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Reconciling Motherhood and Work: Evidence from Time Use Data in Three Countries

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Abstract

In this study we compare evidence based on time use data for three countries: Italy, Germany and Sweden. While in all these countries working mothers appear to dedicate less time to child care than non-working mothers, in Sweden the difference is smallest in absolute terms as well as statistically insignificant. In Italy maternal work is associated with the largest loss of maternal child care. To shed light on the possible reasons for this finding we consider the role of part-time job opportunities and formal or informal child care arrangements. We argue that while child care facilities increase mothers' access to employment, it is the availability of flexible working arrangements that allows them to work and still have enough time to allocate to child care.

Keywords: Time use; Child care; Labor market institutions

JEL Classification: J22; J13; D1

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Table of contents

1 Introduction

Since in most western economies, and specially in Southern European countries, fathers are typically reluctant to change their working habits and their attitudes towards family duties, men s share of total domestic labor is still far below that of women.[1] Therefore, reconciling motherhood and employment remains today a problem for many women. Given that a day cannot have more than 24 hours, going to work implies necessarily cutting on other activities and one which is at risk of signi´ cant reduction is child care.

Is there a negative effect of parental employment on children s outcomes? This question has been the object of extensive empirical research with mixed results.[2] However, the most recent studies, probably based on higher quality data, seem to point more consistently towards the ´ nding of worse children s outcomes associated with parental employment as far as educational achievements are concerned.[3] Moreover, the assessment of negative consequences seems to extend also to other outcomes beyond cognitive development.[4]

Independently of these considerations, it seems plausible that parents are on average the best suited persons to take care of their children for at least a non-trivial part of the day. If this is true, it becomes important to measure the extent to which child care provided by mothers (and fathers) decreases when they work.

Despite how relevant this assessment is, given the trend of increasing female labor market participation in the western world, it is striking that to the best of our knowledge only Hofferth (1999) addresses explicitly and directly this issue, showing that in the US employed mothers spend less time on child care than their counterparts without jobs. Several less recent papers indirectly suggest the possibility of a more diversi´ ed relationship between parental work and time devoted to child care, depending on the role of the education

level of mothers and fathers.[5] In any case, no one seems to have addressed the question of which institutional setting makes it easier for mothers to work without reducing too much the time they can allocate to child care.

In this study we try to ´ ll in this gap by comparing evidence based on time use data for three countries: Italy, Germany and Sweden. Although in all these countries working mothers appear to spend less time on child care than non-working mothers, Sweden is clearly a country where the difference is smaller as well as statistically insigni´ cant. To shed light on the possible reasons for this ´ nding we consider the role of part-time job opportunities and formal or informal child care arrangements. These two factors are typically considered crucial to explain the extent to which females can reconcile motherhood and work in different countries.[6] There is, however, an important and often neglected difference in the way in which these two factors facilitate a reconciliation. If formal child care arrangements are available in the absence of part-time employment opportunities, it is certainly easier for mothers to work but at the cost of a considerable reduction of the time they are able to spend on child care because only full-time jobs can be found. If, instead, ˆ exible job opportunities are available in conjunction with child care arrangements, mothers can work without completely giving up the possibility of spending time on child care. Our evidence from time use data along with information on the availability of part-time and child care arrangements suggests that the second of these two ways to reconcile motherhood and work characterizes Sweden, in contrast to Germany and Italy, where the ´ rst way seems to prevail. However, nothing comes without a cost. The Swedish solution favours the reconciliation of child care with maternal work, but since part-time jobs are easily available only in certain occupations and sectors, this solution entails a considerable amount of gender

segregation by occupation, as, for example, shown by Breen and Garcia-Peñalosa (2002).

2 The Data

Our analysis is based on three data sets constructed from time-budget studies for Italy (1989/90), Germany (1990/91) and Sweden (1984/85). These surveys contain information on labor market participation, education, family structure and general demographic characteristics. As for the time use information, Table 1 summarizes the essential features of the time diaries completed in the three countries. Each respondent was asked to complete a time diary on one day in the Italian survey and on two days in the German and the Swedish surveys. Our empirical work is based on diaries for weekdays (that is, from Monday to Friday) and for Sundays. Both the Italian and the German surveys obtain time use information from all the adult household members. Note, however, that the Swedish survey only provides time diaries for the husband and the wife and, in some cases, for a third person present in the household. As for the number of possible activities, individuals responses are coded into 151, 230 and 72 separate categories in the Italian, German and Swedish diaries, respectively. The time units into which the days are disaggregated are 5 minutes long in the German time-budget, whereas the Italian and Swedish diaries do not present time slots and respondents must specify when each activity begins and ´ nishes.

We use information on the number of minutes devoted to child care by the mother and by all the other household members excluding siblings younger than 15. In what follows, we focus on the number of minutes allocated to child care divided by the number of children under 15 present in each household.[7] Unfortunately, it is not possible in any of the data sets used to identify the exact amount of time that household members devote to

the care of each of the children.

Our data sets are detailed enough so that we can distinguish two main types of child care: quality and basic.[8] Quality child care encompasses activities linked to children s educational and cultural development, while basic care encompasses activities related to children s more essential needs. Table 1 s last two rows present the exhaustive list of activities that we have classi´ed as quality and basic child care in the three countries. The distinction between quality and basic child care is quite homogeneous in Italy and Germany. However, we cannot make such a careful distinction for Sweden, where the range of possible child care activities encompasses only three categories: active child care (that we refer to as quality care), passive child care and care of a sick child (that we have classi´ed as basic care).

