instytut
badań
strukturalnych

IBS WORKING PAPER 02/2019
FEBRUARY 2019

THE ADDED WORKER EFFECT, EMPLOYMENT CONTRACTS, AND THE REASONS FOR THE WIFE'S INACTIVITY

Jan Gromadzki

ibs working paper 02/2019
february 2019

THE ADDED WORKER EFFECT, EMPLOYMENT CONTRACTS, AND THE REASONS FOR THE WIFE'S INACTIVITY*

Jan Gromadzki†

Abstract

The recent literature provides compelling evidence of the existence of a significant added worker effect (AWE) - wives increase their labour supply in response to the job displacement of their husbands. However, little is known about the heterogeneity of the effect. I study the variation in the AWE depending on the reasons for the wife's inactivity, and on the husband's employment contract type. I find a significant variation depending on the reasons for the wife's inactivity. The response of the so-called discouraged women is stronger than the response of the women, who are inactive for reasons of health or family. In addition, I find that the size of the AWE depends on the type of employment contract the husband had. The results suggest that high employment protection reduces the wife's incentives to join the labour force after her husband's job displacement.

Keywords: added worker effect, labour supply, discouraged workers, employment protection, self-employment

JEL Classification: J22, J41, J82

*This article was prepared within a project financed by the National Science Centre Poland, project no. UMO-2016/21/D/HS4/02808. I am grateful to Ewa Gałecka-Burdziak, Iga Magda, Concepción Román Díaz and Lucas van der Velde for their valuable comments. I also gratefully acknowledge the use of the Python/Stata template provided by von Gaudecker, (2014). All errors are mine.

†Warsaw School of Economics; Institute for Structural Research (IBS), Warsaw, Poland. E-mail: jan.gromadzki@ibs.org.pl.

Introduction

The employment status of the spouse is one of the factors that influences the labour supply of married individuals. Theoretical models of family labour supply suggest that household members react to a sudden loss in household income by increasing their labour supply. The ability of family members to respond to income shocks may be perceived as intra-household insurance. If a breadwinner loses a job, other household members are forced to look for a job to compensate for the income loss. This income effect is known in the literature as the added worker effect (henceforth AWE). Stephens, (2002) developed a family life-cycle labour supply model with uncertainty, which assumes that household utility depends on the consumption and leisure of both a wife and a husband. The job displacement of a husband leads to a decline in the household's expected lifetime wealth. In turn, the decrease in the household income causes the marginal utility of wealth to increase, prompting the wife to increase her labour supply. In an empirical analysis, Stephens found evidence of a significant AWE in the US. The goal of this article is to provide evidence that the size of the AWE varies depending on husband's employment contract type, the reasons for the wife's inactivity, and the reasons for the husband's job displacement.

The paper makes three major contributions to the literature. First, I provide novel evidence of the impact of the husband's employment contract type on the size of the added worker effect. Specifically, I show that employment protection is crowding out the natural intra-household insurance that results from the AWE. Second, I study differences between the responses to the husband being dismissed or quitting his job. Finally, this study is the first to examine the variation in the AWE depending on the reasons for the wife's inactivity.

I distinguish between three types of employment contracts: permanent contracts, fixed-term contracts, and self-employment. The three types differ greatly in the degree of employment protection they provide. Permanent contracts provide a high degree of employment protection. Fixed-term contracts are subject to similar regulations regarding the notice period, dismissal compensation, and eligibility for unemployment benefits. However, fixed-term contracts are associated with uncertainty about the employment situation after the end of the contract[1]. Self-employment is associated with a low level of employment protection with no notice period and no compensation payment. Self-employed individuals are also personally liable for all of their business debts. Social benefits and dismissal compensation act as buffers after a job displacement, lowering the size of the negative income shock. A notice period reduces the AWE, because the affected households can adjust their labour supply prior to the displacement. Thus, the husband having a high level of employment protection may reduce the wife's incentives to join the labour force after her husband's job displacement. Hence, it appears likely that the AWE is stronger for wives of self-employed men than for wives of workers with fixed-term contracts. The husband having a fixed-term contract should be associated with a greater AWE than the husband having a permanent contract.

[1] In Poland, the notice period depends on the tenure and ranges from two weeks to three months. Until 2016, the notice period was also shorter for fixed-term than for permanent contracts. Fixed-term contracts may be terminated without justification (see Lewandowski and Magda, (2017) for a detailed description of the Polish regulatory environment). Workers under both permanent and fixed-term contracts are usually entitled to unemployment benefits. Additionally, approximately 15% of temporary workers are employed under civil law contracts with a very low level of employment protection (Lewandowski, 2018).

According to the theoretical model, the wife's response to the job displacement of her husband should be significant only when the job displacement was unexpected (Stephens, 2002). I use the information on the reasons for the transition to non-employment and distinguish between the workers who transitioned to non-employment because they quit their job and the workers who transitioned to non-employment because they were dismissed. As resigning from a job is voluntary, the husband's decision to leave his job should be expected by the household. While a dismissal might also be expected by the household, in many cases it is unexpected, as it is the result of the employer's decision.

Previous research has neglected the issue of the reasons for the wife's inactivity. I distinguish between three reasons for inactivity: discouragement (the person does not believe that a suitable job is available), health reasons, and family reasons. Several studies have found that discouraged people are more likely to enter the labour force than those who are inactive due to other reasons (Gray, Heath, and Hunter, 2005; Jones and Riddell, 1999). This is the first study to compare the AWE among women who are inactive for reasons of family, health, or discouragement.

Literature review

One strand of the empirical literature uses macro models to estimate the size of the AWE. The procyclical labour force participation rate is a sign that the discouraged worker effect (DWE) is more dominant than the AWE, and the countercyclical labour force is a sign that the AWE is more dominant than the DWE. Nucci and Riggi, (2018) showed that during the Great Recession, the DWE played a larger role tha AWE in the US, and the AWE was more important than DWE in the euro area. They suggested that these diverging patterns might be attributable to differences in consumer preferences and in levels of real wage rigidities. Congregado et al., (2011) showed that in Spain, the AWE was more dominant than the DWE only when unemployment was below 11.7%. Evans, (2018) found that the AWE was dominant in transitions between non-participation and unemployment in Australia. In Germany, the AWE was shown to be dominant for selected age groups only (Fuchs and E. Weber, 2017). In Poland, a few studies have investigated the AWE at the macro level (Gałecka-Burdziak and Góra, 2016; Gałecka-Burdziak and Pater, 2016). These studies showed that in Poland, the AWE tends to be strongest during economic downturns. Similar results were found for Mexico (Parker and Skoufias, 2004). Mankart and Oikonomou, (2016) argued that in the US, the size of the AWE has not only undergone cyclical fluctuations, but showed a significant positive trend from the 1980s to the 2000s. They asserted that this positive trend can be explained through a narrowing the gender pay gap, changes in frictions in the labour market, and changes in the labour force participation costs of married women.

The availability of high-quality panel survey data has given rise to new studies of the AWE at the micro level. Recent studies have found a significant AWE for women in Australia (Gong, 2011), Austria (Halla, Schmieder, and A. Weber, 2018), Brazil (Fernandes and de Felício, 2005), Italy (Baldini, Torricelli, and Brancati, 2018; Ghignoni and Verashchagina, 2016), Turkey (Ayhan, 2017; Karaoglan and Okten, 2015), and the UK (Bryan and Longhi, 2018). Bredtmann, Otten, and Rulff, (2018) investigated the magnitude of the AWE using a pooled sample of individuals from 28 European countries, including post-communist countries of Central and Eastern Europe (CEE). They found a significant AWE for both the full sample and a subsample with observations from CEE countries only. Specifically, they showed that in the CEE countries, the job displacement of the husband led to an increase in the probability of the wife's transitioning from inactivity to

unemployment, but it did not have any impact on the probability of the wife's transitioning from inactivity to employment whereas in the other European countries, the job displacement of the husband had significant effects on both types of transitions. This finding could suggest that in the CEE countries, women face significant barriers in the labour market.

