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# Structural Transformation, Population Ageing and Elderly Labour Force Participation in Kerala, India

Sanitha V.P.\* Jajati Keshari Parida\*\* and Shiba Shankar Pattayat\*\*\*

*This paper attempts to explore the pattern of elderly Labour Force Participation (LFP) in Kerala and its determinants using both secondary and primary data. National Sample Survey Office (NSSO) data from 1983 to 2011-12 was used to find out the broad trends and changing pattern of elderly LFP rate, whereas, the primary data was used to provide an in-depth analysis of the factors determining their LFP in Kerala. Using stratified random sampling method, information was collected from 801 households selected from three districts in Kerala. The major findings of the paper suggest that elderly LFPR is high in Kerala. At the macro level, it is mainly due to the ongoing structural transformation process owing to agricultural transformation, which has very close connection with the changing social and family structure. At the household and individual level, poverty and old age financial insecurity are the major determining factors of elderly LFP in Kerala. As a higher percentage of elderly population is engaged in the informal sector jobs (mostly in the service sector), provision of appropriate health and social security norms would help in improving their overall wellbeing in Kerala.*

**Keywords:** *Elderly population; Labour force participation; Social security; Kerala*

## I. INTRODUCTION

Kerala's economy has been experiencing a number of changes in its productive sectors and other dimensions of the economy. The economy has changed from a traditional backward agrarian economy to a modern growing economy (Rajan, 2011). This change has led to a structural transformation of Kerala's economy, giving it a non-agrarian character, both in terms of income and employment (Kannan, 2011). The rise of income and employment in service sector is one of the important driving forces behind the increase in elderly labour force participation decision. Moving from an agriculture-oriented employment towards a service-oriented employment will reduce the physical stamina required for work. Thus, inviting more of the elderly people to participate in the labour market.

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As compared to all India and other major states, the labour force participation of elderly is high in Kerala. It is estimated that the proportion of total elderly in the labour market was 32.29 per cent with 51.21 per cent among elderly males and 15.47 per cent among elderly females during 2011-12 (NSSO, 2012). This is a huge percentage for a section of population which is vulnerable to health problems. Hence, they need more emotional, mental, physical and economic support than other sections of the population. A few advanced states like Goa (8.19 per cent), Delhi (24.06 per cent), Haryana (27.78 per cent) and-, Uttarakhand (26.93 per cent) are far behind Kerala in terms of the elderly labour force participation. Elderly labour force participation in Kerala is equally comparable with some of the other advanced states of India like Punjab (34.92 per cent), Maharashtra (33.21 per cent) and, Tamil Nadu (37.6 per cent) etc. But these states are mainly dependent on agriculture sector unlike Kerala, which is least dependent on agriculture. In Kerala, about 71 per cent of the population depends on service sector, but still having a high proportion of elderly is found in the labour force.

Labour force participation has gone through significant changes, especially for the elderly. These changes are mainly due to the social and economic factors. Social factors, such as longer schooling for younger population results withdrawal of the younger population from the labour market and increases the participation of elderly. Other factors include, changing role of women in the household, changing family structure, urbanization and migration of younger people; demographic factors such as decline of fertility rates, improved health and longevity (Oshio and Usui, 2018). The economic factors include rate of unemployment, average income of household, lack of social security benefits, share of part-time employment in total employment, the share of the services sector or high wage rate in the economy and others. The structural transformation in Kerala economy has increased the share of service sector jobs encouraging the elderly to stay longer in the labour force due to less amount of physical work needed.

Traditionally, Kerala has a joint family system and usually the elderly stay with their adult children. This traditional pattern of living arrangement places the responsibility for the care of elderly members (Gulati and Rajan, 1999) with the adult children. Such a living arrangement usually provides the elderly with both an emotional as well as economic support (Rajan and Kumar, 2003). However, with economic and social changes, urbanization, migration, nuclear families are at a rise. Consequently, family care and economic support for the elderly has been declining (Dandekar, 1996; Gulati and Rajan, 1999; Rajan and Kumar, 2003; Rajan, 2007; Pal and Palacios, 2011). Improving the health status of the elderly is essential in order to encourage employment among older people (Adhikari et al., 2011). Kerala's achievements in the health sector have

been often cited as role models for the country as a whole. Some of its health indices could be comparable with that of the developed countries of the west (GoK, 2018). As a result of the improved health sector, elderly in Kerala have a good health status which leads them to participate in the labour market even in the older age. There are several social security and pension schemes available in Kerala like disability pension, widow pension, old age pension, unmarried women pension, agriculture labour pension and others. However, the amount provided by these social security schemes is too small to meet the needs and consumption expenditure of the elderly but the coverage of the schemes have been modest (Kumar and Anand, 2006; Dandekar, 1996; Rajan, 2007; Narayana, 2011). Thus, the elderly have to continue working in their old age in order to meet their day-to-day expenses. When the older generation loses the support of their children (Sonawat, 2001) due to urbanization, induced migration of younger adults of the family, it forces the elderly to join the labour market.

This paper is organized in five sections. Section two provides a brief review of literature (both theoretical and empirical) on elderly labour force participation. Data and econometric methods used in the estimation of determinants of elderly LFPR is explained in the section three. Section four provides a discussion on trends of the sectoral employment and labour force Participation of Elderly in India and Kerala. Finally, the section five provides concluding remarks along with some policy suggestions.

## **II. A BRIEF REVIEW OF LITERATURE**

The determining factors for elderly LFPR is different among different countries. In the developed countries like USA, UK, Canada, Mexico, Australia, Germany, Spain, Netherlands and Sweden, good health is the most important factor that determines LFPR of the elderly. A better health causes a stronger attachment to the labor market in Mexico (Van Gameren, 2008). If elderly's health is poor, it discourages them from participating in the labour market and vice versa. Different health indicators impact elderly's participation in Europe differently (Kalwij and Vermeulen, 2005). Improved health conditions may help over 10 per cent higher participation rates in countries like Australia, Germany, Spain, Netherlands and Sweden. Most of the elderly retired from the labour market because of poor health in USA (Davis and Oever, 1985). Green (2006) explains the unexpected impact on health on the labour supply of the oldest Americans. Level of educational attainment is another factor that determines labour force participation and remains a positive determinant of the labour market participation decision in U.S, Canada and U.K (Schirle, 2008). It is mostly concentrated among the educated, wealthiest and healthiest elderly (Best and Kale, 1996; Haider and Loughran, 2010; Hill, 2002).



Another factor that determines LFPR of the elderly is social security. When the elderly population is getting enough social security benefits, they are ready to withdraw from the labour market irrespective of their health status. In more of the developed countries, social security provision by the state is an essential part of their living standards (Kulkarni et al., 2014). In these countries, majority of the elderly in the labour force are able to receive some form of formal social security benefits which contributes a major part of their retirement income (Crawford and Lilien 1981). This lowers the work participation in their old age (Boskin, 1977 and Quinn, 1977). Elderly's retirement decisions in the developed countries are very much influenced by the economic factors such as availability of pension, financial incentives and others. Higher social security benefits result in early retirement from the labour market (Samwick, 1998; Gratton, 1987; Wise, 2004; Pampel, 1979; Guillemard, 1989; Hernaes et al., 2016; Moulton and Stevens, 2015; Supan and Schnabel, 1998; Sugawara and Nakamura, 2014; Oshio and Oishi, 2004). Growth in pension coverage or social security provisions contributed towards the decline in labor force participation of older Americans (Quinn, 1977; Samwick, 1998; Wise, 2004). The size of social security old age benefits, representing social security wealth at retirement ages, has a strong negative effect on participation, particularly among women (Hanoch and Honig, 1983). Market oriented social insurance of elderly care policy has decreased the work participation of elderly female in Japan (Sugawara and Nakamura, 2014).

