

1 Female Labor Supply and Child Care Opportunities in Italy

by Daniela Del Boca¹

1.1 INTRODUCTION

One of the major long-time trends in the labour market in most OECD countries has been the increasing proportion of parents at work. A growing share of married families became dual-earning families and a growing number of lone parents are working.

As a consequence of the labor force composition, child care and child rearing have been partially re-allocated. Since a larger portion of mothers of young children are now in the labor force, the issue of child care has been receiving growing attention. Two important fields of interest are the child care system and opportunities for women to work part-time or with flexible schedules, as well as parental leave policies which allow women to maintain a continuous relationship with the labor market. The increase in the incidence of non-parental child care has been object of study since the mid-1970s in the US, UK and Northern Europe; much less in Italy, where it received attention only recently.

One reason is related to the Italian employment trend: only a relatively low proportion of women are working in most European countries. Only recently, with the growing importance of the European objective of harmonization of employment rates, more interest has been devoted to this subject by economists and policy makers. The data reported in Table 1 show how the position of Italy is still quite far from the Lisbon objective relatively to the average employment rates in Europe.

The second reason is due to serious data limitations. The ISTAT Multiscopo Survey contains several information on child care, but does not provide information on family income, wages etc. The ECHP (European Community Household Panel), which has the advantage to be comparable with several European countries, contains only a very limited number of information

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on child care. The Bank of Italy Survey (SHIW), which is the most complete micro-survey on income and wealth of Italian households, does not provide information on child care. Only in 1993 it contained a special section with information on child care use, cost, and quality, but the sample is quite small and concerns only that year.

Table 1. The position of Italy and the Lisbon targets for 2010

	EU 1999	EU target for 2010	Lisbon gap for EU	Italy 1999	Ranking	EU 1999 gap for Italy	Lisbon gap for Italy
Employment rate, MF	62.1%	70%	-7.9%	52.5%	14	-9.6%	-17.5%
Employment rate, M	71.6%			67.1%	15	-4.5%	
Employment rate, F	52.6%	60%	-7.4%	38.1%	14	-14.5%	-21.9%
Gender gap (F – M)	-19.0%			-29.0%	13		

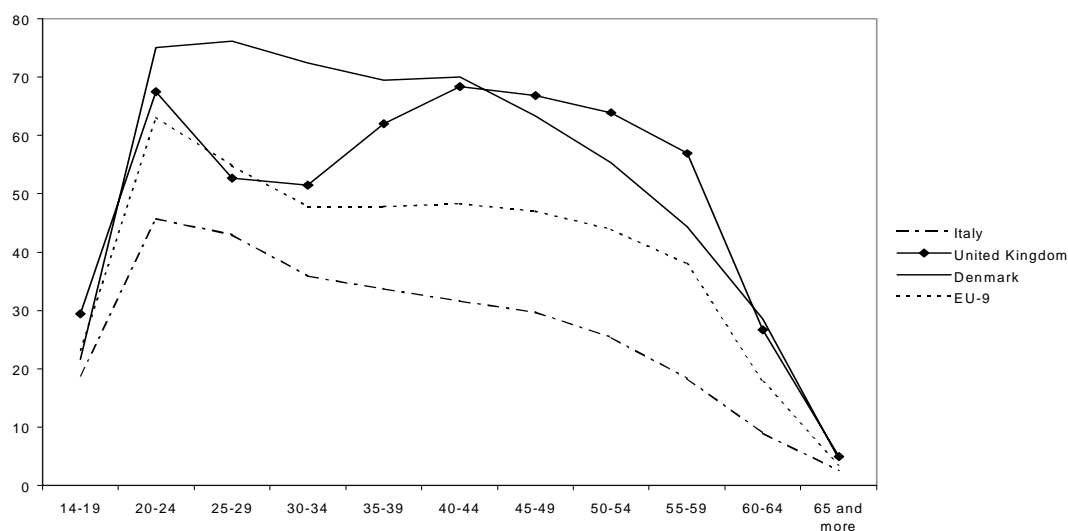
Source: Eurostat, LFS Villa (2001)

In this paper we analyze some important explanations and interpretations of the low labor market participation of mothers with younger children, focusing on the effect of child care availability and costs. Other characteristics of the social system are relevant in allowing to conciliate child-bearing and labor market. In Section 2 we discuss some of the important characteristics in the labor market and social service system that affect mother participation in the labor market (the availability of parental leave during child-bearing years, part-time and self employment). In Section 3 we focus on the relationship between child care characteristics and labor supply. Section 4 describes the characteristics of the child care system in Italy. Section 5 presents the results of the recent literature on child care and mother participation. In Section 6 an empirical analysis of the effect of child care costs is presented. Section 7 summarizes the results and discusses policy implications.

1.2 LOW PARTICIPATION OF MOTHERS WITH CHILDREN

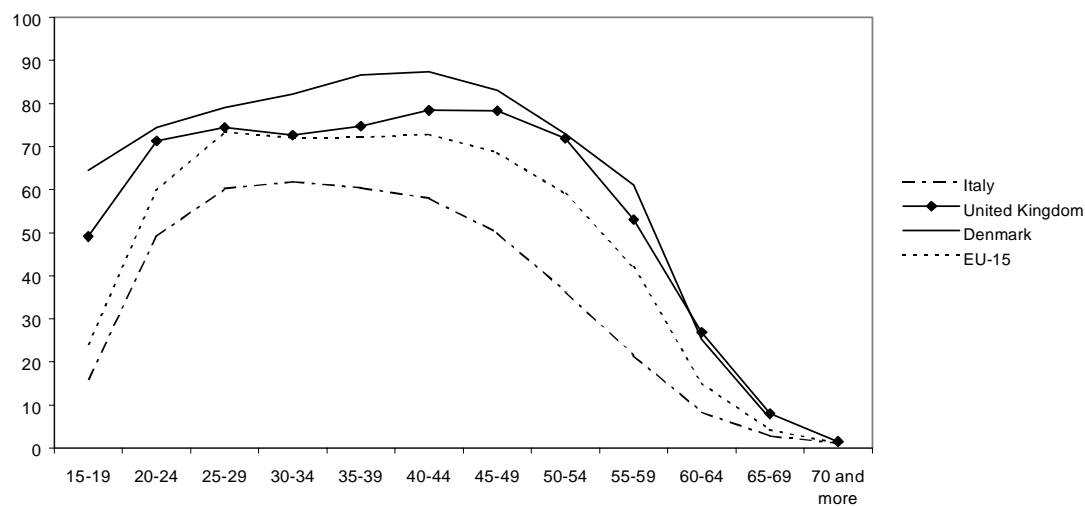
The participation of women in the child-bearing years has been increasing, though it is smaller than in other advanced countries. Figure 1 and 2 show how the participation rate increased mostly among women between 25-39 years of age, remarkably changing the shape of the participation curve by age in Italy, which remains nevertheless much lower than in other countries.

Figure 1. Participation rates by age 1977



Source: EUROSTAT (1978).

Figure 2. Participation rates by age 1997



Source: EUROSTAT (1998).

According to recent analyses, Italy shares with some other European countries the characteristics of the so-called "Southern model": namely the lowest female participation and fertility rate. These characteristics are significantly related to a relatively lower level of social protection (especially social expenditures for families and children) as well as to stricter employment regulations than in the rest of Europe (Ferrera, 1996; Saraceno, 2000; Bertola *et al.*, 1999). Recent research projects provided a ranking (between 1 to 17) for the income support granted to families with children and Italy is ranked 10.3, Spain 12.8 and Greece 14.3, while Denmark is 7.0, France is 3.7 and Sweden 5.3 (Bradshaw *et al.*, 1997).