The ´nal samples for our analysis have been selected from the original samples on the basis of three criteria. First, households are excluded if the information needed to specify the relationship between all its members is not available.[9] Second, since our goal is to explore the link between maternal employment and the amount and characteristics of the time allocated to child care, we keep only two-parent households with children under 15 years old.[10] The third criterion requires the exclusion of all the households for which one or more of the variables used in the analysis are missing. These three criteria leave us with 1,292, 1,749 and 411 households for Italy, Germany and Sweden, respectively.

Table 2 presents summary statistics for the key variables used in the analysis for the three samples.[11] Mothers work in 76% of the households in the Swedish sample, against only 65% and 43% of the households in the German and Italian samples, respectively. The average number of children under the age of 15 in our samples is 1.45 in Italy, 1.84 in

Germany and 1.70 in Sweden.

Regarding education, individuals have been classi´ed as highly educated if they had access to college (even if they did not actually go to college) or had a higher quali´cation and as low educated otherwise. According to this classi´cation, almost 30 percent of mothers are highly educated in the three countries. Note also that mothers are also slightly younger[12] and less educated than fathers in the three countries.

Finally, note that adult individuals other than parents or children older than 14 are present in 6% and 4% of the Italian and German households, respectively, while they are never present in our Swedish sample.

3 Maternal Employment and Child Care

3.1 The Effect on a Working Day

Table 3 presents evidence on the effect of maternal employment on child care in a working day. The ´rst row reports the average number of minutes that working or non-working mothers devote to child care per child under 15. These statistics are adjusted predictions computed at sample averages after controlling for the following observable characteristics: mother s age, father s age, mother s and father s education dummies, number of children under 15, number of children over 14, number of grandparents, number of other adults and region dummies. Note, in particular, that the number of children under 15 is included on the right hand side of each estimated equation in order to allow for the possibility of economies (or diseconomies) of scale in childcare.

Germany is the country where non-working mothers spend more time on child care,

with an average of 82 minutes per child on a daily basis from Monday to Friday. Perhaps unexpectedly with respect to some stereotypes,[13] Italian non-working mothers come second in the ranking with 63 minutes per child. Much less time is instead devoted to child care by Swedish non-working mothers (40 minutes). However, this ranking is substantially modi´ ed when we look at the changes induced by maternal work. These changes are reported in percentage terms in the second row of each panel. The correspondent t-statistics for the null hypothesis of a zero change is given in parentheses. While Swedish working mothers dedicate 3% more time to child care than their non-working counterparts (but the difference is not statistically signi´ cant),[14] the corresponding ´ gure for Germany is -28% and Italy reaches the lowest level of -41%. In both Italy and Germany, these differences are statistically signi´ cant. As a result, Italy is the country where working mothers allocate the least time to child care: 37 minutes against 41 in Sweden and 60 in Germany (see the ´ rst row).

Although it is hard, if not impossible, to disentangle with the available data the combination of historical, cultural and institutional factors that determine these cross country differences, it has been argued that the availability of child care and part-time work[15] are the two crucial factors that explain the extent to which females can reconcile motherhood and work in different countries.[16] However, these two factors facilitate a reconciliation in very different ways. When formal child care arrangements are available but part-time employment opportunities are scarce, it is easy for mothers to work, but this decision necessarily implies a considerable reduction of the time they can spend on child care because only full-time jobs are available. If instead a combination of part-time opportunities and child care facilities is available, mothers can work without giving up completely the pos-

sibility to spend time on child care. In what follows we investigate the possibility that a successful combination of part-time work opportunities and child care facilities is what allows Swedish mothers to work and still be able to spend a considerable amount of time on child care relative to their non-working counterparts.

Table 4 shows that in our Italian sample 56% percent of mothers do not work and among those who work, the majority work full-time. Only 19% of all Italian mothers have a part-time job, and survey evidence shows that this is not the result of female preferences against shorter working hours. For example, the European Commission (1993 and 1995) shows that in Italy, and more generally in Europe, the majority of female employees would prefer to work fewer hours even if this implies a proportional reduction of labor income. Although in 1984 a reform eliminated the institutional constraints that penalized the diffusion of part-time jobs in Italy, these jobs are still infrequent, mainly because of the opposition of employers who fear the organizational costs of shorter working hours.[17] Also trade unions, which otherwise favour a generalised compulsory reduction of working time, oppose the optional availability of part-time jobs on the ground that it may create ghettos" of lower quality occupations. As a result of this widespread opposition from employers and employee organizations, the possibility for parents to reconcile work and child care through a ˆ exible allocation of time between alternative activities is severely limited in Italy.

Table 5 shows that, as far as child care services are concerned, the situation is slightly more favourable to female employment in Italy. According to OECD, only 6% of children under 3 years of age had access to these facilities in 1998. However, it should be noted that both male and female Italian workers can easily obtain a leave of absence during the ´ rst

three years of life of a child, and in some sectors these leaves of absence are even partially compensated. Moreover, 95% of children older than 3 have access to the formal school system, which takes care of them for a large part of the day until the end of elementary school. More precisely, for children younger than 10, schools are typically open from 8.30 in the morning until 16.30 in the afternoon, with the possibility of extensions for working parents. The situation of children older than 10, but still in mandatory school age, is more problematic because junior high school lasts only until 13.00 approximately, although for six days per week. This is evidently a problem for families with working parents, if part-time jobs are not available. In these cases the solution is often offered by extended family networks, which are an aspect of the Italian situation that we explore below.

As a result, Italy appears to be characterized by some relatively accessible kinds of formal or informal child care arrangements, matched by a very limited access to part-time jobs. Therefore, it is not surprising to observe in our data that very few Italian mothers work (Table 4) and at the same time those who work are forced to reduce substantially the time they can allocate to child care (Table 3).