Unlike in the developed countries, LFPR of elderly in the developing and under developed countries is determined by poverty and income shortage. Most countries in sub-Saharan Africa are struggling to attain both the financial resources and the political will to implement social protection policies (United Nations). In the developing and under developed countries, elderly are forced to work until very old age due to poverty and even those who stop working, withdraw themselves primarily because of poor health (Gaminiratne, 2004; Vodopivec and Arunatilake, 2011).

Lack of vocational or technical training reduce the probability of participation in the labour market (Nasir et al., 2000) and the educated ones are less likely to continue in the labour market since high levels of human capital formation helps them to save enough to meet their old age requirements (Nasir et al., 2000; Alam and Mitra, 2012). Older workers in South Africa face an increasingly competitive labour market characterized by high unemployment and limited opportunities especially for those with poor education and training (Lam et al., 2006; Tati, 2005). Majority of the working elderly are engaged in the agriculture sector where there is no offset/predefined retirement age (Nasir et al., 2001; Giang and Pfau, 2007). Within the agricultural sector, there is no difference in work stoppage across regions. Workers simply continue to work until they get physically unable (Friedman et al., 2001).

In India there are a number of micro as well as macro factors that determine the LFPR of elderly. Poverty, unavailability of social security benefits, nuclear family system, longevity, structural transformation are a few among them. Majority of the Indian elderly workers are engaged in the unorganized sector where no retirement pension or social security benefit is available.

Elderly living alone or with other elderly members have experienced more poverty, compared to those elderly living with non-elderly members in India (Srivastava and Mohanty, 2012). As a result of high incidence of poverty, elderly living alone or living with other elderly members are participating more in the labour market, especially in the informal or unorganized sector. Around 90 per cent of the total elderly labour force is a part of the informal or unorganized economy (Narayana 2011; Srivastava and Mohanty, 2012) and benefits from public pension schemes are not adequate enough to meet their consumption needs (Narayana 2011). Most of the elderly people in India do not have enough savings to meet their requirements in the old age. Majority of them tend to work even after post retirement due to inadequate old age security, both emotional as well as material (Rajan, 2014). Those who are involved in agriculture or casual wage labour have access to income only during the time they are working. Once they stop working, they become totally dependent on their children or relatives. As a result, elderly men and women continue to work much beyond what is normally regarded as the working ages (Gulati, 1993; Ladusingh and Narayana 2011). The total number of elderly workers in India was approximately seven per cent of the total work force in 2004-05 and it slightly increased to 8 per cent in 2011-12. WFP of elderly declined from 42 per cent in 1983 to 39 per cent in 2004-05. This is mainly due to the increasing elderly mainly in the group of higher age group, as age increases the participation of elderly declines (Selvaraj et al. 2011). Most of the Indian elderly are working as self-employed or in the informal sector jobs (Samordov, 1999; Chakraborty and Sekhar, 2011; Reddy, 2016).

Normally in India, elderly people live with their families and family is the most important supporting institution for aged people in their advanced age (Gupta, 2009; Sebastian and Sekhar, 2012; Bloom et al, 2010). Now-a-days the family set up has changed from joint family to nuclear family and the number of adult members in the family has separated. So, the elderly members are also in the labour market.

The ageing scenario of Kerala is different as compared to the other states of India. Earlier studies conducted on ageing in Kerala are mostly concentrated on the health aspects, old age homes, elderly women', consumption pattern of elderly and others. (Gulati, 1993; Prasad and Beena, 2008; Rajan and James, 2007; Kumari, 2010; Sebastian and Sekhar, 2012). Studies conducted on the work force participation of aged population is the least in Kerala. The present study explains why elderly LFPR

is high in an advanced state like Kerala. What is its composition on sector, sex, caste, employment, age group, nature of employment and others? The study assumes that the states which are turning to elderly society will have higher elderly LFPR and elderly LFPR will decline with improved level of economic development.

### III. ON DATA AND METHODS

This paper is based on both secondary and primary data. The main source of secondary data was National Sample Survey Organization (NSSO). Various rounds of NSS (period 1983, 1987-88, 1993-94; 1999-00, 2004-05, 2009-10 and 2011-12) were used to identify the broad trends and patterns of elderly LFP in Kerala. Moreover, NSS data was also used for designing the methodology of primary survey. Information on number and share of older people and other demographic and socio-economic details were collected from Census Population data (2011), NSSO reports on employment and un-employment (2011) and Economic review of State Planning Board (various years).

#### Methodology of Primary Survey

Primary data was collected from Kerala. First, Kerala was divided into three major regions based on the geographical<sup>1</sup> locations (viz. Northern, Central and Southern regions). One district from each of these three regions was selected for Primary survey. District Kozhikode from the Northern Region, Ernakulam from the Central Region and Trivandrum from the Southern Region were selected. The selected districts possess the highest number of elderly population within their regions (as per Census data, 2011).

From each of these districts, one taluk was randomly selected (using lottery method). And from each of these taluks, one rural village and one urban ward was selected. Given the total number of households in each of the selected villages (and wards), number of sample households to survey was fixed using normal distribution criteria (at 90 per cent confidence interval) and using the sample size calculator with the help of *Raosoft*<sup>2</sup> online sample calculator. The details of sample districts, taluks and villages as well as the sample size is given in *Annexure 1*. Out of the total 53144 households only 801 households were surveyed with a pre-tested interview schedule. This interview helped in collecting social and economic details of the households. In addition, information on elderly's health and labour force participation was also collected.

#### *Demographic, Socio-economic Profile of Selected District*

##### *District Kozhikode*

The Kozhikode metropolitan area is the second largest urban agglomeration in Kerala with a population of 2 million in 2011. The district is situated in the northern part of Kerala and highest number of elderly population among the northern districts.

The district has three taluks viz, *Vadakara, Quilandi and Kozhikode*. *Vadakara* taluk was selected for the primary survey.

### ***District Ernakulam***

Ernakulam is the most industrially advanced and flourishing district of Kerala compared to the other districts. It is highest revenue yielding and richest district in Kerala in terms of GDP and per capita income. It contributes 41.74 per cent of the total state revenue. The district is situated in the central Kerala and has the highest number of elderly population among central districts. It has seven taluks viz, *Kunnathunad, Aluva, Paravur, Kochi, Kanayannur, Muvattupuzha* and *Kothamangalam*. *Kothamangalam* was selected for the survey.

### ***District Thiruvananthapuram***

Thiruvananthapuram stretches along the shores of Arabian Sea for a distance of 78 KMs. The district is situated in the southern part of Kerala. It has four taluks viz, *Chirayinkeezhu, Nedumangad, Thiruvananthapuram* and *Neyyanttinkara*. *Chirayinkeezhu* was selected for the survey. The demographic and socio-economic profile of the selected districts is shown in *Annexure 2*

## **Econometric Methods Used**

To identify the individual- and household-level factors that determine the elderly labor force participation (LFP) decision, at the micro level, elderly labor force participation function was estimated. Since the dependent variable is dichotomous (which assumes value 1 for labor force participation and zero otherwise) and having a very large sample, probit regression was the appropriate choice. Both instrumental variable (IV) probit regressions models are used.

## **IV. FINDINGS**

### **4.1 Trends and Patterns of Elderly Labour Force Participation in Kerala**

In a country like India, where no social security exists, people tend to work as long as they can (Rajan, 2010). People who were either 'working' (or employed) or 'seeking or available for work' (or unemployed) constitute the labour force. It consists of the economically active population in a particular age group as a percentage of the total population of that same age group (United Nations, 2013). The elderly in the developing countries like India face different problems than those faced by the same age group in the developed countries. In developed countries, the majority of the elderly labour force has access to some form of formal social security benefits which is the major source of their retirement income (Crawford and Lilien, 1981). However, in India the system is entirely different as the workers in formal and informal sector

faces differences in retirement system and also in the access to retirement pension. Only a small portion of elderly workforce engaged in the formal sector and have a proper retirement system and formal social security benefits. The rest of the lion share engages in the informal sector employment and has no retirement schemes or pensions and is expected to work even in their old age.

