

"A man is  
great by  
deeds, not by  
birth"

-Chanakya

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**'Social Institutions, Identities, and Labor Force  
Participation'**

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# Social Institutions, Identities, and Women's Labor Force Participation

## Abstract

This study explores the effect of social institutions such as religion, caste, and the household on women's decision to participate in the labor force. The Southwestern Indian state of Kerala offers a diverse sociocultural setting to analyze this. Using data from two rounds of the Kerala Migration Survey - KMS 2013 and 2018 - women's labor force participation (LFP) is assessed as a function of their religious group, and among castes, denominations, and sects within these religious groups. An interesting finding that holds regardless of the time period and religious group is that the more educated a woman is, the less likely she is to be gainfully employed. Changes in economic circumstances as a result of the return of migrants from Gulf countries primarily to the Muslim-dominated northern parts of Kerala have permeated long-standing cultural influences that kept Muslim women from participating in the labor force, thereby enabling such participation in the latter period of study. We also see the effect of the dominant culture of the region on women's labor force participation, especially in Malabar where the social norms of the Sunni Muslim sect seem to permeate across religious groups.

**Keywords**— labor force participation, gender, household, institutions

**JEL Classification:** A12, D13, J21, Z13

# 1 Introduction

‘Choice takes place within certain social structures, themselves the outcome of previous choices and structures’

—*Nancy Folbre, Who Pays for the Kids? Gender and the structures of constraint, 1994*

Female Labor Force Participation has been a subject of consistent inquiry and has spurred discussions on the role of women in development (Boserup, 1970). Their participation in the labor force involves compromising their predetermined responsibilities within a household, often recognized as a contribution to the household head’s production process (Sen, 1985). Labor force participation (LFP) also leads to better bargaining power for women at the household level and is generally met with backlash from their spouses or other male members (Alonso-Borrego & Carrasco, 2017; Chin, 2012; Lenze & Klasen, 2017; Luke & Munshi, 2011). Despite the considerable focus on household-level determinants, impediments, or resistance to women’s participation in the labor force, a large proportion of the extant literature appears to have done little justice to the role of institutions that play a critical role in this decision. To address this issue, this paper develops a conceptualization of how these institutions shape individuals’ roles and responsibilities within society and their ability to deviate from these. One such deviation is a woman’s participation in the labor force, which is the focus of this study.

The household to which the woman belongs is perhaps most fundamental to her decisions concerning the labor market. Broadly, the composition of the household and one’s roles in it, the intra-household power dynamics, the economic position of the household, and the membership of the household in various social institutions, all contribute to this choice. Here, labor force participation represents a choice that outweighs multiple factors that likely keep a woman from working outside the household. It is reasonable to refer to those factors that *pull* women away from the labor force as a form of persistence.

This study finds that higher the educational qualification of the woman, less likely it is that she will participate in the labor force. The household composition that is favorable to women’s participation is one in which the number of children are fewer and the number of adult females are greater. Compared to unmarried women, divorced or separated women are more likely to work whereas the opposite is true for married and widowed women. Female household heads are enablers in women’s labor force participation choice. Some of these overall findings are robust to changes in the survey period and hold across sub-samples based on religious affiliations. However, there appear to be considerable differences in intra-household factors affecting LFP for Muslim women from 2013 to 2018. The study finds that the same factors that kept women from joining the labor market in 2013 enable their participation in 2018. We find that there are economic underpinnings to this result and attribute it to the economic crisis of the Gulf countries and employment policies in favor of their citizens which culminated in a large-scale reverse migration of predominantly Muslim migrants to their homeland in northern Kerala.

This paper is organized as follows - Section 2 provides a brief review of the extant literature on female labor force participation, Section 3 develops a conceptualization of the woman’s decision to participate in the labor force, and Section 4 substantiates the choice of Kerala to study the role of identity in labor force participation by presenting the history of its identity groups. Section 5 describes the data, while Section 6 elaborates on the methodology. Section 7 analyzes the results, and the paper concludes with a discussion in Section 8.

## 2 Brief Review of Literature

A large body of literature is dedicated to the study of labor force participation. Women’s decision to participate or withdraw from the labor force has especially spurred scholarly interest due to women’s consequential role *in* the household. This so-called household-market trade-off makes the study of female labor force participation appealing to both microeconomists and macroeconomists alike. The latter relates to the Feminization U-shape hypothesis, first proposed in Boserup (1970) according to which at the initial stages of economic development, female labor force participation falls since most of the jobs that require high skills are dominated by men who are at that point, more educated than women. As more women get educated due to economic development, they are able to acquire more skills through

education and become qualified enough to make a shift from traditional occupations such as agriculture<sup>1</sup> to non-agricultural sectors. Studies such as Çağatay and Özler (1995); Durand (1975); Fatima and Sultana (2009); Gaddis, Klasen, et al. (2012); Goldin (1994); Klasen and Pieters (2012); Mammen and Paxson (2000); Pampel and Tanaka (1986); Tam (2011); Tansel et al. (2001) have focused on this U-shape hypothesis. This is explained by income and substitution effects (Goldin, 1994), wherein a rise in real wages leads to a rise in the standard of living (income effect), and it also increases the opportunity cost of choosing leisure over work (substitution effect). The negative income effect and positive substitution effect together affect the female labor force participation (FLFP) depending on the magnitude of each effect. The extant literature uses the income and substitution effects under the pretext of accounting for intra-household factors to study FLFP<sup>2</sup>.

In India, there has been considerable work on testing the U-shape relationship. However, Indian literature finds evidence only for a decline in female labor force participation, despite steady economic growth (Bhalla & Kaur, 2011; Chaudhary, Verick, et al., 2014; Das, Jain-Chandra, Kochhar, & Kumar, 2015; Kapsos, Silbermann, & Bourmpoula, 2014; Klasen & Pieters, 2012, 2015; Sorsa et al., 2015). Much of the recent literature has been exploring plausible reasons for this decline (Afridi, Dinkelman, & Mahajan, 2018; Lahoti & Swaminathan, 2016; Mehrotra & Parida, 2017; Sarkar, Sahoo, & Klasen, 2019) mostly from a macroeconomic standpoint, with the intra-household considerations being reduced to standard household level controls that haven't changed much since Killingsworth and Heckman (1986).

Dessing (2002), however, deserves credit for an economic theorization of female labor force participation that is inclusive of gender roles within the household. Dessing (2002) refers to the male member as a primary worker and the female member or the spouse of the primary worker as a secondary worker. In his model, the primary worker is a full-time worker i.e, one whose hours of work are unaffected by changes in wages or the earnings of their spouses. On the other hand, the secondary worker is faced with trade-offs between the private and public domains. When a secondary worker chooses to join the labor market, they are obligated to manage both domains, which often forces their withdrawal from the labor force. In such situations, a secondary worker's decision to join the labor force is purely driven by necessity, as in the case of extreme poverty. Moreover, according to Dessing (2002), secondary workers also have low bargaining power within the household<sup>3</sup>.

