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Editorial

Re-Imagining the 'Public' in Public Sector: Potentials of a Democratic Engagement with the Informal Economy

At a time, when public sector logics are under severe strain as brought about by the diminished credit and deposit growth in public sector banks (Ram Mohan, 2016), in this issue, Saha and Kumar (2016) explore employee's commitment in public sector undertakings. They find that organisational culture has a positive impact on affective commitment. However, it does not have a significant impact on group commitment and job involvement. We require more investigations into the experiences of India's public sector employees. We need to understand the narratives and stories of their existence.

The democratisation of employment relations is an important composite of equity and justice (Parry, 2013). What is the imagination of the public in the public sector? Do public sector organisations operate in deliberative spheres where there is a robust discourse about how businesses operate at the intersection of society, culture and economy? It is necessary to understand how marginal and vulnerable stakeholders relate to the functioning of the public sector. It is necessary to inquire into how public sector employees relate to other sections of Indian society.

With only eight percent of India's workforce in the organised sector (Joseph and Jagannathan, 2016), it is useful to understand how public sector employees intersect with India's informal economy. Public sector employees may be connected with India's informal economy in numerous ways. In trying to understand the sociology of 'class four' employees in India's public sector, several meanings of labour are opened up for inquiry. While dignity is an important consideration for labour, many 'class four' employees experience everyday indignities in India's public sector workplaces. They may be abused by their superiors, made to do menial labour or inhabit a general melancholy of meaninglessness.

There are problematic intersections of social relations of caste and gender with the imagination of 'class four' employees (Subramanian, 2007). Several janitors across the public sector in India are likely to be Dalits. Many 'class four' women employees may be prone to vulnerabilities and harassment both in the workplace, and in their homes. Yet, 'class four' employees may have the most proximate connections with India's informal economy. They may have several relatives who do not work in organised sector and may hold precarious informal economy jobs. These relatives and friends may be dependent for informal forms of social insurance on public sector employees.

The neoliberal turn has focused its attention on 'class four' employees with several public sector organisations deciding that they must implement a freeze in recruitment of 'class four' employees in the permanent rolls of their organisations (Jagannathan, Selvaraj and Joseph, 2016). The 'class four' employee has been the first to experience the insecurities of contractualisation of work in the public sector.

With its neoliberal turn, the state has created numerous dilemmas for 'class four' employees. For the marginal employee, the 'class four' job is an important opportunity for mobility. It offers some forms of job, income and social security.

The 'class four' employee may use this form of security to finance the education of her children (Selvaraj, Jagannathan and Vijayakumar, 2015). She may also use these modest forms of security for investing in the health and well-being of an extended family. The contractualisation of work may lead to the erosion of opportunities for mobility. At the same time, the 'class four' employee should not be unduly romanticised as a figure of mobility. She may also be embedded in corruption networks and may act as a gatekeeper who prevents citizens from accessing accountable governance.

She may treat people who are more vulnerable than her with contempt and disdain ('From peons to clerks', 2012, January 21). We need to uncover complex networks of authority and subordination that are enacted in India's public sector. These complex interlinkages signify the complex location of the public sector in Indian society. On the one hand, the public sector offers the possibility of mobility and equity. On the other hand, it is embedded in a deeper state-governmental trope of corruption and subordination.

We require research that uncovers all these complexities and nuances in terms of narratives, experiences, stories, cases and complex layers of data. Narratives of the public sector need to anticipate how value is shaped at the level of community and economy. The democratisation of the imagination of public within the public sector may require newer social relations of comradeship that transcend rigid levers of hierarchy and status. Such a process of comradeship requires experimentation with models of industrial and organisational democracy (Semler, 1994). Eventually, the nature of the interface between the public sector and the informal economy needs to become more democratic.

All these issues also arise in the wake of other articles in this issue. Subramanian, Irudayaraj and George (2016) argue their case for women leadership in the context of paying attention to the gendered nature of organisations. The case for women leadership of course extends to the informal economy as well, as women try to carve out their livelihood in the midst of numerous constraints (George, 2013). The context of gender is related to the complexities of space, and in this issue, Pandey and Jessica (2016) engage with the issue of investment in real estate as a potential form of diversification in the Indian financial market. The issue of real estate is of course crucial for the informal economy as issues of urban housing are an important axis of inequality (Mahadevia, Liu and Yuan,2012).

In this issue, Jaiswal and Uchil (2016) inquire into the potential of engaging with inflation in the context of commodity futures. Mishra (2016) analyses the role of pension funds as financial intermediaries and argues that the role played by pension funds is set to expand in the context of an ageing population. Ranjan (2016) analyses the problems associated with the implementation of the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in terms of its implications for wages and minimum support prices. All the three issues of inflation, social security funds and MGNREGA have serious implications for the informal economy. In future issues, we look forward to welcoming more explicit inquiries into India's informal economy and issues of re-imagining the nature of public so that we can understand discourses, politics and tensions that suffuse our economy in deeper ways.

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CONTENTS

Impact of Organizational Culture on Multiple Commitments: Mediating Role of Organizational Learning

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Abstract

The current dynamic environment has impelled organizations to learn continuously and keep up with changing trends. Learning and culture of organizations are considered two most important components that can facilitate high performance for business in organizations. This study attempts to study the mediating effect of organizational learning between organizational culture and multiple commitments. Data were collected from 712 employees working in different public sector undertakings (PSUs) across India. Structural equation modeling was used as a statistical tool to verify the proposed relationships. The findings of the present study indicate that organizational culture significantly predicts affective organizational commitment. Organizational learning mediates the relationship between organizational culture and affective organizational commitment. Organizational learning has a significant impact on multiple commitments, that is, affective organizational commitment, group commitment and job involvement. Thus a study of the organizational culture helps organizations to formulate policies directed towards enhanced effectiveness of human resources. The results imply that organizations have to focus on building a culture that incorporates a sense of assertiveness, collaboration, creativity and at the same time, provide employees flexibility, learning, opportunities for growth and reward them for their contributions to increase their commitments.

Keywords: Organizational Culture, Organizational Learning, Affective Organizational Commitment, Group Commitment, Job Involvement, Employees, Public Sector Undertakings

1. Introduction

The new business environment demands organizations to be competitive. They have to adapt to rapid changes to meet demands of the competitive business scenario (Popper & Lipshitz, 2000). Organizational culture and organizational learning are very important for survival and growth of organizations in this context (Cook & Yanow, 2011). All employees working in any particular organization have to learn certain new things that are considered essential to boost productivity. Organizational learning suggests learning has to occur at an organizational level and not only at an individual level (Pillania, 2006). Understanding the role of culture in the functioning of an organization is a recent aspect that is being focused in organization behaviour (Pondy & Mitroff, 1979). It is often seen that not all employees welcome change. So organizations are often resistant to change owing to less readiness to change. This needs to be taken care by finding possible interpretations and solutions. Organizational culture has to be changed to remove resistance in organizational learning (Schein, 1985; 1992).

For the change to occur, organizational learning has to take place so that the organization can evaluate its self-understanding of ways to deal with business. Culture is used by management to nurture the beliefs, behaviors and understandings of individuals of an organization to reach specified goals (Deal & Kennedy, 1982). Organizations can maintain a good work environment in this way. This will make employees develop positive feelings for their organizations.

Organizational commitment is the extent to which an individual identifies with his or her organization. It depends on how well the individual accepts the organization's goals and objectives. There is a willingness of the employees to exert a lot of effort in the organization's activities and to be its part (Mowday, Steers & Porter, 1982). Commitment is also known to be the one of the most significant factors among top performing companies and companies with average performance. It is clearly observed in a cumulative manner that organizational commitment is responsible for achieving the goals of an organization. However, more than one-third of employees had low commitment levels towards their job and organization (TNS Worldwide, 2002).

Employees who exhibit high organizational commitment are likely to perform better (Laschinger, Wilk, Cho & Greco, 2009). Organizational commitment is one such variable which was researched abundantly by the research scholars in recent years in education sector (Kumar & Giri, 2013). Commitment is present in all settings that involves social relations. It can be argued that the world of work is becoming characterized by rapid competition and developments globally in business. To be able to generate performance, companies must be able to adapt to the changing conditions by making employees being committed to their organization (Jaramillo, Mulki & Marshall, 2004). Under such turbulent business environment, organizations have to continuously look for qualified, skilled and committed employees.

There is lack of methods and components to improve organizational commitment of employees. There is a need to understand how commitment can be created in employees and enjoyed over time in organizations. It was claimed that organizational culture is highly non-supportive for a positive learning environment in public sector organizations of India (Pillania, 2006). However, this is contradictory with recent research findings. Gupta and Pannu (2013) argue that organizational culture of public sector undertakings is found to be very supportive due to high job satisfaction levels. This is because employees have commitment, cooperation, teamwork and proactivity among themselves (Jain, 2013). This contradiction can be cleared by inquiring about the culture in these organizations.

Group commitment is a form of commitment that gauges the level of bonding of an individual with his or co-workers (Randall & Cote, 1991). Group commitment is a very new concept in the domain of multiple commitments. Those employees and work groups who are more committed towards their organization have high morale, lower turnover, increased productivity and performance (Cohen, 2003; Mowday et al., 1982). Job involvement is an attachment towards job which is different from organizational commitment and group commitment (Cohen, 2003, Kanungo, 1982; Randall & Cote, 1991). There are many studies on job involvement. However, very little attention is paid to explore job involvement in relation to other workplace factors. Despite the presence of significant amount of research in the areas of organizational culture, organizational learning and commitment, little attempt has been made to link the three and translate these findings systematically into a comprehensive review of current knowledge in Indian public sector organizations.

2. Literature Review

2.1 Organizational Culture

Organizational culture is an important aspect of organizational behaviour (Kristof, 1996). It can be thought of a concept that encompasses the way organizations think (O'Reilly, 1989). Culture refers to shared values of reality that emerges through social interactions in organizations. Potter (2003) suggests that values, beliefs and norms that are practiced in organization form organizational culture. Wallach (1983) has divided organizational culture into three parts - bureaucratic, supportive and innovative.

The bureaucratic culture is characterized by hierarchical, clear authority lines, organized, compartmentalized and systematic work. The flow of information and authority is hierarchical based on control and power. The various adjectives used for bureaucratic culture are power oriented, solid, cautious, regulated, established, ordered, structured, procedural and cultural-hierarchical.

An innovative culture is known to engendera creative and dynamic work environment. People are always under stress to perform better. The various adjectives that are used to describe innovative culture are result-oriented, risk-taking, creative, pressurised, challenging, stimulating, enterprising and driving.

The supportive culture is characterized by confidence, encouraging, trusting, people-oriented and friendly work culture. Adjectives used for this culture are supportive, trusting, equitable, safe, social, encouraging, relationships-oriented and collaborative.

Organizational culture is widely regarded as the humanizing component in business. It gives rise to an enabling atmosphere for airing mutual expectation between an employee and organization. This helps employees to trust each other, facilitate communication and develop organizational commitment.

2.2 Organizational Learning

Tushman and Romanelli (1985) suggest that an organization has to change when there are certain developments that make existing strategies obsolete in organizations. Restructuring the relationships and learning new ways of working in organization are the ways for long run survival (Haveman, 1992). Organizational learning is necessaryas its efforts are directed towards organizational effectiveness (Sahin & Simsek, 1996).

Individuals of a work group need to learn to work productively. They will have to invest efforts and learn things necessary for effective attainment of goals. Organizational learning helps to learn and re-learn in order to update individuals with necessary skills. This acts as a principal measure of renewal of strategy of an organization.

2.3 Multiple Commitments

More than one form of commitment may be exhibited by the employees in the workplace simultaneously. For example, an employee wanting to develop commitment may end up building attachment towards the organization or the members of his or her work group (Meyer & Allen, 1997). It would be better on the part of employees if they are committed to more than one aspect of work, like, the work group or job or organization (Saha & Kumar, 2015). Hence, it is necessary to study multiple commitmentsto have a clear knowledge of commitment (Cohen, 1993, 2003).

2.3.1 Affective Organizational Commitment

Affective organizational commitment is the emotional attachment of an individual with his organization (Morrow, 1993). It is believed to exist when there are positive feelings about the organization (Meyer & Allen, 1997). An individual who is affectively committed to his organization might be more attached to his or her organization, to join and be active in relevant matters. The same is not true for individuals who possess normative and continuance commitment. This is due to the reason that such persons might be more interested in aspects of their occupation as a whole instead of their organization. For example, individuals who wish to scale up higher in pay might leave his or her organization in search for better paid jobs. In another example on a similar note, individuals who do not want to be associated with an organization opt to leave. Hence, affective organizational commitment is an important behavioral aspect.

2.3.2 Group Commitment

Group commitment refers to the strength of attachment of an individual with all members of his work group (Randall & Cote, 1991). It is relatively less researched in all forms of commitment (Morrow, 1993). Group commitment involves good relationships and interactions among group members and is important to develop social ties between the employee and the organization (Randall and Cote, 1991). They suggest that employees relate and identify themselves with the work group once they start working jointly. This, in turn, translates into positive attitudes towards the organization. They explained that on being hired, one's initial reference group gratifies one's needs for guidance and reassurance and exerts a lasting influence over individual attitudes to the organization. A reason for analyzing group commitment as a separate construct together with affective organizational commitment is the need to demonstrate the distinction between them. In addition, it is also essential to determine if group commitment is an equally important concept like other forms of commitment.

2.3.3 Job Involvement

Blau (1985) defines job involvement as the extent to which an individual identifies psychologically with his/her job. In the early approach to job involvement, Lodhal and Kejner (1965) argued that job involvement is the internalization of values about the goodness of work or the importance of work for the person's worth. One of the objects of commitment for an employee in the workplace could be his/her job, which can be termed as job involvement.

3. Theoretical Framework

3.1 Organizational Culture and Multiple Commitments

One of the factors which can influence the relationship among employees is its organizational culture. It is a vital component of organizational success. The values of an organization are based on its culture. Employees who are acquainted with various cultural dimensions generally have positive feelings about organizational commitment(Ooi, Boon & Arumugam, 2006). Organizations that have bureaucratic culture do not have employees who are satisfied and committed to their job (Silverthorne, 2004). Instead, a culture that has a good mix of all three types may have employees who have good commitment levels and job involvement (Bigliardi, Dormio, Galati & Schiuma, 2012). Harris and Mossholder (1996) found that organizational culture influences outcomes of individuals such as satisfaction and commitment.

It is always better if learning takes place collectively as employees generally work in groups (Wegner, 1987; Cohen, 1996). People often prefer to work in groups. Collectivist tendencies exist among Indians (Hofstede, 1980; Singh, 1990; Verma & Triandis, 1999). Group commitment emphasizes on the "collective" nature of work. It develops when there is good relationship among employees (Randall & Cote, 1991). It may be suggested that learning collectively in groups may be able to strengthen group commitment (Bigliardi et al., 2012).

There is a paucity of research verifying the impact of organizational culture on commitment forms in Indian public sector undertakings. Also, there is no creditable research work which verified the relationship between organizational culture and group commitment.This led us to propose the following hypotheses:

H1(a,b,c): Organizational culture will be positively related to affective organizational commitment, group commitment and job involvement.

3.2 Organizational Culture and Organizational Learning

Learning is considered essential activity in every organization. As the business becomes more globalized, organizational learning assumes even greater significance. Organizational culture plays a key role in organizational learning (Lee & Chen, 2005) as culture affects the behaviour of employees. The culture predicts the amount of relevance it poses on organizational learning (Sanz-Valle, Naranjo-Valencia & Jimenez-Jimenez, 2011). Thus the culture of an organization must value the way employees are given freedom. Innovative culture and healthy relationships help to foster organizational learning levels. Focus on innovation is known to have a significant effect on organizational learning (Sanz-Valle et al., 2011). Looking at the pace at which the business is taking its course in globalized and liberalized economy, more research is warranted between organizational culture and organizational learning. This led to developing the following hypothesis:

H1(d): Organizational culture will be positively related to organizational learning.

3.3 Organizational Learning and Multiple Commitments

Employees feel attached to their organization as they learn(Bambacas, 2010). This may lead them to think that learning improves their knowledge and skills. They will feel obliged to work for their organization which helped them improve their skills. They are likely to develop positive feelings about their organization.

Senge (1990) suggests that organizations that encourage learning in the interest of employees will help generate involvement with the job. Group commitment develops when there is collective work or interactions among employees. This would help to build good relationship and facilitate group work. Thus organizational learning may help build group commitment by learning together. Highly committed group members maintain unity with their team members when they face threat (Ellemers, van Rijswijk, Bruins & de Gilder, 1998b).Learning among employees helped build commitment within work groups in manufacturing firms in US (Kukenberger, Mathieu & Ruddy, 2012).

An employee will be involved in his job when he finds interest in his job. He needs necessary skills to be able to perform his job. Learning provides the necessary skills and trains employees to be capable to perform the job. It is only then that the employee will be able to identify with the job. Hence, organizational learning may help to enhance job involvement. There has been very little or no research concerning organization learning's effect on group commitment. Possible extension of the existing knowledge to verify the impact of organization learning on different forms of commitment. Thus, the following hypotheses were framed:

H2(a,b,c): Organizational learning will be positively related to affective organizational commitment, group commitment and job involvement.

3.4 Interrelationship among Multiple Commitments

Evaluating the impact of extent of decision making in one's work group on attachment with the organization is very important for the organization's long term performance. Chen and Chiu (2009) reported that employees who are highly involved with their job display good performance at work. They also display desirable behaviours in the process.

Research suggests that organizational commitment can have an impact on group commitment (Cohen, 2003). Work group of an individual is important for his orientation towards work (Lodhal & Kejner, 1965). Group members provide necessary support to an employee for successful completion of work.This provides satisfaction to the employee and he develops interest in his work. This gives scope for group commitment to have an impact on job involvement of employees (Randall & Cote, 1991). According to Cohen (2003), this research is supported in Canadian and Israeli cultures. Hence, research in Indian context is warranted for better understanding.

Job involvement is a very stable attitude which does not change easily over time (Blau & Boal, 1989). Satisfaction with work in the organization and with the group will make employees satisfied with the organization in the long run. This may strengthen his attachment with the organization Hence, group commitment may help to improve affective organizational commitment of employees (Cohen, 2003). There are very few studies to establish the impact of group commitment on organizational commitment. This led to formulation of the following hypotheses:

H3(a,b): Group commitment will be positively related toaffective organizational commitment and job involvement.

3.5 The Mediating Role of Organizational Learning

Organizations emphasize on gaining knowledge while performing their business. Raj and Srivastava (2013) argue that organizational learning has a mediating impact in the relationship between organizational culture and HRM practices that are responsible for generating commitment forms (Gellatly, Hunter, Currie & Irving, 2009). It happens because learning boosts the confidence level of employees and they develop attachment to their organizations (Bigliardi et al., 2012). The mediating nature of organizational learning levels between organizational culture and commitment forms has not been examined.

According to Baron and Kenny (1986), a variable can act as a mediator when the following terms are met: (a) significant levels of variation in the presumed mediator is caused by varying levels of the independent variable, (b) significant variations in the dependent variable caused by the presumed mediator and (c) a previous significant relation between a dependent variable and independent variable becomes less significant due to the presence of presumed mediator. However, multiple commitmentswere not included in the test for mediation. Hence, the present study aims to study the impact of organizational culture on multiple commitments through organizational learning by proposing the following hypotheses:

H4(a): Organizational learning will mediate the relationship between organizational culture and affective organizational commitment.

H4(b): Organizational learning will mediate the relationship between organizational culture and group commitment.

H4(c): Organizational learning will mediate the relationship between organizational culture and job involvement.

Figure 1 shows the hypothesized model based on the theoretical framework.

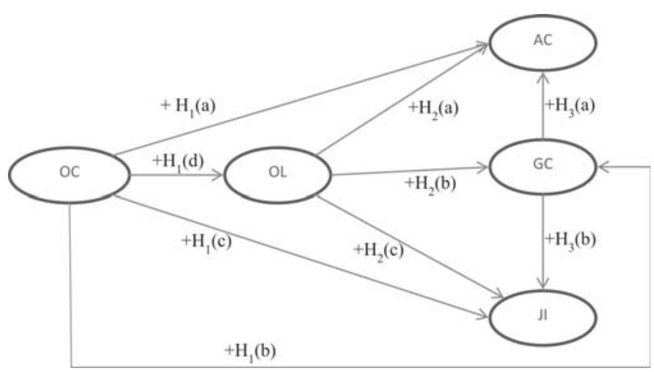

Figure 1: Hypothesized model

Note: OC = Organizational Culture; OL = Organizational Learning; AC = Affective Organizational Commitment; GC = Group commitment; JI = Job Involvement; + indicates positive impact.

4. Method

The sample consisted of respondents belonging to managerial cadre from nine different large scale organizations termed as public sector undertakings in India. These organizations belonged to bauxite, petroleum and heavy industries located in the states covered were Orissa, Madhya Pradesh, Delhi, West Bengal, Assam, Maharashtra and Karnataka. Convenient sampling technique was adopted to identify organisations. Care was taken to collect data from these organizations so that maximum regions were covered across India. The names of the organizations are not revealed due to anonymity request made by them. The sample consists of employees from different departments, namely, HR, Finance, Electrical, Instrumentation, Civil, Environment, Tender and Contract, Sales, Production, Chemical, Lab, Research and Development and several other departments. Participation of employees in this study was voluntary. Respondents were asked not to disclose their identities so that the identities are anonymous. They were requested to respond to all the questions. It took a maximum of forty-five minutes to completely respond to the questionnaire. The filled questionnaires were collected over duration of five days from each of the organizations.

The survey was conducted using cross sectional survey design. The sample consisted of respondents belonging to managerial cadre from public sector undertakings located in various parts of India. Convenience sampling technique was adopted to identify organisations. Convenience sampling is adopted for many studies related to organisation behaviour (Verma & Duggal, 2015). This procedure entails participation from all regions based on convenience, willingness, interest and availability of respondents to obtain quality responses (Teddlie & Yu, 2007). Table 1 demonstrates the sample characteristics. The sample includes executives of different departments, namely, electrical, mechanical, instrumentation, finance etc. Participation in the study was voluntary and identities of participants were kept anonymous. Anonymity and confidentiality was preserved in this way leading to more accurate responses. A passive consent approach was adopted. The receipt of a completed questionnaire was left at the discretion of the respondent. The respondents had the liberty of not answering any particular question. However, they were requested to answer leaving out least number of questions.

Table 1: Sample Characteristics

Gender	Male	95.6%
	Female	4.4%
Age-group	21-30 years	19.4%
	31-40 years	39.3%
	41-50 years	27.9%
	51-60 years	13.3%
Marital Status	Single	15%
	Married	85%
Qualification	B.E./B.Tech	61.3%
	M.E./M.Tech	36.2%
	Ph.D.	2.5%
Level of Management	Entry	44%
	Middle	44%
	Senior	12.1%
Maximum Tenure	With present employer	33
	Total work life of employee	37

4.1Measures

4.1.1Organizational Culture

A scale developed by Wallach (1983) measuring organizational culture consisting of 24 items was used (e.g. 'Mutual trust and loyalty is the glue that holds my organization together'). All items were measured on a five-point likert scale ranging from "Describes my organization most of the time" to "Does not describe my organization".

4.1.2 Organizational Learning

Organizational learning variable was drawn from Bontis, Crossan and Hulland (2002) framework. It consisted of 10 items (e.g. 'My organizational structure allows us to work effectively"). All items were measured on a five-point likert scale ranging from "strongly agree" to "strongly disagree".

4.1.3 Affective Organizational Commitment

Affective organizational commitment was drawn from the three factor model proposed by Meyer and Allen (1997). It was measured based on Meyer and Allen's (1991) organizational commitment scale. It consisted of 8 items (e.g. 'I would be very happy to spend the rest of my career with this organization'). All items were measured on a five-point likert scale ranging from "strongly agree" to "strongly disagree".

4.1.4 Group Commitment

Group commitment was assessed using Ellemers, Gilder and Heuvel's (1998a) scale. It consisted of 7 items (e.g. 'I am prepared to do additional work when this benefits my work team'). All items were measured on a five-point likert scale ranging from "strongly agree" to "strongly disagree".

4.1.5 Job Involvement

Job involvement was measured using Kanungo's (1982) scale. It has 10 items (e.g. "I am very much involved personally in my job"). All items were measured on a five-point likert scale ranging from "strongly agree" to "strongly disagree".

4.2 Statistical Tools and Techniques used for Data Analysis

To analyse the data, the Statistical Package for Social Sciences (SPSS) version and AMOS version were used. The statistical analyses such as obtaining descriptive statistics, developing the correlation matrix, and calculating Cronbach's Alpha values of the various measures used in the study have been analysed using SPSS. The hypothesized model emerging from literature review was subjected to analysis and fit tests. A variety of Goodness-of-Fit indices as provided by AMOS (Bentler, 1990; Kline, 2005) were utilised for this purpose. AMOS tool was used to perform some advance statistical techniques such as creating structural equation models. The hypothesised model was tested and the conclusions regarding the model fit and acceptance are reported.

4.3 Data Analysis

The data was subjected to statistical analysis in order to test the above hypotheses. First, mean, standard deviation (SD), reliability and inter-correlation were computed. Table 2 shows the mean, SD and reliability coefficients for all the measures.

As the values for Cronbach's Alpha are well above the recommended threshold of .70, hence the reliability of the measurements is considered valid (Fornell & Larcker, 1981). Table 2 shows the results of bivariate correlation between the latent variables.

Indicators having standardised residual greater than |4| were dropped (Hair et al., 2006). Attention was given to the indicators which had standardized residuals between |2.5| and |4|. Modification indices and loading estimates were checked to detect problems associated with the indicators. Since the items JI3, JI4, JI7, AC3, AC8, OC6, OC8, OC17, OC21 and OC24 have very high standardised residuals, these items were removed for further analysis. Hence, all indicators with factor loadings greater than .50 and residuals less than |2.5| were considered for further analysis. The fit indices for the overall measurement model are displayed in table 3.

