The Impact of Young Children on Women's Labour Supply

A Reassessment of Institutional Effects in Europe

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abstract: The proportion of women who withdraw from paid employment when they have children differs considerably among the countries of the European Union (EU), and the variation has mostly been attributed to institutional factors. In this study, we reassess the institutional explanation, because earlier supportive evidence is threatened by two alternative macro-level explanations: the influence of the economic necessity to work and the influence of gender role values in society. Our main research question is whether and to what extent these alternative explanations alter the effect of public childcare arrangements on mothers' labour supply. Using panel data from 13 countries of the EU, we find evidence in favour of the institutional and economic explanations. In countries with more generous provision of public childcare and in countries with a lower level of economic welfare, the impact of childbirth on female labour supply is less negative than in other countries. Economic welfare appears to suppress rather than rival the institutional effect. More egalitarian gender role values in a country increase mothers' labour supply, yet these values do not alter the institutional effect. Our results underpin the importance of publicly supported arrangements for enhancing female labour supply.

keywords: childcare ◆ children ◆ gender values ◆ labour supply ◆ multi-level models ◆ panel analysis

Introduction

Despite rising female labour force participation rates, an important barrier for women to be employed is the presence of children. Numerous studies demonstrate that children affect women's labour supply negatively. Women with children participate to a lesser extent in the labour market than childless women, and when mothers are engaged in paid employment they work fewer hours than childless women (Gornick, 1994; Blossfeld, 1995; Rosenfeld and Birkelund, 1995; Blossfeld and Hakim, 1997; Kurz, 1998; Dekker et al., 2000; Drobnič, 2000; Stier and Lewin-Epstein, 2001; Van der Lippe, 2001). However, the existing literature suggests that this 'child effect' is not equally strong throughout Western industrialized countries. There are differences in the extent to which childbirth affects female labour supply. In the United Kingdom, for example, women with a child under the age of 5 work on average 24 hours less than women without young children, while in Denmark this difference is only 5 hours (Van der Lippe, 2001).

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The cross-national variation in the effect of children on women's labour supply has frequently been connected with differences in institutional arrangements. The extent to which the government supports the employment of mothers varies from country to country and this is believed to have a major impact on women's labour market careers (Gornick et al., 1996, 1998; Van der Lippe, 2001). In particular, the provision or sponsoring of public childcare arrangements will increase the labour supply of mothers with young children because these arrangements render an alternative to child-rearing at home.

To examine the role of institutions empirically, cross-national research is needed in which the presence or absence of government policies is related to the labour market careers of individual women. Although women's labour market careers have been studied in similar ways in various countries, evidence for the influence of institutions is impressionistic. There are several two- or three-country comparisons (Dekker et al., 2000; Gornick, 1994), but such designs do not have enough degrees of freedom for alternative interpretations for the observed associations to be ruled out. Better evidence is provided in multi-nation comparisons. An important work in this respect is Stier and Lewin-Epstein's (2001) study of women's employment patterns during the child-rearing period in 12 industrialized countries. Using retrospective longitudinal survey data they find that employment continuity is highest among countries in which the state provides support for working mothers. In countries with conservative regimes, and in those that do not highly support women's employment, mothers interrupt their employment more often. In a cross-sectional study of female labour supply in 20 countries, Van der Lippe (2001) also finds support for the institutional perspective. She shows that in former communist countries – countries that support(ed) women's employment to a relatively large extent – mothers are less likely to withdraw from the labour market than in other countries. Moreover, in countries where public childcare provision is higher, the presence of young children has a less negative effect on women's employment than in countries where public childcare provision is lower.

Using panel data from 13 countries of the European Union (EU), we re-examine institutional explanations of cross-country variation in child effects. We do this because earlier findings for the institutional perspective are potentially threatened by alternative macro-level explanations. One alternative explanation is economic, and holds that in poorer countries with lower levels of economic welfare women need to work for economic reasons. The economic explanation may threaten the institutional explanation because economic welfare and institutional support for working mothers co-vary in a positive manner: the more affluent countries generally have more institutional support for working mothers. The initial effect of female employment supportive institutions on mothers' labour supply can therefore be attenuated. A second alternative explanation of cross-country variations is cultural, and focuses on the gender values that prevail in a society. Incorporating this explanation is important, since commonly shared egalitarian gender values also co-vary with the existence of female employment supportive policies: countries with more egalitarian gender role values generally have more institutional support for working mothers. As a result, the two explanations compete and the effect of public arrangements may partly be due to more egalitarian gender role values in society.

Our research questions are as follows:

1. To what extent do countries of the EU differ with respect to the impact of children on women's labour supply?
2. To what extent can cross-national differences in the impact of children on women's labour supply in Europe be attributed to differences in the existence and generosity of public arrangements supporting the employment of mothers?
3. To what extent are the documented institutional effects confounded by the underlying influence of country-level variations in economic affluence and in gender role values?

We limit the analyses to the short-term consequences of childbirth on female labour supply. We compare the working hours of women one year before childbirth with the working hours two years after childbirth. The relatively short observation period is chosen because the youngest children demand most care and are most likely to affect labour supply. Furthermore, we limit the analyses to first childbirth, since second and later births may have a different effect on female labour supply and their inclusion would hence introduce new complexities. For example, Nakamura and Nakamura (1994) find for the USA and Canada that after first childbirth, female labour supply rises with the number of children, indicating a positive instead of negative child effect. This positive effect may have to do with child maturation and family completion: women might wait to return to the labour market until they feel their families have been completed and their youngest children are grown up (Nakamura and Nakamura, 1994: 314). Given these considerations, we decided to confine our sample to young women aged 20 to 40. A final limitation is that we restricted the analyses to women in married or unmarried cohabitation. Single mothers are not studied since the employment behaviour of single mothers may differ from that of cohabiting women. Drobnič (2000), for example, showed for Germany and the USA that the effect of children on the odds of employment exit is weaker for single women than for married women.

Hypotheses

We start out from the well-known finding at the micro-level that the presence of young children negatively affects women's labour supply. Explanations at the micro-level are directly relevant for our macro-approach. The standard economic explanation for the child effect is that the care of young children costs time and money (Van Dijk and Siegers, 1996; Van der Lippe, 2001: 223–4). According to the economic theory of specialization, the spouse with the highest earning potential will specialize in paid work while the partner will specialize in domestic work (Becker, 1991). Since women usually have lower wages than men, the theory implies that couples are better off financially if the woman reduces her number of paid working hours and takes care of the child(ren). A cultural explanation is that mothers are often considered as more appropriate or more skilful caregivers than men. Together with social norms disapproving of the mother's role in the labour market, this explains the documented negative effect of children on women's labour supply. The former explanation fits well with the institutional perspective, since the main reason why institutions play a role is that they lower the financial cost of having children by allowing women to remain in the labour force. The latter explanation fits well with the competing cultural explanation, because combining employment and child-rearing is more strongly disapproved of in countries with traditional gender role values.

Our central macro-level hypothesis is that institutions mediate the influence of children on women's labour supply. The term institution is believed to refer to a set of rules or arrangements designed to affect the behaviour of individual persons. Although the notion of institutions is sometimes used in a more general fashion, we limit our definition to public arrangements that are created by or through the state. The literature has focused on a range of policy effects. Some authors discuss the role of welfare-state typologies, others focus on particular policies or public arrangements, while there are still others who discuss both general policies and particular public arrangements (Esping-Andersen, 1990, 1999; Stier and Lewin-Epstein, 2001; Van der Lippe, 2001). We focus on the impact of specific employment-related public arrangements because we contend that they play a more decisive role than the more general welfare state typology.

