FP7 MULTILINKS Work package 5: Report on the comparative study on intergenerational transfers and women's labour force participation
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Abstract

By using data of seven countries drawn from the Gender and Generation Survey, we study the relationship between mother employment and informal childcare provided by grandparents. Whereas intergenerational support encompasses several dimensions, childcare provided by grandparents is of particular interest. In general, we find that mothers' employment is positively associated with grandparents providing childcare. However, there are important endogeneity issues involved. The key is that preferences of both the middle generation (i.e. the respondent) and the grandparents are unobserved but may impact the outcomes of interest. Moreover, interactions and negotiations taking place between the generations are also unobserved. These kind of endogeneity issues are not well studied nor understood and we provide a preliminary analysis of the issues involved and how to deal with them using simultaneous equations and instrumental variables

Keywords

Female labour market participation, grandparents, child care

1. Introduction

One of the most remarkable transformations of Western societies in recent decades is the rise in female labour force participation. Every indication suggests that female labour force participation is here to stay, and most likely, it will increase in the years to come. Perhaps the most important change female employment entails, is a shift in the gender balance in households and societies, as the traditional breadwinner model is rapidly disappearing in Western countries. The rise of female employment is also vitally important for the sustainability of social protection systems, especially in the context of rapid population ageing (Pagani and Marenzi, 2003).[1] There is consequently considerable interest in understanding the role of female labour force participation in Western societies. Economists normally analyse women's labour supply as a function of their opportunity cost, whereby education and children are critical factors. More recent analyses have focused on how labour supply is linked up with availability of childcare. A substantial part of this analysis takes an economic perspective, where the opportunity cost from the presence of children is somehow taken into account through making corrections for the cost and availability of childcare. However, the majority of these studies are based on specific countries even though the availability of childcare varies tremendously between countries and also regions. Moreover, in many countries, informal childcare is hugely important, and by and large, it is provided by the grandparents. There are therefore important intergenerational relationships that matters for mothers' labour supply decisions, but where the effects depend on the context considered. For instance, one might argue that intergenerational transfers are critical in countries where state welfare is weak and institutional provisions of services are low like in Mediterranean countries. In contrast, they play much less of a role in Social Democratic countries where the state provides generous support both in terms of caring for the elderly and for the young and where gender equality is strongly promoted.

The study of women's participation to the labour market is particularly relevant in light of the cultural changes having taken place in the European region. Increasingly, women invest in education with the consequence of gaining stronger preference for work over housework. As a result, women tend to marry and form families later compared to older generations. Rising participation rates have of course important impact on demographic behaviour. In many countries, increasing female labour force participation is accompanied by decreases in fertility rates. The balancing of motherhood and career has become difficult to achieve and it raises important

[1] Increasing women participation to the labour market is among the objectives included into the Lisbon Strategy: " "Female employment rate in the European Union should reach 60% by 2010, up from 51% now. "

challenges in terms of intergenerational solidarity. Given that institutional childcare services in some countries contribute little to ease the new role of "working mothers", family networks may represent the crucial link between employment and motherhood by compensating for the lack of flexibility of the service system. Among extended family members, mostly grandparents provide child care services which complement the limited services provided by publicly-funded day care facilities (Del Boca 2002).

In this report, we focus on mothers' employment using data on seven countries from the Gender and Generation Program. The contribution of the report is threefold. We start by considering a simple model of labour market participation and consider how this is affected by educational levels, by the presence of children and by the provision of childcare provided grandchildren. We find evidence that, in some but not all the countries, there is a positive association between childcare (by grandparents) and women's labour force participation. Secondly, when analysing the role of grandparents' support to their children (i.e. the middle generation who constitutes the respondent in our surveys), we encounter important endogeneity issues. The reason is that grandparents may have preferences for childcare that certainly affect their decision to provide childcare, but also may influence the employment decision of the mother. Likewise, the preference of the mother (for work say) will impact her preferences for childcare. Moreover, the outcomes of mothers' labour supply and grandparents are, presumably, the outcome of some negotiation process between the two generations – that to us is unobserved. Statistically speaking we are encountering a classic omitted variable bias problem, where naïve estimators such as ordinary Least Squares estimation or Logit specification will yield incorrect estimates. In order to deal with the reverse causality at play, we implement a simultaneous equation model and attempt to disentangle causal relations. This last model reveals that childcare by grandparents do have a positive impact on mothers' labour supply in Bulgaria, Germany and France. Finally, we contribute to the current literature on labour supply and intergenerational exchanges by adopting a comparative perspective, which also includes countries not frequently analyzed in the literature i.e. Bulgaria, Georgia and Russia. The challenge imposed by the comparative nature of our work is that institutional and cultural characteristics are crucial aspects to be considered in order to explain the different results we observe.

2. Past literature

There is an important strand of the economics literature focusing on the modelling issues of intergenerational exchanges, and several studies have devoted substantial attention to issues related

to intra-family financial transfers, such as downward monetary transfers (Becker 1974; Becker and Tomes 1976; Wolff 2006). Another part of the this literature has addressed issues related to the motivation behind intergenerational transfers i.e. altruism as opposed to part of an exchange, rather than on the effects and consequences of them (Cox and Rank 1992). Ogawa and Ermisch (1996) were among the first to assess the impact of intergenerational solidarity on the combination of motherhood and work by exploring the link between intergenerational co-residence and the labour supply of young women. They indeed showed a positive impact of intergenerational co-residence on female participation highlighting a clear link between downward transfers and work effort of the recipient. However, there is now extensive evidence that, while intergenerational co-residence in countries such as Western Europe and the United States is decreasingly frequent, time services, especially in the form of grandchild care, are non-decreasing and indeed on the rise (Dimova and Wolff 2006). As a result more recent studies tend to focus on the importance of time transfers from parents to adult children (Chiuri 2000; Del Boca 2002; Bratti 2003; Marenzi and Pagani 2008; Arrondel and Masson 2006; la Ferrére and Wolff 2006; Dimova and Wolff 2006; Dimova and Wolff 2008). The nature of these studies varies together with their research questions and methodologies. Dimova and Wolff (2006) is the only paper that, to the best of our knowledge, studies the impact of private transfers on the career choice of women taking a comparative perspective. Sociological studies have also addressed issues related to this topic without stressing causality issues (Tobio 2001).

Another important strand of the economics literature has instead concentrated on the effects of childcare costs on female employment. The general consensus is that higher childcare costs reduce female labour supply. According to Heckman (1974), the cost of childcare is generally viewed as a reduction in female wages. Empirical studies have indeed found a negative relationship between female participation rates and childcare costs. Namely, higher availability in childcare options as well as reductions in their costs, are associated to significant increases in the labour market participation rates of mothers in many countries (Ermisch 1989; Gustaffson 1994, 1995).

The possible links between the provision of public and informal child-care services (i.e. mainly from grandparents) have not received much attention in the empirical literature. However, the family may act as an important substitute for the lack of institutional provision of childcare services, and informal child-care appears more common in countries where the formal child-care services are lacking. The eventual choice of childcare mode depends of course on a range of factors, including individuals' preferences. These preferences are in turn affected by cultural and institutional factors, which to a large extent drives availability, cost and quality of formal childcare. In their analysis, and different from the mainstream literature, Del Boca (2002) and Chiuri (2000)

consider simultaneously the family and the institutional spheres, demonstrating the linkages with labour supply decisions. The results show that the decision to work is positively influenced by the available supply of public child-care as well as the availability of part time jobs. Moreover, the availability of family supports both in the form of transfers and presence of grandparents increases the probability of market work. However, their results are confined to the Italian context hence they cannot be generalized given the peculiar characteristics of the Italian "Southern model".