The model is prepared in a recursive manner to avoid problems associated with statistical identification (Hair, Black, Babin, Anderson & Tatham, 2006). The results of the model with completely standardized path coefficients for the model are demonstrated in figure 2. This model showed a perfect fit with the data (X^2

Table 2: Descriptive Statistics and Correlations among Latent Variables with Reliability Coefficients on the diagonals

Variable	Mean	SD	Culture	OL	OC	GC	JI
OC	4.02	.51	**.90**	.62	.42	.47	.49
OL	4.02	.57	.62	**.86**	.51	.56	.61
AC	3.77	.70	.42	.51	**.83**	.49	.47
GC	4.22	.55	.47	.56	.49	**.83**	.65
JI	3.92	.66	.49	.61	.47	.65	**.86**

Note: All correlations are significant at p<.001; OC = Organizational Culture; OL = Organizational Learning; AC = Affective Organizational commitment; GC = Group commitment; JI = Job Involvement.

Table 3: Goodness of Fit Results for Overall Measurement Model

Model	X²	X²/df	GFI	CFI	RMSEA	Items Deleted	Reason
CFA1	4089.29	2.51	.83	.85	.04	JI7	HSR
CFA2	3887.50	2.48	.84	.86	.04	OC6	HSR
CFA3	3669.54	2.42	.84	.87	.04	JI4	HSR
CFA4	3537.32	2.42	.85	.87	.04	AC3	HSR, LFL
CFA5	3339.83	2.38	.85	.87	.04	AC8	HSR, LFL
CFA6	2799.99	2.07	.87	.90	.04	OC17	HSR
CFA7	2660.62	2.05	.88	.91	.04	OC24	HSR
CFA8	2509.84	2.01	.88	.91	.04	JI3	HSR
CFA9	2424.84	2.02	.88	.92	.04	OC21	HSR
CFA10	2159.16	1.88	.89	.93	.03	OC8	HSR
CFA11	2021.53	1.83	.90	.93	.03	-	-

Note: LFL = Low Factor Loading; HSR = High Standardised Residual; OC = Organizational Culture; OL = Organizational Learning; AC = Affective Organizational Commitment; GC = Group commitment; JI = Job Involvement.

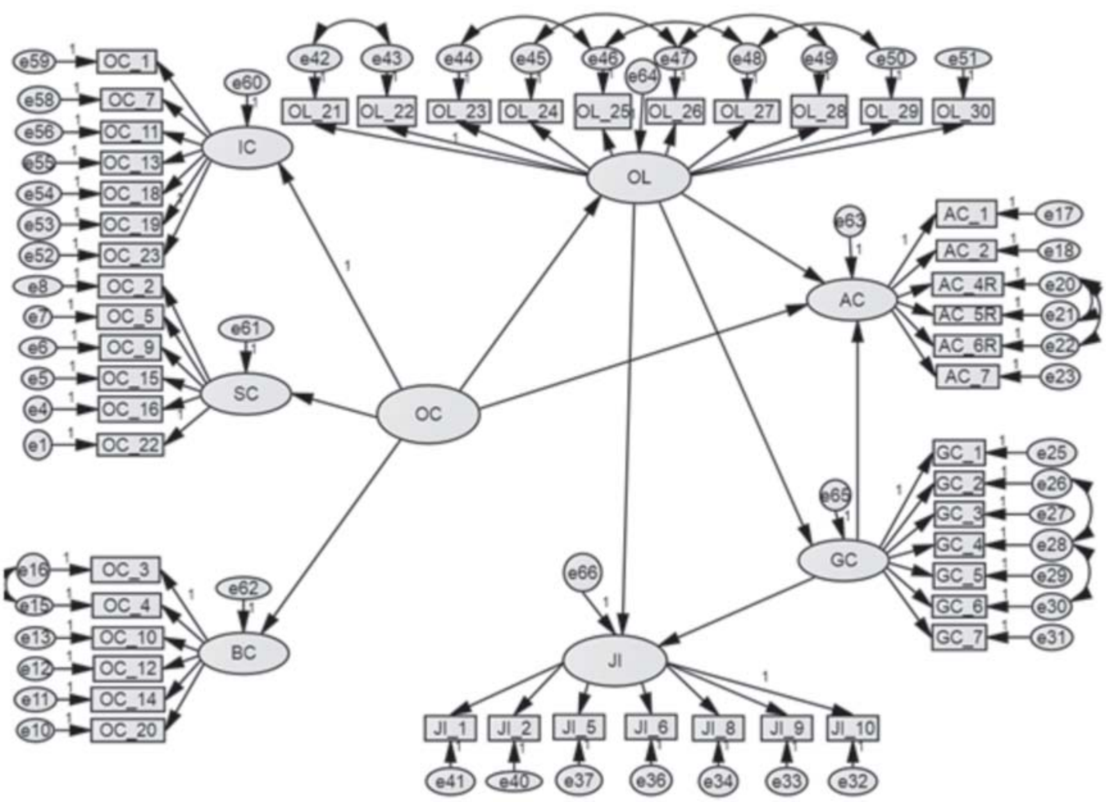

Figure 2: Structural equation model showing standardized estimated parameters

Notes: Only significant path coefficients are displayed; OC = Organizational Culture; OL = Organizational Learning; AC = Affective Organizational commitment; GC = Group commitment; JI = Job Involvement.

= 2044.12, X^2/df = 1.86, GFI = .90, CFI = .93, RMSEA = .03) which is considered to be an overall acceptable fit. A X^2/df value of less than or equal to 3 is considered a reasonable good indicator of the model fit (Bentler, 1990; Hair et al., 2006). GFI, TLI and CFI have values greater than .90. these values are considered to be good model fit indices (Bentler, 1990). A good fit is also indicated by RMSEA value of less than .05 (Hair et al., 2006).

5. Results

Table 4 shows the hypotheses results. Culture is positively related to affective organizational commitment (β = .23, p < .01) and organizational learning (β = .78, p < .001). Hence, hypothesis H1(a) and H1(d) are accepted. Organizational learning shows significant relationship with affective organizational commitment (β = .48, p < .001), group commitment (β = .63, p < .001) and job involvement (β = .43, p < .001). Hypothesis H2(a), H2(b) and H2(c)are thus accepted.Culture is not positively related to group commitment (β = .17, p > .05) and job involvement (β = .12, p > .05). This rejected hypotheses H1(b) and H1(c).

Table 5 shows the results for mediating role of job involvement based on the suggestions of Baron and Kenny (1986) and Sobel (1982). The total mediation effects for all the paths were significant at p< .001. The results confirm the mediating effects of OL in the relationship between Culture and three outcome variables, that is, AC (Sobel z value = 5.15, p < 0.01), GC (Sobel z value = 7.79, p< 0.01), JI (Sobel z value = 5.86, p < 0.01) relationship. For Sobel's (1982) test, the statistics are compared with the standard prior critical values (z = 1.645 when p< .05, z = 2.326 when p< .01). Thus these measures, Baron and Kenny (1986) method and Sobel (1982) method confirm the mediation effect of OL in one of the three relationships. Hypothesis H4(a) is accepted and H4(b) and H4(c) are rejected.

6. Discussion

Culture is known to be a very important component in organizations. The findings of this study indicate that organizational culture predicts affective organizational commitment. This has been found to be consistent with Malaysian research (Ooi, Boon & Arumugam, 2006). It enhances our knowledge of building a committed workforce in organizations by

Table 4: Path Coefficients and Inferences Drawn on Hypotheses

Hypotheses	Paths	Path Coefficients	Result	Hypotheses	Paths	Path Coefficients	Result
H1(a)	OC → AC	.23*	Accepted	H2(a)	OL → AC	.48**	Accepted
H1(b)	OC → GC	.17	Rejected	H2(b)	OL → GC	.63**	Accepted
H1(c)	OC → JI	.12	Rejected	H2(c)	OL → JI	.43**	Accepted
H1(d)	OC → OL	.78**	Accepted	H3(a)	GC → AC	.23**	Accepted
				H3(b)	GC → JI	.47**	Accepted

Notes: ** denotes significant at p< .001 level; *denotes significant at p< .01 level; OC = Organizational Culture; OL = Organizational Learning; AC = Affective Organizational Commitment; GC = Group commitment; JI = Job Involvement.

Table 5: Direct, indirect and total effects for mediation by OL between OC with AC, GC and JI

Hypotheses	Paths	Variable	JI			OC			Mediation
			Direct	Indirect	Total	Direct	Indirect	Total	effect
H4(a)	OC → OL → AC	OC	.45*	.00	.45*	.23*	.47	.70**	Accepted
H4(b)	OC → OL → GC	GC	.49*	.00	.49*	.17	.38	.55	Rejected
H4(c)	OC → OL → JI	JI	.33*	.00	.33*	.12	.51	.63	Rejected

Notes: ** denotes significant at p< .001 level; OC = Organizational Culture; OL = Organizational Learning; AC = Affective Organizational Commitment; GC = Group commitment; JI = Job Involvement.

having a good organizational culture. This opens further scope of research to find ways to build high commitment in employees. People share good experiences like values, beliefs when they work together. In this process, they share positive views and attachment with the organization. However, culture does not have significant relationship with group commitment and job involvement. This may be because of the fact that not all employees share the equal amount of participation in decision making in a work group. Employees who are senior may enjoy a slightly higher amount of participation compared to junior employees. Hence, this could lead to demoralisation of the rest of the employees who have lesser right to participate in making decisions. A work group is identified by its group cohesiveness. Unequal distribution of power leads to low group cohesiveness. The performance of a group is viewed collectively. Group performance and individual performance are viewed from group perspective and individual perspective respectively. Thus, when the group cohesiveness is hindered, it also hinders group commitment of the employees in a work group.

The results indicate that organizational culture was found to have significant impact on organizational learning which is consistent with past studies (Lee & Chen, 2005). Culture in an organization will have differences, disagreements and hostility. Organizations should be able to detect and correct errors, if any, in the operation. Learning helps to focus on the right things and take corrective actions on errors. This is a continuous process. In this whole process, a good culture where the focus is on learning new things, the learning process evolved eventually from being a substantially problem-oriented process to problem-solving understanding of the organization.

Organizational learning has a significant impact on commitment forms like affective organizational commitment, group commitment and job involvement in accordance with the findings of the previous research (Bambacas, 2010; Kukenberger, Mathieu & Ruddy, 2012; Senge, 1990). Learning occurs when employees work together. In the event of problem solving there is collective work towards finding a solution. Learning is a process of gaining knowledge and improving skills. Employees should be willing to learn throughout their working span. It includes the ability to solve problems critically. This helps to work together effectively and hence build commitment towards the organization. Learning is a process of collective work towards a common goal. When the goal or learning is achieved, the employees of the group will feel a sense of attachment towards the group and hence group commitment is strengthened. Employees feel they can identify with the organization more in terms of effectiveness, fulfilment, mental satisfaction and job involvement.

The results reveal that group commitment has significant impact on affective organizational commitment and job involvement which is at par with past research (Randall & Cote, 1991). Only affective commitment alone cannot explain an individual's commitment with his organization because of the presence of collective nature of work. Social ties give rise to attachment with group members. This leads to commitment with the work group members as well as the organization. On working with the group, the initial reference group gratifies one's needs for reassurance and guidance and it exerts a lasting influence over other behavioral attitudes like organizational commitment and job involvement. Importance of job in the lives of employees should be perceived in their lives. This is when they tend to place more importance on trying to help their colleagues with their work which leads to teamwork and in the process, organizational learning is achieved.

This study has also pointed the mediation of organizational learning, which implies that if there exists a good organizational culture that promotes the interests of the employees, then organizations can help provide employees with better work experiences leading to enhanced commitment towards the organization. Organizational learning in various forms like enriching one's knowledge by problem solving or collective work involving training sessions for improving performance can help increase satisfaction by achieving sound knowledge in the area concerned. In order to promote organization learning, a supportive culture is necessary. Cultures that trust, support and nurture the interests of employees are often preferred. This favour is reciprocated by them in the form of enhanced affective commitment. Baron and Kenny (1986) suggested that three relations should be significant, that is, between independent variable to mediator variable and between mediator variable and outcome variable and between independent variable to outcome variable should be significant. In this study all these relations are significant. Hence, mediation by organizational learning was tested which is positive and in accordance with similar studies done in past (Raj & Srivastava, 2013). However, it is not a mediator between organizational culture and group commitment, organizational culture and job involvement. Since, culture does not significantly impact group commitment and job involvement, so there is no mediation of learning on these behavioural outcomes.

7. Implications

The results of this study carry many implications for Indian public sector undertakings. This study implies that organizations have to establish a mix of supportive, innovative and bureaucratic factors to the correct proportions to get their employees remain satisfied with the job as well as increase performance by promoting their interest areas. Flexibility in work hours and autonomy can be obtained. This provides employees with certain work that helps them learn new skills. This helps the organization to achieve sustainable competitive advantage. A culture that has the components of being supportive, bureaucratic and innovative encourages group work. It enhances creativity of employees by having less formal norms. Organizations should always thrive to build culture that supports innovation as against following the traditional practices of doing work.

Role of employees' organizational learning on attitudinal outcomes has been identified in this study. The results are pertinent to top as well as middle level managers who are involved in the governance of the organization directly and indirectly. Organizational culture was not exclusively related to organizational learning, but it also significantly predicted affective organizational commitment. Organizational learning was found to significantly predict affective organizational commitment. These findings are relevant to the managers and directors of the public sector undertakings to understand how affective organizational commitment develops. As globalisation and economy is growing, there exists tough competition among the public sector organizations. The recommendations of Harris and Mossholder (1996) about the purpose of organizational culture to avoid dissatisfaction of employees and to promote positive outcomes are endorsed in the present study. The findings support calls from previous researchers that increased learning within organizations helps in employee identification and commitment with job (Silverthorne, 2004).

Employees need cognition, knowledge and participation to be able to develop skills for generating good productivity and positive behavioural outcomes. An implication of the present study is that it is not necessary that all employees having significant amount of affective organizational commitment would have strong group commitment. Therefore, it is essential on the part of the organization to ensure that employees are happy within their respective work groups. Fair measures should be adopted by the management like decentralising at all levels, giving recognition to the employees in the form of rewards and other beneficial measures like providing free canteen facilities and increasing remuneration for working overtime. Many individuals think that long working hours is in the welfare of the organization. However, longer working hours does not necessarily imply more productivity. Hence, the organizations should ensure fixed working hours and optimum time management. Also, in the light of changing competition, flexible working hours can be provided to employees who have personal obligation towards their families.

The public sector organizations can work on building a highly competitive workforce by adopting three strategies. First, they can leverage the positive effects of organizational culture by making decentralised structures where employees can discuss and come up with their own methods of solving issues. Decentralisation helps the employees feel that they have an active role in framing the policies of the organization. Second, public sector settings should hold interactive sessions about performance and responsibilities. Communication in these sessions would help people from different departments come together and discuss common technical and welfare issues related to the organization thus leading to organizational learning. Such sessions would build group commitment as people sharing common interests would come forward in making positive results in the form of increased productivity and performance. Third, the organizations should ensure that the senior members recognise their junior colleagues in a work group as equally potential employees. This would provide the junior employees with the necessary support, recognition and guidance in the group work they perform.

8. Limitations and Future Scope of Research

This study is the first of its kind to have examined organizational learning as a mediator between organizational culture and multiple commitments in India. A unique contribution is that the findings have implications that are useful to managers and employees of public sector undertakings. Very limited research has been conducted for the betterment of attitudinal outcomes in this sector. However, there are certain limitations despite the contributions. Collection of diverse samples from different MNCs may yield industry specific results. The scope of this study can be further extended to determine if organizational learning mediates relationship between culture, job satisfaction and citizenship behaviours. Further research can be done to examine if learning moderates any such relationship. An extension for further scope of research could be for more sectors like food industry, health care and communication.

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Women Leadership in Organization

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Abstract

Earlier approaches to leadership ignored the feminine qualities of leaders. The focus was on the masculine aspect ('great man theory of leadership'.) Women leaders remained unexplored by research scholars till 60s. As women started to occupy influential positions in academia, organizations and politics; the feminine aspects of leadership drew attention from scholars. This paper reviews studies done in women leadership in the context of the Full Range Theory of leadership. It was found that the gender of leaders, gender of organizations and gender of followers influence leadership styles. This gender aspect has an impact on women leaders and their style of leadership in organizations. In this paper, the leadership styles exhibited by men and women are compared. The differences in the leadership styles of men and women in gendered organizations and reasons for differences are discussed followed by directions for future research.

Keywords: Women leadership, full range theory of leadership, gendered nature of organizations, feminine leadership and masculine leadership.

In primitive society, men and women held equal roles. But in the course of the evolution of the economy from simple to complex; the new roles (mining, smelting of iron ore, lumbering, and warfare) required training, displacement and energy expenditure in which there was a hierarchy of gender and men gained power over women. Women became confined to household work (Hartley, 1914). Later with increased investment of social capital on women, they were able to come out to compete with men for all positions. Some essential leadership traits such as ambition, self reliance and assertiveness were also acquired by women without compromising on their gender traits. Their emotional intelligence level has also been found to be higher than men (Eagly & Carli, 2007).

Leadership roles have traditionally been held by men. The characteristics of leadership were also perceived as masculine in nature. There has been a general agreement that women face much more challenges and barriers in reaching leadership positions (Eagly, Karau, & Makhijani, 1995). Subordinates, by and large, were found to be reluctant to accept a female as a leader or as a Manager since they perceived women to be incapable of performing the leadership or managerial role and/or they seemed to have looked at women as people not fully qualified for the role (O'Leary, 1974; Riger & Galligan, 1980; Terborg, 1977).

The term "Glass ceiling" was a metaphor originally coined by Carol Hymowitz and Timothy Schellhardt in a Wall Street Journal article (March, 1986). It indicates the invisible barrier that women face when aspiring to attain top leadership positions. It is so even in female dominated occupations. This is contrary to the "Glass escalator" that white men ride in masculine, feminine and gender neutral organizations. The term 'Glass ceiling' is revised and termed as "Leadership Labyrinth" (Eagly & Carli, 2007) which means that women face multiple barriers right from their entry. This term is applicable to other non-dominant groups such as ethnic and racial minority women also.

The gradual entry of women into the labor force during the last few decades and their trickling into the top management and corporate ladders attracted researchers in the area of women leadership (Van Engen & Willemsen, 2004). Women work force adds diversity of value when employed in the nontraditional sector (Desvaux, Devillard-Hoellinger & Meaney, 2008). There is also positive relationship between presence of women and the performance of the organization (Desvaux et al.2008).

In this paper, literature on women leadership is reviewed. The gendered nature of organizations, leadership style exhibited by men and women and reasons for the difference in the leadership style are discussed followed by directions for future research in the context of South Asian culture.

Full range theory of Leadership style

The most common styles of leadership are the task oriented and the interpersonally oriented styles(Bales, 1950). This was further developed by the Ohio studies on leadership (Hemphill & Coons, 1957) which labeled the task oriented style as initiation structure and the interpersonally oriented as consideration.

In the 1980s and 1990s came another type: the Full range theory that consists of Transactional and Transformational leadership styles (Bass 1998). The term 'Transformational' was coined by Downton in 1973. Subsequently, it was popularized by James MacGregor Burns in his book published in 1978. It emphasizes the follower's development, intrinsic motivation and affective component of leadership. It is more oriented towards the future than the present context and it inspires followers' commitment and creativity.

Transformational leaders are characterized by dominance, desire to influence, self-confidence and strong moral value. The performance of the followers goes beyond expectation whereas in transactional leadership, only the expected outcome happens. Transformational Leaders are said to be possessing the four 'I's: Individualized Consideration, Intellectual Stimulation, Inspirational Motivation and Idealized Influence. It is not similar to charismatic leadership in which the leader possesses some special personality characteristics (House, 1976). Burns also contrasted these leaders with transactional leaders, who establish exchange relationships with their subordinates.

Transactional style of leadership was first described by Max Weber (1947) and then by Bernard Bass (1985). Transactional leadership refers to the exchange between the leaders and followers. The leader rewards the followers in monetary or non-monetary terms for the work done. There are three components: Contingent Rewards (Transactional leaders link the goals to rewards), Active Management by Exception (Transactional leaders monitor the work of their subordinates and take corrective action to prevent mistakes), and Passive Management by Exception(i.e. Transactional leaders intervene only when the standards are not met)(Bass, 1991).

In the mid-1980s, Bass extended the work of Burns by giving more attention to followers' rather than leaders' needs and also by describing the transactional and transformational styles on a single continuum (Bass & Bass, 2009).

Transactional leadership is a style of leadership in which the leader promotes compliance by his followers through both rewards or punishments (for every transaction) whereas transformational leaders influence the followers by giving individualized consideration, inspirational motivation and intellectual stimulation to them.

A transactional leader focuses on the role of supervision, organization, individual performance and rewards relationship, and group performance; whereas Transformational leadership accomplishes this by challenging and transforming individuals' emotions, values, ethics, standards, and long-term goals through the process of charismatic and visionary leadership (Northouse, 2007).

Bass (1985) also wrote that transformational leaders inspire the followers by raising their levels of consciousness for the organizational goals, rising above their own self-interest for the sake of the organization and addressing the latter's higher level needs.

While charisma of the leader is an important factor to achieve the organizational needs, other conditions are motivation, intellectual stimulation, and individualized consideration. By acting as 'ideal influence', they set the right example for the followers.

Apart from the four 'I's and transactional components, Full Range Theory of Leadership Styles contains the gender aspect as well which is explained below.

Gender orientation in the context of Full range theory of leadership styles

Men are instrumental, competent, rational and assertive while women are sensitive, warm, tactful and expressive (Broverman I.K, Vogel, Broverman D.M, Clarkson & Rosenkrantz, 1972; Deaux & Lewis, 1984; Williams & Best, 1982).

The typical female and male behavior are also termed as Communal and Agentic behaviors respectively in literature. Communal behaviors are characterized as kind, affectionate, helpful, sympathetic, interpersonally sensitive, nurturing and gentle. Agentic behaviors are characterized as aggressive, ambitious, dominant, forceful, independent and self-confident (Ashmore, Del Boca & Wohlers, 1986)

These gender stereotypic characters give rise to respective leadership styles: Autocratic or transactional leadership style exhibited by Men and Democratic or transformational leadership style exhibited by Women (Eagly, Ashmore, Makhijani & Longo, 1991; Eagly, A. H., & Karau, 2002; Eagly & Koenig, 2006). Generally all the leadership traits reflect either femininity or masculinity dimensions of gender stereotypes.

Hence, it is proposed that:

P1: Gender would moderate leadership style (in the context of full range theory).

In a study among MBA students (UK) it was found that women's orientation is interpersonal and attentional to people while men give attention to task (Eagly & Steffen, 1984; Eagly & Karau, 1991; Berpard M. Bass et al, 1996). Similar findings emerged in the study of the US congregation of the Roman Catholic Church (Druskat, 1994).

As per the perception of the subordinates, the components of transformational leadership style (Democratic) are more aligned with the feminine gender role and the components of transactional leadership style (Autocratic) are more aligned with the masculine gender role (Hackman, Furness, Hills & Paterson, 1992; Ross & Offermann, 1977). Meta-analysis also showed that women scored high on all the four components of transformational leadership and contingent reward aspects of transactional leadership (Eagly, Jahannensen, Schmidt & Van Engen, 2003). They differ from men in being less hierarchical, more cooperative, more collaborative and more inclined to enhance others' self-worth (Helgesen, 1990; Rosener, 1995).

These results support the claim that components of transformational leadership style are in correspondence with feminine leadership and components of transactional leadership style are more aligned with masculine gender role (Gibsonm, 1995; Alimo-Metcalfe, 1995).

From the above findings it is proposed that:

P2a: Women are transformational leaders as the components of transformational leadership style are more aligned with feminine gender role.

P2b: Men are transactional leaders as the components of transactional leadership style are more aligned with masculine gender role.

P3: Women develop more nurturing relationships compared to men. Hence, women are expected to display more transformational leadership behavior than men.

Not only the leader, but the organization also has gender orientation which is explained below.

Gendered nature of Organization

No organization has a very significant advantage for women in terms of work culture. The social environment of any organization is more masculine in nature as it is traditionally and predominantly occupied by men. The earlier gendered management style debate had the view that the characteristics of a successful manager is due to the characteristics of men (Schein, 1975; Schein, Mueller, & Jacobson, 1989; Brenner, Tomkiewicz & Schein, 1989). As the entry of female managers increases, they adopt traits and behaviors typical of male managers in order to succeed in a masculine work environment (Powell & Butterfield, 1979). This is one of the barriers faced by women when they enter any organization for a leadership role (Eagly, Karau, Miner & Johnson, 1994). They "fail" to gain inclusion as they are evaluated in a work culture set up by men which has typical male standards and criteria (Oakley, 2000).

There is substantial advantage to men in military and police. The roles of these organizations were found to be particularly masculine as they are dominated traditionally by males on a numerical basis (Arkin & Dobrofsky, 1978).

Women also have such substantial advantage in organizations like education and social service (Eagly, Karau and Makhijani, 1995). Teaching is perceived as aligning with their family role. Research and publication becomes mandatory to excel in academics. But when compared to men, women academicians are traditionally less published (Priola, V., 2007) as women are still expected to bear the major responsibility for the nurturing of children.

Women Leaders in Men dominated organizations

A women leader when performing a leadership role, tends to reduce her gender stereotype (feminine traits) in order to survive (Eagly, & Johnson, 1990). It reduces the role conflict (Eagly, Mahakijini & Klonsky, 1992).

