Push or Pull Factors: Determinants of Female Labour Force Participation in Bangladesh

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Acronyms and Abbreviations

BBS   Bangla Bureau of Statistics

GDP   Gross Domestic Product

LFS   Labour Force Survey

LFPR   Labour Force Participation rate

HDR   Human Development Report

SME   Small and Medium Enterprise

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Mst Morium Khatun

Abstract: Female can play an important role by contributing to household income, adding to the supply of labour for economic activities, and above all by empowering women in the society. Despite the advances in female educational attainment and the expansion of the market economy, however, female labour force participation rates are still low in comparison to the rates of their male counterparts and others developing countries. Recent past, urban female participation also slowed down. This paper, which seeks to examine the deterministic factors of female participation and also investigates the reasons behind the urban slowed down. Data for the study were extracted from the 2010 Labour Force Survey of Statistics Bangladesh and also 357 individual urban female interviews. Logistic regression modeling was used to estimate the influence of education on labour force participation, and the results show that there is an association between the level of education status and FLFP. Wage earners or low paid household heads strongly motivates their spouses to participate in the labour market, compared salaried or high earners household heads. Number of infants creates obstacles to participate. Therefore, government can focus on improving female education, increase or establish childcare or daycare centers especially in the rural area and increase female safety both in office and roads.

1. Introduction

In developing economies, women play an important role by contributing to household income, adding to the supply of labour for economic activities, and above all by empowering women (Rahman, R.I. 2013). As the country's development process shifting up the women participation rate shows declining trends from increasing trends experienced during early development-trend in women's employment hypothesizes a U-shaped relationship between economic growth and women's employment (Bosereup, 1970, 1990; Psacharopoulos and Tzannatos, 1989, 1991; Schultz, 1990). The growth of the modern sectors like education, finance creates more opportunities for female which increases the labour force participation, while as the wage increases the households has more wealth than before which increases the reservation wage to join in the labour market.

The national labour force statistics showed that male and female labour force participation has increasing trends (Table 1.1) and also stated that female LFPR went

through an incessant rise during 1991 to 2010. During the latest sub-period, that is 2006 to 2010, female LFPR increased from 26.1 to 36.0 percent, which was faster than compared to other neighboring countries (Rahman, R.I. 2013). Although the trend showing the improvement of the labour market situation especially for women, but still around two-third females are outside from the economic activity. The country will not achieve faster economic development without major proportion of female in the labour force.

Table 1.1: LFPR in Bangladesh (15+ years)

LFS year	Female	Male	Total
1991-92	14.0	86.2	51.2
1995-96	15.8	87.0	52.0
1999-00	23.9	84.0	54.9
2002-03	26.1	87.4	57.3
2005-06	29.2	86.8	58.5
2010	36.0	82.5	59.3

Source: Bangladesh Bureau of Statistics (BBS), Labour Force Survey, LFS (various years)

The disaggregated picture of rural and urban LFPR can help realize associations between LFPR and growth of urbanization. Table 1.2 presents the proportion of rural and urban LFPR. Female LFPR in both rural and urban areas have increased during 1992 to 2010.

Table 1.2: FLFPR by area in Bangladesh

LFS year	Rural	Urban
1995-96	17.4	20.5
1999-00	23.1	26.5
2002-03	25.6	27.4
2005-06	29.8	27.4
2010	36.4	34.5

Source: BBS, LFS (various years)

Female LFPR in urban areas were 20.5 and 34.5 per cent in 1996 and 2010 respectively. In these years, female LFPR in rural areas has risen from 17.4 to 36.4 percent. Urban and rural FLFPR are, thus, quite close and both have risen over the last 20 years. The recent years rural LFPR exceeds up compared to urban, while the earlier years the pattern was the reverse. There are two noticeable points: firstly, rural LFPR increasing speeds were faster than urban, and secondly, rural LFPR exceeds urban area. The question is why in rural areas LFPR increases rapidly and also why urban LFPR slowed down.

Given the background and context mentioned above, it would be useful to examine the factors that influence female labour force participation and employment. This could help further appropriate policy initiatives to speed up the female LFPR. The purpose of the present study is to enhance the understanding why urban LFPR becomes slowed down? As the urbanization growing faster as the economic development, it can provide insight materials for policy initiatives to speed up urban female employment.