Some studies have analysed the heterogeneity of the AWE with respect to various dimensions. Fernandes and de Felício, (2005) found no significant difference between the wife's response depending on whether her husband quit his job or experienced a dismissal. This result contradicts the implications of theoretical models (see for example Stephens, (2002)) that the AWE is the result of an unexpected income shock only. According to these models, an anticipated transition to non-employment should lead a worker and his family to make adjustments prior to the job displacement. Bredtmann, Otten, and Rulff, (2018) studied how the AWE varies depending on the welfare regime, time period and cycle. They found that the AWE is weaker in countries with high levels of social protection than in countries with lower levels of social protection. This finding confirmed the results of previous studies, which found that the AWE was crowded out by unemployment benefits (Cullen and Gruber, 2000; Ortigueira and Siassi, 2013). High levels of welfare receipts can compensate for the income shock resulting from the husband's job displacement, and can thus reduce the incentives for the wife to increase her labour supply. There is a lack of research on how the AWE varies depending on the type of employment contract the husband had. Recently, Jäger et al., (2018) showed that increases in unemployment benefit level have no effects on wages, a result that is hard to reconcile with wage setting mechanisms based on Nash bargaining. Since the AWE constitutes a part of worker's outside option, the crowding-out of intra-household insurance by public social insurance may help to explain this puzzling result.

Jones and Riddell, (1999) showed that there is a high degree of heterogeneity among inactive individuals. They found that discouraged people are significantly more likely to enter the labour force than people, who are inactive for other reasons. They defined discouraged individuals as those who want work, but have not been looking for a job because they believe that no work is available. The finding that discouraged individuals are more likely to transition to labour force was also confirmed by Gray, Heath, and Hunter, (2005). Thus, discouraged people are often referred to as the marginally attached workforce. The question of how the AWE differs based on the reasons for inactivity has not yet been studied.

Empirical strategy

I investigate the wife's labour supply responses to the job displacement of her husband. I select all opposite-sex marriages in which the male partner worked and the female partner was inactive in period $t-1$ (in my case, one year before). I am interested in identifying the determinants of the probability of a wife transitioning to the labour force. I estimate a logit model of the form

$$A_{i,t} = \alpha + \gamma NE^{p}_{i,t} + \beta X_{i,t} + \epsilon_{i,t} \tag{1}$$

where A_{it} equals one when a wife became active and zero otherwise; $NE^{p}_{i,t}$ equals 1 when a husband lost his job and 0 otherwise; and $X_{i,t}$ is a set of individual characteristics of a wife (age, education, disability), her husband (age, education, occupation), and the household (place of residence, number and age of chil-

dren). In the baseline specification, I take into account only the individual characteristics of a wife. Next, I extend the specification by the partner's and the household's characteristics. The coefficient of interest is γ. A significant and positive γ means that there was a significant AWE in Poland between 2007-2017.

The main specification does not allow for a causal interpretation of the coefficients of interest for two reasons. First, it is possible that the husband's job loss was the result of a decision made by the family, and was therefore not an unexpected shock. For example, a husband may have quit his job if he knew that his wife was planning to enter the labour force in the near future. Second, the job displacement may have been anticipated by the family. If the family knew that the husband was likely to lose his job, the wife may have chosen to increase her labour supply before the job displacement. I address these issues by estimating an additional model given by

$$A_{i,t} = \alpha + \gamma NE^{p}_{i,t} + \delta NE^{p,dismissed}_{i,t} + \beta X_{i,t} + \epsilon_{i,t} \tag{2}$$

where $NE^{p,dismissed}_{i,t}$ equals one if the husband was dismissed, and zero otherwise. Thus, I test the heterogeneity of the AWE with respect to the reasons for job displacement. The endogeneity of the results still cannor be ruled out, since the dismissal may have been expected by the family. However, it is far less likely that the husband's job loss was the expected by a family if the husband was dismissed by the employer, and did not resign volunatrily.

I also test whether the wife's response to her husband's job loss differs depending on her reasons for inactivity. I distinguish between women who were inactive for reasons of family, health, or discouragement based on their responses to the question about the reasons for not looking for a job. The women who responded 'I believe I will not find a suitable job' or 'I tried every method of job search that I can think of' are classified as discouraged. The women who responded that they 'look after children, or other persons requiring care' and those who are inactive for 'other personal or family reasons' are classified as inactive for family reasons. Finally, the women who said they were inactive 'because of illness, disability' are classified as inactive for health reasons. I exclude women who were reported being inactive for reasons of education and retirement. I use the discouraged workers as the reference level, and I estimate the following model

$$\begin{aligned} A_{i,t} = \alpha + \gamma NE^{p}_{i,t} + \theta_0 NE^{p}_{i,t} \times IA^{f}_{i,t-1} + \theta_1 NE^{p}_{i,t} \times IA^{h}_{i,t-1} \\ + \beta_0 X_{i,t} + \beta_1 IA^{f}_{i,t-1} + \beta_2 IA^{h}_{i,t-1} + \epsilon_{i,t} \end{aligned} \tag{3}$$

where $IA^{f}_{i,t-1}$ and $IA^{h}_{i,t-1}$ are dummy variables for the reasons for the wife's inactivity in $t-1$ being family and health reasons, respectively. I compute contrasts of the marginal effect of $NE^{p}_{i,t}$ over the reasons for the wife's inactivity based on the estimated logit results.

Finally, I am interested in the extent to which the AWE differed depending on the type of employment contract the husband had at $t-1$. I distinguish between three types of employment: permanent contract, fixed-term contract, and self-employment. I use the men employed under permanent contract in $t-1$ as the reference level and estimate the following logit model

$$\begin{aligned} A_{i,t} = \alpha + \gamma NE^{p}_{i,t} + \theta_0 NE^{p}_{i,t} \times E^{FCT}_{i,t-1} + \theta_1 NE^{p}_{i,t} \times E^{SE}_{i,t-1} \\ + \beta_0 X_{i,t} + \beta_1 E^{FCT}_{i,t-1} + \beta_2 E^{SE}_{i,t-1} + \epsilon_{i,t} \end{aligned} \tag{4}$$

where $E_{i,t-1}^{FCT}$ equals one if a husband worked under a fixed-term contract, and zero otherwise. $E_{i,t-1}^{SE}$ is one for the wife of a husband who was self-employed at $t-1$, and is zero otherwise. After estimating the logit model, I compute contrasts of the marignal effect of $NE_{i,t}^{p}$ over the employment contract types.

In the logit and the probit models, omitted variables always lead to bias (Mood, 2010; Wooldridge, 2002). Therefore, I estimate a linear probability model as a robustness check.

Data

I use individual data from the Polish Labour Force Survey (Polish LFS) for the years 2007-2017. The survey provides detailed information on the labour market situations of household members. It is possible to match information about all of the household members. It is also possible to study the labour market transitions of all of the family members because each individual was surveyed four times during the six-quarter period.

I select all married couples in which the wife was inactive, the husband was working in the previous year, and both partners were 25-49 years old. This age range is used to avoid capturing transitions from education and transitions to retirement. I pool observations from the 2007-2017 - period when the female LFPR was increasing rapidly in Poland. While the labour force participation rate among women in Poland declined from 63% in 1992 to 57% in 2006 (the male LFPR also decreased by six pp.), it recovered over the subsequent decade, and had again reached 63% by 2017.