The proportion of people in labour market drops significantly after people reach their sixties and under-represented in the labour market. Different explanations have been provided for such a decline including lack of requisite skills in elderly workers, employment and wage discrimination, restructuring and tightening of labour market rules which reduced the availability of older workers and others (Whiting, 2005).

Elderly people today are considerably less likely to participate in the labour force than they were in the past. It may be because of many reasons. Among elderly population, gender differences are more noticeable. It may be due to sexual division in families where women are expected to stay at home for domestic work. Basically, a large number of women work but their contributions to the labour market remains undetectable as many of them are not paid workers (Paltasingh, 2012; Mehrotra and Parida, 2017). Especially in the case of elderly women, they are expected to stay and take care of their young grandchildren. So eventually, as a result the labour force participations of elderly women is low. Elderly females' participation has declined by around 46 per cent from 28 per cent in 1983 to 15 per cent in 2011-12 in Kerala (See Figure 1). Over all, elderly participation was 32 per cent in 2011-12 which is less than the national average. This declining LFPR in Kerala may be due to relatively better social security system and low level of poverty in the state as compared to the earlier days. Among elderly men in India, the labour force participation reduced from 63.4 per cent in 1983 to 57 per cent in 2011-12. Among women, the reduction was considerably high, from 20.7 per cent in 1983 to 17.4 per cent in 2011-12. Labour force participation rate continues to be high in the case of older men compared to older women. Low physical stamina of females and their higher participation in household activities may be the reasons for their low participation in labour market at old age (Rajan and Mathew, 2006). Declining LFPR of elderly women presumably the result of rising household incomes from other sources, as well as the open market wage rates rising in both rural and urban areas (Mehrotra et al., 2014). The relatively high male labour force participation could be due to having more financial responsibilities than women, even in the later part of their life (Sai et al., 2010).

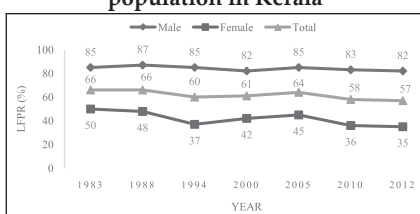
Higher proportion of working age group (15-59 years) is considered as a demographic bonus contributing to the development of a state. LFPR of working age males in Kerala remained stable during the period between 1983 and 2011-12. During 1983, the male labour force participation in Kerala was 85 per cent and it was 82 per cent in 2011-12 with a meager change of 3.5 per cent. But among females,

the withdrawal was much higher. It declined from 50 per cent to 35 per cent with a declining rate of 30 per cent. There are many reasons for this decline of LFPR among females including attainment of education as one of them. Especially women in rural areas are now pursuing higher education and they are not available for the labour force (Chowdhury 2011, Rangarajan et al. 2011, Neff et al., 2012). Another reason for the withdrawal of females from labour market is income effect. As compared to the earlier days, household's incomes could have risen due to higher wage levels. As a result, it could have taken off the pressure on women to seek distress employment in times of economic hardship (Mazumdar and Neetha, 2011). Other reasons could be non-availability of job opportunities within their locality and some security issues due to increasing criminal activities against women. These may be the reasons for restricting young girls from moving out of their village or home town for work (Mehrotra and Parida, 2017). In India, the male working age population has declined more than that in Kerala. Women belonging to 15-59 age groups have much lower labour force participation rate than that of the corresponding age group of males. During 1983, 90 per cent of the males participated in the labour market in India, while in 2011-12 it has declined to 82 per cent by a decline of 8.2 per cent. In case of females, LFPR declined by 30.3 per cent from 47.6 to 33.2 per cent.

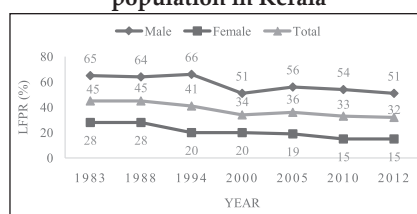
Figure 1

**Comparison of Labour Force Participation Rate of Working Age and Elderly Population in Kerala & India, 1983-2012**

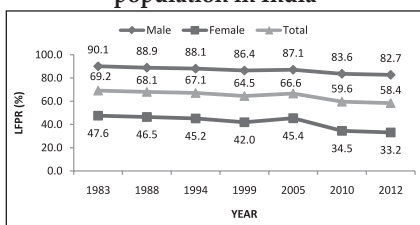
Panel A: LFPR of working age (15 to 59 years) population in Kerala



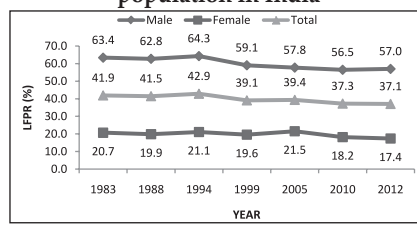
Panel B: LFPR of Elderly (60 years and above) population in Kerala



Panel C: LFPR of working age (15 to 59 years) population in India



Panel D: LFPR of Elderly (60 years and above) population in India



Source: Authors' estimates from the NSS Unit-level data, various rounds

Table 1  
**Sector and Sex-wise Labour Force Participation Rate (%) of Working Age  
 and Elderly Population in Kerala and India**

Year	LFPR of working age population (age 15 to 59 years)						LFPR of Elderly (60 years and above) population					
	Rural Areas			Urban Areas			Rural Areas			Urban Areas		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
<i>Kerala</i>												
1983	85.3	52.4	67.7	84.8	39.1	60.6	65.4	29.8	46.2	60.5	21.9	38.3
1987-88	87.0	50.2	67.3	85.0	37.4	60.4	64.5	29.4	45.8	60.0	19.1	38.8
1993-94	84.8	38.0	59.7	83.9	35.6	59.0	68.0	22.0	42.7	61.2	15.5	35.3
1999-00	82.7	41.9	61.3	78.7	41.5	59.3	50.7	20.0	33.6	51.5	18.4	34.2
2004-05	84.8	45.9	64.0	84.2	42.6	62.7	58.9	19.6	37.3	48.3	17.1	31.3
2009-10	83.5	36.7	58.3	80.1	34.5	56.2	57.6	17.6	36.4	43.3	7.9	23.9
2011-12	82.7	36.6	57.7	81.7	32.5	55.5	54.0	18.6	35.5	43.2	7.5	23.5
2017-18*							59.5	14.0	34.3	52.0	10.1	27.2
<i>India</i>												
1983	91.8	54.9	73.3	85.4	24.8	64.8	66.7	22.6	44.8	50.4	13.8	31.3
1987-88	90.5	53.0	71.8	84.0	25.1	64.6	66.8	22.0	44.7	46.8	12.0	29.2
1993-94	89.8	52.1	71.2	83.3	25.1	64.7	69.8	24.1	47.4	44.2	11.3	27.3
1999-00	88.3	48.7	68.5	81.9	23.5	63.6	63.6	22.8	43.4	42.2	9.6	24.4
2004-05	88.7	52.4	70.6	83.4	26.1	64.9	64.5	25.4	44.8	36.6	10.0	22.8
2009-10	84.8	39.9	62.6	80.9	21.0	62.3	64.7	22.6	43.7	34.2	7.0	20.2
2011-12	83.6	37.9	60.9	80.9	22.2	62.5	64.9	21.3	43.1	36.5	7.7	21.8

Note: \*Implies primary survey data collected during 2017-18.

Source: Authors' estimates from the NSS Unit-level data, various rounds.

