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Treball de Final de Grau

Facultat d'Economia i Empresa

**TÍTOL: What impact does childbearing have on women's careers
and their family economy in Spain**

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Abstract

The transition to motherhood is a big life change that affects women's employment and household finances significantly. This study looks into how parenting affects women's opportunities in the job market and household budgets in Spain and examines the effects of delivery on women's job status, earnings, and work arrangements using microdata from the Family Budget Survey (EPF) which was carried out by the National Institute of Statistics (INE) between 2016 and 2021. It also looks at the relationship between being a mother and the financial health of the home, taking into account things like income, and the number of members of a household, among others. The results go on to show the wider socioeconomic outcomes of motherhood in the Spanish context and advance our knowledge of the difficulties moms encounter in balancing their obligations to their families and their careers. Overall, this study has the intention of providing insight into these dynamics in order to understand and help to take a large step in the direction to gender equality in terms of being a parent while working.

Keywords: motherhood, labor market, household, income, employment, children, family, household

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1. Introduction

Only a few decisions in the field of economics have as much of an impact on a person's labor life as the choice to begin a family. The shift to parenting is a critical point in terms of personal fulfillment as well as the dynamics of household economics and labor market involvement.

Before exploring the objectives of this study, it is of vital importance to recognize the relationship between motherhood and the economy. All across the world, communities struggle to find a balance between being able to provide care for children and their presence in the labor market, although there has been progressing in understanding and providing aid for the needs of mothers in the workforce, these inequalities still exist, showing the need for a more intensive investigation of the causes behind them.

In Spain, some regulations protect the rights of working mothers, facilitate work-life balance, and promote a workforce based on gender equality. Outlined in Real Decreto-ley 6/2019¹ maternity and paternity leave policies support new parents by giving mothers/fathers time off work after childbirth, with full Social Security contributions. Measures such as the ones in Law 39/1999², allow flexible work arrangements, and reduction of hours, contributing like this to the work-life balance. There are also economic assistance measures like tax deductions for maternity under the Personal Income Tax and Social Security benefits for births or adoptions, that support families through the financial challenges of maintaining employment while raising children.

Nevertheless, empirical data indicates that there's still a noticeable difference between policy goals and actual results, and designing more effective treatments and policies that support gender equality and financial stability for all requires an understanding of the different interactions between childbearing, career paths, and economic results, which this study intends to do.

1.1 Women in the Spanish Labor Market

In Spain, despite the efforts towards gender equality in the labor force, significant disparities persist, affecting particularly women with children.

¹BOE-A-2019-3244 Real Decreto-ley 6/2019, de 1 de marzo, de medidas urgentes para garantía de la igualdad de trato y de oportunidades entre mujeres y hombres en el empleo y la ocupación. (2019, March 1). Retrieved from <https://www.boe.es/eli/es/rdl/2019/03/01/6>

² BOE-A-1999-21568 Ley 39/1999, de 5 de noviembre, para promover la conciliación de la vida familiar y laboral de las personas trabajadoras. (n.d.). Retrieved from <https://www.boe.es/buscar/act.php?id=BOE-A-1999-21568>

Over the past 15 years, the gap between men and women in terms of unemployment remained noticeable, with women experiencing a 2.5% higher unemployment rate. (Hupkau & Ruiz, 2021) This disparity also extends to employment contracts, with the percentage of women working part-time tripled over the past decade to 23% compared to the 7% of men, and mothers with kids under the age of 15, are 20/30% more likely to end up in temporary jobs contracts compared to fathers. Also, the gap in temporary contracts has been wider since 2015, with 27% of women with that type of contract compared to 25% of men, and more women working part-time than men, even without kids. Overall, 74% of women without kids who work part-time want to work more hours, suggesting that the differences in the type of working time are not solely due to individual preferences (Hupkau & Ruiz, 2021).

Also, the COVID-19 pandemic has enhanced these inequalities, with a 2.3% decrease in employment for women in the last quarter of 2020, due to that they were more affected by job losses and temporary layoffs (ERTEs) during that period. This made women with children experience greater disruptions in employment and working hours compared to men with children and widened the existing gender gap in time spent on childcare and household chores, with women having a greater burden in these areas. (Hupkau & Ruiz, 2021).

According to the Instituto Nacional de Estadística (INE)³ website, in the section titled “Salaries”, in 2021 the most common annual salary among women represented 74,3% of the most common salary among men. This percentage was 81,6% both median and mean gross salaries, and considering full time-work, women’s salaries represent 91,/% of men’s and for part-time 90.4%. Women’s hourly wage reached 95,1% of men’s hourly wage for full-time and 87.1% for part-time work.

According to the INE, the wage gap increases with age, where workers aged 25 to 34 have a gap of 1.3, and those aged between 55 to 64 have a gap of 14.4, making it the second highest value in the gender wage gap, where the first one corresponds to the age group of 65 and more, with a value of 27.

Looking at the gender wage gap by sector in the INE, we see that it is positive in all sectors except for the extractive industries sector and the construction sector, and the highest values are in the sector of Healthcare and Social Services Activities with a value of 23,1 in the sector of Professional, Scientific and Technical Activities with a value of 20,1 and in the sector of Retail Trade, Repair of Motor Vehicles and Motorcycles with a number of 15.9. It is also observed that the gender wage

³ *Productos y Servicios / Publicaciones / Publicaciones de descarga gratuita.* (n.d.). Retrieved April 20, 2024, from https://www.ine.es/ss/Satellite?L=es_ES&c=INESeccion_C&cid=1259925408327&p=1254735110672&pagename=ProductosYServicios%2FPYSLayout¶m3=1259926137287

gap in Spain, with a value of 8,9 is lower than the value of 17,7 in the EU-27. Lastly, according to the employers' nature, the highest value of the gap occurred in 2012 and 2016 at 14,3 for the public sector, and for the private sector, the highest value was in 2012 at 21,9.

2. Literature Review

2.1 Theoretical framework on the relationship between childbirth, women's career, and family economics

Several theoretical frameworks, such as the conflict theory of work-family balance, gender role theory, and human capital theory can be used to understand the effects of motherhood in the Spanish context.

