Table 3).

**Table 3: Migration of Labourers from Kerala and UP as percentages of total from India, 2005-2014**

| Year | Kerala | UP | Total (Kerala + UP) |
|---|---|---|---|
| 2005 | 22.7 | 4.1 | 26.8 |
| 2006 | 17.7 | 9.7 | 27.4 |
| 2007 | 18.5 | 11.3 | 29.8 |
| 2008 | 21.2 | 16.4 | 37.6 |
| 2009 | 19.5 | 20.6 | 40.1 |
| 2010 | 16.0 | 21.9 | 37.9 |
| 2011 | 13.8 | 24.7 | 38.5 |
| 2012 | 13.1 | 25.6 | 38.7 |
| 2013 | 10.5 | 27.0 | 37.5 |
| 2014 | 8.2 | 28.5 | 38.7 |

*Source:* Government of India, Ministry of Overseas Indian Affairs, Annual Reports, 2010-2011 & 2014-2015.

The paper addresses the following questions: (1) How did intra-border migration lead to cross-border migration? (2) What role social network played in each of intra-border and cross-border migration? (3) What was the impact of intra-border and cross-border migration on the standard of living of the households of the migrant labourers?

The rest of the paper is structured as follows. In Section I we present the study zone, the methodology and sample. In Section II we present social network of migration. In Section III we present the causes and consequences of dual-step migration. In Section IV we present the legal framework. In Section V we present the implications of dual-step migration. Finally, in Section VI we present conclusions and recommendations.

## I. Study Zone, Sample and Methodology

Based on pilot visits, we selected a village that revealed continuity in migration to Gulf countries via migration to the city of Mumbai. This village was Inayat Patti in the district of Allahabad in Uttar Pradesh located around 500 meter away from Handia-Kokhraj bypass of National highway (NH-2). Based on some informal conversations with the local people and relatives of the migrant individuals in the selected village, we gathered some ideas about migration in the past from the village.

Of the total 348 households with a total population of 2425 in the selected village following Census 2011, 95 were part of cross-border migration that was 27.3 per cent of all households. Of this 95.8 per cent were from Muslim households. The literacy rate of the village was 74.9 in 2011 with male literacy rate at 86.5 and female at 62.2 (Census 2011). The history of migration from this village went back to 1950s when the underprivileged labourers used to migrate to work in the coalfields of Bihar (that

enveloped Jharkhand) and West Bengal. The region around the city of Dhanbad in Jharkhand was a favourite destination for migration that the migrant labourers used to pronounce *coalouree* (coal belt). Social network helped the labourers to know the opportunities in the coal mines to migrate. Migration to the city of Mumbai that started around 1960s was a turning point to extend the migration frontier for these labourers. Mainly the cotton textile industry and partly the port areas worked as pull factors. Migration to Mumbai from this village opened the gate for cross-border migration. The first individual of this village migrated to Gulf countries in 1985 assisted by his relatives who had prior work experience in Gulf countries.

We selected the village, Inayat Patti, as our study zone since it showed continuity in cross-border migration via Mumbai for past many years. We selected a sample of 25 households that constituted 26.3 per cent of all the households involved in cross-border migration or 7.2 per cent of all the households of the village. Our sample consisted of the return migrant labourers who worked for at least two consecutive years in Gulf countries. The selected village was located in the Handia tehsil in block Saidabad in Allahabad district. We selected some adjoining villages with homogenous cultural background of the households as control villages.

The average age of migrant labourers was 31 when they first time migrated to gulf countries. Cent per cent of the migrant labourers were male; 56.0 per cent were unmarried. 40.0 per cent of the sample labourers migrated to Gulf countries once; 16.0 per cent migrated twice, 24.0 per cent migrated thrice and 20.0 per cent migrated four times. Thus, in the sample, 60.0 per cent were return migrants. 4.0 per cent of the migrant labourers were Graduates; 4.0 per cent got education up to Intermediate level; 36.0 per cent up to high school level; 56.0 per cent up to upper primary level. 88.0 per cent of the migrants first migrated to the metropolitan city of Mumbai; for the rest it was direct migration abroad (Field Survey, 2015).

## II. Social Network of Migration

The social network centred on the homogeneity of the households in the selected village where the relatives, friends, neighbours and the local agent helped the labourers to migrate to the Gulf countries. To understand the nature of migration from the selected village, we selected some control villages in the neighbouring areas. These villages were *Panch Purva* (five hamlet settlements), Basgit, Saidahan, Damgarah, Porshottampur, Kharah, and Hasnapur. The households in all these villages, mostly Muslims, revealed similar propensity to migrate. Social network facilitated migration because of the following factors:

- The continuity in migration by the household members and their friends helped them migrate to Mumbai as a first step and then to Gulf countries,
- Return migration would bring them back to their relatives and friends in Mumbai,
- Kinship by marriages was intra-village or intra-cluster of villages so that the social network remained dependable for migration,
- Migrant (male) labourer was preferred in the village to get daughters in households married off in which case the would-be bridegroom was also provided initial financial support for cross-border migration.

Social network operated effectively among the Muslims in the locality for each of intra-border and cross-border migration. For the Hindu labourers the destinations of migration were cities like Delhi and Surat. The Hindu households in the selected village and adjoining villages started migrating to Gulf countries since year 2000 assisted by local agents. Almost all the local agents were Gulf-returned Muslims. The migrant labourers travelled by train to Mumbai to ultimately migrate to the Gulf countries. Mumbai is known as *Pardesh* (foreign) and migrants are identified as *Pardeshi* (foreigner) in the village. The labourers migrated to Mumbai with the expectation to get initial support as they knew that most of the migrants from the selected village lived in Mumbai. These migrant labourers learnt by doing the skill to drive vehicles, jobs of technicians, plumbers and manual works. The households who migrated previously continued to live in Mumbai and provided support to the new generation migrants. The migrants to Mumbai who stayed back and did not migrate to Gulf countries accepted their living as stable in Mumbai. However, Mumbai provided a stepping stone for those who migrated to Gulf countries. Some of the migrants did not fit in well in the job market in the Gulf countries in the absence of required skill and came back to Mumbai to be engaged in the city economy.

## III. Causes and Consequences of Dual-Step Migration

The migrant labourers could not bank on agriculture for their livelihood; 16.0 per cent were engaged as cultivators. Working as wage-labourers and self-employment in their

native village and in the neighbourhood reflected the bottom of the labour market. 20.0 per cent of them worked as drivers of commercial vehicles in the cities around; 40.0 per cent of the total remained unemployed (Table 4).

The reasons why they migrated to Mumbai were:

1. Relatives and friends encouraged,
2. Self-initiative for job search,
3. Mumbai seen as a hopper's stop for migration to Gulf countries,
4. Mumbai seen as a pedestal for the migrants,
5. Mumbai seen as a stable pedestal for the return migrants in case of job loss and end of job tenure in Gulf countries.

### Occupations in Mumbai

Half of those who migrated first to Mumbai got engaged as drivers of commercial vehicles. Others worked as wielders, AC technicians and manual wage-labourers (Table 5).

The migrant labourers in the first-step used to work-cum-stay in Mumbai – 45.4 per cent had job tenure less than two years, 36.4 per cent had tenure between two and four years and none had tenure more than six years in Mumbai (Field Survey, 2015).

The income the migrant labourers earned was based on their skills. The average income for 68.1 per cent of those who first migrated to Mumbai varied between Rs. 6,000/- and Rs. 10,000/- per month. No migrant labourer

**Table 4: Occupations of Labourers in Native Village before Migration**

| Occupations | Number | Per cent |
|---|---|---|
| Unemployed | 10 | 40.0 |
| Wage-Labourers | 2 | 8.0 |
| Beedi Rolling Workers | 1 | 4.0 |
| Drivers | 5 | 20.0 |
| Cultivators | 4 | 16.0 |
| Self-employed | 3 | 12.0 |
| Total | 25 | 100.0 |

*Source* : Field Survey, 2015.

**Table 5: Occupations of Migrant Labourers in Mumbai**

| Occupations | Number | Per cent |
|---|---|---|
| Drivers | 11 | 50.0 |
| Wielders | 5 | 23.0 |
| A.C. Technicians | 2 | 9.0 |
| Labourers (Manual) | 4 | 18.0 |
| Total | 22 | 100.00 |

*Note:* Three labourers could not specify their economic engagement.
*Source*: Field Survey, 2015.

earned less than Rs. 4,000/- per month in the labour market in Mumbai, excepting one (Table 6).

### Housing in Mumbai

The migrant labourers lived collectively in *kholee* (small room) on rent in Mumbai. Some migrant households purchased *Mahaliyaa kholee* (more than one storey in residential house) in Mumbai. Plywood, tinplate and plastic sheets were used to construct make-shift *kholee*. The *kholee* used to be cluster of houses inside slums or slum-like areas in Mumbai. Eight to ten migrant labourers used to live by rotation in one *kholee* based on works by shifting time by day and night. They used public toilet for sanitation and related purposes. These migrant labourers were known to the resident Marathi people as *Bhaiyaa* from UP. *Bhaiyaa* in Mumbai has a dual meaning – a close relation (brother) and a *dabang* (those who can be used extra-legally). The migrant labourers used to take food in *Bissee* (Mess) at low cost. The migrant labourers with families used to run *Bissee*. This also cemented socio-cultural network of the migrant labourers in Mumbai.

88.0 per cent of the labourers migrated to Saudi Arabia and the rest to UAE and Qatar. The currency exchange rate relative to India's Rupee for each destination country was around the same (Table 7).

**Table 6: Annual Income of Migrant Labourers in Mumbai**

| Annual Income (Rs.) | Number | Per cent |
|---|---|---|
| 24,000.00 - 48,000.00 | 1 | 4.6 |
| 48,001.00 -72,000.00 | 5 | 22.7 |
| 72,001.00 - 96,000.00 | 8 | 36.3 |
| 96,001.00 -1,20,000.00 | 7 | 31.8 |
| 1,20,001.00 -1,40,000.00 | 1 | 4.6 |
| Total | 22 | 100.0 |

*Note:* As in Table 5.

*Source*: Field Survey, 2015.

**Table 7: Number of Migrant Labourers by Destination Countries**

| Destination Country | Number | Per cent | Currency: Rs. |
|---|---|---|---|
| Saudi Arabia | 22 | 88.0 | 17.09 |
| UAE | 2 | 8.0 | 17.45 |
| Qatar | 1 | 4.0 | 17.61 |
| Total | 25 | 100.0 | ———— |

*Note* : Currency of countries by name - SA: Riyal; Qatar: Riyal; UAE: Dirham.

*Source* : Field Survey, 2015. www.x-rates.com

### Social Network for Labourers Migrating from UP to Gulf Countries

The migrant labourers had to incur high cost on completing formalities like getting passport-visa, medical check up and ticket for travel. They did all these through agents of their village paying them accounted and unaccounted money. The household members provided initial money support.

*Kafeel* was the single authority who used, abused and misused the migrant labourers from UP. Just on arrival

in Gulf countries the *Kafeel* forced them to surrender their passport-visa to him. The order of *Kafeel* defined the working conditions of these migrant labourers. *Kafeel* issued the *Iqama* (Identity Card) to the migrant labourers; *Kafeel* had the right to cancel visa. The cancellation of visa was known as *Khuruch* (visa cancellation) among the migrant labourers. The migrant labourers were distanced from the country citizens by language (Arabic), clothing and culture. The Arab citizens used to identify the migrant labourers from UP as *Ghulam* (slave). Being identified as *Ghulam* is derogatory in civil society parlance; however, the migrants from the selected village did not protest against the so-called identity in Gulf countries. Actual and expected job-cum-income played the role of erasing inferior identity associated with the nature of job. It was anonymous – so glorifiable identity could be restored at home via possession of demonstrative consumer durable goods. The migrants had to be punctual, job-tied, no advance wage and no dissidence. The migrant labourers were not aware of the rules and regulations there and worked under the dictates of the *Kafeel*. Money-wage mattered. Only one of the selected migrants reported that the *Kafeel* forced him to work beyond 12 hours a day that was against the job contract. He, however, could not show the job contract.

The migrant labourers from UP lived in labour camps in Gulf countries that included migrant labourers from rest of India and labourers from other south Asian countries. The single room of 120 sq. ft. accommodated eight to ten labourers. The *Kafeel* provided electricity, cooler, and toilet. The labour camp was liveable better than *kholee* of Mumbai as reported by these labourers. Some of the labourers who migrated from the selected village lived together in the same room in labour camps while a few took shelter in cities in Saudi Arabia that were close to their worksite. On each Friday, the declared public holiday, they used to meet and pray together in the mosque. On the occasion of *Haj* pilgrimage in Saudi Arabia they got chance to meet relatives and neighbours from UP.

## Causes and Consequences of Migration to Gulf countries

Cent per cent of the labourers migrated for positive expected wage-differential; 60.0 per cent for better quality of employment; 60.0 per cent followed self-motivation; 4.0 per cent because of unemployment at the native village. 52.0 per cent of the labourers lived with other migrants from India in labour camps; 36.0 per cent lived in labour camps with migrants from India and other countries based on religious-cultural conditions; the rest lived in separate rooms or in rented house (Field Survey, 2015).

In the Gulf countries the migrant labourers were classified by skills for employment. Four labourers engaged in construction works and domestic works were considered as unskilled. Three labourers who worked as managers and technical supervisors were treated as skilled. The rest were drivers, wielders, technicians and washer men considered as semi-skilled. The job contract period varied between two and five years abroad; however, for most of the migrant labourers (80.0 per cent) it varied between two and three years. The average tenure of jobs in Mumbai for the migrant labourers was 2.5 years and in Gulf countries it was 2.8 years. Thus, it was mostly short-term migration to the Gulf countries (Field Survey, 2015).

In Mumbai all were engaged in informal economy; in Gulf countries all were engaged in private sector. The average income per annum of all the migrant labourers in Gulf countries was 4.6 times what it was in Mumbai that compared less favourably if exchange rate was considered. However, the migrant labourers were not guided by the exchange rate but by the absolute higher money wage that enabled them to remit to home. They used to mention their employer as *Seth* (wealthy person) in Mumbai; the migrant labourers were called *Ghulam* (slave) in Gulf countries (Field Survey, 2015).

64.0 per cent of the migrants earned less than Rs. 41,666.66 per month in the Gulf countries; 96.0 per cent earned less than Rs. 62,500.00 per month (Table 8).

52.0 per cent of the migrant labourers remitted money to their households in the native village between Rs. 1,80,000 and Rs. 3,60,000 per annum; 36.0 per cent of the migrant labourers remitted between Rs. 3,60,001 and Rs. 4,20,000 per annum (Table 9).

The migrant labourers remitted through both Banks and Western Union. The skilled labourers remitted 70.7 per cent, semi-skilled labourers remitted 76.3 per cent and the unskilled labourers remitted 80.6 per cent of their annual income earned in Gulf countries. The absolute remittances on average per annum by the skilled labourer were 2.6 times that of the unskilled labourer (Table 10).

The remittances spent by the households showed mostly lump-sum expenditure on private utilities like residential house, non-agricultural land and vehicle for self-use. The other major expenditure was on marriage that

**Table 8: Income per Annum of Migrant Labourers in Gulf Countries**

| Annual Income (Rs.) | Number | Per cent |
|---|---|---|
| Up to 5,00,000.00 | 16 | 64.0 |
| 5,00,001.00 -7,50,000.00 | 8 | 32.0 |
| 7,50,001.00 - 12,00,000.00 | 1 | 4.0 |
| Total Labourers | 25 | 100.00 |

*Source*: Field Survey, 2015.

**Table 9: Annual Remittances by Migrant Labourers to their Native Village**

| Annual Income (Rs.) | Number | Per cent |
|---|---|---|
| 1,80,000.00 - 3,60,000.00 | 13 | 52.0 |
| 3,60,001.00- 4,20,000.00 | 9 | 36.0 |
| 4,20,001.00 - 540,000.00 | 2 | 8.0 |
| 540,001.00 - 8,40,000.00 | 1 | 4.0 |
| Total Labourers | 25 | 100.00 |

*Source*: Field Survey, 2015.

**Table 10: Average Annual Income of Migrant Labourers and Remittances Sent to their Native Village**

| Migrant Labourers | Income (Rs.) | Remittances (Rs.) |
|---|---|---|
| Skilled Labourers | 8,19,996.00 | 5,79,996.00 (70.7) |
| Semi-skilled Labourers | 3,99,996.00 | 3,05,208.00 (76.3) |
| Unskilled Labourers | 2,79,000.00 | 2,25,000.00 (80.6) |

*Note*.: Figures in parentheses show remittances as percentage of income.

*Source* : Field Survey, 2015.

demonstrated the capacity of the household in the locality. Education was an exception by number of households and money spent on it (Table 11).

Expenditure on food pre-migration was 35.7 per cent of household budget that declined to 26.4 per cent post-migration in a state of 121.4 per cent increase in absolute expenditure on food. Each of transport, communication and education showed high percentage increase in expenditure post-migration though it was from a very low base. Total annual expenditure per household post-migration was twice that of pre-migration (Table 12).

Economic uplift was visible for the migrant households in the village by possession of house by type, and consumer durable goods post-migration (Box 1).

## IV. Legal Framework: State as the Facilitator

In post-colonial India the Indian Emigration Act, 1983 and the Indian Passport Act, 1967 formed the legal framework governing emigrations (Rajan *et al.*, 2010: 257). Following the Act 1983, the Protector General of

**Table 11: Remittances Spent on Private Utilities by Migrant Households at Native Place**

| Private Utilities | Households | | Remittances Spent per Household (Rs.) |
|---|---|---|---|
| | Number | Per cent | |
| Construction/repair of House | 22 | 88.0 | 4,00,000.00 |
| Purchase of Vehicles | 11 | 44.0 | 3,61,818.00 |
| Marriage | 5 | 20.0 | 4,30,000.00 |
| Purchase of Land | 2 | 8.0 | 5,00,000.00 |
| Education | 1 | 4.0 | 90,000.00 |
| Total | 25 | 100.0 | |

*Source*: Field Survey, 2015.

**Table 12: Average Annual Expenditure (Rs.) of Migrant Households: Pre-Migration and Post-Migration**

| Items | Pre-Migration | | Post-Migration | | % Change in Expenditure |
|---|---|---|---|---|---|
| | Expenditure | % of Total | Expenditure | % of Total | |
| Food | 21,072.00 | 35.7 | 46,656.00 | 26.4 | 121.4 |
| Education | 4848.00 | 8.2 | 20,208.00 | 11.5 | 316.8 |
| Health | 5376.00 | 9.1 | 18,384.00 | 10.4 | 241.9 |
| Entertainment | 3456.00 | 5.8 | 11,016.00 | 6.2 | 218.7 |
| Communication | 2856.00 | 4.9 | 12,048.00 | 6.8 | 321.8 |
| Transport | 5232.00 | 8.9 | 21,648.00 | 12.2 | 313.7 |
| Other items | 16,176.00 | 27.4 | 46,800.00 | 26.5 | 189.3 |
| Total | 59,016.00 | 100.0 | 1,76,760\.00 | 100.0 | 199.5 |

*Note :* Other items included expenditure on intoxicants, fuel, clothing, footwear etc.
Pre-migration included intra-border migration to Mumbai. Post-migration means migration to Gulf countries.
*Source :* Field Survey, 2015.

Emigrants (PGE) attached to the Ministry of Overseas Indian Affairs (MOIA), Government of India, shoulders the responsibility of protection and welfare of the emigrants. The PGE is empowered to seek any information from the recruiting agent and enjoys the same powers as are vested in a court under the Code of Civil Procedure, 1908 (GoI, 1983). The PGE is empowered by the Government of India to function as the Registering Authority to regulate the recruitment of labourers through Recruitment Agents and also as Competent Authority to regulate direct recruitment by employers. The recruiting agents are required to obtain the Demand Letter, Power of Attorney and specimen Employment Contract from the foreign employers in order to recruit workers and obtain emigration clearance for their departure (GoI, 2014-15).

**Box 1: Status of Households by Selected Indicators: Pre-Migration and Post-Migration to Gulf Countries**

| Indicators | Pre-Migration | Post-Migration |
|---|---|---|
| Average Annual Income per migrant household (Rs.) | 2,80,360.00 | 7,22,160.00 |
| Remittances per migrant household (Rs.) | Rs.1,22,400.00 | Rs.5,18, 000.00 |
| Remittances as % of total Annual Income | 43.7 | 71.8 |
| Types of House | 20.0 per cent of the households lived in pucca houses. | 92.0 per cent of the households lived in pucca houses. |
| Fuel for Cooking | 96.0 per cent of the households used Wood/Cow dung Cake | 80. 0 per cent of the households used LPG. |
| Electricity at house | 64.0 per cent of the households had | 92.0 per cent of the households had |
| Vehicles | 84.0 per cent of the households had bi-cycle as the most valuable vehicle. | Automobile two wheelers and four wheelers were most valuable vehicles owned by migrant households. |

*Note*: Pre-migration included intra-border migration to Mumbai. Post-migration means migration to Gulf countries.

*Source*: Field Survey, 2015.

The Rules under the Emigration Act 1983 of the Government of India pledged to ensure the following before recruitment of Indian labourers abroad:

- Period/place of employment;
- Wages and other conditions of service;
- Free food or food allowance provision;
- Free accommodation;
- Provision regarding disposal, or transportation to India, of dead body of the emigrants;
- Working hours, working conditions, overtime allowance, leave and social security benefits as per local labour laws;
- To and fro air passage at the employers' cost;
- Mode of settlement of disputes.

The recruitment of Indian labourers to ECR countries occurs either through licensing Recruiting Agent (RA) in the Ministry of External Affairs, Government of India, or by foreign employer directly or through exporter. Foreign employer also recruits workers from India for a specific project through Project Exporter. The PGE is empowered by the Government of India to function as the Registering Authority to regulate the recruitment through recruitment agents and also as Competent Authority to regulate direct recruitment by employers.

The 1983 Act has entrusted the PGE to look into the grievances that covers non-payment and delayed payment of wages to emigrant workers, unilateral changes in the contract of workers and any other complaints (GoI, 2014-15). The Government of India gradually brought down the educational requirements of emigrants to the level of matriculation (secondary school) to be eligible for Emigration Check Not Required (ECNR) perhaps guided by the rising remittances from abroad and unskilled labour required abroad (Rajan *et al.*, 2010). The Government of India launched the Overseas Workers Resource Centre (OWRC) in January 2008 to provide information relating to overseas employment, recruiting agencies and emigration procedures. The Government of India has also set up Migrant Resource Centre (MRC) at Kochi (Kerala), Hyderabad (Andhra Pradesh) and Panchkula (Haryana) to work similar to OWRC (GoI, 2014-15).

The Government of the Kingdom of Saudi Arabia (KSA) through its Ministry of Labour passed Nitaqat Law that made it mandatory to employ at least one home labourer for every ten migrant labourers (Hejailan, 2012). The provision that causes anxiety of the migrants from India to the Gulf countries is the stamping of the 'entry

ban' on the passports of migrant workers and the 'deporting route' of the Saudi Government rather than the normal sortie (Oommen, 2016). The migrant labourers from the selected village were not aware of the 1983 Act of the Government of India.

## V. Implications of Dual-Step Migration

The implications that we derive from the above are the following:

- While first-step migration was need-based, second-step migration was for economic uplift.
- The job tenure in first-step migration zone Mumbai was short-term.
- Social network and homogeneity helped the second-step migration because the migrants perceived security to be able to come back to Mumbai.
- Electronic advancement eliminated the communication gap between the migrants in Gulf countries and the local outmigration zone.
- The demonstration effect visible in housing, vehicles and marriages worked in the village to boost migration to Gulf countries. Remittances by the migrants from Gulf countries to their households created culture of demonstration in the village.
- Remittances as percentage of income of the labourers bracketed by skills in ascending order post-migration to the Gulf countries marginally declined though the absolute remittances by the skilled labourers were much higher relative to that by the unskilled labourers.
- The return migrants did not report against the working conditions in Gulf countries.
- The migrant labourers were satisfied with higher wage rate in the Gulf countries.
- The migrant labourers calculated the benefits from remittances to the village and the benefits of return migration to Mumbai.
- The migrant labourers had no food insecurity in the Gulf countries.
- The migrant labourers faced problems in communication as it was mostly in Arabic and English in the Gulf countries that was beyond their comprehension.
- The migrant labourers shuttled between the living place and workplace six working days a week excluding Friday.
- The cultural life of the migrant labourers was confined to intra-migrants from India and migrants from other countries with same religious belief.

## VI. Conclusions and Recommendations

Migration of labourers from a village in UP to the metropolitan city of Mumbai was a first-step migration. Migration to the Gulf countries by these first-step migrants depended on the social network that was based on the information provided by the return migrants. Mumbai provided a stepping stone for these intra-border migrants to become cross-border migrants. Mumbai remained as a pedestal for the return migrants to get re-engaged. Wage-differential was the major reason for migration to Gulf countries. It was short-term migration controlled by *Kafeel.* We did not find any adverse report from any of the migrants who came back from the Gulf countries.

The Act 1983 needs a relook to protect the emigrants since the *Kafala* system in the Gulf countries reflects control by the *Kafeel.* We propose setting up of Information Bank by the Government of India at state and district levels to keep the list of applicants who migrate to Gulf countries.