At the opposite extreme is the Swedish situation, were formal child care facilities and part-time opportunities are well known to be quite accessible. As many as 77% of the mothers in our Swedish sample work (and the data are for 1984!), and, more importantly, the bulk of the difference with respect to Italy is generated by part-time workers (46% in Sweden against only 19% in Italy). The difference in full-time work is actually quite small (30% in Sweden against 23% in Italy). Regarding child care services, Table 5 shows that, in 1998, 48% of children under 3 years of age were in formal child care, and the same was true of 80% of the older children. We do not have similar data for 1984, the year of our

Swedish time use survey, but they are probably not very different given that, in that year, we observe that most Swedish mothers work without having to reduce by a large amount the time spent on child care (Table 3).

Germany takes an intermediate position in terms of female employment in both full and part-time jobs, with child care services similar to the Italian ones. Nevertheless, in terms of consequences of maternal work for the time mothers can spend with children, Table 3 shows that Germany is much more similar to Italy than to Sweden.

In light of the evidence so far presented, it is fairly clear that maternal employment reduces the time mothers can dedicate to child care in the three countries. However, the Swedish experience strongly suggests the possibility that institutional arrangements can substantially limit this undesirable consequence of female labor market participation. This is clear from the observation of Table 6, which reports the amount of time spent on child care by the mother according to whether she works full-time, part-time, or does not work.[18] In all countries, mothers working part-time dedicate more time to children than mothers working full-time and in Sweden there is actually no difference between the time dedicated to child care by mothers who work part-time and mothers who do not work.

However, nothing comes without costs. A wide literature[19] has shown that Sweden is characterized by the highest degree of gender segregation by occupation among OECD economies. This is likely to be the consequence of the fact that part-time jobs are easily available in certain occupations and sectors while being rare in others. If females mainly work in part-time jobs, the ´nding of gender seggregation by occupation cannot come as a surprise. As a result, while the Swedish solution favours the reconciliation of child care with maternal work, it also entails the possibly undesirable consequence of increasing

gender seggregation by occupation.

3.2 Quality care and basic care

As explained in detail in Section 2, an interesting aspect of the time use data at our disposal is the availability of information which allows us to distinguish between quality child care and basic child care. A further important aspect of the Swedish success in comparison with Italy and Germany is offered by the fact that in these two latter countries it is the quality type of care the one most reduced when mothers work. The second panel of Table 3 shows that quality care is reduced by 49% and 40% when the mother works in Italy and Germany, respectively, while in Sweden it actually increases by 3%, albeit in a statistically insignificant way. Moreover, in the ´rst two countries the reduction of basic care is substantially smaller than the reduction of quality care (37% in Italy and 24% in Germany) while in Sweden differences of effects between types of care are smaller.

It is obviously impossible to attribute these differences to a well de´ned set of causes, but it seems reasonable to believe that the time dedicated to basic care can be compressed less than the time dedicated to quality care. This might be the reason why Italian and German mothers have to cut back on quality child care more than Swedish mothers, given that the former are more likely to work full-time if they work. In other words, basic forms of child care, like feeding the children, must take priority in the limited amount of time Italian and German mothers have at their disposal after working full-time. The evidence presented suggests that basic child care takes precedence over quality forms of child care, like reading and playing with children.

The ´gures for Sweden should be considered with some caution because, as discussed

in Section 2, they are not directly comparable to the ´gures in the other two countries. Sticking to the Swedish de´nition of quality care, it seems nevertheless reasonable to say that if a Swedish mother spends time on child care, she does so mostly in activities that imply an active form of care, as if more passive types of care could be left to public institutions.

3.3 The contribution of other household members

As we already mentioned, a speci´c aspect of the Italian model of reconciliation of motherhood and work is the role of other members of the household. In addition to the father, these are primarily grandparents, aunts and uncles. Also adult children are frequently living at home in Italy (see for example Bentolila and Ichino (2003) and Becker et al. (2002)). However, in Ichino and Sanz de Galdeano (2002) we show that the amount of time devoted to child care by adult children living in the household is negligible. Hence, in what follows, with the words other adults" we refer to any adult in the household different from parents and adult children (that is, children older than 14).

Table 7 shows that in Italy the probability that other adult members are present in the household is higher than in Germany. More importantly, from the viewpoint of this study, this probability more than doubles when the mother works (9% against 4%). A smaller difference is observed for Germany (5% against 3%), where the presence of other adults is in general less likely than in Italy. On the contrary in our Swedish sample, independently of maternal work there are no households with other adults present in addition to parents and adult children, which explains the empty cells for the Scandinavian country in Table 7.

It is impossible with the available data to determine the direction of causality between

maternal work and presence of other adult members. It could be that the mother can go to work because, for example, the grandparents live in the household, or it could be that the latter are invited to join the household because the mother wants to work. In any case, it is clear that other adult household members are likely to play an important role in the Italian methof of reconciling motherhood and employment.

Table 8 shows that our time use data con´ rm this conclusion. This table reports ´ gures on the time dedicated to child care by other adults in the restricted samples of households in which other adults are present. Since with this restriction we have no observations for Sweden, the cells of Table 8 are also empty for the Scandinavian country.

Italy is the only country where the amount of time in which children are taken care of by other adults in the household increases when the mother works, and the difference is statistically signi´ cant at the 10% level. When the mother does not work, other adults dedicate relatively little time to child care (8 minutes per day), but when the mother works this time increases to 19 minutes, which corresponds to 51% of the time the working mother herself dedicates to each child every day. In Germany there is basically no difference in the role of other adults as a function of whether the mother works or not.