Otherwise, she invites prejudice in the form of biased performance evaluations and negative preconceptions which may diminish her performance (Geis, 1993; Miller & Turnbull, 1986; Eagly & Karau, 2002). Male leaders are at an advantage compared to female leaders in terms of prejudices (Eagly, 1987).

This role adjustment has an impact on women's health. When they work in their traditional style (interpersonally oriented), they have not complained of any pressure or mental health ill whereas they feel mentally ill when they need to alter their leadership style (Gardiner & Tiggemann, 1999). This need to alter their leadership style arises when they work in male dominant industries such as military. Masculine organization (such as military and police) differ from other organizations because male leaders are favored in such organizations and the roles of military or police officers are highly masculine in nature. The feminine gender characteristics are in sharp contrast to the skill requirements of masculine organizations. To be a successful cadet in masculine organizations, women are expected to possess typical masculine gender characteristics (Ebbert & Hall, 1993; Francke, 1997).

Those women who have worked in the other male dominant industries (automotive and timber) also stated that they were task oriented where as those in female dominant industries (beauty parlor, education and nursing) said that they were interpersonally oriented (Engen, Leeden, & Willemsen, 2001). Generally women who choose military as career adopt the military culture (male dominant) and fit in to survive by compromising in the female style of leadership. Those who are unable to adapt, leave the organization. Adaptations create homogenous organizational culture and minimize diversity (Kelley, 1997).

Herbert (1998) describes how women in military adopt an 'in between role' or blending strategy (not too feminine and not too masculine). In terms of appearance and self presentation, they meet their gender expectations and in terms of work situations they are competent, rational and impersonal. Thus they try to perform better without any compromise on their gender role.

A finding closer to this was found in the study of Israel's women police force. They had a role conflict of "feminine and inappropriate (for organizational role)" or "unfeminine and atypical (of gender)". They did not reject their gender identity. Rather they adjusted their gender identity by including selected masculine traits which are not in conflict with traditional feminine attributes (assertive, independent, dominant) and by reducing selected feminine traits (shy, soft spoken, warm and gullible) which are considered as hindrance to performing their organizational roles (Moore, 1993; Moore, & Gobi, 1995). Thus, women, though they are transformational in nature, wherever the situation requires, they adopt masculine characteristics.

Eagly and Carli (2003), in their updated meta-analysis found more support for this claim. They state that contemporary context demands both masculine and feminine gender characteristics (mentoring, collaboration, cooperation) of leadership. This was termed as "Androgynous identity" (Bem, 1977) which is a blending of male (dominance, assertiveness and competitiveness) and female styles (collaborative, cooperativeness and concern for people). Androgynous individuals are more independent and nurturing (Bem, 1977), have high self esteem (Spence, Helmreich & Stapp, 1975), have successful social skills with social poise and intellect (Berzing, Welling & Wetter, 1978). They have higher involvement in academic competitions (Kleinke & Hinrichs, 1983). Hence Androgynous identity is preferred as it facilitates them to express either 'instrumental' or 'expressive' behavior, depending on the demands of the situation.

Adopting an androgynous leadership style may help women to overcome gender stereotypes that have prevented them from being viewed as leaders in the past (Korabik, 1990). Moreover women perceive their leadership role as androgynous (both agnetic and communal) compared to men (Schein, 2001).

Human being are gifted with the ability to survive in a given environment as gender roles are continuously evolving depending on the requirements of the environment (here - masculine or feminine). Hence women, without compromising in their gender role, are able to sustain in any environment (Fincher, 1993).

Hence, it is proposed that:

P4: Gender of the organization would moderate the leadership style, at least for women.

P4a: Women exhibit androgynous type of leadership style in masculine organization to overcome the gender bias and meet the gender expectation as well.

While the context of the organization and/or the gender composition of the work environment influences the behavior style of the leader, it influences the leadership effectiveness as well.

Leadership effectiveness with reference to gender orientation

The effectiveness of leadership depends upon the leadership style exhibited by the appropriate gender. Though women faced barriers in moving up the official hierarchy, they were able to perform equally effective compared to their male counter parts (Eagly, Mahakijini & Klonsky, 1992). The implication of the women work force is that they add diversity of value when employed in the nontraditional sectors (Desvaux, Devillard-Hoellinger & Meaney, 2008). There is also positive relationship between presence of women and the performance of the organization (Desvaux et al.2008). This is supported by a study conducted among recreation clubs, government agencies, public transport companies and students of Germany showing that women leaders are evaluated as more effective and as producing more satisfaction than their male counterparts (Anette Rohmann, Jens Rowold, 2009).

Women have been found to be effective leaders in stereotypic feminine organizations such as service sectors while men are effective leaders in masculine organizations such as technical and manufacturing sectors (Eagly, Karau & Makhijani, 1995; Lowe, Kroeck, & Sivasubramaniam, 1996).

Research advocates that women will make it to the top because of their unique and different characteristics (Peters, O'Connor, Weekley, Pooyan, Frank, & Erenkrantz, 1984; Rosener, 1990) such as higher EI than men (Caruso, Mayor & Salovey, 1999; Mayer & Geher, 1996), feelings or caring attitude and friendship (Perrault, 1996).

P5: Women leaders are effective when their gender traits are aligned with their leadership style they exhibit and gender of the organizations.

The reasons for different leadership styles

There are two answers: One is matching of the leader's gender and gendered nature of organizations (role congruence). The other is the traditionally dominant role of men in the creation of the organization.

Role incongruence

While it is true that both the leadership styles are effective, it creates conflict when they are not adopted by their respective gender. It needs a perfect match between gender of the leader and the organization. This matching of leader's gender and gender of the organization is termed as 'role congruence'. It means that a group will be positively evaluated when its characteristics are recognized as aligning with that group's typical social roles (Eagly & Diekman, 2005). Role congruity theory is rooted in social role theory but the scope extends beyond that as it matches the gender with the occupational role.

Biased gender preference in the organizational role is the major impact of role congruence. For example, men were preferred over women in masculine jobs (auto sales person, Manager for heavy industry) and gender neutral jobs where as women were preferred only in feminine jobs (Carli & Eagly, 2007).

Leaders of each sex excel in task accomplishment only when their role is congruent with their gender. Otherwise they may experience conflict (role incongruity) between their gender role and organizational role (Bass, 1981; Bayes & Newton, 1978; Eagly & Karau, 2002; Kruse & Wintermantel, 1986; Learly, 1974; Wentworth & Anderson, 1984). The consequences of such conflict leads to reduction in ability to organize people and resources for goal achievement. This explains the facts that women are less effective when they lead military organizationa than when they lead in education or social service organizations (Eagly, Karau & Makhijani, 1995; Lowe et al., 1996).

The foremost consequence of role incongruence is the negative reaction of subordinates. They are reluctant to accept a female leader or manager as the latter (women Leader or Manager) can't perform the role or are not fully qualified for the role (O'Leary, 1974; Riger & Galligan, 1980; Terborg, 1977). Subordinates perceive feminine personality attributes as similar to the components of transformational style (Hackman, Furness, Hills & Paterson, 1992; Ross & Offermann, 1977).

As a result, women face resistance or negative reactions when they exercise power and authority in the line of autocratic leadership style (Eagly et al, 1992; Carli & Eagly, 1999; Rudman & Glick, 2001). When women fail to temper the agentic behaviors required by a leader with sufficient display of female typical communal behavior, they incur a backlash. They may be passed over for hiring and promotion (Burgess & Borgida, 1999; Carli & Eagly, 1999; Heilman, 2001; Rudman & Glick, 2001). To avoid such backlash women exhibit more communal behavior (more collaborative and less hierarchical). They try to placate the subordinates, collaborate with them and allow them in the decision making.

The prejudice against female leaders and role conflict is stronger particularly when they lead in male dominant organizations and their evaluators are men as men perceive that their position is threatened by the female work force (Eagly et el., 1995).

The findings of a study of the Australian Police Force supports this. Themale police force experienced more negative emotions towards women ("aversive sexism") in the presence of men than in the presence of women and more positive emotions towards men when in the presence of women (Melgoza & Cox, 2006).

This analysis suggests that gender and role congruence does matter for achieving greater effectiveness.

"The history of the world is but the biography of Great Men" (Thomas Carlyle, 1888)

While a masculine organization is a great advantage to men, there is also claim that the socio-cultural environment of any organization is more of masculine in nature. This is because the creation and nurturance of an organization and its culture were conventionally and predominantly carried out by men. In this context, the discussion of the "great man theory" given by Thomas Carlyle (1993) would be more meaningful. This theory was popular in the 19th century. This was the earliest approach to leadership. According to Thomas Carlyle, great leaders were men and born with innate leadership qualities. This is one of the reasons for the earlier management literature's stereo typical definition of the successful manager or leader in terms of the masculine gender (Brenner, Tomkiewicz & Schein, 1989; Schein, 1975; Schein, Mueller, & Jacobson, 1989). The concept of 'glass ceiling' (for women) and 'glass escalator' (for men) can be traced back to the earlier entry of men in the organizations.

Studies in South Asian culture

In Hofstede's study of cultural differences (1980), he studied five dimensions: Power distance, Individualism, Masculinity, Uncertainty avoidance and Long term orientation. These cultural dimensions did not differ by age, gender, education or occupation (except the Masculinity dimension) but differed for the countries. There are gross variations across regions and continents.

In the Masculine dimension, values such as assertiveness, performance, success and competition are measured to see to what degree they have feminine vis-a-vis masculine orientation. In countries where there is high masculinity, their leaders are performance, success and competitivion oriented. On the other hand, countries with low masculinity have leaders with the need for personal relationships, quality of life, and care for the elderly (Hofstede, 1980).

Hofstede lists numerical values for different countries. Western countries such as US (62), Australia (61), Germany (66) and Great Britain (66) have high masculinity oriented culture whereas India (56) and Pakistan (50) have a less masculine culture.

In case of power distance, Asian countries (India (77), Pakistan (55)), scored high compared to US (40), Canada (39), Great Britain (35) and Germany (35).

Both of the above two dimensions and their variance across the continents necessitates the need for more context specific studies. For example, in the literature

Table 1: Numerical values of different countries on Hofstede's cultural dimension

Hofstede's Dimension	US	Australia	Germany	Great Britain	India	Pakistan
Masculinity	62	61	66	66	56	50
Power Distance	40	36	35	35	77	55

(Source: Geert, H., & Jan, H. G. (1991). Cultures and organizations: Software of the mind. McGraw-Hill, New York.)

on women leadership, Helgesen (1990) and Rosener (1995) suggest that the leadership style of women differs from men in being less hierarchical, more cooperative, more collaborative and more inclined to enhance others' self-worth. Thus, when women occupy leadership positions, there may be less power distance in the organizational culture.

Similarly, Williams and Best (1990)'s study of 14 countries shows that men and women in traditional cultures (e.g. Pakistan and Nigeria) stress the sex role difference, whereas western cultures (Netherland and Finland) do not emphasize them. Such differences tend to have an impact on the leadership style of women.

Gender stereotyping in South Asia

Gupta, Koshal, & Koshal's (1998) study of Indian women managers reveals that gender still remains a consideration in terms of salary raises, promotions or advancement decisions. Exclusion of women from informal networks of communication and women's commitment to family responsibilities are some major barriers that prevent women from advancing to top managerial positions. Traits such as relationship orientedness, more attention to procedures, collaboration with followers and supporting change and innovation (Gupta et al., 1998), sensitivivity towards employees' family lives, domestic issues (Nath, 2000), concern for personal situations, willingness to share ideas and information with others (Budhwar et al, 2005) align with the components of transformational leaders. One study is not enough to conclude that women are transformational leaders in South Asian context.

Gupta et al. (1998) suggest that women managers are less competitive and less aggressive than their male counterparts in modern organizations. But should the "ideal managers" necessarily be more aggressive and competitive? Some traditional South Asian feminine values such as submissiveness and unobtrusiveness may some of the reasons for less aggressiveness or less competitiveness (Thanacoody et al., 2006).

In a study of the US IT workforce, Adya (2008), found that South Asian women display aggressive skills to counteract gender stereotypes while western women managers rebel against the system. Western women managers hold that they did experience gender stereo typing in the IT field while majority of the South Asian women replied in the negative. The reason is interesting. For American women, IT is a masculine industry where as for the South Asian women, it is not so. For them, electrical and mechanical are the masculine fields in contrast to IT . They also experience more discrimination in the Indian work place than in western workplace. This is also supported by Thanacoody et al.'s (2006) study of academics in Mauritius and Australia which shows that South Asian women are more tolerant of gender stereotyping than women in the West. It is because such gender differences in South Asia are accepted as part of the cultural values and sometime it is also attributed to fate which is beyond one's control.

From the above studies, it is proposed that:

P10: Culture moderates the perception of gender discrimination in the workplace among the women managers.

Almost all the studies were so far conducted in western cultures (UK, US, Canada and Australia). There are very few studies in the South Asian context (India, Pakistan, Sri Lanka or Bhutan) particularly in masculine or male dominated organizations. These countries have witnessed the rise of women leaders (Indira Gandhi, Benazir Bhutto and Sirimavo Bandaranaike) in politics as early as the 1980s. All the three leaders had a tough time during their ruling period and acted in autocratic ways in their respective Nations. Benazir Bhutto successfully led the politically and economically unstable Pakistani government. She is known for the tough stand she took against the trade unions, her domestic political rivals, and her survival in the unsuccessful coup d'état attempt by her army in 1955.

The Indian Prime Minister (Indira Gandhi) is also known for her bold political stand and unprecedented centralization of power. During her tenure, India went to war with Pakistan supporting East Pakistan's independence movement, conducted the operation blue star to wipe out the Sikh extremists and also undertook a state of emergency. She, along with her Pakistani counterpart Benazir Bhutto, earned the nick name of 'iron lady' for their masculine leadership style.

Sirimavo Bandaranaike, the world's first women head of the government, served as the Prime Minister of Sri Lanka thrice between the years 1960 to 2000. She took bold measures such as nationalizing key sectors of the economy (banking, insurance and schools).

In the post 90s, India witnessed the rise of regional women leaders like Mamta Banerjee (West Bengal) and J Jayalalitha (Tamil Nadu). Both of them are known for their autocratic style of leadership. By sex, though they are women, by gender, they are Masculine. Such case studies pose the question whether leadership (particularly political leadership) itself is masculine in nature?

More case studies on South Asian business women leaders (such as Kiran Mazumdhar shaw, Chanda Kochhar, Naina Lal Kidwai and Indira Nooyi) will clarify the type of way they lead in contrast to western women leaders. To have a broader understanding of women leadership (styles), more studies need to be done in these cultures particularly in various industries.

Directions for future research

Apart from their (leaders') gender, there are other factors that have a substantial influence on their effective functioning. They are: gender orientation of the organization and of the subordinate or colleague. The interaction of these factors leads to gender stereo typing and role congruence which affects the effectiveness of the leadership style. Following are some of the areas that need to be explored further.

Firstly, the concept of "Gendered" organization needs empirical support. There is no literature that perfectly defines the terms "masculine organization" or "feminine organization". The authors in their respective literature merely mention that "masculine organization like military…" or "feminine organization such as education, beauty parlor" (Eagly et el., 1995; Eagly et el., 2001; Eagly & Carli, 2003). The culture of masculinity is characterized by three factors: Number of male employees, type of task required in majority of the jobs and characteristics required to perform the jobs. Thus police or military organizations are characterized as masculine because majority of the workers are male, type of job is high risk, use of physical force is required to protect the civilians during crisis and the skills required to perform the job are a strong sense of articulating power and authority, dominance and forcefulness (Moore, 1993). But there are no such criteria discussed for feminine organizations in any of the referred literatures.

Lack of clear cut criteria for gender based categorization of organizations questions the basic assumption that leadership styles differ for different types of organizations for both the genders. The most popular Hofstead's model of cultural dimensions theory (1983) was based on a study of 117,000 IBM employees across 40 large countries and later extended to 50 countries and three regions. Hence large scale study of organizational culture of different organizations is needed to validate the claims of gender based categorization of organizations. This will help to alleviate the confusion of such gender based categorization (masculine, feminine and gender neutral).

Secondly, there is no detailed discussion of masculine leaders in feminine or gender neutral organizations as masculine leaders in leadership position were never questioned. But they are perceived as most suitable. A male leader in a top position is conventional too. Traditionally men dominated in all positions and there is no 'role incongruence' Moreover the question of 'role incongruence' arises only when there is a female leader and her subordinates are men. When women started occupying leadership positions in organizations, they exhibited a different kind of style known as transformational leadership. The components of transformational leadership are correlated with feminine gender traits as discussed above. Female leaders, when leading female dominant organizations, exhibit transformational leadership (Eagly et al., 1995; Lowe et al., 1996). Hence, the leadership style of masculine leaders leading in feminine or gender neutral organizations can be probed empirically.

Both the leadership styles (transactional and transformational) need be compared to know theie effectiveness. This needs empirical support across sectors to come to a valid conclusion. The anticipated finding would be that masculine leaders would exhibit transactional leadership style as per the available literature (Gibsonm, 1995; Alimo-Metcalfe, 1995). But effectiveness may differ when compared to feminine leaders.

A feminine organization is dominated by female employees. A woman leader can understand the problems of their women subordinates and they will able to motivate them better than their male counterparts (Peters, 1990; Rosener, 1990; Hare, 1996;

Caruso, Mayor & Salovey, 1999; Mayer & Geher, 1996; Perrault, 1996). So a women leader will be expected to be effective in a feminine organization but there is no literature on the leadership effectiveness of men leaders in the feminine organizations.

Another area of research is how the women subordinate perceives (rates) the masculine leaders in their domain? The notion of 'gender' itself a social construct (i.e. expected behavior). In this context, it is expected behavior from the subordinates. The 'role incongruence' is due to the imperfect match between the gender of the leader and gender of the organization as expected by the subordinates (Eagly & Diekman, 2005). Hence it is a question whether male leaders also face 'role incongruence' when they lead in feminine organizations and their subordinates are women.

The leadership style of women leaders is transformational. They are effective when they exhibit transformational leadership style in feminine organizations (Gibsonm, 1995; Alimo-Metcalfe, 1995). They face role conflict (feminine and inappropriate) or gender conflict (masculine and appropriate) in masculine organisations. Hence they need to alter their leadership style in order to avoid the role conflict by adopting 'transactional leadership style' (Eagly et al., 1992) or adjusting their gender identity in order to avoid gender conflict or adopting a n androgynous leadership style (Korabik, 1990). The need to alter their typical leadership style arises only when they have to avoid prejudice from their (male) subordinates. If their subordinates are female, then there is no need to alter their leadership style. But this remains a hypothesis unless investigated empirically. Hence the leadership style of female leaders and effectiveness of their leadership style in masculine organizations when their subordinates are women can be explored. The anticipated finding would be that female leaders would exhibit transformational leadership style as per the available literature support. This is also due to the fact that their subordinates are female. Hence if they exhibit transformational leadership, they will not be resisted or invite any prejudice.

Conclusion

The paper has reviewed the literature on women leadership. The studies were done in the context of Full range theory of leadership (Downton, 1973; Burns 1978). On comparing the leadership styles of feminine and masculine leaders, it was found that feminine leaders exhibit transformational style and masculine leaders exhibit transactional style (Hackman et al., 1992; Ross & Offermann, 1977).

The findings suggest that while there is no change in the way masculine leaders lead, there is difference in the style of feminine leadership. It is not only the gender of the leader that influences the leadership style but also there are other factors such as gender of the organization and gender of the subordinate that influenc the leadership style of women leaders. The reason for the difference is 'role (in) congruence'. While this study does not offer a conclusive answer to the question of role conflict or gender conflict faced by women leaders, it does give a picture about how they respond to those situations.

This is important for the study of leadership as it helps to understand the leaders' behavior and the differences in their leadership styles. The increased participation of women workforce, cultural diversity in the organization and boundary less organizations necessitate the gender diversity in leadership roles irrespective of the type of organization. The research raises important questions about the gender of the organization as there is no empirical support or clear definition of such claims.

As mentioned in the direction for future research, it would be fruitful to pursue further research about how masculine leaders lead in feminine organizations and feminine leaders in masculine organizations when their subordinates are females, in order to understand the broader aspect of leadership behavior and gender.

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Real Estate Investment: An Alternative or A Diversifier For Indian Financial Market

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Abstract

The diversity and complexity of Property Market, its linkages with economy and investment sphere has necessitated a closer study on its dynamics and movement. This paper attempts to find out the role of real estate in a multi-asset portfolio and need of its securitization in order to be investible in Indian context. Johansen cointegration test and Granger's Causality Test in the VAR block exogeneity on Quaterly data (Q 1 2009-10 to Q3 2016-2017) for HPI (Real estate index) and NSE 50(Stock market index) shows that there is no long run as well as no short run relationship between these markets. Segmentation exists between the stock market and the real estate market, and so these two assets can be held in a portfolio for diversification purpose. Descriptive statistics prove it as desirable asset class for investment. It further proves that Direct real estate investment is sufficient to be defined as an asset class and does not require standardization through securitization in order to be investible. Findings are relevant for policymakers as well as for market traders. This study contributes to the alternative investment literature for emerging markets.

Keywords: Direct Real Estate Investment, Cointegration, Granger causality, Securitization.

1. Introduction

The diversity and complexity of Property Market, its linkages with economy and investment sphere has necessitated a closer study on its dynamics and movement (RBI, 2008, 2010). There has been explosion of articles regarding its dynamics as far as US and UK is concerned (McDonald, 2002; Barras, 2009 and Brooks & Tsolacos, 2010). The characteristic of real estate market in Emerging economies have not been systematically researched (Ciarlone, 2015).There are very few studies with limited scope in Indian Context eg., Halbert and Rouanet (2014) and Newell and Kamineni (2007). As the benefits from including real estate in a portfolio varies across countries (Hoesli, Lekander, & Witkiewicz, 2004), it is required to know the role of real estate in a multi-asset portfolio in Indian Context.

The aim of this study is to analyse the long run as well as short run relationship between the real estate market and the stock market. The presence of an association between the stock market and the real estate market lies in the field of market integration or segmentation. In this study, cointegration test proposed by Johansen (1988) and Johansen and Juselius (1990) is used to examine the relationship between stock markets and real estate market. If the null hypothesis of no cointegration is rejected, it indicates that these two markets can reach equilibrium in the long run, and implies that the stock market is integrated with the real estate market. Therefore, it can be concluded that these two assets are good substitutes in investment allocation. Conversely, if the null hypothesis of no cointegration is accepted, segmentation between the stock market and the real estate market exists, and these two assets can be held in a portfolio for diversification purpose. Toda and Yamamoto (1995) Granger causality in VAR block erogeneity is used for short-run diagnostic check for long-run equilibrium relationship.

Introduction of the Commercial Real estate asset in the form of REIT (Indirect real estate investment) in India is an important step towards securitization of Indian real estate market So, it becomes important to find out whether direct real estate investment is sufficient to be defined as an asset class and does not require standardization through securitization in order to be investible. Descriptive statistical properties of sample log return series (Brooks & Tsolacos, 2010) are used to find out whether direct real estate in terms of their risk-return characteristics qualify as an alternative asset class.

Identifying such relationship is important both for investors as well as policy makers. It demonstrates that there are potential gains of long-run diversification when investors hold Direct real estate and stocks at the same time. It can further affect their overall wealth, consumption behaviours, aggregate demand and employment. In response to such a potential chain reaction, local governments seek to propose effective tax and growth strategies(Lin & Fuerst, 2014; Kiohos, Babalos, & Koulakiotis, 2017).

2. Literature Review

Numerous studies have explored the relationship between the stock market and the real estate market but results have been varying perhaps due to differences in sampling, data quality, or economic environments (Ambrose, Ancel, & Griffiths, 1992; Chaudhry, Myer, & Webb, 1999; Liow & Yang, 2005 and Lin & Fuerst, 2014).

The presence of an association between the stock market and the real estate market lies in the field of market integration or segmentation. Studies by Geltner (1990); Wilson and Okunev (1996); Ling and Naranjo (1999); Quan and Titman (1999) and Lu, Chang, and Wei (2007) provide evidence in favour of segmentation of the two markets. On the other hand, Knight, Lizieri, and Satchell (2005);Hoesli and Lizieri (2007) and Adcock, Hua, and Huang (2016) provide evidence in favour of the presence of integration relation between the two asset markets under study.

According to Baum (2009, p. 5) "The direct implication of property being different is its diversification potential, and hence the justification for holding it, within a multi-asset portfolio." Direct real estate investments have been shown to provide significant diversification benefits in a portfolio containing stocks (Hoesli et al., 2004 and MacKinnon & Al Zaman, 2009). Very few studies, however, have examined the role of direct real estate markets in influencing alternative mainstream capital markets.

International diversification has been shown to be more effective in the Asian real estate markets than in the European real estate markets (Bond, Karolyi, & Sanders, 2003), as well as there being long-term diversification opportunities by investing in real estate in several Asian countries (Garvey, Santry, & Stevenson, 2001).The characteristic of real estate market in Emerging economies have not been systematically researched (Ciarlone, 2015).There are very few studies with limited scope in Indian Context eg., Halbert and Rouanet (2014) and Newell and Kamineni (2007).

Introduction of the Commercial Real estate asset in the form of REIT(Indirect real estate investment) in India is an important step towards securitization of Indian real estate market (Das & Thomas Jr, 2016). Pai and Geltner (2007) showed that Indirect real estate with less systematic risk tend to offer higher returns. Endowment Model (Swenson, 2000) describes the immaturity and non-transparency as the beneficial characteristics of an asset class. According to Hoesli and Oikarinen (2012), Indirect real estate offers liquidity and information transparency but is also highly correlated to the wider equity market. In that case it cannot act as a diversifier in the portfolio mix. So, it becomes important to find out whether Direct real estate investment is sufficient to be defined as an asset class and does not require standardization through securitization in order to be investible.