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*"Migrants and refugees are not pawns on the chessboard of humanity"*

*– Pope Francis*

Feature

# Measurement of Material Productivity: A Case Study of Pharmaceutical Sector Companies included in Nifty 50

MEENU MAHESHWARI AND PRIYA TAPARIA

*In this modern environment, productivity has become an indicator of the progress of a country. It may be treated as a key to prosperity. Productivity can be denoted as a ratio of the monetary value of the output to the monetary value of the input which shows the actual performance of a unit. Higher the productivity means a more efficient use of the resources in an organisation. Productivity may include material productivity, labour productivity and overhead productivity and also the overall productivity. The Material Productivity of pharmaceutical sector companies included in Nifty 50 has been analysed in the present study. The sector consists of Cipla Ltd., Dr. Reddy's Laboratories Ltd., Lupin Ltd. and Sun Pharmaceutical Industries Ltd. Material productivity of eight years has been studied in the present study from 2008-09 to 2015-16. Both intra-sector and inter-sector hypotheses have been tested and results have been drawn from it. For intra-sector hypothesis, an analysis has been drawn with the help of Chi-Square Test and it has been observed that in all companies except in Sun Pharmaceutical Industries Ltd. null hypothesis has been accepted, which shows that the material productivity ratios of the sampled company for the study period are approximately equal. In the case of Butin Sun Pharmaceutical Industries Ltd an alternate hypothesis is accepted. In inter-sector hypothesis, analysis is drawn with the help of Kruskal Wallis Rank Sum Test popularly known as H Test and it has been observed that the null hypothesis is rejected, which means that the material productivity ratios between the pharmaceutical sector companies included in Nifty 50 differ significantly. The reason for the increase or decrease in the material productivity may be due to increase or decrease in the output or input or the components associated with productivity. For improving the material productivity it is recommended to improve the output, input or components of output or input.*

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## Introduction

In recent years, much has been said and written about the topic 'Productivity'. Earlier corporates were less concerned with the productivity concept. They didn't consider it as the priority. It is now given national importance and the efforts of government, business concerns, trade unions, workers, etc. are being coordinated to accelerate the process of economic growth and raise the standard of living of people in the country. It is only through the productive utilisation of the scarce resources we are able to produce quantity and quality of goods and services within a specified period of time which can meet the rising expectation of the people of a country. Business units want to improve their performance to ensure their survival in this competitive world and if possible try to capture the maximum market share. This improvement can only be attained by focusing on the production of quality goods, in a cost-effective manner and by generating enough profits to plough back into the business to further improve productivity and this should occur on a continuous basis to create an advantage in the market by capturing the market share. For fulfilling the above need of an organisation the concept of productivity gained importance.

The term productivity refers to the optimum use of productive resources in an organisation or the optimization of resources. It is the one's ability to produce more as compared to the input incurred. Productivity means the results produced in terms of output which is expressed in monetary terms by an input which is also expressed in the monetary terms under given condition say it be a material, labour, overhead, etc. and within a given period of time means the study period.

The term productivity and efficiency are synonyms. Yet there is a slight difference between the two. The productivity of an organisation may be indicated without

any improvement in its efficiency. On the other hand, the efficiency of an input may increase without any simultaneous improvement in its productivity.

As per business dictionary, "Productivity is a measure of the efficiency of a person, machine, factory, system, etc. in converting inputs into useful outputs. Productivity is computed by dividing average output per period by the total costs incurred or resources (capital, energy, material, personnel) consumed in that period. Productivity is a critical determinant of cost efficiency."

**Review of Literature**

Many studies on productivity trends in India and abroad have been carried out over the last few decades. Few studies are being summarised below:

1. **Schoer (2006)** in his paper, "Calculation of direct and indirect material inputs by type of raw material and economics activities" presented a technique for calculating the direct material input used in Raw Material Equivalents (RME). It is calculated according to the type of raw material and economic activities. Indirect raw material input had also been included in calculating Raw Material Equivalents. The study also states that RME as an indicator was more suitable for estimating the environmental pressure and discharging the global responsibility. This is only possible due to the comprehensive and detailed recording of material inputs. A technique known as Hybrid Input Output Table (IOT) had been developed for calculating the indirect raw material inputs.

2. **Yildirim (2015)** examines in his paper, "Relationship among Labour productivity, real wages and inflation in Turkey" the inter-relationship of the manufacturing industry of turkey for the period 1988 to 2012. The author applied Co-integration analysis and a Granger Causality test and concluded that the inflation has a greater impact on the labour productivity as compared to the real wages. According to the author, a feedback effect is there between labour productivity and inflation. Also, the author concluded that there is unidirectional causality from real wages to productivity, thus indicating a broken connection between productivity and wages. The author also suggested that broken connection may be due to less bargaining power and structural problems comprising high unemployment, a giant tax burden on wages and the big share of the informal sector.

3. **Gorantiwar and Shrivastava (2015)** in their paper, "Validating quality productivity improvement framework for sponge iron industry in India" tried to validate the quality productivity improvement framework with the help of model implementation called case study for sponge iron industry. Model is implemented in two different sponge iron manufacturing units. The selection of units was done in such a way that both the units differ in many aspects viz. manufacturing capacity, manufacturing process, year of establishment, number of employees, location, ownership, etc. It was observed that there is significant relationship between the implementation factors and the performance measures of the sponge iron industry companies. It was also noted that there has been the remarkable improvement over the years in the various performance indicators. The companies had accomplished both tangible and intangible benefits by practising quality management. The author also concluded that the framework developed is valid and reliable and can also be implemented in other countries in this world with modification according to the environment of that country.

4. **Fresenbichler and Peneder (2016)** investigated in their paper, "Innovation, competition and productivity: Firm-level evidence for Eastern Europe and Central Asia" the relationship of productivity to innovation and competition. Business environment and enterprise survey (BEEPS) data were used for analyzing the results. The survey was conducted in Eastern Europe as well as in Central Asia. The study covers the survey year 2012 for Russia and 2013 for the other countries. Monetary values are mostly for 2010 or 2011 as the last complete fiscal year and were converted from local currency units into USD. They concluded that productivity in terms of either sales or value added per employee is positively affected by competition and innovation. Further, the study also analysed that there is a positive impact on productivity from firm size, exports or population density.

5. **Maheshwari, M. (2016)** in her paper "Measurement of Productivity: Various Models" explained the different categories of Productivity models and their approaches as given by Sardana and Vrat. Seven models for measuring productivity had been discussed. One of the models is the Production Function Model. This model considers only labour and capital as input for calculating productivity.

Another model described was Economic Utility Model. In this model multi ratios had been used for calculating productivity. A particular economic activity is reflected by a particular ratio. Another model described is the Measurement through Financial Ratio where productivity is measured by calculating the ratios such as acid test ratio, debtor's turnover ratio, creditors turnover ratio, stock turnover ratio, asset turnover ratio, return on capital employed, etc. Another model discussed is the Surrogate Model. It is a partial productivity model which only considers the measures which are valid and easily available. Another model which had been talked about in the paper is the Systems Approach Based Model. It is based on the traditional method of computing output and input for calculating productivity. The second last model described is the Production Based Model. It has been described in two ways. The first model is based on output as the value of production and the second model based on the output as value addition. The last and the very important model discussed is the Productivity Accounting Model (PAM). This model considers all the elements of output and input, ignoring the effect of inflation.

## Main Objective of the Research Work

In the present study, an attempt has been made to measure, analyse, compare and suggest the concepts regarding material productivity in the pharmaceutical sector companies included in Nifty 50.

*The main objectives are being summarized as follows:-*

1) To measure, analyse and compare the material productivity ratios of the pharmaceutical sector companies included in Nifty 50.

2) To measure, analyse and compare the intra company material productivity ratios of the study period.

3) To suggest ways for the improvement in material productivity ratios.

## Research Methodology

### *Collection of Data*

This research is based on the secondary data. The data and information regarding output, sales, materials consumed, total inputs and all other financial variables have been obtained from the annual reports of the respective companies. The annual reports are available on the website of the companies. To remove the inflation effect of prices on outputs and inputs, the revaluation of the values of outputs and inputs has been made. For the revaluation of values, index numbers have been used. The index numbers used in the study have been collected from the various bulletins published by Reserve Bank of India on its website.

### *Selection of Base Year*

Pharmaceutical sector companies of Nifty 50 have been selected. The sector comprises four companies viz., Cipla Ltd., Dr. Reddy's Laboratories Ltd., Lupin Ltd. and Sun Pharmaceutical Industries Ltd. The study covers a period of eight years i.e. from 2008-09 to 2015-16. The year 2008-09 has been taken as a base year. The base year has been selected because the revaluation of output and input is done on the basis of base year prices.

### *Model to be used*

In the present research work Productivity Accounting Model has been used for measuring productivity because it considers all the elements of output and input, ignoring the effect of inflation. According to Sardana and Vrat, this model is known as productivity accounting model because it is based on the accounting data and the study is also being conducted in the field of accounting.

## Hypotheses

Keeping in mind the objectives of the research work, following hypotheses have been developed and tested.

### *Intra-Company Comparison*

To measure, analyse and compare the material productivity ratios of the sampled company for the study period following hypothesis has been developed and tested.

***Null Hypothesis ($H_0$):*** There is no significant difference in the material productivity ratios of the sampled company for the study period.

***Alternate Hypothesis ($H_1$):*** There is a significant difference in the material productivity ratios of the sampled company for the study period.

Above hypothesis has been tested and analysed with the help of the Chi-Square Test. For calculating expected values for the purpose of calculating chi-square, the least square method has been used.

### *Inter-Company Comparison*

To measure, analyse and compare the material productivity ratios of sampled companies following hypothesis has been developed and tested.

***Null Hypothesis ($H_0$):*** There is no significant difference in the material productivity ratios of sampled companies.

Alternate Hypothesis ($H_1$): There is a significant difference in the material productivity ratios of sampled companies.

For testing the above hypothesis, Kruskal Wallis Rank Sum Test popularly known as H Test has been used.

**Variables used:**

The variables used in the present study are output and input. For calculating output and input monetary values have been considered. Output and input both have been revalued on the basis of price index with reference to the base year.

**Calculation of Index Numbers and Conversion Factors**

For the revaluation of data on the base year's prices for eight years from 2008-09 to 2015-16, index numbers and conversion factors have been used. Wholesale price index has been used for revaluating the output and the material input. Here the year 2008-09 has been taken as base year (Table 1). Following formula has been used to calculate conversion factors:

**Index number of the base year**

*Index number for the current year*

**Table 1 : Index Numbers and Conversion Factors for Revaluation of Data**

| Year | Wholesale Price Index Base year 2004-05-100 | Conversion Factor |
|---|---|---|
| 2008-09 | 123.50 | 1.000 |
| 2009-10 | 136.30 | 0.906 |
| 2010-11 | 149.50 | 0.826 |
| 2011-12 | 161.00 | 0.767 |
| 2013-14 | 170.10 | 0.726 |
| 2014-15 | 176.10 | 0.701 |
| 2015-16 | 175.30 | 0.705 |

**Revaluation of Output:**

The output of the companies has been revalued by multiplying the output values with the conversion factors. Here for the purpose of the study sales, other income and change in the inventories of finished goods, work in progress and traded goods are considered as output. Revaluation of Output of the companies from 2008-09 to 2015-16 has been calculated and shown in Appendix 1 to 4 respectively.

**Revaluation of Material Input:**

The material input of the companies has been revalued by multiplying the input values with the conversion factors. Here for the purpose of this study, the material input includes raw material and its components, stores and spares and purchases of traded goods or stock in trade. Revaluation of Input of the companies from 2008-09 to 2015-16 has been calculated and shown in Appendix 5 to 8 respectively.

**Material Productivity**

Materials are termed as the first and foremost factor in the cost of production because of the dependence of manufacturing operation on material input. Performance evaluation of resources in a business concern largely depends on material input use. Material Productivity indicates that how much has been produced as output by a unit of material input. It measures the efficient and effective utilisation of material input.

$$\text{Material Productivity} = \frac{\textbf{Total output}}{\text{Material input}}$$

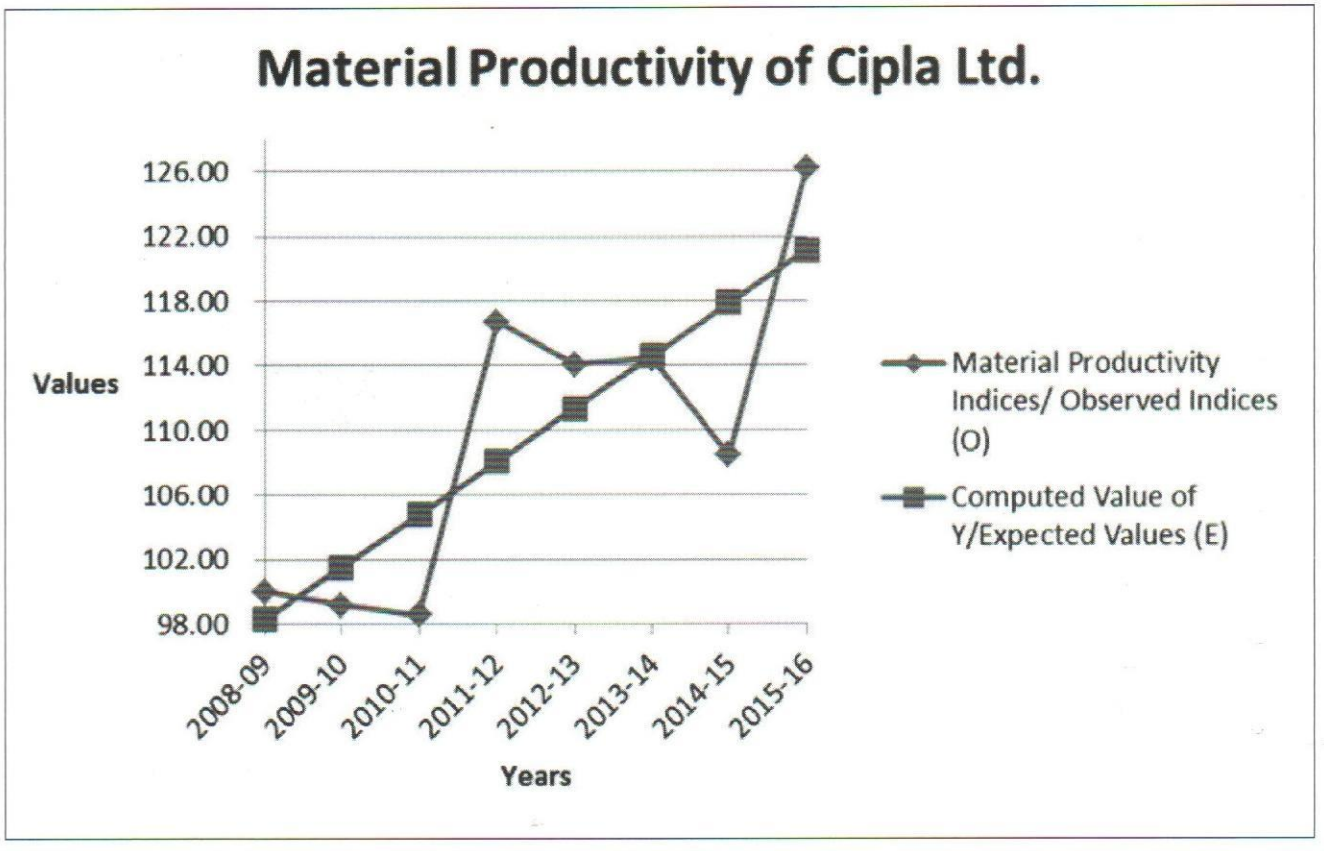
**Analysis and Interpretation:**

***Output:*** The revalued output of Cipla Ltd. has an increasing trend except in the year 2009-10.

It is the highest Rs 8827.72 crore in 2015-16 and it is the lowest Rs 5009.41 crore in 2009-10.

**Table 2: Material Productivity of Cipla Ltd. From 2008-09 to 2015-16**

| Material Productivity of Cipla Ltd. From 2008-09 to 2015-16 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Base Year 2008-09 | | | | | | | | | Amount Rs in Crore |
| S. No. | Items | 2008-09 | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 |
| 1 | Output (Rs in Crore) | 5,213.22 | 5,009.41 | 5,210.52 | 5,474.11 | 5,910.22 | 6,509.18 | 6,961.39 | 8,827.72 |
| 2 | Raw Material and Components (Rs in Crore) | 1,872.91 | 1,825.96 | 1,912.22 | 1,764.75 | 1,921.60 | 2,154.56 | 2,402.14 | 2,561.50 |
| 3 | Raw Material and Components (Input Output Ratio) | 0.35926 | 0.36451 | 0.36699 | 0.32238 | 0.32513 | 0.33100 | 0.34507 | 0.29017 |
| 4 | Stores and Spares (Rs in Crore) | 52.16 | 45.73 | 82.38 | 70.23 | 62.75 | 57.57 | 59.04 | 79.16 |
| 5 | Stores and Spares (Input Output Ratio) | 0.01001 | 0.00913 | 0.01581 | 0.01283 | 0.01062 | 0.00884 | 0.00848 | 0.00897 |
| 6 | Purchases of Traded Goods/Stock in Trade (Rs in Crore) | 588.04 | 563.22 | 554.35 | 426.11 | 513.20 | 529.78 | 633.29 | 731.48 |
| 7 | Purchases of Traded Goods/ Stock in Trade (Input Output Ratio) | 0.11280 | 0.11243 | 0.10639 | 0.07784 | 0.08683 | 0.08139 | 0.09097 | 0.08286 |
| 8 | Total Material Input (Rs in Crore) | 2,513.11 | 2,434.91 | 2,548.95 | 2,261.09 | 2,497.55 | 2,741.91 | 3,094.47 | 3,372.14 |
| 9 | Material (Input Output Ratio) | 0.48206 | 0.48607 | 0.48919 | 0.41305 | 0.42258 | 0.42124 | 0.44452 | 0.38199 |
| 10 | Material Productivity Ratio | 2.0744 | 2.0573 | 2.0442 | 2.4210 | 2.3664 | 2.3740 | 2.2496 | 2.6178 |
| 11 | Material Productivity Indices/ Observed Indices (O) | 100.00 | 99.18 | 98.54 | 116.71 | 114.08 | 114.44 | 108.45 | 126.20 |
| 12 | Computed Value of Y/Expected Values (E) | 98.25 | 101.52 | 104.79 | 108.06 | 111.33 | 114.61 | 117.88 | 121.15 |
| 13 | Chi-Square $(O-E)^2/E$ | 0.03121 | 0.05410 | 0.37260 | 0.69166 | 0.06754 | 0.00024 | 0.75442 | 0.21042 |



Total material inputs consist of raw material and components, stores and spares, purchases of traded goods/ stock in trade.

**Raw material and Components**: The most important part of the raw material input is raw material and components. It is Rs 1872.91 crore in 2008-09, Rs 1825.96 crore in 2009-10, Rs 1912.22 crore in 2010-11, Rs 1764.75 crore in 2011-12, Rs 1921.60 crore in 2012-13, Rs 2154.56 crore in 2013-14, Rs 2402.14 crore in 2014-15 and Rs 2561.50 crore in 2015-16. Raw material and components input output ratio is the highest 0.36699 in 2010-11 while it is the lowest 0.29017 in 2015-16. The lowest raw material and components input output ratio indicates optimum raw material and components utilisation has been achieved in this year.

**Stores and Spares**: Another part of the total material input is stores and spares. The input output ratio of stores and spares is the lowest 0.00848 in 2014-15 as compared to the highest 0.01581 in 2010-11. This indicates stores and spares is optimally utilized in 2014-15.

**Purchases of Traded Goods / Stock in Trade**: Input output ratio is the lowest 0.07784 in 2011-12 indicates optimum utilisation.

**Total Material**: Total material input output ratio 0.48206 in 2008-09, 0.48607 in 2009-10, 0.48919 in 2010-11, 0.41305 in 2011-12, 0.42258 in 2012-13, 0.42124 in 2013-14, 0.44452 in 2014-15, 0.38199 in 2015-16 respectively. The lowest material input output ratio in the year 2015-16 with 0.38199. This means material is the best utilized in the year 2015-16.

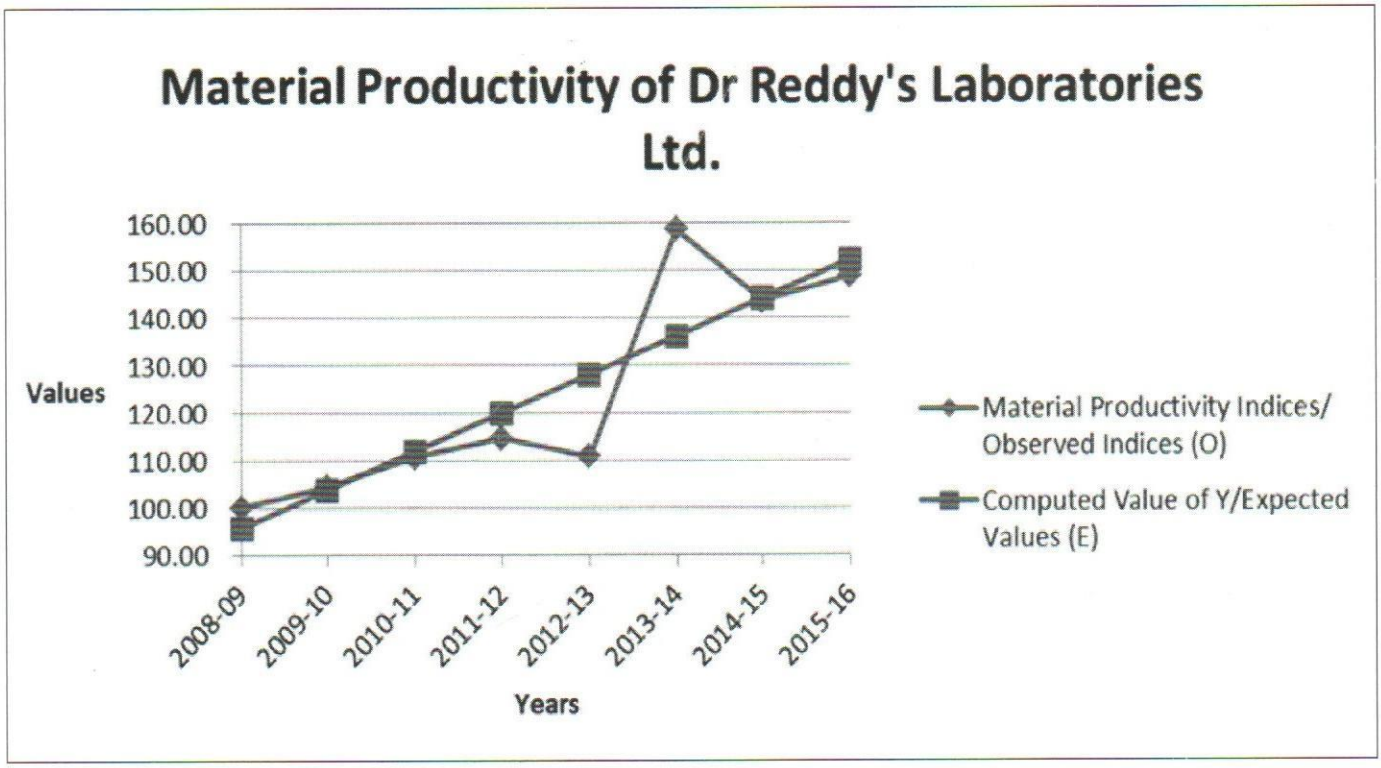
**Material Productivity Ratio**: There is an erratic trend in the material productivity ratio. Material productivity ratio is 2.0744 in 2008-09, 2.0573 in 2009-10, 2.0442 in 2010-11, 2.4210 in 2011-12, 2.3664 in 2012-13, 2.3740 in 2013-14, 2.2496 in 2014-15, 2.6178 in 2015-16.

Material productivity ratio is the lowest 2.0442 in 2010-11 while it is the highest 2.6178 in 2015-16. The highest ratio indicates efficiency and effectiveness while the lowest ratio indicates that the material input has not been utilized efficiently and mismanagement may be responsible for the low productivity.

**Hypothesis Testing:** The table value of chi square at 5% level of significance with (8-1) = 7 degree of freedom is 14.07 while the calculated value of chi square of Cipla Ltd. is 2.18.

**Table 3: Material Productivity of Dr. Reddy's Laboratories Ltd. From 2008-09 to 2015-16**

| Material Productivity of Cipla Ltd. From 2008-09 to 2015-16 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Base Year 2008-09 | | | | | | | | | Amount Rs in Crore |
| S. No. | Items | 2008-09 | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 |
| 1 | Output (Rs in Crore) | 4,233.80 | 4,174.21 | 4,415.05 | 5,151.71 | 6,152.92 | 8,268.84 | 8,750.02 | 8770.91 |
| 2 | Raw Material and Components (Rs in Crore) | 921.20 | 997.05 | 880.02 | 1333.51 | 1653.32 | 1501.38 | 1576.13 | 1401.89 |
| 3 | Raw Material and Components (Input Output Ratio) | 0.21758 | 0.23886 | 0.19932 | 0.25885 | 0.26870 | 0.18157 | 0.18013 | 0.15983 |
| 4 | Stores and Spares (Rs in Crore) | 356.40 | 229.58 | 291.66 | 58.83 | 73.69 | 64.80 | 263.23 | 302.52 |
| 5 | Stores and Spares (Input Output Ratio) | 0.08418 | 0.05500 | 0.06606 | 0.01142 | 0.01198 | 0.00784 | 0.03008 | 0.03449 |
| 6 | Purchases of Traded Goods/Stock in Trade (Rs in Crore) | 256.40 | 222.42 | 273.41 | 235.93 | 285.39 | 321.27 | 368.80 | 430.33 |
| 7 | Purchases of Traded Goods/ Stock in Trade (Input Output Ratio) | 0.06056 | 0.05328 | 0.06193 | 0.04580 | 0.04638 | 0.03885 | 0.04215 | 0.04906 |
| 8 | Total Material Input (Rs in Crore) | 1,534.00 | 1,449.05 | 1,445.09 | 1,628.27 | 2,012.40 | 1,887.45 | 2,208.16 | 2,134.74 |
| 9 | Material (Input Output Ratio) | 0.36232 | 0.34714 | 0.32731 | 0.31606 | 0.32706 | 0.22826 | 0.25236 | 0.24339 |
| 10 | Material Productivity Ratio | 2.7600 | 2.8807 | 3.0552 | 3.1639 | 3.0575 | 4.3810 | 3.9626 | 4.1087 |
| 11 | Material Productivity Indices/ Observed Indices (O) | 100.00 | 104.37 | 110.70 | 114.64 | 110.78 | 158.73 | 143.57 | 148.87 |
| 12 | Computed Value of Y/Expected Values (E) | 95.69 | 103.77 | 111.84 | 119.92 | 127.99 | 136.07 | 144.14 | 152.22 |
| 13 | Chi-Square $(O-E)^2/E$ | 0.19376 | 0.00351 | 0.01177 | 0.23281 | 2.31522 | 3.77433 | 0.00227 | 0.07392 |




As the calculated value of chi square is less 1 increasing. It is the highest 0.26870 in 2012-13 while it is the lowest 0.15983 in 2015-16 indicates that raw material and components are optimally utilized in year 2015-16.