Each household in a patriarchal society has established and often uncontested gender roles where the male member assumes the role of the breadwinner (public domain) while the female member takes responsibility for the activities at home (private domain). We find that the role of social institutions in women's decision to participate in the labor force is unexplored in the extant literature. We aim to fill that gap by not only incorporating social institutions in a meaningful way but also treating them as fundamental to the decisions concerning women's LFP.

### 3 Identities, Institutions, and Labor Force Participation

An individual's identification *with* a group of people is called collective identity, and identification *apart* from others is called personal identity. More recently, Burke (2020) defines social identities as "Identities (that) tell us who we are and they announce to others who we are". In other words, they regulate individual behavior through codes of conduct that are further regulated by identities rooted in society. Folbre (1994) asserts that for women, collective or social identities dominate their personal identities in a manner that gender identities not only define the nature of their interactions with others in society but also define who they are as individuals. The social identity frame of understanding women's labor force participation that we have chosen for our study is indeed apt, given the analysis of Folbre (1994).

Labor market opportunity is determined largely by the market wage, is commensurate with an individual's skills or experience, and in principle does not discriminate on the basis of gender. While opportunities are equitable, the choice can be biased in favor of men whose gender roles enable labor force participation. For women, gender roles as defined by social institutions such as the household, their

<sup>1</sup>Where they work on the family farm and are therefore not remunerated.

<sup>2</sup>Refer Killingsworth and Heckman (1986) for a review of literature on intra-household factors affecting a woman's decision to participate in the labor market.

<sup>3</sup>Which allows the men to work and decide how the fruits of their labor are distributed amongst the members of the household. The division is a measure of the woman's bargaining power (Sen, 1985).

caste, and the religious grouping play a crucial role in defining and guiding their decision to participate in the labor force.

The purpose of this study is to analyze the role of social institutions in defining women’s roles and responsibilities in affecting their participation in the labor force. The complex nature of identities makes it rather challenging to categorically attribute certain identity affiliations to decisions relating to the labor market. To simplify this complex process, we develop a conceptualization of this decision, as shown in Figure 1.

Identity is the medium through which roles and responsibilities are defined in society. Society is marked by norms of conduct for each of these identities. Caste and religious institutions define social mores and ensure that there is no deviation from socially ascribed roles and responsibilities. These institutions are divided by their own beliefs and treat these roles with varying degrees of strictness. Gender roles are a case in point. Although gender roles are defined in rather similar ways by all caste and religious groups, the cost of deviation from such roles and responsibilities differs based on affiliations. Therefore, the social cost of deciding to work is distinct for Shia Muslim women vis-à-vis that of Hindu Brahmin women. This is further affected by the dominant culture of the region they are located in. For instance, in a predominantly Sunni Muslim region, the social norms reflect Sunni Muslim culture.

In a patriarchal Indian household, power is typically assumed by the male members of the household. Understanding the power dynamics at the household level is crucial for the comprehension of gender roles within it, and further, decisions pertaining to the labor market. Since gender roles define a woman’s duty to be confined to the household and a man’s role to be outside of the household, the decision of a woman to join the labor market involves a violation of the socially assigned roles.

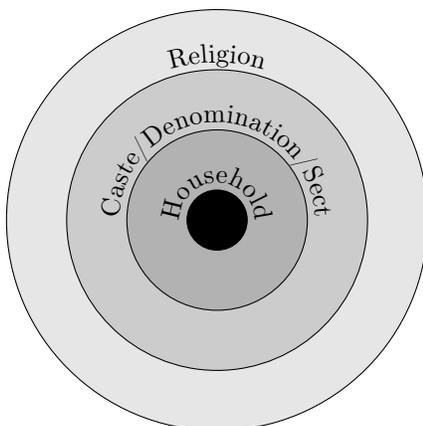


Figure 1

Conceptualization of institutions affecting women’s LFP through gender roles

As shown in Figure 1, there are three institutions that define gender roles, and further affect women’s decisions pertaining to labor force participation. Each circle represents an institution moving from broader to more specific<sup>4</sup>. The outermost circle represents religious institutions which encompass castes/denominations/sects depending on the religious affiliation, i.e, among religious groups, individuals are further affiliated to specific castes for Hindus, denominations for Christians, and sects for Muslims<sup>5</sup>. The innermost circle forms the core of institutions that actually operate under the social norms laid out by the first two layers of institutions. Within this innermost core - household - lies the discretion to relax or reinforce norms defining gender roles that ultimately influence a woman’s decision to participate in the labor force. It is the characteristics of the household such as the intra-household power relations, household size and composition, marital status of the woman, economic position of the household, and education of the woman, that affect women’s LFP. In principle, higher educational attainment manifests in a greater likelihood of labor force participation. However, when viewed within the context of the household, a higher educational attainment *prevents* rather than encourages such participation, which

<sup>4</sup>They form part of level 1 of the *Four Levels of Social Analysis*, a framework first introduced in Williamson (1998), and later in Williamson (2000).

<sup>5</sup>The denominations and sects are hierarchical much like the caste system and even mimic caste itself.

is a direct outcome of backlash from the male members. This is why education is studied within the context of a household and treated as an intra-household variable. The three institutions - religion, caste/denomination/sect, and household - and individual characteristics defining the institution of a household, together affect LFP decisions of a woman.

Given the intricacies of the model, the study requires a social setting that has considerable diversity in terms of group affiliations - religion, caste/denomination/sect - and regions. Furthermore, the study can do justice to its conceptualization only if there is adequate variation in power relations i.e, the data should have a sufficient proportion of female-headed households as well. The southwestern state of Kerala in India offers a unique socio-cultural setting to test this relationship.

## 4 A Brief History of Identity in Kerala

The state of Kerala has a history of maritime trade that is distinct from the rest of the Indian subcontinent. Natural conditions such as the monsoon winds are said to have enabled seafaring expeditions to and from the region. Trade with the Romans, Dutch, Portuguese, and Arabs at different times in its history also meant the diffusion of their culture which happened through marriages and religious conversion. The spread of Christianity took place predominantly in the southern region<sup>6</sup> of Kerala known as Travancore, while conversions to Islam<sup>7</sup> was common in the northern region known as Malabar. Christianity in Kerala is marked by countless schisms from their initial Roman factions and forced conversions during the advent of trade with the Portuguese. These sects, many of which are native to Kerala, follow their own rites and practice endogamy through claims of purity based on the caste from which they had converted. The Hindus, Muslims, and Christians lived in harmony, their religious practices characterized by syncretism<sup>8</sup>, and familial privilege that transcended religious barriers<sup>9</sup>. This harmony, however, did not permeate *within* the religious groups. Kerala was rife with caste discrimination that even surpassed untouchability<sup>10</sup>.