3. Data and Methodology

3.1. Research Objectives

I. To find out whether direct real estate investment in terms of their risk-return characteristics qualify as an alternative asset class.

II. To examine the relationship (long run as well as short run) between equities and real estate in India.

a) To test whether there is cointegration relationship between stock and real estate markets.

b) To examine whether a causality relationship exists between the stock and real estate markets.

3.2. Research Approach

According to Brooks and Tsolacos (2010) there are four stylised facts about the returns to an asset that an investor would like to know about when considering investing in an asset, they are expected return (sample mean), risk (Standard deviation), whether or not the extreme returns are above the expected value (positive skewness), the relative likelihood of occurrence of extreme returns(kurtosis). These descriptive statistical properties of sample log return series are used to find out whether direct real estate in terms of its risk-return characteristics qualify as an alternative asset class.

The stationarity of data is checked by ADF (Augmented Dickey Fuller) Test. Johansen Cointegration Techniques were used to examine long-run relationship between stock markets and real estate market. Whereas Toda and Yamamoto (1995) Granger causality in VAR block erogeneity was used for short-run diagnostic check for long-run equilibrium relationship.

3.3. Sources of information:

Traditionally in India, rent data of CPI(UNME) & CPI(IW) was only the source of housing price data[1]. At present, there are three different approaches for tracking housing prices, viz., RESIDEX by NHB, Housing Price Index (HPI) by Reserve Bank of India and Residential Property Price Index (RPPI). This study uses HPI data, as the coverage of property registration data is more robust as compared to property loan data collected from banks/HFCs (in case of RESIDEX and RPPI), as all house transactions are not financed by banks/HFCs.

The secondary data is collected from indices of the stock (NSE 50 Index) and real estate market (HPI). Quarterly data is taken for both the indices from Q 1 2009-10 to Q3 2016-2017, So as a whole there are 31 data points. Although, HPI series is available from Q 4. 2008-09 to Q 3. 2016 - 17, but data is available with two base years viz., 2008-09 and 2010-11. The time series constructed with Laspeyres formula with 2008-09 as the base year will be inconsistent with the time series constructed with base year 2010-11. So, the present study uses Splicing (Hill & Fox, 1997) to combine these two overlapping time series. Eviews has been used for analysis.

4. Results and Discussion

For the analysis, continuously compounded returns (log returns) are used. Log returns of the NSE series and HPI series are denoted by LNRNSE/lnrnse and LNRHPI/lnrhpi respectively. For the model formulation, Initial lag four has been used as data is quarterly and according to Brooks and Tsolacos (2010, P. 380) frequency of data can be used to decide the lag.

Table 1 shows that the mean which is the measure of expected return is higher for real estate return, the standard deviation which is the measure for risk is lower for real estate return, Kurtosis (relative likelihood of occurrence of extreme returns) is low for real estate return which is desirable as investors prefer returns closer to expected returns. Skewness is negative for both the asset classes which is not desirable. So apart from skewness other measures are favourable for real estate, which prove it as desirable asset class for investment. It further proves that Direct real estate investment is sufficient to be defined as an asset class and does not require standardization through securitization in order to be investible. This goes in accordance with the Endowment Model (Swenson, 2000),which describes the immaturity and non-transparency as the beneficial characteristics of an asset class. Here, the desirability of direct real estate investment stems from its illiquidity premium and inherent inefficiency. The illiquidity premium and the real component of real estate as a contributor to the efficiency of the portfolio (Ang, Nabar, & Wald, 2013).Indirect real estate investment offers liquidity and information transparency but is also highly correlated to the wider equity market (Hoesli & Oikarinen, 2012).

Table 1: Descriptive statistics of log return series of real estate market and stock market

	LNRHPI	LNRNSE
Mean	0.037280	0.017662
Median	0.040711	0.022772
Maximum	0.077338	0.350972
Minimum	-0.011797	-0.281496
Std. Dev.	0.021689	0.116715
Skewness	-0.224946	-0.220334
Kurtosis	2.489109	5.358695

Before conducting statistical tests unit root of variables are studied using ADF (Augmented Dickey Fuller) Test reported in the Table 2. The results indicated both the variables at their corresponding level are nonstationary and they are stationary at their first difference.

1 Compilation of CPI (UNME) has since been discontinued since April 2008.

Table 2: Augmented Dickey-Fuller test statistic

	CNX NIFTY		RESIDEX	
	t-Statistic	Prob.*	t-Statistic	Prob.*
Unit root estimation at level	2.70533	0.0867	1.41763	0.5581
Unit root estimation at first difference I	4.45191	0.0018	5.24906	0.0002

Table 3: Result of Johansen Cointegration Test

Series: LNRHPI LNRNSE
Lags interval (in first differences): 1 to 4

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.274799	12.07211	15.49471	0.1535
At most 1	0.133251	3.718161	3.841466	0.0538

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.274799	8.353950	14.26460	0.3439
At most 1	0.133251	3.718161	3.841466	0.0538

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Error! Not a valid link.Again, Johansen Cointegration Technique was used to check the long-run relationship. The results pertaining to the Johansen Cointegration Test are presented in Table 3. In order to determine the maximum number of cointegrating vectors, was conducted the trace and max test. Both the probability value of trace test as well as Maximum Eigenvalue test are higher than the critical value at 5 percent level of statistical significance, which shows that there is no cointegration between HPI and CNX NIFTY. So, there is no long run relationship between real estate market and stock market which further validates that both can be used as diversifiers.

There is no long run relationship but there are chances for short run dynamic relationship which is tested by using the Toda Yamamoto Granger's Causality Test in the VAR block exogeneity. The result is reported in table 4.

Table 4: VAR Granger Causality/ Block Exogeneity Wald Tests

Dependent variable: LNRHPI			
Excluded	Chi-sq	Df	Prob.
LNRNSE	4.033758	4	0.4015
All	4.033758	4	0.4015
Dependent variable: LNRNSE			
Excluded	Chi-sq	Df	Prob.
LNRHPI	4.420597	4	0.3521
All	4.420597	4	0.3521

As the p value is more than 5%, it is concluded that there is no causal relationship between Real Estate Market and Stock Market.

5. Conclusion

This paper attempts to find out the role of real estate in a multi-asset portfolio and need of its securitization in order to be investible in Indian context. Direct real estate investment is sufficient to be defined as an asset class and does not require standardization through securitization in order to be investible. This goes in accordance with the Endowment Model (Swenson, 2000). Here, the desirability of direct real estate investment stems from its illiquidity premium and inherent inefficiency. The illiquidity premium and the real component of real estate as a contributor to the efficiency of the portfolio (Ang et al., 2013).Although, the introduction of REITs in India paves the way for further comparative research between Direct and Indirect real estate investment.

The empirical findings suggest that there is no short run as well as long run relationship between the stock market and the real estate market. Segmentation exists between the stock market and the real estate market, and these two assets can be held in a portfolio for diversification purpose. The reason for this segmentation is the systematic risk associated with real estate market is governed by laws which are different from those of stock market. It provides real diversification benefit by acting as inflation hedge.

Findings are relevant for policymakers as well as for market traders. Identifying such relationship is important both for investors as well as policy makers. It demonstrates that there are potential gains of long-run diversification when investors hold Direct real estate and stocks at the same time. It can further affect their overall wealth, consumption behaviours, aggregate demand and employment. In response to such a potential chain reaction, local governments seek to propose effective tax and growth strategies. Although exploring relationship is important, finding the factors that drive that is enduringly significant. So, further research can be done in that area.

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An Empirical Analysis of Inflation Hedging Potential of Commodity Futures: A Regime Switching Approach

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Abstract

This study analyses inflation hedging potential of individual commodity futures viz. crude oil, gold, silver, copper and zinc for the sample period from April 2005 to April 2015. On the basis of information selection criterion, linearVector Error Correction Model (VECM) and nonlinearMarkov-Switching Vector Error Correction Model (MS-VECM)are employed to analyse the time-varyingmovement of long-run inflation hedging properties of commodity futures. Theerror correction mechanism of VECM gives evidence of full inflation hedging ability of gold and silver futures. On the contrary, results of VECM give very weak evidence of the inflation hedging potential of crude oil. The MS-VECM estimation confirms the partial hedging potential of copper and it is appropriately represented by both the regimes. Conversely, the Johansen cointegration test suggests the lack of long-run relationship between zinc and inflation index. Hence, it is concluded that precious metals possess better inflation hedging potential than energy and industrial metals. Based on these findings, it is suggested that futures on gold, silver and copper can be effectively used as a hedge against inflation and inflation hedging potential of these commodities does not depend on the time horizon of investment.

Keywords: Cointegration, Commodity futures, Hedge, Inflation, Markov-switching, Vector error correction model.

1. Introduction

Two extreme sides of inflation, in terms of hyperinflation and deflation always create havoc for the economy. To maintain inflation at an acceptable rate becomes the cornerstone of a policy framework for an economy, which is suffering from the long-run erosive effect of unstable inflation on assets' return and overall growth of the economy (Pettinger, 2014).It is apparent from the deflationary situation in European countries and the US in the aftermath of financial crisis. Conversely, India recorded an average inflation rate of 8.44 percent from 2012 until 2015. In November 2013, it reached a recent highof 11.60 percent.In addition, the ruinous case of hyperinflation in Russia during 1992 and 1994, in Zimbabwe during 1999-2009, and in Venezuela in 2015 are few cases that confirm that price stability should be the primary goal of monetary policy-makers (Pilling and England, 2016; Hanke, 2015).

Price stability increases the employment rate, economic growth and the stability of financial markets. High inflation rate disrupts the operations of financial institutions and their integration with the rest of the world market (Pettinger, 2014). Inflation creates uncertainty in future prices, interest rates and the exchange rate, resulting in reduced economic activity of a nation. Stable and sufficiently low inflation do not influence the economic decisions of households and firms, which result in the more efficient allocation of resources. Inflation erodes the real value of an investment and purchasing power over time (Gerolamo, 2015). Conversely, inflation helps the investors to decide the rate of return on their investment they need to make in order to protect their purchasing power and investment returns over the long-run.Hence, several efficacious economic policies such as fiscal policies, monetary policies, supply-side reform policies and labour market reforms are being considered by the government and the central bank to achieve the goal of price stability(Trichet, 2004; Mathai, 2012). In addition, investors should invest in a product which moves with inflation and isimmune to inflation risk(Spierdijk and Umar, 2014).

A vast literature is available to analyse the inflation hedging ability of various asset classes such as stocks, bonds and real estate. However, investment in hard assets such as metals, energy and agricultural commodities is considered a decent approach to hedge against inflation, as they tend to maintain their values in times of inflation (Worthington and Pahlavani, 2007).

Commodity prices, shares and currencies show wide fluctuation and sometimes brutal variations that entail risks arising from unforeseen price changes. The high inflation rate is driven by the rising cost of raw materials and basic commodities and ultimately leads to higher prices for the basic goods such as food and clothing. It is evident from oil crisis and energy crisis in 1973 and 1979 respectively, which caused a stagnant growth and price inflation during the 1970s (Zhou, 2014). Similarly, the 2007-08 subprime crisis was marked by a commodity boom and a high inflation rate. In addition, continuous fall in the prices of crude oil from their 2014 peak, had a positive impact on the retail inflation and domestic growth rate in India (Kumar, 2015).

From a theoretical perspective, the investors, producers and consumers buy a commodity due to increase in expected inflation. They either want to protect their purchasing power due to decline in the value of money or buy a commodity to be onthesafer side, due to the expectation of a rise in the prices of commodities. This activity increases the demand for commodities and yields an increase in price also. Investors with prior knowledge of increase in expected inflation rate can make profits by taking their respective positions in the spot and future markets of the commodities (Beckmann and Czudaj, 2013). Thus, commodities can be used as a hedge against inflation as the movements of commodity prices give a direction to the expected future inflation.The above mentioned arguments indicate that there is a need to analyse the inflation hedging potential of commodity futures in order to identify the role played by commodities in driving the inflation rates.

Investing in commodity futures is one of the alternative ways to invest in commodities and to participate in the commodity market. Commodity futures represent a bet on commodity prices (Gorton and Rouwenhorst, 2006). The commodity futures contract can be used by producers and consumers to protect from price risk as the expected spot prices are reflected in commodity futures prices. The prime motivation of this study is the conventional perception of treating commodity futures as a hedge against inflation. Conventional wisdom indicates that commodity futures can be a natural hedge against inflation due to its ability to accommodate expected commodity price changes (Bhardwaj et al., 2011). The rationale of using commodity futures as an inflation hedge is its ability to incorporate future trends in commodity prices and to foresee the expected deviation in inflation (Gorton and Rouwenhorst, 2006). However, sensitivity in returns of commodity futures to the changes in the inflation rate does not remain constant over time and varies from one commodity futures to another (Erb and Harvey, 2006). These lines of thought motivated usto explore the feasible implications of conventional wisdom related to commodity futures acting as an inflation hedge in the Indian scenario.

The prime contribution of the study to the theoretical world is the analysis of inflation hedging potential of crude oil, gold, silver, copper and zinc futures in the Indian scenario by the application of nonlinear MS-VECM. To the best of authors' knowledge, this is the first paper which has used the regime-switching framework of MS-VECM to investigate the regime-specific equilibrium relationship between individual commodity futures and inflation. The empirical results of the study give evidence of the application of linear VECM for gold, silver and crude oil and nonlinear MS-VECM for copper futures. The estimated results signify the full inflation hedging potential of gold and silver futures. On the contrary, MS-VECM confirms partial inflation hedging potential of copper futures. In addition, like gold and silver futures, investment decision in copper does not depend on the time horizon of investment.

The remaining part of the paper is organized as follows: Section 2 discusses the literature review. Section 3 elaborates the theoretical background of the study while Sections 4 and 5 brief about methodology and dataset used. Section 6 contains the empirical results and discussion, followed by conclusion in Section 7.

2 Literature Review

The following literature provides an insight into the inflation hedging potential of various asset classes such as stocks, bonds, gold and real estate. Mahdavi and Zhou (1997) used conventional VECM to measure the performance of gold and commodity prices as a leading indicator of the inflation rate. Their out-of-sample forecasts of the prices of gold signify that error correction model of the Consumer Price Index (CPI) and commodity prices significantly outperform a CPI model. However, the marginal contribution of an error correction model was statistically insignificant. The inflation hedging property of gold has diminished over time, which undermines the role of gold as a leading indicator of inflation.Levin et al. (2006) used VECM to analyse the long-run and short-run determinants of gold prices from January 1976 to August 2005. They found that there is a long-term relationship between US price level and price of gold. However, there was a presence of slow reversion towards long-run equilibrium from any deviation caused by shocks in short-run. Their conclusions are in line with the outcomes of Laurent (1994), Harmston (1998), Adrangi et al. (2003) and Ghosh et al. (2004) which confirmed the reliability of gold as an inflation hedge both in long-run and short-run in the US, UK, France, Germany and Japan. Worthington and Pahlavani (2007) analysed the structural changes in both gold market and consumer prices by using Zivot and Andrews(1992) unit root test to find out the most significant structural breaks impacting the long-run relationship between these two variables. Their modified cointegration method using these breaks suggested a strong cointegration relationship between gold and inflation, which confirms gold as an efficient inflation hedge. Bekaert & Wang (2010) investigated the inflation hedging capability of standard securitiesand assets using inflation beta derived from an ordinary least squares regression. They found that standard securities such as nominal government bonds and equities are the poor hedge against inflation. Other standard assets such as treasury bills, foreign bonds, real estate and gold improved the relationship, even asforeign bonds and gold perform better than other assets. However, it is difficult for these assets also to hedge the inflation risk.Tiwari (2011) used cointegration analysis with an allowance of structural breaks and seasonal adjustment to investigate the inflation hedging ability of gold from April 1990 to June 2010 in the Indian context. He suggested that gold can be used by investors as an effective tool for hedging inflation.

Wang et al. (2011), Beckmann and Czudaj (2013) and Van Hoang et al. (2016) have examined the long-run and short-run inflation hedging potential of gold by using nonlinear approach.In addition, Bredin et al. (2015) used nonlinear wavelet analysis to examine the hedge and safe haven properties of gold for investors with short and long-run horizons.The findings of Wang et al. (2011) suggested that gold returns cannot be used as a hedge against inflation in both the US and Japan during low momentum regimes, while in the case of high momentum regimes, gold shows its inflation hedging potential only in the US. Beckmann & Czudaj (2013) analysed the inflation hedging ability of gold for four economies, the US, the UK, the Euro area and Japan for a sample period ranging from January 1970 to December 2011 using MS-VECM. They found that gold is a partial hedge against inflation in the long-run and this ability is stronger for the US and the UK compared to Japan and the Euro area. In addition, inflation hedging ability of gold depends on the time horizon of investment. Van Hoang et al. (2016) analysed the inflation hedging potential of gold which is denominated in the local monthly prices of China, India, Japan, France, UK and US. They have used Nonlinear Autoregressive Distributed Lags (NARDL) model for the study period from 1955 to 2015. Their results confirmed that gold is not a hedge against inflation in the long-run for any of the countries. However, gold is an inflation hedge in the short-run only for the UK, the US and India. In addition, they found that there is a lack of long-run equilibrium relationship between gold prices and the CPI in China, India and France.

The above studies have mainly concentrated on investigating the inflation hedging property of gold. Very few studies have been conducted on the inflation hedging property of commodity futures. Bodie (1983), Kaplan and Lummer (1997), Becker and Finnerty (2000) and Menzel and Heidorn (2007) found that commodity futures are valuable portfolio components as they perform better during the high inflationary period. Gorton and Rouwenhorst (2006) used the Sharpe ratio to investigate the simple properties of commodity futures as an asset class. They conducted the study on equally-weighted index of commodity futures and found that commodity futures are positively correlated with inflation, unexpected inflation and changes in expected inflation. Erb and Harvey (2006) used ordinary least squares to investigate the inflation hedging capability of commodity futures. They suggested that all commodity futures are not a good inflation hedge. However,the portfolio of commodity futureswith selected weights of futures can serve as an inflation hedge, while their returns depend on the rebalancing of the portfolio.

Spierdijk and Umar (2014) and Zhou (2014) considered the nonlinear relationship between commodity futures and inflation. Spiedijk and Umar (2014) assessed the hedging properties of commodity futures from 1970 to 2011 using Vector Autoregressive Model (VAR) across three dimensions: market, investment horizon and time. They used the rolling window and sub-sample analysis to incorporate structural changes in the inflation rate and commodity futures prices. They found thesignificant abilityof energy, industrial metals and live cattle to hedge US inflation, especially for an investment horizon of one year. Long-run inflation hedging property of Standard & Poor's Goldman Sachs Commodity Index (S&P GSCI)-total return Index against the US seasonally adjusted CPIwas conducted by Zhou (2014). He adopted MS-VECM for the sample period from January 1983 to December 2012. He found that sub-indices of energy, industrial metals and precious metals were the best inflation hedge. However, the hedging capacity exhibited substantial variation over time.

In the Indian context, Joshi (2013),Thota and Bandi (2015) and Sharma (2015) investigated inflation hedging potential of commodity futures. Joshi (2013) used the standard statistical method to investigate the potential of pepper, steel, mustard seed and wheat futures to hedge the portfolio of equities against the risk of inflation. They found that all these commodity futures provide a hedge against fall in the equity prices in an inflationary environment. Similarly, Thota and Bandi (2015) used the normal regression model to analyse the inflation hedging potential of base metals and agricultural commodities traded in National Commodity & Derivatives Exchange (NCDEX) for the study period from January 2004 to December 2014. They found that most of the commodity futures under agricultural sector can be used as a hedge against inflation. In addition, Sharma (2015) analysed the performance of a conventional portfolio with and without the inclusion of inflation tracking portfolios. They found that conventional portfolio gives higher Sharpe ratios during the high inflationary period due to the present of inflation tracking portfolio. Hence, their results confirm the inflation hedging potential of commodity futures with the exception of agricultural commodities.

Through literature review, it is found that studies related to measuring the time-varying exposure of individual commodity futures to inflation using the nonlinear framework are very limited. For instance, Zhou (2014) used MS-VECM to analyse the inflation hedging potential of commodity futures index. However, he didnot consider the individual commodity futures. Similarly, there is a lack of studies to analyse the inflation hedging potential of commodity futures using the nonlinear approach in the Indian context. For instance, Joshi (2013), Thota and Bandi (2015), and Sharma (2015) have conducted studies in this stream for the Indian context. However, they used a simple linear regression model. Hence, this study analyses the inflation hedging potential of individual commodity futures using the nonlinear framework in the Indian context.

The present study contributes to the existing literature by analysing the inflation hedging potential of individual commodity futures by using linear VECM and nonlinear MS-VECM framework. It investigates the changing nature of inflation hedging properties of individual commodity futures among the different states of the economy in the Indian context.

3. Theoretical Framework

In the existing literature, inflation hedging has been defined in different ways. Informally, an asset can be qualified asan inflation hedge if it can immune the investors' return from the general increase in the price level. Many inflation hedging measures have beenproposed in literature and all these measures evaluate the inflation hedging potential of various assets from different aspects such as the Fisher hypothesis (Theory of Interest) converted into an empirical test by Fama & Schwert(1977), Pearson correlation used by Hoevenaars et al.,(2008), cointegration approach used by Ely and Robinson (1997), Mahdavi and Zhou (1997) and Anari and Kolari (2001), hedge ratio and cost of hedging used by Bodie (1976) and hedging demand and inflation tracking portfolio by Bodie (1976) and Schotman & Schweitzer (2000).

From a theoretical perspective, it is necessary to check the long-run equilibrium relationship between commodity futures price and inflation since the variables deviate from their equilibrium relationship due to short-run price volatility (Ghosh et al., 2004). The validity of any commodity as an inflation hedge is justified only if prices adjust to any variation from long-run equilibrium relationship. In addition, from an econometric point of view, the cointegration approachis needed when the series is integrated of order one which leads to distinguished long-term and short-term analysis of inflation hedging potential. If an asset is cointegrated with inflation then it can be considered at least a partial hedge against inflation for institutional investors with a long-term investment horizon, whereas short-term dynamics allow the evaluation of hedging properties of this asset at shorter horizons. Hence, the cointegration technique seems to be the most suitable technique to verify the inflation hedging potential of commodity futures. Many studies adopted the conventional cointegration technique to investigate the inflation hedging potential of different asset classes such as Ely and Robinson (1997) used VECM to identify the long-run and short-run dynamics between output, money, stock prices and goods prices. According to them, stock prices are considered to be a good hedge against inflation if, in response to a real or monetary shock in inflation, stock prices adjust their values relative to the goods prices. Anari and Kolari (2001) applied VEC model and impulse response function to assess the impact of an inflationary shock on stock prices over time. They found that if the permanent effect of inflationary shock on expected stock return is equal to unity, then the stock can be considered as a complete long-run hedge against inflation.

However, commodity prices and inflation usually undergo many structural changes and show significant variation in time series. The sudden and unexpected changes in the movements of commodity prices cause the presence of different regimes in the economy, such as the bull phase during sub-prime crisis, the bear phase during the European crisis and the recent economic slowdown in China. The application of the conventional linear model for these scenarios will not provide the proper analysis of inflation hedging potential of commodity futures as these regimes depict different equilibrium relationship between commodities and inflation (Beckmann and Czudaj, 2013). Thus, from a theoretical perspective, it is essential to adopt the time-varying cointegration approach to estimate the inflation hedging potential of commodity futures under different regimes of the economy. In these cases, MS-VECM is more suitable than any other time-varying model since it is based on the state-dependent time series model where unobservable state follows the exogenous stochastic process rather than deterministic process.

4. Methodology

This study adopts a linear VECM and nonlinear MS-VECM to analysethe inflation hedging property of individual commodity futurescontract in different regimes and their pace of adjustment towards the long-run equilibrium. The Markov-Switching (MS) model is originally designed by Hamilton (1989), which is further extended by Krolzig (1997, 1998), who provided the overview of Markov-switching vector auto regression model. The concept of MS-VECM is based on the state-dependent time series model, which allows for a shift of some estimated parameters between the stochastic, unobservable regimes. These unobservable regimes are generated using a stationary, irreducible ergodic Markov chain.Maximum likelihood estimation of MS-VECM includes the additional process of adjustments of divergence in the long-run equilibrium relationship in each regime.

MS-VECM is the generalization of the basic VECM with finite order of *p* and *r* cointegrating vector. Thus, the VECM for a k-dimensional time series vector is $Y_t=(Y_{1t},\dots ,Y_{kt})$, t = 1, ... , T, with p^{th} order of autoregression and *r* cointegrating vector is shown in Equation (1):

$$\Delta Y_t = \upsilon + \sum_{i=1}^{p} P_i \, \Delta Y_{t-1} + \sum_{j=1}^{r} C_j V_{t-1} + \varepsilon_t \qquad (1)$$

$$\varepsilon_t \sim \text{IID}\,(0, \Sigma)$$

Where IID refers to Independent and Identically Distributed, υ is the intercept term, P_i shows the short-run dynamics of the model, C_j measures the speed of error correction and V_t contains the residuals from the error correction equation.

This study generalized the VECM (p,r) by using MS-VECM of M-regimes, p^{th} order autoregression with *r* cointegrating vector. This model allows the regime shift in the intercept term, the autoregressive parameter, error correction speed coefficient and variance-covariance matrix of residuals as shown in Equation (2).

$$\Delta Y_t = \upsilon\,(S_t) + \sum_{i=1}^{p} P_i(S_t)\, \Delta Y_{t-1} + \sum_{j=1}^{r} C_j\, (S_t) V_{t-1} + \varepsilon_t$$

$$\varepsilon_t \,|\, S_t \sim NID\,(0, \Sigma(S_t)), \qquad t = 1,\dots\dots , T \qquad (2)$$

Where, NID refers to Normally and Independently Distributed, ΔY_t shows the time t column vector of observation, S_t = 1, 2,….M represents the regime in time t, $\upsilon(S_t)$ shows the vector of regime-dependent intercept terms. $P_i(S_t)$is a row vector of p^{th} order autoregressive parameters in regime S_t, denotes the state-dependent short run dynamics of the model. $C_j(S_t)$ measures the speed of error correction in regime (S_t) and V_t is the column vector representing the residuals from the error correction equation.