Among the important policies aimed at conciliating market work and family responsibilities during child-bearing years there is parental leave. In parental leave policy Italy has been traditionally one of the most generous system. The recent provisions on maternity and paternity for the right to care have the objective to ensure leave periods for both parents during the first years of baby life. Fathers are induced to take parental leave and a longer period is granted, provided that is shared on an equal basis by both parents. Table 2 summarizes maternity leave coverage for a full-time employed working mother in Europe.

Table 2. **Maternity / child care leave for 1999-2001**

	Duration of maternity leave (weeks)	Maternity benefits (% of average wages)
Norway	42	100
Sweden	64	63
Denmark	30	100
Netherlands	16	100
UK	18	44
Germany	14	100
Belgium	15	77
France	16	100
Italy	21.5	80
Spain	16	100
Greece	16	50

Source: OECD (2001).

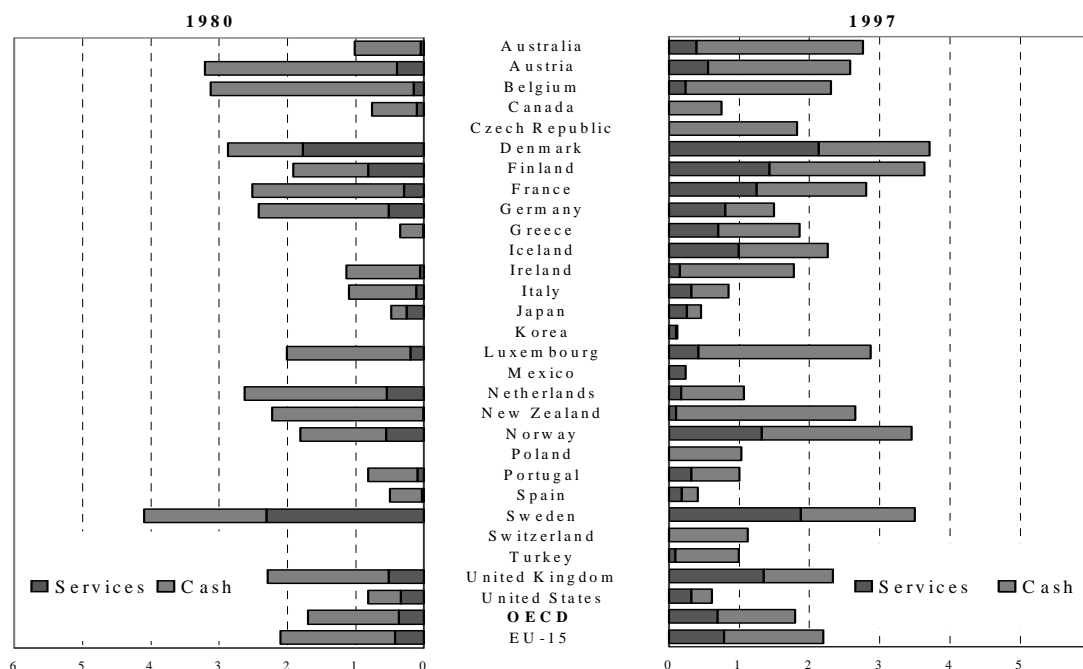
Italy is quite generous in leave granting (included compulsory and optional leaves), but only in terms of length and not in term of benefits, covering only 80% of the average wage. Conversely, less flexibility is found in optional leave, that is shorter than in most European countries, with benefits covering 30% of the average wage (ISAE, 2001). Maternity leave policies are expected to increase mothers' participation in the labour market, but it may happen that, if they are too long, they have a negative impact on women's job opportunities and wages. In fact, employers may find risky to hire young women that will probably be absent from work for long periods.

According to the ISAE research, the length of parental leave may have two opposite effects on women's employment rate: a longer maternity leave induces employers to prefer male

workers, but it may encourage women to enter the labor market, avoiding mothers' exit and making re-entering difficult. The effect of maternity leave on women's work can be different if we consider compulsory or optional leave. While the rigidity associated to long compulsory parental leave appears to have a negative impact on the probability of women to work, the length of the optional maternity leave has a positive effect on women's employment rate (ISAE, 2001).

Gornick *et al.* (1998) compare public policies directed to working mothers in fourteen different OECD countries by constructing an index that is the weighted sum of eight indicators of policies affecting mothers with children under 3 years of age (coverage, length and generosity of parental leave, tax relief and access to public child care) and an index for policies directed to mother of children between 3 and 6 year (public support for child care through tax relief for private child care, access to public child care and age of compulsory school). Italy ranks quite well when policies for mothers of children between 3 and 6 years are taken into account (second out of fourteen countries, mainly European plus US, Canada and Australia), and very badly (ninth) when we look at policies for mothers of children below 3.

Figure 3. Gross public expenditure on family benefits, as percentage of GDP



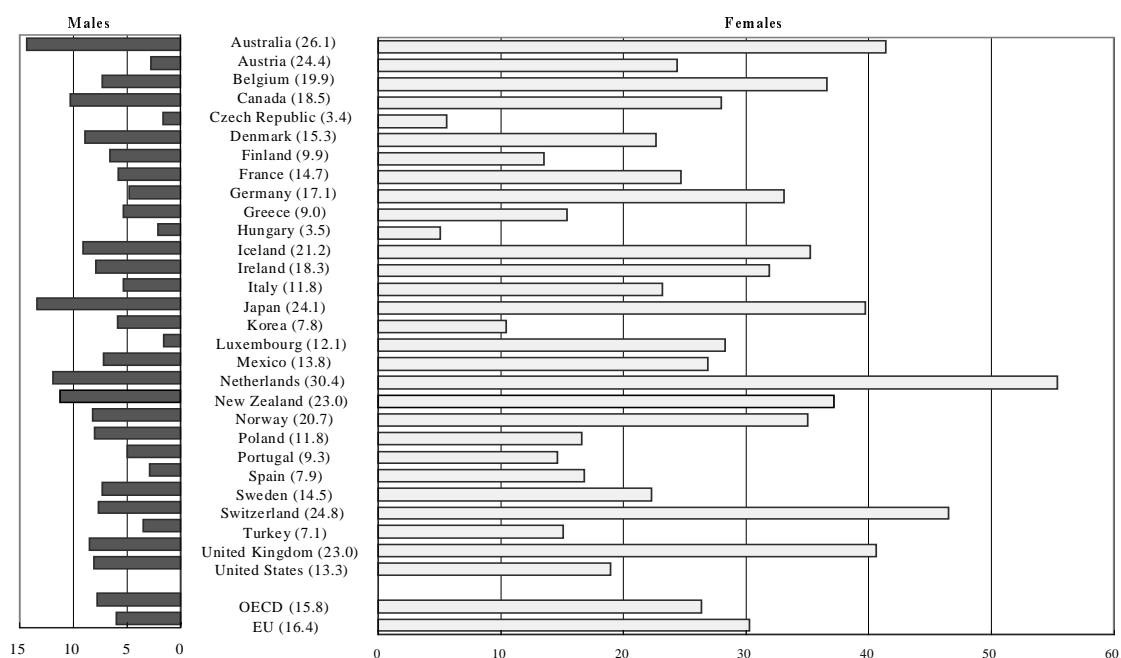
Source: Bradshaw *et al.* (1997).

Cross-country data show that where public support for children is low, also women's participation rates are low. Figure 3 shows public expenditure for family benefits as a percentage of GDP (in services and cash), which proves that in Italy cash and service transfers are among the lowest in Europe. Comparing 1980 and 1997, we see that cash transfers decline between

1980 and 1997, while services increase by a small proportion. This pattern is very different from that of countries such as France, Sweden and Denmark, where an increasing trend is observed.