An extraordinary feature of Kerala's caste system was the absence of two major occupation-based clans or *Varnas* from its hierarchy - the *Kshatriyas* or the warrior clan and the *Vaisyas* or traders and merchants. With only *Brahmins* at the peak of the caste hierarchy, and the *Shudras* at the bottom, the latter started filling up occupations that were hitherto reserved for the *Kshatriyas* and *Vaisyas*. These occupational classes permeated the traditional social hierarchy to the point of making such class affiliations indistinguishable from their assumed caste identities. Titles conferred by the kings soon became synonymous with caste groups, making way for an effortless movement up the social hierarchy for some groups<sup>11</sup>, while the others were left to carry the burden of their *Shudra* identity. Soon, the adoption of titles to claim allegiance to a social group<sup>12</sup> much different from their original *Shudra* caste further obscured the *Varna* order. In short, Kerala society can be characterized as "a madhouse of caste"<sup>13</sup>, a marriage of cultures<sup>14</sup>, and a muddle of identities<sup>15</sup>.

Another noteworthy feature of Kerala society is the practice of matrilineage among some of its castes and classes. Kerala also has the highest sex ratio in the whole country, highest literacy rate ([Census, 2011](#)), and is ranked highest among Indian states based on Human Development Indicators (HDI).

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<sup>6</sup>Explained by the myth that St.Thomas the Apostle visited Kerala ([Bayly, 1989](#)).

<sup>7</sup>Made possible by the Zamorin's (king of Malabar) directive that every fisherman household must convert one boy to Islam in exchange for naval instruction from the Arabs ([Allen, 2017](#)).

<sup>8</sup>For instance, Syrian Christians and Muslims in some parts of Kerala had processions similar to that Hindu temple festivals ([Brown, 1956](#)). It was even common practice to share paraphernalia ([Brown, 1956](#)) for these festivals, and 'sacred space' amongst these religious groups ([Bayly, 1989](#)).

<sup>9</sup>For instance, some Syrian Christians families became patrons of specific temple festivals of the Hindus in southern Kerala and the donorship continued for generations ([Brown, 1956](#); [Whitehouse, 1873](#)).

<sup>10</sup>'Unseeability' was a common practice ([Hutton, 1963](#)).

<sup>11</sup>The *Nairs/Nayars* is a case in point ([Fuller, 1975](#)).

<sup>12</sup>Much like *Sanskritization* ([Srinivas, 1956](#)).

<sup>13</sup>A remark made by Swami Vivekananda.

<sup>14</sup>Owing to religious syncretism ([Bayly, 1989](#)).

<sup>15</sup>Owing to the blurred lines between castes and occupational class.

## 5 Data

Since women’s labor force participation is modeled as a decision that entails accounting for institutional factors and characteristics specific to households as an institution, it necessitates the use of data that exhibits diverse identities. This study uses data from two rounds of the Kerala Migration Survey - KMS 2013 and 2018 (Rajan, 2013, 2018). The survey collects data on international migration, household characteristics, demographics, and the financial position of households in Kerala. This data is particularly suited for a study of identity due to the detailed information collected on religion, castes for Hindus, denominations for Christians, and sects for Muslims, the details of which are shown in Figure 2.

With reference to the identity model developed in Figure 1, religion and the various castes, denominations, and sects within these religions are included in the data and represent institutions. Society is reflected in the regions considered - Malabar, Travancore, and Cochin - of which the Malabar region in northern Kerala is Muslim-dominated, and the Travancore region in South Kerala has a large proportion of Christians.

Power relations are measured based on whether the woman is the head of the household or the spouse of the head. It is believed that power relations skewed in favor of the woman are likely to manifest in her joining the labor force. Household composition pertains to the number of children aged 0-5 years and 5-15 years, the number of elderly people in the household (aged 65 and above), and the number of adult females (15-65 years). We posit that the presence of a larger number of adult females in the household reduces the burden of household work per adult woman and therefore enables LFP. As for marital status, a married woman is tied down by the responsibility to care for the family i.e, her role is restricted to the household; an unmarried woman has fewer responsibilities. In the case of a widow, the demise of her spouse does not translate into freedom from restraint which is aggravated by the social stigma associated with being a widow. The magnitude of stigma is dependent on cultural factors that the model already accounts for. In the case of a divorced or separated woman, social stigma is rife but the freedom of choice is greater due to at least a partial severance of patriarchal ties. Another important factor is the household’s economic position which is measured by the monthly per-capita expenditure (MPCE), income, and the occupation of the household head. In a situation of absolute penury, the economic position will weigh in more than any other factor and will reflect in LFP by the women in the household. Higher education not only reflects qualification and eligibility for skilled employment but is detrimental to women’s labor force participation in households that are highly patriarchal.

Using these variables, we test our propositions using a probit or IV probit specification as detailed in the following section.

Figure 2  
Social Identity Groups: Caste, Denominations, and Sects



## 6 Methodology

We use a probit or IV probit specification depending on the presence of endogeneity to estimate the following model:

$$\begin{aligned}
 LFP_i = & \beta_0 + \beta_1 \ln(MPCE_i) + \beta_2 \ln(MPCE_i^2) + \beta_3 \ln(Wage)_i + \beta_4 Age_i + \beta_5 EDU_i + \beta_6 HouseholdSize_i \\
 & + \beta_7 NChildren1_i + \beta_8 NChildren2_i + \beta_9 NElderly_i + \beta_{10} NAdultF_i + \beta_{11} Religion_i \\
 & + \beta_{12} MaritalStatus_i + \beta_{13} Head_i + \beta_{14} HeadSpouse_i + \beta_{15} Region_i + \beta_{16} Occupation_i + \epsilon_i \quad (1)
 \end{aligned}$$

The dependent variable represents female labor force participation. It takes the value 1 if the woman is working and 0 otherwise. The independent variables include a quadratic in the log of monthly per-capita income  $\ln(MPCE_i)$  and  $\ln(MPCE_i^2)$ , log of wage ( $\ln(Wage)_i$ ) that is calculated using Heckman (1979) specification,  $Age_i$  which serves as a proxy for experience,  $EDU_i$  which is a categorical variable as defined in appendix A.2. Household characteristics are measured by  $HouseholdSize_i$ ,  $NChildren1_i$ ,  $NChildren2_i$ ,  $NElderly_i$ , and  $NAdultF_i$  which measure the size of the household, the number of children aged 0-5 years and 5-15 years, the number of elderly, and the number of adult females in the household, respectively.  $Religion_i$  is a categorical variable that is either Hindu, Christian, or Muslim;  $MaritalStatus_i$  is also a categorical variable that includes unmarried, married, widowed, and separated/divorced.  $Head_i$  and  $HeadSpouse_i$  are binary variables that take a value of 1 if the woman is the head of the household or the spouse of the head, and a value of 0 if she is neither. The state of Kerala is divided into three regions - Travancore, Cochin, and Malabar, the former kingdoms that existed before they were unified into a single state. The variable  $Region_i$  represents these regions.  $Occupation_i$  is the occupation of the

household head and is constructed based on the National Classification of Occupations 2015<sup>16</sup>. The same model is used for sub-samples such as Hindu, Christian, and Muslim women for 2013 and 2018.