Sociological theories are useful for understanding how motherhood is socially constructed and how it affects women's roles in households and society at large. According to Hochschild & Machung's, (1989), notion of the "second shift" women frequently shoulder an unfair share of the burden for childcare and household chores, which increases time limitations and raises the possibility of conflicts between work and family responsibilities.

Feminist theories also highlight the patriarchal systems that support conventional gender roles and the expectations society has of mothers (Acker, 2006). Furthermore, the availability of childcare assistance, parental leave benefits, and other resources that affect women's economic choices and outcomes are shaped by society state and family policy frameworks (Esping-Andersen, 2007)

From an economic point of view, motherhood can have profound implications for women's labor market participation, earnings, and financial dynamics. According to human capital theory, women's professional interruptions by parenthood may result in a decline in skill value and a decrease in pay (Becker, 1985). Furthermore, the gender pay gap and discrimination against mothers in the workplace are factors that contribute to the ongoing income gap between men and women.

The notion of gender roles explains the cultural norms around women's care nature responsibilities, potentially impacting their involvement in the labor market and professional paths (Wood & Eagly, 2012). Furthermore, the difficulties mothers have in striking a balance between

their obligations to their families and their careers are highlighted by the conflict theory of work-family balance. (Greenhaus & Beutell, 1985).

2.2 A review of empirical studies examining the impact of childbearing on women's labor market outcomes and household finances in Spain

The analysis conducted by Dominguez-Folgueras et al., in 2022 about the motherhood penalty in Spain using data from MCVL, by analyzing the effect of taking unpaid full-time and part-time maternity leave on women's income, is relevant for the project in several ways. Paid maternity and paternity leave are frequently the subject of research, but unpaid absences for longer-term childcare are less well-researched in the literature, even though they are crucial for promoting work-life balance in the early phases of a career.(Dominguez-Folgueras et al., 2022)

The findings of Dominguez-Folgueras et al., show a negative correlation between women's income in Spain and the number of children, in particular, it shows that the motherhood penalty varies with parity: compared to years without children between 2005 and 2012, having one kid is related to a 4,3% loss in monthly income, having two children with a 9.6% decrease, and having three or more children, with a 13% decrease.

Furthermore, Dominguez-Folgueras et al. also draw attention to the trade-offs related to parental leave; parental leave has costs associated with it even though it allows women to stay in the labor market. According to the study, full-time parental leave affects wages more significantly than part-time leave.

Research by Sevilla-Sanz et al., (2010) shows how childbirth affected Spanish women's earnings.

The study discovered evidence of a wage penalty for mothers, with the penalty being more noticeable for those who worked in low-paying jobs or had several children

According to De Quinto et al., (2021), women's wages do not significantly differ until they give birth to their first kid, nonetheless, women have a significant difference in their income trajectory after childbirth. According to their research, the earnings penalty following the birth of the first child is 11.4% in the first year and rises to 28% over time. The Spanish child penalty is comparable to that of Anglo-Saxon and Nordic nations in this regard.

De Quinto et al. (2021) also delineate several pathways by which mothers are presented with lower earning profiles; after birthing their first child, women significantly cut back on their working

hours; over ten years, this drop amounts to 26%, with a 15% decrease in the number of days worked in the first year. Furthermore, the likelihood that a woman will work part-time rises by 38% in the year after the birth of a first child, but the likelihood that women will work under fixed-term contracts rises, while the likelihood that men will do so falls by 6%.

The study also shows that women without college degrees have far greater losses in wages and days worked following the first baby. College graduate mothers, on the other hand, are more likely to continue working but opt for part-time jobs. (de Quinto et al., 2021)

3. Data and practice

3.1 Methodology

This study uses a rigorous approach and microdata from the Household Budget Survey of Wellness, provided by Instituto Nacional de Estadística, which covers from 2016 to 2021, to examine the mentioned relationships and phenomena. By applying statistical analysis tools such as Rstudio and JMP this research aims to show the relationships between childbearing, women's professional careers, and family economics and to understand the challenges women face in their motherhood path and labor career, by uncovering the reasons behind the differences in job outcomes and financial stability.

3.2 Data description and sources

The microdata used for this study is the Family Budget Survey (Encuesta de Presupuestos Familiares), retrieved from the Instituto Nacional de Estadística. The survey includes a sample of 24.000 households and it has been carried out since 2006. This study specifically focuses on the data collected between the years 2016 to 2021 with a total of 124.830 entries and 188 variables for analysis.

The microdata underwent a data-cleaning process aimed at eliminating all entries containing missing values, to ensure the integrity and robustness of the analytical procedures. Also, the data suffered some modifications for increasing representativeness, such as the modification of the variable GASTOT (yearly spending of the whole household), which was raised to the population factor, leading to the need to be divided by the variable FACTOR (population factor), for getting the annual spending of a single household (GASTOTANNUAL). Also, the variables IMPEXAC

(exact amount of the net monthly income of a household), and IMPEXACSP (exact amount of the net monthly income of the main breadwinner of the household) underwent a modification to make them annually instead of monthly, for the sake of interpretation. Also, the values that were negative, which represented a lack of answer, were eliminated from the variables used for the practical part.

Table 1: Statistics Summary

	Mean	Median	Minimum	Maximum
<i>Economic Variables</i>				
Annual income of the main provider	19,987	17,880	600	216,000
Annual income of the household	29,383	25,596	720	264,996
Annual expenses of the household	32,260	28,384	1,191	189,311
<i>Demographic and Social Variables</i>				
Number of members between 0 and 4	0.1733	0.000	0.000	4.000
Workday	1.077	1.000	1.000	2.000
Number of dependent children	0.916	1.000	0.000	10.000
Professional situation	1.052	1.000	1.000	2.000
Socioeconomic situation	1.683	2.000	1.000	3.000
Occupation	4.928	5.000	1.000	9.000

Looking at gender demographics, women constitute 33.10% of the sample population, while men constitute 66.9%.

Regarding age distribution, the dataset spans from 16 to 85 years, where the minimum age for men was 16 while for women was 18. Notably the average age among men was observed to be 56 years, while women exhibited a slightly higher average age of 57.

Looking at the socioeconomic status of the female breadwinners, specifically at the income level, we see that the average annual income is 15,039.24€, while for males is 18,225,45€, looking at a gap of approximately 17,48%

Looking at income from an educational perspective reveals some disparities. Participants with an education level below the first stage of secondary education show an average income of 11,777€, meanwhile, those who only have completed the first stage of secondary education report an average income of 14,312.12€. Those who completed secondary education demonstrate a higher average income at 17,486.24€, next to the individuals with the highest educational studies, who present the highest average income, with 23,749.3€.

