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Lessons from a Decade of Childcare Reforms

When Context Does Matter. Childcare and Maternal Employment: Trying to Solve the Puzzle

Chiara Daniela Pronzato and Giuseppe Sorrenti[1]

Introduction

The relationship between childcare provision and maternal employment appears simple: childcare availability should facilitate the reconciliation of work and family duties, and hence have a positive effect on mothers working. Despite the apparently simple connection between the two concepts, the question of whether childcare provision affects maternal employment has been widely debated. Does childcare provision really influence maternal employment? Is reducing childcare costs a better solution than increasing the number of childcare places available? Providing conclusive answers to these questions is no easy task.

When scholars attempt to solve this kind of complex puzzle in order to obtain definite policy implications, the final answer can nearly always summarised as: "It all depends on…". The case of childcare is no exception to this rule. Indeed, political and institutional frameworks are very important in shaping the possible effects related to formal childcare provision. The same policy applied in a country such as Sweden – where childcare is universally provided and female participation is extremely high – is likely to achieve different results when applied in countries with lower childcare coverage and female labour market participation (e.g. Italy or Spain).

This paper begins by exploring the relationship between childcare utilisation and maternal employment through a cross-country comparison. The positive correlation between maternal employment and childcare utilisation will appear evident, suggesting not only differences across countries, but also within the same country. We then propose a brief overview of recent studies on this topic, emphasising in particular the institutional context in which such studies are carried out. We conclude with a simple empirical analysis applied to the Italian case, which highlights the heterogeneous effects of childcare availability across mothers who are more or less attached to the labour market.

Childcare provision and maternal employment: a cross-country comparison

The importance of the institutional and political context in shaping the effectiveness of childcare related policies is indisputable. The first important step towards forecasting the potential outcomes induced by investment in childcare services is gaining an understanding of the "environment" in which the policy will be implemented. The best way to pinpoint institutional contexts is a simple analysis of female labour market participation and childcare availability.

To this end, we graphically represent the relationship between childcare utilisation – used as a proxy for availability – and maternal employment across European countries using EU-SILC data.[2,3] As shown in Figure 1, the correlation between mothers' employment and childcare utilisation is positive and extremely high, with a value around 0.7.[4,5] Countries with low levels of childcare utilisation are grouped in the left part of the graph.

[1] University of Turin (both).

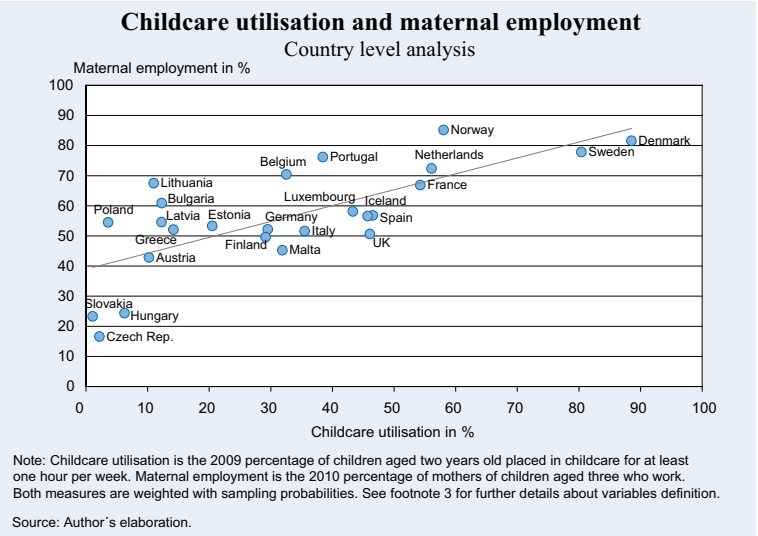
[2] The European Union Statistics on Income and Living Conditions (EU-SILC) aim to collect multidimensional microdata on income, poverty, social exclusion and living conditions across European countries. Fur further details see: http://ec.europa.eu/eurostat/web/microdata/european_union_statistics_on_income_and_living_conditions.

[3] Childcare utilisation is a weighted average at a country (regional) level of children using childcare for at least one hour a week. Maternal employment is a weighted average at a country (regional) level of mothers working full or part-time. Childcare coverage is measured in 2009 for children born in 2007. Maternal employment is measured in 2010 for mothers with a child born in 2007. We exclude from our analyses countries (regions) reporting extreme values (0 or 1) for childcare utilisation or maternal employment.

[4] Reduced sample size could influence the reliability of some of our figures. Despite this potential limitation, our analysis seems very reliable if we compare, for example, our measure for childcare coverage with data provided by the OECD (2014). More specifically, the ranking – in terms of childcare availability – obtained by our analysis is very close to the one in: http://www.oecd.org/els/soc/PF3_2_Enrolment_in_childcare_and_preschools.pdf (page 2).

[5] This simple analysis does not address the endogeneity issue due to the fact that countries/regions with higher availability of childcare may be characterised by mothers more willing to work.

