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Child Care Prices and Female Labour Force Participation: A Meta-Analysis

Yusuf Emre Akgunduz
Janneke Plantenga

Universiteit Utrecht

Utrecht School of Economics

Tjalling C. Koopmans Research Institute
Utrecht School of Economics
Utrecht University

Janskerkhof 12
3512 BL Utrecht
The Netherlands
telephone +31 30 253 9800
fax +31 30 253 7373
website www.koopmansinstitute.uu.nl

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How to reach the authors

Please direct all correspondence to the first author.

Yusuf Emre Akgunduz
Janneke Plantenga
Utrecht University
Utrecht School of Economics
Janskerkhof 12
3512 BL Utrecht
The Netherlands.
E-mail: y.e.akgunduz@uu.nl
j.plantenga@uu.nl

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Utrecht School of Economics
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Abstract

The empirical findings for the labour force participation elasticity with regards to child prices are varied. While some estimates imply substantial participation gains from child care subsidies, others find insignificant effects from child care prices on participation decisions. This paper analyzes the elasticity sizes using estimates from 37 peer-reviewed articles and working papers in the literature. Using meta-analysis tools, we attempt to provide a weighted elasticity estimate and variation between countries and over time. The results suggest that the elasticity size has a positive inverse U-shaped relationship with aggregate labour force participation, and decreases with higher rates of part-time work and social spending. The findings imply that the impact of changes in child care prices and success of child care subsidy policies are correlated with aggregate level factors.

Keywords: Child care, female labour force particiaption and meta-analysis

JEL classification: J13, J18, J21

1. Introduction

Child care subsidies, generally defined as any financial support towards the use of formal child care services, have long been a staple of developed welfare states. It is an attractive policy option, given that it can serve both reallocation goals favoring young adults and parents, and efficiency goals through increased female labour force participation and fertility.[1] To test the benefits of child care subsidies actually exist, since the late 1980s, a sizable body of literature appeared estimating the elasticity of female labor supply with regards to child care prices. This paper provides a meta-analysis of this literature, both to calculate a reliable elasticity estimate and to explain the underlying causes for the variance in estimated elasticity sizes.

A puzzle arises when considering the empirical findings over time and across countries. While earlier studies, such as Blau and Robins (1988), find a large elasticity of labour force participation with regards to child care prices in the United States, there is a large variation in results when more recent studies from USA and also Europe are taken into account. These findings inevitably challenge the hypotheses relating high female labour participation with child care subsidies. As opposed to American studies, Jongen (2009) finds very small effects of child care prices on labour supply of Dutch women, and comments that the gains are not worth the increase in taxes required to support subsidies. A striking example of variance over time can be seen in Sweden. The elasticity values calculated in 1992 by Gustaffson and Stafford average out to about -0.5 while Lundin et. al (2008) find almost no significant effects of child care prices on labour force participation.

A number of explanations can and have been offered for the variation in elasticity sizes. Estimation differences such as the methodology used or sample

[1] See Blau and Robins (1988), Ribar (1992) for theoretical discussions on the effects of child care prices on labour supply.

characteristics can account for some of the differences. Perhaps of bigger interest is how macro level variables influence the effect child care prices have on labour force participation. Analyzing the effects of child care subsidies in different settings can help in understanding when and where they would be most effective (or ineffective). This paper analyzes the impact of three basic aggregate indicators: female labour force participation, part-time work incidence and social spending. The sample collected allows for an analysis of estimates from 12 countries and around 30 years.

The rest of the paper is organized as follows. Section 2 puts forward three hypotheses relating to macro level variables. Section 3 introduces the meta-sample of 38 articles that were collected, section 4 presents preliminary statistical results; calculating a weighted effect size, testing for heterogeneity in the sample and checking for publishing bias. Section 5 tests the viability of the hypotheses by using meta-regressions aimed at explaining the variation within elasticity estimates in the literature.