There are several examples of specific policy arrangements that directly or indirectly reduce the negative impact of women's fertility on their labour market careers. Good examples are

public childcare arrangements, parental leave arrangements, and the way elementary schools adapt their time schedules to allow women to work (Gornick, 1994; Gornick et al., 1996, 1998; Van der Lippe, 2001; Van Dijk, 2001). Though it would be attractive to consider various policy arrangements, in this article we focus on the availability of public childcare. Public childcare is likely to have greater consequences on young mothers' labour supply than other institutional arrangements. Parental leave arrangements affect women's labour supply only during or just after childbirth. Its longer-term effects on employment are not clear: on the one hand, these arrangements increase women's attachment to paid work, since job guarantees and wage replacement presumably lessen the probability that mothers will exit paid work, but on the other hand leave arrangements decrease female labour supply because women who are on leave miss work experience and career-enhancing opportunities (Gornick et al., 1996: 11). Another female employment supportive arrangement, the adaptation of school time schedules, likely affects the labour supply of older mothers when children are of school age.

Childcare facilities vary greatly from country to country, as Table 1 demonstrates. In the period 1990–95, the number of public childcare places per 100 children of three years and under ranged from a low of 2 in Austria, Germany, Ireland and the United Kingdom to a high of 30 in Belgium, 32 in Finland and 48 in Denmark. This country variation does not correspond well with Esping-Andersen's general classification of welfare state regimes. Although the social democratic regimes from Scandinavia stand out with high levels of childcare provision, countries belonging to the conservative–corporatist regime type show large variation, with high levels of public childcare in Belgium and France and low levels in Germany and Austria (Van Dijk, 2001).

Our first hypothesis is that the greater the availability of public childcare in a society, the greater the labour supply of mothers in that country (and the weaker the negative child effect).

Table 1 *Description of country-level characteristics*

	Number of public childcare places per 100 children under age three (1990–5)[a]	Economic affluence (GDP per capita, 1995)[b]	Mean support for egalitarian gender role values (1990–9)[c]
Finland	32	25,310	2.99
Denmark	48	34,515	3.06
United Kingdom	2	19,364	2.61
Ireland	2	18,476	2.56
Netherlands	8	26,830	2.65
Belgium	30	27,311	2.69
France	23	26,179	2.65
Germany	2	30,103	2.16
Austria	2	29,230	2.16
Portugal	12	10,812	2.40
Spain	5	14,894	2.66
Italy	6	19,148	2.34
Greece	3	11,246	2.42
EU-wide	*14*	*22,571*	*2.57*
Standard deviation	*15*	*7,467*	*0.27*

[a] *Sources*: Van Dijk, 2001; Gornick et al., 1998; OECD, 1990; Tietze and Cryer, 1999.
[b] *Source*: OECD online database.
[c] *Source*: EVS 1990/99, own calculations.

As mentioned earlier, this institutional effect can be expected because public-supported childcare lowers the financial constraints of mothers to participate in the labour market. Mothers will therefore shift preferences and substitute time spent at home for time spent in the labour market. Several objections may be raised to this hypothesis. First, the hypothesis denies the existence of other childcare arrangements. The absence of public childcare can be compensated by the existence of either publicly supported private arrangements or pure private arrangements organized in informal networks, through family and friends. Although this may be the case, we lack adequate cross-national comparative data on these other types of childcare arrangements to test this alternative hypothesis. A second objection relates to the causality between the availability of public childcare and female labour supply. We assume that public childcare has a positive effect on women's labour supply, but the reverse relationship might also be true: increasing the labour supply of mothers may give rise to more supply of public childcare. Gornick et al. (1996) discuss this problem of causality when they review single-country studies around the relationships among the demand for childcare, the price and availability of care, and women's labour supply. They conclude that although the relationships are complicated and multi-directional, 'on the whole the literature supports the theoretically-driven prediction that having more attractive childcare options increases maternal employment' (Gornick et al., 1996: 5).[1]

An alternative, economic explanation of cross-national variation in child effects points to the economic necessity of women to maintain a certain level of household consumption. Economic need forces women to stay employed once they have children (Oppenheimer, 1982; England and Farkas, 1986). In countries with low economic affluence, women do not work to become financially independent or to get a career, but instead take the role of secondary breadwinner in the household. In more affluent societies, on the other hand, mothers may afford not to work and to withdraw from the labour market because their household income is higher.

We use the economic explanation not to give a fuller account of country differences in child effects, but primarily to test whether this explanation provides an alternative explanation of institutional effects on female labour supply. We specifically expect that the standard of living in a country suppresses the mediating role of institutions. The causal diagram in Figure 1 illustrates this point. It assumes that a nation's economic affluence has a positive effect on public support for working mothers: that is, wealthier nations generally have more generous public childcare (see also Table 1). This is primarily so because wealthier nations are better equipped to financially support public childcare. A second assumption of the causal diagram in Figure 1 is that the level of affluence in a country has – for the reasons just mentioned – a negative effect on mothers' labour supply. That is, the wealthier a nation the less necessary it will be for mothers to work and therefore the weaker the labour supply. Given the two presumed effects of economic affluence – a positive effect on public childcare and a negative effect on mothers' labour supply – we expect that the effect of public childcare will become stronger (more positive) when affluence is controlled for. In other words, affluence is a suppressor variable.

Another explanation for women's employment patterns is cultural. This explanation has two components. The first is that individual values regarding gender roles guide a woman's employment behaviour. When a woman has traditional views about gender roles in society, she is more likely to become the primary caretaker at home after her first child is born (Jansen and Kalmijn, 2002; Lesthaeghe, 2002). The second is that women's employment behaviour is guided partly by the values of the people in social contexts (Kalmijn, 2003). When the husband has traditional gender role values or when other persons in the network share more traditional values, women are more likely to leave the labour market when they have children. In these cases, the values of surrounding others may operate as social norms for the individual. Such

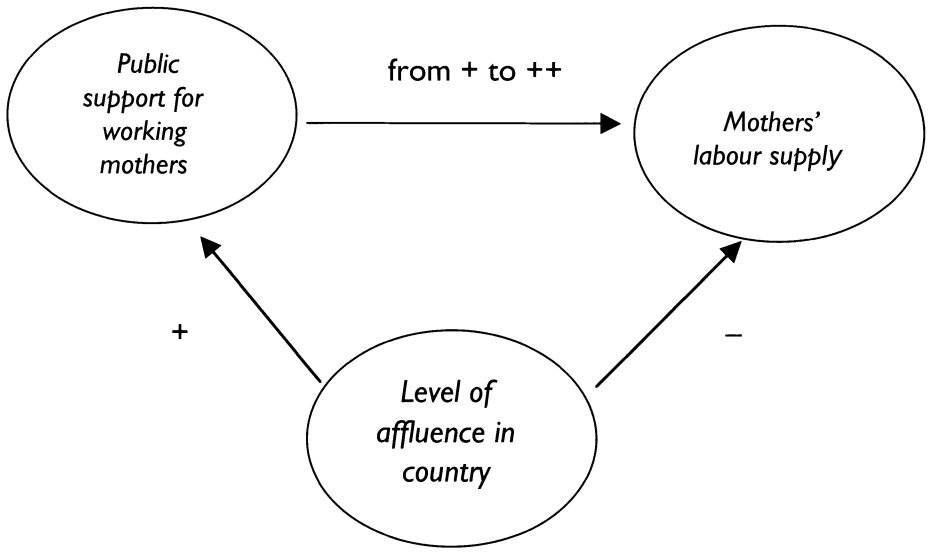


Figure 1 *Economic versus institutional macro-explanations*

norms may not solely be typical for the community in which one lives, but may reflect the social norms of a broader geographical context such as a whole society. We do not intend to estimate the relative importance of these two cultural components (individual value influence and contextual value influence). Both cultural components imply the same macro-level hypothesis: when gender values in a society are more traditional, mothers' labour supply will be lower (and the child effect higher). This cultural effect is both a compositional effect (more women with traditional gender values) and a contextual effect (influence of other traditional people).