Another important way of conciliating family and children responsibilities and market work lies in part-time opportunities or flexible time. Italy is among the countries where part-time opportunities are relatively lower (Chart 1).

Chart 1. Incidence of part-time employment as a proportion of total employment



Source: OECD (1999).

While in studies concerning countries with high part-time employment rates the focus is on the high cost associated to part-time work (lower median hourly earnings, lower job tenure, less job-related training and reduced access to occupational benefits and public social welfare benefits) (Bardasi and Gornick, 2000), in countries where part-time is low, research is focused on the lack of coherence between child care schedules and full-time work activities (Del Boca, 1993 and 2002; Del Boca and Tanda, 2000). Data from the European Community Household Panel report that, among the reasons whereby women prefer part-time jobs, the first is the need for family and children care (ECHP 1994-1998).

Finally, also the recent growth of self-employment has been determined by the desire for flexible-time jobs and the possibility to spend more time caring for children. Boden (1999), Connelly (1992a), Presser (1989) show a significant relationship between self-employment and household responsibilities. On the one hand, a self-employed worker is perceived to have more control over his/her working time. On the other hand, greater opportunities exist for working at home which allows even greater flexibility. The majority of workers who are home-based are self-

employed and are in most cases women with young children. Finally, in Italy also family-friendly policies (which include a range of working time arrangements, teleworking, child care services in the work place) are much less developed and widespread than in other European countries (den Dulk, 2001).

Recent analyses have tried to discuss the implications of the Southern model (relative to other welfare models) for women and children welfare. They show how the relationship between families and social policies in the Mediterranean countries contributed to the worsening position of women and children. Women still work less than in the rest of Europe and have less children than they wish (Del Boca, 2002). Thus, the lack of flexibility in parental leave and in working schedules are important factors in explaining the low participation rate of women with children. Similar considerations are relevant for child care opportunities. While in other countries child care is available and compatible with the prevailing working schedules, in Italy the child care system is rationed in terms of places and of hours of service, creating difficulties to women having full-time jobs. Ferrera (1996) and Addabbo (2001) analyzed the positive experience of family welfare mix of Emilia Romagna and showed that expanded child care with longer hours have contributed to encourage female work.

In the next Section we show how the female labor supply is related to the several aspects of child care, considering the effects of costs, availability and hours of service.

1.3 LABOR SUPPLY AND CHILD CARE CHARACTERISTICS

The analysis of child care policy is related to several aspects, availability, quality and costs. In this Section we will discuss some issues of measurement as well as the relationship between them. The issue of child care costs centers on family's ability to pay. According to most estimates, child care expenses make up 30-50 per cent of earnings of employed mothers with one child under 3. The analysis of availability focus on the ability to find appropriate child care. Shortage of child care options in terms of types of schedules and location limits the use. The problem of quality, which is more relevant in the private sector (where a wider variety of services is supplied), has mainly to do with the problems related to the fact that a proportion of children is cared for in low-monitoring situation (Blau and Hagy ,1998; Blau, 1991; Connelly, 1992a).

Even if distinguishable, all three aspects are related to the effect of child care costs on family decision-making. Availability is related to child care costs: the constraint that parents face in finding child care is often a problem of finding care at a price the family can afford.

Another important connection with child care costs is related to the fact that the distance from child care places (especially in areas where the number of services falls short of demand) increases the total cost of child care. The considerations on child care supply availability reported above, imply that the usual price effects should be observed only in areas in which the supply constraints are not binding (Gustaffson and Stafford, 1992). The issue of child care availability is very relevant especially in countries with low birth rates. For example, in a country like Italy, where the average number of children is only one and a high proportion of children grow up without siblings, the purpose of child care is not only supervision and care, but also essential socialization opportunity (Saraceno, 2000).

Finally, the problem of quality is also related to the issue of costs. Specialized personnel relatively to the number of children and higher levels of training are positively related to higher quality care, and high-quality care costs more than low-quality care (Blau, 1991; Connelly, 1992a).

Child care costs are part of family decision-making in two ways. Firstly, child care costs can be thought of as part of the cost of rearing a child, thus they affect the decisions in which children cost is a relevant factor. In addition, child care costs reduce the mother effective wage on the labor market and thus affect decisions for which the mother wage is a relevant factor. The higher the cost of child care, the higher the cost of an additional child. This leads to the prediction that higher child care costs tend to lower fertility (Cigno, 1991; Del Boca, 2002; Ermisch, 1989).

Conditional on fertility decisions, the stronger impact of child care costs is on the working mother's wage. Indeed, in most families, mothers are the family members with the lowest earnings. Assuming that women are the main caregiver in the household, mothers base their decisions on the costs and benefits of working on the labor market and these depend on their wages minus the cost of child care per working hour. By increasing the cost of extra-family child

care, their effective wages decrease (Del Boca, 1997).

An effective wage decrease reduces the probability of female participation in the labor market. If women remain in the market, a decline in their effective wages has two effects on their number of working hours. A wage decrease lowers the amount of family income, which eventually increase the number of hours women work. But the wage reduction diminishes the value of an extra hour spent on the labor market relative to the value of an extra hour spent at home (Connelly, 1992). Therefore, the number of working hours should decrease as the child care cost increases. The effect of child care costs is larger on female participation than on male one and is indeed stronger on the number of working hours, because women may prove unable to fit their working time to their real needs (Chiuri, 1999; Del Boca, 1993 and 2002).

1.4 PREVIOUS RESEARCH

A number of researchers have attempted to estimate the behavioral effects on various family decisions of changes in income wage rates and the price of child care. Research on the effect of child care on participation in the US and the UK focused on the impact of costs (Heckman, 1974; Blau and Robins, 1988; Connelly, 1992; Ribar, 1992, among others). These studies used different methodologies to estimate child care costs taking into account endogeneity problems.

Heckman (1974) had no information on child care costs and explicitly estimated a child care price function which incorporated measures of the availability of child care and its costs. Blau and Robins (1988) included a regional average of day care expenditure, but did not control for household specific information such as the age of the youngest child. Connelly (1992) used predicted expenditures as an instrument for child care costs in a subsequent labor force participation equation. The cost instrument controlled for regional variation and family characteristics. Ribar (1992), using a more structural approach, considered expenditures per hour of care per child as its measure of child care costs.

Generally speaking, those studies have found that family behavior is significantly influenced by child care policies. Blau and Robins (1988) estimate child care price elasticities for married women of $-.38$ with respect to labor supply and of $-.34$ with respect to their demand for formal child care. They found that, if the child care price were zero, 87 per cent of mothers would work. While Blau and Robins use the characteristics of average women in their sample, Connelly used the effects of change on each woman in his sample. She found also a substantial labor supply effect: if free child care were available, 68.7 per cent of women would be employed. Ribar (1992) found much larger elasticities for both labor supply and the demand for child care. The results of all those studies show that child care costs are a very important variable. Jenkins and Symons (1995), while analyzing UK data for single mothers, found similar results.

A completely different situation is the one emerging from North-European countries. Gustaffson (1994, 1995) studied the implication of the child care supply constraints on women labor supply decisions, in comparison with other countries. Gustaffson and Stafford (1992) investigated the responsiveness of the decision of women to work and use public child care use in response to variation in child care fees, availability of places and spouse income in Sweden². They found that, in areas where child care places are not rationed, higher fees significantly lower the probability of female work and public child care choice, while in areas where rationing is more severe there is little evidence of such price effects.

Studies on Italy report quite different results. Del Boca (1993) analyzed a model similar to

² Sweden is by far the country among the Northern European countries where the quality of child care is higher and the availability is greater. The participation rate of mothers is also higher.