As the calculated value of chi square is less as compared to the table value hence null hypothesis is accepted and the alternate hypothesis is rejected. This reveals that the material productivity ratios of the Cipla Ltd. for the eight year period are approximately equal.

**Analysis and Interpretation:**

**Output:** The revalued output of Dr. Reddy's Laboratories Ltd. for the year 2008-09 is Rs 4233.80 crore, in 2009-10 it reached to Rs 4174.21 crore, in 2010-11 it is Rs 4415.05 crore, in 2011-12 output becomes Rs 5151.71 crore, in 2012-13 it is Rs 6152.92 crore, in 2013-14 Rs 8268.84 crore, in 2014-15 Rs 8750.02 crore and in 2015-16 output is Rs 8770.91 crore.

Total material inputs consist of raw material and components, stores and spares, purchases of traded goods/ stock in trade.

**Raw material and Components** : The raw material and component elements in Dr. Reddy's Laboratories Ltd. is Rs 921.20 crore, Rs 997.05 crore, Rs 880.02 crore, Rs 1333.51 crore, Rs 1653.32 crore, Rs 1501.38 crore, Rs 1576.13 crore and Rs 1401.89 crore respectively from 2008-09 to 2015-16. Raw material and components input output ratio are also showing an erratic trend that is in some year it is decreasing and in some year it is increasing.

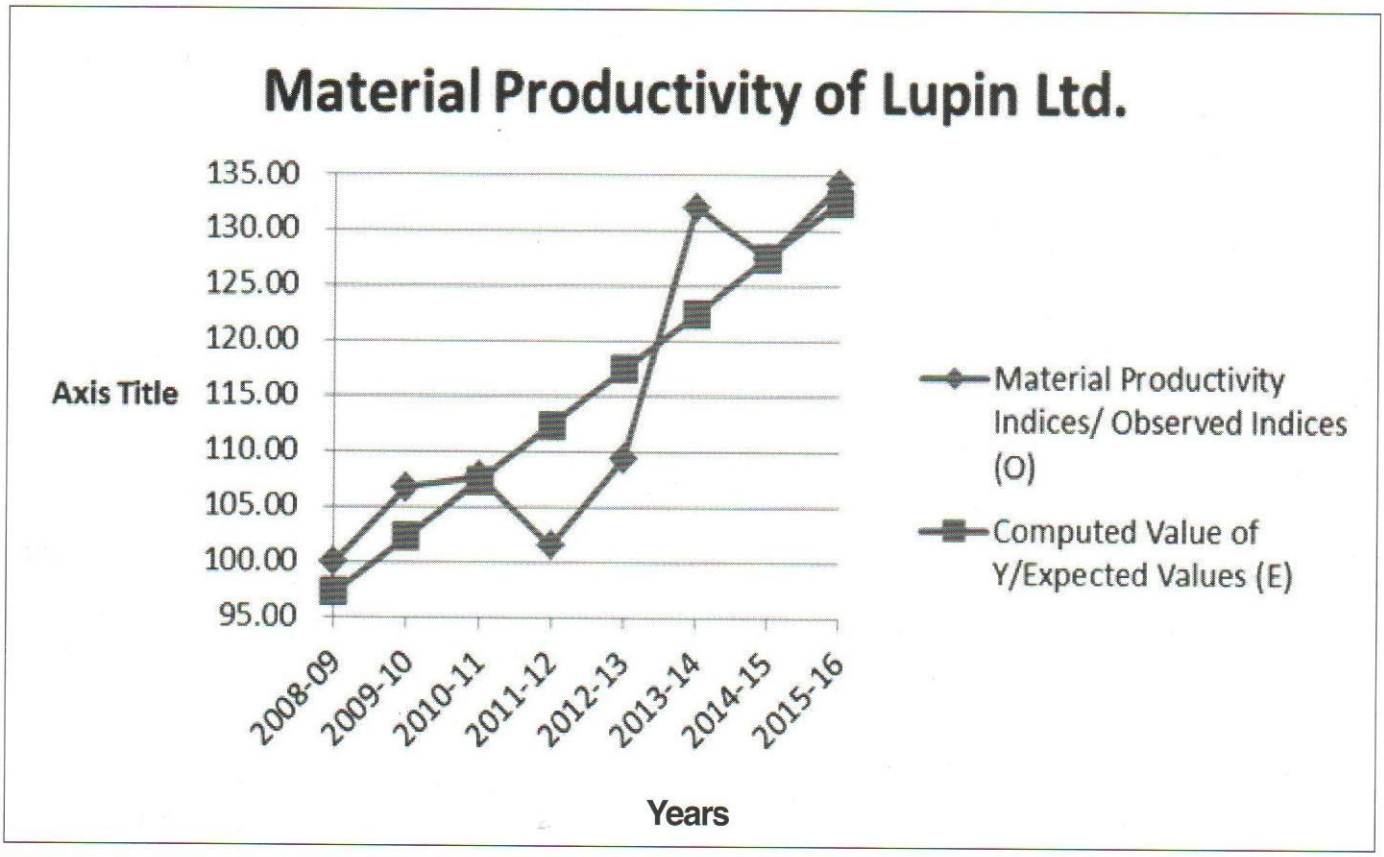
**Stores and Spares**: Another part to analyse in the total material input is stores and spares. It is Rs 356.40 crore in 2008-09, Rs 229.58 crorein 2009-10, Rs 291.66 crore in 2010-11, Rs 58.83 crore in 2011-12, Rs 73.69 crore in 2012-13, Rs 64.80 crore in 2013-14, Rs 263.23 crore in 2014-15 and Rs 302.52 crore in 2015-16. Also stores and spares input output ratio is calculated which is the highest in 2008-09 i.e. 0.08418 and the lowest in 2011-12 i.e. 0.01142. This means that stores and spares was the best utilized in 2011-12 as compared to other years.

**Purchases of Traded Goods / Stock in Trade**: Input output ratio of purchases of traded goods or stock in trade is 0.06056 in 2008-09, 0.05328 in 2009-10, 0.06193 in 2010-11, 0.04580 in 2011-12, 0.04638 in 2012-13, 0.03885 in 2013-14, 0.04215 in 2014-15 and 0.04906 in 2015-16.

**Total Material**: Total material input output ratio 0.36232 in 2008-09, 0.34714 in 2009-10, 0.32731 in

**Table 4: Material Productivity of Lupin Ltd. From 2008-09 to 2015-16**

| Material Productivity of Lupin Ltd. From 2008-09 to 2015-16 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Base Year 2008-09 | | | | | | | | Amount Rs in Crore | |
| S. No. | Items | 2008-09 | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 |
| 1 | Output (Rs in Crore) | 2,945.50 | 3,365.42 | 3,726.04 | 4,031.19 | 5,055.41 | 6,355.81 | 6,843.37 | 7,961.56 |
| 2 | Raw Material and Components (Rs in Crore) | 919.85 | 982.59 | 1,141.88 | 1,221.19 | 1,399.15 | 1,460.42 | 1,569.76 | 1,654.45 |
| 3 | Raw Material and Components (Input Output Ratio) | 0.31229 | 0.29197 | 0.30646 | 0.30294 | 0.27676 | 0.22978 | 0.22938 | 0.20780 |
| 4 | Stores and Spares (Rs in Crore) | 84.31 | 96.02 | 127.67 | 142.66 | 160.61 | 179.65 | 231.37 | 287.41 |
| 5 | Stores and Spares (Input Output Ratio) | 0.02862 | 0.02853 | 0.03426 | 0.03539 | 0.03177 | 0.02827 | 0.03381 | 0.03610 |
| 6 | Purchases of Traded Goods/Stock in Trade (Rs in Crore) | 347.46 | 368.06 | 317.34 | 459.64 | 563.40 | 568.00 | 660.69 | 780.24 |
| 7 | Purchases of Traded Goods/ Stock in Trade (Input Output Ratio) | 0.11796 | 0.10937 | 0.08517 | 0.11402 | 0.11144 | 0.08937 | 0.09654 | 0.09800 |
| 8 | Total Material Input (Rs in Crore) | 1,351.62 | 1,446.67 | 1,586.89 | 1,823.49 | 2,123.16 | 2,208.07 | 2,461.82 | 2,722.10 |
| 9 | Material (Input Output Ratio) | 0.45888 | 0.42986 | 0.42589 | 0.45235 | 0.41998 | 0.34741 | 0.35974 | 0.34191 |
| 10 | Material Productivity Ratio | 2.1792 | 2.3263 | 2.3480 | 2.2107 | 2.3811 | 2.8784 | 2.7798 | 2.9248 |
| 11 | Material Productivity Indices/ Observed Indices (O) | 100.00 | 106.75 | 107.74 | 101.44 | 109.26 | 132.09 | 127.56 | 134.21 |
| 12 | Computed Value of Y/Expected Values (E) | 97.20 | 102.25 | 107.30 | 112.36 | 117.41 | 122.46 | 127.51 | 132.56 |
| 13 | Chi-Square $(O-E)^2/E$ | 0.08066 | 0.19781 | 0.00181 | 1.05979 | 0.56516 | 0.75653 | 0.00002 | 0.02048 |



2010-11, 0.31606 in 2011-12, 0.32706 in 2012-13, 0.22826 in 2013-14, 0.25236 in 2014-15, 0.24339 in 2015-16 respectively. It is the highest in 2008-09 which indicates that maximum material remained unutilised in 2008-09 as compared to other years in the study.

**Material Productivity Ratio**: Material productivity ratio is fluctuating in nature. It is 2.7600 in 2008-09, then increasing to 2.8807 in 2009-10, 3.0552 in 2010-11, 3.1639 in 2011-12, then it slightly decreased to 3.0575 in 2012-13, then again increased to 4.3810 in 2013-14, then it lowered down to 3.9626 in 2014-15, ultimately it increased to 4.1087 in 2015-16. Material productivity ratio is the lowest 2.7600 in 2008-09 while it is the highest 4.3810 in 2013-14. The highest ratio indicates efficiency and effectiveness while the lowest ratio indicates that the material input has not been utilized efficiently.

**Hypothesis Testing:** For testing the hypothesis Chi Square method has been used. The table value of chi square at 5% level of significance with (8-1) = 7 degree of freedom is 14.07 while the calculated value of chi square of Dr. Reddy's Laboratories Ltd. is 6.61. As the calculated value of chi square is less as compared to the table value hence null hypothesis is accepted and the alternate hypothesis is rejected. This reveals that the material productivity ratios of the Dr. Reddy's Laboratories Ltd for the eight year period are approximately the same.

**Analysis and Interpretation**

**Output:** The output of Lupin Ltd. showing an increasing trend. It is Rs 2945.50 crore for the year 2008-09 and it reached to Rs 7961.56 crore in 2015-16.

Total material inputs consist of raw material and components, stores and spares, purchases of traded goods/ stock in trade.

**Raw material and Components**: The raw material and components are forming the major part of the material productivity of Lupin Ltd. It is showing an increasing trend from the year 2008-09 to 2015-16. It is Rs 919.85 crore in 2008-09 and it reached to Rs 1654.45 crore in 2015-16. Raw material and components input output ratio is showing an erratic trend. It is 0.31229 in 2008-09, 0.29197 in 2009-10, 0.30646 in 2010-11, 0.30294 in 2011-12, 0.27676 in 2012-13, 0.22978 in 2013-14, 0.22938 in 2014-15 and 0.20780 in 2015-16. This means that for any one Rs of output, 0.31229 as input is required in 2008-09 and so on.

**Stores and Spares**: Another aspect in total material input is stores and spares. It is Rs 84.31 crore in 2008-09, Rs 96.02 crore in 2009-10, Rs 127.67 crore in 2010-11, Rs 142.66 crore in 2011-12, Rs 160.61 crore in 2012-13, Rs 179.65 crore in 2013-14, Rs 231.37 crore in 2014-15 and Rs 287.41 crore in 2015-16. Also stores and spares input output ratio is 0.02862, 0.02853, 0.03426, 0.03539, 0.03177, 0.02827, 0.03381 and 0.03610 respectively. It is the highest 0.03610 in 2015-16 while it is the lowest in 0.02827 in 2013-14. The lowest stores and spares input output ratio indicates that stores and spares are the best utilized in the year 2013-14.

**Purchases of Traded Goods / Stock in Trade**: Purchases of traded goods or stock in trade is Rs 347.46 crore in 2008-09, Rs 368.06 crore in 2009-10, Rs 317.34 crore in 2010-11, Rs. 459.64 crore in 2011-12, Rs 563.40 crore in 2012-13, Rs 568.00 crore in 2013-14, Rs 660.69 crore in 2014-15 and Rs 780.24 crore in 2015-16. Input output ratio is 0.11796 in 2008-09, 0.10937 in 2009-10, 0.08517 in 2010-11, 0.11402 in 2011-12, 0.11144 in 2012-13, 0.08937 in 2013-14, 0.09654 in 2014-15, 0.09800 in 2015-16.

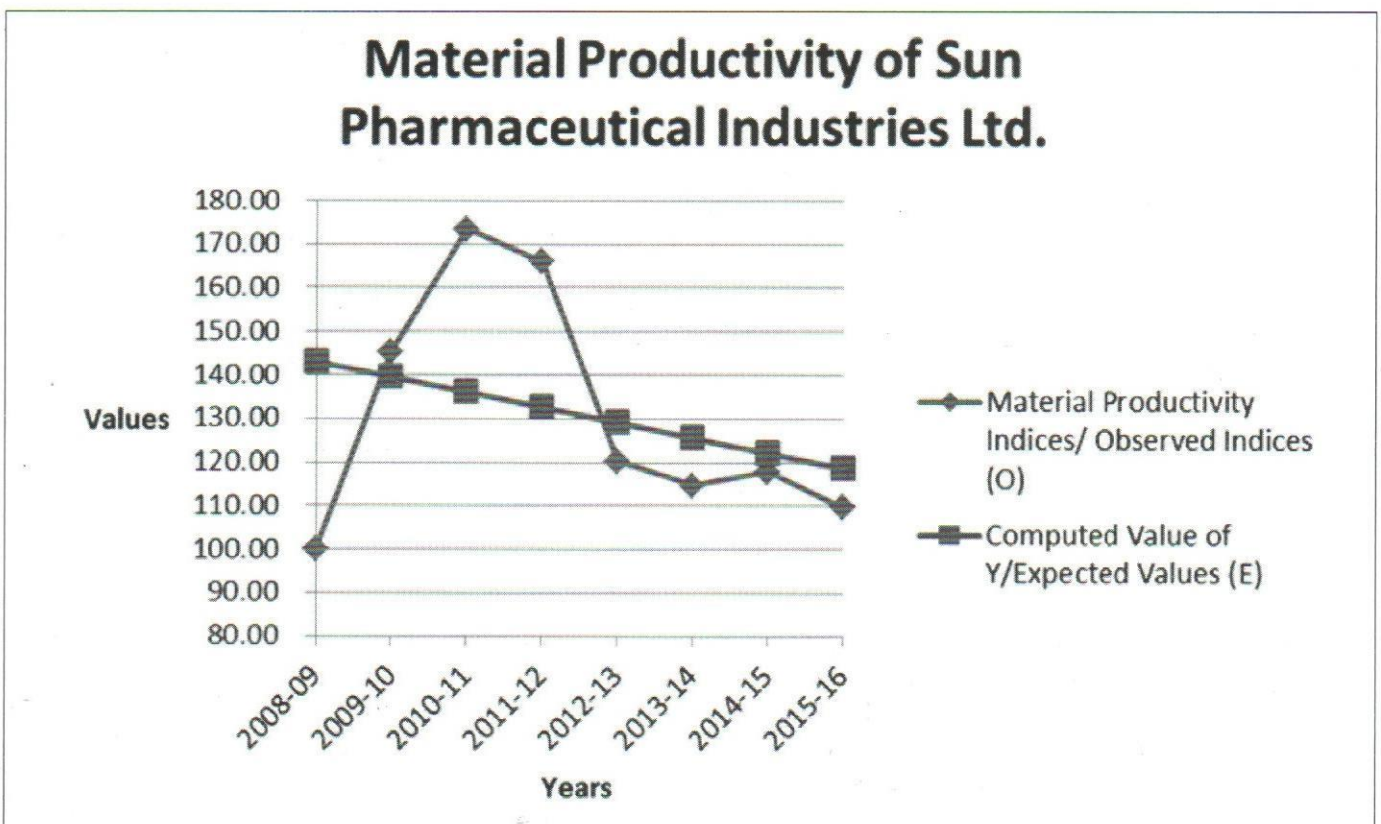
**Total Material**: Total material of Lupin Ltd. showing an upward trend. Total material input output ratio 0.45888 in 2008-09, 0.42986 in 2009-10, 0.42589 in 2010-11, 0.45235 in 2011-12, 0.41998 in 2012-13, 0.34741 in 2013-14, 0.35974 in 2014-15, 0.34191 in 2015-16 respectively. Total material input output ratio is the lowest in the year 2015-16 with 0.34191 indicating that total material is not optimally utilized in this year.

**Material Productivity Ratio**: Material productivity ratio is showing an erratic trend. It is 2.1792 in 2008-09, then increasing to 2.3263 in 2009-10, again increased to 2.3480 in 2010- 11, then decreased to 2.2107 in 2011-12, then it slightly increased to 2.3811 in 2012-13, then again increased to 2.8784 in 2013-14, then it lowered down to 2.7798 in 2014-15, ultimately it increased to 2.9248 in 2015-16. The highest material productivity ratio in 2015-16 with 2.9248 indicates that material is the best utilized in 2015-16. It represents that for every unit of input 2.9248 units of output is obtained in 2015-16.

**Hypothesis Testing:** Chi square has been used for testing the hypothesis. The table value of chi square at 5% level of significance with (8-1) = 7 degree of freedom is 14.07 while the calculated value of chi square of Lupin Ltd. is 2.68. As the calculated value of chi square is less as compared to the table value hence null hypothesis is

**Table 5: Material Productivity of Sun Pharmaceutical Industries Ltd. From 2008-09 to 2015-16**

| Material Productivity of Sun Pharmaceutical Industries Ltd. From 2008-09 to 2015-16 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Base Year 2008-09 | | | | | | | | | Amount Rs in Crore |
| S. No. | Items | 2008-09 | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 |
| 1 | Output (Rs in Crore) | 4,019.89 | 2,369.92 | 2,726.51 | 3,280.21 | 1,929.55 | 2,036.94 | 5,991.36 | 5,624.35 |
| 2 | Raw Material and Components (Rs in Crore) | 662.93 | 642.50 | 593.28 | 729.96 | 512.40 | 612.81 | 1,585.04 | 1,423.99 |
| 3 | Raw Material and Components (Input Output Ratio) | 0.16491 | 0.27111 | 0.21760 | 0.22253 | 0.26555 | 0.30085 | 0.26455 | 0.25318 |
| 4 | Stores and Spares (Rs in Crore) | 28.23 | 29.23 | 28.01 | 90.97 | 124.23 | 126.68 | 242.19 | 254.07 |
| 5 | Stores and Spares (Input Output Ratio) | 0.00702 | 0.01233 | 0.01027 | 0.02773 | 0.06438 | 0.06219 | 0.04042 | 0.04517 |
| 6 | Purchases of Traded Goods/Stock in Trade (Rs in Crore) | 1,270.67 | 124.16 | 145.94 | 143.80 | 145.90 | 126.75 | 654.89 | 824.85 |
| 7 | Purchases of Traded Goods/ Stock in Trade (Input Output Ratio) | 0.31610 | 0.05239 | 0.05353 | 0.04384 | 0.07561 | 0.06223 | 0.10931 | 0.14666 |
| 8 | Total Material Input (Rs in Crore) | 1,961.83 | 795.89 | 767.23 | 964.73 | 782.53 | 866.24 | 2,482.12 | 2,502.91 |
| 9 | Material (Input Output Ratio) | 0.48803 | 0.33583 | 0.28140 | 0.29411 | 0.40555 | 0.42527 | 0.41428 | 0.44501 |
| 10 | Material Productivity Ratio | 2.0491 | 2.9777 | 3.5537 | 3.4001 | 2.4658 | 2.3515 | 2.4138 | 2.2471 |
| 11 | Material Productivity Indices/ Observed Indices (O) | 100.00 | 145.32 | 173.43 | 165.94 | 120.34 | 114.76 | 117.80 | 109.67 |
| 12 | Computed Value of Y/Expected Values (E) | 143.05 | 139.58 | 136.11 | 132.64 | 129.17 | 125.70 | 122.23 | 118.76 |
| 13 | Chi-Square $(O-E)^2/E$ | 12.95801 | 0.23579 | 10.23187 | 8.35736 | 0.60409 | 0.95238 | 0.16045 | 0.69612 |



accepted and the alternate hypothesis is rejected. This reveals that the material productivity ratios of the Lupin Ltd. for the eight year period are approximately the same.

**Analysis and Interpretation:**

***Output:*** The output of Sun Pharmaceutical Industries Ltd. showing a fluctuating trend. Output in 2008-09 is Rs 4,019.89 crore, in 2009-10 Rs 2,369.92 crore, in 2010-11 Rs 2, 726.51 crore, in 2011-12 Rs 3,280.21 crore, in 2012-13 Rs 1,929.55 crore, in 2013-14 Rs 2,036.94 crore, in 2014-15 Rs 5,991.36 crore and in 2015-16 Rs 5,624.35 crore.

Total material inputs consist of raw material and components, stores and spares, purchases of traded goods/ stock in trade.

***Raw material and Components***: The raw material and components of Sun Pharmaceutical Industries Ltd. is Rs 662.93 crore in 2008-09, Rs 642.50 crore in 2009-10, Rs 593.28 crore in 2010-11, Rs 729.96 crore in 2011-12, Rs 512.40 crore in 2012-13, Rs 612.81 crore in 2013- 14, Rs 1,585.04 crore in 2014-15 and Rs 1,423.99 crore in 2015-16. Raw material and components are highly consumed in the year 2014-15 and 2015-16. The input output ratio is the lowest 0.16491 in 2008-09 while it is the highest 0.30085 in the year 2013-14. The lowest ratio indicates that the raw material and components is best utilized in the year 2008-09.

***Stores and Spares***: Another point to discuss in the total material input is stores and spares. It is the lowest Rs 28.01 crore in 2010-11 while it is the highest Rs 254.07 crore in 2015- 16. Also stores and spares input output ratio is 0.00702 in 2008-09,0.01233 in 2009- 10,0.01027 in 2010-11, 0.02773 in 2011-12, 0.06438 in 2012-13, 0.06219 in 2013-14, 0.04042 in 2014-15 and 0.04517 in 2015-16. It is the lowest 0.00702 in 2008-09 which indicates that for every unit of output produced 0.00702 unit of input is required. Hence reflecting a positive signal that for small amount of input more output is generated.

***Purchases of Traded Goods / Stock in Trade***: Purchases of traded goods or stock in trade is Rs 1270.67 crore in 2008-09, Rs 124.16 crore in 2009-10, Rs 145.94 crore in 2010-11, Rs 143.80 crore in 2011-12, Rs 145.90 crore in 2012-13, Rs 126.75 crore in 2013-14, Rs crore in 2014-15 and Rs 824.85 crore in 2015-16. Input output ratio is 0.31610 in 2008-09, 0.05239 in 2009-10, 0.05353 in 2010-11, 0.04384 in 2011-12, 0.07561 in 2012-13, 0.06223 in 2013-14,0.10931 in 2014-15, 0.14666 in 2015-16.

***Total Material***: Total material of Sun Pharmaceutical Industries Ltd. is showing a fluctuating trend. It is Rs 1,961.83 crore in 2008-09, Rs 795.89 crore in 2009-10. Rs 767.23 crore in 2010-11, Rs 964.73 crore in 2011-12, Rs 782.53 crore in 2012-13, Rs 866.24 crore in 2013-14, Rs 2,482.12 crore in 2014-15, Rs 2,502.91 crore in 2015-16. Total material input output ratio is 0.48803 in 2008-09, 0.33583 in 2009-10, 0.28140 in 2010-11, 0.29411 in 2011-12, 0.40555in 2012-13,0.42527 in 2013-14, 0.41428 in 2014-15,0.44501in 2015-16 respectively. Total material input output ratio is the highest 0.48803 in 2008-09 while it is the lowest 0.28140 in 2010-11. The lowest ratio indicates that material has been optimally utilized in the year 2010-11.