As expected the labour participation among females is very low particularly in urban areas. Around 60 per cent of the elderly men and 22 per cent of elderly women were working in urban Kerala during 1983 (See Table 1). In urban areas relatively higher proportion of people were employed in formal sector regular jobs. These urban sector employers can expect to receive a pension upon retirement. While, the rural sector employers are largely working on informal farm and non-farm jobs which not only gives low income but also does not offer any retirement pension. So the urban people are themselves to find their future income by continuing work. This may be a result of inadequate provision of social security for the elderly, which has left the majority without any economic support and resultant need to continue to work in their old age (Reddy, 2016). In rural Kerala, 65.4 per cent of elderly men and 29.8 per cent of the elderly women were working in 1983 and it has declined to 54 per cent and 18.6 per cent respectively in 2011-12. The declining rate was higher among elderly females (37.6 per cent). During the period 1999-2000 to 2004-05 the rural female labour force had increased by 7.6 per cent and the urban female labour force had increased by 11.1 per cent among the working age group. Both being the highest increment in

the labour force between two NSS rounds. For elderly females, it has increased by 11.4 per cent and 4.2 per cent respectively. For urban males too we find this rise in 2004-05 followed by a decline in 2009-10.

As compared to urban elderly, rural elderly is more likely to participate in the labour market. Out of the total elderly population in the rural area, 34.3 per cent are engaged in the labour force with 59.5 per cent of male elderly and 14 per cent of female elderly (Table 1; 2017-18\*). While in urban area, the LFPR is only 27.2 per cent with 52 per cent of male elderly and 10.1 per cent of female elderly. The incidence of financial insecurity has been found to be greater among the rural elderly, female elderly (particularly widows), the aged residing in nuclear families or alone etc. (Rajan, et al., 2003). So this category gets forced to participate in the labour market.

The probability of participating in labour force decreased significantly with increasing age. The fall in the female LFPR is mainly because of the steep fall in employment in the agricultural sector (Sanghi et al., 2015). The decline in LFPR in agriculture sector is not compensated by an increase in the participation in industrial and service sector. In the last three decades the decline of LFPR of 65-69 years age group of elderly male and female was 31.2 and 31.7 per cent respectively in Kerala (See Table 2). The interesting fact is that the LFPR of elderly male in the age group of 75 years and above has showed an increasing trend during the above period. It has increased from 31 per cent to 36.1 per cent with an increase of 16.5 per cent indicating ageing of older population in the state. Unlike developed countries, one of the important reasons for withdrawal of labour market is poor health. As age increases, health deteriorates. This may be one of the reasons for declining LFPR with increasing age. And another thing is retirement age. Some of the government institutions have the retirement age set as 60 to 65 years. So, the elderly in the age group of 60-64 years are still in the service and they are counted as employed or labour market participants.

Among the different age groups, majority of the state's elderly workforce population belongs to the age group 60-64 years and least majority is in the age group of 75 plus age group. The elderly working male population aged 60-64 during 1983 was 83.3 per cent. It has declined over the years and reached to 67.9 per cent with 18.5 per cent decline. However, this group still has the highest share of participation in the labour market. In case of female workers, it has declined sharply from 43.9 per cent to 23.2 per cent with a decrease of 47.2 per cent. As age increases, LFPR of elderly deteriorates. That is clearly reflected in table 2. Female LFPR is very low among the 75 plus age group. A mere 2 per cent of the total elderly female population is in the labour force. In the same age group, male LFPR is 21 per cent. Among the 60-69 age groups, three fourth of the male elderly are still in the labour force. They may be working for supplementing family income, or for making themselves as independent. But in the case of elderly female, 80 per cent are out of the labour force. They are dependent of their spouse or children's.



Traditionally in India, the participation of women in the workforce has been low in all the communities. There is some evidence that when household income goes up, women generally withdraw themselves from the labour market. The LFPR for males was much higher than those for females for all religious groups. The LFPR among Christians is higher as compared to other religious groups. It may be due to higher literacy levels in the community. The decline in LFPR was mainly among the Muslim community with 72.8 per cent decline among females and 26.4 per cent in males from 1983 to 2011-12 (Table 2).

LFPR varies across religion and caste. In terms of labour force participation, Muslim community is behind other religious communities and the lag is more among Muslim females. When disaggregated by religion, it is found that only 6 per cent of elderly Muslim females are in the labour force as compared to 14 per cent of elderly Hindu females and 11 per cent of Christian females. Elderly males' participation is also low among Muslims as compared to Hindus. Low educational status of Muslims in comparison with their Hindu counterparts is reflected in the lower labour force participation among Muslims (Das, 2003). Another reason might be their cultural norms and seclusion. SC/ST communities are the most deprived category and they have the highest labour participation rate. Elderly women are also in the labour force among this category. It may be due to higher incidence of poverty or low standard of living compared to other communities.

A large section of the Muslim community prefer women to stay at home, which is one of the reasons for low work participation among them. Lack of education and work opportunities for females, cultural factors such as the practice of Purdah and seclusion might have affected the Muslim females LFPR at the state level (Sarikhani, 2008). The Purdah system also prohibits women from holding noticeable social roles. This makes Muslim women unable to participate in visible work force when compared with women in other religions. Any country or region with higher proportions of Muslim community, women may likely have lower labour force participation rate. In Kerala, some districts like Malappuram, Kozhikode and Kasargod have high percentage of Muslim population with a comparatively very low LFPR. District with high Christian population, such as Kottayam, Idukki, Ernakulam and Pathanamthitta, have high LFPR. So, religion also plays an important role in determining the labour market participation. The low participation exists within Muslim community maybe the impact of gulf migration also. They are getting a large amount of money as foreign remittances. So that both males and females are reluctant to participate in the labour market.

The benefits from government and other organizations have not really trickled down to all sections of the society. Elderly who belong to historically, socially

and economically most disadvantaged social groups had the highest labour force participation rates. Economic deprivation has been much more pronounced among these social groups. Looking across social groups, elderly LFPR is highest among the ST communities in Kerala, both for males and females. During 1983, about 70 per cent of elderly male and 4 per cent of elderly females in the ST community are in the labour force. It may be attributed to their relative social and economic disadvantage compared to other groups. For males, there wasn't much decline in their percentage of participation. It has declined to only 67 per cent in 2011-12 with a mere 4 per cent decline. However, for elderly females, LFPR has declined to 24 per cent with a 47 per cent decrease.

Table 2  
Patterns of Elderly (Age 60 years and above) LFPR by Socio-Economic and Demographic Groups in Kerala

Socio-economic & demographic groups		Elderly LFPR (in %)													
		Males							Females						
		1983	1988	1994	2000	2005	2010	2012	1983	1988	1994	2000	2005	2010	2012
Age	60-64	83.3	80.7	79.7	80.5	68.9	67.3	67.9	43.9	35.2	30.8	29.1	29.9	26.2	23.2
	65-69	73.8	68.3	71.6	65.7	67.2	62.0	50.8	28.1	35.1	21.1	22.7	21.2	13.9	19.2
	70-74	49.5	58.1	57.2	43.7	52.2	39.5	35.0	21.3	23.1	15.9	18.7	15.6	9.9	10.6
	75+	31.0	31.9	40.5	14.9	31.4	35.2	36.1	10.9	11.9	6.2	9.6	7.6	6.3	5.7
Religion	Hindus	65.2	65.2	66.5	54.4	55.5	51.0	51.4	30.4	31.9	21.3	22.8	21.3	14.9	17.4
	Muslims	59.2	60.9	63.5	45.2	53.9	44.0	43.6	18.2	19.4	16.0	15.3	9.7	6.8	5.0
	Others	66.1	62.1	68.2	49.2	60.4	66.7	58.5	29.8	23.2	20.6	14.8	19.8	21.2	18.6
Social group	SC	69.7	89.5	70.7	78.3	53.9	41.8	67.0	53.7	41.5	42.5	0.0	15.6	8.3	24.2
	ST	60.9	57.9	57.9	27.5	54.7	44.6	49.7	69.3	41.6	32.6	12.0	27.0	31.8	20.3
	OBC	---	---	---	45.0	54.2	52.9	48.9	---	---	---	21.9	19.2	11.6	14.6
	Others	65.1	64.2	67.0	58.3	59.9	57.8	54.6	72.1	25.8	19.4	19.3	17.1	16.6	15.7
Economic group	Quintile 1	50.4	51.6	50.2	36.3	40.6	35.6	34.0	26.4	26.9	20.9	20.1	15.3	11.5	10.8
	Quintile 2	63.3	60.0	66.3	45.3	46.4	43.6	53.6	30.4	23.2	22.4	14.2	16.3	11.1	18.6
	Quintile 3	72.6	67.9	68.4	51.3	58.6	59.1	50.7	25.1	28.1	18.4	24.1	19.9	17.4	17.4
	Quintile 4	63.4	63.8	71.0	59.5	65.4	66.5	57.3	28.8	32.1	16.2	24.3	21.0	19.9	17.6
	Quintile 5	71.7	74.9	80.6	67.8	64.2	59.5	59.3	31.5	28.7	24.2	18.6	22.5	15.4	12.6