2. Hypotheses

One implicit explanation for the differences in the sizes of the elasticity over time is from Lundin et al. (2008). The authors argue both that further reductions in care prices have diminishing effects, and that high labour supply countries are unlikely to see significant changes from shifting prices. Countries with high female labour force participation are more likely to either have cheap and readily available formal child care or make use of alternative informal care arrangements, both of which will diminish the effects of further reductions in child care prices. Furthermore, if other structural factors, such as the wage structure or working hour flexibility, contribute to

high female employment, the effect of the child care prices on decision making may be limited.

Somewhat paradoxically, low participation figures can also signal characteristics that lead to smaller elasticity sizes. Cultural or structural impediments have been shown to constrain the impact of child care (Van Gameren and Ooms, 2010). Using European data, Van der Lippe and Siegers (1994) find that women in very traditional networks are unlikely to respond to changes in wages. As child care subsidies are a similar incentive, its effects can be influenced by social norms and the definition of gender roles. Cross country comparisons support this point. Results from a low female employment economy, Italy, and a transitional economy, Romania, are on the lower end of elasticity estimates in the literature (Del Boca et. al 2004; Loshkin and Fong, 2000). The two observations relating participation rates and child care prices are summed up in hypothesis 1.

- ***Hypothesis 1:*** *Female labour force participation has an inverse U-shaped relation with the elasticity of labour supply with regards to child care prices.*

The substitution of informal care for formal care is an intuitive explanation for why previous literature reviews find that the price elasticity of demand for formal child care is much larger than the labour supply elasticity with regards to child care (Blau and Currie, 2003). This is most evident in the "part-time economy" of the Netherlands where estimates are uniformly smaller or insignificant compared to the rest of the literature (Jongen, 2010; Weitzels, 2005). Although parents opt for more formal child care in the Netherlands when prices are decreased, this simply crowds out informal care without having an effect on participation decisions. The availability of informal child care for shorter periods of time can allow for a greater substitutability between formal and informal child care in countries with high part-

time work rates. As a result, hypothesis 2 predicts that the correlation between elasticity sizes and part-time incidence is negative.

- ***Hypothesis 2:*** *An increase in the share of part-time work leads to a smaller elasticity of labour supply with regards to child care prices.*

The differences in estimate sizes between Europe and USA are striking: European estimates are mostly around 0.1 while American estimates tend to be much larger. The variation in social spending and its implications for inequality and child care choices may be one explanation for the difference in elasticity sizes. When estimating the elasticity size, a one percent increase in a constant child care price will be a smaller part of earnings for high income parents and vice versa for low income parents. The difference in the effect is even larger when a concave utility function with diminishing marginal returns from wages is considered. With low earnings, elasticity will be higher as child care prices become a larger proportion of wages and an increase in prices has a larger absolute impact on utility received from work. Kimmel (1995) notes the prevailing notion that high child care costs are a much bigger obstacle to employment for low income mothers. Thus, higher dispersion in wages may lead to the use of market provided child care by a relatively small share of high income mothers. This implies a relationship between the effects of child care prices and inequality in a country. If social spending decreases inequality and hence the amount of low income households, it would also lead to smaller elasticity sizes. While its hypothesized effects rely mostly on inequality, social spending is preferred over more direct measures such as the Gini coefficient because social spending can be an indicator for more than income inequality. With generous non-pecuniary benefits (most prominently parental leave) the impact of child care prices in decision making can be lower for all parents. Overall, a compressed income setting and non-pecuniary

benefits will lower the aggregate opportunity cost of having children, and therefore the effect of child care prices.

- ***Hypothesis 3:*** *Higher social spending leads to a smaller elasticity of labour supply with regards to child care prices.*

The hypotheses listed above are intuitive and provide a good starting point for analyzing the cross country and time variation of estimates. The following meta-analysis gives the opportunity to check whether or not the intuition holds up to the empirical evidence. In terms of the indicators for labour force participation, part-time incidence and social spending, the values used are from the year and country of the sample the estimate of elasticity is from. For studies with panel data or pooled data across years, the median years' values are used.