As far as the distinction between quality and basic care is concerned, other interesting differences emerge between Italy and Germany. In Germany, other adults devote approximately the same amount of time to quality and basic care when the mother works and when she does not. In Italy when the mother works basic care is the type of care to which other adults give the greatest contribution.

This suggests again, as observed in Section 3.2, that it is more dif´ cult to compress the time allocated to basic care. If parents cannot offer a suf´ cient amount of this type of care,

someone else has to do it, and in Italy this role appears to be taken by other adults in the household when they are present.

Since in Italy other adults spend more time on basic care than on quality care when the mother works, this latter is the type of care which seems to suffer the most in case of maternal work. Interestingly, fathers, who are basically all working in our samples, compensate slightly for this effect, as shown in Table 9. When the mother does not work, two thirds of paternal time dedicated to children in Italy takes the form of quality care, and this ´gure increases by 46% when the mother works. As a result, considering the corresponding ´gures for mothers from Table 3, when the mother and the father work they dedicate approximately the same amount of time (11-12 minutes per child and per day) to quality child care. The mother is instead relatively more involved in basic care.

A different pattern prevails in the other two countries. In none of them do fathers change behaviour signi´cantly when the mother works~but while in Germany they are relatively more involved in basic child care, in Sweden all of their time is devoted to quality care. All in all, the evidence suggests that, even in Italy, fathers do not come close to compensating for the loss of child care implied by the working decision of the mother, which leaves open the problem of what parents can do to ensure that children are taken care of when they work.

There seems to be no evident reason to argue that other relatives are a preferable second-best solution in comparison to public or private child care arrangements when both parents work. But independently of whether relatives are better than formal facilities, the Italian solution does not seem to help in allowing the mother to limit the loss of child care she can provide to her children when she decides to work. The reason is that, even if the

solution based on relatives provides greater ˆ exibility, when part-time jobs are not available it does not really matter whether relatives or the school system take care of children, from the viewpoint of increasing the time that working mothers can spend with them. It is not the ˆ exibility of child care that matters: what matters is the ˆ exibility of jobs.

3.4 The Effect on a Sunday

Table 10 replicates Table 3 using Sunday diaries instead of working day diaries. There is no evidence in any of the three countries that holidays are used on average by working mothers to make up for the time that they cannot spend on child care from Monday to Friday. In Sweden, we even observe an almost statistically signi´ cant decline in maternal child care on Sunday when the mother works.

Interestingly, in the Scandinavian country this decline appears to be associated with a large amount of time dedicated to leisure, which amounts to 33% of total Sunday time for Swedish working mothers as opposed to 25% in Germany and Italy. In Italy, instead, housework takes a larger portion (20%) of Sunday time of working mothers in comparison to what happens in Sweden and Germany (15%).

3.5 Does the Effect Differ across Educational Levels?

When a parent decides to work he or she obviously has less time for leisure, housework and child care, but the effect of the working decision on the time dedicated to each of these alternative activities does not have to be the same. Speci´ cally, it is possible that the time for work is found at the expense of leisure and housework, with no or even a positive effect on the time spent on child care. This could happen in particular if, for example, parents

can buy housework on the market thanks to the higher income they earn by working more hours. Whether this happens or not depends of course on preferences with respect to work in the market, housework, leisure and child care. If preferences for child care change signi´cantly across education levels, the effect of working decisions on time spent with children may change along the same dimension.

In the light of the evidence presented by Hill and Stafford (1974,1980) and Leibowitz (1974a, 1974b), one might expect that if educated mothers dedicate on average more time to child care, the effect of the decision to work should be smaller for them. We explore this issue in Tables 11 and 12.

In the left part of Table 11, we look at highly educated mothers in a working day. Once again, the differences between the Swedish model and the Italian and the German models are striking. In terms of total and quality care these ´gures suggest that in the Scandinavian country highly educated mothers increase the time dedicated to children when they decide to work, although the difference with respect to non-working mothers is not statistically signi´cant. On the contrary, in Germany, and even more so in Italy, maternal work decreases substantially the amount of child care provided by mothers, and the loss is statistically signi´cant. In line with our previous ´ndings concerning the distinction between the two types of child care, the loss is stronger for quality care (47% and 40% in Italy and Germany, respectively) than for basic care (39% and 24%).

In contrast with the expectation based on the results of Hill and Stafford (1974, 1980) and Leibowitz (1974a, 1974b), the last three columns of Table 11 show that the picture is very similar for Italian households in which the mother has low education. Also in Sweden, low educated mothers devote less time to child care when they work, although

this effect is not statistically signi´ cant. In Germany, the working decision of low educated mothers reduces (increases) the amount of time dedicated to quality (basic) care. However, none of these effects is statistically signi´ cant. Overall, the main difference with respect to highly educated mothers is that for all countries the loss of maternal child care time is more pronounced in the case of quality care. This result is in line with Gronau and Hamermesh (2003), who show that additional education (and thus income) does not alter the relative goods intensity of child care and that more educated parents do not substitute money for time as far as child care is concerned.

At least for Italy, this picture changes considerably on Sundays, as shown in Table 12. In Italy, this is the only day of the week in which the education level of the mother interacts signi´ cantly with the working decision in shaping the effect on the time dedicated to child care. In an average Italian household with a highly educated mother, she dedicates more time to child care on Sundays if she works than if she does not work. Most of this positive effect is generated by an increase in basic care, while the increase in quality care, although substantial in size, is statistically insigni´ cant. A completely opposite pattern is observed on Sunday for low educated Italian mothers who appear to dedicate substantially less time to child care on holidays if they work.