On average, around 15% of the inactive wives in the sample had entered the labour force after a year (Table 1). The group of inactive women aged 25-49 whose husbands were employed in a previous year had some interesting characteristics. On average, more than 90% of these women had children. Caring for family members was cited as the reason for their inactivity by almost 90% of the wives in the sample. The last two columns in Table 1 compare the summary statistics of the women who entered the labour force and those who remained inactive after a year. Compared to women who had remained inactive, the women who had entered the labour force were almost twice as likely to have a partner who had transitioned to non-employment. This is the first sign of a possible added worker effect. The wives who had been inactive for reasons of discouragement more likely to have transitioned to the labour force, while those who were inactive for health reasons were less likely to have entered the labour force. Compared to the women who remained inactive, the women who transitioned to the labour force were better educated, less likely to be living in a rural area, more likely to have one child, but less likely to have three or more children.

Table 1. Summary statistics

	All	$IA_{t-1} - A_t$	$IA_{t-1} - IA_t$
Individual characteristics			
Active	14.95%	100.00%	0.00%
Age (years)	35.44	34.37	35.63
Secondary education	40.36%	35.78%	41.16%
Tertiary education	19.96%	35.64%	17.20%
Disable	6.02%	2.67%	6.61%
Inactivity reason: discouragement	5.33%	5.98%	5.21%
Inactivity reason: family	87.69%	88.91%	87.47%
Inactivity reason: health	6.99%	5.11%	7.32%
Ever worked	72.40%	71.73%	72.51%
Partner characteristics			
$NE^p_{i,t}$	2.84%	4.26%	2.59%
Secondary education	31.41%	32.60%	31.21%
Tertiary education	17.54%	26.14%	16.02%
Younger partner	15.71%	16.51%	15.56%
Reason of displacement: fired	1.07%	1.35%	1.02%
Reason of displacement: quit	1.69%	2.80%	1.49%
Initial husband status: permanent contract	62.66%	62.81%	62.64%
Initial husband status: fixed-term contract	18.42%	18.93%	18.33%
Initial husband status: self-employed	18.91%	18.26%	19.03%
Husband's work experience (years)	16.08	14.63	16.33
Household characteristics			
One child	30.93%	36.36%	29.97%
Two children	42.73%	45.03%	42.33%
Three and more children	18.28%	12.99%	19.21%
Medium town	19.88%	21.54%	19.59%
Small town	13.02%	12.64%	13.09%
Rural area	44.10%	36.58%	45.42%
N	18,895	2,812	16,083

Note: The first column shows the percentages of persons with selected characteristics in the whole sample. The second column shows the percentages among those, who transitioned to labour force after a year. The third column shows the percentages among those, who remained inactive.

Data: Polish Labour Force Survey.

Results

Those women who experienced the job displacement of a husband within the last 12 months were more likely to have entered the labour force. However, to isolate the effect of job displacement, it is necessary to control for the effects of other variables. First, I estimate Equation (1) by logit regression on a set of individual characteristics. The job displacement of a husband is shown to be associated with an 11 percentage point increase in the probability of the wife transitioning to activity (see Column (1) in Table 2). Next, I estimate a model that includes additional partner and household characteristics. Adding new variables does not change the size of the AWE (see Column (2) in Table 2).

I find strong variation in the AWE depending on the type of employment contract the husband had (see Column (5) in Table 2). The wives of self-employed husbands respond to the husband's displacement almost three times as strong as the wives of the husbands working under permanent and fixed-term contracts. No

Table 2. Logit results: $IA_{t-1} - A_t$

	(1)	(2)	(3)	(4)	(5)
Added worker effect					
$NE^p_{i,t}$	0.11***	0.11***	0.13***	0.32***	0.06**
Ref. $NE^p_{i,t}$ *reason: quit*					
$NE^p_{i,t}$ reason: fired			-0.04		
Ref. $NE_{i,t}$ x $IA_{i,t-1}$ *reason: discouraged*					
$NE^p_{i,t}$ x $IA_{i,t-1}$ reason: health				-0.24**	
$NE_{i,t}$ x $IA_{i,t-1}$ reason: family				-0.22**	
Ref. $NE^p_{i,t}$ *x initial husband status: permanent contract*					
$NE^p_{i,t}$ x initial husband status: fixed-term contract					0.04
$NE^p_{i,t}$ x initial husband status: self-employed					0.20**
Year dummy	*yes*	*yes*	*yes*	*yes*	*yes*
Individual characteristics	*yes*	*yes*	*yes*	*yes*	*yes*
Partner characteristics	*no*	*yes*	*yes*	*yes*	*yes*
Household characteristics	*no*	*yes*	*yes*	*yes*	*yes*
N	18,895	18,871	18,849	18,849	18,849

Note: Results represent average marginal effects, calculated as average effects over all individuals obtained from logit estimations of probability of wife's labor market transitions from inactivity ($IA_{i,t}$) to labour force ($A_{i,t}$ - employment or unemployment). $NE^p_{i,t}$ is a dummy variable, which equals 1 if the husband lost his job, and 0 otherwise. The first row shows marginal effect of $NE^p_{i,t}$ (AWE) for the whole sample in Columns (1) and (2), AWE in the case of dismissals in Column (3), AWE for discouraged women in Column (4), and AWE for the wives of husbands working under permanent contract in Column (5). The interactions in Column (3), Column (4), and Column (5) show the contrasts of AWE over reasons for the job displacement of the husband, reasons for the wife's inactivity, and the type of employment contract the husband had at $t-1$, respectively. Robust standard errors (clustered at the household level) were calculated.

* p<0.1, ** p<0.05, *** p<0.01

Data: Polish Labour Force Survey.

significant difference was found in the size of the AWE depending on whether the husband had been employed under a permanent or a fixed-term contract (for both groups, an increase in the probability of entering the labour market of around 7 percentage points was observed). These findings suggest a possibility of the crowding out of intra-household insurance by public social insurance based on employment protection.

Table 3. $IA_{t-1} - A_t$**, employees with fixed-term contracts**

	(1)	(2)	(3)	(4)
Added worker effect				
$NE^p_{i,t}$	0.09***	0.09***	0.07**	0.54***
Ref.$NE^p_{i,t}$ *reason: quit*				
$NE^p_{i,t}$ reason: fired			0.01	
Ref.$NE_{i,t}$ *x* $IA_{i,t-1}$ *reason: discouraged*				
$NE^p_{i,t}$ x $IA_{i,t-1}$ reason: health				-0.55***
$NE_{i,t}$ x $IA_{i,t-1}$ reason: family				-0.46***
Year dummy	*yes*	*yes*	*yes*	*yes*
Individual characteristics	*yes*	*yes*	*yes*	*yes*
Partner characteristics	*no*	*yes*	*yes*	*yes*
Household characteristics	*no*	*yes*	*yes*	*yes*
N	3,563	3,556	3,540	3,540

Note: Results represent average marginal effects, calculated as average effects over all individuals obtained from logit estimations of probability of wife's labor market transitions from inactivity ($IA_{i,t}$) to labour force ($A_{i,t}$ - employment or unemployment). $NE^p_{i,t}$ is a dummy variable, which equals 1 if the husband lost his job, and 0 otherwise. The first row shows marginal effect of $NE^p_{i,t}$ (AWE) for the whole sample in Columns (1) and (2), AWE in the case of dismissals in Column (3), and AWE for discouraged women in Column (4). The interactions in Column (3) and Column (4) show the contrasts of AWE over reasons for the job displacement of the husband and reasons for the wife's inactivity, respectively. Robust standard errors (clustered at the household level) were calculated.