2. Meta Sample

The sample is collected in three steps to avoid missing any relevant articles. First, the Google Scholar search engine was used, searching for the key phrase "labour supply child care elasticity." Second, the references of several articles were scanned. Third, the literature reviews of Blau and Currie (2003) and the literature review section of Worlich (2006) were used, the former for studies on USA and Canada, and the latter for studies from Europe. In total around 50 articles were considered and 38 estimates are included in the final sample from 34 different articles. The majority of the studies consider labour supply as labour force participation rather than weekly or annual hours worked. The studies that did use hours worked had to be eliminated since the comparison of the two is not possible in terms of the elasticity sizes. The remaining articles and estimates used in this paper are listed in table 1. The sample is made up of nine working papers, indicated with italic writing in table 1, and 25 articles from peer-

reviewed journals. The number of working papers investigating the elasticity is fairly high mostly due to the understandable policy interest.

From each article, we collected the calculated elasticity, standard errors, year of the data used, country and the data source. In terms of the methodology, the estimation procedures were checked to see whether or not a dynamic panel regression was used and if a multinomial model was employed. Articles using pooled data from several years are not considered to be panel studies. As for the sample characteristics, estimates from a full sample of married or single women are categorized differently. Finally, several results are based on samples of low-income mothers and these too are controlled for.

Table 1: Meta-Sample

Authors / Publishing Year	*Elasticity*	*Standard Error**	*Year*	*Country*	*Panel*	*Data Source*
Gong et al. (2010)	-0.287	0.07	2006	Australia	0	HILDA
Doiron and Kalb (2002)	-0.05	**0.03**	1997	Australia	0	CCS SIHC
Doiron and Kalb (2002)	-0.136	**0.07**	1997	Australia	1	CCS SIHC
Powell (2002)	-0.2268	0.10	1988	Canada	0	CNCCS
Baker et al. (2005)	-0.236	0.06	1998	Canada	***1***	NLSCY
Cleveland et al. (1996)	-0.388	0.19	1988	Canada	0	CNCCS
Worlich (2004)	-0.025	**0.01**	2002	Germany	0	SOEP
Worlich (2006)	-0.02	**0.01**	2002	Germany	0	SOEP
Beblo et. al (2005)	-0.19	**0.10**	2002	Germany	0	SOEP
Del Boca et. al (2004)	-0.004	0.01	1998	Italy	0	Bank of Italy
Wetzels*** (2005)	0	0.07	1995	Netherlands	0	AVO
Gameren and Ooms (2008)	0.073	0.42	2004	Netherlands	0	SCP
Jongen (2010)	-0.025	**0.01**	2008	Netherlands	0	Simulation
Jongen (2010)	-0.07	**0.04**	2008	Netherlands	0	Simulation
Kornstad and Thoresen (2007)	-0.12	**0.06**	1998	Norway	0	IDS
Jaumotte (2003)	-0.05	0.03	1992	OECD	1	OECD
Loshkin and Fong (2000)	-0.17	0.06	1999	Romania	0	RCCES

Loshkin (2004)	-0.12	0.04	1995	Russia	0	RLMS
Gustaffson Stafford (1992)	-0.4675	**0.24**	1984	Sweden	0	HUS data
Lundin et. al (2008)	-0.0019	0.00	2002	Sweden	1	Statistics SE
Jenkins and Symons (2001)	-0.09	0.04	1989	UK	0	LPS
Viitanen (2005)	-0.138	0.03	2000	UK	0	FRS
Blau and Robins (1988)	-0.38	**0.19**	1980	USA	0	EOPP
Conelly (1992)	-0.2	0.13	1984	USA	0	SIPP
Ribar (1992)	-0.74	0.14	1984	USA	0	SIPP
Anderson (1999)	-0.511	**0.26**	1997	USA	0	SIPP
Anderson (1999)	-0.463	**0.24**	1997	USA	0	SIPP
Baum (2002)	-0.349	0.12	1991	USA	1	NLSY
Blau and Robins (1991)	-0.028	0.03	1984	USA	1	NLSY
Han and Waldfogel (2001)	-0.35	0.13	1992	USA	0	SIPP
Han and Waldfogel (2001)	-0.6	0.20	1992	USA	0	SIPP
Hotz and Killburn (1992)	-0.0494	0.08	1986	USA	0	NLSY
Kimmel (1995)	-0.346	**0.18**	1988	USA	0	SIPP
Kimmel (1998)	-0.219	0.49	1987	USA	0	SIPP
Kimmel (1998)	-0.923	*0.29*	1987	USA	0	SIPP
Blau Hagy (1998)	-0.2	**0.10**	1990	USA	0	NCCS