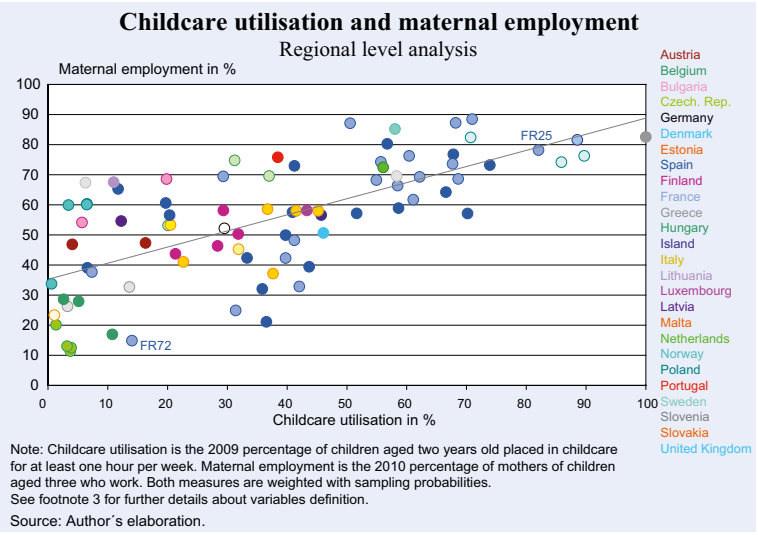
Figure 1



Note: Childcare utilisation is the 2009 percentage of children aged two years old placed in childcare for at least one hour per week. Maternal employment is the 2010 percentage of mothers of children aged three who work. Both measures are weighted with sampling probabilities. See footnote 3 for further details about variables definition.

Source: Author´s elaboration.

Figure 2



Note: Childcare utilisation is the 2009 percentage of children aged two years old placed in childcare for at least one hour per week. Maternal employment is the 2010 percentage of mothers of children aged three who work. Both measures are weighted with sampling probabilities.
See footnote 3 for further details about variables definition.

Source: Author´s elaboration.

Many of these countries are situated in Eastern Europe (e.g. Hungary, Czech Republic, etc.). In the central section of the graph we see countries with a medium level of childcare utilisation like Italy, Germany and Finland. These two groups of countries – as pointed out in the previous section – are likely to be particularly sensitive with respect to childcare policies. Not surprisingly, countries like Norway, Sweden or Denmark are characterised by a very high level of formal childcare associated with high mothers' participation rate.

In Figure 2 a similar analysis is performed, this time dividing observations at a regional level. More specifically, we use NUTS territorial classification to identify our regions of interest.[6] The aim of this representation is to understand the importance – if any – of intra-country variability. Obviously, the positive relationship between childcare utilisation and maternal employment is confirmed, yet interesting insights arise when attention shifts to within-country analysis. By keeping in mind some of the potential limitations previously mentioned (see footnote 4), the intra-country variability appears, in fact, to be extremely relevant in many cases. France is an exhaustive example of the phenomenon: as shown, some regions (e.g. FR72 – Auvergne) in France are dominated by both a low level of childcare and of maternal employment, while others (FR25 – Basse Normandie) are close to the top European performers. The case of Spain appears to be similar.

Therefore, a very simple graphical analysis is sufficient to draw at least two general conclusions. On the one hand, with very few exceptions, a higher level of formal childcare utilisation is often associated with higher maternal participation in the labour force. The investment in childcare provision seems to be effective in reducing female exclusion from the labour market. On the other, differences within the same country often appear as particularly important. This would imply caution when aggregate results – at a national level – are discussed. The presented evidence clarifies the necessity to adopt a multiple perspective in designing childcare policies. In particular, the central government and local institutions need to strongly interact to avoid the risk of not addressing specific territorial needs.

[6] The NUTS classification of European territory was introduced by Eurostat in 1988 to make easier the comparison between within-country territorial units.

Much evidence for (too) many results?

Formal childcare is considered a fundamental service for fostering child development and promoting maternal employment. Understanding the causal impact of childcare on female labour supply is particularly challenging due to the possible differences between mothers asking for childcare service and mothers not interested in the service (Coneus, Goeggel and Muehler 2009). In addition, studies carried out using data from different countries often report very different results. This heterogeneity of findings means that caution is required when extrapolating results about childcare across time periods or across different populations (Fitzpatrick 2012). These conceptual and methodological difficulties complicate policymakers' decisions when asked to choose whether to invest in cost reduction or to increase service availability. The mentioned uncertainty is the main responsible for a flourishing literature on the topics. We present a short overview of the more recent works and distinguish them on the basis of political and institutional contexts.

An important effect of a cost reduction on mother's labour supply is found in Lefebvre and Merrigan (2008) for the Canadian case. They use a new childcare policy based on a reduced fee applied to children aged four to show that the policy had a large and significant impact on the labour supply of mothers with preschool children. More specifically, the policy increased the participation rate of mothers with at least one child in age one to five by around eight percentage points. The policy was not only effective in the short-term but had also an important long-term labour supply effects particularly relevant for less educated women (Lefebvre, Merrigan and Verstraete 2009).