* p<0.1, ** p<0.05, *** p<0.01

Data: Polish Labour Force Survey.

In addition, I find an evidence that the AWE varied depending on the reasons for the wife's inactivity (see Column (4) in Table 2). The women who were inactive due to discouragement responded most strongly to the partner's job loss: i.e. if the wife had been discouraged, her rpobability of transitioning to the albour force in response to her husband's job displacement would have increased by 32 percentage points. By contrast, the response of a wife who was inactive for family reasons amounted to 10 percentage points, and the response of a wife who was inactive for health reasons amounted to only 8 percentage points. The results show that discouraged women are not only more likely to enter the labour force but also they are more responsive to income shocks.

Finally, there is no significant difference between the wife's response depending on whether her husband lost his job because he was dismissed or because he resigned (see the third column of Table 2). There are several explanations for this puzzling result. First, a dismissal cannot be experienced by a self-employed person. Thus, the parameter found is partly attributable to the high AWE among self-employed individuals. Second, employees with permanent contracts receive advance notice of their dismissal. As the dismissal is expected, the spouse of the employee with permanent contract can adjust her labour supply prior to his job displacement. The notice period for employees with fixed-term contracts is much shorter than it is for workers with permanent contracts. Additionally, an employer can decide not to extend the fixed-term contract of an employee regardless of the employee's wishes. Therefore, we can better understand the variation in the AWE depending on whether the husband was dismissed or quit by restricting the sample to the wives of employees with fixed-term contracts only. Again, I find no significant difference in the AWE

depending on whether the husband was dimissed or quit his job (see the third column of Table 3), which is hard to reconcile with theoretical models.

Robustness checks

The results regarding variation in the AWE depending on the type of employment contract are robust. By contrast, the variation in the AWE depending on the reasons for the wife's inactivity is sensitive to the sample selection. I verify the robustness of the estimates by imposing certain restrictions on the sample. First, I compare the results in two periods: the crisis period of 2007-2012 and the post-crisis period of 2013-2017 (see Tables A.3 and A.4). It appears that the AWE was twice as strong during the Great Recession as after the Great Recession. This finding confirms the results of Bredtmann, Otten, and Rulff, (2018). The variation in the AWE depending on the reasons for inactivity was significant in the post-crisis period only. In 2013-2017, the AWE was very strong among women who were discouraged, but it was nearly non-existent among women who were inactive for family or health reasons. The differences in the AWE among the women depending on whether the husband was self-employed or was employed under permanent or fixed-term contract were constant over time. It is interesting to note that in 2013-2017, the AWE is found to be significant only for wives of self-employed husbands.

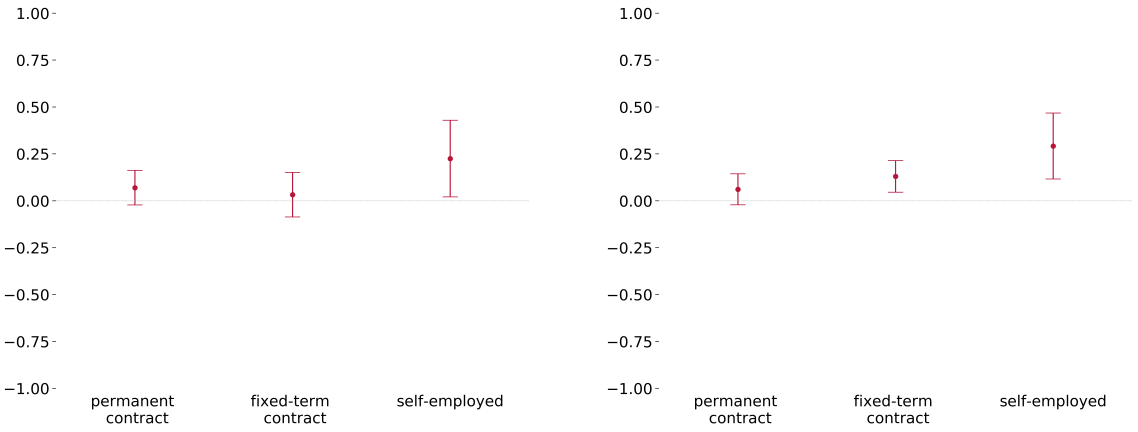
Next, I restrict the sample to households in which the husband was initially employed under a permanent contract. Surprisingly, we observe that the AWE varied depending on the reasons for the wife's inactivity, but in the opposite direction than it did in the full sample. Finally, I look at the households, in which employee remuneration was the main source of income (rather than self-employment, disability pension benefits, social benefits, etc.). The results indicate that the AWE was significant, but did not vary significantly depending on the reasons for the wife's inactivity.

Finally, I distinguish between temporary and permanent separations. I estmate the extended version of model given by Equation (4)

$$\begin{aligned} A_{i,t} = \alpha + \gamma_0 NE_{i,t}^{p,temp} + \theta_0 NE_{i,t}^{p,temp} \times E_{i,t-1}^{FCT} + \theta_1 NE_{i,t}^{p,temp} \times E_{i,t-1}^{SE} \\ + \gamma_1 NE_{i,t}^{p,perm} + \theta_2 NE_{i,t}^{p,perm} \times E_{i,t-1}^{FCT} + \theta_3 NE_{i,t}^{p,perm} \times E_{i,t-1}^{SE} \\ + \beta_0 X_{i,t} + \beta_1 E_{i,t-1}^{FCT} + \beta_2 E_{i,t-1}^{SE} + \epsilon_{i,t} \end{aligned} \tag{5}$$

where $NE_{i,t}^{p,temp}$ is one when the husband lost his job within the previous three months, and zero otherwise. $NE_{i,t}^{p,perm}$ is one when the husband has been without a job for more than 3 months, and zero otherwise. In general, there is no significant difference in the size of AWE depending on the duration of non-employment. The only significant difference is observed for wives of self-employed persons. Among these women, the size of the effect increases with the duration of non-employment.

Figure 1. Added worker effect by the husband's employment contract type and non-employment duration



(a) temporary separations

(b) permanent separations

Note: The figure shows the marginal effects of the work displacement of the husband on the probability of his wife entering the labour market based on the logit model with interactions with the husband's employment contract type. The figure shows the effects for wives of self-employed persons and workers with permanent and fixed-term contracts. The vertical capped lines indicate 95% confidence intervals based on standard errors clustered at the household level.
Data: Polish Labour Force Survey

Conclusions

I found evidence that a significant added worker effect was present in Poland in the 2007-2017 period. In line with the theoretical models of family labour supply, my results show that the job displacement of a husband was associated with an increase in the wife's labour supply. The most important contribution of the paper is my analysis of the differences in the AWE depending on the reasons for the wife's inactivity and the husband's type of employment contract. A wife was much more likely to respond to the job displacement of her husband if he was self-employed than if he was employed under a permanent or a fixed-term contract. These differences in the AWE were constant over time. People who are self-employed have much lower levels of employment protection than people who are working under permanent or fixed-term contracts. Therefore, the results suggest that when a man has a high level of employment protection, his wife's incentives to respond to his job loss may be reduced. In other words, it seems that the intra-household insurance is crowded out by public social insurance. Factors such as having personal liability for business debts may also help to explain this heterogeneity. However, the choice of the employment contract is not random, as self-employed persons differ from employees on a number of observable and unobservable characteristics. Therefore, this heterogeneity should be interpreted with caution.