***Material Productivity Ratio***: Material productivity ratio is 2.0491 in 2008-09, 2.9777 in 2009-10, 3.5537 in 2010-11, 3.4001 in 2011-12, 2.4658 in 2012-13, 2.3515 in 2013-14, 2.4138in 2014-15 and 2.2471 in 2015-16. It is the highest 3.5537 in 2010-11, which means that for every unit of input, 3.5537 units of output is obtained. It is the lowest 2.0491 in 2008- 09 which means that for every unit of input, 2.0491 units of output is obtained. So the highest material productivity ratio is better as it gives more output with small amount of input.

***Hypothesis Testing:*** Chi square has been used for testing the hypothesis. The table value of chi square at 5% level of significance with (8-1) = 7 degree of freedom is 14.07 while the calculated value of chi square of Sun Pharmaceutical Industries Ltd. is 34.20. As the calculated value of chi square is more as compared to the table value hence null hypothesis is rejected and alternate hypothesis is accepted. This reveals that the material productivity ratios of the Sun Pharmaceutical Industries Ltd. for the eight years period are different.

**Material Productivity Ratios in Pharmaceutical sector and Kruskal Wallis Rank Sum Test**

Table 6 shows the material productivity ratios of the companies of the pharmaceutical sector. The material productivity of all the samples is combined and arranged in order of increasing size and given a rank number. Where the tie occur the mean of the available rank numbers is used. The rank sum of each of the sample has been calculated. The detailed calculation has been done in the table 6.

**Table 6: Kruskal Wallis Rank Sum Test**

| Comparative Material Productivity Ratios From 2008-09 to 2015-16 and Kruskal Wallis Rank Sum Test | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Base Year 2008-09** | | | | | | | | |
| **Year** | **Cipla Ltd.** | | **Dr Reddy's Laboratories Ltd** | | **Lupin Ltd** | | **Sun Pharmaceutical Industries Ltd** | |
| | **Ratio** | **Rank 1** | **Ratio** | **Rank 2** | **Ratio** | **Rank 3** | **Ratio** | **Rank 4** |
| 2008-09 | 2.0744 | 4 | 2.7600 | 19 | 2.1792 | 5 | 2.0491 | 2 |
| 2009-10 | 2.0573 | 3 | 2.8807 | 22 | 2.3263 | 9 | 2.9777 | 24 |
| 2010-11 | 2.0442 | 1 | 3.0552 | 25 | 2.3480 | 10 | 3.5537 | 29 |
| 2011-12 | 2.4210 | 16 | 3.1639 | 27 | 2.2107 | 6 | 3.4001 | 28 |
| 2012-13 | 2.3664 | 12 | 3.0575 | 26 | 2.3811 | 14 | 2.4658 | 17 |
| 2013-14 | 2.3740 | 13 | 4.3810 | 32 | 2.8784 | 21 | 2.3515 | 11 |
| 2014-15 | 2.2496 | 8 | 3.9626 | 30 | 2.7798 | 20 | 2.4138 | 15 |
| 2015-16 | 2.6178 | 18 | 4.1087 | 31 | 2.9248 | 23 | 2.2471 | 7 |
| Total | | 75 | | 212 | | 108 | | 133 |

*Source:* Author's Calculation

**Table 7: Comparative Average Material Productivity of Pharmaceutical Sector From 2008-09 to 2015-16**

**Base Year 2008-09**

| **Companies** | **Raw Material Components (Input Output Ratio)** | | **Stores and (Input Output Ratio)** | | **Purchase of Traded Goods Stock in Trade (Input Output Ratio)** | | **Material (Input Output Ratio)** | | **Material Productivity Ratio** | | **Chi Square Test** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Average** | **Rank** | **Average** | **Rank** | **Average** | **Rank** | **Average** | **Rank** | **Average** | **Rank** | **Value** | **Rank** |
| Cipla Ltd. | 0.3381 | 4 | 0.0106 | 1 | 0.0939 | 2 | 0.4426 | 4 | 2.2756 | 4 | 2.1822 | 1 |
| Dr. Reddy's Laboratories Ltd | 0.2131 | 1 | 0.0376 | 4 | 0.0498 | 1 | 0.3005 | 1 | 3.4212 | 1 | 6.6076 | 3 |
| Lupin Ltd. | 0.2697 | 3 | 0.0321 | 2 | 0.1027 | 3 | 0.4045 | 3 | 2.5035 | 3 | 2.6823 | 2 |
| Sun Pharmaceutical Industries Ltd. | 0.2450 | 2 | 0.0337 | 3 | 0.1075 | 4 | 0.3862 | 2 | 2.6823 | 2 | 34.1961 | 4 |

***Source*** : Author's Calculation

## Calculation of Kruskal Wallis Rank Sum Test (H Test)

$$H = \frac{12}{32(32+1)}\left[\frac{(75)^2}{8} + \frac{(212)^2}{8} + \frac{(108)^2}{8} + \frac{(133)^2}{8}\right] - 3(32+1)$$

$$H = 14.5256$$

H Test follows the Chi-Square distribution with (k-1) degree of freedom. k is the number of samples. Here in this case degree of freedom is 4-1 = 3. At 5 % level of significance with 3 degrees of freedom, the critical value/ table value is 7.8147.

The calculated value of H is 14.5256 and the table value is 7.8147. As the calculated value is greater than the table value hence null hypothesis rejected and alternate hypothesis is accepted. This means that the material productivity ratios of the pharmaceutical sector companies of Nifty 50 are different.

***Raw Material and Components Average Input Output Ratio :*** The raw material and components average input output ratio is the best of Dr. Reddy's Laboratories Ltd. by 0.2131, followed by the Sun Pharmaceutical Industries Ltd. by 0.2450, Lupin Ltd. by 0.2697 and lastly Cipla Ltd. by 0.03381.

***Stores and Spares Average Input Output Ratio :*** Stores and spares average input output ratio is the best of Cipla Ltd. as compared to Lupin Ltd., Sun Pharmaceutical Industries Ltd. and Dr. Reddy's Laboratories Ltd.

***Purchase of Traded Goods/Stock in Trade Average Input Output Ratio :*** Purchase of traded goods/stock in trade average input output ratio is 0.0498 of Dr. Reddy's Laboratories Ltd., 0.0939 of Cipla Ltd., 0.1027 of Lupin Ltd. and 0.1075 of Sun Pharmaceutical Industries Ltd.

***Material Average Input Output Ratio :*** The total material average input output ratio is the best of Dr. Reddy's Laboratories Ltd. with 0.3005, followed by Sun Pharmaceutical Industries Ltd. with 0.3862, Lupin Ltd. 0.4045, Cipla Ltd. 0.4426.

***Average Material Productivity Ratio :*** Average material productivity ratio is the best of Dr. Reddy's Laboratories Ltd. with 3.4212 which means that for every one unit of material input, the output produced is 3.4212. This is followed by Sun Pharmaceutical Industries Ltd. with 2.6823 then Lupin Ltd. with 2.5035 and lastly Cipla Ltd. with 2.2756.

***Chi Square Test :*** On analysing the Chi Square of the Pharmaceutical Sector Companies included in Nifty 50 it has been observed that Cipla Ltd. has the least chi square value with 2.1822 then the Lupin Ltd. with 2.6823, followed by Dr. Reddy's Laboratories Ltd. with 6.6076 and lastly it is Sun Pharmaceutical Industries Ltd. with the highest chi square value 34.1961. The table value of chi square at 5% level of significance with (8-1) = 7 degree of freedom is 14.07. This shows that the null hypothesis based on the chi square is accepted in case of Cipla Ltd., Lupin Ltd. and Dr. Reddy's Laboratories Ltd. while in case of Sun Pharmaceutical Industries Ltd. null hypothesis is rejected and alternate hypothesis is accepted. This reveals that the material productivity ratios of the Cipla Ltd., Lupin Ltd. and Dr. Reddy's Laboratories Ltd. for the eight years period are approximately the same while the material productivity ratios of the Sun Pharmaceutical Industries Ltd. for the eight years period are different.

## Suggestions and Recommendations

The reason for the increase or decrease in the material productivity may be due to increase or decrease in the output or input or the components associated with productivity.

If output increases with no increase in input, it results in an increase in the material productivity and vice-a-versa and if output remains same but input decreases then also it results in increase in material productivity and vice-a-versa.

For improving the material productivity it is recommended to improve the components of output or input.

1. The company should optimally utilize the raw material without any wastage or spoilage.
2. The technology used in processing the raw material to make it a finished good should be of high quality so that there is low wastage of material.
3. Equipment used in material processing should be of good quality and proper maintenance of equipment should be there.
4. The standardized raw material should be used. The less standardized material should be avoided.

By keeping in mind the above points, from a small amount of input big amount of output can be obtained. Hence productivity increases.

## Conclusion

It may be concluded from the above analysis that the pharmaceutical sector companies included in Nifty 50 are able to utilize its material resources efficiently as for each amount of input, twice or more than twice amount of output is obtained. This indicates that for small amount of input used, more amount of output is obtained. But this should not be the only criteria for analyzing the material productivity. Material productivity may increase due to other factors. One of such factors may be unfair practices adopted to increase the price of raw material. Price of raw material may increase by creating fake demand of raw material in the market and it is a universally known fact that as the demand increases in the market, prices also increases. Due to this increase, output in terms of quantity remains same but the output in terms of amount increases. As this study is based on the monetary values thus these factors are inseparable from the productivity calculation.

However, on analyzing pharmaceutical sector as a whole, it may be observed that the material productivity was the best of Dr. Reddy's Laboratories Ltd. as it has the highest output per rupee of material input. Its average

material productivity ratio is 3.4212, which is the highest among the others. Next highest average material productivity ratio is 2.6823 of Sun Pharmaceutical Industries Ltd., followed by 2.5035 of Lupin Ltd. and 2.2756 of Cipla Ltd.

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*"A nation's culture resides in the hearts and in the soul of its people."*

*– Mahatma Gandhi*

## Appendix 1

**Revaluation of Output of Cipla Ltd. From 2008-09 to 2015-16**

| Revaluation of Output of Cipla Ltd. From 2008-09 to 2015-16 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Year 2008-09<br>**Rupees in Crore** | | | | | | | | | | | | | | | |
| S. No. Items | 2008-09 | 2009-10 | | 2010-11 | | 2011-12 | | 2012-13 | | 2013-14 | | 2014-15 | | 2015-16 | |
| | Actual | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued |
| | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs |
| 1 Sales | 4960.60 | 5359.52 | 4855.73 | 6135.16 | 5067.64 | 6977.50 | 5351.74 | 8202.42 | 5954.96 | 9380.29 | 6425.50 | 10131.80 | 7102.39 | 12034.10 | 8484.04 |
| 2 Other Income | 366.17 | 353.72 | 320.47 | 298.72 | 246.74 | 148.30 | 113.75 | 229.13 | 166.35 | 280.28 | 191.99 | 147.91 | 103.68 | 259.14 | 182.69 |
| 3 Changes in Inventories of Finished Goods,Work in progress and Traded Goods | -113.55 | -184.09 | -166.79 | -125.74 | -103.86 | 11.24 | 8.62 | -290.75 | -211.08 | -158.12 | -108.31 | -349.05 | -244.68 | 228.35 | 160.99 |
| Total Output | 5213.22 | 5529.15 | 5009.41 | 6308.14 | 5210.52 | 7137.04 | 5474.11 | 8140.80 | 5910.22 | 9502.45 | 6509.18 | 9930.66 | 6961.39 | 12521.59 | 8827.72 |

*Source :* Author's Calculation

## Appendix 2

**Revaluation of Output of Dr. Reddy's Laboratories Ltd. From 2008-09 to 2015-16**

| Revaluation of Output of Dr. Reddy's Laboratories Ltd. From 2008-09 to 2015-16 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Year 2008-09<br>**Rupees in Crore** | | | | | | | | | | | | | | | |
| S. No. Items | 2008-09 | 2009-10 | | 2010-11 | | 2011-12 | | 2012-13 | | 2013-14 | | 2014-15 | | 2015-16 | |
| | Actual | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued |
| | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs |
| 1 Sales | 3999.70 | 4401.10 | 3987.40 | 5218.10 | 4310.15 | 6603.80 | 5065.11 | 8074.40 | 5862.01 | 9495.70 | 6504.55 | 9887.40 | 6931.07 | 9921.80 | 6994.87 |
| 2 Other Income | 298.20 | 323.50 | 293.09 | 206.00 | 170.16 | 217.70 | 166.98 | 501.30 | 363.94 | 383.80 | 262.90 | 346.40 | 242.83 | 530.70 | 374.14 |
| 3 Changes in Inventories of Finished Goods,Work in progress and Traded Goods | 64.10 | -117.30 | -106.27 | -79.00 | -65.25 | -104.80 | -80.38 | -100.60 | -73.04 | 2191.80 | 1501.38 | 2248.40 | 1576.13 | 1988.50 | 1401.89 |
| Total Output | 4233.80 | 4607.30 | 4174.21 | 5345.10 | 4415.05 | 6716.70 | 5151.71 | 8475.10 | 6152.92 | 12071.30 | 8268.84 | 12482.20 | 8750.02 | 12441.00 | 8770.91 |

*Source :* Author's Calculation

## Appendix 3

**Revaluation of Output of Lupin Ltd. From 2008-09 to 2015-16**

| Revaluation of Output of Lupin Ltd. From 2008-09 to 2015-16 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Year 2008-09<br>**Rupees in Crore** | | | | | | | | | | | | | | | |
| S. No. Items | 2008-09 | 2009-10 | | 2010-11 | | 2011-12 | | 2012-13 | | 2013-14 | | 2014-15 | | 2015-16 | |
| | Actual | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued |
| | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs |
| 1 Sales | 2898.56 | 3640.09 | 3297.92 | 4426.25 | 3656.08 | 5384.83 | 4130.16 | 7122.51 | 5170.94 | 8939.38 | 6123.48 | 9752.47 | 6836.48 | 11280.07 | 7952.45 |
| 2 Other Income | 72.40 | 72.52 | 65.70 | 85.21 | 70.38 | 3.49 | 2.68 | 23.31 | 16.92 | 415.38 | 284.54 | 180.63 | 126.62 | 185.64 | 130.88 |
| 3 Changes in Inventories of Finished Goods,Work in progress and Traded Goods | 25.46 | 1.98 | 1.79 | -0.51 | -0.42 | -132.53 | -101.65 | -182.44 | -132.45 | -76.21 | -52.20 | -170.80 | -119.73 | -172.72 | -121.77 |
| Total Output | 2945.50 | 3714.59 | 3365.42 | 4510.95 | 3726.04 | 5255.79 | 4031.19 | 6963.38 | 5055.41 | 9278.55 | 6355.81 | 9762.30 | 6843.37 | 11292.99 | 7961.56 |

*Source :* Author's Calculation

## Appendix 4

**Revaluation of Output of Sun Pharmaceutical Industries Ltd. From 2008-09 to 2015-16**

| Revaluation of Output of Sun Pharmaceutical Industries Ltd. From 2008-09 to 2015-16 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Year 2008-09<br>**Rupees in Crore** | | | | | | | | | | | | | | | |
| S. No. Items | 2008-09 | 2009-10 | | 2010-11 | | 2011-12 | | 2012-13 | | 2013-14 | | 2014-15 | | 2015-16 | |
| | Actual | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued |
| | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs |
| 1 Sales | 2769.75 | 1846.13 | 1672.59 | 1933.12 | 1596.76 | 4015.56 | 3079.93 | 2432.14 | 1765.73 | 2828.79 | 1937.72 | 8017.19 | 5620.05 | 7614.46 | 5368.19 |
| 2 Other Income | 1273.92 | 800.59 | 725.33 | 1365.75 | 1128.11 | 342.85 | 262.97 | 236.17 | 171.46 | 159.38 | 109.18 | 211.58 | 148.32 | 431.82 | 304.43 |
| 3 Changes in Inventories of Finished Goods,Work in progress and Traded Goods | -23.78 | -30.91 | -28.00 | 1.99 | 1.64 | -81.73 | -62.69 | -10.53 | -7.64 | -14.53 | -9.95 | 318.10 | 222.99 | -68.48 | -48.28 |
| Total Output | 4019.89 | 2615.81 | 2369.92 | 3300.86 | 2726.51 | 4276.68 | 3280.21 | 2657.78 | 1929.55 | 2973.64 | 2036.94 | 8546.87 | 5991.36 | 7977.80 | 5624.35 |

*Source :* Author's Calculation

# Appendix 5

**Revaluation of Material Input of Cipla Ltd. From 2008-09 to 2015-16**

| Revaluation of Material Input of Cipla Ltd. From 2008-09 to 2015-16 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Year 2008-09<br>**Rupees in Crore** | | | | | | | | | | | | | | | |
| S. No. | Items | 2008-09 | 2009-10 | | 2010-11 | | 2011-12 | | 2012-13 | | 2013-14 | | 2014-15 | | 2015-16 | |
| | | Actual | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued |
| | | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs |
| (A) | **Raw Material And Components** | | | | | | | | | | | | | | | |
| 1 | Purchased Bulk Drugs | 776.56 | 909.59 | 824.09 | 1075.24 | 888.15 | 884.16 | 678.15 | 953.33 | 692.12 | 1367.62 | 936.82 | 1567.24 | 1098.64 | 1409.10 | 993.42 |
| 2 | Raw Material (Solvents, Capsules, etc.) | 101.25 | 105.62 | 95.69 | 131.67 | 108.76 | 139.29 | 106.84 | 168.37 | 122.24 | 201.84 | 138.26 | 942.06 | 660.38 | 1190.19 | 839.08 |
| 3 | Packing Material | 461.25 | 465.27 | 421.53 | 558.59 | 461.40 | 572.55 | 439.15 | 663.69 | 481.84 | 812.29 | 556.42 | 891.11 | 624.67 | 956.03 | 674.00 |
| 4 | Intermediates and Others | 643.82 | 634.09 | 574.49 | 643.37 | 531.42 | 796.30 | 610.76 | 977.36 | 709.56 | 900.90 | 617.12 | 127.84 | 89.62 | 78.02 | 55.00 |
| 5 | Less Recoverable Duties | -109.97 | -99.16 | -89.84 | -93.83 | -77.50 | -91.45 | -70.14 | -115.92 | -84.16 | -137.31 | -94.06 | -101.51 | -71.16 | 0.00 | 0.00 |
| | Total (A) | 1872.91 | 2015.41 | 1825.96 | 2315.04 | 1912.22 | 2300.85 | 1764.75 | 2646.83 | 1921.60 | 3145.34 | 2154.56 | 3426.74 | 2402.14 | 3633.34 | 2561.50 |
| (B) | **Stores and Spares** | 52.16 | 50.47 | 45.73 | 99.73 | 82.38 | 91.57 | 70.23 | 86.43 | 62.75 | 84.05 | 57.57 | 84.22 | 59.04 | 112.28 | 79.16 |
| (C) | **Purchases of Traded Goods/ Stock in Trade** | 588.04 | 621.66 | 563.22 | 671.13 | 554.35 | 555.55 | 426.11 | 706.89 | 513.20 | 773.40 | 529.78 | 903.41 | 633.29 | 1037.56 | 731.48 |
| | Total Material Input (A+B+C) | 2513.11 | 2687.54 | 2434.91 | 3085.90 | 2548.95 | 2947.97 | 2261.09 | 3440.15 | 2497.55 | 4002.79 | 2741.91 | 4414.37 | 3094.47 | 4783.18 | 3372.14 |

*Source :* Author's Calculation

# Appendix 6

**Revaluation of Material Input of Dr. Reddy's Laboratories Ltd From 2008-09 to 2015-16**

| Revaluation of Material Input of Dr. Reddy's Laboratories Ltd. From 2008-09 to 2015-16 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Year 2008-09<br>**Rupees in Crore** | | | | | | | | | | | | | | | |
| S. No. Items | 2008-09 | 2009-10 | | 2010-11 | | 2011-12 | | 2012-13 | | 2013-14 | | 2014-15 | | 2015-16 | |
| | Actual | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued |
| | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs |
| (A) Raw Material And Components | 921.20 | 1100.50 | 997.05 | 1065.40 | 880.02 | 1738.60 | 1333.51 | 2277.30 | 1653.32 | 2191.80 | 1501.38 | 2248.40 | 1576.13 | 1988.50 | 1401.89 |
| (B) Stores and Spares | 356.40 | 253.40 | 229.58 | 353.10 | 291.66 | 76.70 | 58.83 | 101.50 | 73.69 | 94.60 | 64.80 | 375.50 | 263.23 | 429.10 | 302.52 |
| (C) Purchases of Traded Goods/ Stock in Trade | 256.40 | 245.50 | 222.42 | 331.00 | 273.41 | 307.60 | 235.93 | 393.10 | 285.39 | 469.00 | 321.27 | 526.10 | 368.80 | 610.40 | 430.33 |
| Total Material Input (A+B+C) | 1534.00 | 1599.40 | 1449.06 | 1749.50 | 1445.09 | 2122.90 | 1628.26 | 2771.90 | 2012.40 | 2755.40 | 1887.45 | 3150.00 | 2208.15 | 3028.00 | 2134.74 |

*Source :* Author's Calculation

# Appendix 7

**Revaluation of Material Input of Lupin Ltd. From 2008-09 to 2015-16**

| Revaluation of Material Input of Lupin Ltd. From 2008-09 to 2015-16 | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Year 2008-09<br>**Rupees in Crore** | | | | | | | | | | | | | | | | |
| S. No. | Items | 2008-09 | 2009-10 | | 2010-11 | | 2011-12 | | 2012-13 | | 2013-14 | | 2014-15 | | 2015-16 | |
| | | Actual | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued |
| | | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs |
| (A) | Raw Material And Components | | | | | | | | | | | | | | | |
| 1 | DL2 (RECEMIC) | 61.54 | 77.46 | 70.18 | 74.89 | 61.86 | 81.42 | 62.45 | 93.46 | 67.85 | 95.42 | 65.36 | 111.03 | 77.83 | 117.67 | 82.96 |
| 2 | PEN G | 176.34 | 169.26 | 153.35 | 216.52 | 178.85 | 184.01 | 141.14 | 176.94 | 128.46 | 237.75 | 162.86 | 257.69 | 180.64 | 277.95 | 195.95 |
| 3 | Packing Material | 118.25 | 131.22 | 118.89 | 155.58 | 128.51 | 196.87 | 151.00 | 239.18 | 173.64 | 259.28 | 177.61 | 277.64 | 194.63 | 316.85 | 223.38 |
| 4 | Others | 563.72 | 706.60 | 640.18 | 935.43 | 772.67 | 1129.87 | 866.61 | 1417.63 | 1029.20 | 1539.55 | 1054.59 | 1592.96 | 1116.66 | 1634.27 | 1152.16 |
| | Total (A) | 919.85 | 1084.54 | 982.59 | 1382.42 | 1141.88 | 1592.17 | 1221.19 | 1927.21 | 1399.15 | 2132.00 | 1460.42 | 2239.32 | 1569.76 | 2346.74 | 1654.4 |
| (B) | Stores and Spares | 84.31 | 105.98 | 96.02 | 154.57 | 127.67 | 186.00 | 142.66 | 221.22 | 160.61 | 262.27 | 179.65 | 330.06 | 231.37 | 407.68 | 287.41 |
| (C) | Purchases of Traded Goods/ Stock | 347.46 | 406.25 | 368.06 | 384.19 | 317.34 | 599.27 | 459.64 | 776.03 | 563.40 | 829.19 | 568.00 | 942.50 | 660.69 | 1106.73 | 780.24 |
| | Total Material Input (A+B+C) | 1351.62 | 1596.77 | 1446.67 | 1921.18 | 1586.89 | 2377.44 | 1823.50 | 2924.46 | 2123.16 | 3223.46 | 2208.07 | 3511.88 | 2461.83 | 3861.15 | 2722.11 |

*Source :* Author's Calculation

# Appendix 8

**Revaluation of Material Input of Sun Pharmaceutical Industries Ltd. From 2008-09 to 2015-16**

| **Revaluation of Material** Sun Pharmaceutical Industries Ltd. **From 2008-09 to 2015-16** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Year 2008-09<br>**Rupees in Crore** | | | | | | | | | | | | | | | | |
| S. No. | Items | 2008-09 | 2009-10 | | 2010-11 | | 2011-12 | | 2012-13 | | 2013-14 | | 2014-15 | | 2015-16 | |
| | | Actual | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued | Actual | Revalued |
| | | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs | Rs |
| (A) | Raw Material And Components | | | | | | | | | | | | | | | |
| 1 | Raw Material | 626.71 | 645.23 | 584.58 | 655.57 | 541.50 | 832.81 | 638.77 | 583.90 | 423.91 | 707.50 | 484.64 | 1881.40 | 1318.86 | 1701.42 | 1199.50 |
| 2 | Packing Material | 36.22 | 63.93 | 57.92 | 62.69 | 51.78 | 118.90 | 91.20 | 121.89 | 88.49 | 187.12 | 128.18 | 379.71 | 266.18 | 318.43 | 224.49 |
| | Total (A) | 662.93 | 709.16 | 642.50 | 718.26 | 593.28 | 951.71 | 729.96 | 705.79 | 512.40 | 894.62 | 612.81 | 2261.11 | 1585.04 | 2019.85 | 1423.99 |
| (B) | **Stores and Spares** | 28.23 | 32.26 | 29.23 | 33.91 | 28.01 | 118.60 | 90.97 | 171.12 | 124.23 | 184.93 | 126.68 | 345.49 | 242.19 | 360.38 | 254.07 |
| (C) | **Purchases of Traded** Goods/ Stock | 1270.67 | 137.04 | 124.16 | 176.68 | 145.94 | 187.48 | 143.80 | 200.96 | 145.90 | 185.04 | 126.75 | 934.22 | 654.89 | 1170.00 | 824.85 |
| | Total Material Input (A+B) | 1961.83 | 878.46 | 795.88 | 928.85 | 767.23 | 1257.79 | 964.72 | 1077.87 | 782.53 | 1264.59 | 866.24 | 3540.82 | 2482.11 | 3550.23 | 2502.91 |

*Source* : Author's Calculation

Feature

# Demonetization In India- The Journey So Far

KRISHN AWATAR GOYAL AND VIJAY SINGH

*With each passing day, in the light of various reports and data, the consequences of demonetization are becoming far clearer and comprehensible. The jury is still to give its verdict on the demonetization, which is certainly a watershed event in the political and economic history of our nation. However, it is not that easy to choose between the pro and anti-demonetization divide. There is little doubt about the stated objectives and intentions behind the decision of demonetization, which primarily includes checking the menace of black money, black economy, corruption, FICN, anti-state activities and to enhance cashless & digital economy. The Bharatiya Janata Party (BJP) led NDA government at the Centre shall be praised for taking such a huge political risk to cleanse the economy of our nation. However, there was clear cut indication of lack of proper and adequate planning on the part of the government, which led to unintended adverse consequences like loss of employment and daily wages, deaths, suicides etc.*

*Even after more than two years of the demonetization, it is indeed very difficult to clearly mention that it is good or bad for the Indian economy as the whole picture is still to be unfolded.*

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## Introduction

The decision of demonetization taken on the evening of 8th November 2016, was one of the major economic reform, which touched upon so many lives across India and elsewhere. The ripples of the breakthrough economic event is felt to this day. In the history of our nation, especially in the economic history, the event of demonetization of 2016 will be remembered for varied reasons.