Blau's and Robins' and estimated the effect of child care costs on participation of married women, considering both part-time and full-time and the choice of public and private child care systems³. The estimation of the relationship between child care costs and labor supply shows that a reduction in child care costs increases the probability of mothers' part-time employment, but has a less significant effect on the probability of working full-time. These results raise some concerns, given that part-time employment opportunities are so rare on the Italian labor market⁴. Chiuri (1999) - using Bank of Italy (1993) - analyzes the demand for child care also exploiting the information concerning child care quality. Her estimates show a strong interdependence between the resort to households' members as substitutes for the lack of flexibility and the lack of State-provided child care services. Using a different data set, this study reaches similar conclusions as Del Boca (1993), i.e. household labour supply depends on child care availability rather than on its costs. Table 3 reports and summarizes the signs and the significance of the child care coefficient on labor market participation. The different results certainly reflect important institutional characteristics of the different countries.

Table 3. Effects of child care costs on labor supply

Blau and Robins (1989)	Positive and significant
Connelly (1992)	Positive and significant
Ribar (1992)	Positive and significant
Jenkins and Symons (1995)	Positive and significant
Gustaffson and Stafford (1992)	Significant only in areas not rationed
Chiuri (1999) and (2000)	Non significant
Del Boca (1993) and (2002)	Significant only on part-time jobs

³ As there are no national data on child care use and costs, a data set on the Municipality of Milan was used.

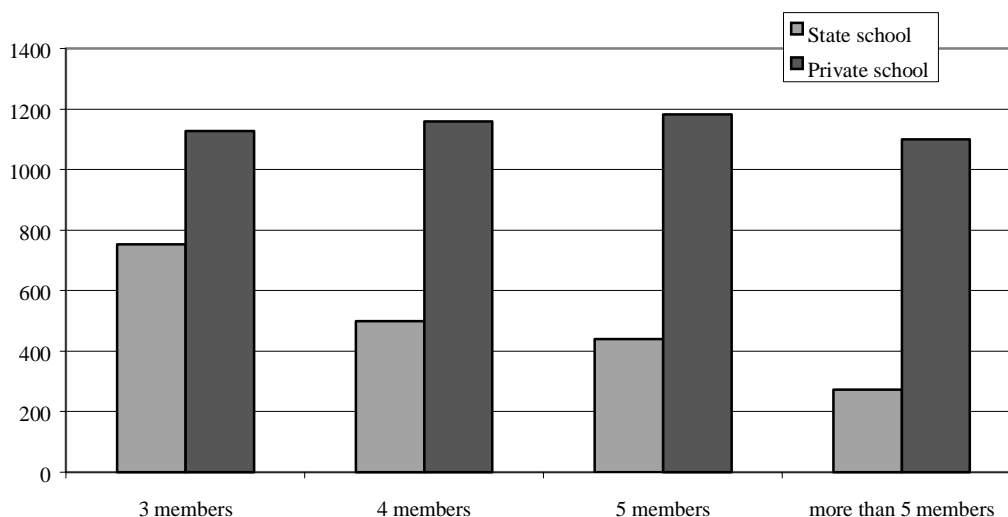
⁴ Empirical studies employing cross-country data have found a high correlation between the proportion of part-time jobs and female participation rates, in particular referring to married women with children (Meulders and Plasman, 1994). The low proportion of part-time workers does not seem consistent with self-reported preferences.

1.5 THE CHILD CARE SYSTEM IN ITALY

While in Anglo-Saxon countries (where a private provision and financing of child care prevails), the costs of child care are an important variable affecting female participation, in Italy (where there is a mixture of private and public child care), costs do not seem to be a significant variable. In the US and UK there is a vast array of child care arrangements in terms of type and costs. This diversity - which offers more choices to parents - creates difficulties for the study of price responsiveness, because of product heterogeneity and unmeasured quality differences on the market. In Italy, as in other European countries (such as Sweden), a high quality child care is available and quality standards are set nationally so that the common problems of unmeasured quality differences on the child care market is of less concern.

Important differences characterize public child care for children < 3 and > 3. First of all, the costs of child care for children less than 3 years of age are much higher on average than the costs of child care for children > 3, for both public and private care.

Figure 4. Average child care costs for children by number of family members

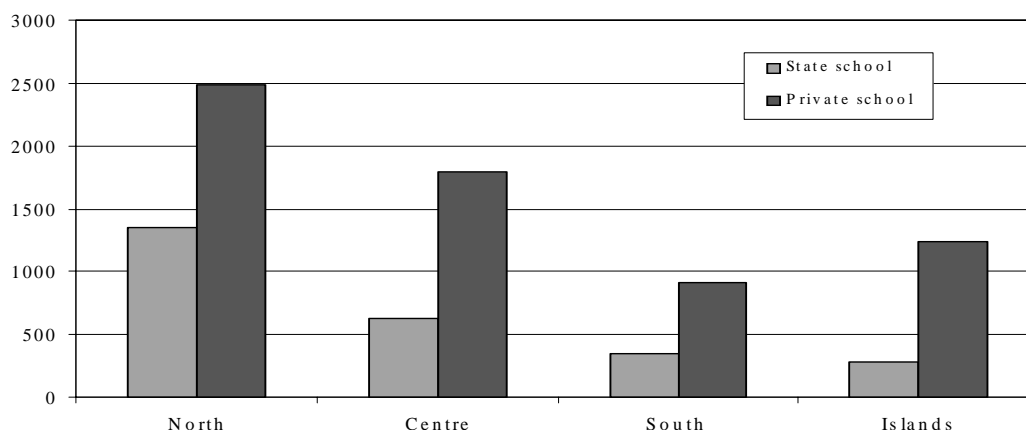


Source: ISTAT (1995).

The public child care price is very heterogeneous across areas. Fees differ from one municipality to another, because subsidies and availability are set by local governments. Private child care prices are higher than public ones. Differently than private child care, the costs of public child care depend on family size (as well as on family income and composition). Figure 4 shows that the cost of public child care is lower for larger families in all areas. In all administrative

regions, the costs of public care is lower than the costs of private care (Figure 5).

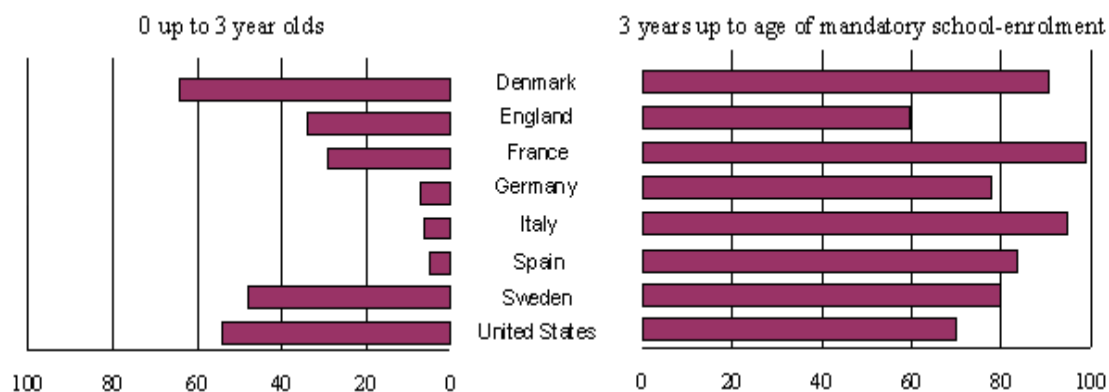
Figure 5. Average child care cost per year for children <3 years (thousands of lire)



Source: ISTAT (1995b), (1995c) and (1995d).