The remainder of the paper is structured as follows. Section 1 presents the background and motivation for the study. Section 2 reviews the major existing studies on female labour force participation (LFP) in Bangladesh and other developing countries. Section 3 presents the economic theory: how individual decide to join labour force or enjoying leisure, and also model specification. Section 4 provides data on the labour force participation rate (LFPR) in Bangladesh and explaining estimated results. Section 5 provides an analysis of the policy environment for women's employment and makes some suggestions for improvement in that regard. It also provides a summary of findings and concluding observations.

2. Literature review: determinants of female labour force participation in Bangladesh

Factors influencing female labour force participation have been usually conceptualized as supply side determinants. In the context of Bangladesh where the underemployment is high and social factors plays vital role, so both push and pull factors are expected to link

with female employment. Kabeer (2012) highlights the role of such social factors in the female labour market and states that women's participation in the labour market is often not her own decision. As a result of strong patriarchy in Bangladesh society, male members of the family usually dictate or guide such a decision. Family's male members, society's attitude and established norms important deterministic factor for such decision.

Bridges et al. (2011) examines the factors influencing female LFPR, and showed the positive association between severity of the poverty and the probability of female employments. They also found that female come from extreme poor households have a significantly higher probability of participation compared to non-poor; while found insignificant difference between moderate poor and non-poor group.

Amin (2005) has argued that due to home-based economic activities has pushed the female labour force participation in Bangladesh. He also found that female-headed households, smaller family size, lower educational attainment, living in urban areas, lower levels of household wealth and microcredit have a positive impact on participation. Moreover, the data set does not have information on self/family employment, which is a larger component of female employment and the study cannot provide insights into its determinants.

Rahman, R.I. (2006) examine the deterministic factor of female employment, and found that women as head, female with higher education, residence in urban area have a positive impact on participation. On the other hand, land ownership; low level of education, marital status, having infants, and having educated household head have a negative impact. Rahman, R.I. (2006) found that the rapid expansion of micro finance in rural areas has supported women's employment in poultry and livestock; while urban employment are dependent on ready-made garments only. In the urban area, working hours, safety and health in the work place, freedom of association and collective bargaining remain also act as a constraint to increase participation. The author suggested increase the availability and accessibility of education and skill training, productive assets like land and credit beyond microcredit, and services of various government institutions.

The level of education increases the opportunity cost of not participating, and this implies higher education postulates higher probability of participation in the labour market (Khandker, 1987). He also found husband's education has a negative effect and increase in female wage reduces the probability of women's leisure. Thus, the author suggested policy interventions to raise women's wages would have a large positive effect on women's LFP. Khandker (1988) reports results for women's home production labour input. Women's education, land holding, and husband's assets have negative effects. Predicted female wage has a positive effect, which is difficult to explain.

3. Methodology of the Study

3.1 The Neoclassical Model of Allocation of Time or labour-leisure choice model

The model of labour-leisure choice, which is an extension of the utility maximization problem of consumer theory; its analyzes how individuals make choices in deciding how they will spend a fixed amount of time. In the simplest model, an individual has two uses for his/her time, either working in the labour market at a real wage rate of W per hour, or "leisure" (George Borjas, 2012:Labor Economics 6th Edition). The amount of both consumed will depend on the individual's market wage (W), personal preferences, and the non-labour income (V) that person enjoys.

The individual's utility function will be:
$$U = f(C, L) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

These constraints can be written as the following:
Time constraint: $L + H = T$ ……………………………………….(2)
Budget constraint: $C = (W * H) + V$ ……………………………..(3)
We can rewrite (2) and (3): $C = W (T- L) + V$…………………….(4)

Setting up the Lagrangian expression to represent the individual's utility maximization problem yields

$$= U\ (C,\ L) + \lambda\ \{[W\ (T - L) + V] - C\}$$

The first order conditions for a maximum are

$$\ell = U\ (C,\ L) + \lambda\ \{[W\ (T - L) + V] - C\}$$

The first order conditions for a maximum are

$$\frac{\partial \ell}{\partial C} = \frac{\partial U}{\partial C} - \lambda = 0 \therefore MU_C = \lambda \tag{5}$$

$$\frac{\partial \ell}{\partial L} = \frac{\partial U}{\partial L} - \lambda W = 0 \therefore \frac{MU_L}{W} = \lambda \tag{6}$$