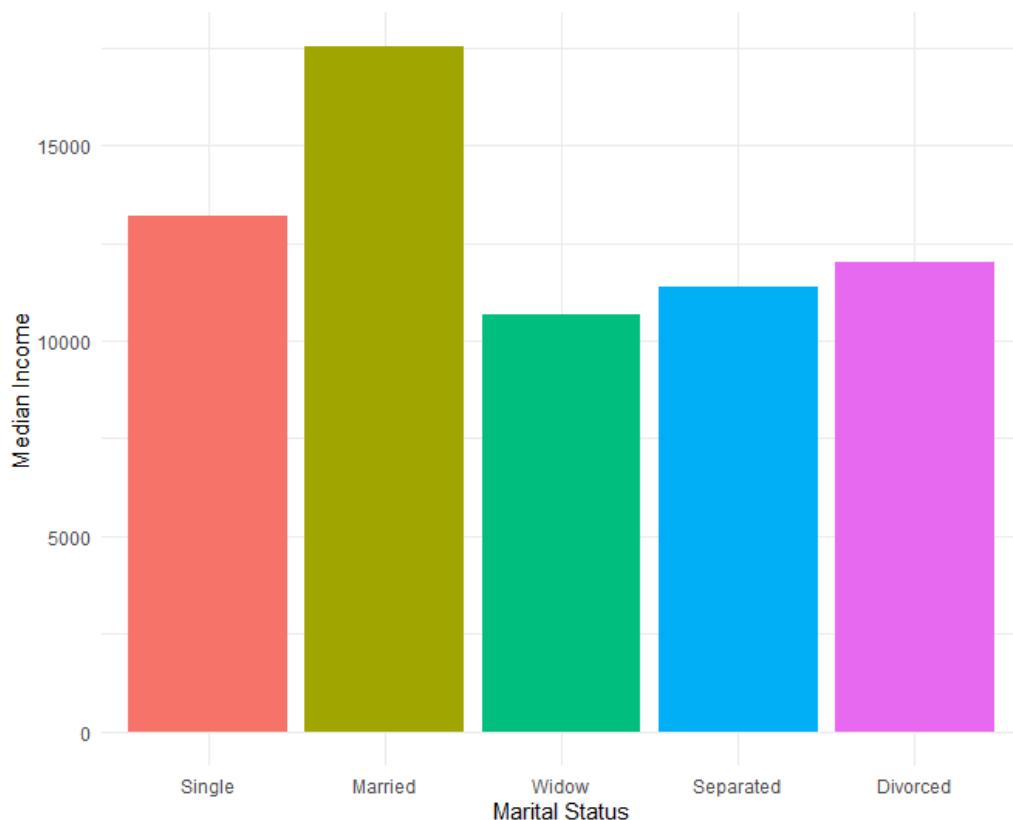


Figure 1: Income breakdown by female participants' marital status.

Looking deeper into the marital status of female participants, the analysis shows that 25% were classified as single, 28% as married, 27% as widowed, and 19% as separated or divorced (the percentages were merged), and as it is shown in the figure, with married women having the highest income, and widows having the lowest.

Income by Number of Members

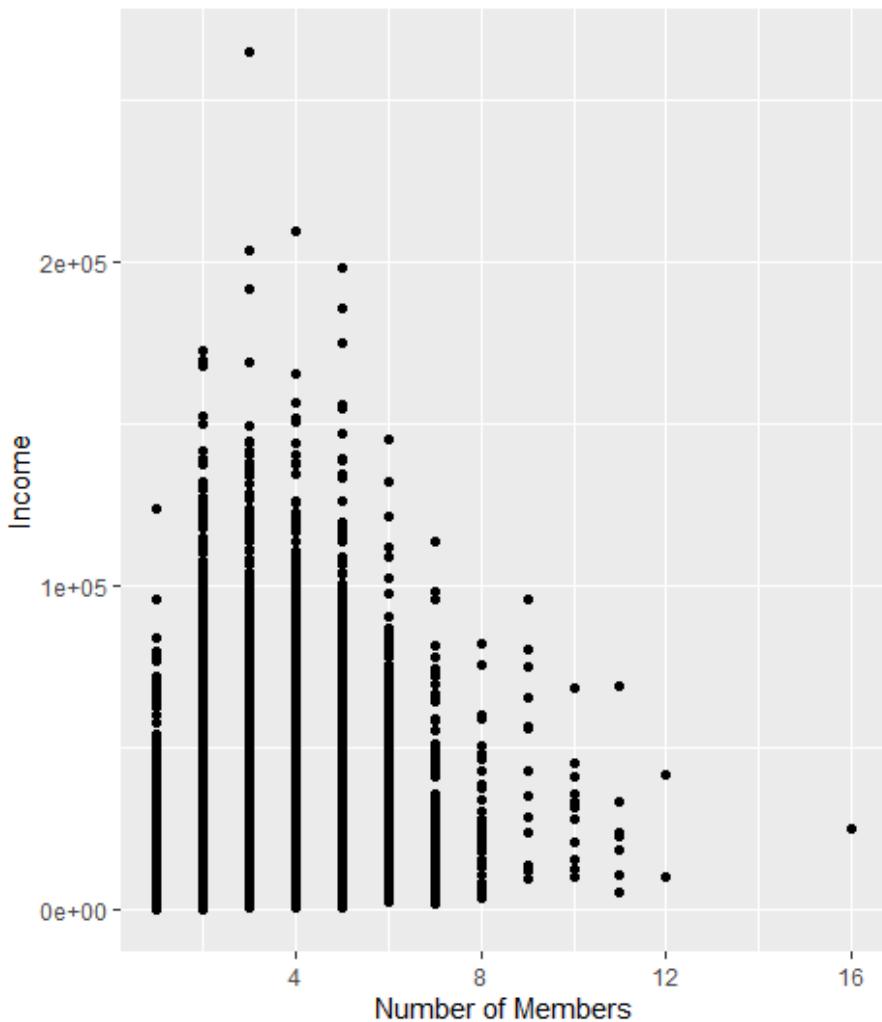


Figure 2: Income trend of the survey by number of members

Now focusing on the number of members in each household, the average number of members is 2.6 overall, and for households where women are the principal provider, the mean is 2.2 members. The highest average annual income of the household corresponds to households with 9 members, with an average of 45,708.92 followed by households with only 4 members, with an annual income of 32,199.99\$

