

Texto para Discussão

Série Economia

TD-E / 31 - 2002

**Married Women's Labor Force Participation as a Response to the Husband's
Unemployment in Brazil**

Prof. Dr. Reynaldo Fernandes
Fabiana de Felício



Universidade de São Paulo
Faculdade de Economia, Administração e Contabilidade
de Ribeirão Preto

Reitor da Universidade de São Paulo
Adolpho José Melfi

Diretor da FEARP/USP
Marcos Cortez Campomar

Chefe do Departamento de Administração
André Lucirton Costa

Chefe do Departamento de Contabilidade
José Carlos Marion

Chefe do Departamento de Economia
Rudinei Toneto Júnior

CONSELHO EDITORIAL

Comissão de Pesquisa da FEA-RP/USP

*Faculdade de Economia, Administração e Contabilidade
de Ribeirão Preto -USP
Avenida dos Bandeirantes,3900
14049-900 Ribeirão Preto – SP*

A série TEXTO PARA DISCUSSÃO tem como objetivo divulgar i) resultados de trabalhos em desenvolvimento na FEA-RP/USP; ii) outros trabalhos considerados de relevância dadas as linhas de pesquisa da instituição. A série foi subdividida em função das principais áreas de atuação da FEA-RP/USP: Economia, Administração e Contabilidade. Veja o site da CPq na Home Page da FEA-RP: www.fearp.usp.br. Informações: e-mail: cpp@fearp.usp.br

Married Women's Labor Force Participation as a Response to the Husband's Unemployment in Brazil

Reynaldo Fernandes*
Fabiana de Felício**

Abstract:

A temporary participation in the labor force of wives whose husbands have become unemployed has been referred in the literature as “added worker effect” (AWE). Previous research to USA have found only a small AWE, what is according to life-cycle models with perfect capital markets.

This paper use panel data with a short recall period to evaluate the AWE in Brazil. The results point out a positive AWE and they were more expressive than those found for the American economy. This happens even in the situation where all the wives whose husbands were out of a job are considered. When the analysis is restricted only to couples whose husbands are dismissed and dismissed from informal jobs, these results are even more significant.

Key words: added worker effect, unemployment, spousal labor supply, Brazil.

JEL classification: J22, J60, O10.

* Department of Economics, FEARP, Universidade de São Paulo, Brazil
FEARP;USP. E-mail: refernan@usp.br

** Mestranda em Economia pelo IPE/USP. E-mail: ffelicio@usp.br

I. Introduction

There are several studies in developed countries evaluating the impact of the head of household unemployment on the labor force participation of others members of household. In particular, the majority of these studies evaluate the entry of wives in the labor market as a response to their husband's unemployment, a phenomenon known as the "added worker effect" (AWE). However, this question has not been investigated before in the context of developing countries. The aim of this paper is to present some evidence on this issue for the Brazilian case.

In a one-period model of household labor supply, the AWE may arise for two reasons: i) the husband's unemployment reduces the family income (income effect) ii) the husband's time can replace the wife's time in household activities (cross-substitution effect). However, in a life-cycle context the importance of the income effect must be reconsidered.

Given the assumption of perfect capital markets, the decision of labor supply by each family member in each time period takes into account their wealth over their lifetime and not only their current income. Therefore, in the case of perfect forecast, the only reason for the arising of the AWE would be the cross-substitution effect, which is expected to be small¹. The fully anticipated income loss does not produce any impact on the present value of the family wealth. There are two reasons however, for the event of the husband's income loss to be expected to cause an important commitment of wives to the labor force: i) uncertainty with regard to the necessary time to reestablish the husband's normal income flow and ii) liquidity constraints.

Suppose, for example, that the market wage of each individual is fixed, but that there is an unemployment probability, that is, the unemployment cannot be fully anticipated. Once unemployed, there is also uncertainty with respect to job offers and the duration of the unemployment spell. In this case, unemployment produces a wealth effect, since the present value of an individual's income flow is higher when he is employed than when he is unemployed. Even in this situation, it is possible to argue that no significant impact on the wives' work effort should be expected during the husband unemployment spell. This is because the transitory reduction in income should produce only a small effect on the present value of the family's income flow, moreover, the wives' work effort would be diluted among the present and all future periods. So, the liquidity constraint would be the main motive to justify a transitory impact on the wives' labor supply during the husband's unemployment spell².