Equating (5) and (6), we get

$$\frac{MU_L}{MU_C} = W \tag{7}$$

An increase in W, holding income constant, makes leisure more expensive. An increase in V will cause an increase in leisure time and a decrease in the hours worked, and vice versa. This theory has been successfully used to explain women's labour force participation: she will be willing to participate in the labour force if the reservation wage is greater than or equal to the market wage --that is, if W*$\geq$ W. The theory suggests that number of kids below 5 years and elderly persons, number of earner in the households, and marital status increases the reservation wages.

3.2 Model Specification

To examine the determinants of female labour force participation, we will deal with the dependent variable in this study is a dichotomous variable (0, 1). Given the nature of the dependent variable, Y, which takes value Y=1 if the respondent (female) is in the workforce; and takes value Y=0 if the female is not in the workforce, the two models, Probit and Logit models, can be used. Both of these models provide a prediction for the probability that a female with a given set of characteristics is in employment/workforce. However, since logistic model is easier to understand and uses a standard form of analysis, logistic regression model is used in this study.

In the logistic model with more than one independent variable, the model can be written as (Mon, Myat, 2000):

$$\text{Prob [Female in workforce]} = \frac{1}{1+e^{-z}}$$

where, Z is a linear function of the explanatory variables. If X_1, $X_{2........}$ X_k represent various characteristics of the household and female respondent, then "Z" equation would be as follows: $Z = \beta_o + \beta_1 X_1 + \beta_2 X_2 +……….……+ \beta_k X_k$

Each β_i can be shown to be $\dfrac{\partial \log \text{ (odds ratio)}}{\partial x_i} = -\beta_i$

where odds ratio is define as: $\dfrac{P[female\ in\ workforce]}{P[female\ not\ in\ workforce]} = e^{-z}$

Therefore, β_i provides a measure of change in the logarithm of the odds ratio of the chance of a female working to not working.

3.3 Variable specification and expected sign

Age is a crucial deterministic factor for women's participation in the labour force is usually viewed as a positive feature. Female participation varies significantly as age distribution (Durand, John D., 1975). The influence of age may be non-linear, that is, may decline after some threshold has been reached that's why quadratic term also included.

The marital status is one of the major influential deterministic factors on female participation in the labour force as it gives additional responsibility compared to unmarried female (Mon, Myat, 2000). Being married has a negative effect and this result may have been influenced by the fact that paid employment dominated by the RMG sector requires long hours of work. In the contrary, they also found there is a growing acceptance of outside employment among young unmarried workers (Bridges et al., 2011).

The female LFP rate reaches a peak before the beginning of childbirth and a few years after the period of childbearing and declines during the child-rearing period (Mon, Myat, 2000). Presence of young children has a positive effect on self-employment and a negative effect on wage employment (Bridges et al., 2011).

Education can have an important positive impact on female LFPR as it increases the opportunity and productivity. Some literatures suggested that some cases influence can be in either direction or non-linear, i.e. do not necessarily improve women's opportunities for meaningful economic participation (Standing 1978; Smock 1981; Jones1984). Higher level of education will expand the opportunity of good jobs, while low education force in a trap to become unemployment.

Urban areas has more opportunity for employment, so urban dummy expected positive effects. Having more non-labour income increase intercept so it discourage employment.

4. Date and Estimated Results

4.1 Data and Variables

To find the deterministic factors of female participation in the labour market, and examine the reasons behind the recent slowed down of urban female participations; we used two types of data sets. For a better understanding of the determinants of female labour force participation, logistic regressions have been estimated on the basis of data from LFS 2010. All individuals aged 15 and above and not currently studying in any educational institutions have been included in the sample. LFS survey consists a total of 58,297 females and 57,525 males in the sample. We only consider the female respondents, as sample size 58,297. In addition, we also collected 357 individual structured interviews in Dhaka City in 2013, to understand the current employment situation and future prospects.