No statistically signi´ cant pattern seems instead to emerge for the other two countries, although in contrast with Italy we observe some negative signs. In particular, for Sweden, as already observed in Table 10, holidays do not seem to be used by working mothers to spend more time on child care, independent of education.

Although we have no obvious explanation for this ´ nding, Italy appears to be the only country where highly educated mothers who work try to compensate on Sunday for the time

they do not devote to child care during the rest of the week. But even in these households, the loss of child care over the entire week remains substantial. An even larger loss prevails in households with low educated mothers.

4 Conclusion

In this study we compare evidence based on time use data for three countries: Italy, Germany and Sweden. While in all these countries working mothers appear to dedicate less time to child care than non-working mothers, in Sweden the difference is smallest in absolute terms as well as statistically insigni´ cant. In Italy maternal work is associated with the largest loss of maternal child care.

Inasmuch as parents are the most suitable persons to take care of their children for at least some time during the day, it seems important to understand why Sweden appears to be characterized by a more satisfactory reconciliation of motherhood and work.

We argue that the Swedish outcome is the result of the availability of ˆ exible job opportunities more than of formal child care facilities. These facilities increase the access to employment for mothers, but do not help them to work and still be able to spend enough time with their children. In Germany and even more so in Italy, ˆ exible job opportunities are scarce and mothers are therefore forced to work full-time if they enter the labor market. This has a large negative impact on the time mothers can spend on child care independent of the availability of child care arrangements offered by public services or extended family networks.

However, in Sweden we also observe the largest degree of gender segregation by occupation and this is likely to be a consequence of the fact that females mainly work in part

time jobs, often of lower quality, which are concentrated in certain speci´ c occupation and sectors. Therefore, not even the Swedish solution is exempt from drawbacks.

In 1996 the Rocard recommendation" of the European Parliament, invited the governments of the Union to reform the discipline of social contributions for part time work with the goal of creating incentives for the diffusion of this type of labor contract.[20] What motivated the recommendation was not the idea that working hour reductions could increase employment, but the observation that many European workers, in particular females, expressed clear preferences for shorter working hours even at the cost of proportional wage cuts.[21] In the light of the evidence presented in this study, the Rocard recommendation was going in the right direction, but it was disregarded in most countries. Like any other attempt to reduce working hours, it encountered the opposition of employers who typically fear the organizational costs of these initiatives. It also encountered the opposition of unions and feminist movements which favour compulsory reductions of working hours, but at the same time oppose discretion in working times because it may create ghettos" of lower quality jobs. The Swedish experience con´ rms the validity of this fear.

As argued on a theoretical basis by Aghion and Hermalin (1990), this is one of those cases in which legal restrictions on private contracts may enhance ef´ ciency". They consider the case of maternity leave and show that if they are not compulsory, females signing contracts which allow for such leaves signal their willingness to have children and therefore signal a lower expected productivity from the viewpoint of the ´ rm. As a result, a separating equilibrium would emerge, with a less than optimal fraction of females on contracts with maternity leave. In the case of preferences for working times and ˆ exible working arrangements, the signaling implications are very similar, suggesting that only compul-

sory working hours reductions for both genders would allow for a reconciliation between parental work and child care and cause less segregation of females in lower quality jobs.

Perhaps unfortunately, such an extreme policy implication is unlikely to have a chance of being seriously considered even in Europe. Nevertheless, our study suggests that the possibility offered by part-time jobs to reconcile work and child care for parents, should tilt again the balance in favour of a reconsideration of the less extreme suggestions of the Rocard recommendation.

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Table 1: Characteristics of the Three Time Use Surveys

	Italy	Germany	Sweden
Data set and year	Italian Time Use Survey administered by ISTAT, 1988-89	Anonymized 80 subsample of the German Time Use Survey administered by the Federal Statistical Of´ ce of Germany, 1991-92	Household Market and Non Market Activities Survey (the Swedish HUS Panel Data Project) administered by Gothenburg University, 1984-85
Number of diaries per individual	1 (households are randomly divided into three roughly equal groups: households in the ´rst group completed diaries for a working day and households in the remaining two groups did the same for a Saturday and a Sunday, respectively)	2 (two working days, Friday and Saturday, Sunday and Monday or Saturday and Sunday)	2 (a weekday and a weekend day, either Saturday or Sunday)
Individuals with completed diaries	All household members aged 3 and above (parents ´ll in their young children s diaries)	All household members aged 12 and above	Household head and spouse/partner as well as a third person in certain households
Number of activities	151	230	72
Time slots (minutes)	Set by the respondent	5	Set by the respondent
Quality Child Care	* Reading and talking with child * Playing and taking walks with child * Helping the child with homework	* Learning with children * Playing, actively engaging in sports, taking a walk with children	* Active child care
Basic Child Care	* Accompanying child * Physical care and supervision	* Child care in case of short-term illness * Preparing connected with child care/time of getting ready * Transport services/travel times for child care * Other child care and assistance	* Passive child care * Care of sick child

Table 2: Summary Statistics

Variable	Italy	Germany	Sweden
Working mother	0.43	0.65	0.76
	(0.49)	(0.47)	(0.42)
N. HH members	3.98	4.17	4.04
	(0.94)	(0.91)	(0.83)
Mother s age	35.75	36.30	35.19
	(6.27)	(6.17)	(6.66)
Father s age	39.67	39.44	37.79
	(6.68)	(7.08)	(7.38)
N. children<15	1.45	1.84	1.70
	(0.62)	(0.85)	(0.77)
N. children>14	0.43	0.27	0.32
	(0.74)	(0.57)	(0.57)
N. grandparents	0.08	0.05	0
	(0.33)	(0.26)	(0)
N. other adults	0.007	0.006	0
	(0.09)	(0.08)	(0)
Presence of other adults	0.06	0.04	0
	(0.25)	(0.20)	(0)
Mother s education: High	0.29	0.27	0.29
	(0.29)	(0.44)	(0.45)
Mother s education: Low	0.70	0.72	0.70
	(0.45)	(0.44)	(0.45)
Father s education: High	0.31	0.32	0.36
	(0.46)	(0.47)	(0.48)
Father s education: Low	0.68	0.67	0.63
	(0.46)	(0.47)	(0.48)
N. Obs.	1,292	1,749	411

Note: Statistics based on the samples of households for which complete information is available on all the variables used in the statistical analyses. Standard deviations are reported in parentheses.