3. Data and context

For this preliminary study we use data from the Generations and Gender Survey (GGS). It is a set of comparative surveys that deals with topics related to children and childbearing, partners, parents, work and everyday life. The survey seeks to study what factors influence family formation, having children, and relations between younger and older generations. A major innovation of the survey lies in its focus on the impact of intergenerational and gender relations on demographic behaviour and vice versa. What is particularly relevant for our research question is that *generations* are included in the form of "questions on relations between generations", such as frequency of the contacts, monetary and emotional support etc. The GGS is designed as a panel survey with at least three waves with intervals of three years. We take data from the first wave which was completed in 2005. Respondents are men and women aged between 18 and 75. The surveys are available for Bulgaria, France, Georgia, Germany, Hungary, Netherlands and Russia. Since we are interested in the labour force participation of women during their child rearing years, we restrict the sample to include only women who have at least one child younger than 14 at the time of the interview. Moreover, we restrict our attention to those living in either a cohabiting union or currently married[2]. In other words, the analysis so far focus on the employment patterns of mothers as a function of intergenerational transfers and other control characteristics.

We start by briefly describing the variables used for the analysis. *Labour Market Participation* is the dependent variable and is binary taking the value one when the woman declares to be part of the labour force at the time of the interview, zero otherwise. The state of being employed encompasses therefore those who record to be employed, self-employed, or helping a family member with a business or a farm. For a sub-group of countries, we also distinguish the degree of involvement in the labour market i.e. full-time vs. part-time. *Education* is defined over three dummy variables representing the levels of education. They are constructed in the same way

[2] In the analysis we only include those women who are coded as respondents in the survey i.e. we cannot consider those women who are recorded as partners. This is imposed by the fact that we do not dispose of information over the woman's parent when she is recorded as a partner rather than a respondent.

for all countries and based on the ISCED code (primary/lower secondary education, upper secondary/ post-secondary education and tertiary). In the regression analyses the baseline category is corresponding to primary and lower secondary educational levels. *Household structure* is controlled for through a set of dummy variables reflect whether the respondent has children in the following age categories: 0-4, 5-10, 11-14. *Intergenerational Links* is our key independent variable, and in this preliminary analysis the focus is on childcare provided by grandparents. The variable is labelled "Child Care" and takes the value one when the respondent receives regular help with childcare from her parents, more precisely from at least one of them. We also include two variables for *Extended Family characteristics:* whether the respondent's mother is alive and the number of siblings the respondent has**.**

3.1 Descriptive analyses by country

We compute basic descriptive statistics separately for the seven countries in order to highlight possible differences in attitudes towards work and non-work for women. The descriptive statistics are computed for the sample of women respondents considered for the subsequent analysis i.e. women who have at least one child in the age range 0-14 and who are currently cohabiting (either as a consensual union or marriage) with a husband or partner. Table 1 reports the results.

Table 1 Descriptive Statistics for women respondents (mothers with at least one child aged 0-14 and cohabiting)

	BULGARIA		FRANCE		GEORGIA		GERMANY		HUNGARY		NETHERLANDS		RUSSIA	
	Work	No Work	Work	No Work	Work	No Work	Work	No Work	Work	No Work	Work	No Work	Work	No Work
Participation Rate	66.50%		74.15%		29.56%		59.25%		85.18%		61.40%		74.22%	
Part-Time	6.42%		37.55%		36.46%		70.49%		12.40%		83.44%		7.23%	
*Part-Time General**	6.27%		27.55%		30.88%		44.08%		8.07%		55.17%		5.42%	
Child Care	22.07%	15.34%	27.97%	15.02%	7.55%	6.12%	17.29%	11.71%	46.33%	34.53%	64.58%	58.14%	26.75%	24.14%
Use paid childcare	32.99%	23.78%	45.72%	14.65%	15.10%	14.86%	42.83%	37.82%	55.77%	56.95%	44.24%	15.84%	44.51%	25.29%
Mother alive	89.74%	90.79%	89.23%	87.85%	83%	89%	90.69%	87.65%	89.40%	78.92%	88.55%	86.12%	81.37%	86.57%

n° siblings	1.21	1.96	2.52	3.48	1.94	2.09	2.15	2.43	1.72	2.41	2.62	2.78	1.74	1.90
N° obs	1615		1056		1299		859		1505		1145		675	

Source: own computation based on GGS (7 countries included). Summary refers to all women respondents without distinction of whether they work or not. "Grandchild care" refers to the % of women respondents benefitting from childcare help from her parents. * For all women respondents aged 55 or lower.

The heterogeneity in participation rates across countries is self-evident. Participation rates are particularly high in Bulgaria, France, Hungary and Russia. Germany and The Netherlands show medium levels of mothers' participation, while Georgia is the only country showing very low levels. Conversely, the rates of part-time work are low in Bulgaria, Hungary and Russia. Part-time work is more common in France and Georgia show medium levels of part-time work, whereas rather high levels of part-time work are evident in Germany and the Netherlands. When looking at the entire sample of women respondents below age 55 regardless of the childbearing and partnership status, "*Part time general"*, we notice that in all seven countries part-time rates are lower with respect to the ones of our selected sample of mothers. Not surprisingly, the results show that working women with school-aged children (i.e. age 0-14) are more likely to be employed under part-time jobs. Interestingly, those countries which show really very levels of participation rates are also the ones which exhibit low levels of part-time work. Conversely, those countries showing medium levels of labour market participation rates are also the ones with the highest percentages of part-time work. Working mothers, as expected, receive childcare more frequently compared to non-working women, with the exception of Georgia where the percentages almost coincide. Use of grandchild care is particularly high in the Netherlands and Hungary. Not surprisingly, working mothers extensively resort to paid childcare, while non-working mothers do so only to a limited extent. Georgia and Hungary represent an exception since in the former both working and non-working mothers make limited use of paid childcare, while in the latter both working and non-working women make extensive use of paid childcare and with no substantial difference between the two groups.

Finally, the last two rows report descriptive statistics for the percentage of women respondents whose mother is still alive and on the number of siblings, namely for the instruments adopted in the second equation of the simultaneous equation. These variables are used as instruments when implementing the simultaneous equations approach and they are used to estimate the probability that at least one of the respondent's parents provides childcare help. We expect these instruments to be relevant (i.e. correlated with the endogenous variable, childcare help) and valid (not directly correlated with the dependent variable, mother's labour supply). We expect the first instrument, whether the respondent's mother is alive or not, to be a strong predictor of the

probability to receive childcare help by grandparents and not to be directly related to the mother labour supply decision. We expect the second instrument, the number of siblings the respondent has, to be negatively associated with the probability of receiving grandparents childcare provision due to a potentially higher number of grandchildren and conversely, not to be associated with the probability that the mother works or not.

3.2 Childcare leave and services: a comparative analysis

In this section we provide a comparative perspective over the provision of child care leaves and services offered across the seven countries. The key purpose of this section is to enhance the understanding of how contextual characteristics, especially in terms of childcare provision, differ across countries. Our intention is not that of including both the provision of informal childcare and public childcare into our regression analysis – rather we investigate the role played by grandparents on mothers' labour supply given the institutional context characterizing each country.

Table 2 provides summary information over the availability of parental leaves across countries. Table 3 instead, provides information over the provision of childcare services for children aged 0-3 and 3-6. Through this table we are able to compare countries directly according to child-care enrolment rates, offered services, opening hours of nurseries, kindergartens and public versus private provision of childcare. We use the term "parental leaves" to sum up maternity, paternity and childcare leaves systems i.e. leaves and benefits related to the possibility of parents to care of their children during the first months or few years after birth. Although analyzing maternity leave and its effect on female labour supply is beyond the scope of this report, we nevertheless argue that differences in generosity levels provide important information about attitudes towards working mothers, highlighting differences and commonalities and ultimately help to comprehend the institutional setting of each country context. The reason is of course that parental leave provisions are likely to set norms and create incentives regarding how care-work is organized between parents, and between parents and other formal and informal suppliers of care services.