Empirical analysis in the United States has not found evidence of an important AWE. Generally, the effects are small and frequently, not statistically significant [Heckman and MaCurdy (1980); Lundberg (1985); Spletzer (1997); and Stephens Jr. (2001)]. These

¹ Cullen and Gruber (2000) note that the extent of complementarity or substitutability between the time of leisure of husbands and wives remains unsolved in the empirical literature of labor supply.

² However, a revision of the decisions of the wives' work effort might be more significant, in a world with uncertainty and without liquidity constraint, when the husband's unemployment signals a reduction in future income flow, whether as an indicator of future market wage reduction and/or increased probability of future unemployment. Stephens Jr (2001) points out that many studies to United States show that the job loss causes long-term income reductions. People who lose their jobs show significant wage reduction 6 years after the job loss.

results are consistent with life-cycle models and perfect capital markets [Heckman and MaCurdy (1980)].

The empiric studies on the AWE, however, are subject to many criticisms. Firstly, if liquidity constraint is the main reason for the temporary increase in the wives' work effort, the AWE should vary across different families in the economy, as well as across different economies. This is due to the liquidity constraint should vary across these dimensions³. Even though the AWE is likely to be small for all families whose head is unemployed, it can be very important for a subgroup of these families.

Secondly, most studies use the unemployment status of the head but do not consider the reason why he became unemployed. The impact on wealth and liquidity constraint must be higher in the case of dismissals than in the case of quit⁴.

Thirdly, there may be a high correlation in unobserved tastes for leisure among wives and husbands in the same household. For example, if this correlation is positive and if husbands with a higher taste for leisure also have a higher probability of losing their jobs, then this will bias against detecting the AWE. To deal with this possibility empirically is not an easy task.

Finally, empirical studies use different measures of labor supply: annual averages of hours worked, probability of participation in labor force and transition probability from inactivity to activity. Different measures tend to show different results. As Lundberg (1985) highlights, if the wives' participation in labor force is transitory (only during the husband's unemployment spell), studies that use long term average measures of labor supply are less likely to observe an AWE.

In Brazil, the only reference in this topic is Jatobá (1994), that estimated a regression in cross-section of a measure of family labor supply (fraction of members in working age who participate of the labor force) on income of the head and on a measure of family unemployment, in addition to a set of control variables. The results showed that the family labor supply is positively correlated to family unemployment and negatively to the head's income. However, the direction of causality between labor supply and unemployment of family is difficult to evaluate in a cross-section regression.

In this paper, we implement a direct test of the impact of the husband's unemployment on the probability of the wives' transition from inactivity to activity. The strategy consists in comparing the probability of transition to activity between two groups of nonparticipating wives, those whose husbands have become unemployed (treatment group) and those whose husbands remained employed (control group). Given that a wife is inactive in month one, we observe if a transition has occurred in months two, three or four. In this way, we are interested in assessing whether there is a short-term labor supply response of wives to their husbands' unemployment.

³ Here, an important issue that must be evaluated is the eligibility to the unemployment insurance. In the United States, Cullen and Gruber (2000) estimates imply wives of unemployed husbands would work 30% more hours if there were no unemployment insurance benefits.

⁴ Stephens Jr. (2001) study is one of the few exceptions: only the workers who lost their jobs were considered. The increase of annual working hours of the wives in the year of dismissal of the husband was not divergent in early studies: it was small and statically non-significant. The results, however, for the long-term labor supply increase (up to five years following the husband's dismissal) were higher and statically significant. These results are consistent with the assumption that the job loss is an indicator of the future flow reduction of income.

The methodology of the work is closed to that of Spletzer (1997), but it presents two main differences: i) instead of considering all the couples with nonparticipating wives and employed husbands, the average AWE was based only on nonparticipating wives whose husbands, in fact, migrated from employment to unemployment (effect of treatment on the treated); ii) the reason for the husbands' unemployment (dismissal or quit) as well as the type of job they had (formal or informal) were taken into consideration. The assumption of liquidity constraint should be less important in case of quit than in case of dismissal and in case of formal employment than in case of informal employment⁵.

The results point out to a more significant AWE than those generally reported in the United States. When the analysis includes only the husbands who lost their job or the husbands who lost their jobs in the informal sector, the results were even more expressive. These results can indicate that Brazilian families have difficulty in adopting alternative strategies to smooth income in unemployment spells of the household head.