Tekin (2007)	-0.133	**0.08**	1997	USA	0	NSAF
Ribar (1995)	-0.088	0.04	1984	USA	0	SIPP
Michalopoulos and Robins (2000)	-0.259	0.11	1989	USA/Canada	0	CNCCS
Michalopoulos and Robins (2002)	-0.156	0.07	1989	USA/Canada	0	CNCCS

* Bold standard errors are imputed based on a 5% significance level. Bold author names indicate working papers.

** Only significance of 1% is reported, standard errors calculated based on a t-statistic of 2.32. Macro level indicators used are the averages of United States and Canada since the sample used is pooled.

*** Elasticity not calculated, only insignificance of the effect of prices on labour supply reported.

While using the estimated elasticity rather than a regression coefficient as the effect size makes a comparison between studies convenient, a number of studies calculate the elasticity based on regression coefficients. Hence, there is often no direct standard error available to use as a precision factor. In many of these cases, the t-statistic of the regression coefficient used to calculate the price elasticity could be transformed to impute the standard error. However, in some cases, even this is not possible because utility derived from each activity such as work and leisure is calculated based on a regression analysis and a simulation model is used afterwards to check for the elasticity. When the standard error was missing, a significance of 5% is assumed and the standard error imputed from the t-statistic. Later, robustness checks are performed using an assumed significance level of 10% and 1%. These imputed standard errors are marked in table I.

A final methodological issue that any meta-analysis needs to discuss is the independence assumption, requiring that the estimates are from different samples. Satisfying this assumption involves a trade-off as fewer estimates can be included or averages of estimates from the same sample need to be used which results in loss of information. Generally, we use one estimate from each article to avoid issues with this assumption. In four cases, multiple estimates are drawn from a single article but different subsamples are used. However, especially in the case of American studies, many articles use the same data source. Fortunately, these are mostly from different years, with the exception of Ribar (1992) and Ribar (1995), which use different methodologies that are controlled for. The issue is exacerbated only in the three studies from Germany which use the same data source from the same year. This is dealt with in the meta-regression of section 5 by taking the average of the three calculated elasticity values.

3. Effect Sizes, Heterogeneity, Independence and Publishing Bias

Before moving onto the meta-regression and decomposing the elasticity estimates, several weighted mean effect sizes are calculated and the heterogeneity in the sample discussed. The standard method weighting each study is to use the inverse of squared standard errors (Wolf, 1986). Using these weights, weighted means can be manually calculated with little difficulty. This is the usual approach in calculating what is called "fixed effect" sizes. The assumption in fixed effect sizes is that there is no heterogeneity in the sample and if each study had an infinite number of observations, the resulting elasticity estimates would have been equal. Clearly, this is an extremely strong assumption. The heterogeneity of the sample can be checked by using what is called a Q-statistic[2] which has a chi-square distribution with degrees of freedom equaling the number of effect sizes minus one. In cases where heterogeneity is found, a random effect size incorporating greater flexibility can be calculated instead. In this case, the weights used are calculated by taking the inverse of squared standard errors plus a variance component representing the variation across the sample of effect sizes (Wilson, 1999). This means that imprecise studies (those with high standard errors) gain more weight while effect sizes with small standard errors lose weight. In table 2, both random and fixed effect sizes as well as the Q-statistic for heterogeneity is presented both for the entire sample and a subsample of American studies. The purpose of taking the American subsample is to see whether or not the heterogeneity is caused by identifiable differences between studies. American studies simply happen to be the largest subsample from a single country in the meta-sample.