The coefficient of the long-run error correction term should be negative and statistically different from zero in order to provide regime-specific equilibrium correction and unconditional cointegration. The regime generating process is guided by Markov chain with a finite number of regimes, $S_t \in \{1,\ldots\ldots\ldots,M\}$ and constant transition probabilities. Transition probability of switching from regime i to regime j at time t+1 is independent of the history of the process, is depicted in Equation (3).

$$P_{ij} = P_r(S_{t+1} = j \mid S_t = i),\ P_{ij} > 0,$$

$$\sum_{j=1}^{M} P_{ij} = 1\ \forall \quad i,j \in (1,\ldots\ldots,M) \tag{3}$$

State variable S_t follows the transition matrix represented in Equation (4), which is decided by an irreducible ergodicM state Markov process:

$$P = \begin{pmatrix} P_{11} & P_{12}\ldots\ldots & P_{1M} \\ P_{21} & P_{22}\ldots\ldots & P_{2M} \\ \vdots & \vdots & \vdots \\ P_{i1} & P_{i2}\ldots\ldots & P_{im} \end{pmatrix} \tag{4}$$

Where $P_{im} = 1 - P_{i1} - \ldots - P_{i,m-1}$ for $i = 1, \ldots, M$.

The smoothed probability estimated in the MS model represents the conditional probability which uses all the information in the sample up to future date T and as a result, it represents the ex-post measure. In MS model, smoothed probability is estimated at each point in time and based on this smoothed probability, each observation is classified to a regime. The classification rule signifies the assignment of each observation in the regime with the highest probability. In case of two regimes, classification rule specify the classification of observations to the first regime if $P_r(S_t = 1 \mid Y_t) > 0.5$ and to the second if $P_r(S_t = 1 \mid Y_t) < 0.5$. The average duration of the first regime and second regime can be computed by Equation (5) and (6).

(5)Average Duration of Regime 1 = $1/(1- P_{11})$

(6)Average Duration of Regime 2 = $1/(1- P_{22})$

The MS-VECM model is estimated with the Grocer toolbox forScilab (Dubois and Michaux, 2013).The parametersof MS-VECM model are estimated by maximum log likelihood function via Expected Maximum (EM) algorithm.

5. Data and Summary Statistics

This study is conducted on crude oil, gold, silver, copper and zinc futures traded on Multi Commodity Exchange (MCX), which covers 83 percent of the commodity market in India. The Indian commodity exchange MCX has been chosen for study as it is not only the largest commodity exchange in India, but also the world's third largest commodity futures exchange in terms of the number of contracts traded in 2012. According to Annual Volume Survey of Futures Industry Association (FIA), MCX is the largest silver and gold exchange, second largest copper and natural gas exchange and third largest crude oil exchange in terms of a number of commodity futures contracts traded for each commodity. The current study uses monthly futures contract prices of five commodities, gold, silver, crude oil, copper and zinc from April 2005 to April 2015 as these commodity futures are the top five commodity contracts traded in MCX in terms of their average daily value. However, availability of data with a higher frequency can give a better analysis of linearity and nonlinearity in the movements of commodity futures and their inflation hedging potential. In addition, 2003-04 isconsidered asignificant year for the development of commodity futures market in India due to the establishment of many nationwide multi commodity exchanges (Gupta, 2011). However, the prices of commodities considered for the study are taken from April 2005, due to the inconsistency on the availability of data for all the months from 2003 to 2005. Although, the study period is short to give firm conclusion, during this period, commodity market has experienced many ups and downs such as industrialization of China (which has given the boost to the global economy), sub-prime crisis in the US, the European crisis and recent economic slowdown in China. Hence, the period is rich enough to give a better regime-specific analysis of inflation hedging potential of commodity futures.

Future prices of commodities considered for the study are retrieved from the website of MCX. These commodities are the constituents of sub-indices MCXMETALS and MCXENERGY of composite index MCXCOMDEX. The commodity-specific Wholesale Price Index(WPI) is selected as inflation index and its value is retrieved from the Database of Indian Economy of RBI. WPIis considered for the study instead of the CPI as a measure of inflation since the commodities under study are not the part of CPI in India.

The nearby futures contracts are used to construct the future price series as these are the most actively traded contract. The rollover of the series from first nearby contract to next nearby contract is performed during rolling periods based on the rolling mechanism adopted by MCX. Before the start of the rolling period, future price series takes the price of the first nearby contract and after the end of the rolling period, the series takes the price of the second nearby contract. During the rolling period, series incorporates the next nearby future price series in a predetermined manner of rolling 20 percent of each day.

Summary statistics on returns of gold, silver, crude, copper, zinc and commodity-specific WPI are given in Table 1. Continuously compounded logarithmic returns are used, which are estimated by taking the first difference of natural logarithm of futures prices of commodities and commodity-specific WPI. Among the five commodities, gold has the highest average monthly return of 1.22 percent with the lowest standard deviation of 5.18 percent, while zinc has the lowest average negative monthly return of -0.018 percent with a standard deviation of 8.199 percent. However, crude oil shows the highest volatility of 8.86 percent with an average monthly return of 0.45 percent. The average monthly inflation rate 1.25 percent with the standard deviation of 3.55 percent for WPI index of gold is highest among the five commodity-specific inflation rates. Whereas, WPI of zinc has the lowest average monthly inflation rate of 0.37 percent with a standard deviation of 3.47 percent.

6. Results and Discussion

Based on a broader overview of Markov-switching vector autoregression given by Krolzig(1997), the analysis is performed in two stages. In the first stage, the Johansen cointegration test is used to identify the cointegration relationship and a number of cointegrating vectors between the variables. In the second stage, estimation of VECM and MS-VECM are performed for each model and the best model is chosen by systematically considering the information criterion: Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC) and Hannan-Quinn Information Criterion (HQ).

Table1: Summary statistics

	Gold	Silver	Crude	Copper	Zinc	WPI-Gold	WPI-Silver	WPI-Crude	WPI-Copper	WPI-Zinc
Mean	1.21	1.04	0.451	0.849	-0.018	1.25	1.05	0.591	0.451	0.376
Median	1.19	1.08	1.89	1.102	0.198	0.963	0.697	0.271	0.00	0.00
Maximum	16.19	28.58	20.63	29.61	20.09	12.09	25.62	25.16	11.53	20.99
Minimum	-13.20	-22.67	-36.99	-37.86	-33.84	-8.83	-14.37	-31.26	-4.13	-22.29
SD1	5.18	8.85	8.86	8.13	8.19	3.55	5.89	8.83	1.95	3.47
Skewness	0.103	0.111	-0.857	-0.726	-0.669	0.242	0.657	-0.476	2.61	-0.617
Kurtosis	3.43	3.59	5.11	7.52	4.79	4.26	5.85	5.21	14.79	29.46
Jarque-Bera	1.14	2.01	36.97	112.50	22.56	9.05	49.29	28.82	831.24	3157.85
Probability	0.5657	0.3661	0.00	0.00	0.00	0.01083	0.00	0.00	0.00	0.00
Observation	120	120	120	120	120	120	120	120	120	120

Notes: SD[1] refers to the standard deviation.

6.1 Unit root test and cointegration analysis

In this section, the unit root test is performed to check if commodities and inflation are integrated of order one. Then, Johansen cointegration test is performed on level data to test whether commodities and inflation series are cointegrated.

The Augmented Dickey Fuller (ADF) test is applied to check the stationarity of time series data. In order to take into account the possibility of a structural break, the Zivot and Andrews (1992) unit root test is used. This test allows for a single break both in the intercept and trend. The results of the unit root test are provided in Table2. For the ADF test, the null hypothesis of unit root is accepted at onepercent level of significance for level time series of all the five commodities and commodity-specific WPI.The null hypothesis of unit root is rejected when the first difference of time series is considered. Similarly, for the Zivot and Andrews test, the null hypothesis of a unit root with a structural break in both the intercept and trend is accepted at the onepercent level for all the time series in their level form. In addition, based on AIC, SIC and HQ information criterionthe autoregressive order of one is selected for all the pairs of commodity and commodity-specific WPI.

Next, the Johansen cointegration test is performed to test the existence of a cointegrated vector for models as presented in Table 3. In the first model of crude and WPI, Johansen's trace statistics confirm the existence of one cointegrating vector at fivepercent level. In the model of gold and WPI, Johansen test statistics indicate the existenceof one cointegrating vector. Similarly,in the third model of silver and WPI and fourth model of copper and WPI, Johansen test of trace statistic and max-eigen value imply one cointegrating vector at the onepercent level. The estimated values of the normalized cointegrating vector for all models are presented in Table 4.In the fifth model of zinc and WPI, Johansen trace test and max-eigen value test confirm the zero cointegrating vector between zinc future price series and inflation.This result suggests the lack of long-run association between zinc and inflation and concludes that zinc futures cannot be used to hedge inflation. In all vectors, except for zinc and WPI, the coefficients are in the expected side, where each cointegration vector entails a positive relationship in the long-run between commodity and WPI. However, gold and silver coefficients are equal to unity in magnitude which depicts proportional relationship of inflation with gold and silver. On the contrary, the copper coefficient is less than unity in magnitude suggesting partial hedging capability of copper future series. The crude oil coefficient is greater than unity, which suggests that crude oil is not able to fully hedge inflation as there is a lack of proportional relationship essential forthe long-run association.

Table 2: Unit root test statistics

	Level Series		First Difference	
	ADF Test	Zivot Andrews Test	ADF Test	Zivot Andrews Test
Gold	-1.678631*	-4.831544*	-13.14161	-13.64990
Silver	-1.623493*	-4.952168*	-11.30789	-9.506214
Crude	-3.171932*	-4.885994*	-7.857013	-8.288129
Copper	-2.523413*	-3.836267*	-8.424634	-9.729757
Zinc	-1.679933*	-5.374482*	-11.34118	-12.36556
WPI-Gold	-0.530756*	-4.629628*	-10.37028	-10.94916
WPI-Silver	-1.179044*	-4.974868*	-8.093387	-8.685411
WPI-Crude	-0.571434*	-3.789352*	-10.94485	-11.32122
WPI-Copper	-2.621863*	-3.0099328*	-4.620237	-5.818255
WPI-Zinc	-3.306422*	-4.197269*	-14.05784	-15.23390

*Statistically significant at 1% level of significance.

Table 3: Johansen cointegration test

Models	r(No. of cointegration)	Trace Statistics	Probability	Max-Eigen Statistics	Probability
Crude-WPI	0	16.06819	0.0410	13.82211	0.0586
	1	0.018698	0.1340	2.246076	0.1340
Gold-WPI	0	26.59969	0.0007	25.23156	0.0006
	1	1.368135	0.2421	1.368135	0.2421
Silver-WPI	0	52.06879	0.0000	49.71148	0.0000
	1	2.357313	0.1247	2.357313	0.1247
Copper-WPI	0	25.62334	0.0050	20.72728	0.0070
	1	4.896058	0.4184	4.896058	0.4184
Zinc-WPI	0	13.55735	0.0959	12.42965	0.0955
	1	1.127708	0.2883	1.127708	0.2883

Table 4: Cointegrating vectors from Johansen estimation

Variables	Vector # 1	Vector # 2
Log(Crude)	-1.7671759	1.7544326
Log(WPI)	1	-3.5389788
Log(Gold)	-1.0096462	4.3114964
Log(WPI)	1	-2.2483232
Log(Silver)	-1.0027849	1.1569745
Log(WPI)	1	0.8340556
Log(Copper)	-0.0342800	1
Log(WPI)	1	-1.3159629

6.2 Estimation of VECM and MS-VECM

After establishing a cointegrating relationship between variables of different models, next, linear VECM and different variants of MS-VECM are estimated. The tests based on information criterion are used to determine the number of regimes for each model.

6.2.1 Inflation and Crude

Table 5 shows the comparison of linear VECM and different specification of nonlinear MS-VECM based on information criterion (AIC, SIC, HQ) and log-likelihood values. According to AIC, the best model specification is MSIAH(3)VECM(1,1) with three regimes, heteroscedastic errors and an autoregressive order of one, SIC favours linear VECM(1,1) while HQ favoursMSIAH(2)VECM(1,1) with two regimes, heteroscedastic error and an autoregressive order of one.SIC supports more parsimonious model and protects from over-parameterisation by imposing stiffer penalty term associated with a number of parameters than AIC and HQ. Hence, preference is given to SIC test results as the selection is made among a

Table 5: Information criterion of VECM and MS-VECM of Crude and WPI

Lag=1	Estimation Period	No. of Obs.	AIC	SIC	HQ	Log-likelihood
VECM(1,1)	2005m7-2015m4	118	-526.75	-488.64	-511.39	274.37
MSIA(2)VECM(1,1)	2005m7-2015m4	118	-525.22	-459.41	-459.41	281.61
MSIAH(2) VECM(1,1)	2005m7-2015m4	118	-563.25	-480.12	-529.74	305.62
MSIA(3)VECM(1,1)	2005m7-2015m4	118	-554.13	-446.75	-510.84	308.06
MSIAH(3)VECM(1,1)	2005m7-2015m4	118	-574.42	-439.33	-519.96	326.21

parsimonious linear model and a less parsimonious nonlinear model. Thus, from an econometric point of view, linear VECM is selected for estimating the inflation hedging potential of crude oil and concluded that there is weak evidence in favour of two regimes and three regimes.

VECM estimation of crude oil and WPI is presented in Table 6. The speed of convergence towards the long-run relationship is determined by the coefficient of the error correction mechanism.The error correction coefficient is the product of cointegrating vector and speed coefficient. Cointegrating vector shows the long-run equilibrium relationship between variables and speed coefficient representing the speed ofcorrection of disequilibrium caused by deviation in the short-run.The negative sign of the long-run error correction coefficient (-0.219) and its t-statistics (-3.74) incrude oil futures price shows the convergence of crude futures price towards inflation. However,a positive sign of the error correction coefficient (0.037) inthe equation of inflation shows the divergence of WPI from crude futures price, though it is not significant. In order to hedge inflation risk, it is essential that the high crude futures price today results in high inflation tomorrow. Convergence of WPI towards crude futures price is essential for this reverse causality to be at work. The short-run dynamics are shown by changes in lagged value of crude oil and WPI. There is a significant and positive dependence of changes in crude oil return over its lagged return. However, there is an insignificantly negative relationship between lagged inflation index and changes in crude. Conversely, there is a positive and significant relationship between changes in WPI and changes in lagged crude oil prices, which signifies that increase in crude future prices results in an increase in WPI.It gives the positive indication of inflation hedging potential of crude oil in short-run. However, long-run dynamics showinefficiency of convergence of WPI towards crude futures price, which is a weak evidence of inflation hedging potential of crude oil futures.

Table 6: Results of the Linear VECM estimated for the model of Crude and WPI

Parameters		Δ Crude	Δ WPI
Intercept		1.16[3.75]*	0.349[1.12]
Δ Crude(-1)		0.409[3.85]*	0.481[4.52]*
Δ WPI(-1)		-0.083[-0.815]	-0.232[-2.27]**
Error Correction		-0.219[-3.74]*	0.037[-1.10]
Standard Errors		0.0819923	0.0820570
Correlation	Δ Crude	1.00000	0.513555
	Δ WPI	0.513555	1.000000

Values in the square bracket exhibit the't' statistics and * shows the significance level at 1%, ** at 5% and *** at 10%.

Table 7: Information criterion of VECM and MS-VECM of Gold and WPI

Lag=1	Estimation Period	No. of Obs.	AIC	SIC	HQ	Log-likelihood
VECM(1,1)	2005m7-2015m4	118	-914.82	-876.72	-899.46	468.41
MSIA(2)VECM(1,1)	2005m7-2015m4	118	-869.58	-803.77	-843.05	453.79
MSIAH(2) VECM(1,1)	2005m7-2015m4	118	-938.04	-854.91	-904.53	493.02
MSIA(3)VECM(1,1)	2005m7-2015m4	118	-906.85	-799.47	-863.56	484.42
MSIAH(3)VECM(1,1)	2005m7-2015m4	118	-964.61	-829.52	-910.15	521.30

6.2.2 Inflation and Gold

The details of information criterion and log-likelihood values of the linear VECM and different specification of nonlinear MS-VECM are presented in Table 7. As per AIC and HQ information criterion, the nonlinear model with three regimes is better than the linear model and the best model specification is MSIAH (3) VECM (1, 1). However, SIC supports the linear VECM (1, 1) as it has minimum SIC value compared tovariants of MS-VECM with two regimes and three regimes.From an econometric perspective, preference is given to SIC test results and the linear VECM is selected for estimating the inflation hedging potential of gold futuresand conclude that there is weak evidence in favour of two regimes and three regimes.

The estimation results of the linear VECM are presented in Table 8. There is an evidence of equilibrium adjustment in inflation index as the error correction coefficient (-0.254) has the negative sign and is statistically significant with t-statistics 3.56. This convergence of inflation towards gold future price gives an indication that inflation reacts to the changes in the prices of gold futures. It confirms that gold future price movements give direction to the inflationary expectation and can be used as a hedge against inflation. Short-run dynamics are shown by a positive and significant relationship between change in inflationand the lagged changes in the gold prices. It indicates the inflation hedging potential of gold futures in short-run. However, there is an insignificant and negative relationship between lagged WPI and change in gold prices. Thus, based on results of short-run dynamics, cointegrating vector and long-run equilibrium adjustment, it can be concluded that gold is able to provide a full hedge against inflation.

6.2.3 Inflation and Silver

The information criterion and log likelihood values of the VECM and MS-VECM for the model of inflation and silver are shown in Table9. Information criterion AIC and HQ suggest the MSIAH (3)VECM(1,1) as the best model specification among the linear and nonlinear models.However, SIC supports the linear VECM (1, 1)

Table 8: Results of the linear VECM estimated for the model of Gold and WPI

Parameters		Δ Gold	Δ WPI
Intercept		0.022[0.039]	-1.07[-3.52]*
Δ Gold(-1)		-0.128[-0.978]	0.267[3.81]*
Δ WPI(-1)		-0.123[-0.847]	-0.163[-2.09]**
Error Correction		-0.0016[-0.012]	-0.254[3.56]*
Standard Errors		0.0519077	0.0278990
Correlation	Δ Gold	1.0000	0.384578
	Δ WPI	0.384578	1.00000

Values in the square bracket exhibit the't' statistics and * shows the significance level at 1%, ** at 5% and *** at 10% .

Table 9: Information criterion of VECM and MS-VECM of Silver and WPI

Lag=1	Estimation Period	No. of Obs.	AIC	SIC	HQ	Log-likelihood
VECM(1,1)	2005m7-2015m4	118	-705.92	-667.82	-690.56	363.96
MSIA(2)VECM(1,1)	2005m7-2015m4	118	-647.38	-581.56	-620.85	342.69
MSIAH(2) VECM(1,1)	2005m7-2015m4	118	-740.60	-657.47	-707.09	394.30
MSIA(3)VECM(1,1)	2005m7-2015m4	118	-683.73	-576.35	-640.45	372.86
MSIAH(3)VECM(1,1)	2005m7-2015m4	118	-762.67	-627.58	-708.22	420.33

as the most fitted model compared to the nonlinear models. Thus, the results of SIC information criterion provide a weak evidence in favour of two regimes and three regimes and give direction to uselinear VECM (1,1) for estimating inflation hedging potential of silver futures.

Table 10 shows estimation results of VECM (1,1) for silver and WPI. The significant and negative coefficient (-0.376) of the error correction term oninflation index depicts the convergence of inflation towards silver future prices. This convergence suggests that movement of silver futures priceis a reflection of inflationary expectations and can be used as a hedge against inflation. Short-run dynamics depict insignificant and negative correlation between lagged WPI and changes in silver futures prices. However, the WPI hasa significant and positive relationship with lagged silver futures prices, which justifies the inflation hedging potential of silver futures in short-run. Thus, cointegrating vector and both long-run and short-run dynamics indicatethe full inflation hedging potential of silver futures.

6.2.4 Inflation and Copper

Table 11 shows a comparison of linear VECM and different specification of nonlinear MS-VECM based on information criterion and log-likelihood values. In the model of inflation and copper, all the information criterion and log likelihood values support the nonlinear model over linear model. However, AIC and HQ support the MSIAH (3) VECM (1, 1) while SIC suggestsfor MSIAH (2) VECM (1, 1). Based on SIC, the nonlinear MSIAH(2)VECM(1,1) is selected with two regimes, heteroscedastic error and an autoregressive order of onefor estimating the inflation hedging potential of copper futures.

Smoothened probabilities of being in the first regime and the second regime are estimated by MS model and depicted in Figure 1. The first regime persists during 2005m7 to 2006m3, 2007m7 to 2007m10, 2008m5 to 2008m8, 2010m3 to 2010m11, 2011m3 to 2013m5 and 2013m9 to 2014m12. All these periods show the period

Table 10: Results of the linear VECM estimated for the model of Silver and WPI

Parameters		Δ Silver	Δ WPI
Intercept		0.515[0.566]	-1.78[-4.08]*
Δ Silver(-1)		0.045[0.287]	0.192[2.53]**
Δ WPI(-1)		-0.018[-0.114]	-0.026[-0.343]
Error Correction		-0.106[-0.554]	-0.376[-4.09]*
Standard Errors		0.0901157	0.0431783
Correlation	Δ Silver	1.000000	0.466516
	Δ WPI	0.466516	1.000000

Values in the square bracket exhibit the't' statistics and * shows the significance level at 1%, ** at 5% and *** at 10% .

Table 11: Information criterion of VECM and MS-VECM of Copper and WPI

Lag=1	Estimation Period	No. of Obs.	AIC	SIC	HQ	Log-likelihood
VECM(1,1)	2005m7-2015m4	118	-897.16	-859.06	-881.80	459.58
MSIA(2)VECM(1,1)	2005m7-2015m4	118	-735.18	-669.37	-708.65	386.59
MSIAH(2) VECM(1,1)	2005m7-2015m4	118	-1009.25	-926.12	-975.74	528.62
MSIA(3)VECM(1,1)	2005m7-2015m4	118	-853.74	-746.37	-810.46	457.87
MSIAH(3)VECM(1,1)	2005m7-2015m4	118	-1056.90	-921.81	-1002.44	567.45

Table 12: Results of the nonlinear MSIAH (2) VECM (1, 1) estimated for the model of Copper and WPI

Parameters	Regime 1		Regime 2	
	Δ Copper	Δ WPI	Δ Copper	Δ WPI
Intercept	0.835[4.26]*	0.170[7.38]*	2.29[2.41]**	1.41[13.85]*
Δ Copper(-1)	-0.175[-1.59]	0.018[1.38]	0.413[2.47]**	0.072[2.74]*
Δ WPI(-1)	-1.009[-2.60]**	0.053[0.961]	-0.554[-0.764]	-0.112[-1.00]
Error Correction	0.006[-4.18]*	-0.034[-7.34]*	0.016[-2.39]**	-0.282[13.79]*
Variance-Covariance Matrix				
Δ Copper	0.00196[3.65]*	0.000039[1.14]	0.009874[4.31]*	-0.0000851[-0.35]
Δ WPI	0.000039[1.14]	0.0M00033[4.79]*	-0.000085[-0.35]	0.0002385[4.23]*

Transition Matrix			Persistence of Regimes		
	Regime 1	Regime 2	Observations	Ergodic Probability	Duration
Regime 1	.8349742	0.2859034	74.81	0.6340317	6.059659
Regime 2	0.1650258	0.7140966	43.18	0.3659683	3.497685

Values in the square bracket exhibit the't' statistics and * shows the significance level at 1%, ** at 5% and *** at 10%.

of low volatility or normal times, i.e. the absence of any major shocks. Conversely, the second regime presents in periods of high volatility such as a period of sub-prime crisis from 2008m7 to 2010m2. The ergodic probability and transition matrix suggest a predominance of the first regime rather than the second regime. The first regime persists for 63.40 percent of the months and lasts for 6.059 months on an average while the second regime remains for 36.59 percent of the months lasting for 3.49 months on an average.

Long-run equilibrium relationship is explained by the error correction term of copper and WPI for each regime as presented in Table 12. The first and second regimes show the significant adjustment in the WPI index towards long-run equilibrium for any variations in the prices of copper during short-run and it is appropriately represented by both the regimes. This result gives the positive indication of the inflation hedging potential of copper futures. Short-run dynamics are depicted by the changes in lagged value of copper and WPI. There is a negative and significant relationship between the change in copper and change in lagged value of WPI in the first regime. The second regime shows the significant dependence of change in WPI over changes in lagged value of copper. Hence, the short-run dynamics show the positive indication of inflation hedging potential of copper for second regime rather than the first regime in short-run. Based on results of the cointegrating vector, short-run dynamics and long-run adjustment coefficient for both the regimes, it is concluded that copper futures can provide the partial hedge against inflation.