Other differences concern the availability of child care. Figure 6 lists the availability of child care in the different countries and shows that, while Italy is among the countries with the highest availability of child care for children > 3 years, it has the lowest supply for children < 3. While the

Figure 6. Proportion of children using public child care



Source: OECD (2000).

public child care for > 3 is used by 95 per cent of children, the child care for younger than 3 is used only by 6 per cent of the population of children <3. We will focus mainly on child care for less 3, which is crucial for labor market decisions.

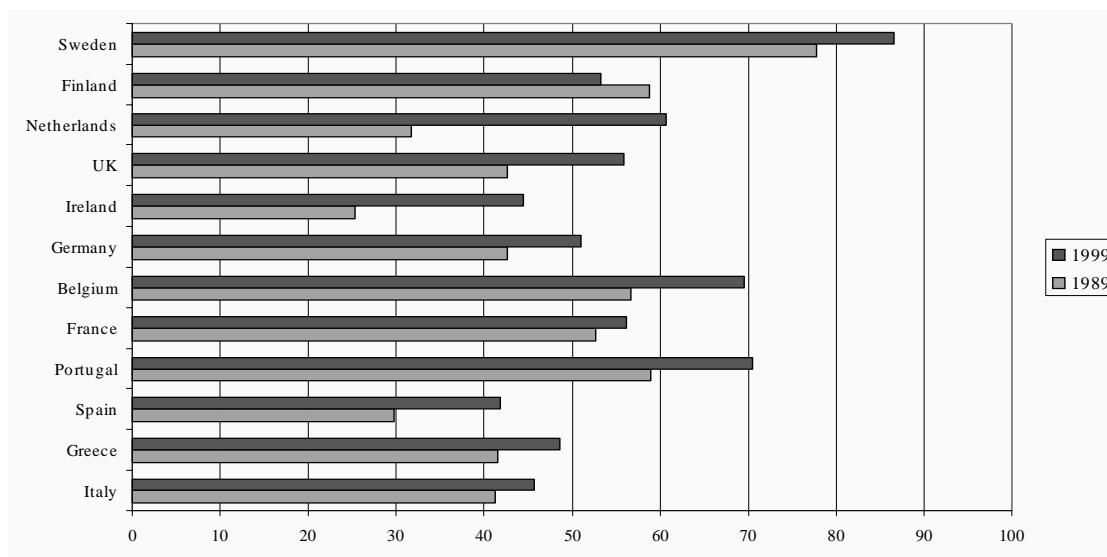
The most recent survey on the diffusion of child care indicates that the coverage has increased by only about 2% in 2000 (Istituto degli Innocenti di Firenze 2001). This seems to be quite in contradiction with the fact that women with children in the age 0-3 have the highest participation rates among women with children (48% as against to 45.6%).

If we consider separately public and private child care, we notice that the supply of private child care is much lower than the public one. The increase in the 1990s, however, is mostly due to the private portion. In 1992, public child care was about 93% of the total supply and private child care was only 7%. In 2000, the proportion changed. Since public care has increased very little while private care increased more, it became 20% of the total. In terms of distribution across regions it emerges that in regions where public child care is relatively high, also the private child care supply is high (ISTAT, 1995; Istituto degli Innocenti, 2001).

The public child care system for younger children is rationed in two ways. On the one hand, the number of places available in the public sector is rationed. According to the study of the Istituto degli Innocenti (2001), it emerges a 2.5 % of unsatisfied demand. However, the percentage of children applying for a place in the public child care system is still quite low as compared to mothers' participation rates. Saraceno (2002) provides an interpretation of the phenomenon, arguing that a great proportion of parents are discouraged from presenting the applications for a child care place by the uncertain outcome and by the lack of flexibility of the service. A high proportion of them prefer informal services such as private baby sitters, or grandparents, which allow more flexibility and more control on child rearing⁵.

On the other hand, also the hours of public child care are rigidly set and have a limit of 7-7.5 hours a day. Also the number of weeks available is limited: only 29 per cent of child care is available for more than 45 weeks in a year (Istituto degli Innocenti, 2001).

Figure 7. Participation rates of mothers with young children (<6)



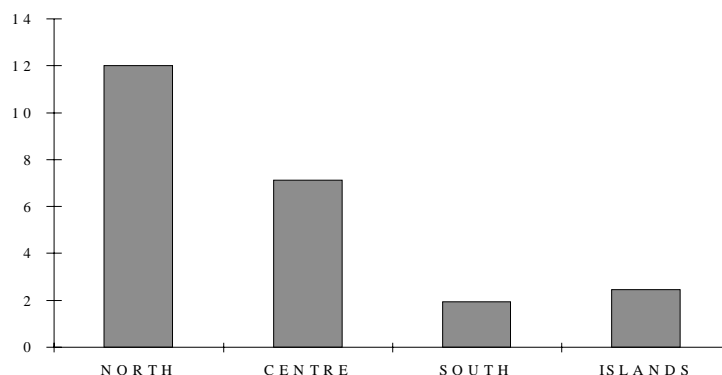
Source: OECD (2001).

⁵ Saraceno (2001) reports also that the opinions concerning what is the better care for children 0-3 is far from homogenous across families. The choice of a formal child care is more widespread among younger mothers with higher education.

Given these characteristics, public child care does not seem to be designed to accommodate full-time market work of both parents. These constraints are likely to have negatively affected the growth in the participation of mothers with younger children which has been much more limited than in other advanced countries (Figure 7).

While the availability of child care for children older than 3 is very uniform across regions, this is not the case for children under 3. There are marked differences across regions (ISTAT Multiscopo, 1998) (Figure 8). The proportion of children younger than 3 in public child care is over 18 per cent in some areas of the North and only 2-3 per cent in most Southern areas (this ratio is the number of places available divided by the population 0-3 years of age). In the Northern areas, the labor market participation rate is about 42 per cent, while in the Southern regions it is about 23 per cent (ISTAT, 1998).

Figure 8. Public child care (0-3 years) by regional area (1993)



Source: ISTAT (1995).

Different accessibility rates have created a situation of more significant rationing of child care in some areas of the countries especially in the South of Italy. In those areas women hardly find a job and are unemployed or work in the underground economy. Public child care for < 3 is therefore rationed in two ways, in the number of places available and in the hours of care offered.

Given the existence of these two types of rationing, many methodological problems arise: the price of public care (and the probability of obtaining the place) depends on several family characteristics (income, marital status), but also on the characteristics of other households applying for a child care place in the same area. Working hours and child care have to be chosen simultaneously.

In order to illustrate the impact of child care characteristics on female labor market participation, a simple model of mothers' decision to work and use child care is proposed.

1.6 METHODS AND DATA

Unfortunately, none of the data sets available on Italian households (Bank of Italy, Multiscopo, ECHP) allows us to produce an analysis fully consistent with the model and the simulations described above. Indeed, we have access to information on child care hours of service in only one of these data sets. However, in this data set (Multiscopo) there is no information on household earnings and income.

The Bank of Italy Survey on Household Income and Wealth contains detailed information on the income and wealth of family members on, several workplace characteristics (such as wages and hours of work), and on socio-demographic characteristics of the household (ages of the family members and the number of children). However, only in 1993 does the Bank of Italy Survey collect information on child care use, child care costs, and quality of public and private services (but no information is available on child care hours). We merge the 1993 dataset with regional information about availability of child care places and part-time opportunities to partially compensate for this lack of information (as well as for their use as instrumental variables).

To be part of in the sample used for the analysis, households had to consist of married adults with at least one child of pre-school age. Only 12 per cent of married couples in the 1993 Bank of Italy Survey have children of pre-school age. This small percentage is a result of the low fertility rate in Italy (see Del Boca, 2001, for an econometric analysis of fertility decisions in the Italian context).