Where  $\ln(MPCE_i)$  and  $\ln(MPCE_i^2)$  are endogenous, a two-step IV tobit specification (Newey, 1987) is used with the land ownership in cents (*Cents*), presence of a TV (*TV*), and a motor car in the household (*Car*) as instruments. Some models use an additional instrument - *Ration* - which indicates the presence of a ration card for the household.

## 7 Results

Table 1 indicates that in the 2013 sample, women respond positively to a rise in wages in the labor market, and to the rising income of the household head by participating in the labor force. Education, however, does not ensure participation in the labor force. In fact, the slope coefficients indicate that the greater the education, the less likely a woman will participate in the labor force. Although it is difficult to categorically state the reasons for this phenomenon, the statistical significance of the coefficients warrants some discussion of potential causal mechanisms.

This could be pointing towards intra-household power dynamics. Even in the most seemingly progressive of societies<sup>17</sup>, patriarchy exists and power is exercised in rather discreet ways. The most discreet of settings to exercise male dominance is the household. Male dominance can be exercised in myriad ways but it can be retained only as long as a woman remains subordinate to the male counterpart. Perhaps the greatest threat to a man’s power is an educated or empowered woman since it not only opens up opportunities for the latter but reduces dependence on the man, both financially and otherwise, and no power relation can exist in the absence of dependence. When it does come to that point, the only power that can be used is the ‘power to punish’ which serves the purpose of “balancing” the formerly lopsided power relations<sup>18</sup>. One plausible explanation is that fear of violence resulting from male backlash could prevent labor force participation. In other words, the greater the woman’s educational attainment, the greater the power imbalance and therefore, the more likely she is to face male backlash, so the greater the chances of her non-participation in the labor force. The negative slope coefficients at educational attainment beyond schooling indicate that at the graduate level or above, the woman has greater bargaining power not necessarily translating into labor force participation.

Household composition is also crucial for female labor force participation. With a greater number of children in the household, women are less likely to participate in the labor force. However, if there is a large number of elderly people in the household, this may translate into either more dependents or more people to take care of the children and affects labor force participation in opposite ways. A larger number of women (female adults) in the household allows women to join the labor market since the household work is divided either amongst these women or is fully taken care of by some female members of the household, enabling the remaining to work.

The only marital status that is favorable to women working is that of a divorcee or a separated woman. There are two plausible explanations for this observation: (1) the lack of influence of the male patriarchy on the lives of the divorced or separated women provide them the freedom to work, and/ or (2) divorced/ separated women have no option but to work in order to financially secure themselves and their families.

A woman who is a household head is likely to work, whereas if she is the spouse of the head, the effect is the opposite and more significant. The occupation of the household head is not significant for female labor force participation. It is noteworthy that only in households where the heads are professionals, associate professionals, or belong to the defense forces (workers not classified) the woman is likely to participate in the labor force.

In Table 2, only Hindu households are included, with the addition of the variable *Caste* to the existing model. It is observed that as one moves up the caste hierarchy, the less likely it is that the women in the household are engaged in ‘gainful’ employment. A better standard of living as indicated by the log of the monthly per capita income of the household ( $\ln(MPCE)$ ) causes women to not participate in the labor force. All other variables affect LFP in ways that are similar to Table 1.

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<sup>16</sup>Refer Table A2 in Appendix A.2 for details.

<sup>17</sup>Kerala is well-known for its model of social development.

<sup>18</sup>Refer Molm (1989) for a detailed discussion corroborated by experimental evidence.

Among Christians, as represented in Table 3, female labor force participation is enabled by a higher wage and higher income of the household head. As observed earlier, education curtails participation with the magnitude of the coefficients being larger for Christians than for Hindus as seen in Table 2. It is interesting to observe that women belonging to the CSI is the only Christian denomination that is more likely to participate in the labor market, compared to the base category - SC/ST Christians. CSI and SC/ST among Christians in Kerala are socio-economically disadvantaged, and therefore, behave in ways that are similar to SCs and STs which form the base category in Table 2. It is also worth noting that being the household head significantly favors Christian women’s labor force participation in 2013, whereas for other religious groups it seems not to matter.

For Muslim women, the only factor in favor of their participation in the labor market that is statistically significant is the market wage. Household-level factors are all in favor of non-participation. A Muslim woman from a Muslim-dominated region like Malabar is also less likely to work, as seen in Table 4. The only personal identity attributes of a Muslim woman that may be in favor of her working outside are separation or divorce and if she is the head of the household. The former is a highly stigmatized identity, while the latter is rarely observed.

We see that in 2013, the effect of the dominant culture of the region on women’s labor force participation, especially in Malabar where the social norms of the Sunni Muslim sect seem to permeate across other religious groups. In addition, for all women regardless of their social group, education does not materialize into participation.

Table 5 shows that not all variables that affected LFP in 2013 are significant in 2018. Education at the secondary and higher secondary level and the head of the household are the only significant variables. Coefficients for educational classifications have a negative sign and have only changed in magnitude from 2013. For Muslim women, the coefficient is negative which means that this group is less likely to participate in the labor force vis-à-vis the base category of Christian women.

Within the sample of Hindu women, the slope coefficients for education continue to be negative and significant in 2018. Table 6 reveals that for Hindu women, having a larger number of adult females is conducive to their participation in the labor force. Furthermore, the tendency of General category and OBC women to refrain from participation in the labor force has not changed since 2013. In fact, the magnitudes of both coefficients are larger. Also, in 2018 there is a flip in the signs of the variables that proxy power relations in a household. The variables head (*Head*) and spouse of the head (*HeadSpouse*) are positive with the former also being significant. The regional effects show that Hindu women in a Muslim-majority region tend to not participate in the labor force.

Among Christian women, Table 7 shows that the only factors that are relevant for labor force participation are the market wage, and whether or not the woman is the household head. Both contribute positively to the LFP of women. Despite the coefficients being non-significant, it is worth commenting on the consistency of the Christian denominations comprising SC/ST and CSI. The coefficients continue to be positive.