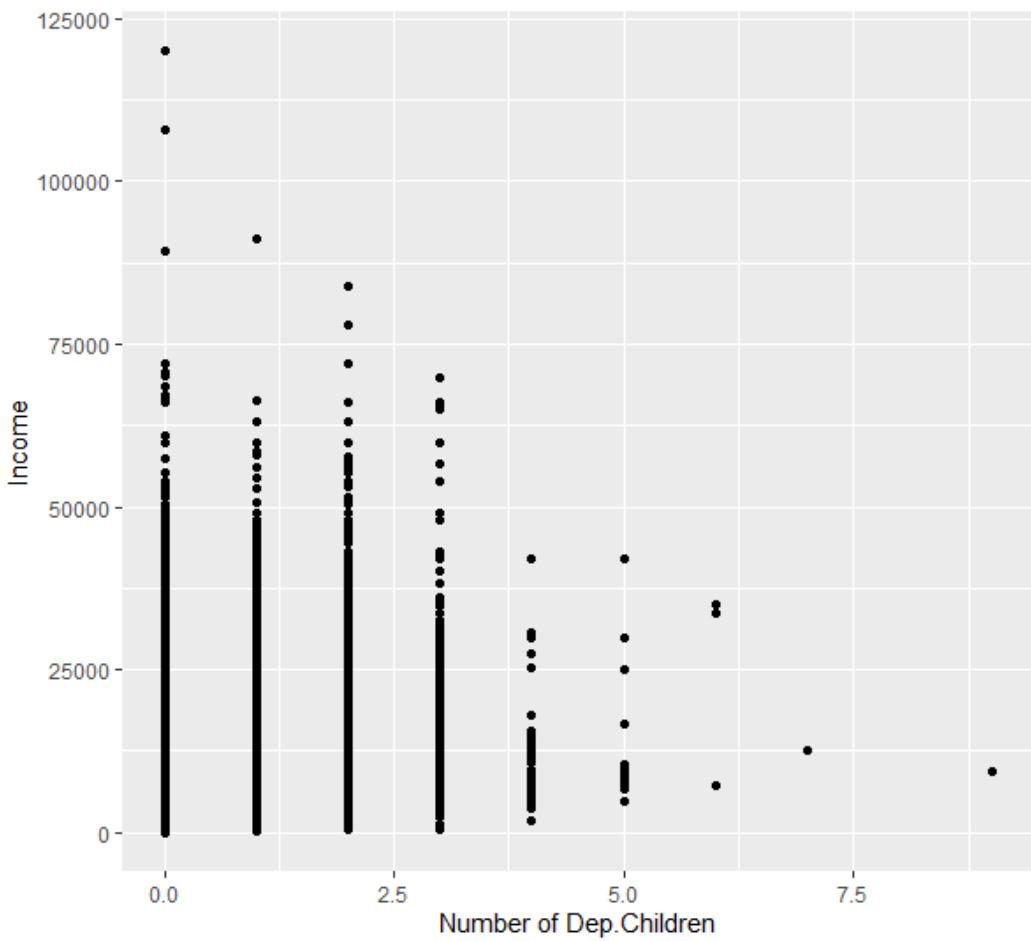


Figure 3: Income trend of female breadwinners with dependent children

In Figure 3 we can see how income is distributed depending on the number of dependent children. The households where the number of dependent children is 6, present the higher annual income with a value of 25,268€, followed by the value of 18,352.80€, which corresponds to households with a number of dependent children of 2. The opposite happens to households with 4 dependent children, with an income of 11,424.42€, being the second lowest, only topped by households with 9 dependent children, with an annual income of 9,480€

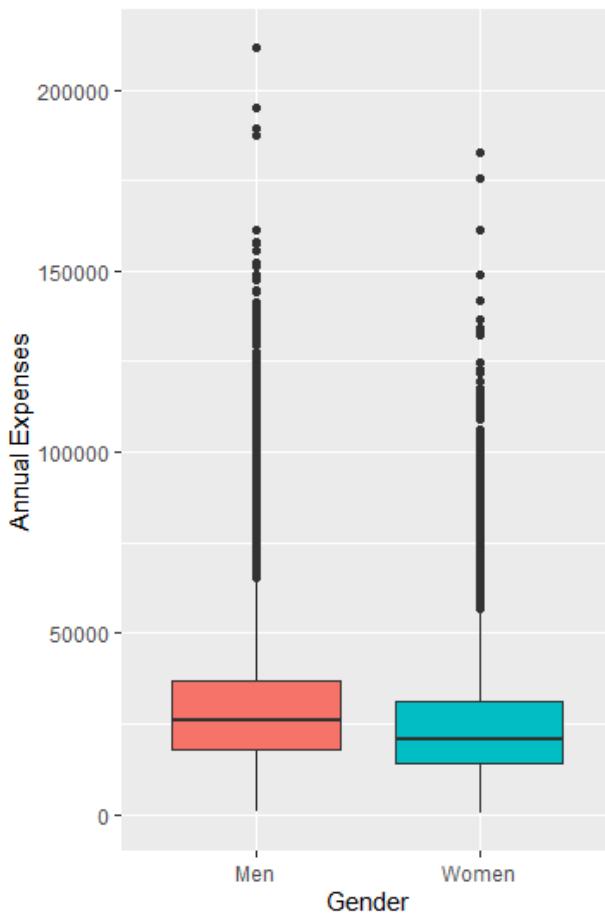


Figure 4: Annual expenses by gender

The annual expenses of the household by the gender of the main breadwinner, show that in average, households where the main breadwinner is a female have lower average annual expenses, with a number of 24,716.65\$, while households with a male breadwinner have on average expenses of 29,437.89\$

3.3 Ordinary Least Squared Model

To investigate the interaction between childbearing, women's earnings, and family economics in Spain, the best model to use is the Ordinary Least Squares (OLS) econometric model. The OLS model uses regression to assess the connections between variables by fitting a linear equation to the observed data, and the ordinary part of the model refers to the minimization of the sum of the squared differences between the observed values and the predicted values of the dependent variables. This model is widely used due to it being simple to interpret and diversity.