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[2] $Q = \sum (w * ES^2) - \frac{\sum (w * ES)^2}{\sum w}$ Where w are weights and ES are effect sizes.

Table 2: Weighted Means and Q-Statistics

	Full Sample	USA Studies Only
Fixed ES	-0.03	-0.16
Random ES	-0.12	-0.38
Q-Statistic (ρ-value)	193.28	59.44

* All values are significant $\rho < 0.01$

According to table 2, the Q-statistics for both the full sample and the subsample of American studies are significant. This is not surprising given the wide variety in methodology, sample characteristics and contexts the studies were done in. The strong significance of the Q-statistic for even the American subsample implies that there is substantial heterogeneity among the results that the meta-regression may explain. It also gives support for the random effect size to be preferred over the fixed effect size. Considering those, the weighted mean elasticity is given as -0.12 in the full sample and -0.38 for American studies. The visibly large difference in fixed and random effect sizes is because studies with large standard errors also have larger elasticity estimates. While using random effects, these studies with larger elasticity estimates are designated a higher weight, leading to a larger weighted effect size estimate. The use of random effect is also preferred in this particular meta-analysis because a large number of standard errors used to weigh estimates are imputed rather than extracted from the articles themselves.

A further issue raised about meta-analyses in general is publishing bias or what is called a "file drawer effect." The basic argument is that only studies that find significant effects or confirm the existing theoretical predictions are published while

the rest are left in a file drawer (Wolf, 1986). In the present sample, an Egger test was performed to check for skewness of estimates. The Egger test regresses normalized effect sizes, calculated by dividing the effect sizes with the standard errors, with the precision factor, which is the inverse of the standard error squared (Egger, 1997). The results show significant bias towards negative estimates, but it is unclear whether or not this is due to publishing bias or the heterogeneity of the sample and the imputed standard errors. Considering the large number of working papers, the latter two explanations seem more plausible than genuine publishing bias.

4. Meta-Regression: Testing the Hypotheses

In this section, the macro level hypotheses of section 2 are tested using meta-regressions. Based on the significant Q-statistics, we employ a random effects model that allows for heterogeneity between the estimates. The regression equation estimated is given below:

$$\beta = X'\gamma + Z'\phi + \varepsilon_i + v_i \quad (1)$$

In equation (1), β is the elasticity estimate of each study, X are several control variables relating to sample and methodological characteristics, and Z represents the macro level variables. The total residual is made up of two parts, ε_i is the error term while v_i is the between study variance component. To control for sample differences, indicator variables are added for studies that estimate effects for only low income, married or single women. Methodological choices, the use of multinomial or panel models, are also controlled for.

Figures for female labour force participation and the incidence of part-time workers among employed women have been retrieved from OECD (2010) statistics. The labour force participation values are for women between the ages 15 and 64.

There are a few years missing in the data for incidence of part-time work in various countries, for these the closest possible year is used instead. Interpolating for part-time is avoided since it correlates and varies with business cycles (Buddelmeyer et al., 2004). OECD data is also used for social spending expenditures as a share of GDP. Unfortunately, data is given for every five years until 2000. Once again, the closest possible year's value is used for cases where data is not available. Appendix B provides a robustness check for the estimates based on interpolations for missing years derived from the rate of change in the available bi-decal data. Table 3 provides summary statistics for all variables and table 4 shows the correlation between macro level indicators.