The cultural explanation rivals the institutional explanation, because gender role values co-vary with public support for working mothers. Generally, countries that have more egalitarian gender role values are also characterized by more institutional support for working mothers (see Table 1). According to a strong version of the cultural explanation, public institutions supporting mother's employment are merely an outcome of existing social norms and attitudes. Governments and their employment-supportive policies respond to how men and women think about the combination of work and employment (Pfau-Effinger, 1993, 1999; Van Dijk, 2001). Institutional arrangements as such do not affect the withdrawal behaviour of women directly; their influence is partly spurious. Public policies obviously still make it easier for mothers to remain in the labour market, but this is what women would do in a liberal country where the market prevails anyway. Empirically, this would imply that once values are introduced in analyses of women's employment, the effect of female employment supportive policies (notably, the provision of public childcare) would become weaker. The causal diagram in Figure 2 illustrates this.

A weaker version of the cultural explanation argues that people adjust their values in response to the institutional context (Gelissen, 2002). A government strongly supporting the working mother role can be viewed as a kind of role model set by the government for the population at large. In this manner, institutional arrangements may directly influence people's attitudes. This argument suggests that the causal order is the other way around (see Figure 2). The implication of the model is the same (the institutional effect should become weaker when

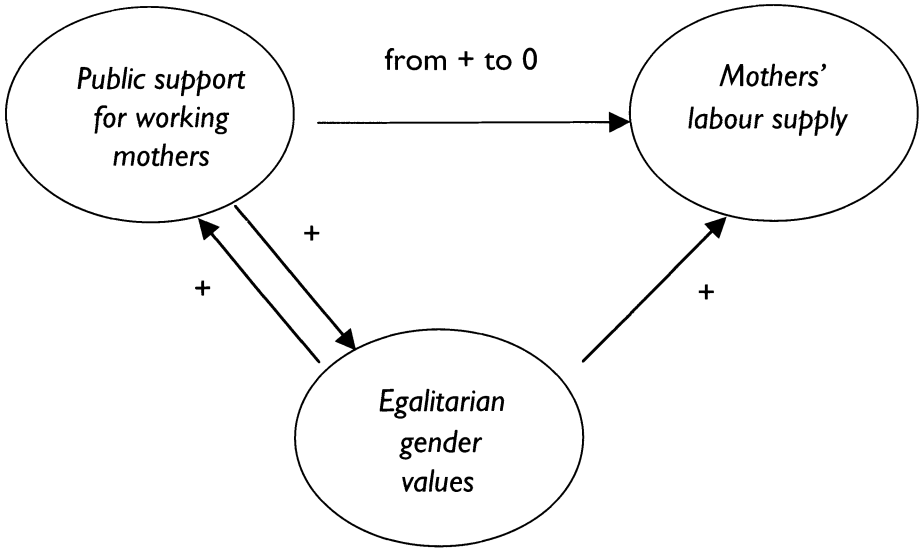


Figure 2 *Cultural versus institutional macro-explanations*

gender values are included), but the interpretation is different: the effect of institutions is no longer spurious but indirect. With the data at hand, we cannot separate the two interpretations, but we believe the former is more plausible.

In sum, we examine the following macro-level suggestions. First, we examine whether there is a positive effect of public childcare on mothers' labour supply. Second, we examine whether there is a negative effect of the level of affluence in a country on mothers' labour supply, and if so whether controlling for affluence leads to an increase in the observed effect of public child care arrangements. Third, we assess whether egalitarian gender role values in society have a positive effect on mothers' labour supply, and, if so, whether the inclusion of gender role values leads to a reduction in the effect of public childcare on mothers' labour supply.

Data, method and operationalization

Data

To analyse cross-country variation in the impact of young children on female labour supply, we use longitudinal data from the European Community Household Panel (ECHP), which is a large-scale panel survey among households and household members in countries of the EU (for further details see Eurostat, 1996; Clémenceau and Verma, 1996; Wirtz and Mejer, 2002). It mainly addresses economic topics such as earnings and employment. The ECHP collects limited information on demographic characteristics. The first wave of the ECHP data was held in 1994 in 12 countries of the EU. Additional waves covering 15 countries of the EU were conducted annually in subsequent waves until 2000. Currently, data for six waves (1994 to 1999) are available.

We use data from 13 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, The Netherlands, Portugal, Spain, and the United Kingdom. For these countries, six interview waves (1994–99) are available, with the exception of Austria (five waves: 1995–99) and Finland (four waves: 1996–99). We exclude data for Luxembourg and Sweden. The sample sizes for Luxembourg are small and the observed waves (1994 to 1996)

do not fit within our design of measuring pre- and post-child labour supply. The Swedish data set does not represent a panel but, instead, pooled cross-sections. Since in the fourth wave (1997) the ECHP surveys were ended in Germany and the United Kingdom, we use longitudinal panel data from the existing non-ECHP panel surveys for these countries, respectively the British Household Panel Survey (BHPS) and the German Socio-Economic Panel (GSOEP), back from 1994 onwards.

The national data sets in the ECHP data are highly comparable, since the national panel surveys used similar sampling methods, common panel follow-up procedures and cross-nationally comparable, standardized questionnaires.[2] Country samples are nationally representative for the population of interest, namely, all private households in the national territory. The samples are fairly large in size: the number of households (headed by persons aged 16 years and over) participating in the first wave (1994) ranges from 3482 in Denmark to 7115 in Italy.

Method

The research method for studying the impact of young children on female labour supply that is used here is panel analysis. Following women through consecutive waves, we assess changes in their working hours accompanying first childbirth. Figure 3 illustrates our approach. We start with wave t and assess whether a first child was born since the prior wave, wave $t - 1$. If so, we define working hours before childbirth (pre-birth hours) as the number of hours worked at the time of the interview for wave $t - 1$. Working hours after childbirth are more difficult to assess because parental leave arrangements usually apply up to one year after childbirth. The working hours at wave $t + 1$ will therefore be affected by country differences in parental leave arrangements. The solution we chose is to define post-birth hours as the working hours at the interview date of wave $t + 2$. At this time, the first child will be between 2 and 3 years of age. The dependent variable in our analyses is the change in hours, that is, post-birth working hours minus pre-birth working hours. A negative effect found for a particular independent variable means that the change in working hours is more negative, and hence, that the child effect is stronger.