For our investigation, the appropriate model type is the Multiple Linear Regression, where multiple independent variables can predict the outcome. This model has the following form

$$Y = B_0 + B_1 X_1 + B_2 X_2 + \dots + B_n X_n + \mu$$

where X_1 , X_2 , and X_n are the independent variables, and B_1 , B_2 , and B_n ... are the coefficients.

3.4 Justification and Assumptions

Choosing the OLS model for our project comes with key assumptions. To begin, we assume a linearity and independence in the model, meaning that the relationship between childbirth and its effects on the family economy can be captured by a linear model, and that the errors that happen in our model are independent of each other, meaning that no observations are influenced by each other's values. Also, regarding the errors in the model, there's the assumption of normality, where the errors are normally distributed with a mean of zero, facilitating the validity of hypothesis testing and the confidence interval estimation

One of the important assumptions is homoscedasticity, where the variance of errors is constant across all levels of the independent variables meaning that our model is accurate for all levels of the predictor variables. Regarding the correlation between variables, we have the no multicollinearity assumption, which explains how independent variables are not highly correlated with each other, assuring that there's no inflation of the standard errors of the coefficient, and enabling accurate estimation of the model

3.5 Multinomial Logistic Regression Model

For investigating the relationship between women's labor participation and childbearing, the best model is the multinomial logistic regression, due to having in the data multiple categorical variables that have different categories numbered, where there are different outcomes to be predicted. In this case, the categorical variable used as the dependent variable is the Professional Situation (SITUACTSP), where there are 8 different categories: 1 corresponds to "Working at least one hour", 2 to "Absent from work", 3 to "Unemployed", 4 to "Retired", 5 to "Student", 6 to "Dedicated to home chores", 7 to "Permanent laboral incapacity" and 8 to "Another situation of economic inactivity". Using this model we can analyze the relationship between the different categories and other independent variables, calculating the probabilities of a woman belonging to each category.

4. Empirical Findings: Impact of Childbirth on Women's Careers and Family Economy

4.1 Changes in women's labor force participation and earnings

Before proceeding with the models, data cleaning was done, ensuring the accuracy and consistency of the results. Both income variables, the one for the main breadwinner and the one for the whole household (IMPEXACSPAN and IMPEXACAN) were transformed into logarithmic variables to avoid asymmetry and increase the normality of the models, and all the not specified values were taken out. For the variables regarding the number of members, dependent children, occupation, and workday, the non specified values were also taken out. Also, before carrying out the models, a multicollinearity test was done with JMP⁴, to see if any of the variables that were going to be used, were highly correlated with each other, making the model inaccurate and biased, with the results being that all the variables had a VIF between 1 and 2, ensuring no multicollinearity.

Table 2: Multiple Regression Model: Changes in Women's Earnings taking into account both Men and Women⁵

Dependent variable				
Logarithmic Annual Income of the Main Breadwinner				
Variable	Coef.	Std. Error	Sig.	
GENDER	-0.026	0.001	***	
OCCUPATION	-0.087	0.001	***	
WORKDAY	-0.52	0.01	***	
NUMBER OF MEMBERS BETWEEN 0 AND 4 YEARS OLD	-0.07	0.006	***	
NUMBER OF DEPENDENT CHILDREN	0.045	0.003	***	
Constant	10.816	0.011	***	

Observations 24,345

⁴ See all the tests done to the models in the appendix

⁵ See in the Appendix the model without any appearance manipulation.

R2 0.353
Adjusted R2 0.352
Residual Std. Error 0.387 (df = 24339)
F Statistic 2,650.781*** (df = 5; 24339)

*Note: *p<0.1; **p<0.05; ***p<0.01*

In the model above, it's clear to see that the dummy variable gender, (where 1 is male and 6 is female) has a negative impact, in the sense that being a female is strongly associated with a decrease in annual income, and holds a high level of significance when looking at the p-value. Also, the increase in household members between 0 and 4 years old is linked with a reduction in annual income, showing a significant negative effect. For the number of dependent children, it cannot be said the same, due to having more dependent children is associated with a higher annual income, as the positive coefficient of 0.045 shows.

When looking at labor factors such as the dummy variable occupation, it's clear that certain occupations are associated with lower annual earnings, and the workday variable has the same effect, depending on the type of workday, the income might be higher or lower. Regarding the model's fit, we see that it explains 35.3% of the variability in women's income and that the F-statistic has a high significance (the p-value is lower than 0.01), making the model statistically significant. But, a Durbin Watson test was made to check for autocorrelation, which with its presence in the model can lead to thinking that the predictors are significant, when they are not, and the result was the following

```
Durbin-Watson test
data: model
DW = 1.977, p-value = 0.03641
alternative hypothesis: true autocorrelation is greater than 0
```

The p-value is lower than 0.05, which means that we reject the null hypothesis (no autocorrelation). Due to this, another model was done filtering the data by only women main providers and taking out the variable Gender (SEXOSP).

Table 3: Multiple Regression Model: Changes in Women's Earnings taking into account only Women

Dependent variable

Logarithmic Annual Income of the Female Breadwinners				
Variable	Coef.	Std. Error	Sig.	
OCCUPATION	-0.099	0.002	***	
WORKDAY	-0.465	0.012	***	
NUMBER OF MEMBERS BETWEEN 0 AND 4 YEARS OLD	-0.071	0.012	***	
NUMBER OF DEPENDENT CHILDREN	0.048	0.005	***	
Constant	10.650	0.011	***	

Observations 8,168
R2 0.434
Adjusted R2 0.433
Residual Std. Error 0.385 (df=8163)
F Statistic 1,561.881*** (df = 4; 8163)

*Note: *p<0.1; **p<0.05; ***p<0.01*

We check for autocorrelation again, and in this case, we see that there's none, which means that the significance of the predictor variables is not biased.

Durbin-Watson test

```
data: model
DW = 1.9747, p-value = 0.1263
alternative hypothesis: true autocorrelation is greater than 0
```

Now, if we compare this model with the latter one, we can see no differences in the impact of the variables on the annual income, but it is clear that this second model focusing only on women is slightly a better fit, due to the goodness of fit that is higher, indicating that a larger proportion of the variability on women's income is explained, among with the residual standard error, that is lower in the second model, suggesting that this one is a better fit.