It is sufficient to move from Canada to the US to understand how heterogeneous results are the rule when investigating childcare effects. Not only heterogeneity across countries is relevant, but often also heterogeneity within each country needs attention. Specifically, according to Fitzpatrick (2012) in the US context childcare subsidisation seems to play a marginal role in shaping maternal employment. The study – which analyses the case of public kindergartens – shows how public school subsidy was responsible for an increase in employment of solely single mothers without additional young children. The effect of this kind of subsidies policy seems partially confirmed by Cascio (2009). More specifically, a relatively large employment effect for single mothers of five-year-olds with no younger children is found, while no effects emerge for other mothers. On the contrary, universal preschool subsidisation is found to have almost no effect on maternal labour supply in Fitzpatrick (2010).

The difficulty of detecting a unique and similar conclusion persists when attention shifts to the European contexts. Extensive social, political and institutional differences among countries stimulate a very broad-ranging debate on which aspects of childcare are to be privileged as a result of policy design. A rough classification of institutional contexts would be based on the identification of two groups of countries. On the one hand, countries such as Norway or Sweden are characterised by universal childcare provision. On the other, there are countries like Italy where the availability of formal childcare is limited and in which limitations are often particularly striking in the public sector.[7]

When focusing on the first group of countries, it is no surprise to find that childcare investments hardly have any effect on female labour supply. The extremely high levels of both childcare coverage and female participation limit the effect of new reforms.

As a result, Lundin Mörk and Öckert (2008) estimate a "close-to-zero" effect of the reduction in childcare costs on female labour supply for the case of Sweden. Similarly, a cash benefit for one-to-two year olds not using subsidised childcare in Norway induces a very small effect on mothers' labour supply (Rønsen 2009). The same lack of a causal effect of subsidised childcare on maternal employment arises in Havnes and Mogstad (2011). This peculiarity of Northern countries makes it difficult to understand the external validity of the results detailed above. How do the specific institutional contexts analysed really matter in shaping the effects induced by childcare policies?

Analysing other territorial contexts is the best way of trying to answer the question. The choice between cost reduction and an increase in availability is examined in Vandelannoote, Vanleenhove and Decoster (2014) using Belgium as a case study. The attempt to disentangle the cost effect on female labour supply from the availability effect for a country with a relatively generous service supply highlights that maternal labour supply seems more sensitive to changes in the availability of care, rather than in price.

[7] See Brilli, Del Boca and Pronzato (2015) for a detailed analysis of Italian public childcare supply.

Germany also constitutes another particularly interesting case. In Germany subsidised childcare is rationed,[8] while private childcare is far more expensive than the public care option. This particular framework seems conducive to the implementation of childcare policies and the understanding of their potential consequences. At first sight, the efficiency of childcare related investments appears to be on the increase compared to the previously selected cases. As a matter of fact, the introduction of a childcare subsidy is found to be responsible for a marked increase in the labour supply of all women (Haan and Wrohlich 2011). Bauernschuster and Schlotter (2015) report a similar result and, more specifically, they estimate that a ten percentage point increase in public childcare provision increases the employment of mothers whose youngest child is three-to-four years old by roughly 3.5 percentage points. Similar to the Belgian case, German women also seem to respond more to an extension of childcare places than to a reduction in the price of existing places (Wrohlich 2011).

Childcare provision and related outcomes is also widely debated within Mediterranean countries. In France, e.g., Goux and Maurin (2010) find that early school availability for two-year olds has a significant employment effect on single mothers, while the effect is almost inexistent for two-parent families. Labour market general conditions and, in particular, high female labour force participation are likely to be the main drivers of modest effects related to childcare provision. With this perspective, Nollenberger and Rodríguez-Planas (2015) chose the case of Spain in order to analyse a context with low labour demand and depressed wages. They find that around two mothers become employed for every ten additional children enrolled in public childcare. Because of the peculiarity of the institutional context, it is not clear whether or not this effect should be seen as modest.

The analysis of a similar institutional and cultural context such as the Italian one appears enlightening instead. In Italy the level of women's labour market participation is significantly low and calls for interventions aimed at fostering employment.[9] Brilli et al. (2015) investigate the effect of public childcare availability on mothers' working status, and find that a percentage change in public childcare coverage increases the probability of mothers being employed by 1.3 percentage points.

As previously mentioned, this comparison across countries highlights different results according to different institutional contexts. Suffice it to say that the main driver of female participation appears to be the availability of childcare, while cost seems to play a secondary role. Not surprisingly, childcare provision is often more relevant in shaping individual employment in contexts where the labour market is characterised by a low level of demand.

Who benefits more from childcare provision?

On a macro level, the existing literature on this topic highlights the modest effect of childcare provision on female labour supply in countries characterised by high female labour market participation – like Northern European countries – in which childcare is universally provided. Conversely, the effect seems more relevant in contexts with low levels of female labour market participation. On a micro-level, we wish to investigate whether the effect of childcare provision is heterogeneous across mothers more or less attached to the labour market.