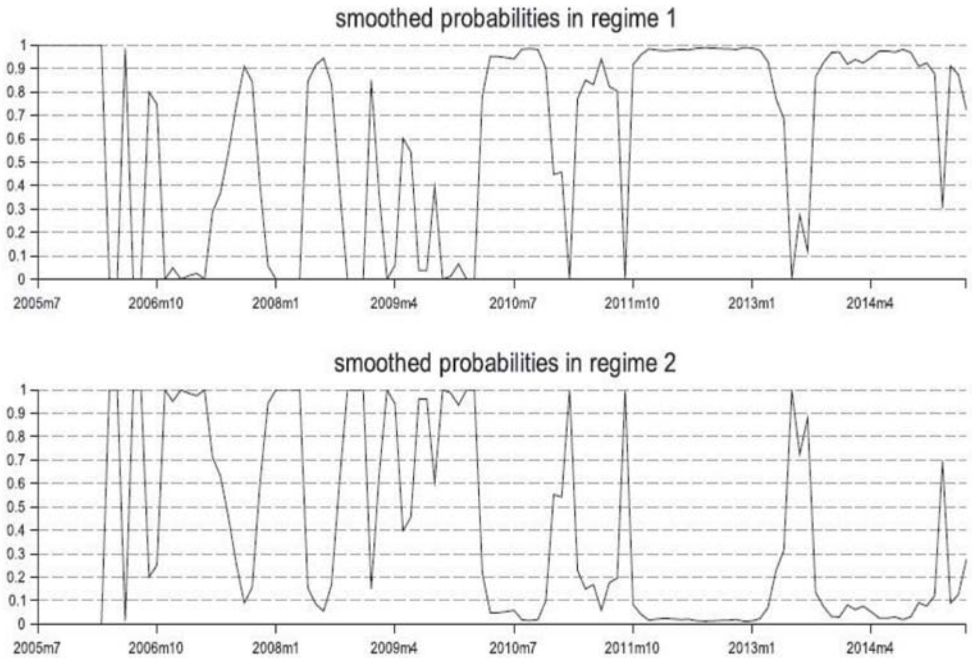

Figure1: Smoothed probability of regimes for the model of Copper and WPI

7. Conclusion

This paper empirically examines the inflation hedging potential of crude oil, gold, silver, copper and zinc futures under the nonlinear framework. The Johansen cointegration test suggests the lack of long-run association between zinc future and inflation and it is concluded that zinc futures cannot be used as a hedge against inflation. In addition, results give evidence in support of full inflation hedging potential of gold and silver futures and partial hedging capability of copper futures. On the contrary, empirical findings for crude oil give the weak evidence in support of its inflation hedging potential. Notably, investment decision in copper does not depend on the time horizon of investment as the inflation hedging potential of copper is common in both the regimes. Moreover, smoothened probability of regime classification characterises the first regime as a period of low volatility or normal period and the second regimeas a period of high volatility affected much by major shocks like the sub-prime crisis. Based on the results, it is concluded that futures of precious metals possess better inflation hedging potential than energy and industrial metals.

From an investors' perspective, they can effectively use gold, silver and copper as a hedge against inflation and the inflation hedging potential of these commodities does not dependon time horizon of investment. Based on these findings, it can be suggested that futures prices of gold, silver and copper can be used to forecast inflationrate.

In India, commodity futures market is working under several institutional constraints. The current study highlights one of the important benefits of investment in commodity futures in terms of their inflation hedging potential. The findings of this study are crucial for global and domestic investors who want to protect their investment returns from inflation risk, which is considered a crucial risk factor. In addition, the results of full inflation hedging potential of gold and silver futures provide aninitial pathway to the policy-makers to design a regulatory framework which will increase awareness among the investors and probably help in enhancing the investment demand for these commodities in India. Moreover, the findings of the studywill pave the direction to the policy-makers in designing such policies that will strengthen the derivative trading in India. It may increase the intensity of commodity derivative trading by growing awareness among the investors about the commodity futures as an alternative asset class. This study can be extended further by including the other commodity futures and different asset classes such as stocks, bonds and real estate in this nonlinear framework to have more elaborate and comparative analysis of inflation hedging potential of different asset classes.

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Pension Funds as Financial Intermediaries: A Literature Review

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Abstract

Pension funds have gradually become one of the biggest institutional investors the world over. Even as their role in moving or stabilizing the capital markets is widely understood and well documented, the role performed by pension funds as financial intermediaries is less recognized and rarely mentioned. This paper presents a literature review to look at various facets of financial intermediation performed by pension funds. In the process, paper also mentions some unique characteristics of such funds, such as being custodians of very long term funds, which differentiate pension funds from other intermediaries such as Banks. Paper concludes by observing that pension funds are expected to become very significant intermediaries going forward because of not only the economic factors such as increase in global wealth, but also the sociological factors such as ageing population and improving longevity.

1. Introduction

By the end of 1995, pension funds in Finland, the UK, Switzerland, and the Netherlands already had total investment corpuses exceeding GDP of the respective countries; in fact in the Netherlands, the pension funds' investments were twice as large as the GDP (Iorgova&Ong, 2008). In the US, share of investments by pension funds in domestic corporate equity rose from about 5% in 1966 to about 25% in 1995, outstripping any other class of institutional investors such as insurance companies or mutual funds (Allen &Santomero, 1998). As of 2013, assets held by pension funds in the US were about 83% of the GDP (OECD, 2014). Talking about all OECD countries, pension fund investments were 84.2% of GDP on a weighted average basis (OECD, 2014). Looking at India, an emerging economy, where pension funds are still in nascent stage and population at large is still unconcerned about old age social security, total investment corpus held by such funds have reachedRs 12 lakh croresin 2012, which would be about 11% of the then GDP (EY, 2013).

The preceding discussion clearly points out the role and significance of pension funds in overall accumulation and investment of domestic financial savings. As people around the world get more and more concerned about savings for their sunset years, pension funds are expected to get even more significant going forward. Another booster to such funds would be adoption of defined contribution schemes in many countries such as Chile, Peru, Sweden or even India[1]..

Despite the important role of financial intermediation performed by pension funds, they are scantily recognized as such.As pension funds collect their periodic contributions from households and as they keep on doing the same for years together, their role as financial intermediaries should have significant repercussions for capital formation and economic growth in a country. Through literature review, this paper advocates consideration of pension funds as valuable financial intermediaries and seeks to delve deeper into the aspect of financial intermediation done by the pension funds in an economy-how they facilitate channelization of financial savings of households, the fund-surplus units, to corporates and governments, the fund-deficit units.

2. Growth of Pension Funds

Pension funds have grown substantially in the past four decades majorly due to increased economic prosperity that nudges people to care more for their future and increased number of people covered under a pension fund scheme even as the number of schemes themselves hasincreased. Significantly positive increments in life expectancy the world over have also contributed to greater demand for pension products.

1 In India, all the government officials joining services after 01/01/2004 have been made a member of the New Pension Scheme (NPS), which is a defined contribution (DC) scheme offering benefits based on accumulated contributions and income earned thereon rather than a defined benefit (DB) scheme, which typically guarantees the benefits based on service length and last drawn salary

Moreover, incentives given by governments in form of tax concessions also have played a crucial role in increased popularity of pension plans (Pilbeam, 2005). Why increased economic prosperity should enhance the demand for pension products? One can put forth a proposition that savings for pension is a luxury good, and hence the income elasticity for this good would be greater than one. This explains why pension savings grow at a more rapid pace than the income itself. Apart from these attributes, pension savings in many countries have been made compulsory and social security contributions are deducted at the time of disbursements of salary itself (which can be termed as a modified version of the tax deducted at source (TDS)), which also plays a significant role in enhancing the overall fund size available with the pension funds. Yet another factor for popularity of pension funds is the portfolio diversification/professional fund management service offered by them at reasonable cost due to economies of scale achieved in their operation (Sellon, 1992). Proponents of pension plans say that provisioning of such schemes ends up increasing the net domestic financial savings (Munnel&Yohn, 1991).

A schematic representation of the arguments made above is given in the Annexure-1.

3. Intermediation by Pension Funds

Allen and Santomero, in their seminal paper, point out that the traditional roles performed by financial intermediaries on the basis of reduction of 'transaction costs' and 'information asymmetry' were passé, and intermediation was much more about risk management, risk transfer, and dealing with complex financial instruments in the present economic setup (Allen &Santomero, 1998). Hence, if viewed through the lens of traditional theory, pension funds may be asked whether they are really doing the role of intermediation as they hardly involve themselves in reducing the information asymmetry through repeated contacts and transactions with their depositors and borrowers as banks do, nor do they have any incentive to do so. But when viewed in terms of the broader definition suggested by Allen and Santomero, pension funds surely facilitate risk transfer by providing their members good opportunity to diversify among different asset classes; and also facilitate innovations in financial product development if not developing such products themselves. On the top of that, they certainly reduce transaction costs as they also function on the basis of pooling of resources and lending the same to needy borrowers as banks do.

Davis (2000) studied various intermediation roles performed by pension funds as per the criteria prescribed by Merton and Bodie (1995). As per his study, pension funds must be termed as financial intermediaries based on a number of attributes. First, they indirectly affect the "clearing and settlement of payments" in an economy for bringing in efficiency in the overall financial system in general and securities markets in particular as they are often counted among the largest institutional investors in capital markets. Second, they provide for "a mechanism for pooling of funds and subdivision of shares" as by collecting contribution from thousands and millions of depositors, pension funds are performing exactly thatfunction. Third, pension funds have "ways of transferring economic resources" across time, as they eventually deal with different phases of lives of members, and space, as they assist members by diversifying to include international securities in their portfolios. Fourth, they demonstrate "ways and means to manage uncertainty and control risk" by providing insured retirement income to households and also by diversifying while making investment decisions.Fifth, pension funds assist in "providing price information" by requiring companies to adhere to strict disclosure norms.Lastly, pension funds also "provide ways to deal with incentive problems" by having an edge over individual investors due to voting rights and professional competence[2]. As pension funds meet all the criteria put forth by Merton and Bodie (1995), they should be rightfully recognized as financial intermediaries.

Pension funds, however, possess unique characteristics and need to be considered separately from other recognized intermediaries such as banks and insurance companies.There are many aspects that are distinctive to intermediation by pension funds in an economy. As happens in case of other forms of intermediation, pension funds also collect their funds from households, but they have historically been less regulated than the traditional intermediaries such as banks (that

2 Agency problems could still arise when pension funds are involved as in case of any other intermediary because ownership and management are often dissociated and agency problems arise precisely due to this fact.

specialised in short term lending), insurance companies, or thrift institutions (that catered to home loans) and hence could invest more aggressively in stocks and could lend not only to satisfy short term needs of corporates by subscribing to their commercial papers but also invest in long term projects as they could hold long -maturity funds (Sellon, 1992). Developments in the US as mentioned before are testimony to this effect[3].

Another aspect of pension funds is long term horizon and very stringent terms and conditions regarding premature withdrawal. This aspect of 'extent of certainty' about non-withdrawal of funds has significant repercussion regarding the kind of investment avenues that could be explored and also regarding how asset-liability matching should be reached at. Banks, the most well-known financial intermediaries, have to be content with withdrawal by a depositor at his whims and fancy- in fact their term deposits could also be broken easily. On the other hand, banks cannot demand back their disbursed loans as and when they need the money back. This dichotomy in their operations keeps banks busy in money markets while trying to meet various prudential norms. Pension funds hardly have to worry on these counts. Once money flows into their coffers, they are assured that it will flow out only at a certain future point of time unless or until some very stringent conditions/eventualities (such as death of a subscriber) occur/take place. This gives the pension funds a great leeway in choosing their investments, but then this is why the subscribers expect much better returns from their pension fund managers than from their bankers.

4. Economic Aspects of Intermediation by Pension Funds

We may now discuss the economic impact of pension funds, both at macro level (i.e. national level) and micro level (a household, or an individual member of a pension fund).

I. Impact on National Savings

As per Munnell and Yohn, if employees and employers both know about how pension provisioning would affect disbursements to employees in short vs. long term, pension benefits will be exactly offset by reduction in savings from current income (1991: 6). They argue that any diversion to pension benefits would enhance postretirement income for an employee, who, knowing fully well the implications will reduce his current saving to enjoy the same benefits he would have otherwise got if left to fend for himself (Munell & Yohn, 1991). This will result in no enhancement of national savings contrary to argument given earlier. This theoretical conclusion using idealized setup involving fully rational human-beings and applying the life-cycle hypothesis (which itself has been questioned on the basis that savers do save for inter-generational transfer of funds and not only for their own life-time consumption), however, could be questioned.

A study has been done by Sadhak (2004), wherein he has observed the savings rates, capital formation, and GDP growth rates in countries that undertook pension reforms. Such countries include Chile (1981), Peru (1993), Colombia (1994), Argentina (1994), Uruguay (1996), Mexico (1997), Bolivia (1997) in the Latin America, apart from Sweden (1998) in Europe, and Singapore and Malaysia in Asia[4]. The study found that the gross domestic savings in most of the Latin American Countries increased post pension reforms, though they declined afterwards, e.g., Chile that took reforms in 1981, had domestic savings at 20% of GDP in 1980, which increased to 28% in 1990 and to 29% in 1995 before declining to 23% in 1999[5]. Similarly, for Sweden, which had domestic savings at 19% of GDP in 1980, it increased to 22.4% of GDP in 1999 and further to 27.1 of GDP during 2010-14. For Singapore, the savings were at 38% of GDP in 1980, but increased to a very impressive 52.1% of GDP in 2010-14[6]. Evidences for gross domestic capital formation and the GDP growth rate are, however, mixed. Some LACs such as Chile or Mexico saw appreciable growth in capital formation and the GDP post pension reforms, while others such as Peru or Columbia did not notice the same. For Sweden, the effects have been positive,

3 The Indian pension funds market is still in nascent stage; hence studies done in advanced economies such as the US have been referred to more readily.

4 In Singapore and Malaysia, reforms have been gradual. India has also been included in the study, but the pension reforms were too recent to allow any significant effect on macroeconomic parameters in India.

5 As per the latest world bank estimates, Chile's domestic savings were 23.6% of GDP for the period 2010-2014.

6 Data taken from Sadhak, 2004 and the web-page of the World Bank; Singapore, at 37%, has one of the highest contribution rates for a social security scheme globally.

while for Singapore and Malaysia the results have been mixed. It would, however, be naïve to conclude that significant or noticeable changes took place or not due only to pension reforms. To check the overall effect, it would be better to control for other factors that could impact the macroeconomic factors (such as business cycles, rains, business environment, political milieu etc.) and then only to carry out the required regression to see the results. One must factor in the time variable in the equations as well because pension reforms are expected to impact the macroeconomic variables only with a lag.

II. Returns generated by pension funds

Another problem could arise due to agency problem. Though the funds are collected from households (the principals) by pension funds, they are managed by professional fund managers (the agents), who may very often be a third party exacerbating the agency problem as such fund managers may not work in the best interest of original principals being so far away (Klumpes& McCrae, 1999). In fact Klumpes and McCrae cite Ippolito and Turner (1987) who studied the performance of pension fund managers with respect to the markets they were investing in and also compared the performance of pension fund managers with performance of equivalent mutual fund managers and found that that pension fund managers significantly underperformed both the benchmarks and mutual fund managers (1999: 262).One of the reasons cited in the paper is that even as pension trusts appoint reputed fund managers in order to discharge their fiduciary duty to their members, they are often naïve financially and cannot keep the required tab on performance of such fund managers, who can take benefit of information asymmetry arising in such circumstances (1999: 262).

III. Nature of Pension Fund

There is another matter of differentiating defined benefit (DB) schemes from defined contribution (DC) schemes. As has been pointed out briefly, defined benefit schemes that were more popular early on depended on inter-generational transfer of savings through pay-as-you-go (PAYG) systems. Retirement income of the previous generation was generated by taxing the income of the present generation. However, most of the countries (including India) and indeed institutions such as the World Bank consider such schemes unsustainable. DB schemes were thought to overburden the exchequer, and promote unemployment. Moreover, they did not induce the long term savings behaviour, and hence could not contribute to development of the capital market and economic growth in a country (Sadhak, 2004). As against this, defined contribution schemes are always fully funded and individuals take on all the responsibility of their retirement by regularly contributing to a scheme, which would offer annuity income after retirement based on the corpus accumulated during the working age. Such schemes are expected to promote savings in individuals, unburden the exchequer and channelize such funds to productive usage in the economy[7]. However, defined contribution schemes have also been criticised for not taking care of unemployed, underemployed, and self-employed (Tuesta, 2011). Moreover, such schemes also transfer the burden of uncertainty[8] to the individual, who might be less capable than the state to deal with any eventuality.However, a significant benefit of the contributory pension schemes (i.e. defined contribution plans) is greater availability of individual savings for investments in domestic capital markets. As has been pointed out earlier, pension funds have become one of the largest institutional investors in capital markets in many developed countries-be it the stock markets or the debt segment. In OECD[9] countries, weighted

7 A parallel phenomenon had taken place in India with regard to pension provisioning for central government's employees. All civil servants who joined their service before 01/01/2004 were covered under a defined benefit system, wherein they did not contribute a penny to any scheme, but were guaranteed a life time pension (which would be payable to the spouse after death of a pensioner, however, at reduced rate), whose quantum was based on the length of service rendered and the amount of salary last drawn. This pension burden would be charged to the consolidated fund of the country, which is largely derived from present tax payers. This is also called as the pay-as-you-go system. Realising that the government would not be able to meet the ever increasing burden of pension provisioning going forward, all the civil servants joining service after 01/01/2004 have been made members of the new pension scheme (NPS), which is a defined contribution scheme. Individual officials contribute 10% of their basic salary to the fund every month; government provides the matching contribution. Based on the scheme chosen by an individual (various schemes are available with different combinations of investments in equity (E), corporate debt (C), and government bonds (G)), he will accumulate certain corpus at the age of his retirement. This corpus will then be used to buy an annuity from a listed life insurance company. Government, hence, will not be concerned about the quantum of pension a person is getting, its only burden is to keep on providing the matching contribution during the length of service of a government employee.

8 What if corpus is majorly invested in stocks and markets crash just as a person is approaching his retirement.

9 Organization for Economic Cooperation and development-a group of 21 most developed countries.

average investment in equities was 40.3% of their total investments, and pension funds in these countries invested over 70% of their total corpus in two assets classes- equities and bonds (OECD, 2014). Considering that pension funds in these economies had accumulated investments of $24.7 trillion (OECD, 2014), and considering the proportion of this corpus flowing to capital markets, such funds must be playing significant role in deepening and widening of domestic capital markets while also enhancing overall liquidity.

IV. Pension Funds as Conscience Keepers

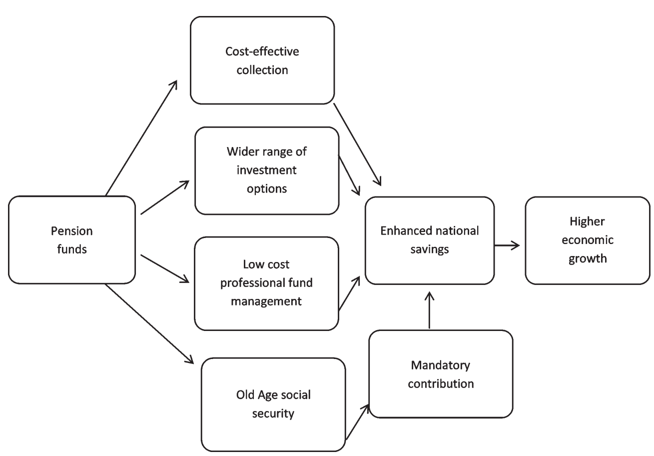
Many pension funds such as CalPERS[10] have been actively involved in investor activism and have tried to enforce high standards of social and human rights in such companies where they put in their money[11]. These investors i.e., pension funds have assisted in bettering the overall corporate governance standards. Pension funds also help in building the institutional capacity in the areas of fund management, offering innovativefinancial instruments, and prudent disclosure norms (Sadhak, 2004).

5. Conclusion

As per the discussion above, we can fairly conclude that pension funds have already become a significant financial intermediary in most of the developed economies. Even in emerging economies, they are destined to become significantly large intermediaries in not so distant future. Attributes such as assured contributions, long maturity periods, and relaxed regulation compared to other financial intermediaries such as banks or insurance companies; increasing economic prosperity; and ageing population coupled with increasing life expectancy place pension funds in a unique sweet spot. However, as noted earlier, many of the pension funds have underperformed the benchmark indices and have failed to protect the interest of their members- one recent case being that of filing of bankruptcy by Detroit in the US in 2014 because of inadequate funding of the defined benefit scheme run by the city administration. Pension funds assume a fiduciary responsibility by being trustees of old age related savings of their members and must work in the best interest of their subscribers; else any error might balloon into substantial socio-political problems[12] due to compounding of errors over long gestation periods.

There is also a need to test the effect of pension reforms in such countries that already have carried out such reforms. As of now, there are both proponents and opponents of the opinion that pension funds could affect macroeconomic indicators such as national savings, consumption, capital formation, and GDP growth rate positively. Not much of work has been done to empirically test the hypothesis that pension reforms should positively impact the parameters mentioned above. Researchers should try to fill this important research gap.

Annexure-1



10 California Public Employees Retirement Scheme (CalPERS) is one of the biggest pension funds globally and is the biggest public pension fund in the US having a corpus of $299.6 billion as on 31/03/2015 (Source: CalPERS official website, accessed on 23/07/2015).

11 A related comment could be made about the Employees' Provident Fund Organization (EPFO) in India, which has an accumulated investment corpus of over $ 100 billion by the end of the FY 2014. EPFO has been exclusively investing in the debt segment and has helped in deepening this segment with some significance as one of the largest institutional investors in the segment. EPFO has, however, shunned investments in the stock markets, which, if allowed, could have provided much needed stability to the domestic stock market-to some extent at least. This appears going against the wind noticing the pattern largely adopted by pension funds across the world and considering that stocks have historically provided highest risk premiums over long horizons that match the liability schedules of such funds. In fact, investment by CalPERS in Indian currency dominated assets as on 30/06/2014 stood at $1.27 billion even as domestic pension and provident funds avoided investing in their own equities. EPFO has recently allowed investments in equities to the extent of 5% of the incremental funds and even though this money will be invested in index funds (passive investment), this augurs well for both the Indian capital markets and the members of EPFO.

12 As this paper was being written, on 16/06/2015, the talks between Greece and the IMF and other European lenders to Greece failed. In a televised address, the Greek Prime Minister put the blame on lenders for asking him to undertake austerity measures such as 'pension cuts' and 'tax increases'. This again underlines the sensitivity of issues related to pensions provisioning.

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Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA): A Critical appraisal of its performance since its inception

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Abstract

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) was implemented and came into force on February 2, 2006. It was the first act of its kind in the world wherein an economic safety net is provided to around 2/3rd of the population through a right to work. The scale on which it has been provided is just mindboggling, engaging around 1/10th of the total world population. It was second in a series of right based policies Government of India has rolled out in the past decade.

This research considers the performance of MGNREGA since its inception and examines its objectives, design and the several modifications in it. The purpose is to examine the consistency and effectiveness of this policy. An assessment of the program till date has been performed using secondary data analysis and the intended and non-intended effects and impacts are discussed. It is clear that the program is no silver lining but have several clouts associated with it.

Keywords: MGNREGA, policy evaluation, objectives, design, consistency, effectiveness.

1. Introduction

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) was implemented and came into force on February 2, 2006. It was the first act of its kind in the world wherein an economic safety net is provided to around 2/3rd of the population through the right to work. The scale on which it has been provided is just mindboggling, engaging around 1/10th of the total world population. It was second in a series of right based policies Government of India has rolled out in the past decade. The others are the Right to Information (RTI) Act, the Right to Education (RTE) Act, the Right to Food Act etc. passed in 2005, 2009 and 2013 respectively.

It was implemented in a phase wise manner; with the first 200 most backward districts covered in Phase I i.e. 2006-07. The Phase II included 130 additional districts and the final phase covered the remaining rural districts. The Act currently covers all the 645 rural districts throughout India. It has generated 1679.01 crore person days of employment since its inception at a total expenditure of Rs. 250310.81 crores (refer to Table 1 for details).

The MGNREGA act has laudable objectives of providing a work-guarantee to the poor rural households on one hand and creating quality asset, strengthening rural resource base, ensuring social inclusion, and strengthening Panchayati Raj institutions on the other. However, questions have been raised about the timing and purpose of the act, its design and structure, about the logic of state intervention in labour market in an era of liberalization, likely impacts of the programme on asset creation and economy and its overall success.