The demonetization of 2016 is considered to be unparalleled in terms of the sheer volume which led to around 86% of the currency rendered worthless (Rs 500 and Rs 1,000 currency notes lost their legal status as the accepted currency). There would hardly be any resident of our nation who has not felt the effect of demonetization.

The experts who are watching the unfolding of the effects of demonetization from close quarters have differing opinion on the question of its efficacy. The opinion varies diagonally from the much necessary and awaited economic cleansing of the whole economy to one of the largest economic disaster of unimaginable proportions.

## 2. Historical Background

India has resorted to the demonetization for the first time in 1946 with the aim to curb black marketing owing to the Second World War. Back then Rs 500, Rs 1,000 and Rs 10,000 notes lost their legal status as the official currency.

Again in 1978, Rs 1,000, Rs 5,000 and Rs 10,000 notes were rendered worthless with the chief aims to check black economy.

In 2016, on the evening of 8th November, the government decided to demonetize Rs 500 and Rs 1,000 notes, which constituted around 86% in value term of the total money in circulation. What was striking about the

demonetization of 2016 is the sheer volume and value of the demonetized currency, which brought down the entire economic activities on its knees, at least temporarily.

India is not the first country that has taken the route of demonetization to address the underlying economic issues and better future economic outcomes. In the past many countries like Nigeria, Ghana, Zimbabwe, North Korea, Soviet Union, Australia and Myanmar have resorted to demonetization to address their economic problems which majorly includes; check on black money, controlling inflation, combating corruption, transformation to digital economy. The experience of these countries reflects mixed response in terms of achieving the underlying goals of the demonetization.

However, the event of demonetization of 2016 was quite gigantic in terms of the people affected and the sheer quantum of the currency that lost it legal status.

This time the government presented following reasons behind the decision to demonetize around 86% of our currency.

A. To gauge the black money and black economy

B. To check corruption

C. To control anti-state activities like terror funding, insurgencies, stone pelting in Jammu and Kashmir, extremism etc.

D. To check the circulation and misuse of counterfeit currency (FICN)

E. To move towards a cashless and digital economy

### 3. Review of Literature

**Arun Kumar, (2017)** "Economic Consequences of Demonetization Money Supply and Economic Structure", pointed out the impact of demonetization is difficult to ascertain due to the uncertainty caused by demonetization. However, according to RBI, the economy is expected to slow down by 0.5%. The researcher has concluded that a tiny proportion of the black wealth is expected to be destroyed owing to demonetization but it would not be able to check the generation of black wealth in future.

**J Dennis Raja Kumar and S L Shetty, (2016)** "Demonetization 1978, the Present and the Aftermath", compared the demonetization exercise undertaken in 1978 and 2016 on the basis of the stated goals and their strands. They opined that the step of demonetization should be resorted to in a demanding and precarious economic situation like hyper-inflation, financial crisis; which was not the case in 2016. In 1978, when the President of India promulgated the High Denomination Bank Notes (Demonetization) Ordinance to demonetizing the `1,000, `5,000 and `10,000 currency notes, the main objective was to eliminate "the possible use of such notes for financing illegal transactions" (RBI 1977–78:77).

The current situation is different, the demonetized Rs 500 and Rs 1,000 notes constitute over 85% of total notes in circulation by value. In the first week of November 2016, when the current demonetization took place, about 95% of such currencies were with the public. Another fundamental difference between the 1978 and 2016 demonetization is of the motivation behind the actions taken. The reason this time, according to the RBI, is that there is increasing quantum of FICN which are used for terror funding and by black money hoarders. However, the claim is debatable as the counterfeit notes have generally constituted around 0.002% of the notes in circulation. It is expected that the demonetization would improve the fiscal heath of government's finances as the exercise of demonetization is likely to result into addition to RBI's accrued income as part of "other liabilities and provisions" on the liabilities side.

**Ashok K Lahiri, (2016)** "Demonetization and Cash Shortage", asserted that the demonetization of 2016 is similar to the demonetization done in 1946 and 1978 for that the main goals are to address the critical issue of Black money and to gauge the problem of counterfeit currency (FICN). The researcher makes an endeavor to analyze the possible impact of cash shortage on growth of the economy and when the cash shortage is likely to get over based on various scenarios.

**Sumanta Banerjee, (2016)** "Narendra Modi, Bob Dylan and Demonetization", has questioned the intent behind the demonetization as to whether it was one man decision by the Prime Minister to compensate for his failure to make good his promises in the realm of bringing back black money that is stashed abroad, thereby boosting his image as an anti-corruption crusader. Some conspiracy theories have pointed out the possible political mileage that the government tried to get out of the exercise in the light of forthcoming election in 5 states by 'drying up' the opposition of the cash funds while the BJP itself secured its position by enough stacked cash as in the case of West Bengal.

**Prerana Priyadarshi, (2016)** "Demonetization: Potential Benefits for the Indian Economy" called the demonetization as an unprecedented move which in the short-term would cause inconvenience but there are larger economic gains ahead. The parallel economy casts a long shadow on the real economy. The cash recoveries made by law enforcement agencies from time to time indicate the use of Rs 500 and Rs 1000 notes for storage of unaccounted wealth. The Finance Ministry's 2012 White Paper on Black Money acknowledged the application of cash in generation and use of black money. It is concluded that the demonetization will encourage electronic transactions. Much of black money is expected to be mainstreamed because of the demonetization.

### 4. Impact Analysis of Demonetization-

Based on the claims made and counter-arguments put forward regarding the appropriateness and timely demonetization, critical analysis is presented in order to measure the efficacy of the move in achieving the stated goals.

### A. Black Money and Black Economy

The term black money can be defined as the money on which the taxes are not paid. In other words, it is the money which is not accounted for in the official records. While the Black economy is unrecorded and unaccounted in the books of account, resultantly it is beyond the coverage of the official statistics.

According to various estimates the size of Black economy is in the range of 20% to 70% of the Gross Domestic Product (GDP) of India. The disturbing fact is that the size of the Black economy is already on the higher side which is increasing with each passing day primarily due to the forces of globalization and liberalization which have opened up the world economy.

This leads to locking up of billions of dollars in unproductive assets, further aggravating the problem of economic inequality across the globe and having disproportional opportunity cost to an economy. The report of the National Institute of Public Finance and Policy (NIPFP) submitted to the finance minister in December 2013, black economy could constitute 75% of India's gross domestic product (GDP)

One of main reason behind demonetization was that the government was expecting that a huge quantum of black money was stored in Rs 500 and Rs 1,000 notes and therefore a major proportion of the notes would not come back to the RBI.

However, according to RBI, 99.3% of the demonetized currency notes has returned to it. Out of the total amount of Rs 15.41 lakh crore in the denomination Rs 500 and Rs 1,000 in circulation at the time of announcement of demonetization, notes worth Rs 15.31 lakh crore have reached back to RBI. In other words, the notes worth Rs 10,720 crore failed to return to RBI.

This indicates that the black money holders found the ways and means to settle and adjust their ill-gotten money through various channels like depositing the money in the account of their knows, relatives, servants etc. The government has also gauged the fact and categorically pointed out that the Rs 2.89 lakh crore is under consideration for not being legitimate.

The Income Tax department of Government of India launched the "Operation Clean Money" in July, 2017. According to the Ministry of Finance, the number of Tax returns filed are 2,82,92,955 (August 05, 2017) which were 2,26,97,843 during the corresponding period (2016-2017). This reflects a handsome increase of 24.7 % in comparison to the increase of just 9.9 % in the previous year. The Advance Tax collections of Personal Income Tax (other than Corporate Tax) and Personal Income Tax under Self Assessment Tax (SAT) registered an appreciable growth of 41.79 % and 34.25 % (August 05, 2017) respectively as compared to the corresponding period (2016-2017).

It is a welcome development and points out that increasing number of people are filling the returns which would reduce the quantum of black money and ensure better tax compliance.

The move of demonetization has delivered a bodily blow to the black proportion of the real estate sector which is considered as a substantial reservoir of black money. It is an open secret that builders prefer a proportion of the sale to be paid in cash which is being affected due to cash crunch and shift to digital economy owing to the demonetization.

This is an encouraging development as the money which was laying ideal can now be productively be pumped into potential entrepreneurial projects thereby giving boost to employment opportunities and to our economic growth.

In addition, the government has introduced and implemented the Goods and Services Tax (GST) from July

1, 2017 which is expected to further check the tax evasion and black economy by widening the tax net and brining transparency in the economic activities.

On the other side the critics have pointed out that one of the reason why Indian Economy was able to come out of the Global Financial Crisis of 2008 relatively less harmed as compared to major economies of the world, perhaps the black money was fueling of the economic activities primarily in unorganized sector. Now, the money which was used to fuel the economic activities is channeled into formal banking sector where the banks will be required to pay interest on the same.

The phenomena of double whammy of sorts is in operation as on the one hand many small units and entrepreneur would suffer due to absence of funding from informal channels and secondly the banks would be obliged to pay interest on the money deposited with them.

The critics have also pointed out the credit off take is not just purely the function of credit availability but also the economic opportunities, economic ecosystem, expectations about the future, animal spirit etc. The over simplified assumption that the availability of the money with banking system will automatically lead to credit off take, which would further lead to vibrant economic ecosystem and better economic growth is actually need not stand firm in the light of economic realities. Moreover the ever increasing problem of Non-Performing Assets (NPA) and Asset Liability Mismatch that is infesting out Banking system especially Public Sector Banks with further complicated the process of credit off take itself.

In fact, according to the economist, Swaminathan S Anklesaria Aiyar (2016), less than 2% of black money is held in cash and the remaining has already been converted into other assets like precious metals, real estate, financial investment at home and much abroad.

**B. Corruption**

In simple term the phenomena of corruption can be understood as private gain at public cost. It is observed that the Rs 500 and Rs 1,000 notes are main instrument of effecting corrupt transaction as they are logistically easy to transact, move and store.

The black money plays a critical part in fueling the prices of goods and services especially the prices of real estate properties. This further aggravates the problem of economic inequality and eats into the vitals of socio-economic fiber of a nation.

The fact of the matter is that in digital economy, the transaction leaves a trail which makes it very easy to trace a transaction and in case of suspicion the question can be raised about the authenticity of such exchange. The government has emphasized on cashless economy and shift towards digital economy to check the corruption.

It is strongly felt that the demonetization would lead to reduce the corruption as the cost-benefit analysis would be high stacked against the people indulge into taking bribes. No person in his senses would take the risk of accepting the bribe in e-transaction format as that would ultimately lead to being caught by the law enforcement agencies.

On the other hand the critics have questioned the introduction of Rs 2,000 currency notes. They pointed out that undertaking corrupt transaction will become far easier using Rs 2,000 notes. According to them it is not a wise move and questioned the very premises of checking corruption through demonetization owing to the introduction of Rs 2,000 currency note.

Some people with political leaning have pointed out that one of the reasons for demonetization in 2016 was the upcoming elections in five major states. They alleged that the central ruling part intended to make other political parties cash starved as the political parties resorts to money power in buying votes using cash, liquor etc. However, the proofs for same are yet to be found.

It is also asserted that had government been serious on the matter of corrupt practices in political funding, it would have brought the political parties under the umbrella of Right to Information (RTI) Act, 2005 and should have promoted the state funding of elections.

It is expected that the demonetization would transform our economy into a digital economy where the people prefer the e-transaction and the usage of currency notes will decline substantially. The bone of contention is whether the people's romance with cash will ever end in the future or not which would have its bearing of corruption to a greater extent.

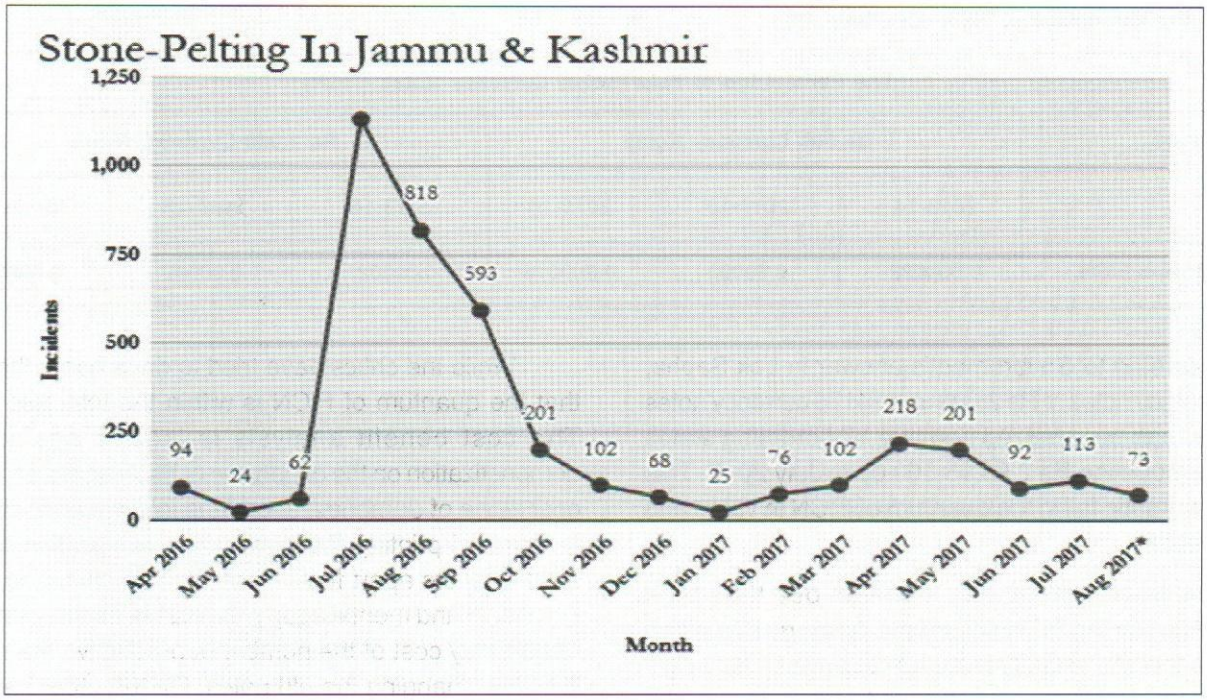
**C. Checking Anti-State Activities**

One the major stated goal of demonetization was to check the anti-state activities like terror funding, stone pelting in the Jammu & Kashmir and Naxalites activities.

The Financial Action Task Force (2013) stated that high-quality counterfeit Indian notes were "printed in

Pakistan and then smuggled into India through transit points at Dhaka, Sri Lanka, United Arab Emirates and Bangkok." According to Intelligence Bureau report, every year almost INR 100 crore is being funneled from Pakistan to Kashmir through 'Hawala' channels.

The image shown reflects that immediately after the demonetization the incidents of stone pelting have decreased from the high of 1132 in July, 2016 to the low of 25 in January, 2017.




(*Source:* Jammu & Kashmir police *As of August 19, 2017)

Image 1: Courtesy Factchecker.in

**Table 1: Incidents of Stone Pelting in Jammu & Kashmir**

| Particulars | Year | | |
|---|---|---|---|
| | 2015 | 2016 | 2017 |
| No. of Stone Pelting Incidents | 730 | 2808 | 1661 |

*Source:* Incidents of Stone Pelting in Jammu & Kashmir, Courtesy Ministry of Home Affairs

The above table 1 reflects that the incidents of stone pelting registered growth rate of 284.66% in 2016 as compared to 2015. Interestingly, post demonetization, in 2017 there is a decline of 40.84% in comparison to 2016.

The whole supply chain of illegal activities of Naxalites is overwhelmingly driven on the back cash which involves illegal activities like extortion, back-mailing which is used to fuel their acts of violence against security forces. Post demonetization the Naxalites groups are left with hordes of cash having no value.

The then Finance Minister Shri Arun Jaitely has pointed out that due to the demonetization, the anti- state actors ran out of cash, which is one of the reasons behind the drastic decrease in the incidents of stone pelting in Jammu & Kashmir and Naxalites activities.

### D. Fake Indian Currency Notes (FICN)

The term Fake Indian Currency Note (FICN) used to indicate the counterfeit currency which is being pumped into our economy. This is illegal in nature as eats into the vitals of

our economy and suspected to be used for anti-state activities (Table 2).

In 2012, the Indian Statistical Institute (ISI), Kolkata was directed by the Government of India to undertake the study on FICN. Accordingly, in 2015 Government informed that the quantum of FICN in value terms is Rs 400 crores which has remained constant for the last four years. The study of ISI has shown its confidence in the existing system of examination, detection and capture to get rid of the FICN.

**Table 2 : The Percentage of FICN (Courtesy RBI)**

| The Percentage of Fake Indian Currency Notes (FICN) | | | | | | |
|---|---|---|---|---|---|---|
| **Particulars** | **Rs 500 Currency Notes** | | | **Rs 1,000 Currency Notes** | | |
| | 2013-14 | 2014-15 | 2015-16 | 2013-14 | 2014-15 | 2015-16 |
| Percentage of FICN | 0.000022 | 0.00002 | 0.000016 | 0.000021 | 0.00002 | 0.00002 |

According to Government's answer in Lok Sabha, 9254 currency notes of Rs 2,000 and 14175 currency notes of Rs 500 has been seized from the 17 bordering states of India amounting Rs 2,55,95,500 up to July 2017. This reflects a drastic fall in the quantum of FICN in value and volume terms.

The government has pointed out that post demonetization the FICN seized are of low quality which indicates that the security features of currency notes are sophisticated and it is quite an onerous task to copy the new notes.

While the critics have tried to drive home the point that the quantum of FICN is within the tolerable limits. The cost benefit analysis is loaded against the demonetization on the dimension of FICN as the economic cost alone of demonetization runs in thousands of crore in terms of printing the new notes, moderation of ATM machines etc apart from unimaginable cost in terms of emotional and mental agony, avoidable deaths, suicides, opportunity cost of the number of productive man hours lost in exchanging the old notes. On the other hand the quantum of FICN is not at the alarming level to merit the demonetization. Moreover the new Rs 2000 note would

**Table 3: Growth in Digital Mode of Payments**

| Electronic fund transfer/national electronic funds transfer. *(Growth in Digital Mode of Payments)* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Month/Year** | **EFT/NEFT** | | **Immediate Payment Service (IMPS)** | | **Credit/Debit Cards (Usage at ATMs and POS)** | | **Prepaid Payment Instrument (M-wallet, PPI card, paper vouchers)** | |
| | Volume (Million) | Value (Rs. billion) | Volume (Million) | Value (Rs. billion) | Volume (Million) | Value (Rs. billion) | Volume (Million) | Value (Rs. billion) |
| Nov-16 | 123 | 8807.9 | 36.2 | 324.8 | 896.1 | 1823.2 | 169.3 | 50.7 |
| Mar-17 | 186.7 | 16294.5 | 67.4 | 564.7 | 1089.4 | 2952.6 | 342.1 | 106.8 |
| Aug-17 | 151.6 | 12500.4 | 75.7 | 651.5 | 1097.8 | 3072.1 | 261.1 | 102.9 |
| Growth rate (%) | | | | | | | | |
| Mar-2017 over Nov-2016 | 51.7 | 85 | 86.4 | 73.9 | 21.6 | 61.9 | 102 | 110.4 |
| Aug-2017 over Nov-2016 | 23.2 | 41.9 | 109.2 | 100.6 | 22.5 | 68.5 | 54.2 | 102.7 |

*EFT/NEFT*: Electronic fund transfer/national electronic funds transfer.

*Source:* Reserve Bank of India.

provide higher motivation to the anti-national forces to duplicate the same.

### E. Digital and Cashless Economy

A digital or a cashless economy is defined as an economy in which the transactions are routed through digital means between the parties like UPI, USSD, prepaid instruments, debit cards, credit cards and internet banking. In such economies the prevalence of undertaking the transaction through cash takes a back seat. It is also observed, in most of the cases, that as an economy develops and transforms into developed economy, the romance with cash dwindles and more number of transactions are affected using the digital means (Table 3).

The above table shows a commendable increase in terms of the volume and value of the transactions routed through digital platform between November 2016 and August 2017. As compared to November 2016, the highest growth is registered in Prepaid Instruments in terms of volume and value in March 2017 which stands at 102% and 110.4 % respectively. During the given period, the lowest growth of 21.6 % (volume term) is registered in Debit and credit card usage which stands at 21.6% and 61.9% in volume and value terms respectively, which is again a no mean achievement.

When comparison is done between November 2016 and August 2017, the growth rate registered on various digital platforms merited appreciation with highest being achieved by IMPS (109.2 %) in terms of volume and Prepaid Payment Instruments (102.7%) in terms of value.

According to RBI, the total number of digital transactions have reached to 1.11 billion in January 2018, registering a growth of 4.73% over the 1.06 billion transactions in December.

This indicates a strong move towards the acceptability of digital platform to undertake financial transactions by the masses and acceptance of digital mode to effect the economic transactions. Mihir Sharma, a writer and business columnist: "What started as a 'surgical strike' on black money is now called the dawn of a cashless society." This opportunity, if milked in the right way, will go a long way in ensuring that cash finds minimal use in the future.

However, based on the RBI findings, the critics have pointed out that, prior to demonetization, the amount of currency with public was Rs 17.01 lakh crore which reached to the low of Rs 7.81 lakh crore in December 2016 but it has bounced back substantially to Rs 15.33 lakh crore.

This reflects two things. Firstly the measures taken by government to transform our economy into digital economy were rather forced upon the masses and have little acceptability among the masses. The people resorted to digital mode due to paucity of cash in the economy and lack of alternate means to undertake economic transaction. Secondly the romance with cash has not declined. In our nation where a substantial majority of economy lies in unorganized sector, the cash is still the king and preferred mode of effecting the transaction. The reason for same are primarily due to overwhelming presence of unorganized sector, lack of banking facilities, lack of financial literacy; to name the few.

The critics have strongly opined that there is no guarantee of reduction in the size of black economy but it can certainly undermine the freedom and privacy of the people owing to the new avenues of surveillance in a digitalized economy where government and its agencies has eye on each and every transaction they wish to. The JAM (Jan Dhan–Aadhaar–Mobile) trinity, is matter of great concern in the realm of freedoms of people.

On the other hand as per the Deutsche Bank's (2016), indicated that high share of cash in total payments does not always indicate a large shadow sector citing the cash-intensive economies of Germany and Austria which in fact have small shadow economies. Also, Sweden has mid- sized shadow economy in spite their payment systems being highly less cash intensive.

The critics have pointed out the transformation to digital economy is a gradual process and should be done in a calibrated mode rather than forcing it down the throat of the masses. In developing economies like India, which is infested with poor literacy and learning outcomes, poverty, digital divide, glaring inequalities etc. the shift towards digital economy in a hastily manner is not an intelligent choice. The problem of cyber fraud, banking frauds, identity theft etc. have the potential to kill the dream of achieving the digital economy before it takes the wing.

There are important facilitators that should be put into place before eyeing for the digital economy which includes digital literacy, financial education, ensuring economic viability of the modes of digital transaction, the transaction cost on digital platform, cyber security measures, strong legal and regulatory framework, reliable digital infrastructure, unhindered power supply and internet

connection etc. The digital eco-system should be developed to optimal level to motivate and inspire confidence in the masses to go digital way else we would keep falling back to old habits. It is quite safe to say that our romance with cash is quite prominent and deep rooted, the reason for which has been discussed at length.

### 5. Food for Thought

In spite of all the measures on the part of government and enforcement authorities, people still find the ways to play around and con the system, laws, policies, reforms, welfare programs etc. Likewise, in spite of necessary measures taken by government and changing rules on regular basis in order to achieve the underlying goals of the demonetization, people still got their black money deposited in the banks or get them turn into white.