Table 3: Maternal Employment and Time Devoted to Child Care by the mother - Working day

	Italy		Germany		Sweden	
Child Care	Is the mother working?					
Type	No	Yes	No	Yes	No	Yes
Total	63	37	82	60	40	41
	(2)	(2)	(2)	(2)	(6)	(3)
	-41%		-28%		3%	
	(-7.76)		(-7.55)		(0.16)	
Quality	22	11	21	13	38	37
	(2)	(1)	(1)	(1)	(6)	(3)
	-49%		-40%		3%	
	(-5.31)		(-6.13)		(0.17)	
Basic	41	26	61	47	1	1
	(2)	(1)	(2)	(1)	(1)	(0.4)
	-37%		-24%		-0.5%	
	(-6.25)		(-5.96)		(-0.01)	

Note: The ´ rst row of each panel presents, for a working day, adjusted predictions of the amount of minutes allocated to child care per child under 15 in the household by the mother when she works and when she does not work. Standard errors are reported in parentheses. Ajusted predictions are calculated at sample averages using the coef´ cients from OLS regressions of the corresponding dependent variables on a constant, mother s age, father s age, mother s and father s education dummies, n. children under 15, n. children over 14, mean age of children, n. grandparents, n. other adults and region dummies. The second row of each panel displays the percentage variation in the amount of minutes devoted to child care per child under 14 when the mother works. t-statistics from the underlying coef´ cients are reported in parentheses.

Table 4: Proportion of mothers in full-time work, part-time work and no work

Variable	Italy	Germany	Sweden
Full-time	0.23	0.28	0.30
	(0.42)	(0.45)	(0.46)
Part-time	0.19	0.36	0.46
	(0.39)	(0.48)	(0.49)
Not working	0.56	0.34	0.23
	(0.49)	(0.47)	(0.42)

Note: Full-time work (part-time work) means more (less) than 6 hours per day. Standard deviations are reported in parentheses.

Table 5: Proportion of children in formal child care arrangements

Variable	Italy	Germany	Sweden
Age under 3	6	10	48
Age 3 to mandatory school age	95	78	80

Note: Percent of children in formal child school arrangements in 1998 (Italy, and Sweden) and in 2000 (Germany) as reported by OECD, Employment Outlook 2001, Adema (2001) and Del Boca (2002)

Table 6: Maternal child care and working hours

	Child Care Type	Mother does not work	Mother works part-time	Mother works full-time
Italy	Total	63	48	32
		(73)	(55)	(38)
	Quality	22	16	10
		(39)	(30)	(21)
	Basic	41	32	22
		(54)	(41)	(28)
Germany	Total	82	66	53
		(69)	(61)	(68)
	Quality	21	14	11
		(30)	(26)	(21)
	Basic	61	51	42
		(53)	(49)	(57)
Sweden	Total	42	42	38
		(55)	(57)	(55)
	Quality	41	42	35
		(54)	(57)	(54)
	Basic	1	1	3
		(10)	(5)	(13)

Note: This table reports the amount of time the mother spends on child care per child when she works full-time, part-time and when she does not work.

Table 7: Presence of Other Adults and Maternal Employment

		Italy	Germany	Sweden
Working Mother	No	0.04 (0.001) *	0.03 (0.0005) *	-
	Yes	0.09 (0.001)	0.05 (0.0008)	-

Note: This table displays predictions of the probability that other adults are present in the household. Other adults are de´ ned as any adult in the household different from parents and adult children. Ajusted predictions are calculated using the coef´ cients from probit models including a constant, working mother dummy, mother s age, father s age, mother s and father s education dummies, n. children under 15, n. children over 14, mean age of children and region dummies. Bootstrapped standard errors are reported in parenthesis. * indicates that the estimated coef´ cients on the working mother dummy are statistically signi´ cant at the 5% level, respectively.

Table 8: Maternal Employment and Time Devoted to Child Care by Other Adult Household Members - Working day

	Italy		Germany		Sweden	
Child Care	Is the mother working?					
Type	No	Yes	No	Yes	No	Yes
Total	8	19	19	19	-	-
	(4)	(6)	(7)	(5)		
	141%		0.6%		-	
	(1.79)		(0.01)			
Quality	5	6	7	7	-	-
	(3)	(3)	(4)	(3)		
	23%		2%		-	
	(0.36)		(0.03)			
Basic	3	13	13	12	-	-
	(2)	(5)	(5)	(2)		
	330%		-4%		-	
	(2.14)		(-0.09)			

Note: Other adults are de´ ned as any adult in the household different from parents and adult children. The estimations is restricted to the samples of households in which other adults are present. Therefore, differently than in the other tables, the sample sizes are now 68 for Germany and 86 for Italy. The ´ rst row of each panel presents, for a working day, adjusted predictions of the amount of minutes allocated to child care per child under 15 in the household when the mother works and when she does not work by the other household members. Standard errors are reported in parentheses. Adjusted predictions are calculated at sample averages using the coef´ cients from OLS regressions of the corresponding dependent variables on a constant, mother s age, father s age, mother s and father s education dummies, n. children under 15, n. children over 14, mean age of children, n. grandparents, n. other adults and region dummies. The second row of each panel displays the percentage variation in the amount of minutes devoted to child care per child under 14 when the mother works. t-statistics from the underlying coef´ cients are reported in parentheses.