Table 4: Multinomial Logistic Regression Model: Changes in Women's Labor Force Participation Taking into account only Women

Dependent variable							
Professional Situation of the Female Breadwinners							
	2 (1)	3 (2)	4 (3)	5 (4)	6 (5)	7 (6)	8 (7)
NUMBER OF MEMBERS BETWEEN 0 AND 4 YEARS OLD	0.0354*** (0.067)	-1.275 (2.362)	-5.119 (3.461)	-4.478 (5.020)	-4.013 (5.000)	-4.889 (4.999)	-3.778 (4.997)
NUMBER OF DEPENDENT CHILDREN	-0.218*** (0.036)	-0.073 (1.157)	-0.0596 (1.937)	0.198 (2.319)	-1.072 (2.314)	-0.042 (2.314)	-0.553 (2.315)
SOCIOECONOMIC SITUATION	-0.090** (0.037)	18.759*** (2.862)	41.031*** (1.428)	59.214*** (0.834)	59.411*** (1.501)	58.019*** (1.434)	56.855*** (1.351)
Constant	-2.640*** (0.072)	-64.609*** (9.097)	-162.202*** (4.872)	-268.194*** (0.146)	-264.900*** (8.509)	-257.770*** (7.685)	-251.324*** (6.412)
Akaike Inf. Crit	17,058.290	17,058.290	17,058.290	17,058.290	17,058.290	17,058.290	17,058.290

Note: * $p<0.1$; ** $p<0.05$; *** $p<0.01$

Regarding the multinomial model, we see that even though there are 8 categories, only 7, that's because the last category coefficient (Another situation of economic inactivity), can be extracted from the coefficients of the other 7.

The variable of the number of members between 0 and 4 years old has a positive effect on the first category (working at least one hour), and a negative effect for the remaining categories, indicating that households with female breadwinners that have members between 0 and 4 years old have more propensity to be working at least one hour by 0.354 units.

This is the opposite for the number of dependent children, due to that it has a negative effect for all categories, except for category 4 (retired). The variable of the socioeconomic situation has a negative effect on the first category and for the remaining ones a positive, meaning that for each unit that increases in the socioeconomic situation, the log odds of working at least one hour decrease by 0.090 units.

4.2 Economic consequences on household finances.

Table 5: Multiple Regression Model: Economic consequences on household finances taking into account both men and women

Dependent variable				
Logarithmic Annual Income of the Household				
Variable	Coef.	Std. Error	Sig.	
GENDER	-0.003	0.001	***	
NUMBER OF MEMBERS BETWEEN 0 AND 4 YEARS OLD	-0.002	0.005		
NUMBER OF DEPENDENT CHILDREN	0.019	0.002	***	
LOGARITHMIC ANNUAL INCOME OF THE MAIN BREADWINNER	0.932	0.005	***	
Constant	1.005	0.045	***	

Observations 24,334
R2 0.646
Adjusted R2 0.646
Residual Std. Error 0.333 (df = 24329)
F Statistic 11,096.740*** (df = 4; 24329)

Note: * $p<0.1$; ** $p<0.05$; *** $p<0.01$

In this model, we also check for autocorrelation, and given the following results we can assure there's none.

```
Durbin-Watson test
data: model
DW = 2.0121, p-value = 0.8274
alternative hypothesis: true autocorrelation is greater than 0
```

When looking at the income of the whole household, as with the income of the sole provider, being a female decreases it, but in this case, having members between 0 and 4 years old has no significant effect on annual income, due to the model shows a p-value higher than 0.1. With the variable of dependent children, the income increases by approximately 0.019 units. In the case of the logarithmic income of the sole provider, it's a positive relationship where each unit increase of the logarithmic income of the main breadwinner increases by approximately 0.932 units. The variance

in logarithmic annual income is explained by the independent variables by 64.6% as the R-squared indicates, while the residuals standard error shows an average deviation of 0.333 from the predicted values. Overall, this model is statistically significant as the F-statistic test coefficient shows.

We also run a model without the variable of gender, to see the differences and compare which one fits better

Table 6: Multiple Regression Model: Economic consequences on household finances taking into account only women

Dependent variable				
Logarithmic Annual Income of the Household				
Variable	Coef.	Std. Error	Sig.	
NUMBER OF MEMBERS BETWEEN 0 AND 4 YEARS OLD	0.052	0.011	***	
NUMBER OF DEPENDENT CHILDREN	0.024	0.005	***	
LOGARITHMIC ANNUAL INCOME OF THE MAIN BREADWINNER	0.963	0.008	***	
Constant	0.678	0.074		
<hr/>				
Observations 8,163				
R2 0.663				
Adjusted R2 0.663				
Residual Std. Error 0.353 (df=8159)				
F Statistic 5,350.534*** (df = 3; 8159)				

Note: * $p<0.1$; ** $p<0.05$; *** $p<0.01$

When looking at the autocorrelation, this model neither has it, but it has a lower p-value than the one with the gender included. The opposite of what happened with the annual income of the main provider

```
Durbin-Watson test
data: model
DW = 1.9713, p-value = 0.09702
alternative hypothesis: true autocorrelation is greater than 0
```

In this second model, the goodness of fit increases, and the variable of the number of members that are between 0 and 4 years old becomes significant in a positive way, added to the number of dependent children, suggesting that the more members between 0 and 4 years old, and the more dependent children, the higher the income.

Conclusions

After all the analysis and research done, this study shows how being a woman means having a lower income compared to men, even without having any children, specifically, there's a 17,48% salary gap taking into account the years 2016 to 2021. When looking at female main providers, the ones with young children (0-4 years old) have a significantly lower annual income, suggesting challenges in balancing work and caregiving, but the opposite happens when looking at the annual income of the household, where it increases with young children and also with having dependent children, possibly due to the increase of financial support.

Also, the multinomial model revealed that households with young children are more likely to be working at least one hour, but these same households also face challenges in other economic activity categories, while the socioeconomic situation negatively impacts the likelihood of working at least one hour, possibly due economic constraints on work participation. Regarding occupations and workdays, they are associated with varying levels of annual income.