Table 2 shows that parental leave is available but differs substantially across the seven countries. The duration of maternity leave ranges from 14 weeks in Germany to 28 weeks in Russia. With the exception of Hungary, where women receive 70% of their earnings during maternity leave, the benefits range from 90 to 100% of income earnings. More heterogeneous patterns are evident for paternity and childcare leaves. Out of the seven countries, France is the only one which offers paternity leaves to fathers. Between 11 to 14 of job-protected days are offered to fathers within 4 months of the child birth. Two thirds of fathers avail themselves of this benefit. Of course, the

duration, level of benefits and other features of childcare leave differ across countries.[3] The duration of childcare leave varies from 3 months in Netherlands to three years in Germany, France and Georgia. The leave can be paid partially or for a limited period of time (Bulgaria, Germany, Georgia and Russia) or unpaid (Netherlands). France and Hungary constitute an exception. In the former no paid leave is available for the first birth and a flat rate of 500 Euros is applied for subsequent births, while in the latter the benefit is given at a flat rate and it is income-tested.

In some countries childcare leave can be combined with part-time work (Germany, France and Russia). Together with the availability, duration and compensation, a very important feature is whether childcare leaves can be shared among parents, which obviously determines whether care-work can be shared between partners. Family entitlements can be shared and taken sequentially or simultaneously by both partners in Germany and France, whereas in Georgia and Russia the childcare leave may be used by the father (fully or partially) but not simultaneously by both parents.[4]

We briefly summarize the information over childcare services presented in Table 3.

Bulgaria. Good coverage as far as nurseries and kindergarten are concerned since institutions are opened from 7am to 7pm Monday to Friday. Children of mothers who are currently occupied in the labour market, study or take care of a sick child can be entitled to the standard childcare service (daily). Around 60% of children aged 3-6 are enrolled into pre-primary education. The current package of family leave benefits and childcare services in Bulgaria is designed to reduce job-related penalties of parenthood experienced by working mothers.

Germany. Poor coverage for children aged 0-3. Only 10% of children aged 0-3 is enrolled into formal childcare services with levels comparable to the ones observed in Southern European countries (e.g. Italy, Spain and Greece).[5] There is quite good coverage for children aged 3-6, however these are mostly half-day programmes with very poor coverage for children whose mothers are working full time.

France. France is among the countries with the best coverage in terms of childcare services across Europe. "Crèches" are available for babies from 2 months to age 2 whose mothers are employed. All children aged 2-6 are eligible to attend "Ecolle Maternelle", however not all 2 years old can have access to childcare services because there are not enough places. However, 40% of 2 years old

[3] Information is somewhat limited in so far as childcare leave is concerned. However, the information reported is all gathered from the same source such that it is possible to compare countries. Whenever a box is left blank means that the source was not providing specific information over that particular issue.

[4] No information is available for the rest of the countries.

[5] Source: OECD (2001).Balancing Work and Family Life: Helping Parents into Paid Employment. The Project on Global Working Families (2004). *The Work, Family and Equity Index: Where Does the United States Stand Globally?*Boston, MA: Harvard School of Public Health.

children are enrolled and almost 100% of those aged 3-6.Childcare services run for 10 to 12 hours every day.

Georgia. In 2002/2003 less than 40% of children aged 3-5 were enrolled into pre-primary education, signalling very low coverage and enrolment rates. Over the years (especially during the 90s) both the number of pre-schools and the number of children enrolled declined because of the economic crisis.

Hungary. Day nurseries are available for children aged 0-3. However the availability of these services varies tremendously across regions (they are rare in villages and smaller towns) since the local governments often do not have enough money to maintain them. Kindergartens are free, but parents are supposed to pay for meals; almost 80% of children aged 3-5 are enrolled into pre-primary education.

Netherlands. Surprisingly, most of the care in the Netherlands remains informal. In the last few years however, parents are seeing formal centres as an attractive option. There is quite poor coverage as far as children aged 0-3 is concerned (less than 10% is enrolled into formal childcare centres), whereas 95% of children aged 3-6 is enrolled into pre-primary education. The Netherlands is far behind with respect to its northern neighbours; however, over the last decade the childcare capacity of the country has increased by more than 5 times due to growth in employment among mothers with young and school-age children.

Russia. During the Soviet era kindergartens were seen as part of the educational systems and they were provided by state run enterprises. However, the void left by state run enterprises after the end of the Soviet period has not been filled by the private sector. The number of pre-school establishments has constantly decreased since the 1990s till 2004 together with enrolment rates.

The data suggest that while the degree of heterogeneity is somewhat limited across countries in so far parental leave is concerned; differences are much more substantial when one looks at the provision of childcare services. Differences are particularly strong in the general provision of childcare services for infants and toddlers (age 0-3) and, as a consequence, in enrolment rates for children aged 0-3 (quite high in France and quite low in countries like Germany and the Netherlands). Interestingly, it seems that the provision of childcare services follows only to a limited extent the traditional welfare state regime classification. As a matter of fact, the Netherlands, which is generally considered together with the northern social democratic countries, offers limited childcare services; conversely, France and Germany, typical examples of conservative welfare regime countries, do not appear to be any similar in the provision of childcare services since the former offers a much more extended coverage with respect to the latter. Even tough there is not specific information as far as enrolment rates of young children in Bulgaria are

concerned, it appears that the country is quite favourable in providing services which enable women to take part to the labour force. As a matter of fact, Bulgaria's female participation rates were relatively high since the 1970s, with levels comparable to those of the North-European countries. Finally, the provision of these services, rather than being on the rise in order to promote and support women's labour force participation, is rather decreasing in countries like Russia and Georgia, where especially the latter appears to be a rather more traditional society with respect to the rest of the countries.

Table 2 Maternity, Paternity and Childcare Leave across Europe

	MATERNITY LEAVE				PATERNITY LEAVE			CHILDCARE LEAVE		
	Duration	Benefit	Notes	Unemployed	Duration	Benefit	Notes	Duration	Benefit	Notes
BG	20 weeks	90% of income (average past 6 months)	Start 45 days prior to birth	Childcare leave for those who have not been employed in the past 6 months-100 BGN per month	None or not mentioned			Until the 2nd birthday of the child	Until age 2: minimum wage (circa 67 euro) Age 2-3:unpaid	Deferrable until: 7th birth of the child
DE	14 weeks	100% of earnings	6 weeks prior to birth and 8 after birth	Lump sum payment of 200euro	None or not mentioned			36 months up to child's 3rd birthday, there from a maximum of 12 months may be taken until the child reaches the age of 8	Regular benefit of 307 Euros (24 months) or budget of 460 Euros (12 months)	Family entitlement can be shared or taken simultaneously by both parents. Part-time allowed.
FR	16 weeks	100% of earnings	6 weeks prior to birth and 10 weeks after birth. 97% of mothers used maternity leaves	not mentioned	11 days of job-protected leave (3 additional days from employers)	84% of earnings	Within 4 months from birth. 2/3 of fathers avail themselves of leave	36 months until the 3rd birthday of child.	None for first child. Flat rate for subsequent births (500 p/month)	Parents can take leave at the same time or sequentially. The leave is income tested but 90% of families with children qualify. Part-time allowed.
GE	At least 70 days but it is not clear how many days after child-birth	100% of average monthly salary	Start 70 days before delivery	not mentioned	None or not mentioned			37 months (maternity +childcare). Extra: for each child under age 5 additional 12 weeks of leave are given.	126 days paid (140 in case of complications)	Partially paid leave till the child is 1 year. Additional 6 months leave without payment can be taken by the father, but not simultaneously by father and mother.

	MATERNITY LEAVE				PATERNITY LEAVE			CHILDCARE LEAVE		
	Duration	Benefit	Notes	Unemployed	Duration	Benefit	Notes	Duration	Benefit	Notes
HU	24 weeks maternity	70% of wage	Flat rate/income-tested		None or not mentioned			Childrearing until the child is aged 3	Flat Rate	Income tested
NL	16 weeks	100% of wage to a specified maximum	Start: 4/6 weeks prior to birth-End:10-12 after birth	Lower entitlement with respect to employed women	None or not mentioned			3 months for each parent full time unpaid job-protected leave	Unpaid	Leave may be taken up until the child is 8
RU	28 weeks	100% of wage (average past 12 months)	Start 70 days before delivery. End 70 or 110 end after delivery	Lump sum birth grant. 6 months childcare leave at 100% of minimal salary	None or not mentioned			Partly paid leave: until the child is 1.5 years. Not paid leave: until the child is 3 years old		The childcare leave may be fully or partially used by the father or other relatives (but parents cannot use the leave simultaneously). Part-time allowed.