II. Data

The source of data used in this study was the Pesquisa Mensal de Emprego – PME (Monthly Employment Survey) carried out by the Instituto Brasileiro de Geografia e Estatística – IBGE (Brazilian Census Bureau). This is a household survey that collects information every month in six Brazilian metropolitan regions (São Paulo, Rio de Janeiro, Porto Alegre, Belo Horizonte, Recife and Salvador).

According to the data collection methodology of the PME, a household that enters the sample is interviewed for four consecutive months. After a period of eight months, the household is once again interviewed for another four months. This feature of the data allows us to examine monthly transitions between occupational states for all individuals in our sample. The first four interviews are always carried out in years ending in an even number and the last four ones in years ending in an odd number.

The information on transitions used in this study were collected in the period between the fifth and eighth interviews. In the first four interviews, information was collected on the labor market status of husbands and wives. This procedure was adopted because the PME did not investigate the work background of the interviewed and the fact that the use of this information, as the control variables, can be important, as long as they might include information on non-observable variables, specially those concerning tastes for leisure. The families included in the sample had the fifth interview carried out between 1985 and 1999.

Our sample consists of married couples, between the ages of 25 and 60, that lived together for the 16-months period, in which the wives were inactive and the husbands employed at the time of the fifth interview. The treatment group was composed of wives whose husbands transited from employment to unemployment between the fifth and sixth interviews. The control group was formed by wives whose husbands were employed all the way between the fifth and the eighth interviews. Other cases were excluded of the sample. This procedure resulted in a sample of 67,146 couples, 1,331 in the treatment group and 65,815 in the control group. A description of the sample is presented in table 1.

⁵ In general, the formal workers can, at the time of dismissal, access both the unemployment insurance benefits and FGTS (a compulsory saving's account that the worker is able to receive in the case of dismissal).

Table 1 shows that 2% of the couples sample had the husband transiting to unemployment between the fifth and sixth interviews. The proportion of women that entered into the labor force between the sixth and eighth interviews was higher among those whose husbands became unemployed (28.17%) than among those whose husbands remained employed (16.18%). This might indicate an AWE or only reflect heterogeneity between the sub-samples.

Concerning the demographic variables, only average years of education (of wives and husbands) were significantly different between the sub-samples, favoring the couples in which the husbands remained employed. Differences relating to the previous labor force status are more significant. Among nonparticipating women (fifth interview) whose husbands became unemployed (sixth interview), 27% were active for at least one month, between the first and the fourth interviews (a year before). This rate was only 6% for the women whose husbands remained employed. On the other hand, 33% of the husbands who became unemployed (sixth interview) were unemployed, for at least one month, between the first and the fourth interviews. This rate was of 25% for the employed husbands between the fifth and eighth interviews. The rate of informal workers⁶ (fifth interview) was also higher among those husbands who became unemployed.

Finally, it is worth to highlight that 87% of the husbands who declared the reason for the unemployment alleged they had been fired⁷.

Table 1: Sample Characteristics

Variables	Husbands		Husbands	
	Employed ⇒ Unemployed		Employed ⇒ Employed	
	Average	Standard deviation	Average	Standard deviation
Wife's transition – from inactivity to activity	0.2817	0.45	0.1618	0.37
Age of wife	37.68	10.38	37.60	9.89
Age of husband	40.65	10.49	40.99	9.96
Years of education of wife	4.61	3.43	5.94	3.78
Years of education of husband	4.94	3.54	6.58	4.26
Children under 10 years	0.2455	0.43	0.2365	0.43
Number of family members	4.78	1.89	4.56	1.68
Wives employed between the 1 st and 4 th interview – one year before	0.2665	0.44	0.0567	0.23
Husbands unemployed between the 1 st and 4 th interview – one year before	0.3266	0.47	0.2448	0.43
Husbands in informal sector	0.3030	0.46	0.1966	0.40
No. of observations	1331	-	65815	-

⁶ Informal workers are only those who do not have a formal labor contract, that is, workers not entitled to working benefits and social security and whose income is not subject to taxation. The self-employed workers were excluded among the informal workers.

⁷ Only about half of the husbands that entered in the unemployment answered that item of the questionnaire. So, 87% of those that declared the reason alleged they had been fired.