Source: Authors' estimates from the NSS Unit-level data, various rounds.

Elderly women from all social groups have much lower labour force participation rates compared to elderly men. Elderly women belonging to socially and economically well-off group (Others) have the very lowest labour force participation rates. This could be due to their relatively better economic position compared to elderly from

other social groups. Relatively high rate poverty and lower restrictions on mobility may be the main driving forces behind higher labour force participation of ST women compared to other women. Among the general and OBC category, keeping women within the boundaries of the home is an assertion of status and honor.

The elderly labour force participation by household income quintile in Kerala presents a more complex picture. The elderly LFPR movements across the distribution in 2004–05 and 2011–12 were in opposite direction, especially at the lower end of the distribution. Among men from the poorest households, the LFPR was as low as 26 per cent, while rising to about 60 per cent in the well-off households (see Table 2). In total, the elderly female LFPR in the upper MPCE quintile thus increased from 16.5 per cent in 1983 to 26.1 per cent in 2011-12. Whereas, a sizeable proportion of elderly women from upper MPCE households appear to have withdrawn from the labour market from 2004-05 (37.9 per cent) to 2011-12 (26.1 per cent).

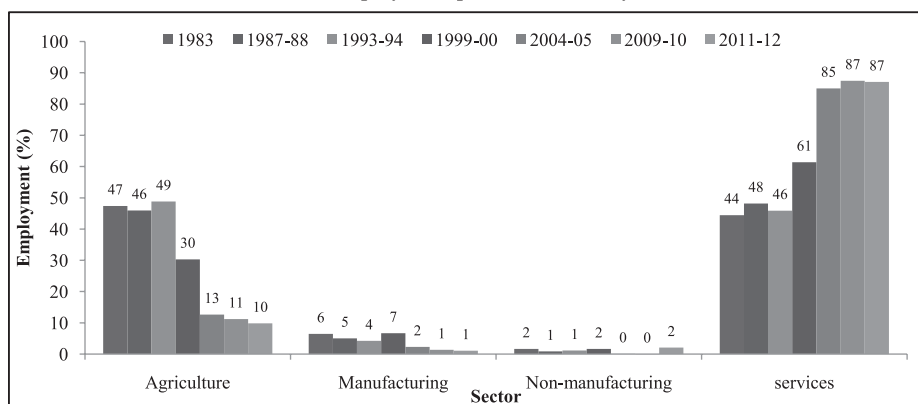
To assess the impact of income effect on withdrawal of elderly from the labour force, the household MPCE (Monthly Per Capita Expenditure) data is also examined. The household level MPCE data is used to form decile classes. The elderly from higher quintiles are less likely to participate in the labour market. Likewise, elderly from lower and middle quintiles are more likely to participate. This is the general tendency that as income increases, people start withdrawing from the labour market. It may be due to the lower MPCE classes indicate they can't afford luxury of leisure and can't spare any hand out of work. So that their participation in the labour market is high and the opportunity cost of leisure is also high (Motkuri, 2013). For both the male and female elderly in Kerala, the LFPR is high among upper quintile classes in the last three NSSO rounds. Women from the highest MPCE households are actively engaged in gainful employment, probably in better-off and well-paying occupations, as reflected in the upward trend of LFPR (Mathew, 2015).

#### **4.2. Quality of Elderly Employment in Kerala: Evidence from Primary Data**

On one hand, the dependence on the service sector continues to rise whereas on the other hand, the dependence on agriculture continues to decline in Kerala. Employment in agriculture, relative to other sectors has fallen while the share of employment in non-manufacturing and service sector has risen both in the case of males as well as in females. During 1983, about half of the (47.4 per cent) elderly males were engaged in the agriculture sector. It decreased to 27.1 per cent in 2011-12. While in the case of elderly females, it decreased from 21.9 per cent to 9.9 per cent in the same period of time (See Figure. 2). As per 2011-12, lion share of the elderly females are engaged in the service sector. Their share increased from 73.7 per cent in 1983 to 87.1 per cent in 2011-12 with 18 per cent increase. The number of elderly females working in the non-

manufacturing sector was almost non-existent in all the rounds. Elderly engaged in the manufacturing sector declined over the years implying that elderly engaged in manufacturing sector faced loss of jobs. Job loss for both men and women could be a result of a decrease in demand for the products from traditional industries (Sanghi et al., 2015).

**Figure 2**  
**Sectoral Employment Patterns of Elderly Population in Kerala**  
**Panel A: Sectoral Employment patterns of elderly males in Kerala**



**Panel B: Sectoral Employment patterns of elderly females in Kerala**



Source: Authors' estimates from the NSS Unit-level data, various rounds

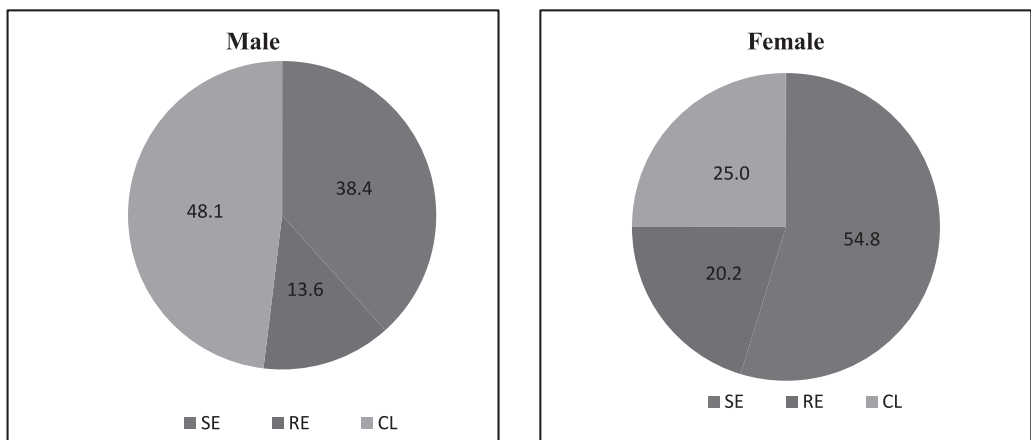
Percentage of elderly males engaged in the service sector is far behind than the elderly females. Male female gap in the service sector employment was about 21 per cent in 2011-12. Structural transformation of Kerala economy remains the main reason for such a shift of employment. Over the last three decades, Kerala economy experienced a structural transformation i.e. moving from an agricultural economy to

service-oriented economy. Changes in the cropping pattern also had displaced large volume of the women workforce from agriculture, and the primary sector is no longer the most significant channel of employment for females (Mazumdar and Guruswamy, 2006).