Source: The Clearinghouse for International Developments in Child, Youth and Family Policies at Columbia University; Eurostat (2004) *Development of a methodology for the collection of Harmonized Statistics on Childcare.*Luxembourg: Office for Official Publications of the European Communities; Balancing Work and Family Life: Helping parents into Paid Employment. The project on Global Working Families (2004).*The Work, Family, and Equity Index: Where does the United States stand globally?* Boston, MA: Harvard School of Public Health; OECD (2001)

Table 3 Childcare services across Europe

	Children 0-3	Children 3-6 years	Notes
BG	Nurseries and Kindergarten. The working hours are valid for daily childcare institutions (7am to 7pm Monday to Friday)	Preschool education is obligatory in school or in kindergarten. Preschool education in kindergarten is a full-time (7am - 7pm) care. In school it is organized as part-time (8am - 12am) classes. 60% of children aged 3-6 enrolled into pre primary institutions	Institutions can be private/municipal/state. Children of mothers, who are occupied, study or take care for a sick child can be entitled in the standard childcare institutions (called daily). As an exception, a child can be accepted in childcare institution if the mother is unemployed, but has 3 or more children or there is a seriously sick member of the family.
DE	Poor coverage. 10% of children aged 0-3 are enrolled into formal childcare services	Good coverage in public and publicly subsidized preschools. However, these are mostly half-day programs with very poor coverage for infants and toddlers whose mothers are working full time. Almost 80% of children aged 3-5 are enrolled into pre-primary education.	A strong streak in public opinion considers it wrong for infants and toddlers to be reared outside the home-unless theirs are "inadequate" families. Participation of children under 3 in centre-based childcare services in 2002 was 8.5 percent, compared to an OECD average of 23 percent (OECD, 2004). The Day Care Expansion Act of 2005 is intended to create additional day care places by 2010 (Federal Ministry of Family Affairs, 2006)
FR	Crèches or child-care services: babies from 3 months to age 2. Employed mothers and income-related fees. 10-12 hours per day. The cost is split by government, family allowance fund and by parents.	Ecolle Maternelle: 8 hours per day. Parents have to pay according to income-related fees. It is universal and available for everyone	All children aged 2-6 are eligible to participate, however not all 2 years old can participate because there are not enough places. Almost all 3-4-5 years old children are now enrolled and almost 40% of the 2 years old.
GE	Nursery schools	Kindergartens: In 2002/2003 43% of children aged 3-5 were enrolled in pre-primary education	Over the years (especially during the 90s), both the number of preschools and the number of children enrolled declined because of the economic crisis in Georgia. Enrolments in rural areas are two times lower than those in urban areas. Private kindergartens began to appear after 1992 and there seems to be preference for private vs. public services.
HU	Day nurseries: About two third of the costs is covered by the local government. Only the costs of food are covered by the parents (as in the case of kindergartens).	Kindergartens (in Hungarian: óvoda) are free, but parents have to pay for meals. Almost 80% of children aged 3-5 are enrolled into pre-primary education.	Day nurseries are rare in villages (and also rare in smaller towns): local governments there have often not enough money to maintain them.
NL	Parents are increasingly seeing formal centres as an attractive option, even though most of the care remains informal (relative). Centres are administered under private initiatives but the cost of care is shared among parents, government and employers (tax deductions). Less than 10% of children under 3 years is enrolled in formal childcare centres.	95% of children aged 3-6 are enrolled into pre-primary education	NL is far behind its northern neighbours. However, over the last decade, the child care capacity in the NL has increased 5 times over largely due to the growth in employment among mothers with young and school-age children. The Work and Care Act (2001) increased child care options for parents by increasing the period of paid maternal and parental for birth and adoptive parents and introducing partner leave.
RU	Nurseries. The percentage of children in childcare facilities declined from 26% in 1989 to 14% in 1992.	Kindergarten: during the Soviet era they were seen as part of the educational system. However, they were mostly provided by state run enterprises. Since employment was nearly universal, all children had access to childcare services. In 2001 only 40% of children aged 4-6 attended kindergarten.	The number of pre-school establishment was constantly reducing from the beginning of the 1900s till 2004. The number of pre-school children attending PEE in 1990-2004 reduced 2 times; from 9 mln down to 4.4 mln. The void left by state run enterprises after the end of the Soviet period has not been filled by the private sector.

Source: The Clearinghouse for International Developments in Child, Youth and Family Policies at Columbia University; Eurostat (2004) Development of a methodology for the collection of Harmonized Statistics on Childcare. Luxembourg: Office for Official Publications of the European Communities; Balancing Work and Family Life: Helping parents into Paid Employment. The project on Global Working Families (2004).The Work, Family, and Equity Index: Where does the United States stand globally? Boston, MA: Harvard School of Public Health; OECD (2001)

4. Methodology

In this section we discuss the econometric issues when considering the relationship of labour supply decisions and family links. First we discuss the different sources of endogeneity and their potential effects on estimates. We then go on discussing the methodology adopted to deal with our research question.

4.1 Endogenous preferences

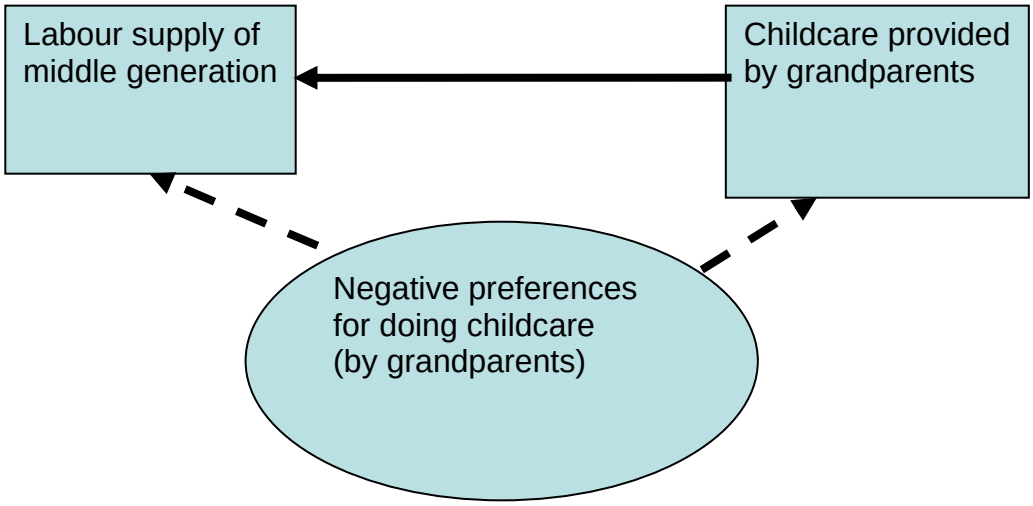
Analysing the relationship between work decisions and childcare is complex since we are considering the effect of behaviours of a certain generation on another: the issue of endogeneity bias becomes very relevant (Holland 1986). What makes the study of this topic particularly intriguing is that the endogeneity issues at play may not be solely related to the respondent's unobserved characteristics, but they may very well be at the "family level". The problem lies in the fact that generations do not act independent of each other, such that the unobserved component is not limited to the characteristics of one individual, but rather the unobserved interaction between two related individuals/generations, as well as their unobserved characteristics, which may include preferences. As a matter of fact, individuals might have unobserved preferences which affect their behaviour and hence the outcomes of interest. Take grand parents' efforts in childcare for their grand children as an example, and consider the effect it may have on labour supply of the middle generation (i.e. mothers' employment decision). Most likely we will find a positive relationship. That is, the more childcare grandparents provide, the more mothers work (i.e. the children of the grandparents). We might therefore conclude that having grandparents providing childcare increases labour supply and with simple regression techniques we get an estimate of this effect. If we are considering hours worked as the outcome we can do the estimation with Ordinary Least Squares (OLS), or a Tobit specification (if we want to take into account the left hand side truncation manifested by many women working zero hours), or a probit specification if estimating labour force participation (i.e. the dependent variable is binary and measures whether the respondent work or not). The problem of course, is that because the middle generation works, they also make an imposition on the grandparents – making them more likely to provide childcare. In this light, it is the work decision of the middle generation that drives childcare provision of grandparents.