In addition, I found that compared to wives who were inactive for family and health reasons, discouraged wives were more likely to have entered the labour force and reacted more strongly to the husband's job loss. This finding shows that discouraged people are distinct from people who are inactive for other reasons. This heterogeneity was, however, observed in the post-crisis period only. It thus appears that the differences in the responses to job displacement disappear during economic downturns. Finally, I find no

difference in the size of the AWE depending on whether the husband was dismissed or quit.

My study has some important limitations. First, I was not able to control for household income and wealth. These could be only proxied by variables such as partner's occupation and work experience. Second, some doubts about the endogeneity of the results remain. It seems justified to claim that a resignation from a job is more likely to be expected by a family than a dismissal. I was able to solve this problem in part by controlling for the heterogeneity in the reasons for job displacement. The finding that there were no significant differences in the AWE depending on whether the husband was dismissed or quit his job is puzzling and is hard to reconcile with the theoretical models. It seems that even if the members of a family had expected that the husband would experience a job displacement, the start of the wife's job search was delayed. Nevertheless, this issue deserves further study.

The estimated AWE is evidence that income shocks have significant effects on labour market participation decisions. Therefore, the results have much broader applications. The finding that there was a significant response to income shocks shows that policies based on income incentives may be effective as a method for increasing the female labour force participation. However, the results of the study also suggest that the effects of such policies are highly heterogenous.

References

Ayhan, Sinem H. (2017). "Married women's added worker effect during the 2008 economic crisis—The case of Turkey." In: *Review of Economics of the Household*, pp. 1–24.

Baldini, Massimo, Constanza Torricelli, and Maria Cesira Urzi Brancati (2018). "Family ties: Labor supply responses to cope with a household employment shock." In: *Review of Economics of the Household* 16.3, pp. 809–832.

Bredtmann, Julia, Sebastian Otten, and Christian Rulff (2018). "Husband's Unemployment and Wife's Labor Supply: the Added Worker Effect Across Europe." In: *Industrial and Labor Relations Review* 71, p. 5.

Bryan, Mark and Simonetta Longhi (2018). "Couples' Labour Supply Responses to Job Loss: Growth and Recession Compared." In: *The Manchester School* 86.3, pp. 333–357.

Congregado, Emilio, Monica Carmona, Antonio A. Golpe, and André Van Stel (2011). "Exploring the big jump in the Spanish unemployment rate: Evidence on an 'added-worker' effect." In: *Economic Modelling* 3.28, pp. 1099–1105.

Cullen, Julie Berry and Jonathan Gruber (2000). "Does unemployment insurance crowd out spousal labor supply?" In: *Journal of Labor Economics* 18.3, pp. 546–572.

Evans, Andrew (2018). "Evidence of the added-worker and discouraged-worker effects in Australia." In: *International Review of Applied Economics* 32.4, pp. 472–488.

Fernandes, Reynaldo and Fabiana de Felício (2005). "The Entry of the Wife into the Labor Force in Response to the Husband's Unemployment: A Study of the Added Worker Effect in Brazilian Metropolitan Areas." In: *Economic Development and Cultural Change* 53.4, pp. 887–911.

Fuchs, Johann and Enzo Weber (2017). "Long-term unemployment and labour force participation: a decomposition of unemployment to test for the discouragement and added worker hypotheses." In: *Applied Economics* 49.60, pp. 5971–5982.

Gałecka-Burdziak, Ewa and Marek Góra (2016). "The impact of easy and early access to old-age benefits on exits from the labour market: a macro-micro analysis." In: *IZA Journal of European Labor Studies* 1.5.

Gałecka-Burdziak, Ewa and Robert Pater (2016). "Discouraged or added worker effect: Which one prevails in the Polish labour market?" In: *Acta Oeconomica* 66.3, pp. 489–505.

Gaudecker, Hans-Martin von (2014). "Templates for Reproducible Research Projects in Economics." `https://github.com/hmgaudecker/econ-project-templates`.

Ghignoni, Emanuela and Alina Verashchagina (2016). "Added worker effect during the Great Recession: evidence from Italy." In: *International Journal of Manpower* 37.8, pp. 1264–1285.

Gong, Xiaodong (2011). "The Added Worker Effect for Married Women in Australia." In: *Economic Record* 87.278, pp. 414–426.

Gray, Matthew, Alexandra Heath, and Boyd Hunter (2005). "The labour force dynamics of the marginally attached." In: *Australian Economic Papers* 44.1, pp. 1–14.

Halla, Martin, Julia Schmieder, and Andrea Weber (2018). "Job Displacement, Family Dynamics and Spousal Labor Supply." In: *IZA Discussion Paper*.

Jäger, Simon, Benjamin Schoefer, Samuel G. Young, and Josef Zweimüller (2018). "Wages and the Value of Nonemployment." In: *NBER Working Paper* 25230.

Jones, Stephen R. G. and W. Craig Riddell (1999). “The Measurement of Unemployment: An Empirical Approach.” In: *Econometrica* 67.1, pp. 147–162.

Karaoglan, Deniz and Cagla Okten (2015). “Labor-Force Participation of Married Women in Turkey: A Study of the Added-Worker Effect and the Discouraged-Worker Effect.” In: *Emerging Markets Finance and Trade* 51.1, pp. 274–290.

Lewandowski, Piotr (2018). *Gaps in access to social protection for people working under civil law contracts in Poland*. European Commission.

Lewandowski, Piotr and Iga Magda (2017). “Temporary employment, unemployment and employment protection legislation in Poland.” In: *Myths of employment deregulation: how it neither creates jobs nor reduces labour market segmentation*. Ed. by Agnieszka Piasna and Martin Myant. Brussels: ETUI. Chap. 7.

Mankart, Jochen and Rigas Oikonomou (2016). “The rise of the added worker effect.” In: *Economics Letters* 143, pp. 48–51.

Mood, Carina (2010). “Logistic Regression: Why We Cannot Do What We Think We Can Do, and What We Can Do About It.” In: *European Sociological Review* 26.1, pp. 67–82.

Nucci, Francesco and Marianna Riggi (2018). “Labor force participation, wage rigidities, and inflation.” In: *Journal of Macroeconomics* 55, pp. 274–292.

Ortigueira, Salvador and Nawid Siassi (2013). “How important is intra-household risk sharing for savings and labor supply?” In: *Journal of Monetary Economics* 60.6, pp. 650–666.

Parker, Susan W. and Emmanuel Skoufias (2004). “The added worker effect over the business cycle: evidence from urban Mexico.” In: *Applied Economics Letters* 11.10, pp. 625–630.

Stephens Jr, Melvin (2002). “Worker displacement and the added worker effect.” In: *Journal of Labor Economics* 20.3, pp. 504–537.

Wooldridge, Jeffrey M. (2002). *Econometric analysis of cross section and panel data*. Cambridge: MIT Press.