Table 3: Summary Statistics of Meta-Regression Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Effect Size	38	-0.23	0.22	-0.92	0.07
Standard Error	38	0.12	0.11	0.04	0.49
LFP	38	66.69	5.55	47.90	78.60
Part-Time (% Employment)	38	28.53	13.03	4.70	60.20
Social Spending* (%GDP)	37	17.19	4.42	13.10	29.50

* Missing data for Loshkin (2004) from Russia

Table 4: Correlation Matrix for Aggregate Variables

	LFP %	Part-Time (% Employment)	Social Spending* (%GDP)
LFP	1		
Part-Time (% Employment)	0.15	1	

Social Spending (%GDP)	0.32	0.43	1

* Missing data for Loshkin (2004) from Russia.

** For Frog and Loshkin (2005), the value used for social spending is from EUROSTAT and 2005 rather than OECD.

Table 5: Determinants of Elasticity Sizes

	Model I	**Model II**	**Model III**
Married	-0.10 (0.05)*	-0.04 (0.06)	-0.07 (0.05)
Single	-0.09 (0.06)	-0.01 (0.07)	-0.06 (0.06)
Multinomial	0.14 (0.06)**	0.13 (0.07)*	0.16 (0.06)**
Panel	0.09 (0.05)	0.04 (0.06)	0.09 (0.05)*
Low Income Sample	0.04 (0.09)	-0.06 (0.1)	-0.02 (0.09)
Part-Time	0.008 (0.002)***		0.01 (0.002)***
LFP	-0.11 (0.04)***		-0.06 (0.05)**
LFP^2	0.001 (0.0003)***		0.0004 (0.0004)**
Social Spending (% of GDP)		0.02 (0.01)***	0.01 (0.01)
R^2	35.09%	14.7%	47.37%
N	38	37	37

Results for three separate regression fits are presented in table 5. Note that the elasticity values are negative meaning that negative coefficients imply a larger

elasticity and vice versa. Model I includes the full sample of 38 estimates and macro level variables for part-time work, labour force participation and labour force participation squared. An additional control is added in this case for the study of Loshkin (2004) from Russia because it is an outlier with the 4% part-time incidence rate. The Loshkin (2004) article is dropped in models II and III due to missing data for social spending. It is difficult to interpret the methodological or sample characteristic controls because several of them are based on a very small number of observations. A Wald test on the labour force participation variables reveals significance at the 1% level, meaning that both part-time and labour force participation have a significant effect on the elasticity estimate. Hypothesis 1 receives support as the relationship between the elasticity size and participation rate is positive but inverse U-shaped. Appendix A presents the exact effects at different rates of participation according to the coefficients found in model I. The effects of participation on elasticity peak at about 55%, which many developed countries have long surpassed. To put this into the current context, according to OECD statistics (2011), the labour force participation rate among OECD countries was at 61.5% in 2009, while the corresponding value is 65.8% for EU-15 countries.

It is possible to argue for reverse causality based on the coefficients of labour force participation because elasticity values may imply that governments can take advantage of participation responsiveness by increasing child care subsidies and thus participation. Alternatively, higher elasticity values could mean more involvement with the labour market. However, the female participation figure used here is for the entire working age population of women rather than only women in an age group with high fertility who are most likely to be affected by changes in child care prices. Furthermore, while reverse causality argument could be plausible for the negative

effect found, it is not for the diminishing effects. If any quadratic effects were expected at all, the prediction would be to have a convex relationship, such as that of a usual cost function, between participation rates and elasticity sizes if the elasticity size was driving participation rates higher. [3]

Hypothesis 2 also receives support in both models I and III because increased incidence of part-time work is correlated with a smaller elasticity estimate. The studies from the Netherlands could be introducing a spurious correlation here if the low elasticity values found in Dutch studies are due to some other underlying factor. However, Appendix B presents the results for model IIIb which controls for the studies from Netherlands. The estimated effects continue to be positive with higher rates of part-time work being significantly correlated with smaller elasticity sizes, even though the coefficient is unsurprisingly smaller.