A number of potential variables for inclusion in the logistic regression as suggested theoretical models that explain female participation in the labour force. The following table describes the notation and dummies, which used in the regression:

Table 4.1: Notation and Description of variables in Logistic Regression model

	Variable(s)	Base for dummy variables
AGE	Age	
SQAGE	Square of age	
MAR_D	Married dummy	Not currently married
NOC5Y	No. of children <5 years in household	
NOME	No. of male earners in household	
NEARNR-N	No. of non-earning males in household	
ASSET_2	No land, other asset	Asset 1 (No land or non-land asset)
ASSET_3	Small land owned	
ASSET_4	Larger land	
URBAN_D	Urban dummy	Rural
EDUC_D2	Education dummy 2 (primary)	No education
EDUC_D3 Education dummy 3	Education dummy 3 (secondary)	
EDUC_D4	Education dummy 4 (above secondary)	
HEDUY	Household head education attainment years)	
HSTAT_D2	Household head status dummy (non-agriculture, wage employment)	HSTAT-D1 (agriculture-self-employed)
REL	Whether head of households	Not

Some observations: Urban Survey Data 2013

Marital status has adverse effects on female employment due to family responsibility, i.e. childcare, house works and etc (Appendix Table 1). Education has positive effects on employment but on the lower and upper level. May be urban areas generates fewer jobs for secondary and college graduates (Appendix Table 2).

No education and with low level of educated females are employed in low paid jobs like garments and factories. Interestingly, they are less constraint to participate in the job market compared to rest. Mid-level educated (secondary and college graduates) female more supposed to be housewives, compared to lower and upper educated females. More than 50% of undergraduates and 36% graduates females are not employed in the job markets, and they are housewives, which is a concern issue (Appendix Table 3).

The survey results suggested female are less came to job market if she belongs to households with secured jobs and stable income earners like salaried and business. Female are more supposed to come to job market if she came from households where household earnings source are not secured and stable like garments/factory workers, petty professions (Appendix Table 4).

4.2 Regression Results: Evidence from Labour Force Survey, 2010

Most of the results of the logit regression analysis presented in Table 4.2 are in conformity with a priori expectations. Indicators of family responsibility have significant negative coefficients-married, number of children aged 5 years or less, number of male dependents above age five etc. Among human capital variables, age has a non-linear effect, first positive and then negative.

Education has a positive impact. Four levels of education, with 'no education' as base case, have gradually rising positive coefficients. Education raises productivity and, thereby, raises wage/salary and through its substitution effect, raises female LFPR. Among the family characteristics, number of male earners has a significant negative coefficient.

Family asset has positive influence. Compared to the base case of households 'with no land or non-land asset' women in households with own land assets have a significantly higher probability of labour force participation. However, ownership of some land raises the probability of female LFP, but in the highest land ownership group, it is insignificant, which may be due to use of more hired labour and prestige considerations.

Table 4.2: Results of logit regression: Determinants of probability of female labour force participation (FP) and salaried (SP)

Independent variables	log(FP/I-FP) Marginal Effect	log(SP/I-SP) Marginal Effect
Age	0.027917***	0.000448***
Square age	-0.000464***	-0.000012***
Marital_d	-0.110999***	-0.017466***
No of kids<5 years	-0.033719***	-0.003933***
No of male earner	0.015207***	-0.002023***
No of nonearner male	-0.073678***	-0.000950*
Asset_d2	0.012783***	-0.001865*
Asset_d3	0.049450***	0.003532***
Asset_d4	-0.042829	-0.008531***
Urban_d	0.020085***	0.014648***
HH head	-0.020158*	0.013875***
Education_d2	0.010206*	0.001599*
Education_d3	0.037621***	0.006842***
Education_d4	0.057568***	0.007052***
Husband edu	0.011978***	0.002052***
Husband wage earner	-0.270196***	0.017469***
Pseudo R2	0.1190	0.1995
Wald chi2(16)	4831.9	2744.8
Prob>chi2	0.0000	0.0000
Log pseudolikelihood	-33982.53	-5959.18
Observation	58297	58297

Table 4.3: Results of logit regression: Determinants of probability of female labour force participation (FP) and salaried (SP) employment by rural-urban