2. An Analysis of ItsDesing, Objectives& Modifications

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) was approved by the parliament in its 2005 monsoon sessionon September 5, 2005. It was within a year of the formation of the UPA-I government at the centre and marked the beginning of the pre-election promise fulfillment of the Congress led UPA-I government regarding measures to strengthen rural India. It was implemented in a phase wise manner, with the first 200 most backward districts covered in Phase I beginning February 2, 2006. The Phase II beginning on April 1, 2007 included 130 additional districts and the final phase beginning on April 1, 2008 covered the remaining rural districts. The Act currently covers all the 645 rural districts throughout India. It emerged in a context wherein there was economic growth without wider reach, when poverty and unemployment

TABLE 1. MGNREGA at a Glance

		FY (2014-2015)	FY (2013-2014)	FY (2012-2013)	FY (2011-2012)
Total no of Districts		645	644	636	635
Total No. of Blocks		6601	6576	6568	6378
Total No. of GPs		247643	247643	247643	247643
Total no of Villages		778134	778134	778134	778133
Total No. of HH Registered(In Cr)		13	13.3	13.2	12.6
Total No. of Workers in Job Card(In Cr)		28.9	29.5	29.3	27.8
Number of GPs with NIL exp		112190	26097	26190	25389
Number of Ongoing Works(In Lakhs)		72.7	72	79.1	53.2
Total No. of Works Takenup (New+Spill Over)(In lakhs)		73.8	93.6	104.6	80.8
	Wages(Rs. In Cr.)	4407.3	26588.8	27152.8	24306.2
	Material and skilled Wages(Rs. In Cr.)	1184.5	9602.1	10430	10650.5
	AdmExp:				
Total Exp (In Cr)	GP Level	6	224.7	307.6	301.8
	Block Level	104.4	1329.3	1330.1	1191.7
	District Level	30.5	592.6	482	514.4
	State Level	19.557	200.166	32.936	108.055
	Total Adm Expenditure	160.5	2346.7	2152.7	2116
	Total Exp(Rs. in Cr.)	5752.3	38537.6	39735.4	37072.7
	Labour Vs Material(%)	78.8	73.5	72.2	69.5
	Admin Exp(%)	2.8	6.1	5.4	5.7
Wage Employment Provided (in lakhs)	Households	116.3	478	498.9	506.4
	Individuals	165.2	736	797.3	820
	Men	67.3	383.3	422.1	446.6
	Women	97.9	352.8	375.3	373.3
	SCs	36.9	167.3	181.7	185
	STs	28.6	129.3	142.9	147.4
	Persons with Disability	1.6	4.8	4.6	4
Person days (In Cr)	Total as per LB	227.0	258.6	278.7	199.6
	Persondays Generated so far	19	219.7	230.5	218.8
	% of Total LB	8.4	84.9	82.7	109.6
	% as per Proportionate LB	39.2			
	SC persondays	4.1	49.6	51.2	48.5
	ST persondays	3.2	37.9	41	40.9
Average Wage rate per day per person		130.3	132.7	121.4	114.5
Average days of employment provided per Household		16.3	46	46.2	43.2
Total No of HHs completed 100 Days of Wage Employment(In Lakhs)		0.1	46.3	51.7	41.7
% payments generated within 15 days		73	50.9	63	57.8
% of payments Disbursed through EFMS		39.2	26	0.9	0

Performance since inception: Person-days Generated (In Cr.): **1679.01**
Total expenditure(In Rupees Crore): **250310.81**

Source: MGNREGA website

wereincreasing, and agriculture and rural economy werein distress (Sharma,2010) .

a. Objectives of MGNREGA

The primary objective of the act is to provide a minimum level of household security to the rural households by providing right to work on demand i.e. at least 100 days of unskilled labour. The gazette document of MGNREGA (2005) outlines the primary objective of the act as:

"An Act to provide for the enhancement of livelihood security of the households in rural areas of the country by providing at least one hundred days of guaranteed wage employment in every financial year to every household whose adult members volunteer to do unskilled manual work and for matters connected therewith or incidental thereto."

Source: (NREGA Gazette document)

MoRD (2014) outlines the other objectives of the Act, which include creation of productive assets both of prescribed quality and durability by providing wage employment, strengthening the livelihood resource base of the rural poor, proactively ensuring social inclusion of women, SCs and STs, and strengthening the Panchayati Raj Institutions (PRIs). The PRIs perform an active part in formulation, implementation and monitoring of the scheme. MoRD (2012, 2010) also stated the auxiliary objective of the act as strengthening natural resource management (NRM) through works that address causes of chronic poverty like drought, deforestation and soil erosion to ensure sustainable development. Moreover, strengthening grass root processes of democracy and infusing transparency and accountability in governance were also mentioned as process outcomes. MoRD (2014) does not mention these auxiliary objectives and process outcomes.

b. The Salient Design Features of MGNREGA

For the achievement of the desired objectives, MGNREGA has several design features which were missing in the erstwhile public works and employment generation programmes. India has a long history of public-works based employment guarantee programs and its experiments with them dates back to the 1980s. Some of them are: National Rural Employment Programme (NREP), Rural Landless Employment Guarantee Programme (RLEGP), JawaharRozgarYojana (JRY), Employment Assurance Scheme (EAS), Jawahar Gram SamridhiYojana (JGSY), Sampoorna Grameen Rozgar Yojana (SGRY) and National Food for work programme (NFFWP) implemented duringthe periods 1980-89, 1983-89, 1988-89, 1993-1999, 1999-2002, 2001-06 and 2004-06 respectively. SGRY and NFFWP were merged to NREGA in 2006. Pankaj (2012) highlighted several challenges in the implementation of these programmes, enumerated as following:

1. All of these schemes were centralized schemes, formulated and implemented by the bureaucracy without any consultation and involvement of the community.
2. The second feature was their supply-driven nature and thus employment was provided based on the needs of the government. Thus, the needs of the people were kept at bay.
3. Poor mechanism for accountability and transparency with no provision for social accounting and monitoring. It led to a lot of pilferage and wastage of resources and there were cases of leakage and rampant corruption by the government officials.
4. There was inadequate employment generation. Moreover, the employment generation was not seen in linkage with provision for minimum livelihood security.
5. Income, minimum wages and workers' amenities were not part of the entitlement, thus not ensuring at least a minimum level of dignity to the poor.
6. Low participation of women in the programmes.
7. Employment opportunities were not flexible to the worker's demand.

According to Sharma (2011, 2010), MGNREGA marks a significant departure to these supply driven work-based employment policies and makes a transition to right-based demand driven policy. MGNREGA has its inspiration from the Employment Guarantee Scheme (MEGS) of Maharashtra, which conceived as a drought relief measure in the years 1972-73 and later got converted into a legal guarantee programme in the year 1975. The MEGS had several distinctive policy design features and was first of its kind policy based on entitlement based approach and a demand-driven work based employment policies. Although there were mixed evidences (Datar, 1990; Dev, 1995; Patel,2006; Vatsa, 2006) regardingits success, MEGS was lauded for its entitlement based and demand-driven approach. MGNREGA draws heavily on MEGS for its objectives, design and implementation structure. Some of the salient features of MGNREGA over its predecessors, as outlined in Pankaj (2012) & Sharma (2010, 2011), are as follows:

1. Unlike its predecessors, which had their beginnings in executive orders, MGNREGA is an act of the parliament and thus has both legal superiority as well as constitutional approval.
2. It is irrevocable and can be dismissed only by another Act of parliament.
3. It is not only a work-based employment programme butalso a means to integrate the agenda of providing minimum livelihood security to rural households and other development objectives.
4. The basic thrust of the Act is entitlement and it provides provisions for minimum wages, appropriate worksite facilities and ensures adequate female participation (at least one-third of the workforce).
5. It is a first-of-its-kind experiment on partially decentralized planning, implementation and monitoring of program through the Panchayati Raj Institutions (PRIs) across states.

Other key features of MGNREGA offering it a distinctive character are as following:-

1. At least 100 days of employment at a minimum wage, thus ensuring a minimum livelihood security for the poor rural households, hence offering them a life of dignity.
2. A demand-driven employment strategy allowing for the self-selection of the participants.
3. Unemployment expenses to the demander in case of inability of the state agency to provide for suitable employment, thus helping to keep the government officials on their toes for providing gainful employment.
4. Providing funds for MGNREGA is a legal obligation and is not subject to budgetary allocations, thus ensuring that livelihood of poor is not contingent upon the fiscal allocations.
5. 60% of the project cost to be spent on wages of the unskilled labour and 40% on wages of semi-skilled labour, skilled labour and material costs.
6. Central funding for 100% of the wage costs of the unskilled labour and 75% of wages of semi-skilled labour, skilled labour and material costs. State to provide for the unemployment wages.
7. A non-lapsable corpus of funds which can be carried over to subsequent fiscal years unlike budgetary allocations.
8. An emphasis on the works of water-conservation and harvesting, which is an important area of concern in rural areas.
9. A decentralized implementation mechanism through PRIs.
10. Social auditing to enforce transparency and accountability
11. Four kinds of worker entitlements viz. drinking water, shelter, first aid and crèche for children (below 6 years) of female workers
12. No contracts as far as possible and no use of machines
13. Provision of ombudsman and three-tier grievance redressal mechanism.

Pankaj (2012) notes that as a policy instrument MGNREGA fits into many shoes. An analysis of the design objectives and salient features of the act reveals that it can be seen as a means to provide social security, employment generation, conditional cash transfer, and it also works as an initiative for rural development and a macroeconomic policy intervention. Its multi-directional and multi-pronged objectives create a lot of confusions about the exact nature of the program. One of the key things it does is to enshrine the principle of minimum livelihood security as a non-negotiable democratic right of citizens despite concerns about the course and exact nature of development. Thus, it establishes the idea of rights and entitlements as part of democratic citizenry firmly, which can have substantial implications for future.

c. *Modifications introduces in MGNREGA over time (TABLE 2)*

TABLE 2. A Brief Timeline of the Changes in MGNREGA (2006 - 2014)

Timing	Event	Changes in Program Objectives	Changes in Program Design	Changes in Program Implementation
February 2006	NREGA 1.0 launched, 200 most backward districts covered in Phase I	To provide livelihood security to rural poor by providing an employment guarantee as an unskilled laborer. Proactively ensuring of social inclusion of women, SCs and STs	No use of machines was part of the program design. Centre-state funding shared in the ratio 90:10	Proposed demand driven scheme turned out to be supply driven due to lack of awareness among the people and the implementation through labour budgets which did not take care of seasonal employment demands
April 2007	130 additional districts covered in Phase II			
April 2008	All rural districts covered, the program is implement fully		Centre-state funding shared in the ratio 75:25	
January 2010	NREGA renamed as MGNREGA			
September 2011	Government proposes reforms in MGNREGA		Proper demand assessment of labour to be done by states using MIS labour supply and demand data Reduction in distress migration by making the program truly demand-driven and not supply driven by non-dependence on labour budgets to provide employment and also reduction in approval time by gram panchayats to take care of seasonal employment demands Reduction in delay of payment to workers Provide number of work-days as per demand and	A demand-driven legal entitlement to be ensured through organization of quarterly ROZGAR DIWAS and also ensuring that the UNEMPLOYMENT ALLOWANCE is provided by use of an automated software based pay order for payment Preparation of true labour budgets showing quantum of work demanded and also the timing of demand to ensure provisioning of seasonal employment. Appointment of full-time dedicated Programme Officer; provision to demand second installment after 75% utilization of the first installment. 60:40 work-material distribution should happen at the block level and not at the Gram Panchayat level

Timing	Event	Changes in Program Objectives	Changes in Program Design	Changes in Program Implementation
			improve quality of assets created and their relevance for the livelihood of the poor Anchor participatory grassrootplanning Strengthen grievance redressal	Habitation Level committees (HLCs) formed and regular habitation assemblies conducted to ensure participatory ideation and planning Set up of ombudsman in each district for grievance redressal
May 2012	NREGA 2.0 launched	Rural asset creation became a stated objective of the program. strengthening the livelihood resource base of the rural poor Skill development of workers also became part of the agenda	Allows NREGA work to be done in private lands of small and marginal farmers Allows private contracts in implementation of MGNREGA work Increasing the use of machinery in MGNREGA projects Going beyond skilled manual work by including semi-skilled works which are measureable like fishery and carpentry. Convergence with projects from other ministries. For instance, rural water and sani tation programs. Use of machines also became permissible	Set up of ombudsman in each district for grievance redressal Appointing dedicated staff at district level to create awareness among people about their rights
January 2014				MGNREGA to include works related to rural sanitation in collaboration with Nirmal Bharat Abhiyaan (NBA) Scheme, also Social audit of toilets built under MGNREGA

Source:Compiled from Circulars onMGNREGA website

d. A comment on its Consistency and Effectiveness with regards to its objectives

There are multiple views on its design objectives. Pankaj (2012) points out that while some consider it as only an income-transfer programme, others consider it as both an asset creation as well as an income transfer program. The supporters of the former evaluate the program from the perspectives of the worker while the supporter of the latter evaluates the program from the perspective of investment and asset creation. There are divergent views on its working and success as well. While some view it as a complete wastage of resources, others see it as a possible instrument of rural transformation. Any conclusive evidence on its overall impact is far from reached.

With regards to its objective, there have been several changes introduced over time. It was being looked at as an employment guarantee program in the beginning whose objective was to ensure minimum livelihood security to the rural poor by providing them unskilled labour. Though the program mentioned a permissible set of workssince its inception in order of priority, it was not clear about how it will lead to boost rural economy in a way that it turns out to be fruitful for the rural poor. After several years of implementation and criticism of the program on account of its inability to do any useful work that can help boost the agrarian economy, it was realized that the objectives of an employment guarantee program cannot be restricted to just providing employment. This led to addition of a second objective of the program i.e. of creation of durable rural assets. The creation of durable assets was to ensure another newborn objective of the program of strengthening the livelihood resource base of the rural poor. This can be linked back to the primary objective of the program of ensuring livelihood security of the rural poor. MGNREGA currently has become a policy with multi-dimensional objectives and hence several questions also surround it. What is the significance and need of a government guaranteed, wage -based employment programme in the post-LPG (Liberalization, Privatization, and Globalization) era and its significance for the market economy that India has become in the post-LPG era? What will be the economic impact of such a huge program on both local as well as national economy? What will be the impact of such program on rural income, rural employment generation and rural asset base? What will be its impact on mitigation of rural poverty at the household level? How should it be connected to other poverty alleviation programmes to ensure that poor people are pushed out of the vicious cycle of poverty? What will be its impact on the agriculture economy and labour market conditions and outcomes, economic linkages between rural-urban, and multiplier effects? What will be the impact of doling out such a huge amount of money on the India's GDP and its growth? These are some of the important policy questions which need an answer. Questions can be raised also on the exact nature of the program since it seems to be loaded with multi-directional and multi-pronged objectives. Is it a programme for social security or an employment generation programme or a conditional cash transfer schema or a rural development initiative or a macroeconomic policy initiative for asset creation. If it is a programme for social security then why it is linked to asset creation and employment generation are some other policy questions that continue to linger. Thus, there is a lot of confusion and inconsistency regarding objectives of MGNREGA. This confusion has not done any good to its effectiveness as a policy because the policy has not been able to use a focused approach to its implementation.

e. MGNREGA's design and implementation

Sharma (2010) notes that there is a triadic structure to the MGNREGA design: first are the processes through which government provides the entitlement and rights to the workers; second are the processes through which the workers make a demand for their rights; and the third are the processes through which government ensures the fulfillment of those rights. A right-based approach and a demand-driven approach have two advantages over and above the earlier supply-driven approach. Firstly, it makes fulfillment of the workers demand a mandatory obligation for the government machinery. Secondly, it provides for several policy innovations some of which have been discussed briefly in the previous section.

The MGNREGA though is a departure from the previous work-based employment guarantee programme, it still has most of the features common to the previous programmes. The question of importance then is what makes it more effective as compared to its predecessors. Kamath (2010) & Sharma

(2010) raise the question that what part of its effectiveness relates to its design factors and what can be owed to the context in which it operates?

The policy context of MGNREGA that facilitated its effectiveness can be divided into two, the socio-economic context and the political context. With regards to the socio-economic context, the period before the launch of MGNREGA was marked with high rates of economic growth with limited impact of poverty and unemployment, thus growth was not happening with distribution. The policy response to poverty and inequality focused on inclusive growth. The MGNREGA was marked as a tool for resource distribution to the rural poor and provided them with minimum livelihood security. This policy was marked as a movement towards a right-based policy by ensuring a minimum dignified level of living for the rural poor. Secondly, the political context also facilitated for the passing of the Act with inclusive growth high on the agenda of Congress-led UPA-I government. The emphasis on rural areas led to the advent of the Act guaranteeing a right to work to all rural households. It was high on Central government's agenda and subsequently also caught the attention of the state governments as it guaranteed rights to rural poor, a critical political constituency.

as discussed already, The design related factors, which supported the effectiveness in detail, were its right-based, demand-driven approach, an irrevocable constitutional provision, decentralized implementation through PRIs, decision making space to the states and district as a unit for implementation, appropriate financial approach and planning, administrative support and transparency & accountability as well as scope for innovation.

f. Policy Innovations in MGNREGA

Sharma (2011) argues that MGNREGA has been able to innovate with respect to its policy implementation despite several operational challenges. Its design has been able to integrate its normative framework with a lot of flexibility. Firstly, the involvement of PRIs in the design, implementation and monitoring has been a key policy innovation to ensure decentralization for management of such a large scale program. Secondly, the ability of the program to disseminate awareness of the program through social mobilization has been another policy innovation. Thirdly, the policy implementation that ensured such a large scale operation in each and every panchayat in all the 645 rural districts in a period of 3 years is another policy innovation. Fourthly, the worksite innovations of the program including time and motion studies as well as worksite facilities for the workers are another laudable policy innovation of the program. Fifthly, there is a focus on sustainable development through activities that regenerate natural resources, individual ownership, and workers as beneficiaries for other social benefits etc. Sixthly, transparency and accountability in operation with all data to be made available in public domain is another policy innovation of the program. Lastly, web-based management information systems (MIS), knowledge resource centres (KRCs), door-step financial services, fund management are some of the other policy innovations of the program.

g. A comment on the policy Consistency and Effectiveness of MGNREGA's design and implementation

With regards to the policy design and implementation, there can be several inconsistencies that can be observed. Firstly, in MGNREGA the basic unit of planning is the villages. But, there is lack of planning capacity, skill and administrative capability to prepare annual plan and project estimates by appropriately mapping village resources. Even the Rozgar Sevaks appointed to advise Gram Panchayats lack training in providing technical inputs, budget preparations and village planning. If Panchayati Raj Institutions (PRIs) were the channel of implementation of the program and one of the process outcomes of MGNREGA was the strengthening of PRIs, then before launching the program there should have been adequate capacity building at the village level through proper training. Secondly, MGNREGA was envisaged to be a right-based program that is demand based and not supply based like the earlier employment based job guarantee programs. The awareness about the program is a precondition to ensure appropriate functioning of its right-based framework and making it successful demand-based program. But, the program after 5-6 years of its inception was facing problems of awareness about its unemployment wage provision which allowed officials implementing the program to involve in a lot of corrupt practices. This led to the primary nature of the program remain as supply-based and not demand-based. Thirdly, one of the key objectives of the program was prevention of distress migration which is seasonal in nature in many parts of the country. The dependence of the program on annual labour budgets and the delays in employment provision because of that led to nullifying its impact on seasonal distress migration in the most years of its implementation. This happened because an annual labour budget does not take into account both factors i.e. the quantum of demand and the timing of demand, leading to non-provision of work quickly leading to seasonal distress migration of labourers. Fourthly, as one of the MGNREGA implementation reform reports mentions that in most cases the unemployment allowance was not provided to the workers. This was a primary feature of MGNREGA design and if neither there was awareness creation regarding this nor a grievance redressal mechanism for the same, it only reflects adversely on the effectiveness and consistency of MGNREGA at the policy level. Fifthly, the ensuring of inclusion of women, SCs and STs was an important state objective of the policy but the cases of discrimination in work provision to these categories in states of Kerala and Andhra Pradesh only reflect the policies'inability to live to its intentions. Sixthly, the program has been unable to keep itself away from cases of corruption and irregularities with cases of fake entries in muster rolls, overwriting, false names, delay in payments to workers and irregularities in job cards. The effectiveness of such a policy fraught with irregularities is more than questionable. Seventhly, challenges in creation of useful assets have been another challenge for MGNREGA with its lack of planning capacity at the village level. The inability of the program to collaborate with other rural development programs has been one of the policy shortcomings which are being modified as late as now. For instance, the rural sanitation works have been brought under MGNREGA works this year. Eighthly, MGNREGA has been unable to achieve many of its own stated objectives in an effective manner, which amounts to policy failure. It has also led to some unintended effects for the Indian economy like agricultural labour scarcity, soaring food prices and inflation among others. A good policy design should try to minimize the unintended effects of a policy by properly interlinking its effects in the larger economic context.

Thus, we can see that a policy is as good as its implementation. As can be seen from the above analysis, MGNREGA has not been able to make a significant departure in terms of policy consistency and effectiveness from other wage-based employment guarantee programs despite its boasting of innovative design features. Although a comprehensive impact assessment of the program still needs to be done, the above analysis does point out some real policy inconsistencies and inefficiencies in MGNREGA design and implementation.

3. Performance Till Date: An Assessment

The performance of MGNREGA has been done in accordance to the objectives outlined in NREGA (2005) and MoRD (2014). It will be assessed on the parameters of the ability of the program to provide employment to the rural poor leading to their livelihood security; its ability to ensure social inclusion of the marginalized especially women, SCs and STs; its performance on financial grounds; and its performance on works taken and completed leading to asset creation for the rural areas. Table 3 depicts the performance of MGNREGA on the employment provided to the rural poor for ensuring their livelihood security. The total number of job cards issued has shown a slightly increasing trend from 2009-10 onwards aftercovering all the rural districts. The job card issued is for a period of 5 years. From 2009-10 to 2013-14, under MGNREGA a total number of 61.24 crorejobcards have been issued, which is almost 50% of the Indian population. The scale of coverage of MGNREGA has been remarkable.

From 2009-10 to 2013-14, the total employment provided has been 24.6 crores, which is 40.17% of the total job cards issued. The figure can be only 40.17% because of two reasons, first, several persons whom the job card was issued belonged to the same household and second, the government's inability to provide employment to the people who demanded jobs under MGNREGA. Such a low figure indicates inability on the part of the government to provide for employment under MGNREGA to many people. The employment provision also shows a declining trend as depicted in Figure 1.

TABLE 3. Performance of MGNREGA on Employment Provided (a National Overview)

	(FY 06-07)	(FY 07-08)	(FY 08-09)	(FY 09-10)	(FY 10-11)	(FY 11-12)	(FY 12-13) Provisional	(FY 13-14) Till Dec 13
Total Job Card issued [in Crore]	3.78	6.48	10.01	11.25	11.98	12.50	12.79	12.72
Employment provided to households [in Crore]	2.10	3.39	4.51	5.26	5.49	5.06	4.98	3.81
Persondays [in Crore]								
Total:	90.5	143.59	216.32	283.59	257.15	218.76	229.86	134.80
SCs	22.95 [25%]	39.36 [27%]	63.36 [29%]	86.45 [30%]	78.76 [31%]	48.47 [22%]	50.96 [22%]	31.53 [23%]
STs	32.98 [36%]	42.07 [29%]	55.02 [25%]	58.74 [21%]	53.62 [21%]	40.92 [19%]	40.75 [18%]	21.09 [16%]
Women	36.40 [40%]	61.15 [43%]	103.57 [48%]	136.40 [48%]	122.74 [48%]	105.27 [48%]	117.93 [51%]	73.33 [54%]
Others	34.56 [38%]	62.16 [43%]	97.95 [45%]	138.40 [49%]	124.78 [48%]	129.38 [59%]	138.14 [60%]	82.18 [61%]
Person days per HH [Days]	43	42	48	54	47	43	46	35

Source: MoRD (2014)

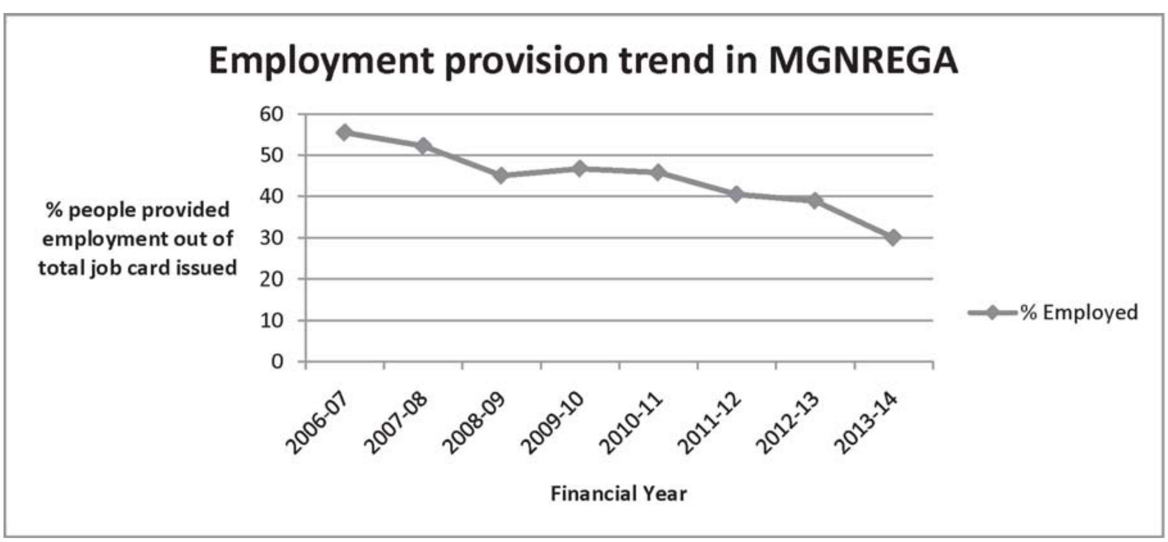


Figure 1.Employment provision trend in MGNREGA

Further, with regards to the participation of SCs Table 2 shows an increasing trend till 2010-11 since inception from 25% to 31%. But the participation rates of SCs in MGNREGA seem to decline since then till 2013 end. The participation rates for STs have seen a continuous declining trend from 36% in the beginning to 16% now. These indicate that both the SCs and the STs are not seeing MGNREGA as a very attractive employment option and are finding better employment options than that. This does not indicate a very positive picture of MGNREGA as far as social inclusion of both SCs and STs are concerned. The trends can be seen in Figure 2.

The women participation trend in MGNREGA has shown a continuous increase from 40% in 2006-07 to 61% in 2013-14 (till 2013 end), which are positive signs. It can be inferred that MGNREGA has shown a positive trend with regards to social inclusion of women.