By 2018, Muslim women show a greater tendency to participate in the labor force as demonstrated in Table 8. Educational attainment is more conducive to LFP than in 2013, and a higher standard of living also points to greater participation. Previously we saw that being the household head mattered significantly only for Christian women, but by 2018, being the household head significantly favors women’s labor force participation among all religious groups. LFP is also no longer affected by the socio-cultural stigma associated with marital status. It seems that something significant must have happened at the household level to enable Muslim women regardless of marital status to participate in the labor force. Participation is also supported by household heads of all occupational categories. A large portion of these findings may be attributed to economic changes in the Gulf countries. There is a direct link between such changes and emigration to Kerala, especially for Muslim households.

The *Nitaqat* system was a step towards ‘Saudization’ which warranted the reservation of jobs for Saudi nationals. Although it first came into being in the 1950s (Wynbrandt, 2010), *Nitaqat* came to be implemented vigorously only by the end of 2013. Added to this was the ongoing economic crises owing to a continuous fall in oil prices. Since nearly 90% of the migrants from Kerala settle in Gulf countries (Rajan & Zachariah, 2020), its effect was felt throughout the state. In 2018, there was a 3.3% increase in the number of return migrants compared to 2013 (Rajan, Zachariah, & Kumar, 2020). It is also worth noting that during the two periods, among households clubbed by religious affiliations, Muslim households constituted the largest proportion of emigrants. The Muslim-dominated district

of Malappuram surpasses other districts in all return-migration indicators ([Rajan & Zachariah, 2020](#)). The economic impact on Muslim households has, without a doubt, permeated long-standing cultural influences that kept Muslim women from participating in the labor force. This is apparent from Table 8 where the factors that kept Muslim women from participating in the labor force in 2013, either doesn't affect or enable such participation by 2018.

Table 1  
Determinants of female labor force participation in 2013

	Coefficient	Standard Error
lnMPCE	-4.534	(3.225)
lnMPCE2	0.283	(0.245)
logWage	0.216**	(0.090)
Age	-0.003	(0.004)
lnHHInc	0.040***	(0.009)
<i>EDU</i>		
Literate with less than primary	-0.557***	(0.135)
Primary	-0.705***	(0.166)
Middle	-0.656***	(0.188)
Secondary	-0.914***	(0.113)
Higher secondary	-1.026***	(0.135)
Graduate	-0.390***	(0.131)
<i>HHSIZE</i>		
HHSIZE	-0.031	(0.047)
Children (0-5 yrs)	-0.131***	(0.036)
Children (5-15 yrs)	0.003	(0.032)
Elderly (65 above)	0.034	(0.042)
Adult females	0.027	(0.037)
<i>Religion</i>		
Hindu	0.032	(0.075)
Muslim	-0.140**	(0.070)
<i>Marital Status</i>		
Married	-0.034	(0.071)
Widowed	-0.143	(0.120)
Divorced/ Separated	0.796***	(0.198)
<i>Head</i>		
Head	0.028	(0.118)
Spouse of the head	-0.223**	(0.088)
<i>Region</i>		
Travancore	-0.036	(0.132)
Malabar	-0.344***	(0.126)
<i>Occupation of the head</i>		
Legislators, Senior Officials, and Managers	-0.185*	(0.112)
Professionals	0.100	(0.145)
Associate Professionals	0.173	(0.185)
Clerks	-0.229	(0.214)
Service workers and Shop & Market Sales Workers	-0.113	(0.153)
Skilled Agricultural and Fishery Workers	-0.276*	(0.142)
Craft and related Trade Workers	-0.137	(0.149)
Plant and Machine Operators and Assemblers	-0.119	(0.156)
Elementary Occupations	-0.024	(0.090)
Workers not Classified by Occupations	0.107	(0.762)
Wald test	62.800	(0.000)
Wald chi2	515.640	(0.000)
N	23,221	

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Notes.* The table reports coefficients for an IV probit model specified in Equation (1). The baseline model includes adult females who are illiterate (EDU), unmarried (Marital Status) Christians (Religion) in Cochin (Region), whose household head is unemployed. The education category *PG and above* has been removed from the estimation due to collinearity.

Table 2  
Determinants of labor force participation among Hindu women in 2013

	Coefficient	Standard Error
lnMPCE	-4.618*	(2.686)
lnMPCE2	0.317	(0.215)
logWage	0.154*	(0.088)
Age	0.004	(0.006)
lnHHInc	0.038***	(0.010)
<i>EDU</i>		
Literate with less than primary	-0.524***	(0.131)
Primary	-0.559***	(0.167)
Middle	-0.564***	(0.166)
Secondary	-0.916***	(0.111)
Higher secondary	-1.028***	(0.130)
Graduate	-0.430***	(0.124)
<i>HHSize</i>		
Children (0-5 yrs)	-0.187***	(0.056)
Children (5-15 yrs)	0.039	(0.041)
Elderly (65 above)	0.047	(0.057)
Adult females	-0.017	(0.057)
<i>Caste</i>		
General	-0.393***	(0.150)
OBC	-0.223**	(0.099)
<i>Marital Status</i>		
Married	0.042	(0.086)
Widowed	-0.064	(0.136)
Divorced/ Separated	0.943***	(0.239)
Head	-0.109	(0.157)
Spouse of the head	-0.384***	(0.131)
<i>Region</i>		
Travancore	-0.056	(0.150)
Malabar	-0.213*	(0.109)
<i>Occupation of the head</i>		
Legislators, Senior Officials, and Managers	-0.194	(0.141)
Professionals	0.332*	(0.170)
Associate Professionals	0.419*	(0.236)
Clerks	-0.023	(0.219)
Service workers and Shop & Market Sales Workers	0.115	(0.152)
Skilled Agricultural and Fishery Workers	-0.073	(0.217)
Craft and related Trade Workers	-0.050	(0.133)
Plant and Machine Operators and Assemblers	-0.047	(0.183)
Elementary Occupations	-0.008	(0.099)
Workers not Classified by Occupations	0.237	(0.719)
Wald test	39.510	(0.000)
Wald chi2	269.540	(0.000)
N	13,042	

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Notes.* The table reports coefficients for an IV probit model specified in Equation (1). The baseline model includes adult females who are illiterate (EDU), unmarried (Marital Status) SC/ST category Hindus (Caste) in Cochin (Region), whose household head is unemployed. The education category *PG and above* has been removed from the estimation due to collinearity.