What is not observed in our surveys is how generations may interact and negotiate in order to reach the labour supply / childcare outcomes (which are observed). Similarly, preferences for work (of the middle generation) and preferences for childcare (of the grandparents) are also unobserved. In so far such unobservables are important for the outcomes we are faced with a classic omitted variable bias, meaning that our parameter estimates do not reflect the true effect of grand parents' childcare effort on labour supply of the middle generation.

In order to better understand the issue, it is useful to compare this endogeneity problem with a very classic example, namely that of returns to education. That is, what is the effect of educational attainment on earnings? Here the issue is that unobserved ability drives both educational choice (i.e. years spent in education) and earnings. In a naïve regression we find a strong positive association. Once adjusting for the ability (unobserved) of the individual, the effect of education becomes smaller (but still positive). Thus, the naïve estimator (such as OLS) will overestimate the effect of education on earnings. In our setting the endogeneity issue becomes more complicated and there are two reasons for this. First, keeping in line with the example outlined above, the outcome is defined over the middle generation (e.g. the amount of work a woman provides to the market), whereas the endogenous variable (childcare) is defined over the grandparents' actions (i.e. the parents of the middle generation). In order to disentangle these complex relations there is, consequently, an important need based on theoretical considerations, to better understand how such interaction may impact the outcome of interest. The second issue is of course a need for having access to information about all generations involved. For example, if the middle generation has high education, she is more likely to work, all else equal. Similar arguments go for characteristics of the grandparents themselves according to their health, age, employment status. As always, it would also be important to control for the characteristics of the partner, which undoubtedly will have an impact on women's labour supply decisions and hence childcare outcomes of the grand parents. The key is to better understand the unobserved components that may have an impact on the bargaining process between generations and therefore impact on the intergenerational support.

At this point it is useful to present a stylized example. Consider the following figure:

Figure 1: Observed and unobserved effects on Labour supply



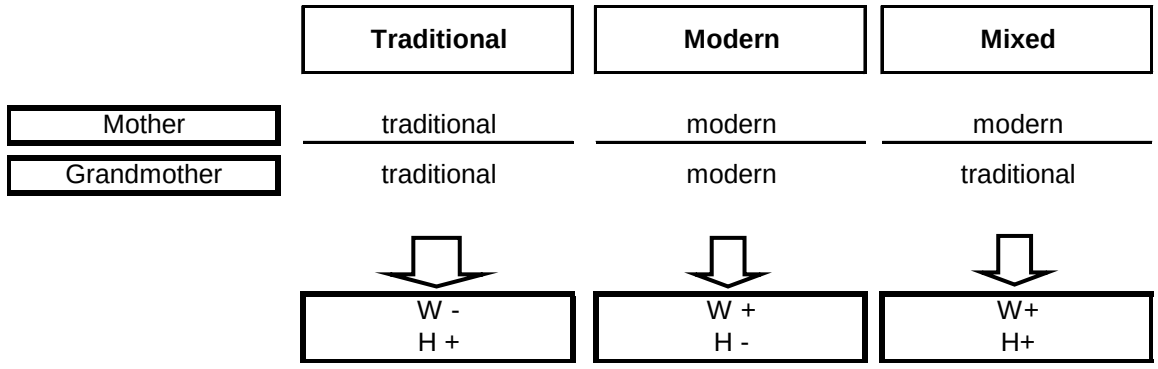
Here the solid line implies a positive effect, whereas the dotted lines represent negative effects. Hence, we have assumed here that access to childcare increases the labour supply of the middle generation. We also assume that grandparents have a negative preference for doing childcare, and again, we assume that their negative preference for doing childcare has a negative impact on labour supply on the middle generation. Bear in mind that these are assumptions imposed to ease the exposition of the endogeneity problem. There might certainly be contexts where these effects are not negative – or they may have very little impact on the outcome of interest (and the explanatory variable). Still let's assume for the time being that this is the relationship between labour supply, childcare provided by grandparents, and, their preferences for doing childcare. As already stated, a naïve estimator is most likely to give a positive relationship between labour supply and childcare. However, if the stated assumptions in Figure 1 hold, the naïve estimator will in fact underestimate the effect of childcare on labour supply. A correction of endogeneity of grandparents' preferences will consequently increase the effect of childcare on labour supply. One important lesson one can gain from comparative work is that these preference will differ for different countries. For instance, grandparents may have a much stronger negative preference for doing childcare in Scandinavian countries where generally speaking childcare is provided by the state and not by grandparents. This is in contrast to Mediterranean countries where it is much more common for grandparents to provide childcare. Due to social norms, their preference towards providing childcare may be much less negative than what would be observed in Scandinavian countries. If the assumptions hold however, we should observe a stronger bias for the Scandinavian countries than in the

Mediterranean ones. In fact, in some countries, the preferences towards doing childcare might be neutral or even positive, in which case an endogeneity correction would provide a smaller estimate of the effect of childcare on labour supply.

On the backdrop of these arguments, it is useful for subsequent discussions to categorize "families" as follows: (as illustrated in Figure 2):

- **Modern family (modern woman with modern parents):** characterised by highly motivated working women; weaker family ties; grandmothers work; preferences for formal childcare
- **Traditional family (traditional woman with traditional parents):** less women work; stronger family ties; positive preferences for family childcare and against formal childcare.
- **Mixed family (modern woman with traditional parents):** women highly motivated to work; grandmothers are available to help because they belong to a generation with low participation rates; mismatch across generations; stronger family ties.

Figure 2: Sources of endogeneity



Here "W" signifies work and "H" signifies receiving help (i.e. childcare from grandparents). In modern types of families, ability and motivation can be a relevant omitted variables because it affects (positively) the probability to work and (negatively) the probability to receive help. This is due to the fact that highly motivated women are those living in more modern families, namely where women are not expected to stay at home caring for children. Within these families it is more likely that both the mother and the grandmother want to work. These unobserved factors at the "family level" increase the probability of participation and decrease the probability of receiving help. Conversely, in more traditional families, the probability that a woman participates to the labour market is lower and family ties are stronger. This implies higher probability to help each other. However, the probability to receive help may in a way be lower simply because it is directly

the mother who looks after the children i.e. she does not need childcare support from grandparents. A third scenario is characterized by the potential mismatch between generations. The negative bias in the probit estimate due to unobserved "modernity" can be mitigated if in a country there are many dyads (or families) with mismatch in "modernity": e.g. modern women with traditional mothers (i.e. who have never worked or did so for a limited amount of time). For this subgroup, we expect to observe a higher probability to work (because of modern attitudes of young generations) and higher probability to receive help (because of traditionalism (or strong family ties) in former generations). This situation is more likely to occur in countries that more recently experienced drastic economic and social changes, such as Hungary, a typical example of an Eastern European transition country.