Overall, these findings show the importance of the implementation of policies that promote gender equality in the workplace, affordable childcare, and how companies should offer flexible work options to support working mothers. Taking into account these issues, the negative effects of motherhood on a woman's career and family finances can be mitigated and increase the family's economic well-being in Spain.

References

Acker, J. (2006). Inequality Regimes Gender, Class, and Race in Organizations. *Gender and Society*, 20(4), 441–464.

BOE-A-1999-21568 Ley 39/1999, de 5 de noviembre, para promover la conciliación de la vida familiar y laboral de las personas trabajadoras. (n.d.). Retrieved from <https://www.boe.es/buscar/act.php?id=BOE-A-1999-21568>

BOE-A-2019-3244 Real Decreto-ley 6/2019, de 1 de marzo, de medidas urgentes para garantía de la igualdad de trato y de oportunidades entre mujeres y hombres en el empleo y la ocupación. (2019, March 1). Retrieved from <https://www.boe.es/eli/es/rdl/2019/03/01/6>

Becker, G. S. (1985). Human Capital, Effort, and the Sexual Division of Labor. *Journal of Labor Economics*, 3(1), S33–S58.

de Quinto, A., Hospido, L., & Sanz, C. (2021). The child penalty: Evidence from Spain. *SERIES*, 12(4), 585–606. <https://doi.org/10.1007/s13209-021-00241-9>

Dominguez-Folgueras, M., González, M. J., & Lapuerta, I. (2022). The Motherhood Penalty in Spain: The Effect of Full- and Part-Time Parental Leave on Women's Earnings. *Social Politics: International Studies in Gender, State & Society*, 29(1), 164–189. <https://doi.org/10.1093/sp/jxab046>

Esping-Andersen, G. (Ed.). (2007). *Family formation and family dilemmas in contemporary Europe*. Fundacion BBVA.

Greenhaus, J. H., & Beutell, N. J. (1985). Sources of Conflict between Work and Family Roles. *The Academy of Management Review*, 10(1), 76–88. <https://doi.org/10.2307/258214>

Hochschild, A. R., & Machung, A. (1989). *The Second Shift: Working Parents and the Revolution at Home*. Viking.

Hupkau, C., & Ruiz, J. (2021). EsadeEcPol Brief #6 Marzo 2021. https://www.esade.edu/ecpol/wp-content/uploads/2021/03/EsadeEcPol_Brief_Conciliacion.pdf

Productos y Servicios / Publicaciones / Publicaciones de descarga gratuita. (n.d.). Retrieved April 20, 2024,

from

https://www.ine.es/ss/Satellite?L=es_ES&cc=INESeccion_C&cid=1259925408327&p=1254735110672&pagename=ProductosYServicios%2FPYSLLayout¶m3=1259926137287

Sevilla-Sanz, A., Gimenez-Nadal, J. I., & Fernández, C. (2010). Gender Roles and the Division of Unpaid Work in Spanish Households. *Feminist Economics*, 16(4), 137–184.

<https://doi.org/10.1080/13545701.2010.531197>

Wood, W., & Eagly, A. H. (2012). Chapter two—Biosocial Construction of Sex Differences and Similarities in Behavior. In J. M. Olson & M. P. Zanna (Eds.), *Advances in Experimental Social Psychology* (Vol. 46, pp. 55–123). Academic Press. <https://doi.org/10.1016/B978-0-12-394281-4.00002-7>

Appendix

Table 7: Summary Statistics

NMIEM7	IMPEXACAN	GASTOTANNUAL	SEXOSP	JORNADASP	NNINOSD
Min. :0.0000	Min. : 720	Min. : 1191	Min. :1.000	Min. :1.000	Min. : 0.000
1st Qu.:0.0000	1st Qu.: 17400	1st Qu.: 20078	1st Qu.:1.000	1st Qu.:1.000	1st Qu.: 0.000
Median :0.0000	Median : 25596	Median : 28384	Median :1.000	Median :1.000	Median : 1.000
Mean :0.1733	Mean : 29383	Mean : 32260	Mean :2.677	Mean :1.077	Mean : 0.916
3rd Qu.:0.0000	3rd Qu.: 36000	3rd Qu.: 40073	3rd Qu.:6.000	3rd Qu.:1.000	3rd Qu.: 2.000
Max. :4.0000	Max. :264996	Max. :189311	Max. :6.000	Max. :2.000	Max. :10.000
SITUACTSP	SITSOCIRE	OCUPA	IMPEXACSPAN		
Min. :1.000	Min. :1.000	Min. :0.000	Min. : 600		
1st Qu.:1.000	1st Qu.:1.000	1st Qu.:3.000	1st Qu.: 13200		
Median :1.000	Median :2.000	Median :5.000	Median : 17880		
Mean :1.052	Mean :1.683	Mean :4.928	Mean : 19987		
3rd Qu.:1.000	3rd Qu.:2.000	3rd Qu.:7.000	3rd Qu.: 24000		
Max. :2.000	Max. :3.000	Max. :9.000	Max. :216000		