Employment shifted from agriculture to industry and then finally to services sector. A structural change in employment has taken place (Parida, 2015). The services sector overtook agriculture as the sector that employs the highest number of women and men. This is the fastest growing sector in Kerala.

The most noticeable aspect of the employment status of the elderly is that vast majority of them are self-employed. Self-employment provides a wider opportunity for the elderly to continue working beyond the mandatory retirement age (Sai et al., 2010). As per the primary data collected among elderly in Kerala, it is estimated that self- employed elderly workers constituted 38.4 per cent of males and 54.8 per cent of females (See Figure 3). Among elderly males, casual labours are more in number. Around 48 percent of the elderly males and 25 per cent of the elderly females are casual labours.

Figure 3  
Types of Elderly Employment in Kerala



Note: SE=Self Employed; RE= Regular wage/salary earning; CL=Casual Labour

Source: Authors’ estimates from primary survey

Regular (salaried/wage) employment has constituted the smallest share. This is natural since old people are seldom hired in regular employment. While they have a better chances of being hired in a casual capacity, their last option remains to be self-employed (Mathew and Rajan, 2008). Moreover, the declining health and energy of the elderly discourages them to withdraw from regular employment while forcing them

to opt for self-employment. This pattern generally applies to both men and women (Rajan, 2010).

Majority of the old people are engaged in self-employment, mainly in the informal sector and paid poorly compared to working age workforce (Reddy, 2016). Employers tend to be hesitant to hire older people on a regular salaried basis in view of their age and perceived deterioration of their health with age. Moreover, the official age of retirement for most of the public sector and regular salaried jobs in the formal sector is 60 years in India (Rajan, 2010). Hence, only very few old people are able to work as regular salaried workers as shown in the Figure 3.

#### **4.3. Factors Determinants of Elderly LFPR in Kerala: Econometrics Results and Discussion**

To identify the determining factors for elderly labor force participation decision, simple probit and IV-probit regression models were estimated for rural and urban areas separately. The study used household-level characteristics including number of adult members, age, elderly living standards, marital status, pensions, remittances, caste and religion to run the IV-probit regressions.

MPCE quintiles were used as proxy variable for level of income. The study found out that rural elderly from lower MPCE quintiles do more work than urban elderly from same quintiles (Table 3 and 4). Elderly females are more likely to withdraw from the labour force as the household income increases. They are overburdened with household work and other work; especially in the rural areas. So, with improvement in their financial situation, they withdraw from the labour force to get relief from the burden of work.

Age has a negative impact on elderly's employment opportunities. LFPR diminishes as a person becomes older and approaches retirement age. One possible reason for this is that additional productivity or output at work decreases as the person gets older (Ingco and Pilitro, 2016).

Table 3 explains the determinants of elderly labour force participation in rural Kerala. The coefficients of adult members dummy are negatively associated with the LFPR of elderly. As elderly belonging to the family with less number of adult members are more likely to participate in the labor force to support family income. Increasing labor force participation of elderly is likely to improve the household living standards. In other case, elderly with large number of adult members are less likely to participate in the labour market as the other adult members will participate in the labour market and will earn enough family income. This reduces pressure on the elderly persons to work.

Table 3  
**Determinants of elderly Labour Force Participation in rural Kerala**

Variables	Simple Probit Estimates						IV Probit Estimates	
	Model 1			Model 2			Coefficient	Z-value
	Coefficient	Z-value	Marginal Effects	Coefficient	Z-value	Marginal Effects		
Log mpce	-0.34	-1.79	-0.07				0.42	0.47
Mpce Quintile2	---	---	---	-0.50	-2.01**	-0.10	---	---
Mpce Quintile3	---	---	---	-0.56	-2.08**	-0.11	---	---
Mpce Quintile4	---	---	---	-0.19	-0.64	-0.04	---	---
Mpce Quintile5	---	---	---	-0.63	-1.74*	-0.12	---	---
Age	-0.36	-0.99	-0.07	-0.41	-1.10	-0.08	-0.50	-1.42
Age square	0.002	0.64	0.0003	0.002	0.77	0.0004	0.003	1.07
No. of adult members	-0.15	-2.30**	-0.03	-0.18	-2.81***	-0.04	-0.09	-0.85
Sex male	2.18	8.09***	0.43	2.11	7.78***	0.42	2.11	7.46***
Primary education	0.21	0.46	0.04	0.21	0.44	0.04	0.30	0.70
Secondary education	0.35	0.69	0.07	0.33	0.62	0.07	0.21	0.44
Graduate and above	-0.45	-0.48	-0.09	-0.44	-0.48	-0.09	-0.68	-0.74
Unmarried	0.58	0.68	0.11	0.31	0.34	0.06	0.40	0.51
Widow/Separated	0.71	2.60***	0.14	0.66	2.39**	0.13	0.71	2.52***
Living with spouse only	0.01	0.02	0.002	0.02	0.04	0.00	0.16	0.36
Living alone	-0.92	-1.96**	-0.18	-0.81	-1.79*	-0.16	-0.33	-0.18
Living with relatives/OAH	-0.51	-0.85	-0.10	-0.43	-0.64	-0.09	-0.48	-0.92
Govt. pension	-0.99	-1.61	-0.20	-1.02	-1.69*	-0.20	-0.88	-1.34
Widow/old age pension	0.08	0.35	0.02	0.04	0.16	0.01	0.17	0.66
Other disability pension	1.57	2.56**	0.31	1.19	1.84*	0.24	1.40	1.00
ENT	-4.17	-8.29***	-0.83	-4.33	-10.01***	-0.86	-4.32	-0.02
Cardiovascular	-4.07	-10.93***	-0.81	-4.27	-13.64***	-0.85	-4.20	-0.02
Respiratory	-4.52	-10.98***	-0.90	-4.78	-13.28***	-0.95	-4.66	-0.02
Rheumatic diseases	-4.30	-11.90***	-0.85	-4.54	-15.97***	-0.90	-4.50	-0.02
Psychological	-4.26	-11.39***	-0.85	-4.46	-14.07***	-0.88	-4.42	-0.02
Severe diseases	-3.29	-5.84***	-0.65	-3.52	-6.32***	-0.70	-3.64	-0.02
Other diseases	-4.02	-6.18***	-0.80	-4.29	-5.63***	-0.85	-4.15	-0.02
Hindus	-0.21	-0.98	-0.04	-0.19	-0.89	-0.04	-0.24	-0.99
Muslims	-0.41	-1.40	-0.08	-0.32	-1.09	-0.06	-0.46	-1.40
SC/ST	-0.20	-0.59	-0.04	-0.21	-0.59	-0.04	-0.07	-0.19
OBC	-0.33	-1.53	-0.07	-0.31	-1.47	-0.06	-0.14	-0.46
Remittance receipts	-0.21	-1.05	-0.04	-0.26	-1.27	-0.05	-0.27	-1.18
Constant	22.5	1.75*		22.1	1.73*		21.7	0.10
Number of observations			386			386	385	
Wald chi2(32)			1873.54			1438.59	118.02	
Pseudo R2			0.4508			0.4545		
Log pseudo likelihood			-136.516			-135.60315		
Wald test of exogeneity chi2(1)								0.83

Note: \*, \*\* and \*\*\* imply statistical significance level at 10 %, 5 % & 1 % levels respectively.

Source: Authors' estimation based on primary data

Pension is another factor that negatively determined elderly labor force participation decisions. The coefficient of government pension dummy (in model 2) is statistically significant at 10 per cent level. Those with government pension are less likely to participate in the labour market post-retirement as they receive enough old age pension and wish to take rest in their later life. The elderly who are receiving normal old age pension are more likely to participate since the pension amount is very nominal and not enough to meet their day to day expenses. In order to meet their consumption expenditure, they participate in the labour market even in the later stages of their life. The major diseases of the elderly are divided into seven categories. The coefficients of diseases type dummy are significantly related to elderly labour force participation decision at one per cent level. Elderly with major type of diseases are less likely to participate in the labour market. There is always a positive relation between health status and labour market participation. If health status improves LFPR will also increase and vice versa.