Some of the ways resorted to include:-

- Making the advance payments to their employees in demonetized currency notes
- Booking most expensive long route railway tickets and getting it cancelled to the refund in legal currency
- Donation to religious organizations
- Purchasing jewellery in back dated bills
- Advance Payment of Loans

Since Independence our colonial hangover has made the ruling dispensation to come up with the variety of never ending and sometimes contradictory rules with bureaucratic red-tapism, which has in fact made us expert in finding way out of any situation with the help of 'jugaad,' which itself has got a strong negative connotation attached to it. Sad enough but we have got tremendous ingenuity to fail the best of intended plans which in turns reflects a lot about our socio-culture value system and economic behavior.

### 6. Conclusion

The pro and anti-camp of demonetization has presented their views where both sides have hard hitting facts to prove their version to be correct. The anti-demonetization camp has rated it as unnecessary economic adventurism at the cost of millions of people. All the set objectives behind demonetization could be achieved through much better and less painful measures. It is argued that the extreme step like demonetization is resorted to only in response to situations of hyperinflation or some form of financial crisis and India was not facing such dire situation in 2016. It is further pointed out that there is huge discrepancy between what government claimed and what the ground realities actually were. Our former Prime Minister Manmohan Singh labelled it as "Making of a Mammoth Tragedy", which is going to bring down our GDP growth by 2%.

On the other side of the divide, the pro-demonetization camp has asserted that the decision of demonetization as a necessary bitter pill that was inevitable for our economy to rejuvenate itself and to add vitality in terms of better economic coverage, revenue generation and better economic opportunities.

A CRISIL report (2016) states that in the long run, owing to demonetization, the significant structural benefits will accrue as the direct tax collection are expected to rise and government fiscal position will strengthen. However, in the short run the GDP growth may be negatively impacted due to cash crunch as millions of small enterprises in the unorganized sector that use cash to transact will be inconvenienced.

Perhaps it would be fair to give the benefit of the doubt to the ruling dispensation in spite of the innumerous hard comings the people were subjected to owing to demonetization, the intentions seemed good in principle and there was correct diagnosis of the economic problems. However the implementing found wanting on various accounts. This roughly indicates the situation of recommending improper medication to address the economic illness where medicine was bitter than the disease itself.

In spite of all the adversities people were subjected to due to demonetization, a strong majority still stands firmly by the government on the move of note-bandi as the people are highly keen to have a secure, prosperous, developed and corruption free nation.

To conclude, the decision to demonetize has got mixed blessings due to good intent and post demonetization positives but at the same time there are far reaching unintended negative consequences owing majorly to implementation glitches. At the fag end of the event, it is still not wise to conclude safely as to which side of the cost- benefit the move of demonetization is tilted. Let the question be settled in future in the light of more conclusive and substantial information to gauge the bigger picture and decipher the enigma called demonetization.

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*"The only real voyage of discovery consists not in seeking new landscapes but in having new eyes."*

*– Marcel Proust*

Feature

# Factors Influencing Yield Rate in West Bengal Agriculture: A Panel Data Approach

**AMIT KUNDU AND PUBALI GOSWAMY**

*In West Bengal Economy, the role of agriculture is still very important. This paper shows that in most of the districts of West Bengal, the agricultural productivity or yield rate of different food and cash crops have increased since 2000-01. Using panel data fixed effect regression technique, it is proved that average harvest price of the previous year, average rainfall and average money wage rate of the agricultural labourers play a positive role behind this improvement of average yield rate in agricultural production. Positive relationship between average yield rate of agricultural production and average agricultural wage establishes consumption efficiency relationship.*

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## Introduction

Agriculture occupies the centre-stage in the overall development of West Bengal's economy. According to 2011 Census, nearly 72% population of the state lives in rural areas. Agriculture remains the mainstay of the state's economy and a major source of livelihood for a large section of population (Mishra, 2009). It continues to provide employment to more than 68% of the total workforce in the state[1]. But gradually; the share of agriculture in the West Bengal's State Domestic Product has seen a decline since the last few years. Agriculture's contribution to GSDP (at constant prices) has declined from 18.6% in 2000-01 to 13.12% in 2013-14[2]. Though the contribution of agriculture to total GSDP at constant prices has declined, it contributes a significant share to the GSDP as compared to other sectors of the economy. West Bengal is one of the states of the country where the expansion of Net Cropped Area (NCA) has almost reached the optimum level. The data on land utilization pattern published by Bureau of Applied Economic and Statistics (BAES) presents that net cropped area in the state has registered a marginal fall of 1.05 % during the period 2000-01 to 2013-14. The cropping intensity of the state in 2000-01 was 168 % (i.e. an increase of only 2.44 % compared to 1995-96). In 2014-15, it was increased to 185%.

In the agricultural sector of West Bengal, food grain dominates the cropping pattern. There is an in-built bias towards the cultivation of food grain crops. Food grain crops are classified as cereals crops and pulse crops[3]. The state also produces some important cash crops like oilseeds, jute, tea, potato, sugarcane etc. In 2000-01, food grain crops occupied 68 per cent of Gross Cropped Area with production of 16501.24 thousand tones, West Bengal occupied the top position in the food grain production in India[4]. Though the state performed well in food grain

production among the states of India, in recent years there is evidence of the stagnancy in growth rate of food grain production.

Further, the expansion of area under cultivation is hardly possible in West Bengal. Several studies have been conducted to deal with the issues of agricultural growth, cropping pattern changes, the variability and instability in West Bengal. Saha and Swaminathan (1994) worked on the agricultural growth performance of West Bengal, which is indeed one of the most careful and systematic efforts to assess agricultural yield growth at a regional level and to examine the factors contributing to the tremendous growth performance[5]. According to Saha and Swaminathan (1994), during 1980s in rural West Bengal, farming practices improved and high-yielding varieties were used on a larger scale than before. The transition in West Bengal's agricultural production performance occurred after a landmark programme of land reform and after the establishment of new, democratic panchayat institutions in the West Bengal countryside. The panchayats are the local self-administrations and are active in different production-related activities. This helped the farmers to enhance their agricultural yield rate and hence agricultural production.

In their opinion, the introduction of HYV seeds, technology and better support services through the local panchayats and improved farming practices were the driving forces behind the impressive growth performance of the state during the decade of 80s. However, this impressive growth performance could not sustain for a very long period. Sanyal. (1998) and Mukherji and Mukhopadhyay (1995) also supported the view of Saha and Swaminathan (1994).

Ghosh and Kuri (2007) investigated the data on crop production of state and the districts there in and had shown that growth rate of aggregate agricultural output declined significantly during the subsequent decade of 90s. According to them, the decomposition of output growth across the districts as well as on the whole state, yield growth plays the most important role in high output growth in the state during the decade of 1980s. The cropping pattern effect has never been an important factor in explaining output growth during the 1980s. Authors have also claimed that the high yield growth rate and hence high output growth rate during the 1980s was mainly due to the joint influence of institutional reforms in the form Operation Barga (land reforms) and technological factors (HYV seeds, irrigation, fertilizer etc.).

In a recent study, Ghosh (2010) further confirmed the declining tendency of the growth of production of major crops during the nineties. The remarkable growth performance of the 1980s did not sustain for very long periods and a fall in yield rate during the decade of 1990s caused the slowing down the output growth. The study of Saha and Swaminathan (1994) and Ghosh and Kuri (2007) made it clear that the growth of yield of paddy cultivation was the main force behind the 'successes' of West Bengal agriculture in recent history.

### The research problem and need for the study

The foregoing surveys of literatures have identified a number of deficiencies of existing research works on the subject. First, the findings contain varied topics jumbled up into a perplexed entity. Second, agricultural performance was influenced significantly by its natural – institutional and technological characteristics (which differ widely across the districts). Existing research has concentrated on state level and the need for studies at the lower level like district level becomes apparent. Third, there is a dearth of studies on agricultural performance at the disaggregate level (mainly at the district level) in West Bengal over last ten to fifteen years. Besides landslide changes in cropping pattern, irrigation coverage, cropping intensity, fertilizer consumption, and enhancement of wage of agricultural workers have taken place in West Bengal agriculture during the contemporary times. Even though these changes might have swayed the agricultural performance of districts differently but they have not been adequately accommodated in the existing studies. There is thus a need for overcoming these research gaps and enriching the existing literature. The present study is a humble attempt in this direction.

### Research Objectives

To capture the present situation in West Bengal agriculture, we consider the time period of 2000-01 to 2014-15. The study intends to achieve the following objectives:

i) To measure the growth rate of yield rate of the major produced crops in different districts of West Bengal during the period under study. Using thus we want to identify the changing crop and productivity pattern in agricultural production in different districts of West Bengal in the entire reference period.

ii) To identify the possible factors those can influence

the average yield rate in West Bengal agriculture during the period under study after considering its districts as a unit.

***Data Sources and Methodology:***

The whole study is based on secondary data taken from 18 district level sources of West Bengal (except Kolkata). Considering its complete urbanized nature, Kolkata has been excluded from the present study. The Statistical Abstracts published by the Bureau of Applied Economics and Statistics of the Government of West Bengal (henceforth bureau) is an important source of the district level data. District Statistical Handbook is another publication of the Bureau that contains database for each district. For effective discussions, various Government reports have been followed. The data used in this study covers the districts level information related to area, yield of the different food crops such as rice, wheat, other cereals, pulses and the non-food crops like oilseeds jute, potato and tea. District wise data on wage of agricultural labour, fertilizer consumption and irrigation coverage from the year 2000-01 to 2014-15 are taken from Economic Review and Statistical Handbook published by Government of West Bengal in different time periods[6]. For examining growth performance of major crops across the districts of West Bengal, compound annual growth rate of yield rates of major crops (both food and cash crops) have been calculated separately between the periods 2000-01 to 2014-15. Yield rate is influenced by different factors. We have to identify the factors which can possibly influence the overall yield rate in West Bengal agriculture; the panel data technique will be used. Before moving to that exercise, initially we have to know the changing cropping pattern of West Bengal between 2000-2001 to 2014-15.

**Changes in cropping pattern at state level**

A great deal of discussion has been taken place on the issue of production and yield performance of agriculture in West Bengal over the last few decades. Now to understand the current scenarios, let us set out a brief account on the recent changes in the cropping pattern in West Bengal covering the wider period, from 2000-01 to 2014-15. The cropping pattern in West Bengal has changed significantly over the time periods. The changes in the cropping pattern are generally viewed as a shift from traditionally-grown less-remunerative crops to more-remunerative crops. The cropping pattern changes, however, are the outcome of the interactive effect of many factors such as: resource related factors (irrigation), climate related factor like average rainfall; technology related factors (fertilizer, and

**Table 1: Cropping Pattern of West Bengal**

**Area is measured in thousand hectares, Total Production is measured in thousand tons and Yield Rate is measured as Kgs/Hectare**

| | 2000-01 | | | 2005-06 | | | 2010-11 | | | 2014-15 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Crops/ year | Area | Pro-duction | Yield rate | Area | Pro-duction | Yield rate | Area | Pro-duction | Yield rate | Area | Pro-duction | Yield rate |
| Rice | 5435.3 | 12428 | 2287 | 5782.9 | 14510.8 | 2509 | 4944.1 | 13389.6 | 2708 | 5526.5 | 15927.2 | 2882 |
| Wheat | 426 | 1058.6 | 2485 | 366.7 | 773.5 | 2109 | 316.8 | 874.4 | 2760 | 334.6 | 939.3 | 2807 |
| Other cereals | 18.3 | 109.1 | 605 | 17.4 | 190 | 1117 | 13.4 | 370.3 | 2846 | 16.2 | 665.8 | 4156 |
| Pulses | 274.5 | 219.5 | 800 | 222.6 | 174.5 | 783.9 | 197.1 | 176.7 | 896.9 | 248.6 | 230.9 | 929 |
| Oilseeds | 598.6 | 570.4 | 953 | 673.1 | 623.3 | 925 | 670.8 | 703.3 | 1048 | 760.9 | 858 | 1128 |
| Jute | 613 | 7428.4 | 1211 | 558.9 | 7989.2 | 1431 | 568.5 | 8137.5 | 1432 | 567.2 | 8808.3 | 1553 |
| Potato | 299.7 | 7673.1 | 25606 | 354.5 | 7462.5 | 21079 | 408.8 | 13421 | 32831 | 412.2 | 13908 | 33737 |
| Tea | 107.5 | 18153.6 | 1689 | 114.6 | 21745.4 | 1907 | 140.4 | 22830.5 | 1630 | 140.4 | 324260 | 2309 |

*Source :* Calculated by the authors from the "Estimates of Area & Production of Principal Crops in West Bengal" of different years compiled by Evaluation Wing, Directorate of Agriculture, and Government of West Bengal

storage and processing); and infrastructure-related factors. Agriculture has experienced the change in the relative importance of these factors over time. Table-1 represent the cropping pattern of major crop(rice, wheat, other cereals, pulses in food crops and oilseeds, jute, potato, tea in cash crops) in West Bengal as a whole over the periods (2000-01 to 2014-15) after considering equal time gap of the reference period.

We observe from Table 1 that paddy continues to remain the principal crop in West Bengal agriculture though the proportion of area under total food grain had declined in 2010-11. Among the non-food crops, there is a sharp increase in proportion of cultivatable area of potato and tea throughout the entire reference time periods. Among all other crops, sharp increase in production of jute, potato and tea is noticed along with a significant increase in production of other cereals in the entire periods. The yield rate of all major crops except wheat, potato and tea (yield rate was fluctuating over the period), are quite satisfactory in our study period. It is noticed that West Bengal agriculture is dominated by cereals cultivation. But the area under cereals cultivation has declined, whereas the yield of cereals has been quite impressive. In case of pulses, even though area and production have decreased, the productivity has increased considerably. Under non-food grains, only tea has shown a remarkable enhancement in these aspects. Here agricultural productivity is defined as output per unit of land cultivated. An improvement in yield rate can be treated as an improvement in agricultural productivity

**Table 2: Compound Annual Growth Rate (In percentage) of Yield Rate of different food crops in different districts of West Bengal (2000-01 to 2014-15)**

| Districts | CAGR (2000-01 to 2007-08) | | | | CAGR (2008-09 to 2014-15) | | | |
|---|---|---|---|---|---|---|---|---|
| | Rice | Wheat | Other Cereals | Total Pulses | Rice | Wheat | Other Cereals | Total Pulses |
| Burdwan | 1.05 | 1.29 | 0.1 | -1.61 | 1.62 | 1.66 | .06 | -1.68 |
| Birbhum | 1.51 | -.08 | .07 | 4.26 | 2.31 | 1.00 | .03 | 4.19 |
| Bankura | 0.77 | 2.01 | .04 | 3.08 | 0.58 | 2.46 | .05 | 1.78 |
| Purba Medinipur | 1.12 | -0.20 | -.07 | 1.37 | 1.68 | 0.53 | 2.28 | 2.68 |
| Paschim Medinipur | 0.80 | 1.04 | 1.05 | 1.98 | 1.71 | 1.63 | 2.11 | 0.73 |
| Howrah | 1.85 | -0.20 | 1.04 | 0.82 | 2.70 | 0.17 | 3.65 | 1.10 |
| Hooghly | 2.42 | 1.08 | -.02 | 0.78 | 0.59 | 0.32 | .065 | 1.85 |
| North 24 pgs | 2.36 | 0.85 | 1.03 | 1.17 | 1.23 | 1.50 | 2.21 | 0.51 |
| South 24 pgs | 5.51 | 2.82 | .62 | -0.46 | 1.99 | 3.36 | 2.3 | 0.21 |
| Nadia | .56 | 1.08 | -.13 | 1.74 | .78 | 3.54 | .23 | 0.68 |
| Murshidabad | 2.8 | 0.15 | 1.3 | 0.83 | 1.14 | 0.38 | 1.6 | 0.16 |
| Uttar Dinajpur | 1.42 | 0.26 | 3.12 | 4.13 | 1.57 | -0.10 | 1.72 | 2.33 |
| Dakshin Dinajpur | 1.42 | 1.66 | .72 | 1.06 | 2.23 | 1.87 | 1.04 | 0.59 |
| Malda | 2.80 | 1.46 | 2.26 | 0.92 | 2.64 | 0.25 | 1.04 | 0.12 |
| Jalpaiguri | 2.44 | 0.82 | -1.7 | 1.83 | 2.68 | .93 | 1.6 | 0.68 |
| Darjeeling | 1.92 | -1.10 | -.09 | 2.41 | 1.42 | .83 | -.11 | 0.97 |
| Cooch behar | .89 | .75 | 2.66 | 0.25 | 1.42 | 1.06 | 2.92 | -0.08 |
| Purulia | 1.71 | -2.17 | -1.11 | -1.63 | .70 | 0.80 | -.02 | 0.75 |

*Source :* Calculate by the authors.

which may happen due to more efficient use of different factors of production in land. Though the state has shown appreciable yield rate of major crops over the time period, intra districts variations in the performance of yield rate may be due to wide variations in resource endowments, climatic conditions and variation in rural infrastructure related to agriculture. In this background, this study will now examine the trends of yield rate of major crops at districts level and try to understand the distinctive features and drivers of yield rate across the districts in West Bengal. The factors responsible for diversity in performance of yield rate across the districts will be investigated after that. Initially, district wise compound annual growth rates (CAGR)[7] of yield rate of major crops during the period 2000-01 to 2014-15 is computed of each district and presented in Table 2. Here the entire time period is divided in to two parts; between 2000-01 to 2007-08 and 2008-09 to 2014-15.

The compound growth rates of yield rate of the major food crops in different districts of West Bengal over different periods 2000-01 to 2014-15 is shown in Table-2. The growth rate of Yield rate of food crops has increased at significant rates in most of the districts during the whole period despite the fact that the rates were significantly different. Rice occupies the major part of cereal and also food crop of the state in terms of area production and yield. It is cultivated under irrigated conditions and assured rainfall situation. It is observed that growth rate of rice in most of the districts are positive and significant.

**Table 3: Growth of Yield rate (In percentage) of cash crops in different districts of West Bengal (2000-01 to 2014-15)**

| Districts | CAGR (2000-01 to 2007-08) | | | | CAGR (2008-09 to 2014-15) | | | |
|---|---|---|---|---|---|---|---|---|
| | Jute | Oilseed | Tea | Potato | Jute | Oilseed | Tea | Potato |
| Burdwan | 0.79 | -0.90 | | 1.18 | 2.30 | -0.02 | | 1.48 |
| Birbhum | 0.75 | -0.42 | | 2.29 | 0.79 | -1.12 | | 3.08 |
| Bankura | 0.75 | -0.81 | | 2.10 | 0.72 | -1.48 | | 2.66 |
| Purba Medinipur | -2.37 | 2w.88 | | 1.79 | -1.94 | 0.23 | | 1.05 |
| PaschimMedinipur | -1.73 | -2.18 | | 1.44 | 0.90 | -2.46 | | 2.38 |
| Howrah | 0.97 | 0.52 | | 0.37 | 1.76 | 0.53 | | 2.89 |
| Hooghly | 0.80 | 2.07 | | 1.05 | 2.84 | 1.15 | | 1.51 |
| North 24 pgs | 2.94 | 5.11 | | 3.01 | 0.85 | 4.26 | | 2.54 |
| South 24 pgs | 4.82 | 4.38 | | 0.55 | 5.12 | 7.27 | | 1.91 |
| Nadia | 1.04 | 1.45 | | 3.04 | 0.97 | 2.97 | | 2.81 |
| Murshidabad | 1.11 | -0.30 | | 1.94 | 2.18 | 2.17 | | 2.65 |
| Uttar Dinajpur | 1.81 | 1.51 | .95 | 1.71 | 1.19 | 0.82 | 1.04 | 2.49 |
| Dakshin Dinajpur | 2.84 | 0.80 | | 2.17 | 3.43 | 0.74 | | 2.23 |
| Malda | 5.84 | 0.19 | | 5.25 | .72 | 1.16 | | 5.34 |
| Jalpaiguri | 1.48 | -0.17 | 1.23 | 3.50 | 3.74 | -0.79 | 4.04 | 1.84 |
| Darjeeling | 1.66 | 2.81 | 2.29 | 0.52 | 1.35 | 3.91 | 2.47 | 2.36 |
| Cooch behar | 2.10 | -1.44 | .78 | 1.52 | 1.12 | -2.31 | .66 | 3.63 |
| Purulia | 2.09 | -3.29 | | 0.87 | 1.12 | 0.62 | | 4.14 |

*Source :* Calculated by the authors.

In rice, we consider different categories of paddy such as aus, aman and boro simultaneously. In the major rice growing districts like Hoogly, North 24 paraganas and South 24 paraganas, the growth in yield exhibited declining trend. Howrah (2.70%) district recorded the highest growth rate in rice followed by Jalpaiguri (2.68%), Malda (2.64%), Dakshin Dinajpur (2.23%) during 2007-08 to 2014-15. Wheat is the second most important cereal produced in West Bengal. Although the growth rate of yield rate of wheat was low and negative in most of the districts during 2000-01 to 2007-08, but the rate has increased significantly during 2008-09 to 2014-15 (except Hoogly, Uttar Dinajpur and Malda as shown in Table-2). The yield rate of wheat increased significantly in 2007-08 to 2014-15 in the districts like, South 24pgs (3.36%), Nadia (3.54%) Dakshin Dinajpur (1.87%) and Paschim Medinipur(1.63%). The growth of yield rate of other cereals in the state recorded a significant positive growth (except Darjeeling) during the study period. Among the districts, significant growth rate of yield is observed in Howrah, Purba Medinipur and North 24 paraganas.The growth rate of yield rate of the pulses is significantly declined in most of the districts except Purba Medinipur, Howrah and Hoogly.

Among cash crops, the growth of yield rate of jute in almost all districts of West Bengal shows at a faster rate during our study period. Though the growth rate was negative in Burdwan (-0.79%), Purba Medinipur (-2.37%) and Paschim Medinipur (-1.73%) in 2000-01 to 2007-08,the rate becomes positive in 2008-09 to 2014-15. South 24 pgs (5.12%) shows a highest growth of yield rate in jute between 2008-09 to 2014-15 followed by the districts like Dakshin Dinajpur(3.43%) and Hoogly (2.84%). Potato, the other important cash crop registered a remarkable growth in yield in all the districts during the study period. Tea is another important cash crop. West Bengal the second largest tea-producing state in India is accounting for 27.8 per cent of the country's total tea production in 2014-15. Darjeeling, Jalpaiguri, is the main tea producing districts in West Bengal. These districts show a positive yield growth in tea over the study period. Among the non-food crops, oilseeds as a whole experienced significant variation in growth of yield rate in most all the districts during 2000-01 to 2014-15. The growth of yield rate of oilseeds has decreased (except South 24 pgs, Nadia, Murshidabad, Malda, Darjeeling and Purulia) in most of the districts in 2008-09 to 2014-15. The growth rate is highest in 2008-09 to 2014-15 in South 24 pgs(7.27%) followed by North 24 parganas (4.26%) and Darjeeling (3.91%). The above analysis has revealed that, agriculture in West Bengal has experienced a high degree of variation in the growth of yield across the districts; therefore it is pertinent to identify the major determining factors so as to draw implications thereon. The study will now examine the impact of different factors on average yield rate in West Bengal agriculture between the time periods, 2000-01 to 2014-15.

**Determinants of Average Yield Rate in West Bengal Agriculture**

The growth rates in yield generally determine the overall performance of an agrarian economy (Bhattacharya and Bhattacharya, 2007) and it is observed that both in cash and food crop that is positive in almost all the districts of West Bengal. So the question may arise what are the possible factors which may play important role behind gradual enhancement of yield rate in West Bengal agriculture. During the time of calculation of average yield rate of a particular district, we consider all the crops (both cash and food crops) simultaneously after taking mean of the yield rate of all the crops (both food crop and cash crop) of that particular district in the particular year. Actually we are considering average yield rate of each district in different time periods as an indicator of agricultural productivity of that district in that particular time period.