4.2 Methods

In this section, we describe the model we implement to empirically study the link between female participation and grandparents time transfers. A simple econometric approach consists in specifying a probit model where labour market participation is the dependent variable. The outcome is a binary variable, which indicates the participation in the labour market:

$$W = \begin{cases} 1 = \text{"work"} & \textit{if } W^* > 0 \\ 0 = \text{"no work"} & \textit{otherwise} \end{cases}$$

We assume that W* is a continuous latent variable representing the propensity to participate in the labour market. If this propensity is sufficiently high to overcome a given threshold, which in probit models is usually set to 0, the woman decides to work (W = 1); otherwise, the woman decides not to participate to the labour market (W = 0). We model the propensity to participate, W*, as a linear function of a set of covariate X^W and the childcare help received by grandparents, H (a dummy variable taking value 1 if woman receives childcare help and 0 otherwise):

$$W^* = X^W \beta^W + \delta H + \varepsilon^W \tag{1}$$

The usual assumption in probit models is that the error term follows a standard normal distribution: $\varepsilon^W \sim N(0,1)$. The appropriateness of the simple probit approach described above relies on the assumption of selection on observables; namely, in order to guarantee that δ consistently estimate the effect of grandparents childcare help (H), we have to rule out the possibility of unobservable

characteristics that influence both H and W. However, as explained in section 4.1 there are several reasons to believe that the assumption of non-existence of selection over observable is not satisfied, i.e. childcare help received from grandparents is endogenous to the woman labour supply decision. This implies a correlation between the error term ε^w and the variable of interest H, and ultimately that the estimate of δ is biased. Instrumental Variable (IV) methods are very popular techniques in econometrics to deal with endogeneity issues – as long as instruments indeed exist (Greene, 1997). Instruments, Z, are variables associated with the endogenous covariate (H) and are supposed to influence the outcome (W) only through the effect on the grandparents help; that is, they should not have a direct effect on the outcome. The IV approach is usually implemented in a two-step approach (two stages least square, 2SLS). At the first stage H is regressed on Z together with other exogenous variables, whereas at the second stage W is regressed on the exogenous variables and on the predicted value of the endogenous variable, grandparents' childcare help obtained from the previous stage. When dealing with a dichotomous outcome, the 2SLS estimator has been proved to be inconsistent (Foster, 1997). An alternative approach is to specify a joint model combining treatment and outcome and estimate this structural model by Full Information Maximum Likelihood (FIML). Since in our case both the outcome W and the endogenous H variables are binary, we can use a bivariate probit model (see e.g.; Maddala, 1983; Hardin, 1996; Greene, 1997).

Model (1) will be therefore estimated together with a second probit where the outcome is the help received by grandparents. Again we can think of this model in terms of the underlying latent variable. We observe the decision to receive (H = 1) or not help (H = 0) as the result of an underlying unobservable propensity to receive grandparents help, H*:

$$H = \begin{cases} 1 = \text{"help"} & \textit{if} \quad H^* > 0 \\ 0 = \text{"no help"} & \textit{otherwise} \end{cases}$$

The propensity to receive help depends on a set of covariate X^H, which may (or may not) coincide with those affecting the decision to work. Since we want to identify the impact of actually receiving grandparents' childcare help on women labor supply, rather than the impact of the propensity to receive grandchild care, we adopt the type II specification in the terminology of Blundell and Smith (1993). That is, we adopt a recursive model in which grandparents' childcare is assumed to influence the probability that a woman works:

$$\begin{cases} W^* = X^W \beta^W + \delta H + \varepsilon^W \\ H^* = X^H \beta^H \qquad\quad + \varepsilon^H \end{cases} \tag{2}$$

The error terms of the two equations are allowed to be freely correlated in order to account for the possibility that some unobserved factors influence both decisions to work and receive grandparents help. More precisely, in the bivariate probit model the error terms in the two equations follow a bivariate normal distribution, with zero averages and a variance–covariance matrix which has values of 1 on the leading diagonal while the off-diagonal elements are to be estimated.

$$(\varepsilon^{w}, \varepsilon^{H}) \sim BN\left[\begin{pmatrix}0\\0\end{pmatrix}, \begin{pmatrix}1 & \rho\\ \rho & 1\end{pmatrix}\right]$$

We estimate the bivariate probit models using the command biprobit in Stata. As proved by Wilde (2000), it is only necessary to have variation in the set of exogenous regressors to avoid identification problems in this recursive bivariate probit model and exclusion restriction are not required: this is known as "identification by functional form". However, this identification could nevertheless be weak because it relies on the bivariate normality of the error terms and it is common practice to impose some exclusion restriction to improve identification. Therefore, the two sets of covariates X^W and X^H generally speaking differ. We follow this procedure using two instruments to estimate the probability that the mother received care for the grandchild: Z_1 (a dummy variable taking value 1 if the woman's mother is alive at the time of the interview, 0 otherwise) and Z_2 (number of siblings the woman has). Both variables can be a priori considered good instruments since they are expected to be associated with the childcare received but not with the labour supply decision (after help and other covariates are controlled for). In particular, Z_1 is expected to be positively (and strongly) correlated with "Help". This argument is strongly supported by many sociological studies, whereby it is indicated that not only grandmothers, as opposed to grandfathers, are the primary source of supply of child-care but also that crae for grandchildren is more likely to affect the career prospects of the daughter as opposed to those of the sons (Tobio 2001). Moreover, after controlling for age effects, the fact of having or not the mother alive should not produce direct effects on the decision to participate in the labour market. As for Z_2, we expect that having more siblings reduces the likelihood to receive childcare help by your parents because a higher number of siblings implies a potentially higher number of nephews whom the grandparents could take care of. Again, we do not expect direct effects on participation rates.

To evaluate the validity of the instruments we use the functional form as identifying restrictions; first, we test the null hypothesis of insignificance of the instruments in the participation equation (test for validity) and then we test the null hypothesis of insignificance of the instruments in the help received (test for relevance).

5. Results

In this section we show the obtained results. We first present the estimates obtained in the endogenous model (1), where we estimate the probability that a mother works based on a set of controls and on whether she received childcare help from at least one of her parents. We then go on comparing the results obtained in models (1) and (2). Table 5 only reports the estimates of the endogenous variable "childcare help" for the two different models. Table 6 reports the results of model (2).

5.1 Probit

Table 4: Probit estimates (endogenous model), by country

	Bulgaria		France		Georgia		Germany		Netherlands		Hungary		Russia	
woman_age	0.260	0.000	0.225	0.000	0.203	0.000	0.263	0.000	0.142	0.026	0.030	0.606	0.221	0.000
woman_age^2	-0.003	0.000	-0.003	0.000	-0.002	0.002	-0.003	0.000	-0.002	0.033	-0.001	0.418	-0.003	0.001
edu2_woman	1.258	0.000	0.465	0.000	0.122	0.491	0.453	0.001	0.552	0.000	0.179	0.502	0.142	0.366
edu3_woman	2.005	0.000	0.969	0.000	0.622	0.001	0.631	0.000	0.875	0.000	0.465	0.080	0.173	0.336
edu2_man	0.313	0.191	0.128	0.262	0.071	0.727	0.027	0.881	-0.054	0.574	0.245	0.430	-0.086	0.502
edu3_man	0.468	0.076	-0.219	0.113	0.039	0.855	0.057	0.773	0.071	0.631	0.511	0.092	-0.037	0.814
child_0_4	-0.399	0.000	-0.274	0.017	-0.493	0.000	-0.469	0.000	-0.362	0.001	0.295	0.011	-0.498	0.000
child_5_10	-0.236	0.008	-0.222	0.025	-0.083	0.379	-0.400	0.000	-0.425	0.000	-0.090	0.368	-0.220	0.099
child_11_14	-0.184	0.057	-0.294	0.006	-0.087	0.396	0.000	1.000	-0.233	0.029	0.027	0.800	-0.426	0.003
childcare	0.138	0.128	0.343	0.001	0.431	0.008	0.463	0.000	0.155	0.071	0.078	0.373	0.082	0.474
N° Observations	1667		1137		1302		1023		1179		1513		804	

Source: own computation based on GGS data.

The association between mother's labour supply and childcare help received from grandparents is positive and significant in France, Georgia, Germany and The Netherlands, whereas it is positive and not significant in Bulgaria, Hungary and Russia.