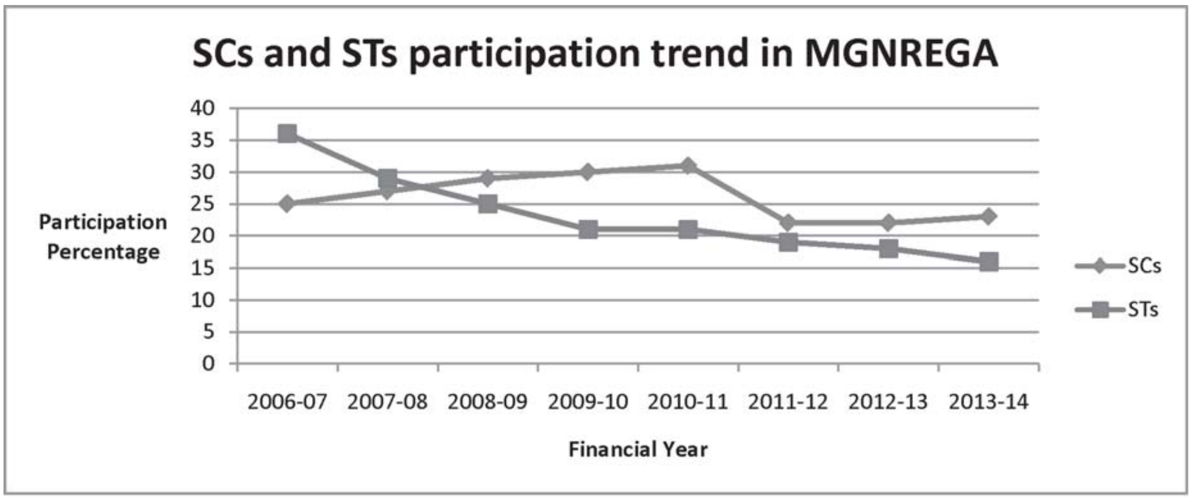


Figure 2.SCs and STs Participation trend in MGNREGA

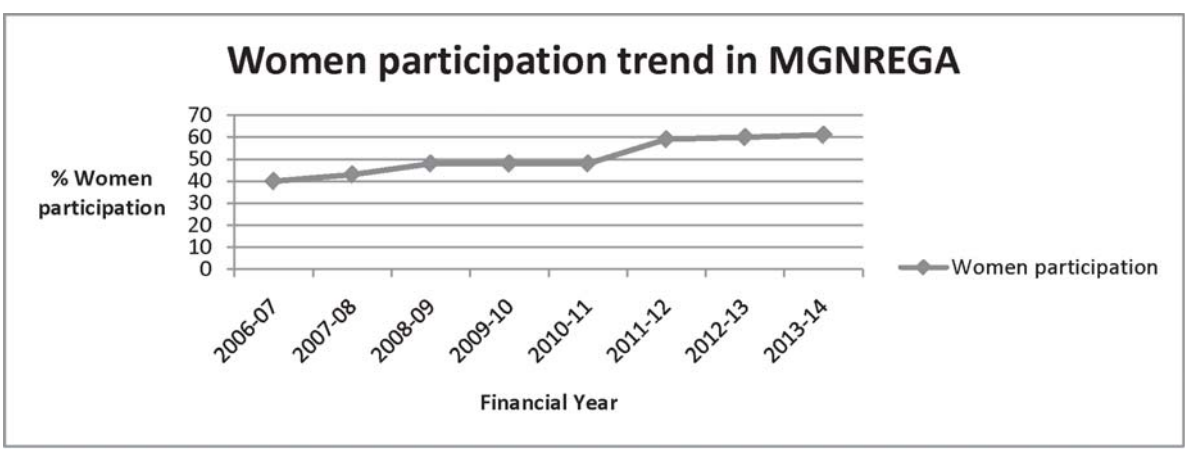


Figure 3.Women Participation trend in MGNREGA

Further, it can be seen as a part of rural household strategy wherein the male member earns from other employment opportunities and the female from the MGNREGA employment thus boosting the overall household income.

The persondays/HH in MGNREGA, which were initiallyproposed to be 100 days,have consistently pegged around 50 since the inception of the program. It showed an increasing trend till 2009-2010 rising to 54 from 43 in 2006-07. But, it shows a declining trend since then. (Figure 4.)

With regards to employment provision in MGNREGA, the analysis of the trends presents a very dismal picture of the program with regards to employment provision, SCs & STs participation rates as well as the work allocation measured by persondays/HH. The only success of the program with regards to participation is the rising trend of women participation, which was envisaged to be at least 33% of the total. It has consistently met the desired criteria and also shows an increasing trend.

Table 4 depicts the financials of the MGNREGA program. Figure 5 depicts the trend of capacity to plan, which is defined as central release as a percentage of the budget outlay. The trend shows values between 73% and 91% in the years 2009-10 to 2013-14, which depicts the Centre's capacity to plan has continuously been below par and has declined to even 73% in 2010-11. Only in the MGNREGA expansion years i.e. 2007-08 and 2008-09, government has shown almost a cent percent capacity to plan. The figure in the year 2007-08 even exceeds 100% which shows government's commitment for the program in its expansion phase but the trends after that need improvement.

Table 4 depicts the government's expenditure on the program as a percentage of total available funds. This figure denotes the government's capacity to implement the program. The figure has continuously fallen between 67% and 88% with the figure in most years around the 75% mark. Column 4 of the table shows it. Looking at the utilization of resources in similar large scale programs like BosaFamilia and Fome Zero in Brazil for which utilization have continuously pegged above 90 percent mark, we can say that the government has not been very efficient in utilization of the resources allocated to the program.

With regards to the expenditure on wages for MGNREGA, it has continuously been above the planned 60% mark. This reveals two things, first, the government's focus on providing wages to the rural households which is one of the objectives and second, the inability of the program and its official to plan for

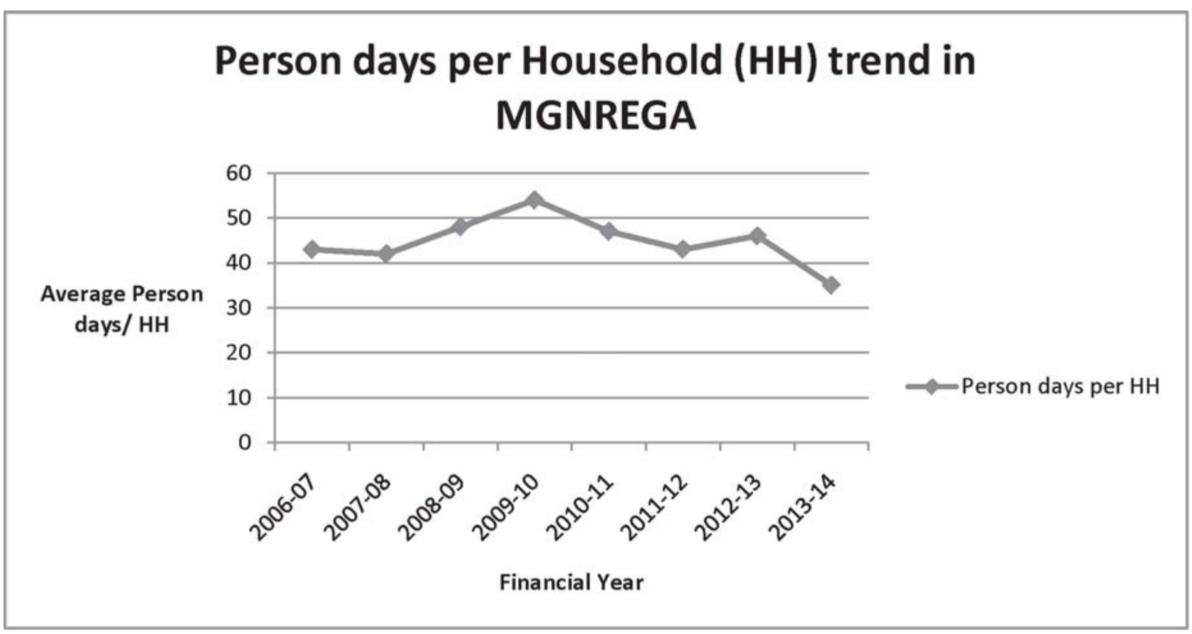


Figure 4.Persondays/HH trend in MGNREGA

TABLE 4. MGNREGA Financials (a National Overview)

	(FY 06-07)	(FY 07-08)	(FY 08-09)	(FY 09-10)	(FY 10-11)	(FY 11-12)	(FY 12-13) Provisional	(FY 13-14) Till Dec 13
Budget Outlay (In Rs Crore)	11300	12000	30000	39100	40100	40000	33000	33000
Central Release (In Rs Crore)	8640.85	12610.39	29939.60	33506.61	35768.95	29189.77	30009.96	29885.92
Total available fund [including OB] In Rs. Crore.	12073.55	19305.81	37397.06	49579.19	54172.14	48805.68	45051.43	37084.76
Expenditure (In Rs. Crore.) [percentage against available funds]	8823.35 [73%]	15856.89 [82%]	27250.10 [73%]	37905.23 [76%]	39377.27 [73%]	37072.82 [76%]	39657.04 [88%]	24848.75 [67%]
Expenditure on Wages (In Rs. Crore.)	5842.37 [66%]	10738.47 [68%]	18200.03 [67%]	25579.32 [70%]	25686.53 [68%]	24306.22 [70%]	27128.36 [72%]	17832.19 [76%]

Source: MoRD (2014)

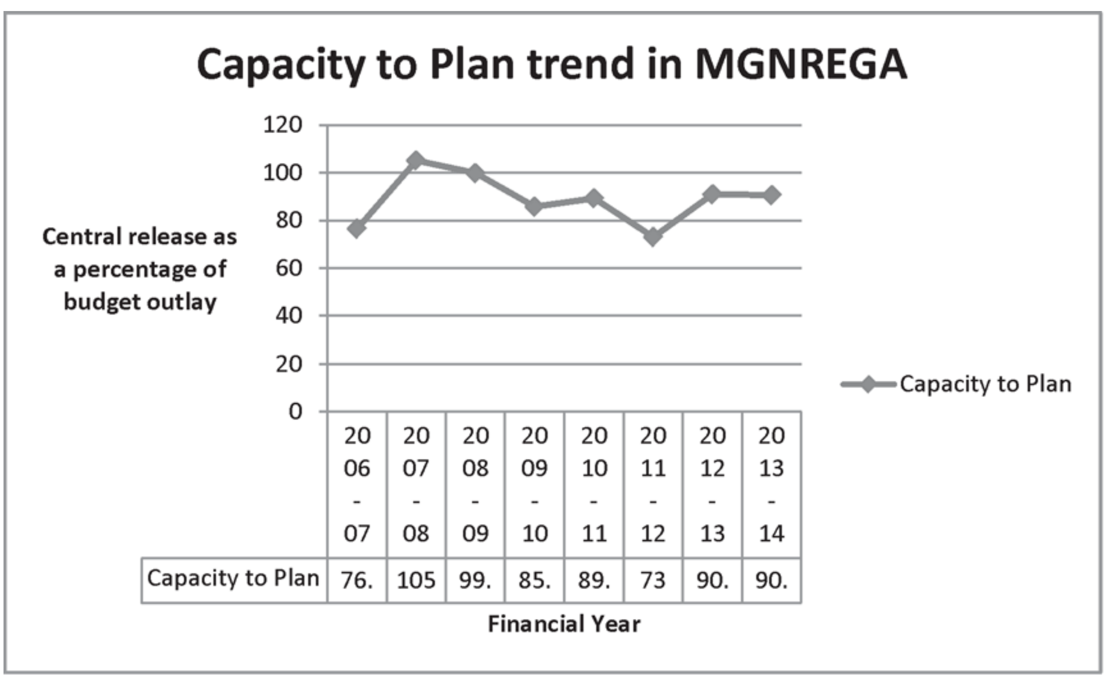


Figure 5.Capacity to Plan trend in MGNREGA

useful asset creation. This reveals inability of the program to spend the envisaged 40% on skilled and semi-skilled labour and materials. Thus, it can be inferred that the objective of asset creation is not being achieved properly.

In sum, the analysis of MGNREGA financials reveals government incapacities to both plan as well as implement the program efficiently. The analysis also reveals that the primary emphasis of the program has been the provision of wages to rural households, which leads to an increase in income distribution, which is a stated objective. But, the asset creation objective is not being achieved properly.

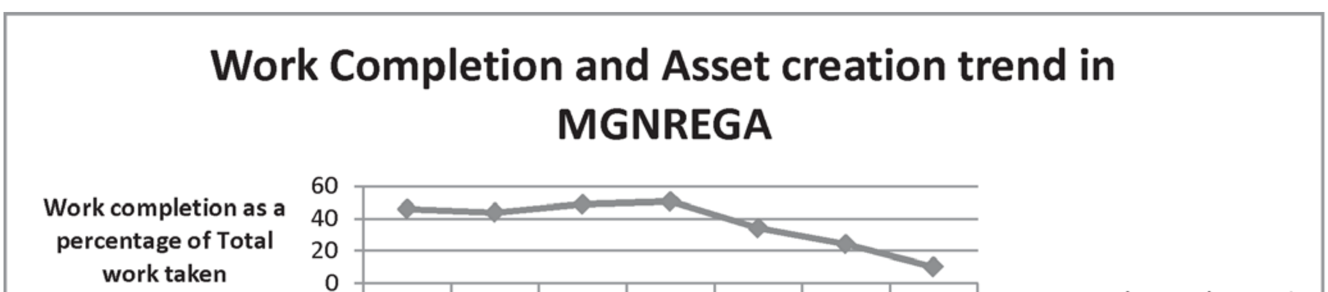
Table 5 gives a national overview of the works taken, completed and break-up of work types. With regards to the works taken up and completed, the analysis of trend shows a dismal performance once again. The work completion rates have a maximum figure of 50.8%, which only shows the inability of the MGNREGA program to develop into an asset creation program apart from a wage-employment program. This kind of inefficiency in work done reveals a very lax attitude of both workers and government officials towards the program outcomes. There needs to be a focus not only on the input expenditures of the program but also on the output monitoring of the program to have a positive impact on the economy of the country. Alternatively, it will turn out to be only a waste of resources and also can have behavioral implications for the workers of the program.

With regards to the work distribution, there are a variety of rural assets that can be created as outcome of this employment guarantee program. These include works related to water conservation, rural connectivity, land development etc. Rural drinking water, sanitation, anganwadi and playground construction seem to be new inclusions. The program outcome,as far as asset creation is considered, remains unsatisfactory and there is still a long way for the program to evolve from its current status of employment guarantee to become a rural asset creation program. This will only enhance the fiscal sustainability of the program otherwise an income distribution program with no outcomes will be difficult to sustain for a developing economy like India.

4. Discussion & Conclusion

a. *The Positive impacts of MGNREGA*

There have been several intended as well as unintended impacts of the MGNREGA program on the economy both at the regional level as well as at the national level. There have been regional variations in the impact as well with the Act proving a boon for states of Bihar and Jharkhand, two of the most backward states of the country while having negative impacts on agricultural economy of states like Punjab, which depend a lot on migrant laborers for their peak agricultural seasons. At the national level, on one hand it can be seen as a full employment strategy and on the other a huge burden on the fiscal expenditure. Mann & Pande (2012) & Ghosh (2009) however argue that it has served as



	1	2	3	4	5	6	7
Work Completion %	45.97	43.74	48.92	50.79	34.12	24.03	10.00

Figure 6.Work completion trend in MGNREGA

TABLE 5. MGNREGA Works (a National Overview)

	(FY 06-07)	(FY 07-08)	(FY 08-09)	(FY 09-10)	(FY 10-11)	(FY 11-12)	(FY 12-13) Provisional	(FY 13-14) Till Dec 13
Total works taken up (In Lakhs)	8.35	17.88	27.75	46.17	50.99	80.77	106.51	111.64
Works completed (In Lakhs)	3.87	8.22	12.14	22.59	25.90	27.56	25.60	11.17
Works break up (in Lakh)								
Water conservation	4.51 [54%]	8.73 [49 %]	12.79 [46%]	23.43 [51%]	24.26 [48%]	48.81 [60%]	49.26 [46%]	45.41 [41%]
Works on individuals land	0.81 [10%]	2.63 [15 %]	5.67 [20%]	7.73 [17%]	9.15 [18%]	9.16 [11%]	11.81 [11%]	12.62 [11%]
Rural Connectivity	1.80 [21%]	3.08 [17 %]	5.03 [18%]	7.64 [17%]	9.31 [18%]	13.86 [17%]	13.04 [12%]	12.62 [11%]
Land Development	0.89 [11%]	2.88 [16%]	3.98 [15%]	6.38 [14%]	7.04 [14%]	6.32 [8%]	6.58 [6%]	5.78 [5%]
Any other activity	0.34 [4%]	0.56 [3%]	0.28 [1%]	0.98 [2%]	1.06 [2%]	2.31 [3%]	9.87 [9%]	9.65 [9%]
Rajiv Gandhi Seva Kendra	-	-	-	-	0.17 [0.33%]	0.29 [0.36%]	0.30 [0.28%]	0.29 [0.26%]
Coastal Areas	-	-	-	-	-	-	0.00061 [0.001%]	0.00407 [0.004%]
Rural Drinking Water	-	-	-	-	-	-	0.03062 [0.03%]	0.08757 [0.08%]
Fisheries	-	-	-	-	-	-	0.02791 [0.03%]	0.03508 [0.03%]
Rural Sanitation	-	-	-	-	-	-	15.59 [15%]	25.12 [23%]
Aanganwadi	-	-	-	-	-	-	-	0.00664 [0.01%]
Play Ground	-	-	-	-	-	-	-	0.00876 [0.01%]

Source: MoRD (2014)

an effective instrument for distribution and reduction of income disparity.

This section examines the impact of MGNREGA on rural areas and the local economy. It discusses impact of the scheme on rural wages, agrarian economy ,aspects of community assets creation and challenges in making it productive, women employment, distress migration etc. Sinha & Mukherjee (2010, 2013) find out positive impact of MGNREGA on the income of the poor. JPMorgan (2011) validates the same by showing a significant increase in rural wages post-MGNREGA. Shah and Jose (2009) discuss aspects of asset creation both in terms of opportunities and challenges. They note that the enhancement of wages with coupling of productive asset creation is a common path taken by employment programs both in India and outside. Their argument is that increase in wages coupled with capital enhancement in the rural economy can boost up both demand as well as productive capacities having positive impacts on poverty reduction as well as overall economic growth of the country. This is especially true for a country like India where agriculture provides livelihood to most of the population. They conclude that while MGNREGA has the potential of increasing the productive capacities of the rural economy, there needs to be sync between planned economic growth and MGNREGA to have positive impact on local economy. Basu (2013) argues that there is a tradeoff between the policy objectives of increased worker's welfare and increased agricultural productivity. He further points out that setting the Employment guarantee scheme (EGS) wage greater than the lean period wage will lead to permanent contract for the workers thus increasing their welfare as well as farm productivity simultaneously. Haque (2012) studies the relationship between MGNREGA and agricultural productivity. He posits a positive impact of the program on agricultural productivity. He points out that this has been due to large amount of irrigation, water-harvesting and land-development works undertaken under MGNREGA. There have been effects on cost of production, crop productivity and cropping pattern. He also points a rise in cost of production because of increase in wages, an effect of MGNREGA. Reddy (2012) finds out that the effect of MGNREGA on small-marginal farmers has been dismal. He points that MGNREGA has a highly positive impact on poor households with a drastic reduction in the distress migration and further argues that there is no reason for being apprehensive about its negative impacts on migration to economically dynamic areas as Farrington et al. (2007) points outthat the migration for works with higher wages and opportunities for skill development remains unaffected. Pankaj & Tankha (2012) find out that the MGNREGA has also implications for correcting gender skewness by removing gender-discriminatory wages prevalent in rural India's labour market prior to MGNREGA. Kelkar (2009) also find evidences for the ability of MGNREGA in enhancing gender agency and productivity. IDYWC (2010) conclude that MGNREGA has significant positive implications for improving rural livelihood and sustainable asset creation.

This part comments on the inter-state variations in the impacts of MGNREGA. Pankaj (2008) in his study on impact assessment of MGNREGA on the states of Bihar and Jharkhand notes that the two states are ideal candidates for the scheme. This is because of existence of high rural poverty, non-existence of occupational diversity in rural households, poor rural infrastructure and a high-incidence of distress migration. The socio-economic realities of the rural households in these states suggest a need for a wage-employment program like MGNREGA. The existence of MGNREGA can also have implications for inter-state variation in average per capita income and poverty. Pankaj (2008) argues that though the program is highly suitable for these states, the lack of awareness, low literacy levels, absence of social mobilization and weak presence of Civil Society Organizations (CSOs), the program remains largely supply-driven and its proper implementation is a matter of concern. However, there are positive impacts of the program on livelihood of beneficiary households both in terms of reduction of debt and seasonal distress migration. Joshi et al. (2008) on their study of Rajasthan note that MGNREGA has positive impacts on distress migration, purchasing power augmentation and debt decline of rural households, rural connectivity, environmental conditions, agricultural production etc. Pankaj (2012) reveals that Rajasthan has been a leading performer in MGNREGA implementation. There are some instances of regulatory capture of the program though. Galab & Revathi (2012) in their study of MGNREGA in Andhra Pradesh note similar positive trends in impact. Pankaj (2012) argues that the MGNREGA does not suit the needs of agriculturally developed states like Punjab and Haryana. There is negative implication of MGNREGA on the agrarian economy of the state which depends a lot on migrant labourers during its peak agriculture season. But, there is reduction in supply of both migrant workers and even local workers due to existence of MGNREGA. This has implications for increase in wage rates of labourers thus reducing agricultural profits. This has led to farmers being tempted to employ their land for non-agricultural purposes. Ghuman & Dua (2012) in their study on the impact of MGNREGA on declining agrarian economy of Punjab, suggest a region or state-specific approach for MGNREGA.

The impact of a large-scale policy like MGNREGA is a matter of pertinent debate. There is a significant budget outlay for the scheme in the range of Rs. 35000 crores every year from 2009 onwards after the full expansion of the scheme to all rural districts. The main contention is that whether it remains only an income transfer scheme, which makes such a huge expenditure as against whether it also develops into an asset creation mechanism, which leads to an investment in rural asset creation. There is also possibility of schemes like MGNREGA being contingent upon states' capacity to implement, and they may create fiscal imbalance. Chakraborty (2007) finds that MGNREGA induced fiscal expansion does lead to fiscal imbalances. He further notes that the flow of resources to individual states is dependent on the ability of the states to forecast labour demand and subsequently submit a plan outlining the same. The poorer states with their incapacities to plan can have lower flow of resources making the program regressive. Hirway (2008) argues that MGNREGA can serve as a full employment strategy to facilitate a labour-intensive growth path for a country like India. But, the contention to this would be how government ex-ante can be able to do an exact sector-wise demand assessment of labour and also set the labour prices at a fixed value. She further suggests skill training and maintenance of public assets and services as permissible works in MGNREGA. Hirway et al. (2008) with their multiplier analysis infer that MGNREGA can make a significantly positive impact on the economy. It can eradicate poverty at the bottom and can generate assets to improve the livelihood of people. It is also an effective instrument for inclusion of women in the productive work force of an economy. Thus, MGNREGA can serve as an instrument for poverty reduction and growth with distribution through employment generation and by making unemployed people part of the productive workforce, if properly implemented. The impact of MGNREGA on inclusion is a little agreeable, but on growth, it is more than questionable. But, is there only a positive side to the MGNREGA story? The answer is a no. It has induced some unintended systemic impacts on the Indian economy, which can have some negative discernible consequences.

b. The Negative impacts of MGNREGA

The MGNREGA though has some useful contribution with regards to reduction of rural poverty and income inequalities, it has also induced some unintended impacts on the economy of India. Firstly, the reduction in poverty through MGNREGA has come at a cost of soaring food prices as the agricultural laborers wages have increased several folds and that have forced farmers to demand more for their food grains by way of Minimum Support Prices (MSPs). Secondly, higher agricultural laborer wages in rural areas are leading farmers to take a move towards mechanization of farms, which is proving to be cheaper. Thus, sugarcane and oilseeds farmers among others are moving towards harvesting through mechanized means which can have negative implications for labour requirement in the agriculture sector. Over a time, this can lead to almost no demand of labour in rural areas thus making MGNREGA only a non-contributory income transfer program or a 'social safety net' for the poor. Thirdly, a program like MGNREGA also has behavioural implications for the people covered under it. Since, mostly the work done under MGNREGA is not well planned and many a times it is perfunctory, the people who are getting employment under MGNREGA are getting into a habit of getting paid for not working, which can have serious implications for India's human prowess and outlook. Fourthly, many skilled occupations like handloom weavers, rural artisans etc. are losing their workers to MGNREGA, which is leading to a loss of skill in that particular profession. Thus, unique skills acquired over generations are being lost due to the existence of an employment guarantee program like MGNREGA which offers more wages, although its impact on skill development is almostnegligiblel. Fifthly, MGNREGA also has implications for increase of urban wages in sectors like infrastructure and real estate that depend on migrant workers from rural areas. This increases the costs of real estate and infrastructure projects. Sixthly, the rising food inflation (which can be an unintended consequence of MGNREGA through the Minimum Support Price (MSP) route due to rise in farm wages) is pushing people back to poverty, who were earlier pulled out of it So, even the claim that it has positive impact on removing rural poverty can be a wrong one. The reason for such claims of poverty reduction might be based on the total nominal income and not on the total real income and it might be the case that the nominal incomes have been raised but not the real income due to inflationary pressures. Seventhly, the flow of resources to individual states is dependent on the ability of the states to forecast labour demand and subsequently submit a plan outlining the same. The poorer states with their incapacities to plan can have lower flow of resources making the program regressive. Thus, there is also possibility of schemes like MGNREGA being contingent upon states' capacity to implement, and may create fiscal imbalance. Eighthly, there have been instances of large scale corruption in MGNREGA. Considering the large scale of the program, it can have serious implications for the economy of the country due to wastage of such a huge amount of resources. Ninthly, Li & Sekhri (2013) note that MGNREGA intends to increase the rural household income, and hence toenablie them to allocate more resources towards quality provisioning of education, but fails to do so by providing perverse incentives. They find out that the program induces young children to either substitute in home production or withdraw from school. Moreover, it also increases private school enrollment and decreases government school enrollment. This is one more unintended consequence of the program. Thus, it is clear that the program is not a silver lining but have several dark clouds associated with it.

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