Independent variables	log(FP/I-FP)		log(SP/I-SP)	
	Rural	Urban	Rural	Urban
Age	0.02915***	0.02513***	0.00063***	0.00078
Square age	-0.00047***	-0.00045***	-0.00001***	-0.00003***
Marital_d	-0.09346***	-0.16727***	-0.01168***	-0.05329***
No of kids<5 years	-0.02882***	-0.05869***	-0.00143***	-0.02119***
No of male earner	0.01654***	0.00474	-0.00084	-0.01018***
No of nonearner male	-0.06149***	-0.11113***	-0.00003	-0.00628**
Asset_d2	0.02024***	-0.04900***	-0.00128	-0.01387**
Asset_d3	0.05048***	0.03592***	-0.00069	0.02439***
Asset_d4	0.06508	-0.06412***	-0.00044	-0.02858***
HH head	-0.03188***	0.00611***	0.00660	0.04889***
Education_d2	0.01356***	0.01691	0.00330***	0.00070
Education_d3	0.03515***	0.06944***	0.00582***	0.02054***
Education_d4	0.05237***	0.07688***	0.00444***	0.02874***
Husband edu	0.01353***	0.01069***	0.00205***	0.00444***
Husband wage earner	-0.27527***	-0.28067***	0.01011***	0.04707***
Pseudo R2	0.1191	0.1362	0.1615	0.1619
Wald chi2(16)	3461.1	1321.5	1292.14	761.81
Prob>chi2	0.0000	0.0000	0	0
Log pseudolikelihood	-26900.29	-5959.18	-3116.21	-2716.03
Observation	46053	12244	46053	12244

The interesting observation from regression Table 4.3 is that number of earner variable has positive for rural but negative for urban participation. Another things, asset has no significant impact on rural salaried but has for urban female participation.

4.3 Regression Results: Evidence from Urban Survey Data

Marital status and having kids has significantly negative effects on the labour force participation. In the urban areas, we have very limited and expensive childcare/baby care centers, so lots of female left jobs after becoming mother.

Table 4.4: Results of logit regression from urban survey data: Determinants of female labour force participation

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Logistic regression                              Number of obs   =        333
                                                 Wald chi2(10)   =      43.19
                                                 Prob > chi2     =     0.0000
Log pseudolikelihood = -176.55053                Pseudo R2       =     0.1845

------------------------------------------------------------------------------
             |               Robust
         lfp |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         age |  -.0109867   .0176524    -0.62   0.534    -.0455849    .0236115
   marital_d |  -2.767991   1.105473    -2.50   0.012    -4.934679   -.6013028
    kids_5yrs |  -.7595198   .2918497    -2.60   0.009    -1.331535   -.1875048
  educ_level |   .6091554   .1483378     4.11   0.000     .3184186    .8998921
     hhsex_d |   .7389839   .4123335     1.79   0.073    -.0691749    1.547143
     m_earner |   .2318931   .2272891     1.02   0.308    -.2135853    .6773715
     hh_educ |  -.4740789   .1527748    -3.10   0.002     -.773512   -.1746458
    hhoccp_d2 |    .50234   .662074      0.76   0.448    -.7953011    1.799981
    hhoccp_d3 |   1.810041   .6711519     2.70   0.007     .4946076    3.125475
    hhoccp_d4 |   .3110695   .601784      0.52   0.605    -.8684055    1.490545
        _cons |   1.355826   1.386896     0.98   0.328    -1.362441    4.074093
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Educational level has significantly positive effects on labour force participation, which was same as expected. Sex of the household heads also has positive effects on female employment, in absence of male household heads, and number of male earners has week positive effects. The level of education of household heads has strong negative effects on female employment or job market participation, which is unexpected. The plausible reasons might be, they are employed in secured and high salaried jobs, which influenced the female members not to participate in the job markets.

The survey results also suggested that garments workers allow their spouses significantly to enter job markets compared to wage earners, but salaried and businessman husband or father are not strongly motivate theirs spouse/daughter to enter job.

In the urban area, the working-women facing problem after having baby, due to very limited childcare centers and lack of trusted home servant; as a consequences some of them quit from jobs. The job market in Bangladesh has producing few part-time jobs for students, married women so even at some point of time female when they wanted to come back but could not find suitable jobs.

In addition to regression results, the transportation in the urban area is not female friendly. Dhaka is the one of the worst traffic congestion city and the public transportation is very limited compared to demand. Another thing, very few offices has childcare facilities which also one of the major obstacles for working mothers.