In this specific framework, the Italian case is particularly appealing due to its labour market in which female participation is at one of the lowest levels across Europe (see footnote 9). To understand the potential of childcare-related policies, we perform a very simple empirical analysis to show the possible relation between childcare provision and maternal employment. Our interest resides in understanding which groups of mothers are more responsive to childcare availability. Specifically, we want to understand whether childcare availability affects the working behaviour of mothers with different attachments to the labour market. As a proxy of a mother's labour attachment, we use information on her employment situation in the three months prior to the birth of the child. Therefore, we need a complete set of information that allows us to detect working status before childbirth, childcare utilisation and working status in the first years of the child's life.

EU-SILC panel data provide us with all the information that we need.[10] In particular, we focus on the period from 2004 to 2010, collecting all the available information

[8] By rationed we mean that because the number of applicants is higher than the number of places available in the public childcare system, some individuals may not gain access to the service. Therefore, they evaluate private childcare as a potential option. See Wrohlich (2008) for an analysis of excess demand for subsidised childcare in the German case.

[9] According to Eurostat, the female employment rate in Italy was 46.5 percent in 2013 compared to an average EU-28 level of 58.8 percent. Only Greece and Croatia performed worst with respect to Italy.

[10] EU-SILC not only provides cross-sectional data described in footnote 4, but also supplies a panel dataset containing information on the same sample of individuals for four consecutive years.

about working status and its time evolution for 921 mothers with a child aged zero to three. The panel nature of the dataset allows us to easily detect mothers' working status in the trimester preceding childbirth and when the child is three years old. Unfortunately, individual information about childcare utilisation is not available for this source of data and, therefore, to overcome this problem we proxy childcare utilisation with a regional coverage rate at a specific point in time.[11]

Table 1

Childcare provision and maternal employment

	(1)	(2)	(3)
	Whole sample	Working before	Not working before
Formal childcare coverage	0.28**	0.23	0.62***
	(0.11)	(0.19)	(0.20)
Observations	921	374	547

Dependent variable: Mother's employment. Logistic Regression Model. Clustered at a regional level standard errors in parenthesis. Col. (1) estimates refer to the whole sample. Col. (2) estimates refer to the sample of mothers working before childbirth. Col. (3) estimates refer to the sample of mothers not working before childbirth. Models (1) to (3) contain age, age squared, a secondary schooling dummy, a tertiary schooling dummy, a two-parent household dummy, a dummy for younger siblings and a dummy for older siblings. Models (1) to (3) also contain regional and time dummies.
*** indicates significance at 1% level, **indicates significance at 5% level,
* indicates significance at 10% level.

Source: The authors.

We therefore estimate a logistic regression model of mothers' employment controlling for a series of potential determinants of working status (e.g. age, education, household composition etc.). Estimated coefficients for childcare coverage are presented in Table 1. As expected, formal childcare coverage has a positive significant effect on the individual probability of maternal employment. More specifically, a one percentage point increase in childcare availability increases the mothers' probability of working by around 0.6 percentage points. However, the average effect is driven by the sub-sample of mothers who were not working before the birth of the child. Results suggest that, while women closely attached to the labour market are better at organising the care of their child and returning to work, higher childcare provision helps less labour market-attached women to find (return to) a job.

In addition, this simple empirical exercise suggests that childcare-related policies play a key role in shaping female employment in countries characterised by low levels of female participation.

Conclusion

This paper reviews the recent literature on childcare provision and maternal employment, and uses simple statistics to show this relationship across European countries and regions. In particular, it studies how the association between childcare availability and mothers' labour market participation may vary across different European contexts. Studies using data from Nordic countries – where levels of female market participation are relatively high – tend to find smaller effects of childcare provision than studies using data from Southern countries. The same relationship has been found at a micro-level: focusing on Italy, a country characterised by low female work participation, we have found that childcare availability is more crucial to less labour-attached mothers. This result is in line with studies which find that family policies are particularly important for less educated women (Del Boca, Pasqua and Pronzato 2009; Pronzato 2009).

[11] The use of coverage rate is a reliable proxy for individual childcare utilisation, but also reduces the endogeneity issue related to childcare utilisation. Mothers using childcare are probably different with respect to mothers not using the service in terms of working propensity. Considering regional coverage as a proxy for individual utilisation we employ an Intention to Treat Analysis (ITT).

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Are Childcare Subsidies Good for Parental Well-being? Empirical Evidence from Three Countries

Marie Connolly and Catherine Haeck[1,2]

Public policies aimed at families, especially those with preschool children, have grown in terms of both their importance and interest in recent years. Many countries have introduced or reformed their maternity and parental leave regulations, as well as their childcare subsidy system. These subsidies can be transferred directly to the parents or given to childcare centres that then provide free or low-fee childcare. The Scandinavian countries, the United Kingdom, France and New Zealand all spend over one percent of their GDP on childcare and pre-primary education (OECD 2013). In 2002, the European Council set out the so-called Barcelona targets: that each country should, by 2010, provide childcare to a minimum of 90 percent of children aged three up to mandatory school age, and to at least a third of all children under three years of age (European Commission 2008). While improving the well-being of the population in general, and of parents and children in particular, may be a goal of such policies, their more immediate intention is often to promote equal opportunities in employment between men and women. Indeed, increases in childcare subsidies are usually accompanied by higher female labour force participation, especially among less socioeconomically advantaged women (Lefebvre and Merrigan 2008). This increase in the labour supply, and its associated rise in daycare attendance, can in turn have consequences for children's human capital development (Baker, Gruber and Milligan 2008), and is also related to an increase in womens' share of contributions to household income, which has implications for intra-household spending patterns (Haeck, Lefebvre and Merrigan 2014).