III. Methodology

The impact of the husband's unemployment on the work effort of the wife may vary from couple to couple and what we intend to investigate is the average impact on a determinate population. Therefore, the average AWE may vary according to the population involved: all the couples with a nonparticipating wife, all the couples with nonparticipating wives and employed husbands etc. A population of special interest, which will be used in this study, is the nonparticipating wives whose husbands, in fact, migrated from employment to unemployment (effect of treatment on the treated). Thus, the aim of this paper is to give a response to the following counterfactual: What would be the proportion of inactive women, whose husbands became unemployed, that would have migrated to the labor force, if their husband had held the employment status? The difference of this rate and the reported rate – in the real situation that the husbands became unemployed – would give us the AWE. Formally, we define:

$$\delta_i = \Pr(A_i=1|D_i=1, L_i=1, t=t) - \Pr(A_i=1|D_i=0, L_i=1, t=t) \quad (1)$$

where:

δ_i = AWE for the couples, with inactive wives and employed husbands in t , whose husbands became unemployed in $t+1$;

A_i = variable that is equal to one when the wife of couple i goes to labor force (in $t+1$, $t+2$ or $t+3$) and zero otherwise;

D_i = variable that is equal to one when the husband of couple i becomes unemployed in $t+1$ and zero when he remains employed;

L_i = variable that is equal to one for couples in the treatment group (wives whose husbands, in fact, became unemployed in $t+1$) and zero otherwise;

t = period of time in which wives are inactive and their husbands are employed.

Let T be the period of time under analysis, the effect we intend to identify is $\delta_t = E(\delta_i | t \in T)$. A consistent estimate of the first term on the right of (1) would be achieved by computing, in the sample of inactive wives and with employed husbands in t , the proportion of wives who entered in the labor force (in $t+1$, $t+2$ or $t+3$), among those whose husbands became unemployed in $t+1$. The problem is to find an estimate of the second term. This is due to the impossibility to observe, in the same period of time, the transitions of wives whose husbands became unemployed, in the situation where their husbands remained employed.

The estimation strategy, in these cases, consists of using the inactive wives whose husbands did not leave their jobs to represent the wives of the treatment group, had their husbands not become unemployed. Obviously, the validity of this strategy depends on how well the comparison group represents the treatment group in the non-observable situation, in which their husbands remained employed. This, on the other hand, depends on the capability to access the set of variables that defines the transition process of wives. Let W be the set of relevant variables (observable or not) for the determination of $\Pr(A_i=1|D_i, t)$. Then:

$$\Pr(A_i=1|W_i, D_i=0, L_i=1, t=t) = \Pr(A_i=1|W_i, D_i=0, L_i=0, t=t) \quad (2)$$

and

$$\delta_{w_t} = \Pr(A_i=1|W_i, D_i=1, L_i=1, t=t) - \Pr(A_i=1|W_i, D_i=0, L_i=0, t=t) \quad (3)$$

The term δ_{w_t} in (3), is the AWE of couples within the treatment group in t and with characteristics W . Then, $\delta_t = E(\delta_{w_t} | t=t)$ and $\delta_T = E(\delta_{w_t} | t \in T)$.

The identification strategy adopted in this study is based on two assumptions. The first, and most important, is that the relevant set of variable, W , can be well represented by the set of observed variables, X , and the household region, r . The second is that the transition probabilities can be represented by the following functional form:

$$\Pr(A_i=1) = \frac{1}{1+e^{-Z_i}} \quad (4)$$

$$Z_i = \alpha + \beta D_i + X_i \Omega + \lambda_t + \eta_r$$

In (4), X represents a vector of families' observable characteristics, while λ_t and η_r are controls of time and region⁸. If the AWE exists, we will expect a positive sign to coefficient β . Knowing the estimated coefficients of this logit model, we can obtain, for each wife of the sample, an estimate of the transition probability to activity in the situations where $D_i = j$ ($j = 0,1$), fixed the other characteristics equal to the sample. Thus, $\hat{\delta}_t = \hat{P}_1 - \hat{P}_0$ - where \hat{P}_j are the averages of the individual transition probabilities, estimated for wives whose husbands became unemployed ($L_i = 1$), for the situations where $D_i = j$ ⁹.