In comparison to cross-sectional analysis, panel analysis leads to more accurate estimates of the causal effect of children on women's employment, since it is assessed whether a change in the presence of children precedes a change in working hours. In existing cross-sectional analyses of child effects (Gornick et al., 1998; Van der Lippe, 2001), it cannot be ruled out that the presence of children itself is a consequence of changes in employment. However, our panel approach also has a disadvantage. When following individuals through

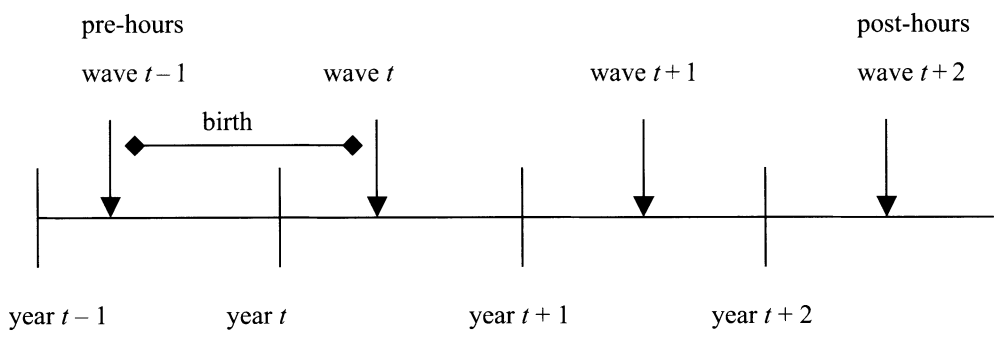


Figure 3 *Time window of the study*

the panel observation period, few events (first childbirths) occur, even though we had, initially, large sample sizes. In our data, the total number of women who have their first child during the panel observation period and have provided valid information on pre- and post-child working hours and on individual-level covariates is 1044. This is our final sample size.[3] Although it is not large, the sample size is large enough for cross-national comparisons to be made. On average, the sample size is 80 women per country, and only in two countries does the sample size appear problematic. In Austria, the sample size is 21 and in Finland 29. This is low, but it has to be noted that these countries were observed in the panel for a shorter period of time. Furthermore, our analyses show that the child effects for these countries are not exceptionally high or low: the observed child effects are in line with what could have been expected on the basis of population and country characteristics (see Table 5).

We model changes in working hours using multi-level regression models. Multi-level regression models correct for the nesting of individuals within higher-level units (here: countries), and take account of the variability associated with each level of nesting. The particular multi-level model we use is a random intercept model. This model assumes that the intercept (the change in working hours) varies among individuals and among countries. Effects of individual-level covariates are assumed to be constant across countries. Compared to analyses where the effects of macro-level characteristics are disaggregated to the individual level, multi-level models provide less biased estimates of the effects of macro-level characteristics, since standard errors are corrected appropriately (see, for example, Snijders and Bosker, 1999). We use a linear specification of changes in working hours, similar to OLS regression. An alternative approach, multi-nominal logit models of transitions between hours categories, is less appropriate, since these models do not utilize information on changes in working hours that fall within hours categories (within full-time jobs or within part-time jobs). In addition, multi-nominal logit models are less parsimonious, which is a serious disadvantage given the relatively small sample size.

We estimate the multi-level models in three steps. In order to answer our research questions on the effects of macro-level characteristics on women's labour supply after childbirth, we need to take two steps in advance. First, we estimate an 'empty' model without variables of substantive interest to describe cross-country variation in child effects. The question is how the selected European countries differ to the extent by which women withdraw from the labour market after first childbirth. Second, we assess compositional effects, that is, the extent to which cross-country differences in child effects result from differential composition of the population of young mothers. Notably, we investigate what the effects are of individual-level characteristics (age, education, partner's working hours, and household income) on the labour supply of young mothers, and to what extent differences in the distribution of these characteristics explain cross-national variation in child effects. Third, we estimate contextual models, that is, models containing the influence of macro-level characteristics on child effects while controlling for individual effects. We assess the extent to which cross-national variation in public childcare provision, economic affluence, and egalitarian gender role values account for the pattern of child effects across European countries. We simultaneously assess to what extent the latter two factors provide an alternative to the institutional explanation. In all cases, we not only examine the extent to which the models can explain the variance at the country level, we also look at country-specific residuals to assess how well the explanations apply to particular countries.

Operationalization

Women's labour supply is measured by the weekly number of hours women spent on paid work. We rely on reports of individual respondents. People who reported having a job or business for

at least 15 hours a week were asked: 'How many hours per week do you normally work in the main job you have at present, including usual over-time if any?' We topped off working hours greater than 50 (3 per cent of pre-birth working hours, 1 per cent of post-birth working hours). Respondents who were working less than 15 hours a week were asked to report the total number of hours they worked, including jobs other than the main job. Respondents who reported not having any paid job or business are assumed to work zero hours a week.

Individual-level covariates in the analyses are age, education, partner's working hours and household income.[4] With the exception of household income, these variables are all measured before first childbirth at wave $t - 1$. Education refers to the highest attained level of education and is coded within the internationally comparable ISCED scheme. Three levels are distinguished: (1) less than second stage of secondary education (ISCED categories 0–2), (2) second stage of secondary level education (ISCED category 3), (3) recognized third-level education (ISCED categories 5–7). The number of working hours of the male partner is measured similar to woman's working hours and is used as a control variable in the analysis because partner's working hours may affect woman's working hours. Household income is obtained from wave t and refers to the income received in calendar year $t - 1$. It is measured as disposable household income. This type of income indicates how much people actually have left to spend on consumption and savings. Household income is transformed to Purchasing Power Parity (PPP) in order to compare income across countries. PPPs eliminate the differences in price levels between countries in the process of conversion. We used PPPs that were indexed as 1995 US dollars.

The country-level characteristics we measure are public childcare provision, economic affluence and support for egalitarian gender role values. The level of public childcare provision is indexed by the number of public childcare places per child of age 0–3.[5] Public childcare places are defined as publicly funded day care services such as day-care centres and kindergartens. The figures are obtained from the European Commission on Childcare for several countries during the 1990–95 period (OECD, 1990; Tietze and Cryer, 1999; Van Dijk, 2001). Because data for the 1990–95 period are missing for Germany, for this country figures from the late 1980s are used (see Gornick et al., 1998). Economic affluence is measured as the Gross Domestic Product (GDP) at the price levels and exchange rates of 1995 in US dollars. It is obtained from the OECD online database. A nation's support for egalitarian gender role value is obtained from data of the European Values Study (EVS) 1990 and 1999 (Halman, 2001). The EVS is a large-scale, cross-national, longitudinal survey research programme on basic human values conducted in 26 nations. The samples are nationally representative and consist of adult citizens, 18 years and older. In the EVS 1990/1999 surveys, respondents were asked, among other things, to answer two attitudinal questions relating to employed mothers and care for children.[6] Kalmijn (2003) found that these two items form a subdimension in factor analyses of women's sex-role attitudes. To construct a scale measuring support for egalitarian gender role values, we averaged the scores of respondents on the two items and the two survey years (1990/1999), where scores range from 1 (strongly agreeing with traditional gender role attitudes) to 4 (strongly disagreeing with traditional gender role attitudes).[7]

Results

Describing cross-country variation in child effects

Table 2 gives women's average working hours one year prior and two years after first childbirth. The working hours before childbirth show the familiar pattern of low female employment participation in Southern European countries (with the exception of Portugal) and higher participation elsewhere in Europe. Interestingly, women from the social democratic countries (Finland and Denmark) do not stand out with the highest level of employment participation before childbirth. Their average pre-birth working hours are comparable to women from other,

more conservative, countries such as The Netherlands, Belgium, France, Germany and Austria. Further analyses have indicated that the low level of pre-birth working hours of Finnish and Danish women is due to the fact that relatively many of them are students. Students are counted as working zero hours. When restricting the sample to women aged 30 and over, Finnish and Danish women appear to have the highest level of pre-birth working hours. Given the low number of women, however, we decided not to reduce the sample sizes further.