Appendix

Table A.1. Logit results: $IA_{t-1} - A_t$

	(1)	(2)	(3)	(4)	(5)
Added worker effect					
$NE^p_{i,t}$	0.11***	0.11***	0.13***	0.32***	0.06**
Ref. $NE^p_{i,t}$ *reason: quit*					
$NE^p_{i,t}$ reason: fired			-0.04		
Ref. $NE_{i,t}$ *x* $IA_{i,t-1}$ *reason: discouraged*					
$NE^p_{i,t}$ x $IA_{i,t-1}$ reason: health				-0.24**	
$NE_{i,t}$ x $IA_{i,t-1}$ reason: family				-0.22**	
Ref. $NE^p_{i,t}$ *x initial husband status: permanent contract*					
$NE^p_{i,t}$ x initial husband status: fixed-term contract					0.04
$NE^p_{i,t}$ x initial husband status: self-employed					0.20**
Individual characteristics					
Age	-0.00***	-0.00***	-0.00**	-0.00***	-0.00**
Ref. Primary education					
Tertiary education	0.15***	0.13***	0.13***	0.13***	0.13***
Secondary education	0.02***	0.02*	0.01*	0.02*	0.01*
Ref. Not disabled					
Disabled	-0.07***	-0.08***	-0.08***	-0.10***	-0.08***
Ref. $IA_{i,t-1}$ *reason: discouragement*					
$IA_{i,t-1}$ reason: health				0.03	
$IA_{i,t-1}$ reason: family				-0.06***	
Partner characteristics					
Ref. Primary education					
Tertiary education		0.01	0.01	0.01	0.01
Secondary education		0.00	0.00	0.00	0.00
Ref. Older partner					
Younger partner		0.01	0.01	0.01	0.01
Ref. Initial husband status: permanent contract					
Initial husband status: fixed-term contract					0.01
Initial husband status: self-employed					-0.01
Household characteristics					
Ref. No children					
One child		0.02	0.03*	0.03**	0.03*
Two children		0.01	0.02	0.03*	0.02
Three and more children		-0.02	-0.02	-0.01	-0.02
Ref. Big city					
Medium town		-0.00	-0.00	-0.00	-0.00
Small town		-0.02	-0.02	-0.02	-0.02
Rural area		-0.03***	-0.03***	-0.03***	-0.03***
Year dummy	*yes*	*yes*	*yes*	*yes*	*yes*
N	18,895	18,871	18,849	18,849	18,849

Note: Results represent average marginal effects, calculated as average effects over all individuals obtained from logit estimations of probability of wife's labor market transitions from inactivity ($IA_{i,t}$) to labour force ($A_{i,t}$ - employment or unemployment). $NE^p_{i,t}$ is a dummy variable, which equals 1 if the husband lost his job, and 0 otherwise. The first row shows marginal effect of $NE^p_{i,t}$ (AWE) for the whole sample in Columns (1) and (2), AWE in the case of dismissals in Column (3), AWE for discouraged women in Column (4), and AWE for the wives of husbands working under permanent contract in Column (5). The interactions in Column (3), Column (4), and Column (5) show the contrasts of AWE over reasons for the job displacement of the husband, reasons for the wife's inactivity, and the type of employment contract the husband had at $t-1$, respectively. Robust standard errors (clustered at the household level) were calculated.

* p<0.1, ** p<0.05, *** p<0.01

Data: Polish Labour Force Survey.

Table A.2. OLS results: $IA_{t-1} - A_t$

	(1)	(2)	(3)	(4)	(5)
Added worker effect					
$NE^p_{i,t}$	0.10***	0.10***	0.12***	0.28***	0.06*
Ref. $NE^p_{i,t}$ *reason: quit*					
$NE^p_{i,t}$ reason: fired			-0.06		
$NE^p_{i,t}$ x $IA_{i,t-1}$ reason: health				-0.22*	
$NE^p_{i,t}$ x $IA_{i,t-1}$ reason: family				-0.19*	
$NE^p_{i,t}$ x initial husband status: fixed-term contract					0.03
$NE^p_{i,t}$ x initial husband status: self-employed					0.17**
Individual characteristics					
Age	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***
Ref. Primary education					
Tertiary education	0.15***	0.14***	0.14***	0.14***	0.14***
Secondary education	0.02***	0.02*	0.02**	0.02**	0.02**
Ref. Not disabled					
Disabled	-0.06***	-0.07***	-0.07***	-0.11***	-0.07***
$IA_{i,t-1}$ *reason: discouragement*					
$IA_{i,t-1}$ reason: health				0.02	
$IA_{i,t-1}$ reason: family				-0.05***	
Partner characteristics					
Ref. Primary education					
Tertiary education		0.00	0.00	0.00	0.00
Secondary education		-0.00	-0.00	-0.00	0.00
Ref. Older partner					
Younger partner		0.01	0.01	0.01	0.01
Ref. Initial husband status: permanent contract					
Initial husband status: fixed-term contract					0.01
Initial husband status: self-employed					-0.02**
Household characteristics					
Ref. No children					
One child		0.02	0.02	0.03**	0.02
Two children		0.01	0.01	0.02	0.01
Three and more children		-0.03*	-0.03*	-0.01	-0.02*
Ref. Big city					
Medium town		-0.00	-0.00	-0.00	-0.00
Small town		-0.01	-0.01	-0.01	-0.01
Rural area		-0.03***	-0.03***	-0.03***	-0.03***
Year dummy	*yes*	*yes*	*yes*	*yes*	*yes*
Log likelihood					
R^2	0.18	0.18	0.18	0.18	0.18
N	18,895	18,895	18,895	18,895	18,895

Results represent parameters from OLS estimation of linear model of probability of wive's transitions from inactivity ($IA_{i,t}$) to labour force. $NE^p_{i,t}$ is a dummy variable, which equals 1 if a husband lost his job, and 0 otherwise.Robust standard errors (clustered at the household level) were used to test the significance of parameters.

* p<0.1, ** p<0.05, ***p<0.01

Data: Polish Labour Force Survey.

Table A.3. Robustness check: $IA_{t-1} - A_t$, 2007-2012

	(1)	(2)	(3)	(4)	(5)
Added worker effect					
$NE^p_{i,t}$	0.14***	0.12***	0.15***	0.20**	0.08**
Ref. $NE^p_{i,t}$ *reason: quit*					
$NE^p_{i,t}$ reason: fired			-0.04		
Ref. $NE_{i,t}$ *x* $IA_{i,t-1}$ *reason: discouraged*					
$NE^p_{i,t}$ x $IA_{i,t-1}$ reason: health				-0.09	
$NE_{i,t}$ x $IA_{i,t-1}$ reason: family				-0.09	
Ref. $NE^p_{i,t}$ *x initial husband status: permanent contract*					
$NE^p_{i,t}$ x initial husband status: fixed-term contract					0.04
$NE^p_{i,t}$ x initial husband status: self-employed					0.20**
Year dummy	*yes*	*yes*	*yes*	*yes*	*yes*
Individual characteristics	*yes*	*yes*	*yes*	*yes*	*yes*
Partner characteristics	*no*	*yes*	*yes*	*yes*	*yes*
Household characteristics	*no*	*yes*	*yes*	*yes*	*yes*
N	9,666	9,661	9,643	9,643	9,643

Note: Results represent average marginal effects, calculated as average effects over all individuals obtained from logit estimations of probability of wife's labor market transitions from inactivity ($IA_{i,t}$) to labour force ($A_{i,t}$ - employment or unemployment). $NE^p_{i,t}$ is a dummy variable, which equals 1 if the husband lost his job, and 0 otherwise. The first row shows marginal effect of $NE^p_{i,t}$ (AWE) for the whole sample in Columns (1) and (2), AWE in the case of dismissals in Column (3), AWE for discouraged women in Column (4), and AWE for the wives of husbands working under permanent contract in Column (5). The interactions in Column (3), Column (4), and Column (5) show the contrasts of AWE over reasons for the job displacement of the husband, reasons for the wife's inactivity, and the type of employment contract the husband had at $t-1$, respectively. Robust standard errors (clustered at the household level) were calculated.

* p<0.1, ** p<0.05, *** p<0.01

Data: Polish Labour Force Survey.