Table 3  
Determinants of labor force participation among Christian women in 2013

	Coefficient	Standard Error
lnMPCE	-2.979	(3.783)
lnMPCE2	0.170	(0.286)
logWage	0.348***	(0.123)
Age	-0.011	(0.008)
lnHHInc	0.047**	(0.024)
<i>EDU</i>		
Literate with less than primary	-0.494	(0.444)
Primary	-1.079***	(0.269)
Middle	-0.912***	(0.297)
Secondary	-1.002***	(0.229)
Higher secondary	-1.086***	(0.221)
Graduate	-0.432*	(0.232)
<i>HHSize</i>		
Children (0-5 yrs)	-0.123	(0.087)
Children (5-15 yrs)	-0.033	(0.106)
Elderly (65 above)	-0.016	(0.092)
Adult females	0.019	(0.090)
<i>Denomination</i>		
RC	-0.276	(0.306)
MSC	-0.419	(0.383)
Latin	-0.400	(0.334)
Jacobite	-0.680	(0.564)
Orthodox	-0.033	(0.302)
Marthoma	-0.278	(0.398)
CSI	0.045	(0.291)
Pentacost	-0.428	(0.311)
Other	-0.291	(0.385)
<i>Marital Status</i>		
Married	0.113	(0.136)
Widowed	-0.358	(0.269)
Divorced/ Separated	0.555	(0.385)
<i>Head</i>		
Head	0.325*	(0.181)
Spouse of the head	-0.157	(0.116)
<i>Region</i>		
Travancore	-0.007	(0.107)
Malabar	-0.456*	(0.248)
<i>Occupation of the head</i>		
Legislators, Senior Officials, and Managers	-0.310	(0.205)
Professionals	0.043	(0.268)
Associate Professionals	-0.290	(0.565)
Clerks	-0.693	(0.765)
Service workers and Shop & Market Sales Workers	-0.579	(0.719)
Skilled Agricultural and Fishery Workers	-0.456*	(0.263)
Craft and related Trade Workers	-0.078	(0.236)
Plant and Machine Operators and Assemblers	-0.273	(0.263)
Elementary Occupations	-0.147	(0.158)
Wald test	15.180	(0.000)
Wald chi2	171.840	(0.000)
N	4,282	

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Notes. The table reports coefficients for an IV probit model specified in Equation (1), with the addition of *Ration* as an instrument. The baseline model includes adult females who are illiterate (EDU), unmarried (Marital Status) SC/ST Christians (Denomination) in Cochin (Region), whose household head is unemployed. The education category *PG and above* has been removed from the estimation due to collinearity.

Table 4  
Determinants of labor force participation among Muslim women in 2013

	Coefficient	Standard Error
lnMPCE	6.966	(5.832)
lnMPCE2	-0.564	(0.430)
logWage	0.652***	(0.242)
Age	-0.021**	(0.009)
lnHHInc	0.027	(0.021)
<i>EDU</i>		
Literate with less than primary	-1.293***	(0.449)
Primary	-1.667***	(0.577)
Middle	-1.666***	(0.608)
Secondary	-1.493***	(0.464)
Higher secondary	-1.843***	(0.581)
Graduate	-1.161*	(0.667)
<i>HHSize</i>		
Children (0-5 yrs)	-0.003	(0.050)
Children (5-15 yrs)	-0.240**	(0.113)
Elderly (65 above)	-0.084	(0.063)
Adult females	-0.165	(0.167)
	-0.037	(0.100)
<i>Sect</i>		
Sunni	-0.227	(0.366)
<i>Marital Status</i>		
Married	-0.215	(0.161)
Widowed	-0.415	(0.305)
Divorced/ Separated	0.461	(0.339)
<i>Region</i>		
Head	0.156	(0.204)
Spouse of the head	-0.113	(0.179)
<i>Occupation of the head</i>		
Legislators, Senior Officials, and Managers	0.184	(0.327)
Professionals	-0.237	(0.317)
Associate Professionals	0.184	(0.327)
Clerks	-0.237	(0.317)
Service workers and Shop & Market Sales Workers	0.184	(0.327)
Skilled Agricultural and Fishery Workers	-0.237	(0.317)
Craft and related Trade Workers	0.184	(0.327)
Plant and Machine Operators and Assemblers	-0.237	(0.317)
Elementary Occupations	0.184	(0.327)
Wald test	6.300	(0.043)
Wald chi2	103.330	(0.000)
N	5896	

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Notes.* The table reports coefficients for an IV probit model specified in Equation (1). The baseline model includes adult females who are illiterate (EDU), unmarried (Marital Status) Shia Muslims (Sect) in Cochin (Region), whose household head is unemployed. The education category *PG and above* has been removed from the estimation due to collinearity.

Table 5  
Determinants of female labor force participation in 2018

	Coefficient	Standard Error
lnMPCE	-66.888	(64.596)
lnMPCE2	4.032	(3.942)
logWage	-0.520	(1.106)
Age	-0.007	(0.017)
lnHHInc	0.075	(0.079)
<i>EDU</i>		
Literate with less than primary	-0.891	(0.839)
Primary	-1.043	(0.852)
Middle	-1.299	(0.896)
Secondary	-1.263*	(0.670)
Higher secondary	-1.384**	(0.582)
Graduate	-0.410	(0.373)
<i>HHSize</i>		
HHSize	0.040	(0.096)
Children (0-5 yrs)	-0.356	(0.265)
Children (5-15 yrs)	-0.030	(0.123)
Adult females	0.053	(0.085)
<i>Religion</i>		
Hindu	0.352	(0.257)
Muslim	-0.280	(0.380)
<i>Marital Status</i>		
Married	0.389	(0.289)
Widowed	-0.220	(0.877)
Divorced/ Separated	1.281	(1.080)
<i>Head</i>		
Head	1.866*	(1.095)
HeadSpouse	0.484	(0.380)
<i>Region</i>		
Travancore	0.221	(0.312)
Malabar	-0.072	(0.242)
<i>Occupation of the head</i>		
Legislators, Senior Officials, and Managers	-0.441	(0.849)
Professionals	0.496	(0.470)
Associate Professionals	-3.590	(3.805)
Clerks	0.400	(0.622)
Service workers and Shop & Market Sales Workers	0.287	(0.396)
Skilled Agricultural and Fishery Workers	0.468	(0.495)
Craft and related Trade Workers	0.209	(0.472)
Plant and Machine Operators and Assemblers	0.545	(0.586)
Elementary Occupations	0.439	(2.826)
Wald test	19.460	(0.000)
Wald chi2	115.560	(0.000)
N	3,550	

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Notes.* The table reports coefficients for an IV probit model specified in Equation (1). The baseline model includes adult females who are illiterate (EDU), unmarried (Marital Status) Hindus (Religion) in Cochin (Region), whose household head is unemployed. The education category *PG and above* has been removed from the estimation due to collinearity. In addition to this in 2013, we removed *NElderly* also due to collinearity.