After first childbirth the country-specific female employment patterns change dramatically. Whereas Scandinavian women continue to work at a similar, high level of working hours when they have their first child, women from other countries experience a drop in working hours of at least three hours a week. Very substantial reductions in working hours can be observed in Austria, Germany, The Netherlands and the United Kingdom. In these countries,

Table 2 *Average weekly working hours of women before and after first childbirth by country (standard deviation between brackets)*[a]

	Mean working hours before childbirth	Mean working hours after childbirth	Absolute change	Relative change (%)	*N*
Finland	29.8	29.8	0.1	0.2	29
	(18.1)	(16.5)	(19.4)		
Denmark	31.7	30.7	–1.1	–3.2	70
	(14.3)	(12.8)	(17.3)		
United Kingdom	34.3	17.0	–17.3	–50.4	102
	(13.8)	(16.9)	(17.2)		
Ireland	32.0	24.0	–8.1	–25.0	48
	(15.2)	(16.1)	(14.1)		
Netherlands	29.3	14.9	–14.4	–49.1	93
	(13.0)	(12.2)	(14.3)		
Belgium	30.9	26.6	–4.2	–13.9	58
	(16.4)	(16.2)	(13.8)		
France	27.0	22.4	–4.6	–17.0	113
	(16.8)	(17.9)	(18.2)		
Germany	28.8	9.4	–19.5	–67.4	119
	(18.1)	(14.5)	(19.7)		
Austria	33.8	16.0	–17.9	–52.7	21
	(13.2)	(17.3)	(18.2)		
Portugal	31.5	28.3	–3.2	–10.2	47
	(17.3)	(17.3)	(20.6)		
Spain	16.7	14.3	–2.4	–14.4	119
	(19.3)	(17.7)	(15.5)		
Italy	20.8	16.5	–4.3	–20.7	140
	(20.4)	(18.4)	(15.4)		
Greece	18.3	14.9	–3.3	–18.6	85
	(20.0)	(18.8)	(19.5)		
EU-wide	26.6	18.6	–8.0	–30.0	1044
	(18.1)	(17.6)	(18.3)		

[a] Including non-employed women
Source: Eurostat, ECHP 1994–9 (own calculations).

women reduce working hours after first childbirth by at least 50 per cent. More modest reductions are observed in Belgium, France, Ireland and the Southern European countries. The relative drop in working hours in these countries varies from 10 per cent (Portugal) to 25 per cent (Ireland). Hence, countries of the European Union seem to display large variation in child effects.

Explaining country variation: compositional effects

In order to test whether country variation in child effects is significant and to test to what extent country variation is due to population heterogeneity, we proceed with multi-level regression analyses of changes in working hours. The parameter estimates of the accompanying models are listed in Table 3. The baseline model (Model 1) is a virtually empty model containing only a covariate for pre-birth working hours. We include this covariate because countries differ in pre-birth working hours and because initial working hours affect further changes in working hours.[8] The variance components of Model 1 show that the country variance in child effects is statistically significant. In total, (5.72/[5.72+14.46)]=) 28 per cent of the total variation in child effects is due to differences between countries.

To what extent can this country variation in child effects be explained by differences in population composition? We first address the level of compositional heterogeneity of young mothers in the European Union. Here, we focus on age, education, partner's working hours and household income. These factors have proven to be important determinants of female labour supply. Table 4 indicates that women in Europe vary in the distribution of these characteristics, notably with respect to education and household income. Women from countries of the northern part of Europe are generally better educated and have higher average levels of household income than women from the southern part of Europe. Women's ages before first childbirth do not differ much between the selected European countries, while partner's working hours vary rather unsystematically.

In multi-level Model 2 of Table 3 we examine the influence of the individual-level characteristics on female labour supply. It appears that only education has a statistically significant effect. The sign is positive, meaning that a higher educational level weakens the reduction in working hours after childbirth. The explanation for this effect may be economic as well as cultural. Higher educated women may withdraw less from the labour market after first childbirth than lower educated women because higher educated women have invested more in human capital and the pursuit of a labour market career. Higher educated women may also reduce labour supply less after first childbirth because they generally have more emancipated attitudes towards working mothers than lower educated women (Haller and Höllinger, 1994; Kalmijn, 2003).

What is more important than interpretation of the effects of compositional factors *per se* is that only a negligible portion (1–[5.642/5.720]=1 per cent) of the observed country variation in child effects can be attributed to population composition. Country differences in women's education, women's age, partner's working hours and household income provide no grounds for explaining why in some countries women experience larger negative child effects than in other countries. This can also be seen in the residual scores for individual countries. The residual scores are the observed changes in hours minus the changes in hours predicted by the particular multi-level model. The residuals from Model 2 are fairly large, indicating a bad fit (see Table 5). Furthermore, the residuals from Model 2 are hardly lower than residuals from the empty model (Model 1; see first column of Table 5). The largest decline in residuals is observable in Finland (from 8.8 to 7.6). The small child effect in Finland is partly due to its distinct population composition, foremost its generally high educational level. For Portugal, the residual increases to some extent (from 6.4 to 8.4). That is, if Portuguese women had average 'European traits' they would have displayed an even smaller child effect. These

Table 3 *Multilevel regressions of changes in women's working hours after first childbirth: effects of individual-level and country-level characteristics*

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	7.145**	0.771	–3.350	3.548	8.553*	–35.317*	–10.905	–1.315	19.512*
Pre-birth hours	–0.532**	–0.559**	–0.561**	–0.558**	–0.555**	–0.558**	–0.560**	–0.560**	–0.556**
Individual-level variables									
Age		0.093	0.110	0.091	0.101	0.092	0.107	0.111	0.117
Education		2.393**	2.266**	2.406**	2.048**	2.275**	2.250**	2.284**	2.085**
Partner's hours		–0.037	–0.033	–0.038	–0.039	–0.036	–0.033	–0.034	–0.040
Household income (/1000)		0.038	0.030	0.039	0.041	0.036	0.033	0.034	0.042
Country-level variables									
Public childcare			0.293**		0.472**		0.248*		0.544**
Affluence				–0.122	–0.620**				–0.660**
Gender values						14.173**	3.220		–4.510
Traditional passive								ref.	
Modern passive								–1.197	
Modern active								7.231**	
Between-country variance	5.720**	5.642**	3.787**	5.583**	1.085	4.382**	3.759**	4.343**	0.743
Within-country variance	14.461**	14.307**	14.306**	14.306**	14.307**	14.305**	14.306**	14.307**	14.312**
Explained country var.	0.000	0.014	0.338	0.024	0.810	0.234	0.343	0.241	0.870
Log Likelihood	–4286.6	–4275.4	–4270.9	–4275.2	–4261.6	–4272.3	–4270.8	–4272.4	–4260.8