Table A.4. Robustness check: $IA_{t-1} - A_t$, 2013-2017

	(1)	(2)	(3)	(4)	(5)
Added worker effect					
$NE^p_{i,t}$	0.07**	0.07**	0.09**	0.63***	0.02
Ref. $NE^p_{i,t}$ *reason: quit*					
$NE^p_{i,t}$ reason: fired			-0.02		
Ref. $NE_{i,t}$ *x* $IA_{i,t-1}$ *reason: discouraged*					
$NE^p_{i,t}$ x $IA_{i,t-1}$ reason: health				-0.62***	
$NE_{i,t}$ x $IA_{i,t-1}$ reason: family				-0.57***	
Ref. $NE^p_{i,t}$ *x initial husband status: permanent contract*					
$NE^p_{i,t}$ x initial husband status: fixed-term contract					0.04
$NE^p_{i,t}$ x initial husband status: self-employed					0.21**
Year dummy	*yes*	*yes*	*yes*	*yes*	*yes*
Individual characteristics	*yes*	*yes*	*yes*	*yes*	*yes*
Partner characteristics	*no*	*yes*	*yes*	*yes*	*yes*
Household characteristics	*no*	*yes*	*yes*	*yes*	*yes*
N	9,229	9,210	9,204	9,204	9,204

Note: Results represent average marginal effects, calculated as average effects over all individuals obtained from logit estimations of probability of wife's labor market transitions from inactivity ($IA_{i,t}$) to labour force ($A_{i,t}$ - employment or unemployment). $NE^p_{i,t}$ is a dummy variable, which equals 1 if the husband lost his job, and 0 otherwise. The first row shows marginal effect of $NE^p_{i,t}$ (AWE) for the whole sample in Columns (1) and (2), AWE in the case of dismissals in Column (3), AWE for discouraged women in Column (4), and AWE for the wives of husbands working under permanent contract in Column (5). The interactions in Column (3), Column (4), and Column (5) show the contrasts of AWE over reasons for the job displacement of the husband, reasons for the wife's inactivity, and the type of employment contract the husband had at $t-1$, respectively. Robust standard errors (clustered at the household level) were calculated.

* p<0.1, ** p<0.05, *** p<0.01

Data: Polish Labour Force Survey.

Table A.5. Robustness check: $IA_{t-1} - A_t$, employees with permanent contracts

	(1)	(2)	(3)	(4)
Added worker effect				
$NE^p_{i,t}$	0.07**	0.07**	0.10**	-0.06
Ref.$NE^p_{i,t}$ reason: quit				
$NE^p_{i,t}$ reason: fired			-0.04	
Ref.$NE_{i,t}$ x $IA_{i,t-1}$ reason: discouraged				
$NE^p_{i,t}$ x $IA_{i,t-1}$ reason: health				0.24**
$NE_{i,t}$ x $IA_{i,t-1}$ reason: family				0.12
Year dummy	*yes*	*yes*	*yes*	*yes*
Individual characteristics	*yes*	*yes*	*yes*	*yes*
Partner characteristics	*no*	*yes*	*yes*	*yes*
Household characteristics	*no*	*yes*	*yes*	*yes*
N	11,804	11,790	11,777	11,777

Note: Results represent average marginal effects, calculated as average effects over all individuals obtained from logit estimations of probability of wife's labor market transitions from inactivity ($IA_{i,t}$) to labour force ($A_{i,t}$ - employment or unemployment). $NE^p_{i,t}$ is a dummy variable, which equals 1 if the husband lost his job, and 0 otherwise. The first row shows marginal effect of $NE^p_{i,t}$ (AWE) for the whole sample in Columns (1) and (2), AWE in the case of dismissals in Column (3), and AWE for discouraged women in Column (4). The interactions in Column (3) and Column (4) show the contrasts of AWE over reasons for the job displacement of the husband and reasons for the wife's inactivity, respectively. Robust standard errors (clustered at the household level) were calculated.

* p<0.1, ** p<0.05, *** p<0.01

Data: Polish Labour Force Survey.

Table A.6. Robustness check: $IA_{t-1} - A_t$, household's main source of income: wages

	(1)	(2)	(3)	(4)
Added worker effect				
$NE^p_{i,t}$	0.09***	0.09***	0.11***	0.26**
Ref.$NE^p_{i,t}$ reason: quit				
$NE^p_{i,t}$ reason: fired			-0.03	
Ref.$NE_{i,t}$ x $IA_{i,t-1}$ reason: discouraged				
$NE^p_{i,t}$ x $IA_{i,t-1}$ reason: health				-0.17
$NE_{i,t}$ x $IA_{i,t-1}$ reason: family				-0.18
Year dummy	*yes*	*yes*	*yes*	*yes*
Individual characteristics	*yes*	*yes*	*yes*	*yes*
Partner characteristics	*no*	*yes*	*yes*	*yes*
Household characteristics	*no*	*yes*	*yes*	*yes*
N	14,681	14,663	14,641	14,641

Note: Results represent average marginal effects, calculated as average effects over all individuals obtained from logit estimations of probability of wife's labor market transitions from inactivity ($IA_{i,t}$) to labour force ($A_{i,t}$ - employment or unemployment). $NE^p_{i,t}$ is a dummy variable, which equals 1 if the husband lost his job, and 0 otherwise. The first row shows marginal effect of $NE^p_{i,t}$ (AWE) for the whole sample in Columns (1) and (2), AWE in the case of dismissals in Column (3), and AWE for discouraged women in Column (4). The interactions in Column (3) and Column (4) show the contrasts of AWE over reasons for the job displacement of the husband and reasons for the wife's inactivity, respectively. Robust standard errors (clustered at the household level) were calculated.

* p<0.1, ** p<0.05, *** p<0.01

Data: Polish Labour Force Survey.

Figure A.1. Labour force participation rate, female (% of female population ages 15-64)