As noted above, the adopted identification strategy depends, basically, on the assumption that - conditional on X , t and r - the probability of wife become active, conditional on D , is independent of the observation of wives in the situation where their husbands become unemployed or the situation where the employment status is held constant. That is, $[\Pr(A_i=1|D_i,) \perp L_i] | X_i, t, r$, where \perp denotes independence. Thus, the plausibility of this assumption depends on the control variables that we will include in vector X .

Individual and family variables usually included in estimates of participation and unemployment equations are natural candidates. In this study, we use: age (wives and husbands); education (wives and husbands) proportion of children under 10 years (in relation to the total of members in the family); and size of the family. These variables,

⁸ These controls aim to capture the differences on labor market conditions.

⁹ Note that, when the estimated model has a good fit, \hat{P}_1 is likely to be very close to the wives' ration, within the treatment group, that make a transition to employment.

however, might not be sufficient to eliminate the possible selection bias based on non-observable characteristics, as for instance, tastes for leisure. In order to avoid this problem, an alternative would be to include variables relating to the couple participation background in the labor force. The idea is that if there are non-observable variables affecting the labor force status of wives and husbands and if these variables can be considered a fixed effect, then they must already have been manifested on couple labor force background. Thus, we included two dummy variables, one that is equal to one for the wife employed in at least one interview in the previous year (first to fourth interviews) and another that is equal to one for the husband unemployed in at least one of the interviews in the previous year.

IV. Results

The estimation results of the logit model listed in the prior section are reported in table 2. Model one does not include any control variable, while the model two includes the family demographic variables, and region, month and year dummies. Finally, model three includes variables relating to the couple's labor market background.

In relation to the control variables, we can observe that the probability of the wives' transition presented a standard U-inverted for age, while the husband's age did not appear to be significant when all controls are included (model three). The education variables presented the expected standard: the probability of the wives' transition from inactivity to activity increases with education and decreases with the husband's education. The negative sign of the number of young children variable was also expected. On the other hand, the positive sign of the family size on the probability of the wives' transition is more difficult to interpret. It might be indicating that the presence of older children could replace the time of wives in taking care of the younger children.

The coefficient of the variable referring to the husband's unemployment in the preceding year (between the first and the fourth interviews) was positive and significant, and this may indicate that women whose husbands are most likely to lose their jobs are the most likely to enter the labor market, independently of the present husband's labor market status. This is according to hypothesis that wives and husbands have a negative correlation in their tastes for leisure. The result of the estimated coefficient of the variable referring to the wives' activity condition the preceding year shows that women that were active the preceding year are more inclined to have an activity during the current year.

Table 2

Variables	Factors		
	LOGIT 1	LOGIT 2	LOGIT 3
Husband's transition (β)	0.7092 (0.00)	0.5876 (0.00)	0.5039 (0.00)
Wife – Age	-	0.1010 (0.00)	0.0690 (0.00)
Wife – Age ²	-	-0.0015 (0.00)	-0.0010 (0.00)
Husband – Age	-	-0.0296 (0.008)	0.0011 (0.928)
Husband – Age ²	-	0.0002 (0.064)	-0.0000 (0.809)
Wife – Years of Studies	-	0.0242 (0.00)	0.0094 (0.028)
Husband – Years of Studies	-	-0.0445 (0.00)	-0.0304 (0.00)
Ratio of Children under 10	-	-0.9819 (0.00)	-0.5156 (0.00)
Number of Persons in the Family	-	0.029 (0.00)	0.0221 (0.004)
Dummies of the Region	NO	YES	YES
Dummies of the Year	NO	YES	YES
Dummies of the Month	NO	YES	YES
Informal employee	-	0.0671 (0.03)	0.0420 (0.129)
Job 12 months before – Wife	-	-	1.84 (0.00)
Out of job 12 months before – Husband	-	-	.155 (0.00)
Constant	-1.6449 (0.00)	-2.4458 (0.00)	-3.3606 (0.00)
Test qui-square	117.95 (0.00)	1590.91 (0.00)	8165.98 (0.00)
Pseudo R2	0.002	0.0266	0.1392

Obs. * Significance level is in parenthesis. The dummies referring to January month, 1985 year, and metropolitan area of São Paulo were excluded.

Our variable of interest had their coefficient positive and statistically significant for the three estimated models, indicating the existence of an AWE. However, the value of the coefficient decreases as the control variables are included.