In this article, based heavily on Connolly's own research on the topic (Brodeur and Connolly 2013), we investigate the relationship between childcare and parental well-being. First, what do we mean by parental well-being? What are the mechanisms by which childcare can influence well-being? What is the evidence base? Should we be interested in the overall effect of childcare subsidies – which includes and partly takes place via an increase in maternal employment – or should we try to net out the effect of work on well-being? This touches upon the key issues of work-life balance, the sharing of household responsibilities and changing gender roles. Indeed, an increase in the female labour supply, while objectively a positive outcome through the higher income, as well as the greater freedom and empowerment that it offers, can have negative consequences on subjective well-being (SWB). For example, women who seem to "have it all", i.e. both a family and a career, report lower levels of SWB than mothers without a career (Bertrand 2013).

As more and more advanced countries ponder whether or not to invest in early childhood education, with its associated impact on childrens' cognitive and non-cognitive development, we should also be assessing the effects of such policies on parental well-being, which is both a goal in itself, and a mechanism through which children's well-being and development are affected. This article takes an international perspective and summarises years of research on Canada (in particular the province of Quebec), Germany and the United States. As will be shown, the evidence is mixed, reflecting the diversity of institutional contexts and government interventions, as well as effects stratified by the parents' socioeconomic situation. For example, in the United States, where childcare subsidies are typically given directly to low-income single mothers and are tied to work requirements, those subsidies have been found to have detrimental effects on mothers' well-being. In Germany and in Quebec, state-subsidised daycare centres offer low-fee childcare options to parents, and their availability has had positive effects for the average parent,

[1] University of Quebec in Montreal (both).
[2] Photographs: © UQAM | Service de l'audiovisuel, photographe: Émilie Tournevache, 2012.

although effects vary according to the parents' income group. While low-income parents seem to be better off, high-income parents are worse off.

What is well-being?

Well-being is a broad concept that describes how good people feel and how they perceive their lives. Although there is no consensus on its definition, it generally relates to quality of life and encompasses both mental and physical health, as well as various dimensions like economic, social or emotional well-being. Well-being need not, however, be equivalent to utility, at least not in the way economists typically think of utility. Hence individual utility maximisation may not coincide with well-being maximisation. This explains why rational individuals can make choices that actually lead to lower well-being, and highlights the fact that the notions of utility and welfare may not be interchangeable.

There are many ways to measure well-being (Kahneman, Diener and Schwarz 1999). Objective measures can be used, both at the micro level (e.g. income, social connections, job loss) and at the macro level (e.g. economic conditions, environmental quality, health-related measures like mortality and morbidity, or political voice and governance-related indicators like the presence of free media or the quality of the judicial system). These objective measures are undoubtedly related to quality of life and are generally easier to collect than their subjective counterparts. But to ignore subjective measures altogether, based on the argument that they are unreliable and not comparable across individuals or regions, would leave us with a narrow and incomplete view of reality. Among the commonly-used measures of SWB are life satisfaction and happiness. Both capture related, but different concepts (Deaton and Stone 2013). Life satisfaction, as well as satisfaction with specific areas of life such as work, marriage/relationships, work-life balance or health, are examples of evaluative measures, which require a certain cognitive effort on the part of the survey respondent. By contrast, hedonic measures such as happiness and affect are based on instantaneous experiences. Other self-reported well-being variables often collected in surveys and related to parental well-being are measures of parenting stress and maternal depression.[3]

[3] The reader wishing to learn more about well-being and economics is referred to Easterlin (2002) and Stutzer and Frey (2012).

By which mechanisms might childcare affect well-being?

Most of the literature on this topic tries to assess the effect of childcare subsidies, whether given directly to the parent (like in the United States) or indirectly through the provision of subsidised childcare in low-fee daycare centres (like in Quebec and Germany). Both types of subsidies work through the same transmission channel: subsidies are akin to higher wages, because they reduce the costs of childcare, and hence the costs associated with work (or alternatively, they increase the opportunity costs of leisure). The primary effect of such subsidies is to increase parental labour supply, and the magnitude of this effect depends on the elasticity of labour supply. As such, these subsidies are more likely to increase the work intensity of women, since their labour supply tends to be more elastic than men's and they typically have lowers levels of employment to start with.