Table 9: Maternal Employment and Time Devoted to Child Care by the Father - Working day

	Italy		Germany		Sweden	
Child Care	Is the mother working?					
Type	No	Yes	No	Yes	No	Yes
Total	13	20	21	21	13	19
	(1)	(2)	(1)	(0.8)	(3)	(2)
	56%		3%		44%	
	(3.47)		(0.50)		(1.50)	
Quality	9	12	7	7	13	18
	(1)	(1)	(0.7)	(0.4)	(3)	(2)
	46%		-6%		37%	
	(2.36)		(-0.52)		(1.28)	
Basic	4	7	14	15	0.1	0.7
	(0.5)	(0.8)	(0.7)	(0.6)	(0.2)	(0.3)
	78%		8%		479%	
	(3.54)		(1.19)		(1.82)	

Note: The ´ rst row of each panel presents, for a working day, adjusted predictions of the amount of minutes allocated to child care per child under 15 in the household when the mother works and when she does not work by the father. Standard errors are reported in parentheses. Ajusted predictions are calculated at sample averages using the coef´ cients from OLS regressions of the corresponding dependent variables on a constant, mother s age, father s age, mother s and father s education dummies, n. children under 15, n. children over 14, mean age of children, n. grandparents, n. other adults and region dummies. The second row of each panel displays the percentage variation in the amount of minutes devoted to child care per child under 14 when the mother works. t-statistics from the underlying coef´ cients are reported in parentheses.

Table 10: Maternal Employment and Time Devoted to Child Care by the Mother - Sunday

	Italy		Germany		Sweden	
Child Care	Is the mother working?					
Type	No	Yes	No	Yes	No	Yes
Total	35	33	57	55	40	32
	(2)	(2)	(5)	(4)	(6)	(3)
	-6%		-3%		-21%	
	(-0.77)		(-0.26)		(-1.16)	
Quality	8	9	15	14	40	31
	(1)	(1)	(2)	(2)	(6)	(3)
	2%		-10%		-22%	
	(0.10)		(-0.53)		(-1.15)	
Basic	27	24	41	41	0.7	0.6
	(1)	(1)	(3)	(3)	(0.6)	(0.5)
	-8%		0%		-20%	
	(-1.08)		(-0.006)		(-0.18)	

Note: The ´ rst row of each panel presents, for a working day, adjusted predictions of the amount of minutes allocated to child care per child under 15 in the household by the mother when she works and when she does not work. Standard errors are reported in parentheses. Ajusted predictions are calculated at sample averages using the coef´ cients from OLS regressions of the corresponding dependent variables on a constant, mother s age, father s age, mother s and father s education dummies, n. children under 15, n. children over 14, mean age of children, n. grandparents, n. other adults and region dummies. The second row of each panel displays the percentage variation in the amount of minutes devoted to child care per child under 14 when the mother works. t-statistics from the underlying coef´ cients are reported in parentheses.

Table 11: Education, Maternal Employment and Time Devoted to Child Care by the Mother - Working day

	Mother: High Education						Mother: Low Education					
	Italy		Germany		Sweden		Italy		Germany		Sweden	
Child Care	Is the mother working?											
Type	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Total	88	51	82	60	25	52	55	33	21	21	44	37
	(8)	(4)	(2)	(2)	(11)	(5)	(2)	(2)	(1)	(1)	(7)	(3)
	-43%		-28%		106%		-40%		3%		-16%	
	(-4.41)		(-7.55)		(2.13)		(-6.52)		(0.50)		(-0.84)	
Quality	37	20	21	13	23	51	18	9	7	7	42	35
	(5)	(2)	(1)	(1)	(11)	(5)	(1)	(1)	(1)	(0.5)	(7)	(3)
	-47%		-40%		116%		-51%		-6%		-17%	
	(-3.12)		(-6.13)		(2.21)		(-4.58)		(-0.52)		(-0.89)	
Basic	51	31	61	47	2	1	38	24	14	15	1	1
	(5)	(3)	(2)	(1)	(1)	(1)	(2)	(2)	(1)	(1)	(1)	(0.5)
	-39%		-24%		-25%		-35		8%		17%	
	(-3.62)		(-5.96)		(-0.31)		(-5.12)		(1.19)		(0.14)	

Note: The ´ rst row of each panel presents, for a working day, adjusted predictions of the amount of minutes allocated to child care per child under 15 in the household by the mother when she works and when she does not work. Standard errors are reported in parentheses. Ajusted predictions are calculated at sample averages using the coef´ cients from OLS regressions of the corresponding dependent variables on a constant, mother s age, father s age, father s education dummies, n. children under 15, n. children over 14, mean age of children, n. grandparents, n. other adults and region dummies. The second row of each panel displays the percentage variation in the amount of minutes devoted to child care per child under 14 when the mother works. t-statistics from the underlying coef´ cients are reported in parentheses.