5.2 Biprobit

Table 5 reports the full set of estimates from the Biprobit estimation, where childcare is instrumented with 1) whether the respondent's mother is alive and 2) the number of siblings the respondents has. The full estimates are of course interesting because it does not only correct for the endogeneity of grandparents' childcare provision when estimating mother labour supply, it also informs us about the drivers behind why grandparents do childcare. The controls include the age and education of the mother, the education of the partner, which is highly correlated to the income level of the household, and, importantly the age distribution of her children. In general, we would

Table 5: Biprobit estimates, by country

	Bulgaria b/se	France b/se	Georgia b/se	Germany b/se	Hungary b/se	Netherlands b/se	Russia b/se
Woman Work							
woman_age	0.222***	0.214***	0.189***	0.241***	0.013	0.140*	0.177*
	(0.055)	(-0.056)	(-0.057)	(-0.066)	(-0.06)	(-0.064)	(-0.076)
woman_age2	-0.003***	-0.003***	-0.002**	-0.003***	-0.000	-0.002*	-0.002*
	(-0.001)	(-0.001)	(-0.001)	(-0.001)	(-0.001)	(-0.001)	(-0.001)
edu2_woman	1.133***	0.370**	0.125	0.371*	0.074	0.556***	0.071
	(-0.228)	(-0.135)	(-0.176)	(-0.157)	(-0.273)	(-0.099)	(-0.171)
edu3_woman	1.690***	0.869***	0.639***	0.500**	0.256	0.897***	0.225
	(-0.274)	(-0.181)	(-0.19)	(-0.186)	(-0.305)	(-0.189)	(-0.199)
edu2_man	0.227	0.068	0.082	-0.001	0.193	-0.068	-0.097
	(-0.241)	(-0.122)	(-0.203)	(-0.196)	(-0.315)	(-0.099)	(-0.137)
edu3_man	0.34	-0.227	0.051	0.047	0.449	0.059	0.034
	(-0.265)	(-0.145)	(-0.216)	(-0.213)	(-0.314)	(-0.15)	(-0.171)
child_0_4	-0.415***	-0.272*	-0.481***	-0.488***	0.205	-0.327**	-0.490**
	(-0.103)	(-0.12)	(-0.115)	(-0.12)	(-0.132)	(-0.116)	(-0.154)
child_5_10	-0.274**	-0.231*	-0.103	-0.293**	-0.119	-0.422***	-0.195
	(-0.087)	(-0.102)	(-0.097)	(-0.106)	(-0.099)	(-0.09)	(-0.148)
child_11_14	-0.127	-0.292**	-0.122	0.169	0.046	-0.208	-0.424*
	(-0.099)	(-0.113)	(-0.106)	(-0.118)	(-0.107)	(-0.111)	(-0.174)
childcare_parents	1.086***	0.829*	-0.185	1.500***	0.66	0.133	-0.032
	(-0.289)	(-0.359)	(-0.764)	(-0.347)	(-0.418)	(-0.218)	(-0.512)
Childcare parents							
woman_age	0.065	0.137*	-0.088	-0.026	0.154**	0.140*	-0.045
	(-0.068)	(-0.069)	(-0.07)	(-0.083)	(-0.058)	(-0.058)	(-0.094)
woman_age2	-0.002	-0.002*	0.001	0	-0.003**	-0.002**	0
	(-0.001)	(-0.001)	(-0.001)	(-0.001)	(-0.001)	(-0.001)	(-0.001)
edu2_woman	0.382	0.444**	-0.047	0.26	0.613	0.111	0.113
	(-0.308)	(-0.154)	(-0.222)	(-0.194)	(-0.393)	(-0.107)	(-0.189)
edu3_woman	0.574	0.585***	0.071	0.219	0.828*	-0.167	-0.018
	(-0.32)	(-0.171)	(-0.252)	(-0.227)	(-0.399)	(-0.199)	(-0.214)
edu2_man	0.359	0.229	0.044	-0.067	-0.11	0.127	0.023
	(-0.338)	(-0.133)	(-0.26)	(-0.253)	(-0.38)	(-0.106)	(-0.149)
edu3_man	0.447	-0.184	0.055	0.052	-0.084	0.204	-0.036
	(-0.352)	(-0.157)	(-0.282)	(-0.27)	(-0.37)	(-0.163)	(-0.178)
child_0_4	0.095	-0.127	0.128	0.126	0.361***	0.480***	0.069
	(-0.11)	(-0.122)	(-0.167)	(-0.142)	(-0.093)	(-0.119)	(-0.18)
child_5_10	0.183	0.069	-0.167	0.085	0.16	0.092	-0.147
	(-0.098)	(-0.108)	(-0.149)	(-0.133)	(-0.083)	(-0.1)	(-0.172)
child_11_14	-0.135	-0.108	-0.371*	-0.334*	-0.096	-0.223	-0.505**
	(-0.105)	(-0.119)	(-0.184)	(-0.151)	(-0.094)	(-0.115)	(-0.184)
resp_mom_alive	0.728***	0.912***	1.017**	0.551*	0.888***	1.439***	1.745***
	(-0.197)	(-0.241)	(-0.385)	(-0.225)	(-0.131)	(-0.157)	(-0.384)
sibilings	-0.279***	-0.146***	-0.198***	-0.106**	-0.088***	-0.163***	-0.211***
	(-0.047)	(-0.03)	(-0.06)	(-0.04)	(-0.024)	(-0.023)	(-0.061)
cons	-0.672*	-0.32	0.321	-0.836	-0.389	0.021	0.118
	(-0.291)	(-0.252)	(-0.419)	(-0.464)	(-0.308)	(-0.139)	(-0.318)

Source: own computations on GGS data. Standard errors are provided in parenthesis. P-values: +p<=0.10:*+p<=0.05:**+p<=0.01***.

Table 6 Probit vs. Biprobit : childcare estimates, by country

	Bulgaria		France		Georgia		Germany		Hungary		Netherlands		Russia	
	B	P-Value	B	P-Value	B	P-Value	B	P-Value	B	P-Value	B	P-Value	B	P-Value
Probit	0.138	0.128	0.343	0.001	0.431	0.008	0.463	0.000	0.078	0.373	0.155	0.071	0.082	0.474
Biprobit	1.086	0.000	0.829	0.021	-0.185	0.809	1.500	0.000	0.660	0.115	0.133	0.541	-0.032	0.951

Source: own computations on GGS data. Controls: age, age^2, woman's and man's level of education, children in age classes 0-4/5-10/11-14. Instruments: respondent's mother alive (binary variable) and respondent's number of siblings. The sample is composed of women who have at least one child aged 0-14 and who are currently in a partnership.

expect women with higher education to have higher rate of participating in the labour force. As a result, they do have a higher demand for childcare, and on one hand, we would expect grandparents to provide more childcare. On the other hand, highly educated women have higher earnings, so are more able to purchase external childcare. We would also expect grandparents to help more the more children the mother has. The age of the children would also matter. For instance, grandparents as childminders my not be suitable when children are very young. Similarly, the demand for childcare will diminish as children enter school age. When we consider Table 5, we find that almost in all countries, the mothers' characteristics matter for labour supply. The exception is Hungary where we find very few significant coefficients. Somewhat surprisingly, we find that the mothers' characteristics, do not have a huge impact on whether they receive childcare from the grandparents. For France, we find that grandparents tend to help more when women have higher education, and that the age of the children matters for other countries. Reassuringly, however, we find the instruments to be highly significant.

Controlling for the endogeneity of grandparents childcare provision changes the results considerably. Table 6 compares the estimates of the effect of childcare on mothers' employment decision for the naïve estimator and for the case when controlling for endogeneity. In the majority of the countries, the effect of childcare increases once endogeneity is properly controlled for. This is the case for Bulgaria, France, Germany and Hungary, and the change in magnitude is substantial. There is in other words a negative bias in the estimates for these countries. Looking back to Figure 1, it appears that the unobservable variables affect both childcare provided by grandparents and mothers' employment in a negative way. One way to interpret these results would be to argue that grandparents have negative (unobserved) preferences for providing childcare, and these may arise if there is a norm towards public childcare. In other words, if grandparents observe in the society where they reside that childcare is well provided by the states, the may feel less inclined to provide childcare. If one take the assumption underpinning Figure 1 seriously, one would also argue that

grandparents would have a negative preferences towards mothers' employment. This may of course simply reflect a generational difference, in that female labour force participation was less common when the grandparents themselves belonged to the middle generation. Another argument is that given grandparents' negative preferences for childcare, they might also prefer the mothers to work less, as this would, presumably, relieve them from childcare duties.