The possible factors which can influence the average yield rate in West Bengal are as follows:

a) **Consumption of chemical fertilizers (total use of nitrogen (N), phosphorus (P) and Potassium (K)):** In West Bengal, the total consumption of fertilizer has increased more than three times during the period from 2000-01 to 2014-15. Within West Bengal, the use of fertilizers increased at the highest rate in the district of Purba Medinipur followed by Bardhaman and Hooghly during our reference period. A higher yield rate needs more nutrients for the plants and chemical fertilizers are used for this purpose. But higher yield rate can be sustained only with the application of balanced NPK ratios. The ratio of nitrogen in fertilizers used in agriculture in West Bengal has been falling, while that of potassium shows a rising trend during 2000-01 to 2014-15.

b) **Average Rainfall:** The rationale for considering rainfall as a determinant factor is that a significant proportion of cultivated area depends on rainfall, and its variation affects the crop yield substantially. It is

used as a proxy of climate related factors. Although West Bengal receives high average annual rainfall (1400-2000 mm), the maximum of the rainfall occurs during the monsoon period (June to September). Its erratic temporal and spatial distribution with considerable year to year variation causes instability in agricultural yield growth. In our investigation, we consider average monthly rain fall of each district in different years.

c) **Irrigation:** Irrigation infrastructure in West Bengal has seen a substantial expansion over the last few years and mainly minor irrigation has played a vital role in agricultural production of the state. It is expected that if major cultivatable land of a particular district is irrigated, then there is a possibility of multiple cropping in that area because that encourages the farmers to go for cultivation in the post rainy season. This may enhance the yield rate in agriculture. Tubewells were the major source of minor irrigation in the state, covering around one-third and more than 45 per cent of the cropped area during the kharif and rabi seasons respectively. Canals were the next important source of irrigation in the state. Here we consider percentage of cultivatable land irrigated in each district in each year as an explanatory variable.

d) **Agricultural wage rate:** We know that no production can take place without labor force. Agricultural labourers offer physical labour during the time of production. It is well known that proper nourishment of the labourers can influence agricultural production because following consumption efficiency argument, agricultural production should depend more on labour power than labour hour. The labour power of a labourer is influenced by his nutritional status which itself depends on his wage income. In subsistence farming, the relationship between wage and productivity or yield rate may play an important role. But the research on agricultural wage – productivity relationship is very limited. Hence an attempt is made here to study the wage productivity relationship in West Bengal over the last few years considering district as a unit. There exists a wide disparity in the wage rate in the different districts of West Bengal. Though, Government of West Bengal has decided to set minimum money wage rate but that it is not maintained in all parts of West Bengal even in the agriculturally advanced districts. The wage rate of Midnapur districts (both) and of North 24 Parganas district is far above the minimum level.

e) **Average Harvest Price:** Average harvest price of the previous year may also play an important role to increase yield growth in West Bengal. Average harvest price of different principal crops cultivated in the post rainy season is calculated by taking simple average of prices of principal crops of that particular district in a particular year except rainy season. It is expected that better average harvest price of the produced crop including minimum support price declared by the government for principal food crop may play an incentive for the farmer to go for agricultural production more intensely through multiple cropping mainly in the post rainy season, which can enhance average yield rate.

f) **Other Expenses:** Besides these we consider the consolidated expenses on different factors such as organic manure, improved seeds, pesticides, and energy use pattern (electricity and diesel) in ploughing and irrigation to identify the impact of agricultural 'other expenses' on yield growth rate over the period. According to NSS 59th Round during 2003, 80 percent of farmer households using modern inputs (such as organic manure, improved seeds and pesticides) as well as 53 percent of farmer households used energy (both electricity and diesel) during the time of calculation. Most of the tractors used diesel rather than electricity. In the case of irrigation, about 87 per cent of farmer households in the state used energy run by diesel, while the rest used electricity. The incidence of the use of pump sets propelled by diesel increased steadily in West Bengal over the last few decades[8]. So these expenditures on agriculture is used as a proxy of the expenditure on mechanization during the time of agricultural production which may affect agricultural yield rate.

The other possible factor, which can influence yield rate in agriculture is agricultural credit. But the farmers who are mainly marginal in nature have to depend both on formal and informal credit and we do not have district level data on disbursed agricultural credit both formal as well as informal in all the considered time period. So this factor cannot be considered in this investigation.

$$\ln yieldrate_{it} = f(confert_{it}, avgrainfall_{it}, agwage_{it}, percentlandirr_{it}, otherexpenses_{it}, avghprice_{i(t-1)}) \text{ ../ Eq. (1)}$$

So on the basis of our above logic, the following model can be considered for our investigation:

Here 'i' indicates the district and 't' indicates the time period. We have a balanced panel data model where i =1.....18 and t = 1..... 14

Here '$\ln yieldrate_{it}$' is 'log of yield rate of the $i^{th}$ district in the $t^{th}$ period. '$Avgrainfall_{it}$' of the $i^{th}$ district in the $t^{th}$ year is the simple average rainfall of that district recorded in the different months and $avghprice_{i(t-1)}$ is average harvest price of the $i^{th}$ district in the $(t-1)^{th}$ period, '$confert_{it}$' is total consumption of chemical fertilizer of the $i^{th}$ districts in the $t^{th}$ period, '$percentlandirr_{it}$' represents percentage land irrigated in the major cultivatable land of $i^{th}$ district in the $t^{th}$ period and lastly '$agwage_{it}$' implies the average agricultural wage in the $i^{th}$ district in the $t^{th}$ period. In the panel regression model we have to adopt fixed effect estimation techniques because our Hausman test suggests Fixed Effect model.

**Table 4: Panel Regression result: Fixed effect model:**

| Dependent Variable : $\ln yieldrate_{it}$ | | |
|---|---|---|
| **Variables considered** | **Value of the Co-efficient** | **Standard Error** |
| $(\text{Average harvest price})_{(t-1)}$ | .0002287*** | .0000344 |
| $(\text{Fertilizer})_t$ | 0.0000596 | .0001389 |
| $(\text{Avg Rainfall})_t$ | .000097*** | .0000201 |
| $(\text{Percentage land irrigated})_t$ | -.000353 | .0009838 |
| $(\text{Ag wage})_t$ | .0038174*** | .00005668 |
| $(\text{Other Expenses})_t$ | -.0474265 | .0483935 |
| Constant | 7.08784*** | .1004092 |

$F(17, 246) = 20.48^{***}$ $R^2$ (Overall) = .5430

***=>implies level of significance at 1% level.

[2]Source: Department of Agriculture, Government of West Bengal.

On the basis of the results presented in Table 4, we can draw the following inferences:

## Discussions

i) Higher Average harvest price of the previous year plays an incentive of the farmers of West Bengal to go for multiple cropping beyond rainy season and this plays an important role to enhance the average yield rate in West Bengal agricultural production over the time period.

ii) Agricultural production in West Bengal still depends on rain fall. It is interesting to observe that not the percentage of land irrigated but the rain fall plays an important role to enhance yield rate of crop over the time periods.

iii) We observe a gradual enhancement of agricultural wage in farm sector which improves the nutritional efficiency of the agricultural labourers and those labourers can devote much more effort during the time of agricultural production which plays a significant role behind gradual enhancement of yield rate in West Bengal agriculture. Hence, in West Bengal agricultural production we observe the presence of consumption efficiency relationship.

## Conclusion

This paper has examined the trends of yield rate of major crops (both food and cash crops) of West Bengal over the last fifteen years along with the identification of major factors influencing the average yield rate. The study has observed that the cropping pattern has changed

significantly with the shift of cultivation of the food crops to cash crops. Though the paddy continues to remain the primary crops in the state, the proportion of area under the food crops declined till 2010-11. Among non-food crops, there was a sharp increase in area of potato and tea throughout the whole period. The yield rate of all crops except wheat (yield rate was fluctuating over the period) was quite satisfactory over the time period. Though the state has shown appreciable yield growth, intra districts variation in the performance of yield growth rate of major crops has been observed. In major rice growing districts like Howrah and South 24 parganas, growth in yield exhibits declining trends, where Howrah recorded highest growth during 2008-09 to 2014-15. The yield growth rate of wheat was low and negative in most of the districts during 2000-01 to 2007-08 but the rate was increased significantly during 2008-09 to 2014-15.

The yield growth rate of other cereals recorded a significant growth (except Darjeeling) in the study period. Among cash crops, the yield growth rate of jute and potato in almost all the districts grows at a faster rate during the study period. Oilseeds, the other important cash crops as a whole experienced significant variation in yield growth rate in most of the districts. Lastly the panel date regression is used to know the possible factors which play an important role behind the enhancement of the yield growth rate. Fixed effect model shows that agricultural wage plays a significant role to enhance yield growth rate. Average harvest price of the previous year and rainfall also plays a significant role to enhance the yield growth in agriculture.

## Policy Implications

The yield growth rate of major crops in the different districts of West Bengal over the last few years has not got the expected momentum due to inadequacy of certain factors that are important to boost the yield growth rate. Besides, the yield growth rate is not uniform across the districts. While some districts are much ahead in terms of yield growth rate, others are lagging behind. This might be because of the fact that even though the state has achieved in self-sufficiency in staple food, the emphasis is still focused towards increasing production of rice only. While productivity of crop is associated with the intensive use of inputs, yield can be increased through better land management and farming practices. It has come out from our investigation that if the farmers or agricultural producers get better price of his/her produced crop that plays an incentive for them to move towards multiple cropping in the next year. So government apart from increasing support price of the produced crop should expand the purchasing system of the produced crop mainly the horticultural crops at the end of production. We cannot ignore the importance of consumption efficiency argument in our agricultural production in West Bengal. But the farmers due to high wage rate of the farm labourers, become less interested to go for multiple cropping unless they have good number of family labour force. Due to which labour force participation rate in the agricultural sector has declined. In this context expansion of NREGS can help the landless agricultural labourers to get some non-farm income which may improve his productive capacity through improving their nutritional efficiency during the time of production. The farmers should also be convinced that better wage can help them to get better output.

## Notes :

[1] Source: Department of Agriculture, Government of West Bengal.

[2] Source: Department of Agriculture, Government of West Bengal.

[3] The important cereals crops include rice, wheat, and maize. On the other hand, pulses include mainly gram, arhar, muskalai (urad), masur (lentil), khesari etc.

[4] State Marketing Board, Government of West Bengal.

[5] In agriculture, crop yield (also known as agricultural output) refers to both the measure of the yield of a crop per unit area of land cultivation, and the seed generation of the plant itself.

[6] Since 1999-2000, there is a change observed in the agricultural sector of India. Between 1999-00 to 2004-05 (more matured phase of economic reforms), the growth rate of food grain production at all India level became negative (-.23% per annum). But the growth rate of population per annum was 1.96%. So the Indian economy was under 'low level equilibrium trap' in agricultural sector. But in West Bengal, the picture was different. Here the growth of food grain production during that period was 2.06% per annum, far above the population growth rate of India. So we have to identify whether West Bengal can maintain this progress in agricultural production after that. Due to this reason, in this paper we consider 2000-2001 as the starting period.

[7] Compound annual growth rate is calculated by the formula, CAGR= $Vt_n/Vt_{0)}^{1/(t_n-t_0)}-1$
Where $Vt_n$=Ending value
$Vt_n$=Beginning value
$1/t_n-t_0$ =Number of years

[8] Planning Commission, Government of West Bengal.

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*"Migration isn't a one-directional process; it's a colossal process that has been happening in all directions for thousands of years."*

*– Mohsin Hamid*

Feature

# Participatory Rural Planning for Sustainable Agriculture: An Observation from Rural Jharkhand of India

**NIRANJAN SAHOO**

*This article is an attempt to know how the community level participatory process could be used to advance agricultural efforts and livelihood initiatives. This empirical study is carried out in two villages of Jharkhand state in India to examine as to how the community people make an interaction with common resources for agricultural planning and development through knowledge management. It is firmly believed that humans are so called unexplored treasures and each additional individual born in this world strains world resource by being a consumer. But by being a producer, each individual has enormous potentialities to explore and contribute to the world resources. Now our concern is as on how to convert the human beings into human resources? More growth of population means, more overtax of the resources, which will ultimately result in widespread poverty and hunger* **(Thomas Malthus 1798).** *Malthus theory on population and general prediction about the common man of third world countries could be reversed by way of converting the human population into human resource through education, training for agriculture. Overpopulation is not a burden rather it may be termed as an opportunity especially for agriculture and rural development sectors. Participation is an indigenous or native instinct, which has paramount importance in helping common people in villages in increasing production and productivity. When common people unite in a participatory process they tend to explore more their inherent skills and knowledge. This empirical study is carried out in two villages of Bero block in Jharakhand state to find the systems and strategies of participatory process where the common and illiterate people became proficient to explore their potentialities for making micro-planning for village development. Various methods of participatory rural appraisal (PRA) like logical framework analysis (LFA) and objective variable indicators (OVI) are also discussed in the full paper.*

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## Background

India is an agrarian economy. Agriculture has been practiced since ancient times, when other developmental sectors were not even in existence and farming was mostly treated as a life sustaining activity. Due to the impact of globalization commons and community participation have become the buzz words in agriculture sector. Biotechnology, precision farming and various hi-tech and mechanized techniques have resulted in a paradigm shift in agriculture. Besides government's special emphasis on privatization, public private partnership, the farming community too has contributed to the agricultural growth. Over and above, education and training play a prominent role in developing human resources in the villages. Currently, community education, training and information have been the promising factors in helping farmers and villagers. To realize the real potential in Indian agriculture and to grow it to the point of a prospective sector, it is a necessity to train and educate the farming community for sustainable enterprise. The same can be expected by utilizing the community potentiality having the qualities to serve the agriculture sector efficiently.

## Problem Analysis & Relevance of the study

Agriculture is the main occupation of the people of Mahru village. Out of 400 (not exact) acres of land, only 175 (not exact) acres land is used for cultivation. **Bhasananda** the second and adjacent village of Mahru where the Participatory Rural Appraisal (PRA) based study was conducte. On the other hand the irrigation plan was not made for the village other than the Micro-Irrigation Check Dam plan for Mahru village. Agriculture is the primary occupation of 48 households whereas it is the secondary occupation of 13 households. Only 54 percent DOIN and 45 percent TAND are irrigated in Mahru village while the

remaining 46 percent DOIN and 55 percent TAND are non-irrigated. ***DOIN*** refers to the low-line land having higher chances of irrigation where ***TAND*** refers as the up-line lands having little chance for irrigation. . Out of these 61 households 12 do not have irrigation facility, 1 household uses pond while 2 household use both well and pond for irrigation. Out of 46 households, majority use wells for irrigation, but a well can hardly irrigate 0.5 acre of land and during summer as they go dry.

Most of the villagers are involved in agriculture still they are not able to get enough produce to meet their own needs. And this leads to low income of family, poor nutrition and health and many a times it leads to migration in search of jobs. This inferred that low agricultural produce is main problem of Mahru village. This is due to lack of improved techniques like drought resistant agriculture and single crop per year by most of the farmers.

Most of the farmers are able to grow only one crop in the entire year and this is due to three factors: lack of irrigation facilities, rain dependent agriculture and agricultural loss due to elephant menace. There are many elephants in the surrounding dense forest of Mahru who visit every year in search of food. There is little villagers can do to stop the elephant menace without enough support from forest department, which is rarely available. Lack of irrigation is due to insufficient water bodies in the village and lack of water in existing wells and ponds. Less availability of water in irrigation sources also leads to dependency on rain for agriculture. Less availability of water in these sources is due to low water table and rain water runoff. Both problems are due to lack of rain water harvesting measures, which happens to be a root cause of the problem.

The other main reason for low agricultural produce is lack of improved techniques in agriculture i.e. people are still following the age old practices. This is due to lack of knowledge about the recent advancements in agriculture; there is no NGO intervention in Mahru village to facilitate the awareness generation for agriculture development. Another factor is lack of capital to apply the improved techniques. Lack of capital is due to lack of financial institutions in the village to provide agricultural loans and lack of implementation of govt. schemes for agriculture.

The major problem of Mahru village is found by Survey and PRA exercise is **Low Agricultural Produce** and this problem could be understood in two different subheads:

1. Single crop per year
2. Lack of improved techniques

To eradicate this major problem and lead to increase in agriculture production, subsequent objectives are framed. The foremost problem in the less production of agriculture is irrigation problem. To solve this issue, first of all there should be increase in water harvest facilities, for this rainwater should be harvested in a check dam. This increased water harvest will result into water collection in a check dam and thus increase the water table. It will also check the water runoff. These two will increase availability of water in ponds and wells. With this increased water bodies and reservoirs there will be an increase in irrigation facilities and this will reduce dependence on rain. These all will finally result into multiple cropping i.e. more than one crops in a year. And this will result into increased production of agriculture. Under second subhead the focus is on adoption of modern agricultural techniques. This will happen only then when there will be an increase in awareness among people and availability of capital. To increase the awareness level there will be interventions of NGOs in the village. And for availability of capital there will be an extension of financial institution and implementation of government institution. All these above interventions will finally lead to increase in agricultural produce.

### *Objectives*

Followings are the objective of the study:

i. Examine how people's participatory learning and training has helped the villagers to increase their capacities and capabilities to enhance agricultural productions in the villages

ii. Exploring the potentialities of farming community for better use of their human resources PRA.

### Methodology of Study

This study has been undertaken in a village of Jharkhand state in India by a group of 24 researchers and the whole farming community for giving a greater insight towards understanding the agricultural productivity issues through PRA exercise.

The PRA approach is used with the following assumptions:

- Rural communities form active foundation for rural development
- Communities need committed local leaders to stir up their development.

## Logical Framework Exercise (LFE)

| NARRATIVE SUMMARY | OVI | MoV | ASSUMPTIONS AND RISKS |
|---|---|---|---|
| **DEVELOPMENT OBJECTIVE** Ensuring water availability for agriculture and improving livelihood opportunity in Mahru and nearby villages in 10 years. | • Water available for agriculture throughout the year for all the land in the village within 5 years.<br>• Up to 15 % increase in per capita income of villagers.<br>• Alternative source of income through fishery and agriculture produce processing and marketing facility. | • Base line survey done<br>• Survey after implementation of project. | • Unstable political situation may derail the project implementation process |
| **IMMEDIATE OBJECTIVE** Availability of water to 150 acres of land of Mahru village through canal, well and pond deepening in 5 years. | • Farmers started harvesting second crop within 5 years.<br>• Yield improved up to 20% within 5 years. | • Direct observation<br>• Sample survey. | • Elephant menace may damage the crop substantially.<br>• Erratic rainfall may affect the production substantially. |
| **NARRATIVE SUMMARY** | **OVI** | **MoV** | **ASSUMPTIONS AND RISKS** |
| OUTPUT: | • A check dam of height of 30 feet constructed in 2 years.<br>• A 1500 ft. long canal constructed in 2 years.<br>• 20 wells dug within 3 years.<br>• Ponds de- silted within 2 years.<br>• 100 farmers received water from canal within 3 years. | • Direct observation<br>• Focused group discussion<br>• Record of check dam management committee. | • Landowner of proposed site agreed to give land for dam.<br>• Concerned department are cooperating. |
| ACTIVITIES: | • Contract placed for sand, stone, gate, cement and other construction material.<br>• Staff recruited and village committee organized for managing dam.<br>• Paper works done for consent of landowner of submerged land.<br>• Village survey conducted for identification of potential beneficiary. | • Accounts<br>• Newspaper cuttings of tender.<br>• Minutes of meeting of managing committee. | |

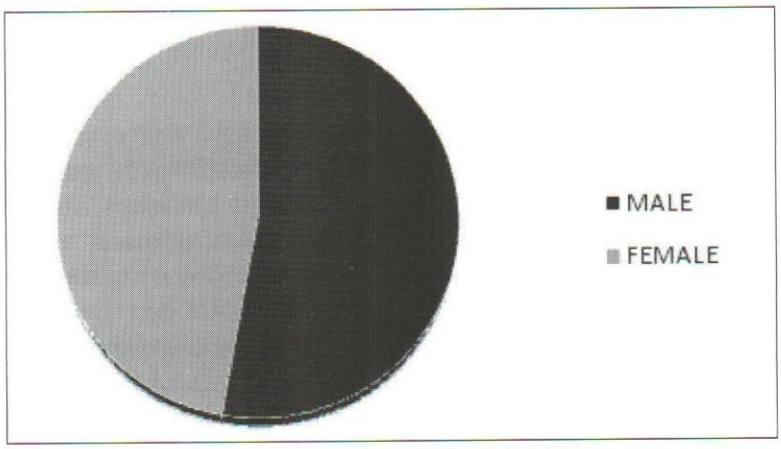
- Communities have knowledge and information but it needs to be organized
- Communities have resources but they need to be mobilized. They can introduce projects, acting primarily on their own resources.
- Community organizations are among the many, which are underutilized resources available for development efforts.
- External units such as government technical experts and extension workers, NGOs, and international organizations often can provide substantial technical, financial or managerial assistance that is critical to rural communities.
- Thus, PRA brings together on the one hand, development needs defined by the community members and on the other, skills of government,

donor agencies and NGOs. It integrates traditional knowledge systems and external technical knowledge in the development process.

**PRA Techniques and Methods**

1. ***Diagramming, Mapping and Modeling***
   a. Transects
   b. Maps (resource, social etc.)
   c. Venn diagrams
   d. Seasonality Analysis
   e. Historical Analysis (Time lines, Trend Lines, Activity Profiles)
2. ***Ranking and Scoring***
   a. Pair wise ranking
   b. Matrix ranking
   c. Matrix Scoring
   d. Wealth Ranking
   e. Proportional Piling

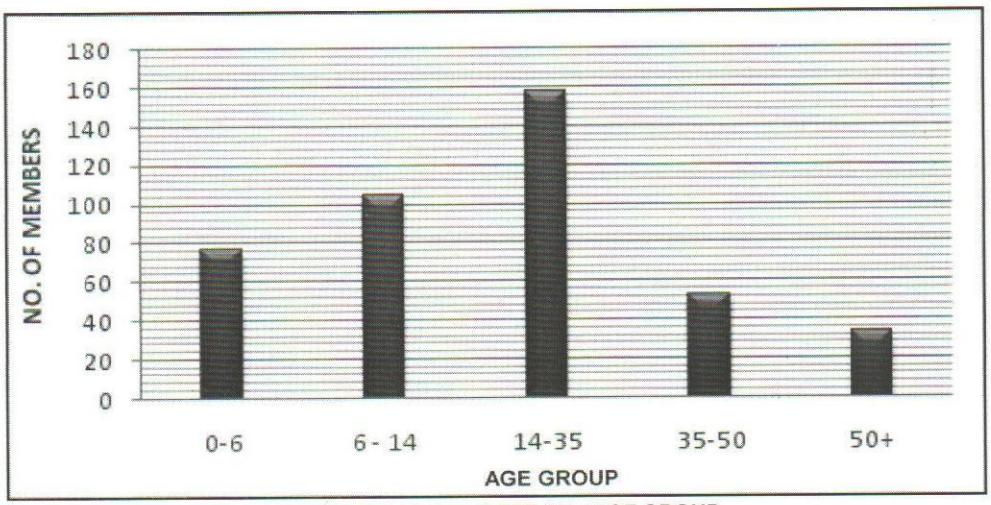
**Profile of Study Area**




**SEX RATIO IN MAHRU VILLAGE**

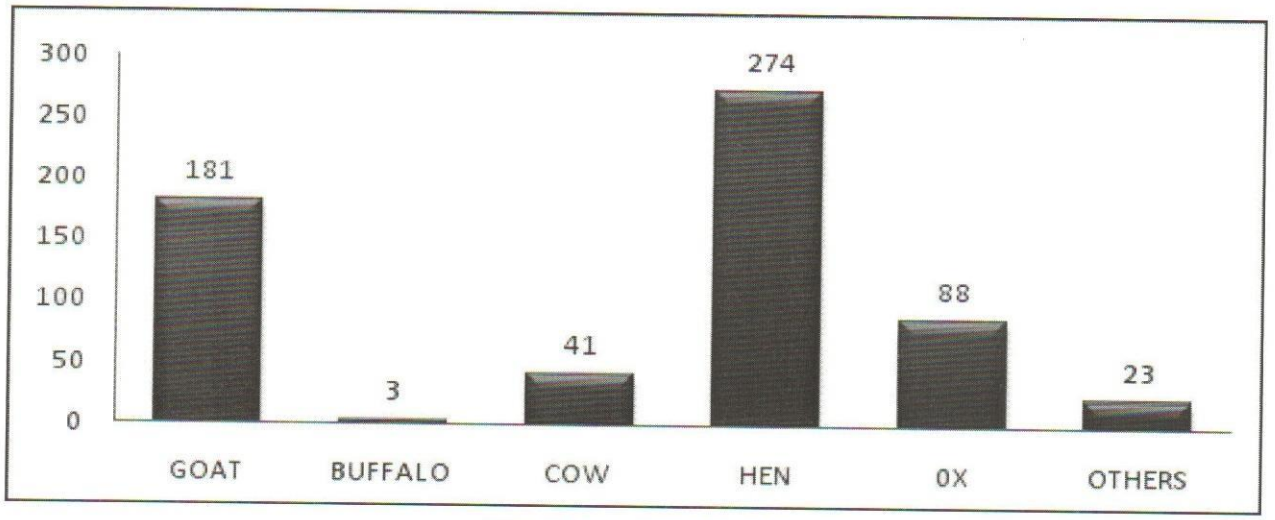
The total population of Mahru village is 425 in which there are 225 male members and 200 female members. So, out of the total population 53 percents are male and rest 47 percent is female population. So, the sex ratio in the village is 889.

**Age Wise Composition of Population**




**POPULATION AS PER THE AGE GROUP**

**Availability 0f Livestock**




NUMBER OF LIVESTOCK IN MAHRU

Table shows the demographic distribution of Mahru village. There 77 children between the age group of 0 - 6 where as the number of children in the age group of 6 – 14 is 104. The maximum number of people falls under the age group of 14 – 35, which are 157 in number. The persons under the age group of 35 – 50 are 53 and there are 34 villagers whose age is more than 50. It means that tout of the total population of the village 37 percent falls under the age group of 14 – 35, followed by 24 percent of children under the age group of 6 – 14 and 18 percent children under the age group of 0 – 6. 13 percent of the villagers are in the age group 35 – 50 and 8 percent villagers are aged more than 50.

The chart shows that number of different livestock in the village. There are 181 goats, 3 buffalo, 41 cows, 274 hen, 88 oxen, and 23 other animals in the village, which includes bulls, cats etc. This table shows that the number of hens is maximum in the village after which comes goats. Out of the 69 households in the village, 62 households have livestock only 7 households don't have livestock.

**Occupational Status on Household Basis Types of Primary and Secondary Occupation**

This chart shows the different occupations adopted by the households in the village. Agriculture is the primary occupation of 48 households whereas it is the secondary occupation of 13 households. Casual labour is the primary occupation of 14 household and it is the secondary occupation of 24 households. Driving is the primary occupation of 2 households and secondary occupation of 4 households. Only 2 households are engaged in business for 1 is the primary occupation and for other it is secondary occupation. Other things like painting, tailoring, teaching, transport business are primary occupation for 4 households, whereas rearing goats is the secondary occupation of one household under the category of others. 26 households don't have any secondary occupation. As there 24 households are engaged in casual labour in secondary occupation, it shows that they either have less land or are unable to cultivate their land in all the seasons.