Table 12: Education, Maternal Employment and Time Devoted to Child Care by the Mother - Sunday

	Mother: High Education						Mother: Low Education					
	Italy		Germany		Sweden		Italy		Germany		Sweden	
Child Care	Is the mother working?											
Type	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Total	32	44	85	66	51	49	34	27	49	52	32	26
	(4)	(3)	(14)	(8)	(14)	(9)	(2)	(2)	(5)	(4)	(7)	(4)
	38%		-22%		-5%		-22%		5%		-18%	
	(2.28)		(-1.14)		(-0.14)		(-2.50)		(0.40)		(-0.64)	
Quality	8	11	18	19	53	46	8	7	14	12	31	26
	(2)	(2)	(5)	(4)	(13)	(8)	(1)	(1)	(3)	(2)	(7)	(4)
	38%		6%		-13%		-13%		-16%		-16%	
	(1.12)		(0.18)		(-0.38)		(-0.57)		(-0.66)		(-0.57)	
Basic	24	34	67	48	0.5	2	26	20	35	40	0.7	0.1
	(3)	(3)	(11)	(5)	(3)	(3)	(2)	(2)	(3)	(4)	(1)	(0.1)
	38%		-29%		252%		-25%		14%		-98	
	(2.12)		(-1.66)		(0.81)		(-2.86)		(0.98)		(-1.02)	

Note: The ´ rst row of each panel presents, for a working day, adjusted predictions of the amount of minutes allocated to child care per child under 15 in the household by the mother when she works and when she does not work. Standard errors are reported in parentheses. Ajusted predictions are calculated at sample averages using the coef´ cients from OLS regressions of the corresponding dependent variables on a constant, mother s age, father s age, father s education dummies, n. children under 15, n. children over 14, mean age of children, n. grandparents, n. other adults and region dummies. The second row of each panel displays the percentage variation in the amount of minutes devoted to child care per child under 14 when the mother works. t-statistics from the underlying coef´ cients are reported in parentheses.

Notes

[1]See UN (1995) and Del Boca and Locatelli (2003).

[2]As far as cognitive development is concerned the literature encompasses papers that highlight positive effects (Vandell and Ramanan, 1992~Parcel and Menagham, 1994) as well as papers that uncover negative consequences (Leibowitz, 1977~Stafford, 1987~Mott, 1991) but in most cases no systematic evidence is found (Desai et al., 1989~Baydar and Brooks-Gunn, 1991~Blau and Grossberg, 1992~Hanushek, 1992, Waldfogel et al., 2000~Neidell, 2000).

[3]Ruhm (2000), using data from multiple years of the National Longitudinal Survey of Youth (NLSY) and controlling for a large set of characteristics, ´ nds that maternal employment during the early years of a child s life has a small negative effect on the verbal ability of 3 and 4 year old and a substantial detrimental impact on the reading and math achievement of 5 and 6 year old. Interestingly these negative consequences are more evident in traditional two-parent families and paternal employment is shown to be similarly detrimental for children. Ruhm s overall conclusion is that previous research may have provided an overly optimistic assessment of the effects of parental employment on child cognitive development. This conclusion is con- ´ rmed by Francesconi and Ermisch (2000) using data from the British Household Panel Survey.

[4]Currie and Hotz (2001) use the NLSY and Vital Statistical records ´ nding that the effects of maternal employment on unintentional injuries to children is positive for blacks and negative for whites in models that control for child-speci´ c ´ xed effects, suggesting also that the effect of maternal employment may be mediated by child care regulations. Anderson et al. (2002) use again the NLSY to show that a child is more likely to be overweight if his/her mother worked more hours per week over the child s life, and the result is robust to the use of techniques aimed at evaluating the causal nature of this relationship, like sibling differences or instrumental variable models.

[5]Hill and Stafford (1974, 1980) and Leibowitz (1974a, 1974b) show that highly educated mothers are more likely to work but at the same time tend to dedicate more time to children than low educated mothers. Gronau (1976), however, ´ nds for Israel no difference in time dedicated by mothers to children across education levels.

[6]See, for example, Del Boca (2002).

[7]Note, however that in the regressions used to predict time spent on child care, the number of children under 15 is also included as a control variable on the right hand side of each estimated equation. This is needed to allow for the possibility of economies (or diseconomies) of scale in child care.

[8]The sum of the minutes devoted to the two types of child care is by de´ nition equal to the total amount of minutes dedicated to child care

[9]The reason why we have not used the 1993 wave of the Swedish Household Market and Non Market Activities Survey, which also contains time use diaries, is that in this wave there is not enough information to correctly identify the role of all household members.

[10]Unfortunately, most time-budgets have small samples which in this case prevent us from performing a separate analysis for households with pre-school age children.

[11]For Italy, we report summary statistics for the weekday sample. Statistics for the Sunday sample are of course identical given that both samples are extracted randomly from the original population.

[12]In the German data set, age is not reported as a continuous variable but as a categorical variable with ´ ve year intervals. We have imputed to each individual the median value of his/her interval.

[13]See Mamma mia , *The Economist*, 1 April 2000.

[14]Since the Swedish sample has fewer observations, differences in signi´ cance across countries should be considered with caution.

[15]And, more generally, the availability of ˆ exible time contracts, job sharing, or tele-working. Unfortunately, we do not have information on the diffusion of these types of working arrangements in the three countries we consider for the years in which we have time-use data. For this reason, in what follows we will only refer to part-time jobs, but our line of argument extends to all contractual arrangements that give ˆ exibility to labor supply.

[16] See, for example, Del Boca (2002).

[17] See Del Boca (2002), Del Boca (1993) and P. Ichino (2003).

[18] We thank Anders Klevmarken for suggesting the inclusion of this table.

[19] See for example Breen and Garcia-Peñalosa (2002), in particular Table 1.

[20] See Rocard (1996) and Ichino P. (2003) par. 307, vol II, 350-351.

[21] See European Commission (1995).