The geographic distribution of our final sample has 44 per cent of households from the South, 20.4 per cent from the Center, 19.7 per cent from the North-west, and 16.6 per cent from the North-east. In terms of female labor market participation rates 46 per cent of wives and mothers work (almost twice the national figure). Women with pre-school children have a higher variance in working hours than men (given a positive number of hours), which means that jobs with more flexible hours are occupied by women with pre-school age children.

Regarding child care utilization, only formal child care is reported (which does not include child care provided by relatives or friends, for example). Fifty per cent of the selected sample use formal child care. Among families with children less than three years old, 34 per cent of households use child care. Of the working mothers (46 per cent of respondents) around 43 per cent use child care. The fact that this percentage is relatively low (in comparison to the U.S. or other European figures, for example) indicates the potential impact of the constraints presented by the high degree of rationing in access to public child care and the limited hours available to mothers acquiring access. Table 4 reports descriptive statistics for the variables used in the empirical analysis.

Table 4. Descriptive statistics (means and standard deviations)

Variables	1993
Participation	48.0 (.367)
Family income	45.490 (27.603)
Age of the wife	36 (12.5)
Family transfers <i>positive values</i>	3.149 (1067)
Number of children	1.93 (1.11)
Wife schooling	11.44 (4.5)
Alive parents	88.7 (37.7)
Public child care costs	346 (.370)
N. 0-2	0.66
Part-time	6.88 (4.77)

We use a bivariate probit model to estimate jointly the probability of working and using child care. Given previous results (Colombino and Del Boca, 1990; Del Boca, Locatelli and Pasqua, 2002) which showed a very low responsiveness of working hours to all measured variables (given the prevalence of full-time jobs in the labor market), we use participation instead of hours (see Del Boca, 1993, for an analysis of the choice between part-time and full-time employment). The dependent variables are whether the wife is working at the time of the interview and whether or not the household uses child care.

One important problem faced in the estimation is the issue of the endogeneity of child care costs. Since we would like to consider both equations as constituting a (partial) demand system for the household, we would like to include the parameters defining the households choice set. These include the prices of child care, both public and private, as well as any limitations to the uses of those services by a specific household. Since we only have child care costs paid by the household, this is not primarily a measure of price but rather it measures utilization. To get around this endogeneity problem, we use regional child care costs as an instrument (although a very imperfect one). Similar issues of endogeneity are encountered if we include the availability of public and private child care.

The variables utilized in the analysis include:

Personal Characteristics: Wife's age, family income (total income minus wife's earnings), and the number of children living in the family.

Informal Child Care: Unfortunately, no information is available on informal child care. We use a variable indicating whether one of the wife's parents is still alive (as a proxy for potential

informal child care).

Family Support: We also use a variable related to the transfers the family has received from relatives during the year of the interview as a proxy for family financial support.

Child Care System: To test the relevance of the rationing in child care we use as a proxy a dummy variable (NW) indicating that the household is situated in one of the three regions with largest availability of child care (Piedmont, Lombardia, Emilia Romagna), where the availability of both public and private child care is larger (see Table 5).

Labor Market: As an indicator of the probability of locating a part-time job, we use the ratio between the number of part-time jobs and total employment in the region.

Table 5. Child care and part-time jobs by region

Regions	Child care	Part-time jobs
Piemonte	10.1	7.8
Valle d'Aosta	7.8	7.8
Lombardia	9.1	8.9
Trentino	5.1	8.0
Friuli-Veneto	5.5	7.0
Liguria	8.1	6.5
Emilia	18.8	7.3
Toscana	7.9	7.5
Umbria	7.9	7.1
Marche	8.5	5.6
Lazio	6.6	5.9
Abruzzo	4.7	5.4
Molise	2.4	3.9
Campania	1.0	4.7
Puglia	4.0	6.5
Basilicata	3.4	6.0
Calabria	1.3	6.9
Sicilia	2.4	6.7
Sardegna	3.3	6.3

1.7 EMPIRICAL RESULTS

As discussed in the description of the child care system in Italy and given our model, we can expect that the price of public child care may not “significantly” influence its use since for many regions there is a space rationing problem. Only for less rationed areas would a clear impact be expected. Conditional to other household characteristics, such as family income, we will assess whether the costs of child care have a larger (negative) effect on its utilization in regions where rationing is less severe.

In Table 6 we present the estimates (with asymptotic standard errors in parentheses) from a specification in which regional child care costs (as a proxy for price) are not interacted with our availability indicator in either the participation or the child care utilization functions. The price of public child care in the region does not have a significant impact on either choices. Instead, the other regional variable that indicates the availability of part-time jobs has a very significant impact

Table 6. Participation and child care decision

Variables	Participation	Child care
Family income	-.198 (.032)	.256 (.111)
Family transfers	.117 (.045)	.113 (.017)
Age	-.038 (.013)	-.030 (.014)
Child care costs	-.232 (.267)	-.496 (.336)
NW	.346 (.110)	.358 (.102)
Part-time	.316 (.120)	.224 (.088)
Schooling	.167 (.049)	.230 (.038)
Alive parents	.268 (.056)	-.216 (.044)
Constant	4.506 (3.216)	4.906 (3.236)
Correlation coefficient (ρ)	.399 (.287)	

on both the participation and the child care utilization decisions. Households living in one of the three selected regions (i.e., $NW = 1$) have a significantly higher probability of working and using child care, though as it stands there is no rationale explaining why this is the case (apart from different preferences, perhaps). We cannot include directly the availability of public child care as well as private child care, given the endogeneity problem discussed above.

In terms of personal characteristics, we see that more educated women are more likely to

work and use child care. Higher household income is associated to lower participation rates (standard income effect), though higher household income is also associated to increased utilization of child care, possibly arising from a higher level of demand for leisure time free of child care burdens on the part of mothers from wealthier households. Older mothers of young children are less likely to work or use formal child care.

Households where the wife has at least one living parent have a higher working probability and a lower probability of using formal child care, indicating that these households may be using parents as substitutes for formal child care. Households receiving family transfers tend to work more, which may indicate that such transfers are provided to help subsidize child care usage or may simply indicate that individuals with substantial financial commitments, like mortgages, are more likely to work and receive transfers to meet those commitments.

Table 7. Participation and child care decision

Variables	Participation	Child care
Family income	-.182 (.032)	.225 (.221)
Family transfers	.111 (.040)	.113 (.097)
Age	-.032 (.006)	-.025 (.006)
Child care costs	-.150 (.135)	.356 (.546)
Child care costs*NW	-.213 (.099)	-.219 (.070)
Part-time	.356 (.060)	.323 (.062)
Schooling	.165 (.016)	.233 (.017)
Alive parents	.234 (.121)	-.245 (.123)
Constant	2.906 (1.416)	3.906 (2.144)
Correlation coefficient (ρ) ₃₁	.302 (.177)	

In Table 7 we re-estimate the model after including an interaction term between regional child care cost and residence in the “high child care provision” areas. A likelihood ratio test indicates that this model is preferred to the one without this interaction term. Most of the coefficient estimates are relatively similar across the two specifications with a few notable exceptions. The child care cost variable interacted with residence in the three region area ($NW = 1$) has an associated coefficient that is negative and significant, whereas the “main effect” of child care costs continues to be insignificantly different from zero. This is consistent with our

argument whereby price matters only when rationing is not severe. Moreover, the “main effect” of living in one of the three high-availability regions is drastically reduced in size, though the coefficient estimate remains significantly different from zero. This might indicate that the main reason whereby people living in those three regions have higher participation rates and utilization rates of child care is because supply is larger, which is a conclusion consistent with competitive market models.