More work can affect parental well-being through various mechanisms (Herbst and Tekin 2014). First, more time spent working necessarily means less time spent doing other activities. This change in time allocation can impact well-being negatively if the displaced activities (leisure, childcare, etc.) were more pleasant than work, which is usually not very highly rated (Kahneman et al. 2004). This is especially true for the type of jobs held by people with a more marginal attachment to the labour force (i.e. low-paid, with unpredictable or nonstandard schedules or hazardous work conditions). Furthermore, longer working hours can also lead to increased stress and difficulties in combining the dual demands of work and family responsibilities. Often the burden of household tasks does not decrease even although the time available for them does. Working parents are thus left to accomplish them under increasing time pressure and stress.

Second, more work increases family income, and so do childcare subsidies, even if they have no effect on parental work. This income effect can have an influence on well-being: the question of whether money can buy happiness has been extensively studied. While no strong consensus emerges, more income is generally linked to increased levels of SWB, but only up to a point. Among the issues raised in the literature are the nonlinear effect of income (leaving poverty is probably beneficial, but additional income for an already-rich person does not have much effect) and whether absolute or relative income matters more. The extra income can also bring changes in consumption, but the direction of the effect

on well-being is unclear: the additional income could be used to promote a healthy lifestyle by enabling the purchase of more fresh fruits and vegetables, but it could also help enable the purchase of more alcohol and cigarettes. In the context of increased childcare subsidies, Haeck et al. (2014) show that more income in the hands of mothers affects the expenditure structure within a household by raising the budget shares of expenditure related to children, family goods and services with a collective aspect.

More directly related to childcare, subsidies and the extra income they bring can also help pay for higher-quality childcare. While the main effect of this increased quality is on the child's development and happiness, parents can also derive satisfaction from knowing their child is receiving high quality and welfare-enhancing care. Related to quality is the issue of the stability of care and the reduced strain associated with childcare arrangements, both of which can be improved with the additional money brought by subsidies, thus reducing stress and increasing well-being. Finally, some government interventions may explicitly target the quality of childcare, for example by sponsoring and promoting centre-based care over informal care, even if they do not have an income effect on parents.

Before moving on to the evidence, we need to pause and reflect on what we are trying to estimate when we want to find the effect of childcare on well-being. Is it the overall effect of some child-care-related policy that is estimated, or only a certain transmission channel of it? For example, Healy and Dunifon (2014) argue that holding participation in the labour market constant is necessary to isolate the effect of childcare subsidies on family well-being, given that maternal employment can affect well-being in various ways. Most studies, however, take a more holistic view and try to assess the overall effect, including the changes in employment. This approach may be more appropriate in that it addresses the complex issues of work-life balance and changing gender roles. The employment effects of subsidies are generally felt by women, whose income in a couple usually pays for childcare, given that the alternative to sending the kids to daycare is generally perceived to be the mother staying at home with them. But if gender roles are slowly evolving such that women still bear the brunt of household responsibilities even when working, the extra work may overall decrease women's well-being, even if it brings in additional income, along with a sense of purpose or control over life. Likewise, men's identity as the family's breadwinner can be threatened by increased female employment. Hence gender role implications probably exist that need to be taken into account.

What is the evidence?

While many papers have studied the effect of childcare subsidies on parental employment (Lefebvre and Merrigan 2008) and others have looked at the effect of employment on well-being (Chatterji, Markowitz and Brooks-Gunn 2013), few papers have explicitly tried to estimate the impact of the subsidies on parental well-being. Some are based on cross-country comparisons at either the micro or macro level, in which measures of well-being and perceived work-life balance are explained by various factors typically including the availability of childcare as measured by the fraction of preschool children attending public care facilities (Treas, van der Lippe and Tai 2011; or see literature review in Schober and Schmitt 2013). These studies come to conflicting results regarding the size and direction of the effect of childcare provision, but that is hardly surprising given the diversity of institutional settings and varying types of government interventions. In this review, we only report the findings of papers focusing on the impact of country- or region-specific interventions on parental well-being.[4] Table 1 summarizes the studies' data, methodology, outcomes studied and findings of these papers. It is worth noting that we focus more on the direction of the effects than their magnitudes, given the variety of outcomes and policies under study.

Canada/Quebec

In 1997, the government of Quebec, Canada's second-largest province by population and GDP after Ontario, introduced a childcare policy providing highly subsidised care through low-fee (CAD five, later raised to CAD seven and CAD 7.30) public daycare centres. The policy was implemented over a few years, and eventually provided childcare access to all preschool children – although the number of actual slots available was not always large enough to accommodate the demand. Three studies have used the Quebec policy as a natural experiment, comparing the outcomes in Quebec with those in the rest of Canada, where no such policy was implemented. The policy, while admittedly costly for

[4] A study not reported here is that by Yamauchi (2010) on Australia, which finds that an increased availability of childcare decreases perceived childcare search costs and increases mothers' satisfaction with their amount of free time available, especially for less-educated mothers.