Table 6  
Determinants of labor force participation among Hindu women in 2018

	Coefficient	Standard Error
lnMPCE	-48.829	(43.520)
lnMPCE2	2.950	(2.656)
logWage	-0.791	(1.072)
Age	0.000	(0.016)
lnHHInc	0.054	(0.104)
<i>EDU</i>		
Literate with less than primary	-1.094	(1.009)
Primary	-1.462	(1.047)
Middle	-1.680	(1.137)
Secondary	-1.418*	(0.753)
Higher secondary	-1.604**	(0.729)
Graduate	-0.501	(0.439)
<i>HHSize</i>		
HHSize	0.067	(0.153)
Children (0-5 yrs)	-0.471	(0.366)
Children (5-15 yrs)	0.071	(0.174)
Adult females	0.028	(0.127)
<i>Caste</i>		
General	-1.035*	(0.573)
OBC	-0.307	(0.299)
<i>Marital Status</i>		
Married	0.371	(0.373)
Widowed	-0.298	(1.051)
Divorced/ Separated	1.294	(1.346)
Head	1.976**	(0.829)
HeadSpouse	0.537	(0.431)
<i>Region</i>		
Travancore	0.199	(0.467)
Malabar	-0.101	(0.301)
<i>Occupation of the head</i>		
Legislators, Senior Officials, and Managers	-0.366	(2.609)
Professionals	-1.176	(2.945)
Associate Professionals	-0.136	(2.607)
Clerks	-4.868	(5.190)
Service workers and Shop & Market Sales Workers	-0.096	(2.581)
Skilled Agricultural and Fishery Workers	-0.578	(2.488)
Craft and related Trade Workers	-0.041	(2.531)
Plant and Machine Operators and Assemblers	-0.206	(2.534)
Elementary Occupations	-0.093	(2.488)
Wald test	6.410	(0.041)
Wald chi2	63.36	(0.001)
N	1,815	

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Notes.* The table reports coefficients for an IV probit model specified in Equation (1), which excludes *TV*, and includes *Ration*, as instruments. The baseline model includes adult females who are illiterate (*EDU*), unmarried (*Marital Status*) SC/ST category Hindus (*Caste*) in Cochin (*Region*), whose household head's occupation is not classified under the National Classification of Occupation 2015.

Table 7  
Determinants of labor force participation among Christian women in 2018

	Coefficient	Standard Error
lnMPCE	2.314	(2.145)
lnMPCE2	-0.130	(0.131)
logWage	1.642*	(0.853)
Age	-0.007	(0.012)
lnHHInc	-0.014	(0.047)
<i>EDU</i>		
Literate with less than primary	0.586	(1.270)
Primary	0.869	(1.223)
Middle	0.309	(1.078)
Secondary	-0.076	(0.819)
Higher secondary	-0.388	(0.758)
Graduate	-0.359	(0.402)
<i>HHSize</i>		
Children (0-5 yrs)	0.107	(0.069)
Children (5-15 yrs)	0.155	(0.176)
Adult females	-0.005	(0.142)
	0.110	(0.088)
<i>Denomination</i>		
RC	-0.186	(0.448)
MSC	-0.510	(0.573)
Latin	-0.388	(0.464)
Jacobite	-0.481	(0.460)
Orthodox	-0.523	(0.467)
Marthoma	-0.313	(0.492)
CSI	0.181	(0.584)
Pentacost	-0.296	(0.482)
Other	0.684	(0.682)
<i>Marital Status</i>		
Married	0.443	(0.307)
Widowed	0.655	(0.587)
<i>Head</i>		
Head	3.457***	(0.662)
HeadSpouse	0.376	(0.299)
<i>Region</i>		
Travancore	0.198	(0.231)
Malabar	0.005	(0.281)
<i>Occupation of the head</i>		
Legislators, Senior Officials, and Managers	-0.438	(0.400)
Professionals	-0.796	(1.099)
Associate Professionals	0.142	(0.502)
Clerks	-1.936***	(0.694)
Service workers and Shop & Market Sales Workers	-0.058	(0.321)
Skilled Agricultural and Fishery Workers	0.314	(0.314)
Craft and related Trade Workers	-0.110	(0.346)
Plant and Machine Operators and Assemblers	-0.003	(0.253)
Pseudo R2	0.261	
LR chi2	128.820	(0.000)
N	562	

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Notes. The table reports coefficients for a probit model specified in Equation (1). The baseline model includes adult females who are illiterate (EDU), unmarried (Marital Status) SC/ST Christians (Denomination) in Cochin (Region), whose household head is unemployed. The education category *PG and above* has been removed from the estimation due to collinearity. In addition to this in 2013, we removed *NElderly* also due to collinearity.

Table 8  
Determinants of labor force participation among Muslim women in 2018

	Coefficient	Standard Error
lnMPCE	4.863	(3.224)
lnMPCE2	-0.281	(0.196)
logWage	1.855**	(0.827)
Age	-0.014	(0.014)
lnHHInc	0.130*	(0.073)
<i>EDU</i>		
Literate with less than primary		
Primary	1.066	(1.025)
Middle	1.271	(0.980)
Secondary	0.435	(0.854)
Higher secondary	-0.053	(0.605)
Graduate	-0.220	(0.539)
<i>HHSIZE</i>		
HHSIZE	0.035	(0.056)
Children (0-5 yrs)	-0.134	(0.127)
Children (5-15 yrs)	-0.251**	(0.117)
Adult females	0.070	(0.079)
<i>Sect</i>		
Sunni	-0.604	(0.519)
<i>Marital Status</i>		
Married	0.529*	(0.281)
Widowed	1.023*	(0.529)
Divorced/ Separated	1.206**	(0.558)
<i>Head</i>		
Head	2.986***	(0.468)
HeadSpouse	0.157	(0.331)
<i>Region</i>		
Travancore	0.259	(0.289)
Malabar	-0.052	(0.219)
<i>Occupation of the head</i>		
Legislators, Senior Officials, and Managers	0.888**	(0.352)
Professionals	0.888**	(0.353)
Associate Professionals	0.800	(0.625)
Clerks	0.344	(0.349)
Service workers and Shop & Market Sales Workers	0.714**	(0.298)
Skilled Agricultural and Fishery Workers	0.077	(0.485)
Craft and related Trade Workers	0.557*	(0.307)
Plant and Machine Operators and Assemblers	0.330	(0.246)
Pseudo R2	0.420	
LR chi2	214.120	(0.000)
N	1246	

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Notes.* The table reports coefficients for a probit model specified in Equation (1). The baseline model includes adult females who are illiterate (EDU), unmarried (Marital Status) Shia Muslims (Sect) in Cochin (Region), whose household head is unemployed. The education category *PG and above* has been removed from the estimation due to collinearity. In addition to this in 2013, we removed *NElderty* also due to collinearity.