The coefficients of social group dummies, and dummies for migration status of the household members and remittance receipts are negatively associated with the probability of elderly participating in the labour force. But these coefficients are not statistically significant in the rural areas. Elderly from Muslim community is less likely to participate in the labour market. One reason may be the flow of foreign remittances. In Kerala, Muslim families are receiving large amount of remittances when compared with families belonging to other religions. An average Muslim household received Rs. 144,000 as remittances in 2014 (Zachariah and Rajan, 2015). Elderly from SC/ST families are more participating in the labour market. The SC/ST households received the lowest average amount as remittances i.e. only Rs. 13,000 (Zachariah, 2016). Another reason for this could be that some religions encourage practices of labour force participation that spur economic growth while others put high value on non-market activities than on market activities (O'Neil & Bilgin, 2013).

Table 4 explains the determinants of elderly labour force participation in urban Kerala. We find that higher educational attainment of elderly has a negative but statistically insignificant effect on labour force participation in the urban areas. The coefficients for the education dummy variable indicates that with higher level of education attainment, the probability of participating in labour force decreases for the elderly in urban Kerala. Higher educated elderly retired from government services. They are receiving some good amount of pension and they don't want to participate in the lower sector jobs in their later life.



Table 4  
**Determinants of Elderly Labour Force Participation in Urban Kerala**

Variables	Simple Probit Estimates						IV Probit Estimates	
	Model 1			Model 2			Coefficient	Z-value
	Coefficient	Z-value	Marginal Effects	Coefficient	Z-value	Marginal Effects		
Log mpce	0.15	1.04	0.03				0.42	1.25
Mpce Quintile2	---	---	---	0.26	1.20	0.06	---	---
Mpce Quintile3	---	---	---	0.26	1.19	0.05	---	---
Mpce Quintile4	---	---	---	0.25	1.17	0.05	---	---
Mpce Quintile5	---	---	---	0.25	1.12	0.05	---	---
Age	-0.10	-0.53	-0.02	-0.10	-0.55	-0.02	-0.09	-0.51
Age square	0.0001	0.10	0.00003	0.0002	0.12	0.00003	0.0001	0.07
No. of adult members	-0.03	-0.55	-0.01	-0.02	-0.36	0.00	-0.02	-0.43
Sex male	1.65	9.04***	0.35	1.63	8.96***	0.35	1.63	9.37***
Primary education	-0.42	-1.48	-0.09	-0.43	-1.51	-0.09	-0.45	-1.67*
Secondary education	-0.45	-1.46	-0.10	-0.45	-1.43	-0.10	-0.51	-1.64
Graduate and above	-0.28	-0.65	-0.06	-0.27	-0.63	-0.06	-0.39	-0.96
Unmarried	0.03	0.07	0.01	-0.01	-0.03	-0.003	0.07	0.17
Widow/Separated	-0.07	-0.34	-0.01	-0.07	-0.33	-0.01	-0.08	-0.40
Living with spouse only	0.12	0.39	0.03	0.14	0.46	0.03	0.12	0.35
Living alone	0.05	0.14	0.01	0.05	0.13	0.01	0.01	0.05
Living with relatives/OAH	-0.81	-1.72*	-0.17	-0.78	-1.64	-0.17	-0.83	-2.57*
Govt. pension	-0.68	-2.22**	-0.14	-0.64	-2.11**	-0.14	-0.71	-2.51*
Widow/old age pension	0.62	4.29***	0.13	0.62	4.28***	0.13	0.66	3.92***
Other disability pension	-0.36	-0.91	-0.08	-0.36	-0.91	-0.08	-0.34	-0.87
ENT	0.32	1.08	0.07	0.29	0.97	0.06	0.30	0.92
Cardiovascular	-0.27	-1.07	-0.06	-0.29	-1.16	-0.06	-0.31	-1.07
Respiratory	-0.43	-1.19	-0.09	-0.46	-1.26	-0.10	-0.43	-1.03
Rheumatic diseases	-0.20	-0.82	-0.04	-0.24	-0.96	-0.05	-0.27	-0.93
Psychological	-0.31	-1.14	-0.07	-0.33	-1.20	-0.07	-0.34	-1.15
Severe diseases	0.52	0.96	0.11	0.50	0.92	0.11	0.36	0.67
Other diseases	-0.30	-0.83	-0.06	-0.36	-0.98	-0.08	-0.34	-0.80
Hindus	0.07	0.39	0.02	0.10	0.55	0.02	0.03	0.13
Muslims	-0.19	-0.84	-0.04	-0.16	-0.73	-0.03	-0.16	-0.68
SC/ST	0.07	0.32	0.02	0.07	0.32	0.02	0.14	0.61
OBC	-0.04	-0.23	-0.01	-0.05	-0.32	-0.01	-0.01	-0.04
Remittance receipts	-0.36	-2.10**	-0.08	-0.38	-2.30**	-0.08	-0.38	-2.03**
_cons	4.02	0.61		4.97	0.79		1.99	0.29
Number of observations			669			669		667
Wald chi2(32)			177.35			179.83		175.94
Pseudo R2			0.3508			0.3522		
Log pseudo likelihood			-251.61037			-251.07415		
Wald test of exogeneity chi2(1)								0.87

Note: \*\* and \*\*\* imply statistical significance level at 10 %, 5 % & 1 % levels respectively.

Source: Authors 'estimation based on primary data

Living arrangement of the elderly also have significant association with their LFPR. The coefficient of living with relatives/OAH dummy (in model 1) is significantly related to the LFPR at 10 per cent level. Those who are living with relatives/OAH are less likely to participate in the LFP. There are strict rules and regulations in each OAHs. They won't allow the inmates to go out or for any kind of employment. Factors like government pension and widow/old age pension are significantly determining elderly labour force participation decision. Elderly with government pension have negative significance on elderly LFPR at 5 per cent level (in both model one and two). They are getting enough amount of pension up on retirement. So that they do not have much economic needs for working in the later years of age. On the other hand, elderly with widow/old age pension has positive significance on elderly LFPR at one per cent level (in both model one and two). Their pension amount is very minimal and not enough for their day to day expenses. This forced them to participate in the labour market.

The coefficient of remittance dummy shows that the elderly with remittance receiving family are negative effect on LFPR. Migration would play a greater role in raising household living standards and hence it is expected that remittance could have played a greater role in reducing income poverty (Parida et al., 2015). The international migration has a disincentive effect on left-behind members, especially elderly and females, through the inflow of remittances, which raises the reservation wage of left-behind members, and encourages them to withdraw from the labour market (Khan and Valatheeswaran, 2016, Parida, 2014). The LFPR among remittance recipient households is high because the financial support from emigrant members through remittances allows them to afford to remain unemployed until they find the job they prefer (Zachariah et al., 2001). Recently female migration is also at high (Parida and Raman, 2018) and it is negatively affected elderly LFPR decision.

#### **4.4. Provision of Existing Social Securities and Its Limitations**

Social security system is composed of a number of schemes and programs spread throughout a variety of laws and regulations. Social security system under service sector comprises of provident fund, pensions and gratuity schemes, health care and maternity benefits. A lion share of the elderly people is not eligible for any kind of pension, gratuity, and health benefits under the service sector. Those people are receiving only a nominal old age pension provided by the government as unorganized/informal social security benefit. During 2011-12, 94.7 per cent of elderly males and 73.1 per cent of elderly females were not eligible for these kind of social security benefits. They were receiving only Rs. 1100 through government's old age pension policy. This amount of pension is not even enough for meeting one month's expenditure. As age increases, health deteriorates and health issues are increasing. Health care expenditure is ones among the expensive one for elderly people.