As mentioned previously, another driving factor behind the endogeneity, is the bargaining that necessarily will take place to determine labour supply of the mother and the childcare supply of grandparents. Would it for instance be the case that women with higher education, and therefore stronger attachment to the labour force, also have stronger bargaining position towards the grandparents? As we have seen from Table 5, there is not much indication of this, bar perhaps the French sample, where grandparents clearly provide more childcare for mothers with higher education. The age of the mother does seem to matter for more countries. There is a positive effect of age in France, Germany, Hungary and the Netherlands. Despite this, the estimates do not suggest that bargaining play a central role.

The results are somewhat more difficult to explain for Georgia, Russia and the Netherlands. For the Georgian sample, childcare increases on mothers' employment when the effect is calculated from the naïve estimator. It becomes insignificant once endogeneity is controlled for. This result is in stark contrast to the previous estimates, since it implies that 1) childcare provided by grandparents do not have a direct effect on mothers' labour supply, and 2) if we believe the arguments put forward for Figure 1, grandparents have a positive preference for providing childcare. For the Netherlands, there is very little difference between the naïve estimator and the one controlling for endogeneity. The same is the case for Russia. The implication here is that grandparents' chiuldcare supply does not appear to affect mothers' labour supply much, nor do they have very strong (unobserved) preferences for doing so.

In light of the estimates and the background knowledge of the country specific context, one can more easily assess the role played by grand parents providing childcare on mother employment. For instance, France is likely to belong to the first group where both mothers and grand mothers have relatively modern attitudes. Female labour force participation is high and has been so for quite some time. The same can be said about Germany, though here high participation rates are driven by part time jobs. The Netherlands appear to be more of a mixed type. Until recently female labour force participation were well below the European average. Between 1979 and 1997 Dutch employment as a whole grew by 28%. This occurred as a consequence of the introduction of part-time jobs on a large scale and increased availability and affordability of day-care.

It is harder to explain the results obtained in Hungary, Bulgaria, Russia and Georgia. These countries exhibited quite high participation rates and good coverage in childcare services until the end of the 80s. All the analyzed Eastern European and Soviet countries experienced a decline in participation rates during the period 1980-2006, whereas in the earlier soviet years, female labour force participation was much higher than in the OECD countries. A number of reasons have been put forward to explain this phenomenon. Holding a job was both a near political obligation and an economic necessity since a family could not easily afford to live decently on the income from only one wage earner, and well-developed child-care structures favoured female economic activity (Atkinson & Micklewright, 1992; Barta *et al.,* 1984; Bodrova & Anker, 1985). Since employment was nearly universal, the decline in participation rates coincides with the transition period following the fall of the wall. Given the similar economic structure and labour market institutions of these countries before the transition and the common elements of the recent economic reforms, one might expect the change in women's economic status over this period to be broadly similar across Eastern European and soviet countries. However, the opposite appears to be true. While wages have unambiguously improved relative to men's relative wages in all eastern European countries analyzed, women in Russia and Ukraine have fared much worse in terms of relative wages since market reforms were introduced. Moreover, in Russia familial policies have been introduced to encourage women to have children and stay home with them. There has been a movement from Soviet-style enterprise-level provision of services to a more Western European, social insurance model, where the government collects social insurance or social security premiums and pays out maternity or parental or other benefits. Yet these new systems coexist with Soviet-era enterprise provision, and a hard neo-liberal private sector sometimes offering informal contracts and no benefits at all. Informal contracts are indeed particularly on the rise in Russia. The significance of informal agreements and their impact on female employment cannot be underestimated. Within the general legislative framework around family created by the government, in the conditions of poor law enforcement, "the actual terms are being negotiated at the individual level directly between employers and employees. This situation puts many parents in a poor bargaining position, especially working women, who are still the primary users of family leaves".

The complex cultural, societal and economic upheavals in these countries, make interpretation harder. The transition to market economies may have affected the labour market and institutional provisions of services in very different ways across countries. For example, while the current package of family leave benefits in Bulgaria is designed to reduce job-penalties of parenthood experienced by working mothers, in Georgia and in Russia women are generally

considered more expensive and perhaps less reliable as workforce because they have the right to take generous maternity leaves.

6. Conclusions

When studying the dynamics behind female labour force participation and fertility, it becomes of outmost importance to consider the provision of intergenerational transfers, informal provision of childcare and the institutional setting characterizing each country. Clearly, childcare is a crucial variable in this setting since it is one of the key instruments to reconcile work and family. The need for childcare policies to reconcile work with family life was also recognized by the European Union which set "Barcelona Summit" targets for the availability of care institutions to 33% of children below 3 years and 90% of children from age 3 to school age for 2010. Currently enrolment rates in childcare facilities for children below age 3 vary between 3% (Greece) and over 60% (Denmark) in the EU15 countries, reflecting the large variety of how early childcare is organized in different countries.

The main challenge imposed by our research question is that we cannot observe how generations may interact and negotiate to reach the observed labour and childcare supply. Nor do we observe preferences for work (of the middle generation) and preferences for childcare (of the grandparents). Whereas this represents a classic statistical problem of omitted variable bias, which obviously needs to be taken care of, it also informs about the extent unobserved preferences matter in the different countries included in our analysis. The first interesting and appealing result is that the direction of the bias differs across countries: France, Germany, Hungary and Bulgaria show strong negative biases, while Russia, Georgia and The Netherlands display a positive one, but where the bias is smaller. Receiving childcare help by grandparents has a positive and significant impact on the mother's labour supply decision in France, Germany and Bulgaria.

Our inclusion of Bulgaria, Russia and George makes the study intriguing. These are countries which prior to the fall of the iron curtain had a rather different societal structure than the western countries, and equally important, have experienced dramatic economic and societal upheavals after 1989. However, it may not always be straightforward to understand how the complex intra-family dynamics function in countries which have experienced such drastic changes over the last 20 years.

There are of course many challenges for future research. First of all, it would be of interest and important to compute similar analysis for the number of hours worked or rather, the mother's choice between working full-time versus part-time or working full-time versus non-working. Whereas the current analysis focuses on labour force participation, such an extension would answer

the question how much of mothers' labour supply is driven by grandparents being bale (orunable) to provide childcare. Finally, a highly interesting line of research would be to consider the more divers patterns of interdependencies between family generations and between men and women giving rise to a multitude of care responsibilities. For individuals in the middle generations, especially women who relate "up" to ageing parents and "down" to children and grandchildren, these interdependencies are self-evident. However, in the literature on female labour force participation, these complex linkages do not appear to have been taken seriously yet and seem to be taken for granted (Pagani and Marenzi 2008 constitute an exception). Transfers "up" and "down" family lines are rarely considered together. For instance, the dominant perspective in ageing research is on the amounts of care for frail old people provided by family members, including spouses and adult children. Yet, the older generations often serve as significant source of support and help for young families not only by caring for young grandchildren, but also through financial transfers and provision of practical help. However, the extent such inter-generational transfers are present and important clearly depends on the context considered. Whereas intergenerational transfers are critical in countries where state welfare is weak and institutional provisions of services is low (e.g. Mediterranean countries), they play much less of a role in Social Democratic countries where the state provides generous support both in terms of caring for the elderly and for the young and where gender equality is strongly promoted. Thus, what is often termed "generational squeezes", i.e. young grandchildren or children and parents or grandparents simultaneously are in need of help, will affect women's labour force participation in different ways. Can we expect women to refrain from working outside the home in certain contexts because of care responsibilities? To what extent does help with caring tasks from spouses, adult children, and parents better enable people to hold jobs? Whereas the literature on female labor force participation typically considers transfers upwards to ageing parents and downwards to children and grandchildren, it tends to disregard transfers received from older and younger generations and from partners.

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