Table 1

Effects of childcare subsidies on well-being

Study and data	Methodology	Outcomes	Main results
Canada/Quebec			
Baker, Gruber and Milligan (2008) Data: National Longitudinal Study of Children and Youth (NLSCY), cycles 1 (1994-95) to 5 (2002-03)	Difference-in-differences, comparing Quebec with the rest of Canada, before and after the introduction of subsidised childcare.	Mother and father's self-reported health, family dysfunction index, mother's depression score, satisfaction with relationship.	Negative effects on mother's depression scores (more depression), on father's health and on satisfaction with relationship.
Kottelenberg and Lehrer (2013) Data: NLSCY, cycles 1 (1994-95) to 7 (2006-07)	Replicate Baker et al. (2008) with two additional cycles of data. Instrumental variable (IV) approach: childcare attendance is instrumented by the policy to recover local average treatment effect. Inverse propensity weighting (IPW) method: non-parametric logit predicts probability to attend childcare, which is used as weight to recover average treatment effect. Sub-samples: mothers who work, mothers who do not.	Mother and father's self-reported health, family dysfunction index, mother's depression score.	Negative effect on mother's depression scores (more depression) in the IV model. Negative effects on father's health and on family dysfunction (more dysfunction) and positive effect on mother's depression (less depression) in the IPW model.
Brodeur and Connolly (2013) Data: Canadian General Social Survey, 1998, 2003 and 2005	Triple-differences with demographic and socioeconomic controls and time trend, comparing Quebec with the rest of Canada, before and after introduction of subsidized childcare, and parents of young children to others. Sub-samples: men/women, low/high education, married or not.	Main: life satisfaction and happiness. Additional: satisfaction with work-life balance, stress, self-reported health and sleeping problems.	Small overall decrease in life satisfaction. Large and positive (negative) effects on both life satisfaction and happiness for lower- (highly) educated men and women.
Germany			
Kröll and Borck (2013) Data: German Socio-Economic Panel (SOEP), 2006-10	OLS models where outcome is regressed on indicator of formal childcare use, individual characteristics, regional characteristics, state and time fixed effects. IV models where childcare use is instrumented by the aggregate rate of formal childcare usage in the district. Sample: mothers only.	Maternal mental health, maternal physical health, mother-child interaction index and the various types of interactions.	Large negative effect of childcare usage on maternal physical health in IV model. OLS coefficients small and not statistically significant. Effects on mental health positive but not statistically significant. Positive effect on mother-child interaction index in IV model, mainly driven by interactions at playground and watching TV.
Schober and Schmitt (2013) Data: German SOEP from 2007 to 2011, Families in Germany Study (FID) 2010-11, administrative records	Fixed-effects models where outcome is regressed on child-care provision (the percentage of children who attended childcare in the county/year), control variables and time and county fixed effects. Sample: mothers and fathers with a child under three.	Maternal and paternal satisfaction with life overall, available childcare, family life, health and personal income.	Positive effects for all outcomes for West German mothers; and for available childcare and family life for East German mothers. Positive effects for available childcare for West and East German fathers; and for family life for West German fathers.
United States			
Herbst and Tekin (2014) Data: FFCWS, Early Childhood Longitudinal Study Kindergarten Cohort (ECLS-K) and DDB Worldwide Communications Life Style Survey	OLS models where outcome is regressed on an indicator of subsidy receipt, family characteristics, census tract characteristics and state fixed effects. IV model where subsidy receipt is instrumented by distance to nearest social services agency. Ordered probit model where life satisfaction categories are regressed on amount of childcare subsidies, demographic and state-level controls and various fixed effects and time trends. Samples: women only for FFCWS, unmarried women for ECLS-K and DDB.	Overall health, anxiety, depression, parenting stress, life satisfaction.	Negative effects on overall health, depression (more depression) and parenting stress (more parenting stress). Marginally more anxiety. Negative effects on life satisfaction, especially for low-income mothers.
Healy and Dunifon (2014) Data: Fragile Families and Child Wellbeing Study (FFCWS)	OLS and logit models where outcome is regressed on an indicator of subsidy receipt and control variables. Propensity score (PS) models where subsidy receipt is modelled to recover average treatment effect. Sample only includes working mothers.	Parenting Stress Index, maternal depression.	Marginal increase in parenting stress in OLS model. No statistically significant effects in PS models.

Source: Authors' compilation from literature.

Quebec's public finances, is generally well-regarded by the parents whose upfront costs are extremely low and whose kids generally get access to good-quality centre-based care. Baker et al. (2008) were the first to put a dent in this enthusiasm by documenting the detrimental effects of the policy in terms of children behaviour and parental well-being. As reported in Table 1, they used a simple difference-in-differences framework, comparing Quebec with the rest of Canada, before and after the introduction of subsidised childcare. They found that the policy had negative effects on mother's depression scores (more depression), on father's health and on satisfaction with their couple relationship. Kottelenberg and Lehrer (2013) deepened Baker et al.'s (2008) analysis, by using the same data, but using two more cycles of the survey (covering four more years). They find the same results, persisting over the longer time period. But they also use two more identification strategies to refine their understanding of the effects. Using an instrumental variable (IV) strategy to recover a local average treatment effect, they are able to show that the negative impacts of the policy on maternal depression are driven by the families that started using childcare as a result of the subsidies. Moreover, using an inverse propensity weighting method, they find a small, but positive average treatment effect of the policy on maternal depression (i.e. less depression for the average mother).