Most of the elderly become vulnerable with ageing due to their inability to work and earn in the old age. Vulnerability due to increasing age can be anticipated in time, and can be alleviated by making specific provisions if one is earning adequate income. When people and families are not able to make arrangements for the care of the elderly, their needs must be provided for by the society/state, either in cash or kind through social security schemes (Kulkarni et al., 2014). There are several schemes to assist older persons in the unorganized sector. Firstly, there are central government's public-assistance schemes. It includes National Social Assistance Scheme (NSAS) and Annapurna scheme introduced in 1995 and 1999 respectively. The Ministry of Justice and Empowerment has taken the lead in commissioning an OASIS (Old Age Social and Income Security) project to enable voluntary provision of old age income for those belonging to the unorganized sector (Rajan, 2002).

Table 5  
Social Security Benefits under Service Sector

Nature of Social Security Benefits		Male			Female		
		2004-05	2009-10	2011-12	2004-05	2009-10	2011-12
Social Security Benefits	Eligible for only PF/ pension	6.55	---	0.29	---	---	---
	Eligible for only gratuity	2.98	9.21	---	2.52	---	---
	Eligible for only health care & maternity benefits	---	1.65	0.58	---	---	3.83
	Eligible for only PF/ pension and gratuity	---	14.63	---	10.86	---	---
	Eligible for only gratuity and health care & maternity benefits	--	1.44	1.74	---	36.72	---
	Eligible for PF/ pension, gratuity, health care & maternity benefits	5.04	17.82	2.69	22.99	13.37	23.09
	Not eligible for any of above social security benefits	85.43	55.26	94.71	63.62	49.92	73.08
Job Contract	No written job contract	83.86	70.99	83.75	66.66	79.05	59.22
	Written job contract for 1 year or less	4.34	---	6.64	21.18	---	24.4
	Written job contract for more than 1 year to 3 years	---	2.24	---	---	---	2.18
	Written job contract for more than 3 years	11.8	26.77	9.62	12.16	20.95	14.2
Paid Leave	Yes	39.6	61.7	28.0	36.3	96.8	29.4
	No	60.4	38.3	72.0	63.7	3.2	70.6

Source: Authors' estimates from the NSS Unit-level data, various rounds

Majority of the elderly do not have any written job contract in the service sector. With a written job contract, the elderly might have to work on regular basis with some

rules and regulations until the contract ends. For elderly people, it may not be possible to work regularly. If the employers are getting paid leave that means the job is formal one. Only 28 per cent of elderly males and 29 per cent of elderly females were eligible for paid leaves in the service sector during 2011-12 (Table 5).

## V. CONCLUDING REMARKS

The main objective of the paper was to explore how the process of structural transformation affects the employment patterns of elderly and their labour force participation decision in Kerala. This paper is based on both secondary and primary data.

As the economy of Kerala has been transformed from low productive agrarian to services-oriented economy, so the sectoral employment pattern changed. Since, service sector employment normally requires low level of physical stamina compared to that of agriculture and industry, elderly people are likely to participate in this sector with increasing numbers in the recent years. The major findings of the paper also suggest that economic insecurity of the elderly is a result of absence of other adult members in the family, increasing healthcare expenditure, incidence of poverty, and lack of social security measures etc. Hence, elderly living with family members are less likely to participate in the labour force. However, changing family structure from traditional joint family system to nuclear family increases the probability of elderly labour market participation in Kerala.

This study also finds a receipt of remittances has negative influence on the elderly LFPR. Elderly residing in remittance recipient households are getting adequate financial support and hence on the average are less likely to take up wage/salaried jobs in labour market. Since, most of the *Muslim* households in our sample are receiving remittances, their elderly members are less likely to participate in the labour market as compared to *Hindus* and all other religions. As elderly from lower quintile of the income groups are more likely to participate in the labour market, and most of them are engaged in the low paid jobs without any social security benefits, their working and living conditions are very measurable. Moreover, it is found that elderly working in rural areas are more vulnerable than their urban counterparts.

On the basis of these findings, it is therefore suggested that the provision of adequate social security benefits including health and accidental insurance schemes is important for the informal sector workers. Moreover, monitoring the existing old age pension schemes is vital to ensure provision of adequate amount of monthly pension on regular basis. This would not only reduce the incidence of poverty and income dependency among elderly, but at the same time it will help to improve their overall standard of living and welfare.

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## ANNEXURE 1

## Sample Collection Procedure

Village/Ward name	Urban	Rural	Urban	Rural village	Urban	Rural	Total
	ward	Village	ward		ward	village	
	Attingal	Chirayinkeezhu	Kothamangalam	Varappetty	Vadakara	Onchiam	
Census Households village/ward wise	9768	7155	9663	4482	15787	6289	
Census Households of the selected villages (taluk total)		16923		14145		22076	53144
No. of Households to be surveyed <sup>1</sup>		267		266		268	801
No. of Households to be surveyed from each <sup>2</sup> of the selected villages/wards	154	113	182	84	192	76	801

Source: Census, 2011

## ANNEXURE 2

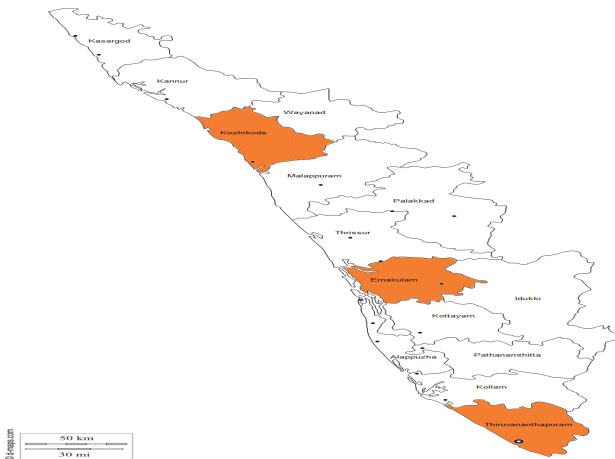
## Socio-economic Profile of Selected Districts in Kerala, 2011

Socio-economic Indicators	Kozhikode	Ernakulam	Trivandrum
Year of formulation of the District	1 <sup>st</sup> January 1957	1 <sup>st</sup> April 1958	1 <sup>st</sup> July 1949
Geographical area	2345 sq. KM	3063 sq. KM	2,192 sq. KM
Population	3,086,293	3282388	3301427
District population as percent of total population of the state	9.24 %	9.83 %	9.88 %
Percentage of Hindus	56.21 %	45.98 %	66.46 %
Percentage of Muslims	39.24 %	15.67 %	13.72 %
Percentage of Christians	4.26 %	38.20 %	19.10 %
Elderly population	235976	450794	429431
Percentage of Elderly population	5.63 %	10.75	10.24
Density of population	1316	1072	1508
Literacy rate	95.24 %	95.68 %	92.66 %
Sex ratio	1097	1028	1088
Infant mortality rate	17.67	8.22	12.13
Work Participation rate	30.7 %	38.1 %	37.3 %
Life expectancy	66.62	70.1	68.33

Source: Census, 2011

### ANNEXURE 3

Map of Kerala (Selected Districts are Highlighted)



Source: Adapted from [https://www.google.co.in/search?q=kerala+map&source=lnms&tbn=isch&sa=X&ved=0ahUKEwju2fCA9MzgAhWRfysKHXtg\\_CUYO\\_AUIDygC&biw=1366&bih=657](https://www.google.co.in/search?q=kerala+map&source=lnms&tbn=isch&sa=X&ved=0ahUKEwju2fCA9MzgAhWRfysKHXtg_CUYO_AUIDygC&biw=1366&bih=657) and modified.

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