Table 3 shows the estimations of the AWE found for each of the models above. This impact is 12.0 percentage points (or 74.13%) by the model one, falling down to 7.64 percentage points (or 37.27%) in the model three. Thus, 36,3% of the difference of the female ratio which move from inactivity to activity, among those whose husbands became

unemployed and those whose husbands remained employed would be explained by the heterogeneity of the sample in these two groups.

Table 3 – Added Worker Effect (%)

Variables	Forecast values*		
	LOGIT 1	LOGIT 2	LOGIT 3
Husband's transition = 0 (1)	16.18	18.12	20.51
Husband's transition = 1 (2)	28.17	28.11	28.15
Difference (2) – (1)	12.00	9.98	7.64
Variation [(1) – (2)]*100/ (1)	74.14	55.08	37.27

* Forecast values for the sub-sample of women whose husbands were out of jobs between the 5th and the 6th interviews.

The results found in this study are more expressive than those found for the American economy. For instance, Spletzer (1997), whose methodology may be compared to the one used in this study, finds an AWE of only 2.08 percentage points, which is statistically non-significant. This difference in the results may point out that is more difficult for Brazilian families to adopt alternative strategies to smooth income and consumption during unemployment periods of the household head.

IV.1. Added Worker Effect, Reason for Unemployment and Kind of Job

The preceding analysis does not distinguish the workers that were out of a job according to transition reason: quit, fired or if he was a self-employed worker. As it was pointed out in the introduction, it would be expected that the AWE would be more significant in the case of workers who were fired, because the hypothesis of a negative income shock would be more appropriate in this case. In order to evaluate this subject, the treatment group was restricted to include only husbands who were out of a job because they were dismissed from their jobs. The comparison group was kept the same as this of the previous analysis. So, the sample was reduced to 66,406 couples: 591 whose husbands were fired and 65,815 who husbands were employed in all interviews. The results of the estimations for this new sample were shown in Table A1 (in the appendix), whereas the estimations of the AWE are shown in Table 4.

Table 4 – Added Worker Effect

Variables	Forecast values*		
	LOGIT 1	LOGIT 2	LOGIT 3
Husband's Transition = 0 (1)	16.18	18.70	20.17
Husband's Transition = 1 (2)	28.96	28.94	29.22
Difference (2) – (1)	12.78	10.24	9.05
Variation [(1) – (2)]*100/ (1)	79.01	54.77	44.87

* Forecast values for the sub-sample of women whose husbands were fired of the job between the 5th and the 6th interviews.

When this restriction is applied the AWE increases about 1.41 percentage points. This result indicates the presence of a significant difference of the AWE among employees who were fired and workers who were out of a job for other reasons. This is because those

who were fired in the original sample represented the majority of husbands who were out of a job.

The last extension was to consider only those employed who were fired from informal jobs. For the same income negative shock, the AWE shall vary whether the family can use alternative forms to smooth consumption. For example, the AWE should be smaller for families where husbands have access to unemployment benefits. Thus, the treatment group was restricted to include only fired employees of informal jobs. In this case, the comparison group constituted families whose husband had an informal job in the fifth interview and remained employed between the sixth and eighth interviews. These procedures resulted in a sample including 9,369 couples: 129 whose husbands went out of job and 9,267 whose husbands kept their jobs in all interviews. The results of the estimations for this sample are reported in Table A2 (in the appendix), whereas the estimations of the AWE are showed in Table 5.

Table 5 – Added Worker Effect (%)

Variables	Forecast Values*		
	LOGIT 1	LOGIT 2	LOGIT 3
Husband's transition = 0 (1)	16.53	19.04	21.35
Husband's transition = 1 (2)	29.46	29.46	30.40
Difference (2) – (1)	12.93	10.41	9.05
Variation [(1) – (2)]*100/ (1)	78.19	54.67	42.42

* Forecast values for the sub-sample of women whose husbands were fired of an informal job between the 5th and the 6th interviews.

The results of this table practically were not changed compared to the results of the previous one, indicating that the main difference is to consider all the husbands that became unemployed in relation to account just for those that were fired. So, we did not find evidences that the benefits of the insurance unemployment and of FGTS avoid the wives for entering in the labor force as a response to their husband's unemployment.