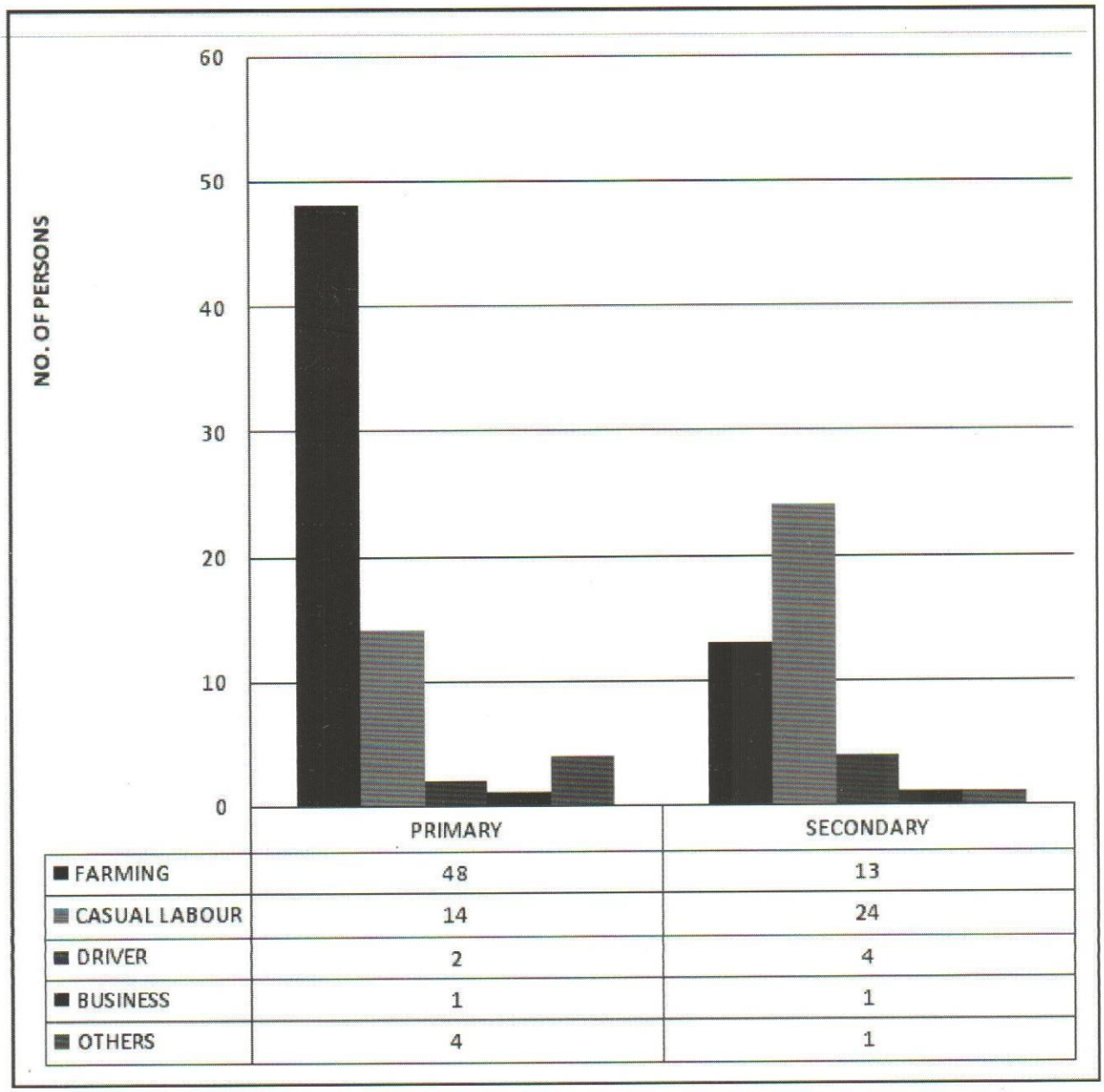
**Status of Agriculture**

This chart shows the production of different crops in the three seasons. The production is highest in the Kharif season. In this season the total production of paddy is 74,480 kilograms, the production of Madua in this season is 8515 kilograms, whereas there is 6785 kilogram production of other crops. In the Rabi season the production is extremely low as there is 4295 kilogram production of wheat, 9430 kilogram production of vegetables and 1735 kilogram production of other crops. The production of crops is almost nil in the summer season only 175 kilogram vegetables are grown in this season, which is done by only two farmers. There are different reasons behind this the major one is the problem of irrigation and the attack of elephant.

**Food Availability of Household by Own Production in Months**

This chart describes food availability to the households through their own farm produce. The horizontal axis shows

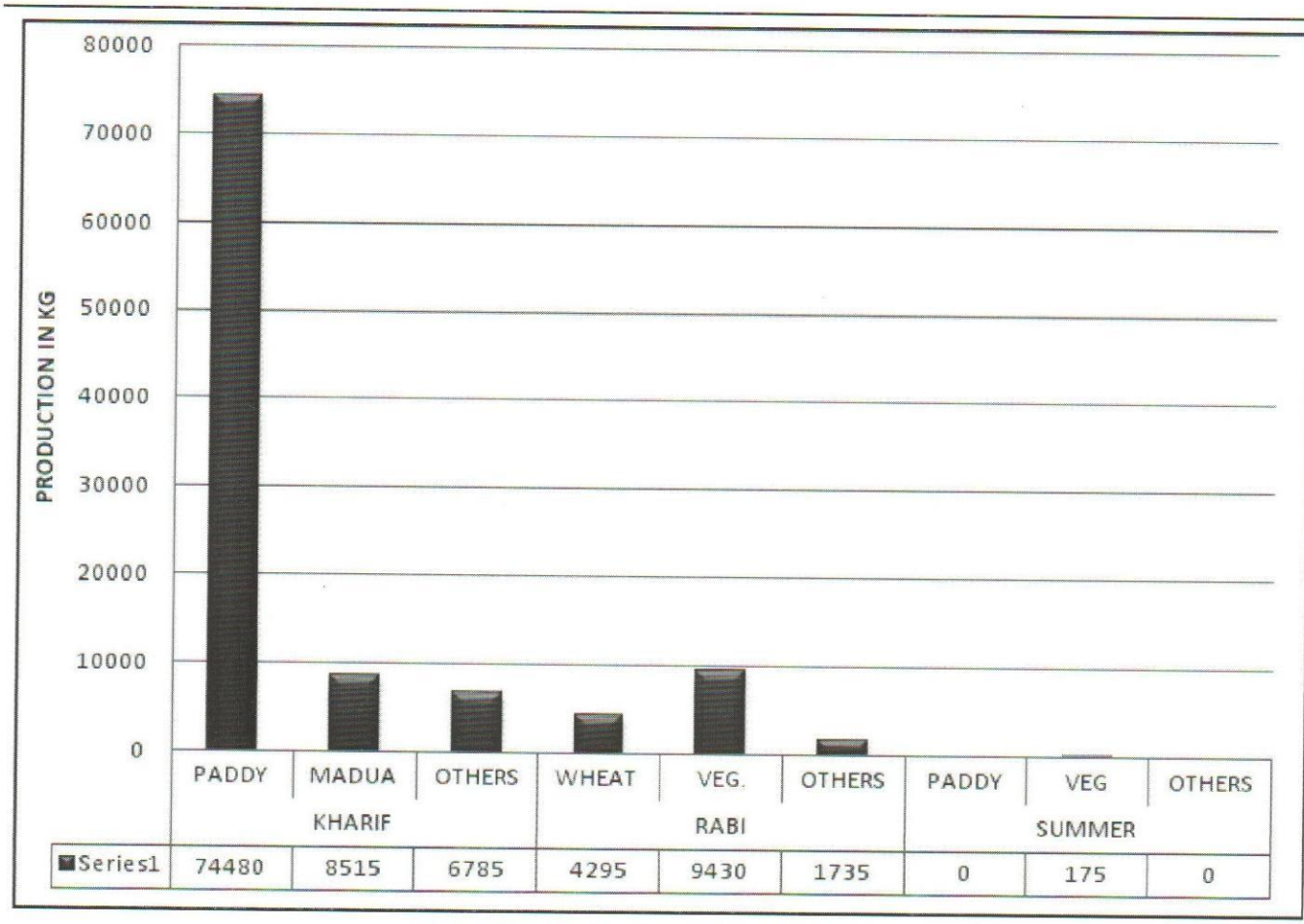
**Occupational Status on Household Basis types of Primary and Secondary Occupation**



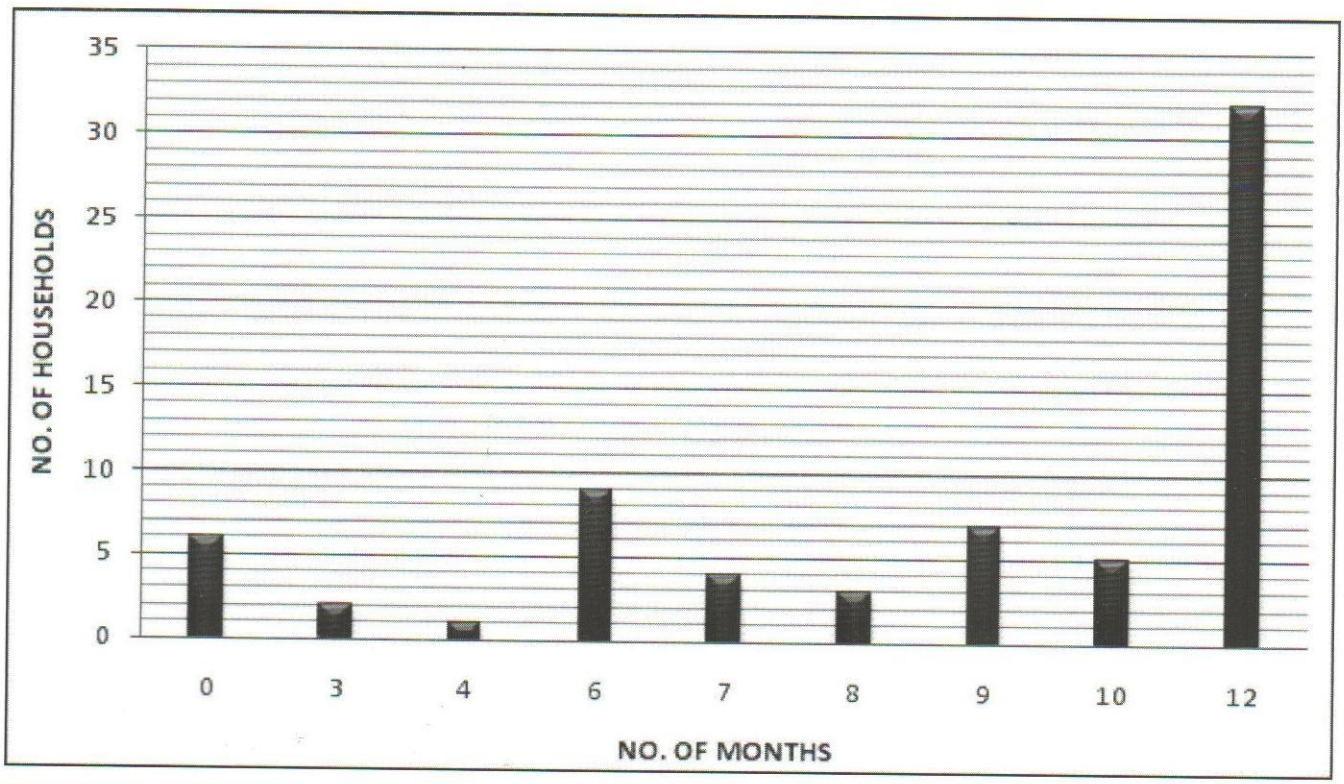

| | PRIMARY | SECONDARY |
|---|---|---|
| FARMING | 48 | 13 |
| CASUAL LABOUR | 14 | 24 |
| DRIVER | 2 | 4 |
| BUSINESS | 1 | 1 |
| OTHERS | 4 | 1 |

the number of months and the vertical axis shows the number of households. It shows that 6 households don't have any farm produce, 2 household have farm produce for 3 months, and 1 household has the production for 4 months. In the village 9 household have production for 6 months, 4 have production for 7 months, 3 for 8 months, 7 for 9 months and 5 for 10 months. The major chunk of the villagers that is 32 household has the production for the whole year.

The table shows the perception of the villagers about the different problem related to agriculture. Out of the total 63 farmers in the village, 14 think that non-availability of seed is a problem for agriculture where as 49 farmers do not consider it a problem. Absence of rain is the major problem for agriculture according to the villagers as 55 villagers find it a problem whereas only 8 farmers suggest that it is not a problem. Approximately 50 percent farmers suggest that lack of knowledge is a problem for agriculture. 37 farmers in the village consider some others factor also as a problem to agriculture. The other factors include the attack of elephant, diseases in the crops etc.




**Seasonwise Production of Crops in Kilogram**



PROBLEM RELATED TO AGRICULTURE

| TYPE OF PROBLEM | YES | NO | TOTAL |
|---|---|---|---|
| NON AVAILABILITY OF SEED | 14 | 49 | 63 |
| INADEQUATE RAIN | 55 | 8 | 63 |
| LACK OF KNOWLEDGE | 32 | 31 | 63 |
| OTHERS | 37 | 26 | 63 |

### *Findings & Discussion*

This PRA exercise tells about the channelized irrigation in the village. The following exercise tells us about the various subjects like soil type, crops which are grown near the river, land utilization, their problems regarding irrigation and their solution etc.

During this exercise, we came to know about several factors like the soil is mainly fertile but farmers can only do a temporary farming during Rabi season. During rainy season we cannot do farming near the river. We also found that the main problems are soil erosion, broke check dam, right flow of water and we came to know through villagers that by planting tree, building wells, repairing check dams and making new check dams can improve the irrigation near the river. We also found that conserving water can give a great chance for irrigation in this area and can help to grow their yield more than they produce at the current period.

This exercise shows particularly the different utilization pattern of land for agriculture in the village. We showed this with the help of a pie chart showing different percentage usage of land for different purposes. The data of this chart was collected in front of good number of villagers to ensure the accuracy and triangulation. Total area of the village is 185 acres (approx.) in which 48% of land has been utilized for agricultural purpose, 27% is forest land, 14% is occupied as residential land and 11% is utilized for other purposes. 48% of land, which is utilized for agricultural purpose is occupied by ***Doin*** and ***Tand***, where as 11% of land is occupied by roads, water bodies and waste lands. The division of this includes 65% of waste land, 20% of road and 15% by water bodies. Thus from this exercise, it becomes clear that agricultural land is maximum over here. If the agricultural methods are developed it may definitely develop the village. The optimum utilization of this waste land can also contribute to development of the village.

### Matrix Ranking Of Vegetables

This PRA exercise tells about the ranking of vegetables grown in the field and sold in the market. This exercise tells about the vegetables, which are highly preferred by the villagers that provide them with high output as with less input.

Thus through this exercise what is actually required is that we need to understand the underlying factors affecting the choice and importance of different vegetables grown by the villagers like vegetables grown for household purpose, grown according to the market, time, irrigation, productivity, cost incurred, profit etc. According to the villagers' potato, ginger, pea, tomato etc are the most preferred vegetables grown in this area because the market cost is very high and they get high profit on the sale of these vegetables. These vegetables require less irrigation and care but it takes more time to mature. This exercise gives a brief idea about the vegetables growing pattern which is being practiced by the villagers since the early times.

This PRA exercise tells about the change in rainfall in a particular region. Through this exercise, we can get information about the pattern of rainfall in the area.

This exercise tells us about the trend of rainfall in the village around 40 to 50 years ago. The rainfall 50 years ago was not so good. But after 10 years scenario changed completely, it shows a positive change in rainfall. There was rainfall nearly all the year around. In 1980, also the trend of rainfall was average to good. In 1990 there was scanty rainfall. In due course of time there has been constant fluctuation in rainfall. In recent time, the rainfall has been constantly average. During August and September the rainfall is good but through the year. There is less than average rainfall. This shows that there is a need of construction of the rain water storage. So that they can use it in future purpose. This exercise shows

that rainfall in not a consistent phenomenon. Fluctuation in rainfall is very high, so fall back measures has to be taken otherwise it can inflict heavy loss in ongoing livelihood activities. Any micro plan to development in this area must consider this crucial fact.

***Action Plan on Micro Irrigation***

**Construction of a 30 feet high Check Dam at Mahru Village**

Main occupation of residents of Mahru village is agriculture. They cultivate paddy, pulses and other vegetables. Most of the cultivation is dependent on rain. Some even try to grow second crop but due to lack of water and problem of elephant leave land barren.

As various surveys show that even though agriculture is practiced by majority of villagers, it is not sufficient for food sufficiency, leave alone surplus production. Any type of development intervention has to first keep in mind this situation. Most of the other socio-economic problems are interconnected with this issue. As many people migrate to other places or live at the mercy of various government programs or forced to work at abysmal wages.

The average rainfall of the area ranges between 1500-1600 mm. Water resources fail to retain water due to uneven topography and hard rock at sub-soil level. As Mahru has huge forest cover and limited cultivable land, so it becomes necessary either to improve production or look for other livelihood opportunity. At this juncture what seems viable is former option. Other livelihood opportunities can be identified at later stage.

This is a viable project because villagers have identified a suitable place for construction of check dam. Sufficient human resource and material resource is available within the village. Construction site is situated within the village boundary between three small hills named 'chadi tongari', 'pahar amba' and 'papra tongari'. This will ensure maximum advantage of natural structural design. Submerged area due to water collection is also very less. Total cultivable land submerged is 2-2.5 acre and forest land is 6-7 acre. Forest land, which will be submerged has very few trees. This check dam will be able to irrigate around 200 acres of land of Mahru village and nearby village after proper channeling of water which in turn will benefit almost 100 families. These 100 families are those who will get benefited in the long term. Other than these benefit this construction work will generate 4700 man day manual labour.

As base line survey of village Mahru shows that almost 90 percent of main earning members of the family are unskilled. All these families are dependent on agriculture for their livelihood. Their expenditure pattern shows that 83 percent of the family spent most of their income on food. This is a paradox. As majority of family are involved in agriculture but at the same time they spend maximum share of income on food. This paradox exists because of low production in agriculture. Among all the respondents 81 percent responded that low rainfall is a big problem. It means most of the agriculture is dependent on rainfall. Very few farmers have irrigation facility and very few of them are actually able to meet their irrigation need from their source of irrigation. Data collected from villagers through baseline survey shows that only 51.43 acre land is irrigated whereas 43.72 acre land is non-irrigated. In case of tand land 33.74 acre is irrigated and bigger chunk i.e. 41.68 acre is non-irrigated. This poses a serious threat to ongoing agricultural practices because gradually profitability in agriculture is decreasing.

Through this stakeholder grid this can easily be analyzed who are the primary and secondary stakeholders and how they are influencing as well as influenced by the project. How the project is important for them and how far they are important for the project, what is the relative importance as well as impact of the project on the stakeholders. It gives a correct idea about their attitude towards the project.

The above-mentioned stakeholder grid clearly shows that primary stakeholders are farmers, village managing committee members (VMC) and landowners of the proposed site. It is so because farmers are the primary beneficiary. This project is supposed to benefit around 100 farmers' family directly. VMC and landowner of the proposed construction site is also primary stakeholder because VMC will have to manage the dam through all the time after its construction. Landowner will lose his land so he has to be convinced. He may have to be compensated by return from the dam on lump sum basis, by compensation or some kind of shareholding in the profit by fishery contract. Secondary stakeholders are also beneficiary but won't get benefitted by dam all the time and are not of primary concern. Neighboring villagers are also secondary stakeholder because they may also get benefitted by the water of dam or they may protest against dam construction because of their perception about blocking of flow of water. So they have to be convinced

**Stakeholders Analysis**

| | High | Low |
|---|---|---|
| **High** | Farmers, Village managing committee Landowners proposed site. | Fishery contractor, labourers, of community people, neighboring villagers |
| **Low** | Government, Implementing agency | Traders, Construction contractor and construction material supplier. |

**Dimension of Check Dam**

| Layer | Length (ft.) | Breadth (ft.) | Width (ft.) | Soil required (cft.) | Sand required(cft.) |
|---|---|---|---|---|---|
| 1st | 142 | 70 | 5 | (75%) 37,275 | (25%) 12,425 |
| 2nd | 250 | 60 | 5 | (75%) 56,250 | (25%) 18,750 |
| 3rd | 310 | 50 | 5 | 77,500 | |
| 4th | 350 | 40 | 5 | 70,000 | |
| 5th | 380 | 30 | 5 | 57,000 | |
| 6th | 400 | 20 | 5 | 40,000 | |

and false perception has to be cleared. Government, implementing agency, traders, and construction contractor along with the material supplier are also secondary stake holder because they are influencing project or getting influenced by the project.

## Budgeting

### Calculation of Material Required for the Construction of Check Dam

Total soil required = **3,38,025 cft.**

Sand required = **31,175 cft.**

Stone required covering slope of both sides of check dam wall –

Total Surface area of wall to be covered= **21165.1 sq.ft.**

Size of stone (0.75x1 ft.)= **0.75 sq.ft.**

Number of stones required = **28,220 blocks**

Area submerged cultivable=**3 acre**

Area submerged forest= **6-7 acre**

Long term Beneficiary family= **100**

Area irrigated by check dam = **200 acre**

## Inference

This Micro irrigation Plan is not a solution to the problems of the people of Mahru village rather it is simply showing a way to solve one of the many problems of the village. The plan designed for the two villages mainly aims at increasing the water availability for irrigation purposes. It has been supposed that by doing so the agricultural production would be higher than what it is today. But there are several assumptions, which are considered while framing this plan like availability of other factors of production, proper management of the check dam and the wells by the community people and many others. These assumptions will be fulfilled then only, when this plan would work effectively and efficiently.

No development initiative would work until the beneficiaries would be ready to accept the initiative whole heartedly along with a commitment to continue the initiative in a sustainable manner. This micro plan also assumes that for the sustainable development in the agricultural production it is necessary to have a proper common property resource management system among the village natives to get an equitable distribution of water for irrigation purposes.

The plan has come out of the vigorous efforts made by the local villagers on a span of 40 precious days spread over a year. Apart from this there are several other issues which have been identified in this micro plan regarding the livelihood, education, health facilities and others. Thus, there could be other micro level plans, which could be designed out of these issues to promote livelihood of people.

**Budget**

| S.No. | Particulars | Quantity | Amount(Rs.) |
|---|---|---|---|
| 1. | **Construction of Dam Wall** | | |
| | • Cost of soil (labour + transportation) | 3,38,025 cft @ Rs. 1.40 per cft. | 4,73,235 |
| | • Cost of sand | 31,175 cft. @ Rs.10 per cft. | 3,11,750 |
| | • Cost of Stone Chips (for wall of water side) | 1600 cft. @ Rs. 30 per cft. | 48,000 |
| | • Cost of Stone Blocks (9 * 12 inch) | 28,220 @ Rs.8 per piece | 2,25,760 |
| | • Cost of Compaction of soil (roller/vibrator) | | |
| | o Rento | For 1 month @ Rs. 27,000 | 27,000 |
| | o Diesel | For 5 days @ Rs. [illegible] per day | 9,000 |
| | o Operator | For 5 days @ Rs. 150 per day | 750 |
| | o Engine Lubrican | 2 Litres @ Rs.250 per litre | 500 |
| 2. | **Construction of Canal (1500*5*10 cft)** | | |
| | • Soil | 37,500 cft. @ Rs.1.40 per cft. (including labour cost) | 52,500 |
| | • Stone Bricks | 2,750 @ Rs.8 per piece | 22,000 |
| 3. | **Construction of Installation of Canal Gate** | | |
| | • Cost of Gate | 556 kg @ Rs. 71 per kg | 39,476 |
| | • Iron Stand | 64 kg @ Rs. 48 per kg | 3,072 |
| | • Steel Rod | 3567 kg @ Rs.48 per kg | 1,71,216 |
| | • Cement | 180 bags @ Rs. 270 per bag | 48,600 |
| | • Stone Chips | 500 cft. @ Rs.30 per cft. | 15,000 |
| | • Sand | 300 cft. @ Rs.10 per cft. | 3,000 |
| | • Labour Cost | 800 sq.ft. @ Rs. 30 per sq.ft. | 24,000 |
| 4. | **Construction of Spill Way** | | |
| | • Steel Rod | 1010 kg @ Rs. 48 per kg | 48,480 |
| | • Cement | 333 bags @ Rs.270 per bag | 89,910 |
| | • Stone Chips | 925 cft. @ Rs.30 per cft. | 27,750 |
| | • Sand | 555cft. @ Rs. 10 per cft | 5,550 |
| | • Stone Bricks (9*12 inches) | 5770 @ Rs.8 per piece | 46,160 |
| | • Labour Cost | 740 sq.ft. @ Rs. 30 per sq.ft. | 22,200 |
| 5. | **Care Taker (Store Keeper)** | | |
| | 2 persons for 100 days | 2*100 days@ Rs.100 per day | 20,000 |
| 6. | **Cost of Compensation for Submerged Land** | 3 acres @ Rs. 2,00,000 per acre | 6,00,000 |
| | TOTAL | | **23,34,909** |

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*"Migration is often misperceived as the failure to adapt to a changing environment. It is, however, one of the main coping and survival mechanisms that is available to those affected by environmental degradation and climate change."*

*– Sylvia Lopez-Ekra*

# Guidelines for Contributors

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