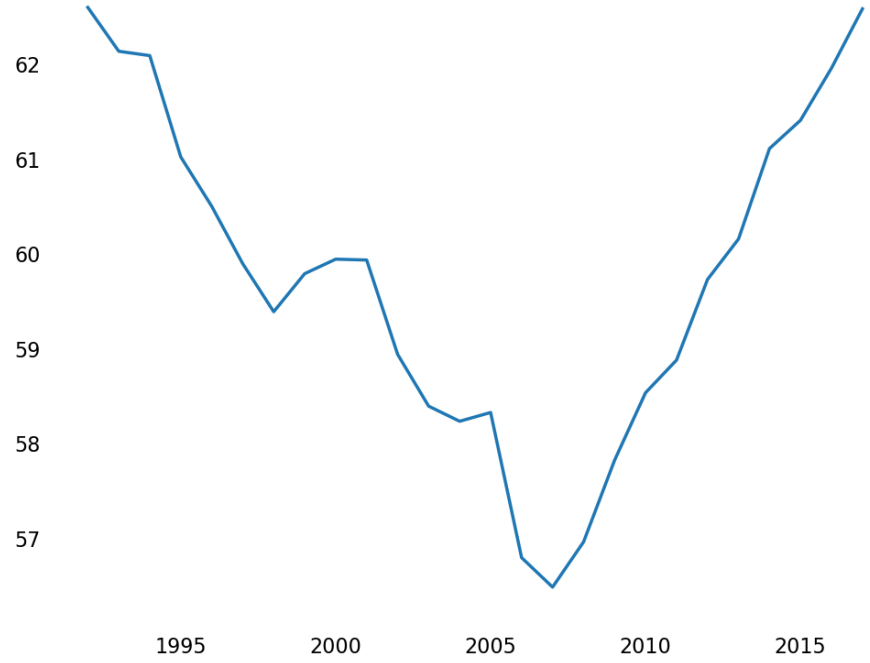
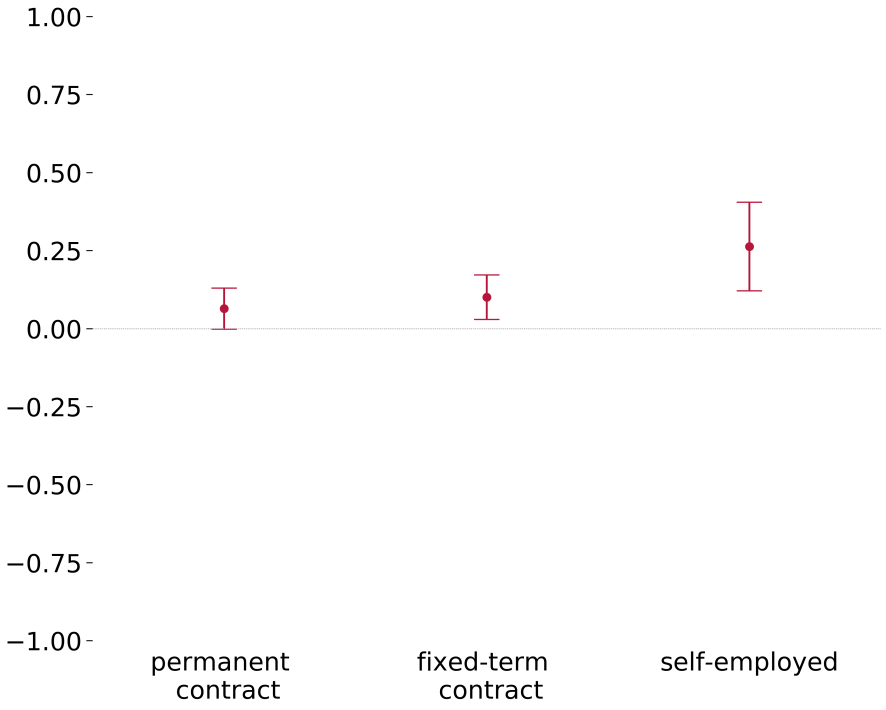
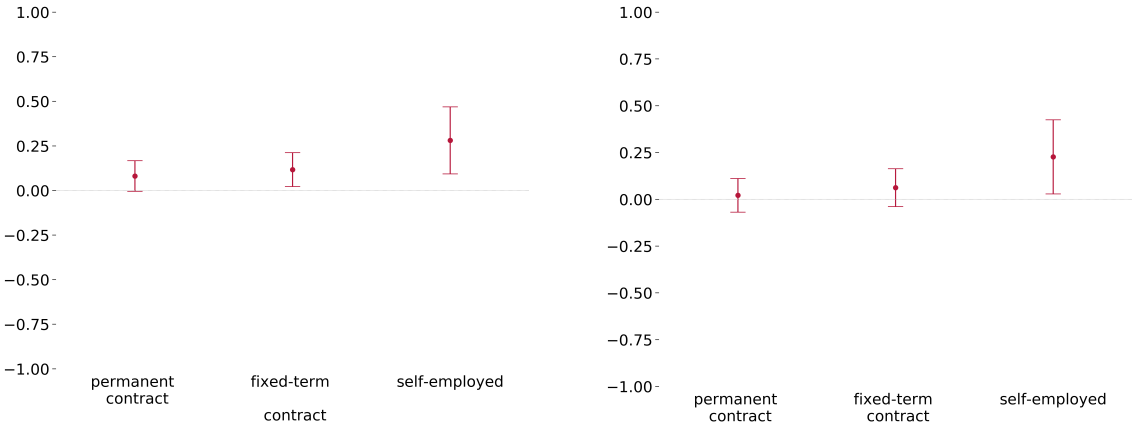


Figure A.2. Added worker effect by the husband's employment contract type



Note: The figure shows the marginal effects of the work displacement of the husband on the probability of his wife entering the labour market based on the logit model with interactions with the husband's employment contract type. The figure shows the effects for wives of self-employed persons and workers with permanent and fixed-term contracts. The vertical capped lines indicate 95% confidence intervals based on standard errors clustered at the household level.
Data: Polish Labour Force Survey

Figure A.3. Added worker effect by the husband's employment contract type (2007-2012 vs. 2013-2017)



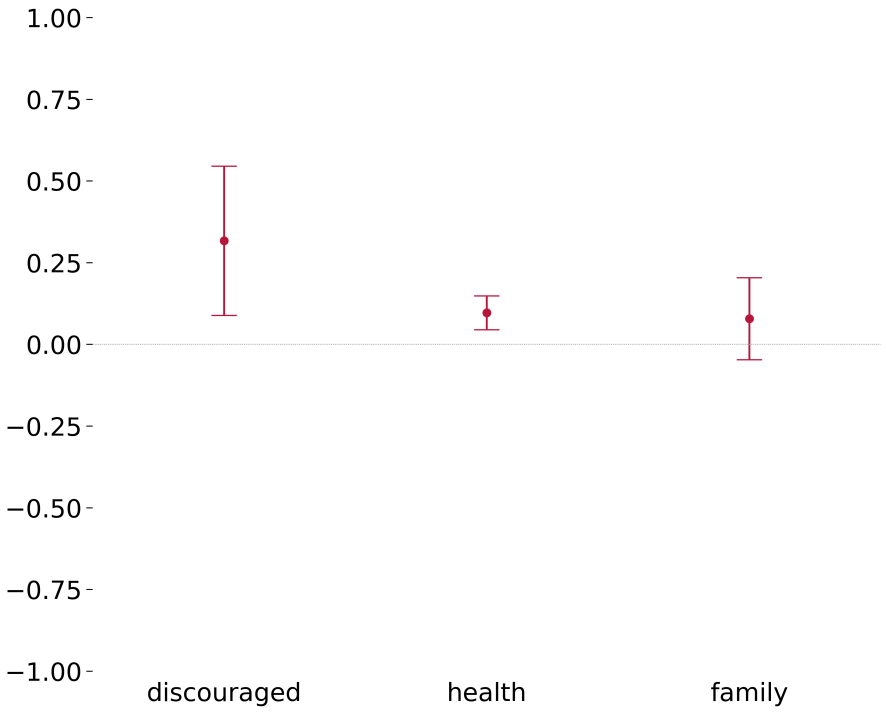
(a) (2007-2012) (b) (2013-2017)

Note: The figure shows the marginal effects of the work displacement of the husband on the probability of his wife entering the labour market based on the logit model with interactions with the husband's employment contract type. The figure shows the effects for wives of self-employed persons and workers with permanent and fixed-term contracts. The vertical capped lines indicate 95% confidence intervals based on standard errors clustered at the household level.
Data: Polish Labour Force Survey

Figure A.4. Added worker effect by the reason for job displacement

Note: The figure shows the marginal effects of the work displacement of the husband on the probability of his wife entering the labour market based on the logit model with interactions with reasons for the husband's job displacement. The figure shows the effects for wives of husband who quit and were dismissed. The vertical capped lines indicate 95% confidence intervals based on standard errors clustered at the household level.
Data: Polish Labour Force Survey

Figure A.5. Added worker effect by the reason for the wife's inactivity



Note: The figure shows the marginal effects of the work displacement of the husband on the probability of his wife entering the labour market based on the logit model with interactions with the reasons for the wife's inactivity. The figure shows the effects for wives who were inactive for discouragement, health, or family reasons. The vertical capped lines indicate 95% confidence intervals based on standard errors clustered at the household level.
Data: Polish Labour Force Survey

instytut
badań
strukturalnych

www.ibs.org.pl