V. Concluding Remarks

This study evaluates, for the Brazilian metropolitan areas, the entry of wives in the labor market as a consequence of their husbands' unemployment, a phenomenon known as "added worker effect" (AWE). The results point out a positive AWE and they were more expressive than those found for the American economy. This happens even in a situation where all the wives whose husbands were out of a job were considered. When the analysis is restricted only to couples whose husbands were dismissed and dismissed from informal jobs, these results are even more significant. This difference compared to the results for the American economy may point out that Brazilian families have more problems to adopt alternative strategies to smooth income and consumption in periods when the head of the family is unemployed.

Bibliography

CULLEN, J. B. and GRUBER, J., Does Unemployment Insurance Crowd out Spousal Labor Supply? Journal of Labor Economics. vol. 18, n. 3, 2000.

HECKMAN, J. J. e MACURDY, T. E., A Life Cycle Model of Female Labour Supply. Review of Economic Studies, vol. 47, no.1, 1980.

JATOBÁ, J., A Família Brasileira na Força de Trabalho: Um Estudo de Oferta de Trabalho – 1978/88. Pesquisa e Planejamento Econômico, vol. 24, no. 1, 1994.

LUNDBERG, S., The Added Worker Effect. Journal of Labor Economics. vol. 3, n. 1, 1985.

SPLETZER, J. R., Reexamining the Added Worker Effect. Economic Inquiry, vol. 35, no. 2, 1997.

STEPHENS Jr, M., Worker Displacement and the Added Worker Effect, Working Paper 8260, NBER, 2001.

APPENDIX

Table A1

Variables	Factors		
	LOGIT 1	LOGIT 2	LOGIT 3
Husband's Transition (β)	0.7477 (0.00)	0.5906 (0.00)	0.5936 (0.00)
Wife – Age	-	0.1010 (0.00)	0.0694 (0.00)
Wife – Age ²	-	-0.0015 (0.00)	-0.0010 (0.00)
Husband – Age	-	-0.0313 (0.006)	-0.0032 (0.794)
Husband – Age ²	-	0.0003 (0.049)	-0.0000 (0.932)
Wife – Years of Studies	-	0.0240 (0.00)	0.0096 (0.025)
Husband – Years of Studies	-	-0.0444 (0.00)	-0.0303 (0.00)
Ratio of Children under 10	-	-0.9855 (0.00)	-0.5460 (0.00)
Number of persons in the Family	-	0.0303 (0.00)	0.0244 (0.002)
Dummies of the Region	NO	YES	YES
Dummies of the Year	NO	YES	YES
Dummies of the Month	NO	YES	YES
Informal Employee	-	0.0634 (0.038)	0.0392 (0.235)
Job 12 months before - Wife	-	-	1.8409 (0.00)
Out of job 12 months before – Husband	-	-	0.1569 (0.00)
Constant	-1.645 (0.00)	-2.4341 (0.00)	-3.3396 (0.00)
Test qui-square	59.35 (0.00)	1528.53 (0.00)	8003.73 (0.00)
Pseudo R2	0.001	0.0260	0.1386

Obs. * Significance Level in parenthesis

Table A2

Variables	Factors		
	LOGIT 1	LOGIT 2	LOGIT 3
Husband's Transition (β)	0.7459 (0.00)	0.5875 (0.003)	0.5499 (0.011)
Wife- Age	-	0.0757 (0.009)	0.0419 (0.172)
Wife – Age ²	-	-0.0013 (0.001)	-0.0008 (0.043)
Husband – Age	-	-0.0015 (0.959)	-0.0033 (0.912)
Husband – Age ²	-	-0.0001 (0.700)	-0.0001 (0.816)
Wife – Years of Studies	-	0.0314 (0.003)	0.0168 (0.134)
Husband – Years of Studies	-	-0.0420 (0.00)	-0.0246 (0.012)
Ratio of Children under 10	-	-1.2045 (0.00)	-0.6960 (0.000)
Number of Persons in the Family	-	0.0416 (0.032)	0.0346 (0.098)
Dummies of the Region	NO	YES	YES
Dummies of the Year	NO	YES	YES
Dummies of the Month	NO	YES	YES
Wife – Activity 12 months before	-	-	1.6791 (0.00)
Husband – Out of Job 12 months before	-	-	0.0602 (0.571)
Constant	-1.6192 (0.00)	-1.9879 (0.00)	-2.4466 (0.00)
Test qui-square	13.07 (0.00)	265.63 (0.00)	1020.95 (0.00)
Pseudo R2	0.0015	0.0315	0.1242

Obs. * Significance level in parenthesis.