1.8 CONCLUDING REMARKS

In this paper we analyze the effect of child care system characteristics on female labour participation. The availability of affordable child care was been identified by policy makers and social scientists in most countries as one of the most important prerequisites for female participation in the labour market.

The characteristics of the Italian child care system are peculiar. While the quality of public child care is generally high, and fairly homogeneous across regions, availability is both limited and heterogeneous (with respect to household characteristics such as income and area of residence). Public child care, although partially subsidized, lacks both local availability and flexibility in the hours of service. Therefore, it is hardly compatible with full-time employment opportunities of the Italian labor market. Child care costs are subsidized to a different extent depending on the municipality. To analyze the effect of child care on mothers' labor market participation decisions in the Italian context, we need to take into account the effect of rationing of services.

Our results indicate that labor force participation of women with children is affected by child care availability as well as by the availability of informal child care. The availability of family support, both in the form of transfers and in the form of presence of parents, both increase the probability of mothers' work. Child care costs are significant only in areas where child care is not severely rationed.

The empirical results seem to indicate that policies which would reduce the financial burden on the Italian family by providing an expansion of the child care system as well as more flexible working hours choices, might have a positive impact on the labour market participation rate of mothers with young children.

REFERENCES

- Addabbo T. (2001), *Offerta di lavoro e child care in Emilia Romagna*, paper presented at the Annual conference AIEL (association of Italian Labor Economists), Florence.
- Becker G. (1981), *A Treatise on the Family*, Harvard University Press.
- Bertola G., Jimeno J.F. Marimon, R. and C. Pissarides (1999), "Welfare Systems and Labor Markets in Europe", *Fondazione De Benedetti Progress Report*.
- Bettio F. and P. Villa (1998), "A Mediterranean Perspective on the Breakdown of the Relationship between Participation and Fertility", *Cambridge Journal of Economics*, 22, 137-171.
- Blau D. M. (1991), *The Economics of Child Care*, Russel Sage, New York.
- Blau D.M. and P.K. Robins (1989), "Fertility, Employment and Child Care Costs", *Demography*, 26, 287-300.
- Blau D. M. and A.P. Hagy (1998), "The Demand for Quality in Child Care", *Journal of Political Economy*, 106 (1), 104-146.
- Boden R. (1999), "Working Hours, Family Responsibilities and Female Self Employment", *American Journal of Sociology*, 58, 1, 71-83.
- Bradshaw J., Ditch J., Holmes H. and P. Whiteford (1997), *Support for the Children: A Comparison of Arrangements for Fifteen Countries*, Department of Social Security, London.
- Cigno A. (1991), *Economics of the Family*, Oxford University Press, Oxford.
- Cigno A., Giannelli G. and F. Rosati (1998), "Voluntary Transfers among Italian Households: Altruistic and Non-Altruistic Explanations", *Structural Change and Economics Dynamics*, Special Issue on "The Economics of the Family" edited by Del Boca D., 9(4) 435-453.
- Chiuri M.C. (1999), "Intra-household Allocation of Time and Resources: Empirical Evidence on a Sample of Italian Household with Young Children", *CSEF WP*, 15, University of Salerno.
- Chiuri M.C. (2000), "Quality and Demand of Child Care and Female Labour Supply in Italy", *Labour*, 14, 1.
- Colombino U. and D. Del Boca (1990), "The Effect of Taxation on Labour Supply in Italy", *Journal of Human Resources*, 25, 390-414.
- Connelly R. (1992a), "The Effect of Child Care Costs on Married Women's Labor Force Participation", *Review of Economics and Statistics*, 74 (1), 83-90.
- Connelly R. (1992b), "Self Employment and Providing Child Care", *Demography*, 29, 1, 17-29.
- Del Boca D. (1993), *Offerta di lavoro e politiche pubbliche*, Nuova Italia Scientifica, Rome.
- Del Boca D. (1997), "Intrahousehold Distribution of Resources and Labor Market Participation Decisions", in Persson I. and C. Jonung (eds), *Economics of the Family and Family Policies*, Routledge Press, New York.
- Del Boca D. (2001), "L'offerta di lavoro", in Brucchi L. (ed.), *Manuale di Economia del Lavoro*, Il Mulino, Bologna, 56-76.
- Del Boca D. (2002), "The Effects of Child Care and Part-time on the Participation and Fertility Decisions of Married Women", *Journal of Population Economics*, 14, forthcoming.

- Del Boca D. and P. Tanda (2000), "Economia della famiglia e politiche sociali", *CNEL Documenti*, 28.
- Del Boca D., Locatelli M. and S. Pasqua (2000), "Employment Decisions of Married Women: Evidence and Explanations", *Labour* 14,1, 34-52.
- Del Boca D., Locatelli M., and S. Pasqua (2002), "Employment and Earnings of Husbands and Wives", in *Women Work and Social Policy in the European Union*, P.Lang, New York forthcoming.
- Den Dulk L. (2001), *Work Family Arrangements in Organizations*, Rozenberg Publishers, Amsterdam.
- Ermisch J.F. (1989), "Purchased Child Care, Optimal Family Size and Mother's Employment: Theory and Econometric Analysis", *Journal of Population Economics*, 2, 79-102.
- European Commission (1995), "Performance of the European Union Labor Market: Results of an ad hoc Labor Market Survey", *European Economy*, 3.
- EUROSTAT (1978), *Indagine sulle forze di lavoro*, Rome.
- EUROSTAT (1998), *Indagine sulle forze di lavoro*, Rome.
- Ferrera M. (1996), "The Southern Model in Social Europe", *Journal of European Social Policy*, 6 (1), 17-37.
- Gornick J.C., Meyers M.K. and K.E. Ross (1997), "Supporting the Employment of Mothers: Policy Variation across Fourteen Welfare States", *Journal of European Social Policy*, (7) 45-70.
- Gustaffson S. (1994), "Childcare and Types of Welfare States", in Sainsbury D. *Gendering Welfare States*, Thousand Oaks, Ca: Sage, 45-61.
- Gustaffson S. (1995), "Public Policies and Women's Labor Force Participation" in Schultz P. (ed.) *Investments in Women's Human Capital*, Yale University Press.
- Gustaffson S. and Stafford F. (1992), "Child Care Subsidies and Labor Supply in Sweden", *Journal of Human Resources*, 27 (1), 204-230.
- Heckman J. (1974), "The Effect of Child Care Programs on Women Work Effort", *Journal of Political Economy*, 82, 2 pp 136-63.
- ISAE (2001), "Le politiche di tutela della maternità e il mercato del lavoro", *Rapporto Trimestrale*, April.
- ISTAT (1995a), "Rilevazione delle forze di lavoro - medie 1993", *Informazione*, 17.
- ISTAT (1995b), "Statistiche della previdenza, della sanità e dell'assistenza sociale. Anni 1992-1993", *Annuario*, 3.
- ISTAT (1995c), "Statistiche della scuola materna ed elementare. Anno scolastico 1992-93", *Annuario*, 4.
- ISTAT (1995d), "Popolazione e movimento anagrafico dei comuni. Anno 1993", *Annuario*, 6.
- ISTAT (1998), *Indagine Multiscopo "Famiglia, soggetti sociali e condizioni d'infanzia"*.
- Istituto degli Innocenti (2001), *I nidi d'infanzia e gli altri servizi educative per i bambini e le famiglie*, Firenze
- Jenkins S. and E. Symons (1995), "Child Care Costs and Lone Mothers' Employment Rates: UK Evidence", *WP ESRC Research Centre on Micro-Social Change*, 2, University of Essex, Colchester.
- Meulders D., Plasman O. and Plasman, R. (1994), *Atypical Employment in the EC*, Aldershot, Dartmouth.
- OECD (1999), *Employment Outlook*, Paris.
- OECD (2001), *Employment Outlook*, Paris.