** $p < 0.05$, * $p < 0.10$, ref. = reference group
Source: Eurostat, ECHP 1994–9 (own calculations).

Table 4 *Means of individual-level characteristics of mothers by country (standard deviation between brackets)*[a]

	Woman's age	Woman's education	Partner's working hours	Household income
Finland	28.5	2.6	39.5	27,811
	(3.5)	(0.6)	(20.9)	(11,770)
Denmark	27.9	2.4	40.1	30,532
	(3.9)	(0.6)	(17.1)	(11,496)
United Kingdom	28.9	2.4	43.5	31,089
	(4.3)	(0.8)	(17.0)	(12,586)
Ireland	29.3	2.2	45.8	31,857
	(4.4)	(0.7)	(16.2)	(12,588)
Netherlands	28.4	2.1	40.2	28,860
	(3.5)	(0.7)	(10.8)	(9,051)
Belgium	27.3	2.4	43.3	32,308
	(3.7)	(0.8)	(16.1)	(12,901)
France	26.9	2.2	38.3	30,045
	(3.6)	(0.8)	(15.7)	(33,765)
Germany	27.4	1.9	40.1	29,044
	(3.8)	(0.7)	(16.5)	(18,519)
Austria	26.0	2.1	37.8	29,891
	(3.4)	(0.5)	(15.1)	(19,508)
Portugal	27.7	1.5	44.6	17,396
	(4.0)	(0.8)	(12.2)	(9,760)
Spain	28.5	1.9	42.7	20,880
	(3.9)	(0.9)	(17.7)	(11,678)
Italy	28.0	1.6	40.6	19,806
	(3.4)	(0.7)	(14.3)	(10,261)
Greece	27.2	2.2	45.2	18,052
	(4.7)	(0.8)	(17.5)	(8,513)
EU-wide	27.9	2.1	41.6	26,140
	(3.9)	(0.8)	(16.0)	(16,957)

[a] Variables measured one year before first childbirth (year $t - 1$)
Source: Eurostat, ECHP 1994–9 (own calculations).

(changes in) country residuals, however, are not large enough to distort the general picture of country differences in child effects.

Explaining country variation: contextual effects

To what extent do macro-level characteristics – independent of individual-level characteristics – exert an influence on the labour supply of women after childbirth? We first review the effect of the level of public childcare on mothers' labour supply. Model 3 of Table 3 estimates this effect controlling for all individual-level characteristics. The parameter estimate of public childcare turns out to be significant and positive. This means that in countries where levels of public childcare are higher, women experience less of a reduction in working hours after first childbirth. The size of the coefficient (0.29) indicates a substantial effect: a rise in a nation's level of public childcare of 15 percentage points – which amounts to one standard deviation difference (see Table 1) – will reduce the negative child effect (or alternatively: increase mother's labour supply) by (15*0.29=) 4.4 hours. Government-sponsored facilities indeed seem to moderate negative child effects.

Table 5 *Regression residuals of prediction of women's change in working hours after first childbirth, by country (selected models of Table 3)*[a]

	Model 1 (only pre-birth hours)	Model 2 (all individual covariates)	Model 3 (plus childcare)	Model 5 (plus childcare and affluence)
Finland	8.8	7.6	2.2	0.9
Denmark	8.6	7.8	–2.2	–0.7
United Kingdom	–6.2	–6.9	–3.5	–3.1
Ireland	1.8	1.5	4.9	4.7
Netherlands	–6.0	–6.2	–4.6	–0.7
Belgium	5.1	4.3	–0.5	–0.2
France	2.6	2.1	–0.6	0.2
Germany	–11.3	–10.9	–7.4	–0.6
Austria	–7.1	–7.0	–3.5	2.9
Portugal	6.4	8.4	8.7	1.9
Spain	–0.7	–0.2	2.2	–0.7
Italy	–0.4	0.8	2.9	2.4
Greece	–0.7	–0.7	2.3	–2.4

[a] Residual score is observed score minus predicted score from multilevel regression (Table 3). Positive values indicate smaller child effects (less reduction in working hours) than expected, negative values indicate larger child effects (more reduction in working hours) than expected.
Source: Eurostat, ECHP 1994–9 (own calculations).

Model 3 further shows that the institutional effect of childcare can explain a great deal of the country variation in child effects. Compared to the model without macro-level factors (Model 2), the explained country variance increases by 32 percentage points. Residual scores of the model illustrate this (see Table 5). The residuals are much smaller than before. Country variation in public childcare can account for the observed small child effects in the Scandinavian countries and Belgium, where the positive residuals drop strongly. That is, child effects in these countries are low because they have a relatively high level of public childcare. The model also accounts for the observed large (negative) child effects in the United Kingdom, The Netherlands, Germany and Austria. Child effects in these countries are high because these countries have relatively weak institutional support for working mothers. However, cross-national variation in public childcare cannot account for the small child effects in Southern European countries (Portugal, Spain, Italy and Greece). Residual scores for these countries are even larger now compared to the previous model. Obviously, for these countries other factors affect mothers' labour supply.

To what extent can country variation in child effects and the influence of public childcare on these child effects be explained by a country's economic affluence, our first alternative and economic macro-level factor? In answering this question we first test what the 'crude' effect of economic affluence is: that is, the effect of affluence without controlling for the effect of public childcare (Model 4). Next, we test to what extent economic affluence mediates the effect of public childcare by including both macro-level factors (Model 5). The coefficients of Model 4 reveal that economic affluence itself does not have an effect on childbirth-related changes in working hours. Although the parameter estimate is in the predicted negative direction – a greater reduction in working hours in more affluent societies – the estimate is statistically insignificant.[9]

Model 5 of Table 3 shows that when childcare and affluence are modelled simultaneously

the effect of economic affluence is statistically significant and negative. This means that among countries with equal levels of public childcare, a higher level of affluence leads women to reduce working hours more after childbirth. Obviously, public childcare suppresses the negative effect of economic affluence. Yet, the reverse also holds: Economic affluence suppresses the effect of public childcare. As can be seen from Model 5, the effect of public childcare becomes stronger when affluence is included. The (significant) effect increases from 0.29 (Model 3) to 0.47 (Model 5). This increase is in line with our hypothesis. We expected that the influence of childcare on mothers' labour supply would be stronger when economic affluence is taken into account, because the two macro-level factors correlate positively and because economic affluence is likely to affect mothers' labour supply negatively. In fact, the Pearson r correlation at the country level between public childcare and economic affluence is 0.52 ($p < 0.10$).