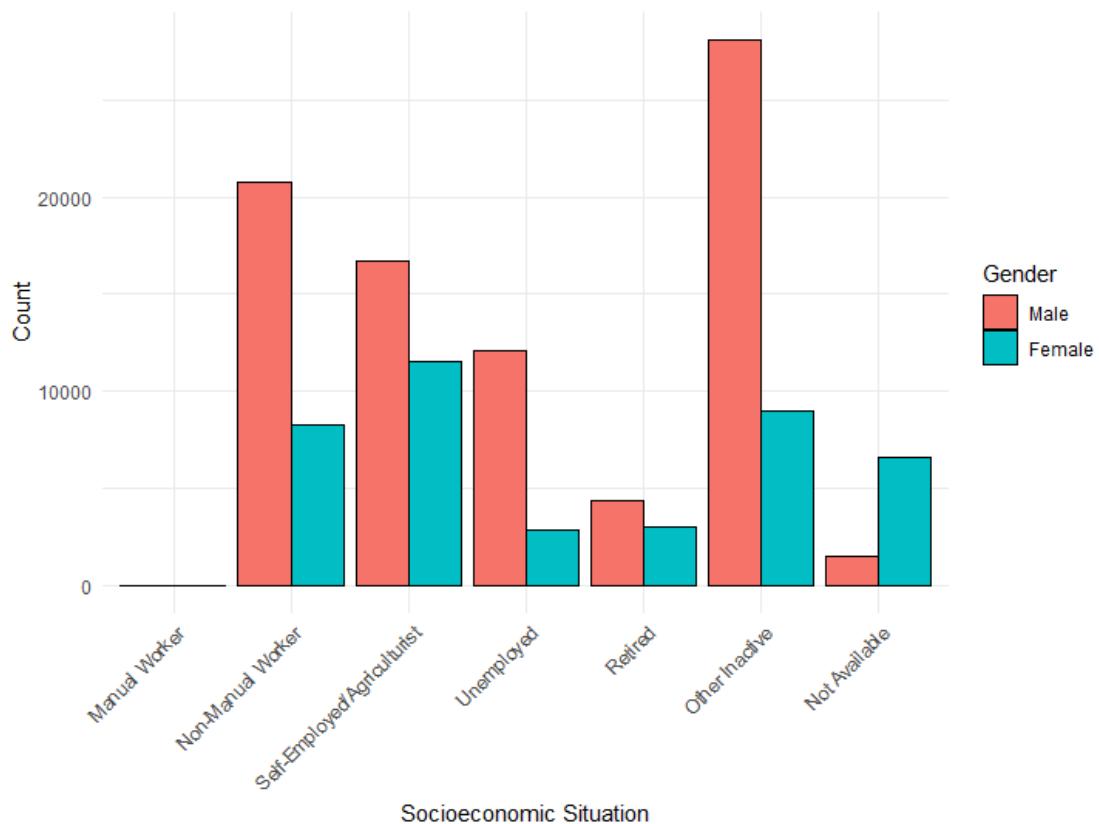


Figure 5: Socioeconomic Situation of the main Breadwinner by Gender

Parameter Estimates					
Term	Estimate	Std Error	t Ratio	Prob> t	VIF
Intercept	295,97907	26,20124	11,30	<.0001*	.
IMPEXAC	0,1398739	0,00263	53,19	<.0001*	1,2162066
NNINOSD	5,2516847	3,668872	1,43	0,1523	1,1595274
NMIEM7	-18,21882	8,349057	-2,18	0,0291*	1,1451476
SITUACTSP	5,8251769	15,9565	0,37	0,7151	1,0020921
JORNADASP	-37,93771	14,1533	-2,68	0,0074*	1,0355815
OCUPA	-12,23209	1,494819	-8,18	<.0001*	1,1771182

Figure 6: Variance Inflation Factor test

Table 8: Multiple Regression Model: Changes in Women's Earnings taking into account both Men and Women

Dependent variable:		
----- log_IMPEXACSPAN -----		
SEXOSP	-0.026***	
	(0.001)	
NMIEM7	-0.070***	
	(0.006)	
NNINOSD	0.045***	
	(0.003)	

OCUPA	-0.087*** (0.001)
JORNADASP	-0.520*** (0.010)
Constant	10.816*** (0.011)

Observations	24,345
R2	0.353
Adjusted R2	0.352
Residual Std. Error	0.387 (df = 24339)
F Statistic	2,650.781*** (df = 5; 24339)
=====	
Note:	*p<0.1; **p<0.05; ***p<0.01

Table 9: Multiple Regression Model: Changes in Women's Earnings taking into account only Women

=====	
Dependent variable:	

log_IMPEXACSPAN	

SEXOSP	

NNIEM7	-0.071*** (0.012)
NNINOSD	0.048*** (0.005)
OCUPA	-0.099*** (0.002)
JORNADASP	-0.465*** (0.012)
Constant	10.650*** (0.015)

Observations	8,168
R2	0.434
Adjusted R2	0.433
Residual Std. Error	0.385 (df = 8163)
F Statistic	1,561.882*** (df = 4; 8163)
=====	
Note:	*p<0.1; **p<0.05; ***p<0.01

Table 10: Multinomial Logistic Regression Model: Changes in Women's Labor Force Participation Taking into account only Women

Dependent variable:							
	2 (1)	3 (2)	4 (3)	5 (4)	6 (5)	7 (6)	8 (7)
NMIEM7	0.354*** (0.067)	-1.275 (2.362)	-5.119 (3.461)	-4.478 (5.020)	-4.013 (5.000)	-4.889 (4.999)	-3.778 (4.997)
NNINOSD	-0.218*** (0.036)	-0.073 (1.157)	-0.596 (1.937)	0.198 (2.319)	-1.072 (2.314)	-0.042 (2.314)	-0.553 (2.315)
SITSOCIRE	-0.090** (0.037)	18.759*** (2.862)	41.031*** (1.428)	59.214*** (0.834)	59.411*** (1.501)	58.019*** (1.434)	56.855*** (1.351)
Constant	-2.640*** -251.324*** (0.072)	-64.609*** (9.097)	-162.202*** (4.872)	-268.194*** (0.146)	-264.900*** (8.509)	-257.770*** (7.685)	-257.770*** (6.412)
Akaike Inf. Crit. 17,058.290 17,058.290 17,058.290 17,058.290 17,058.290 17,058.290 17,058.290							
17,058.290							

Note: *p<0.1; **p<0.05; ***p<0.01

Table 11: Multiple Regression Model: Economic consequences on household finances taking into account both men and women

Dependent variable:	
	log_IMPEXACAN
SEXOSP	-0.003*** (0.001)
NMIEM7	0.002 (0.005)
NNINOSD	0.019*** (0.002)
log_IMPEXACSPAN	0.932*** (0.005)
Constant	1.005*** (0.045)
Observations	
R2	0.646
Adjusted R2	0.646
Residual Std. Error	0.333 (df = 24329)
F Statistic	11,096.740*** (df = 4; 24329)

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 12: Multiple Regression Model: Economic consequences on household finances taking into account only women

Dependent variable:	

	log_IMPEXACAN

NMIEM7	0.052*** (0.011)
NNINOSD	0.024*** (0.005)
log_IMPEXACSPAN	0.963*** (0.008)
Constant	0.678*** (0.074)

Observations	8,163
R2	0.663
Adjusted R2	0.663
Residual Std. Error	0.353 (df = 8159)
F Statistic	5,350.534*** (df = 3; 8159)
=====	

Note:

*p<0.1; **p<0.05; ***p<0.01