- Presser H. (1989), "Can We Make Time for the Children: The Economy Work Schedule and Child Care", *Demography*, 26, 4, 523-543.
- Ribar D. (1992), "Child Care and the Labour Supply of Married Women: Reduced Form Evidence", *Journal of Human Resources*, 27 (1), 135-165.
- Saraceno C. (2000), "Italian Families under Stress", *Labour*, Special Issue on Household Behavior and Social Policies edited by Del Boca D. and P. Tanda.
- Saraceno C. (2001), "Conciliating Work and Family Responsibilities: Paradoxes and Imperfect Balance", *mimeo*, ISFOL Rome.
- Trivellato U. (1997), "Il Panel della Banca D'Italia", *mimeo*, University of Padua.
- Villa P. (2001), "Evaluation of National Action Plans. Italy 1998-2001", Report for the Network on "Gender and Employment", for the Equal Opportunities Unit, DG V of European Commission, Bruxelles.

Comment

by Riccardo Faini⁶

This paper is motivated by an empirical puzzle. First, the fertility rate among Italian women is one of the lowest in the world. Second, Italy's female labor market participation rate is also very low, almost at the bottom of the OECD league. The reason this is puzzling is that child rearing is often seen as hampering labor market participation. Hence, one would expect a negative rather than a positive correlation between these two variables. The joint finding of low fertility and low participation seems therefore difficult to rationalize.

The paper of Daniela del Boca offers a simple and convincing answer to this puzzle. The basic message is that to account for the demographic and the labor market behavior of Italian women we only need to look at the cost and the availability of child care facilities. The reasoning is that the high cost, or the limited availability, of child care facilities will discourage both childbearing and labor market participation. In practice, as argued in the paper, matters are a bit more complicated. To identify empirically the impact of child care facilities one needs to distinguish between those cases where the market for such facilities clears from those other cases where rationing prevails. The evidence reported in the paper from a sample of Italian households shows that the price of child care facilities has a significant impact on both fertility and labor market participation only in those regions that are well endowed with such facilities and where therefore rationing is less likely to prevail. For other regions, mainly in the South of the country, where the supply of child care facilities is more limited and rationing is more likely to prevail, there is no evidence that price effects are significant determinants of fertility and labor market choices. By and large, therefore, the evidence seems to support the basic claim of the paper.

It is difficult to disagree with the basic message of the paper. However, before we can fully subscribe to the results, we need to address a number of issues. One is somewhat technical and has to do with the estimation procedure. To put it simply, if demand is rationed, it is not possible to identify in any meaningful way demand. The problem at hand is slightly more complex because we are not concerned with the demand for the rationed good, e.g. child care facilities,

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but with the fertility and the labor market participation choices. This kind of issues, where rationing in one market affects agents in other unrestricted markets, has been analyzed long ago in a seminal paper by Neary and Roberts (1983). Suffice to say here that, if rationing prevails in one market, this will affect the household choices in all other markets, with an impact on both the level and the responsiveness of demand to its notional determinants. This means for instance that both the price and the income elasticities of demand depend on the presence, and the amount, of rationing. To capture this effect, it is not enough therefore to differentiate only the price response between rationed and unrestricted markets. What is required is to allow for a different responsiveness of fertility and labor market choices to all their determinants depending on whether child care facilities are rationed or not. Moreover, when rationing prevails, quantity as well as prices will affect the agents' behavior in the unrestricted markets.

There is an additional and perhaps more subtle problem. The author seeks to establish a link between the availability of child care facilities on the one hand and the fertility and labor market choices of Italian women on the other. Causality however can run both ways. Consider the simple case where female participation is relatively lower in one area because of cultural and structural factors. It would be perfectly rational for local authorities to supply a limited amount of child care facilities. The causality is therefore reversed. It is not the lack of child care facilities that hampers female participation. It is the limited labor market attachment of women that generates a low supply of child care facilities.

The key question is however about policy. First, the ambiguity about the direction of causality casts some doubts on whether an exogenous increase in the supply of child care activities would be effective in boosting female labor supply. Second, the paper says little about supply conditions. Is there a market failure in the supply of child care facilities? Are there strong reasons therefore to advocate an increase in publicly provided and perhaps also subsidized child care facilities? Why is it that if the public child care facilities happen to be rationed, the private sector does not fill the gap? Without an answer to these questions any definite policy recommendation is at the very least premature.

Comment

by Jean-Paul Fitoussi⁷

The preceding speaker said that he was incompetent, and he offered very competent comments. Well, I want to tell you from the outset, that I am incompetent and I will give an incompetent comment.

First, because I am incompetent, and it's maybe my first acquaintance with the subject, I found the paper very nice and well structured. It begins with a survey of the literature and a description of the Italian system. It then presents a small behavioural, theoretical model, which takes into account the different constraints existing in the Italian system. Then it looks at simulation results, to end with some empirical results, which is a rather dreamlike exercise (given?) the low availability of data on the subject. Hence, the paper is very professional.

Turning to the main question, we can state it as follows: do the availability and the cost of childcare influence women participation in the labor market? I would guess, yes. And I would not have changed my mind even if the empirical result of the paper contradicted this *a priori* belief. But fortunately they do not. So, I come to a second question: if childcare is strongly rationed, does its cost affect the participation rate? Again, I would intuitively answer no, and I would believe it even if the empirical result proved the contrary. But, fortunately, they do not.

The paper describes the Italian system, characterized by a low level of social protection and a specific regime of employment relationship. This implies that the burden of a social protection will fall on families. Maybe this is the reason why families are disappearing in Italy a remark that comes from the observation of the fertility rate. (And) here comes my disappointment: The partial equilibrium framework of the paper does not allow the author to deal with deeper issues. Is there a trade-off, for example, between the fertility rate and the participation rate? Or, on the contrary, the possibility that both depend from the same variable, or the same institutional feature. Because, if there is a problem in Italy, it is the fertility rate problem. And under some conservative assumptions; Italy's population could be, in 2050, only 40 million. So that's a (huge, or serious, or crucial) problem. And we can't analyze the problem of women's participation rate without having a look at what can, at the same time, increase the fertility rate as well.

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So, this (possible) trade-off has to be dealt with and analyzed. It is true that the paper mentions this question: the author argues that the study predicts that higher childcare cost will (imply) lower fertility. Well, this claim is not really convincing. Because, if the average cost of childcare prevents mothers with one children to work, the cost of raising several child is very low, because of increasing returns. (Thus,) it's not that clear what is the relationship between the cost of childcare and the cost of raising (additional children), unless we reason within a general equilibrium model. We have to take into account many factors to disentangle this very complex issue.

The second question that I would have liked the paper to address is that of the availability of housing. Isn't the low availability of housing in Italy one of the candidates to explain both low fertility and low participation rates? It is lower by a factor of 30% with respect to the average of European countries. It is therefore an important feature of the Italian system. Maybe the one which explains that the rate of participation of women between 20 and 24 is very low, the lowest in Europe and, at the same time, that 82% of women between 20 and 24 are living with their parents. Maybe the question of childcare is very important to analyse, but it has to be analysed within a general equilibrium framework, to take into account both the problem of the fertility rate and the participation rate of women in Italy, and to take into account the most important variables which are likely to influence them at the same time.

I would be very happy if the research led to show that the same variables affect both rates, even if with some trade-off, that is with different sign of parameters.

To conclude - and I said I would be brief - I repeat that the paper is well-structured, but it does not seem that it clearly makes the point that childcare (both its cost and its availability) is the most important variable explaining the participation rate of women. And it does not make at all the point that the cost and (availability?) of childcare are important to explain the fertility rate of women. Thank you.