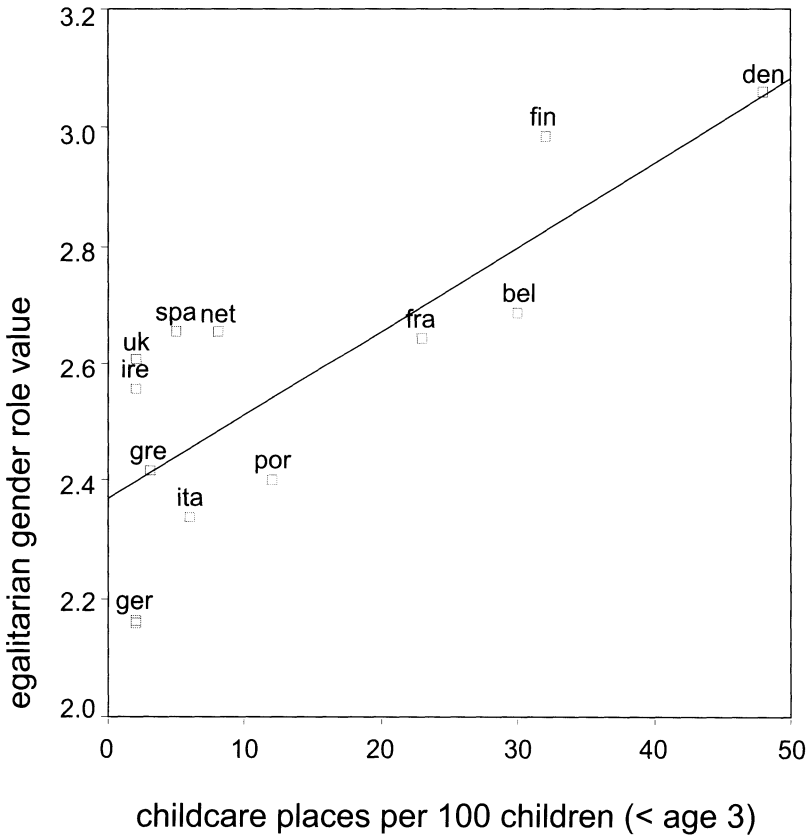
Taken together, public childcare and economic affluence offer a good explanation for existing country variation in child effects. Controlling for individual-level factors, the two macro-level factors account for 81 per cent of all country variation. In fact, the remaining unexplained (between-) country variation is insignificant. Accordingly, residual scores for individual countries are further reduced in size (see Table 5). This holds especially for The Netherlands, Germany and Portugal. Dutch and German women experience large child effects because they have low levels of public childcare as well as high levels of economic affluence. Portuguese women experience a small child effect not so much because of a low level of public childcare, but because of low economic welfare. The on average low household incomes necessitate that Portuguese women maintain working or regain work after childbirth. Difficult to explain is the child effect for Ireland. Irish women experience five hours lower reduction in working hours after first childbirth than can be predicted on the basis of the selected individual- and country-level characteristics. Ireland's country residual is therefore largest of all.

What is the role of gender role values? To what extent can this second alternative macro-level factor explain country variation in child effects and the impact public childcare has on the child effects? To answer these questions and to test the accompanying hypotheses, we again model the effect of the alternative macro-level factor first without the childcare variable (Model 6) and then with this variable (Model 7). In line with our predictions, Model 6 displays a significant, positive effect of a country's value climate. The more egalitarian gender role values in a country are, the higher mothers' labour supply and the smaller the reduction in hours.[10] The coefficient of 14.2 indicates a substantial effect. It implies that one standard deviation increase in commonly shared values (which is 0.27) is associated with (14.2*0.27=) 3.8 hours reduction in the negative child effect. More importantly, Model 7 shows that when public childcare is included as a factor, gender values no longer exert any effect. Its 'independent' effect has become insignificant. Consequently, the effect of public childcare is only slightly changed after the inclusion of gender values. It changes from 0.29 (Model 3) to 0.25 (Model 7) and remains significant. Thus, although gender role values matter, they are not relevant independently of institutions and they do not – in contrast to the prediction derived from the cultural model – alter the effect of institutions on mothers' labour supply.

That gender values do not have an effect net of public childcare can be attributed to the high correlation between the two factors. At the country level, the Pearson r correlation is 0.79 ($p < 0.05$). Disentangling the effects of childcare and gender values is therefore not an easy task. Figure 4 illustrates this point. It displays the relationship between public childcare and gender values graphically and plots the best fitting linear regression line. The 13 countries appear to lie fairly neatly around the regression line. However, the figure also shows that there is some room for gender values to have an (independent) effect. Among countries with low levels of public childcare there appears to be variation in the extent of egalitarian gender values. Some countries have a low level of public childcare and at the same time rather traditional gender

values (e.g. Germany, Austria and Italy). Other countries have a low level of public childcare but modern gender values (e.g. the United Kingdom, The Netherlands). One could argue that in the former group of countries policies and values coincide, whereas in the latter group policies are not tuned with or lag behind commonly shared gender role values.

To examine the separate effects of values and institutions in a different way, we ran an additional model (Model 8). In this model we consider three groups of countries representing different combinations of commonly shared gender role values in society and public support for childcare: (a) 'traditional passive' countries (traditional gender values, low level of institutional support: Austria, Germany, Greece, Italy and Portugal), (b) 'modern passive' countries (modern gender values, low level of institutional support: Ireland, The Netherlands, Spain and the United Kingdom), and (c) 'modern active' countries (modern gender role values, high level of institutional support: Belgium, Denmark, Finland and France). Because there are no countries being 'traditional active' (traditional gender values and a high level of institutional support), we do not distinguish a fourth group. The parameter estimates of Model 8 in Table 3 show that there is no significant difference between traditional passive countries (the reference group) and modern passive countries. The only significant contrast is between modern active and the other two groups of countries. Another way of interpreting this finding



Values for Austria and Germany overlap. Plotted regression line is derived from OLS regression (on country level) of gender role values on public childcare.

Figure 4 *National gender role values by levels of public childcare**

is that modern gender values in a country do not have any effect on mother's labour supply when active public support is lacking.

The final model in Table 3, Model 9, estimates the effects of public childcare, economic affluence and gender values simultaneously. The model does not alter the conclusions drawn from the previous models. Public childcare has a positive effect and economic affluence a negative effect on mothers' labour supply. Again, gender values do not exert any effect independent from these macro-level factors.[11] An interesting question in this respect is which of the two significant macro-level factors – public childcare or economic affluence – matters most. Standardization of the macro-level factors demonstrates that the effect of public childcare is 50 per cent larger than the effect of economic affluence (estimates not shown in the table). Hence, institutional support seems to matter most in explaining mother's labour supply.

Conclusions and discussion

Our analyses of prospective work and family history data in 13 European countries lead to the following conclusions:

(1) The degree to which married or cohabiting women withdraw from paid employment after first childbirth – the so-called child effect – differs considerably between countries of the European Union. Whereas women from Scandinavian countries, Belgium, France and southern European countries show only modest reductions in weekly working hours after first childbirth (2 to 5 hours), women from Ireland, the United Kingdom, The Netherlands, Germany and Austria show more substantial reductions (8 to 20 hours). Our panel analyses show smaller negative child effects than observed in previous cross-national studies (Van der Lippe, 2001) because cross-national studies have mostly been based on cross-sectional data. The use of cross-sectional data probably gives an overestimation of child effects because it cannot be ruled out that the very presence of children is a consequence of changes in employment.