## 8 Discussion

This study reveals that who you are, and where you're from, can be of consequence for what you end up doing. This is especially the case for women, whose identities cannot be severed from that of their household. This link is incredibly strong for Muslim women than for other religious groups. Moreover, for a Muslim woman in a region dominated by Muslims, cultural persistence is far more substantial. Put simply, every aspect of one's identity, whether in relation to others, the culture, practices, region, or their choices, adds up and manifests in their behavior and actions. In the context of this paper, the action entails, to some extent, breaking away from socio-cultural norms that define a woman's role to be limited to the household. The study's focus on social identities - identification *with*, rather than *apart* from - is, therefore, a deliberate one. If the aim of the study was to understand the labor force participation of men, our approach would have been different. In treating men and women as distinct identity groups that serve distinct social purposes, this study does justice to the fact that the factors that affect their decision to join the labor force are unique to their gender identity, and further, their culture. The effects of culture are measured based on three important institutions highlighted throughout the study - (1) religion, (2) caste/denomination/sect within religion, and (3) households that are affiliated with one of these broad groups. The household is especially important because its characteristics are what determine a woman's LFP decision. These characteristics include the economic position household, power dynamics which are intra-household characteristics, and gender roles that are defined both within a household and outside it.

The study uses labor force participation in Kerala in 2013 and 2018 as a means to discuss issues concerning a woman's identity. Women hardly fit in the neoclassical framework that deems all individuals to be utility and welfare maximizing, let alone the definition of a rational *Homo Economicus*. To understand a woman's decision-making behavior, we must know that collective identity surpasses personal identity. If women were utility-maximizing individuals, they would never succumb to their gender roles. The fact that their 'individual' choice and well-being don't always go together (Sen, 1970, 1977), is recognized here. In fact, women's decision to join the labor force or refrain from such participation represents an individual choice for collective well-being. Commitments to family enable the pursuit of collective well-being.

In 2013, cultural persistence continues to surpass development, even in a state like Kerala, which has remarkably high social development indicators. In the latter period, however, we observe that there are several enablers for women's participation in the labor force. This includes higher wage rates and education, and at the household level, the presence of other women. Whether the enablers are relatively stronger than the *pull* forces, is pertinent to facilitating broader discussions concerning women's empowerment, and what it means for the development of the country or region in question. Moreover, many of these factors act together and not independently or in isolation. For example, for a woman identified as a mother, labor force participation is dependent on the number of children (*pull* factor), her marital status (*pull* if she is married, *push* if she is divorced or separated), the number of other women in the household (*push* factor), the region to which she belongs, etc. This illustrates that a woman's identities within a household are intersectional which together influence the decision to participate in the labor force. The definition of a woman's gender role as confined to the household is the reason why household identities are pertinent to this decision. While the study finds evidence for the stronghold of culture being detrimental to such participation, it also asserts that longstanding cultural *pull* factors or persistence that reinforces gender roles can also disintegrate following economic crises. The economic crisis in the Gulf countries marked by falling oil prices, and strict implementation of the *Nitaqat* system led to a mass exodus of predominantly Muslim men back to Kerala owing to the resultant unemployment. What ensued was a cultural change that started enabling Muslim women to participate in the labor force. The same factors that curtailed their participation became enablers by 2018.

This study, through its analysis of social institutions paints a rather bleak picture as far as women's LFP is concerned. However, there seems to be hope that social institutions that curtail women's participation and empowerment are not cast in stone and even if they are, they could fall apart due to economic pressure. Put simply, scarcity of economic resources can sometimes upend social institutions that restrict women's choices and give rise to a more equal society.

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# A Appendix

## A.1 Definition of Key Variables

1. *LFP* - Labor force participation of the adult woman, which takes values zero or one if there is participation or non-participation.
2. *lnMPCE*, *lnMPCE2* - A quadratic in the log of monthly per-capita income of the household which is a proxy for the household's standard of living.
3. *EDU* - Refers to a categorical variable representing the educational attainment of the adult female in the household. The details of the categories are shown in Table [A1](#).
4. *HHSize* - Size of the household
5. *NChildren1* - Number of children in the household aged 0-5 years.
6. *NChildren2* - Number of children in the household aged 5-15 years.
7. *NElderly* - Number of people in the household aged 65 and above.
8. *NAdultF* - Number of female adults in the household who are aged above 15 and below 65 years.
9. *Religion* - Religious affiliation of the household (Hindu, Christian, or Muslim).
10. *MaritalStatus* - Refers to a categorical variable representing the marital status of the adult female member. The categories are unmarried, married, widowed, and divorced/separated.
11. *Head* - A variable that takes value 1 if the female adult is the head of the household and 0 otherwise.
12. *HeadSpouse* - A variable that takes value 1 if the female adult is the spouse of the household head and 0 otherwise.
13. *Region* - A categorical variable that indicates the region in which the household is located. The regions are Cochin, Travancore, and Malabar.
14. *Occupation* - A categorical variable that indicates the occupation of the head of the household. The categories are shown in Table [A2](#).
15. *Cents* - Household ownership of land in cents.
16. *TV* - A dummy variable indicating the presence of a TV in the household.
17. *Car* - A dummy variable indicating the ownership of a car by the household.
18. *Ration* - A dummy variable indicating the ownership of a ration card.
19. *Caste* - A categorical variable that represents the caste affiliation of a Hindu household.
20. *Denomination* - A categorical variable that represents the denomination of a Christian household.
21. *Sect* - A categorical variable that represents the sect of a Muslim household.

## A.2 Educational & Occupational Categories

Table A1  
Educational Categories

Categories	Description	Years of education completed
1	Illiterate with less than primary	<2
2	Literate with less than primary	2-4
3	Primary	5
4	Middle	6-9
5	Secondary	10-11
6	Higher secondary	12
7	Graduate	ITI, Certificate course, Diploma, Degree, Professional Degree
8	PG and above	PG, Professional PG, M.Phil, Ph.D

Table A2  
Occupational Categories

Categories	Description	Skill level	Years of Formal Education
1	Legislators, Senior Officials, and Managers	Not Defined	
2	Professionals	IV	> 15
3	Associate Professionals	III	14-15
4	Clerks	II	11-13
5	Service workers and shop & market sales workers	II	11-13
6	Skilled agricultural and fishery workers	II	11-13
7	Craft and related trade workers	II	11-13
8	Plant and machine operators and assemblers	II	11-13
9	Elementary occupations	I	Upto 10
10	Workers not classified by occupations	Not Defined	

*Notes.* Based on National Classification of Occupations 2015.

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