Model II and III test for the third hypothesis and include social spending as a percentage of GDP as an independent variable. If participation rate and part-time incidence are not included, model II shows that social spending is indeed significantly correlated with smaller elasticity estimates. Conversely, in model III, including both the participation and part-time incidence variables leads to an insignificant social spending coefficient. In separate, unreported regressions, including only one of part-time incidence of participation rate variables still resulted in significant estimates of effects from social spending. The insignificance in model III may be due to multi-collinearity since, as table 3 shows, social spending is positively and strongly

[3] To clarify this point, consider female participation, P as a quasi-linear function of child care price elasticity, ε, the amount of subsidy, s, and a composite entry representing various other factors influencing participation, X, and writing the function as: $P = (\varepsilon s)^a + X$, where $a < 1$. Solving this for ε yields in turn; $\varepsilon = \frac{(P - X)^{1/a}}{s}$, giving elasticity as a convex function of participation.

correlated with both labour force participation and part-time incidence. Thus, unless omitting part-time work, or labour force participation, leads to a bias in the estimate, hypothesis 3 finds some support.

To control the sensitivity of the results, several robustness checks are performed and reported in Appendix B. In table 6, the same models are fitted where for articles without reported standard errors; a significance level of 10% is used instead of the previous 5%. This is, in effect, a fairly strong sensitivity check as well, since decreasing the weight placed on a large number of articles automatically diminishes the total variance. Neither the signs nor the significances of the institutional variables change as a result except for the less significant effects of social spending in model II. Similarly, in unreported checks, assuming a significance level of 1% was seen to have little effect on the results. Additionally, in table 7, model III is fitted again, using a control for the Netherlands and interpolated values from a trend for missing years in social spending data rather than using the closest year possible. Once again, results do not alter significantly.

5. Discussion

The effects of child care prices on female labour supply is largely agreed and found to be negative despite some recent studies showing smaller or insignificant effect sizes in various countries. This has led to a widespread view of child care subsidies as a rather strong policy tool for increasing female participation. However, the comparison or application of elasticity sizes from and to different countries seems to be an almost futile exercise. While the full meta-sample showed a weighted mean of about -0.12, the American only subsample's weighted mean is -0.38. The underlying reasons for

these differences could help give a better overview of what is being found in micro-level research.

While tentative, the meta-regression results of section 5 show that a portion variation in elasticity sizes can be explained through country level structural factors. Labour force participation rate has a positive yet diminishing relationship with the elasticity size, while part-time work and social spending decrease it. Even if high part-time work and social spending are relatively policy based options that vary largely across countries, labour force participation is rising across all developed and developing countries, implying that price based policies for child care may diminish in effectiveness. The continuing increase in labour force participation and part-time incidence, when combined with the results of this study, explain the time trend towards smaller elasticity findings that is observed in the literature at large. For high participation or high part-time countries like Sweden, Norway or the Netherlands, further policy focus on child care prices appears unproductive. Considering alternatives to costs, such as the quality of care offered, could help induce untapped participation effects. Already, quality of care has been examined in terms of child care demand and supply (Blau, 1998; 2002), but its links to labour supply needs further analysis.