5. Summaries and Conclusion

The findings common to a number of earlier studies on determinants of female LFPR in Bangladesh have shown that: having a small child, more assets and husband's education reduces the probability of female employment. Education and family asset are expected to raise women's participation in both rural and urban areas. This result also implies the same as theory; these factors increased the reservation wage so lots of female in the urban areas stay at home rather participate.

The urban survey results suggested that garments workers or low earning husbands or household heads allow their spouses significantly to enter job markets compared to wage earners; since its pretty difficult for them to survive properly by household head income. In the contrary, the reverse scenario seen to the household where household head are salaried and businessman, then they are not strongly motivate theirs spouse/daughter to enter job.

The policy makers showed emphasis on the female education till undergraduate level, and also create more public or public-private childcare or day care centers, which promote more mothers to keep in the job markets. Policy makers can increase/established government supported or subsidized private childcare or baby care for employed mothers. Unavailability of enough public transport for female also discourage middle class families to allow their spouse to enter into job markets. One plausible solution would be providing enough female buses or public transport in the urban areas. To reduce the traffic congestions more female friendly public transportation can provide more safety for working women. To speed up female job market participation in urban areas we have to create jobs for secondary and college graduates; i.e. part-time jobs.

On the other hand, government can provides more SME loans female entrepreneur, so that they can run their own business, which will more job opportunity for more females. The vocational education can help to create more entrepreneurs.

Limitations of the study

Due to time and financial constraints, only 357 women could be interviewed in the urban areas in addition to the LFS national data. Although just 357 respondents cannot adequately represent the social life of all women in urban, it is expected that the survey results will be representative of the total female population in Urban areas. The survey data may also be subject to response errors and biases. These errors and biases may occur from both interviewers and respondents.

Some data like number of childcare in the urban areas, statistics of female public transportation and also percentage of public or private office having childcare or daycare facilities could not collect by the short time. Also those data are not readily available in national statistics, which is the one of the weak points of this study.

Notwithstanding these limitations, the survey has provided some very useful indicators of female status and a key satisfactory model, which identifies important determinants of female employment.

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Appendix Tables

Table 1: Marital status of the sample respondents

Marital status	Not in Job	In Job
Un-married	**0.45**	**18.2**
Married	97.7	65.6
Widowed/divorced	1.80	16.0
Total	220	137

Table 2: Level of education of the respondents

Level of education	Not in Job	In Job
No education	5.45	6.6
Primary incomplete	11.8	16.8
Primary completed	20.9	13.8
Secondary	**20.4**	**10.2**
Higher secondary	**20.9**	**8.03**
Undergraduate	10.9	17.5
Graduate/Higher	9.5	27
Total	220	137

Table 3: Respondents Level of education and occupational choice

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 Level of |                          Occupational Status
Education | Salaried  Garments Self-employed Housewife Wage employ Business   Others  | Total
----------+------------------------------------------------------------------------------+---------
No educa  |    4.76     19.05      0.00        57.14      0.00       0.00     19.05 |  100.00
Below prim|    4.08     32.65      2.04        53.06      0.00       4.08      4.08 |  100.00
 Primary  |    3.08     12.31      1.54        70.77      1.54       6.15      4.62 |  100.00
Secondary |   10.17      5.08      1.69        76.27      1.69       1.69      3.39 |  100.00
 College  |    8.93      3.57      3.57        82.14      0.00       0.00      1.79 |  100.00
Undergrad |   28.26      0.00      4.35        52.17      0.00       4.35     10.87 |  100.00
Graduate  |   49.12      0.00      1.75        36.84      0.00       3.51      8.77 |  100.00
----------+------------------------------------------------------------------------------+---------
   Total  |     57        33        8           220        2          11       22  |   357
```

Table 4: Household head occupational status and female employments

```
Household  |   Respondent Female
     Head  | Not in Job    In Job | Total
-----------+---------------------+----------
  Salaried |     34.10      33.86 |    34.01
  Garments |      8.29      22.05 |    13.37
Selfemploy |      6.45       8.66 |     7.27
 Housewife |      3.23       1.57 |     2.62
Wage-empl  |      4.15       3.94 |     4.07
  Business |     35.48      22.05 |    30.52
    Others |      8.29       7.87 |     8.14
-----------+---------------------+----------
     Total |       217        127 |      357
```