(2) Cross-national differences in the impact of children on women's labour supply can to a large extent be attributed to differences in public arrangements supporting the employment of mothers. That policy matters is shown by the strong significant effect of public childcare: In countries with more generous public childcare, the reduction in working hours after first childbirth is lower than in countries with less generous public childcare. Overall, public childcare can explain one-third of the observed country differences in child effects. Our findings corroborate findings of cross-national studies by Stier and Lewin-Epstein (2001) and Van der Lippe (2001). These studies also found strong effects of institutional support on female labour supply.

(3) Our analyses also reveal that the institutional effect of public childcare is confounded by the effect of economic affluence. When national affluence levels are taken into account, the effect of public childcare on mothers' labour supply appears to be stronger. This is because public childcare and economic affluence co-vary and because the latter factor negatively affects mothers' labour supply. An important and new finding of our research is that economic affluence suppresses the role of institutions.

(4) Egalitarian gender role values in a country seem to play a mixed role. More egalitarian gender role values positively affect mothers' labour supply and moderate negative child effects. But a nation's gender role values do not change the impact that institutionally supported childcare has on mother's labour supply. Once gender role values and public childcare provision are modelled simultaneously, the effect of gender role values becomes insignificant, whereas the effect of public childcare remains practically unchanged. This finding is in contrast to our conjectures beforehand. We expect that once gender values are taken into account the effect of institutions becomes weaker because female employment

supporting policies and gender-work norms co-vary and both factors supposedly increase mothers' labour supply. That it is not the effect of institutions but of gender role values that disappears underlines the importance of institutional support for female labour supply. Gender values may have an effect on women's changes in labour supply, but this effect is explained by the intermediating effect of institutions. Still, it may be premature to rule out the role of gender norms and values. As we espouse in the 'strong version' of the cultural theory, changes in gender norms and values may underlie institutional changes rather than the other way around.

In our view, research investigating institutional effects on female labour supply can advance in several ways. First, cross-comparative research should address more precisely how governments influence female labour supply. The central idea in this article is that governments affect female labour supply through publicly supported institutions, offering childcare places to children of working mothers. As we noted, however, governments may also influence female labour supply through the market by subsidizing private childcare facilities. Apart from publicly supported childcare, there is unsubsidized childcare provided by the market or by the family. It would be worthwhile considering in future research the role of these alternative childcare arrangements in more detail. An interesting question in this respect is whether the 'market' and the 'family' can compensate for the lack of publicly provided childcare.

Second, research of institutional effects on female labour supply can profit from the adoption of a life course perspective (Stier and Lewin-Epstein, 2001). Research along these lines should investigate the impact of young children on female labour supply, but also of older children and of the transition into the 'empty nest' stage. Obviously, it can be expected that distinct institutional arrangements will influence the lifetime labour supply of mothers. When children are still very young, mothers' labour supply is likely to be influenced by parental leave arrangements and childcare arrangements. When the children are older and go to school, the labour supply of mothers is presumably most affected by school time schedules. An intriguing question is whether the effects of special arrangements and particularly designed institutions on mothers' labour supply are persistent when children grow older. In addition to this question, it is of interest which institutions render support to women who want to re-enter the labour market. Answers to these questions are important, since they might shed light on the immediate and longer-term consequences of the role institutions play in affecting mothers' labour supply.

Notes

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1. An additional reason for believing that in our study childcare provision influences female labour supply rather than the other way around is that we measure childcare provision *before* the start of the panel, namely during the 1990–95 period. Although a time-series design would be a better method by which to deal with this problem of causality, our panel approach advances earlier cross-sectional studies of childcare provision and female labour supply.
2. A study of Watson (2003) on attrition rates in the ECHP shows that attrition rates vary only modestly

across countries. Most of the country variation is due to differences in panel duration. Furthermore, Watson found that countries do not differ much in the selectivity of attrition, and so 'fears that attrition has undermined the representativeness of the ECHP samples are largely unfounded' (Watson, 2003: 361).

3. Only a small proportion of women who are eligible for analysis (experienced first childbirth and were observed in wave $t - 1$ and wave $t + 2$) did not report pre-birth or post-birth working hours (2 per cent; $n = 26$). Among mothers who provided valid hours information, the share of missing values on individual-level covariates is also low. One per cent ($n = 18$) of the mothers did not provide information on education and household income. The percentages are at maximum 3 for France and Italy, yet these apply to fewer than 10 cases.
4. We have also considered self-employment status as a potentially important compositional characteristic. Self-employed women might decrease working hours less than other women when they have a first child because they have to keep the business running. In our sample, 4 per cent of the women are self-employed. This percentage is higher in southern European countries (13 per cent in Portugal, 4 per cent in Spain, 8 per cent in Italy and 8 per cent in Greece) and may hence provide an additional compositional explanation of country differences in child effects. However, test analyses with a dummy variable for self-employment did not support this alternative explanation. The independent effect of self-employment is non-significant and inclusion of the effect does not change the effects of the central macro-level factors. In addition, residual scores of individual countries hardly change when self-employment is included. This also pertains to southern European countries.
5. The number of children actually using childcare is probably much higher than the number of places suggests, because one child will on average need day-care relief for only a limited part of the week. However, we lack adequate cross-national data to correct for the average time a child spends weekly in day-care relief centres.
6. The introductory question is: 'People talk about the changing roles of men and women today. For each of the following statements I read out, can you tell me how much you agree with each?' Respondents could strongly agree (score 1) to strongly disagree (score 4; do not know score 9) with the following items:
   (a) A working mother can establish just as warm and secure a relationship with her children as a mother who does not work.
   (b) A pre-school child is likely to suffer if his or her mother works.

   Item (a) was recoded so that a low score represents a traditional gender value, and a high score an egalitarian gender value.
7. The design of the EVS surveys is not entirely standardized across countries. Greece is absent in the 1990 EVS survey, and in the 1999 survey the attitudinal questions for Austria and Ireland did not have the original four response categories but five response categories. For these cases, we (re-)estimated the responses with an OLS regression of gender values on period and country dummies.
8. Low pre-birth working hours function as floor to further reduction in working hours. This can be seen in both the negative effect of pre-birth working hours (Model 2 and further, Table 3) and in the differences between absolute changes and relative changes in working hours in Table 2. In the southern European countries Spain, Italy and Greece, the absolute changes in working hours are low (comparable to the changes in Scandinavian countries), but the relative changes are greater. The weak decline in absolute hours is due to the low pre-birth working hours in Spain, Italy and Greece (lowest among the EU countries).
9. An explanation for non-significance of the effect of economic affluence on mothers' labour supply may be that we have captured part of its effect by controlling for household income at the individual level (a compositional effect). Test analyses did not provide evidence for this explanation, however. The effect of a nation's affluence decreases (becomes less negative) rather than increases when individuals' household income (or any other individual-level factor) is excluded, and the effect of affluence remains non-significant.
10. Similar to economic affluence, the effect of a country's egalitarian gender role values is only slightly biased by the inclusion of individual-level covariates. The effect of gender role values increases from 14.17 to 15.62 when women's education – a proxy of egalitarian gender values – is excluded from the analyses.

11. Country-specific residual scores from Model 9 (all three macro-level factors included) are almost identical to the residual scores from Model 5 (childcare and affluence). The inclusion of gender role values in the model does not reduce the relatively large residual score for Ireland. Yet, when gender role values are modelled as the only macro-level factor (Model 6), the residual score for Ireland decreases. This suggests that gender role values may have an impact on mothers' labour supply, but that we are not able to disentangle its effect.

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