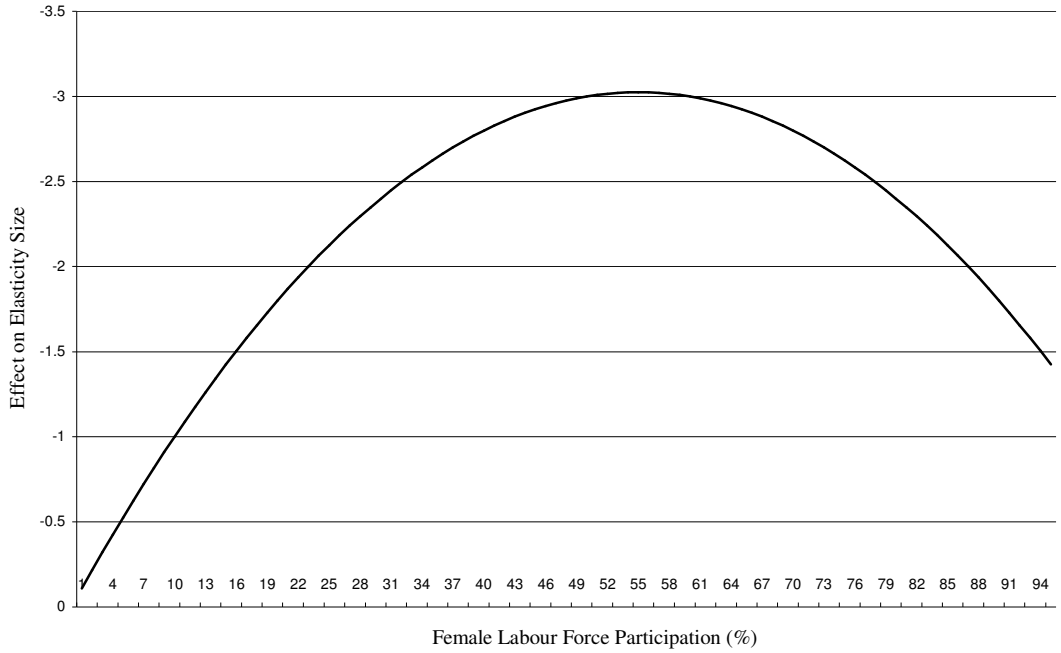
On the other end of the spectrum, in developing countries or countries with low rates of female participation, it appears overly optimistic to base labour market policy and projections on implementing price based policies like child care subsidies. In countries with low female labour market participation, the elasticity is small despite also having relatively lower social spending and part-time rates, owing presumably to more structural and cultural reasons. Simple transplantation of high rate countries'

policies with regards to female participation is unlikely to pay off at the level that it might have for the benchmark countries.

While the sample used in this paper included the more extensive literature that calculates the participation elasticity, questions remain about hours elasticity. The effects of the various macro variables could presumably differ between the external margin, the decision to participate, and the internal margin, the decision to work more or less hours. The effects on the internal margin become even more important when high and increasing part-time rates in some countries are taken into account. As further micro level studies become available using hours elasticity, it should be possible to extend the analysis to how hours elasticity is influenced by the labour market or institutional factors.

Appendix A:

Labour Force Participation Effects



Appendix B

Table 6: Meta-Regression Results with 10% Significance Imputation

	Model Ia	**Model IIa**	**Model IIIa**
Married	-0.15 (0.07)**	-0.03 (0.08)	-0.13 (0.07)
Single	-0.02 (0.08)	0.01 (0.1)	-0.1 (0.08)
Multinomial	0.06 (0.09)	0.10 (0.11)	0.12 (0.08)
Panel	0.05 (0.09)	0.09 (0.11)	0.10 (0.09)
Low Income Sample	0.12 (0.14)	-0.03 (0.16)	-0.02 (0.09)
Part-Time	0.01 (0.002)***		0.01 (0.003)***
LFP	-0.05 (0.04)**		-0.03 (0.05)***
LFP^2	0.002 (0.0003)**		0.0001 (0.0004)***
Social Spending (% of GDP)		0.02 (0.01)*	0.005 (0.01)
Adjusted R^2	30.55%	-9.06%	47.82%
N	38	37	37

* Unreported regressions based on missing standard errors imputed for a significance level of 1%, once again the results change very little.

Table 7: Further Checks; Netherlands Control and Interpolated Social Spending

	Model IIIb*
Married	-0.07 (0.05)
Single	-0.06 (0.06)

Multinomial	0.18 (0.06)***
Panel	0.09 (0.05)
Low Income Sample	0.03 (0.09)
Part-Time	0.01 (0.003)**
LFP	-0.08 (0.05)**
LFP^2	0.005 (0.0004)**
Social Spending (% of GDP)	0.01 (0.01)
Adjusted R^2	41.18%
N	38

* Model III adds a control for studies from the Netherlands to check for changes in the significance of part-time incidence variable as well as changing the social spending indicator to interpolated values from closest available year values.

** No values could be interpolated for social spending for several countries like Romania, since data was insufficient to construct a trend and growth rate.

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