Using another data set containing life satisfaction and happiness measures, Brodeur and Connolly (2013) use a triple-differences model to estimate the effect of Quebec's childcare policy on SWB, in which a difference between parents of preschool children and other adults is added to Baker et al.'s (2008) and Kottelenberg and Lehrer's (2013) difference-in-differences model. They find a small overall decrease in life satisfaction, but the interesting results emerge when the sample is split according to education level. They find large and positive effects on both life satisfaction and happiness for lower-educated men and women. These findings are consistent with an income effect priming over any potential negative channel (e.g. difficult work-life balance) for lower-educated, hence on average lower-earning, parents. The story for highly educated parents is reversed: large and negative effects are found. This could reflect a number of transmission channels, from poorer outcomes for children affecting parents, to increased competition for a limited number of childcare slots, to changing reference groups and social norms.

Germany

Germany has experienced a large increase in the provision of subsidised childcare in formal centres in recent years. The federal government has implemented a number of measures over the years to promote early childhood education and care: since 1996, children aged three and over have been entitled to a slot in a formal centre (kindergarten) for at least four hours a day; since 2005 children under the age of three should be able to receive formal childcare if their parents work; and since 2013 all children aged one and over are entitled to a childcare slot. Although parents pay a contribution based on their income, formal care is highly subsidised, and therefore less expensive than private care and below the OECD average (Schober and Schmitt 2013).

Two papers have used the variations over time and across regions in the provision of formal childcare to tease out its effects on parental well-being. Kröll and Borck (2013) estimate OLS models where the outcomes of maternal mental and physical health and various mother-child interactions are regressed on an indicator of formal childcare use, individual characteristics, regional characteristics and state and time fixed effects. Given the endogeneity of childcare usage, they also estimate IV models where childcare use is instrumented by the aggregate rate of formal childcare usage in the relevant district, which varies substantially in Germany between East and West, primarily for historical reasons. They find that childcare usage has a significant negative effect of on maternal physical health in the IV model, but no effect on mental health. They also find a positive effect on their mother-child interaction index in IV models, mainly driven by more interactions at the playground and while watching TV. While they note that the large negative effect on physical health represents a local average treatment effect, thus reflecting the condition of mothers who only use childcare as a result of increased local formal childcare rates (the "marginal users" of childcare), they do not really provide insights as to why they find negative effects on physical health. Perhaps those marginal users suffer more fatigue and stress from working and increased exposure to germs through their children than the "average user", who was already working and using childcare services.

Schober and Schmitt (2013) use a fixed-effects model to estimate the effect of formal childcare availability on various measures of satisfaction: satisfaction with life overall, with available childcare, with family life, with health, and with personal income. In their reduced-form

models, the county/year average outcome is regressed on the percentage of children who attended childcare in the county/year and on control variables, with time and county fixed effects. They find generally positive effects, with childcare provision being positively related to all outcomes for West German mothers, to satisfaction with available childcare and family life for East German mothers, to satisfaction for available childcare for West and East German fathers, and to satisfaction with family life for West German fathers. No statistically significant negative effects were found, contrary to other studies. The authors note that in Germany the expansion of formal care has focused on creating facilities that allow mothers to work part-time, which is not the case in Quebec for example (Haeck et al. 2013). The possibility to work part-time may hence contribute to an easier and less stressful work-life balance.

United States

In the United States, the provision of childcare is typically not through public formal care centres like in Quebec or Germany, but through the private sector. The federal and state governments, however, provide some childcare subsidies directly to economically disadvantaged parents. Since the welfare reform of 1996, the subsidies require the parents to be working, and consequently a large number of studies have tried to evaluate their effect on employment, while few have focused on well-being. Herbst and Tekin (2014) is the most comprehensive of all, drawing conclusions from three nationally representative data sets on top of presenting the American childcare subsidy policy and discussing the mechanisms by which well-being may be affected. Using OLS models where the outcome is regressed on an indicator of subsidy receipt, family characteristics, census tract characteristics and state fixed effects, IV models where subsidy receipt is instrumented by the distance to the nearest social services agency, and ordered probit models where life satisfaction categories are regressed on the amount of childcare subsidies, demographic and state-level controls and various fixed effects and time trends, they find that subsidies are generally associated with worse maternal health (overall health, parenting stress, depression) and poorer mother/child interactions. They note, however, that the effects are larger for women who did not work prior to subsidies, suggesting that the detrimental effects could be short-run and reflect an adjustment shock, as mothers adapt to the dual responsibilities of home and market work.

Healy and Dunifon (2014) find similar results using OLS and logit models: more subsidies, holding work constant, marginally increase parenting stress and increase depression for mothers of boys. However, consistent with a larger income effect for the very poor, subsidies also decrease parenting stress for those living in deep poverty. All of these effects lose their statistical significance when the authors use propensity score models where subsidy receipt is modelled to recover average treatment effects. It is worth noting, however, that Healy and Dunifon (2014) try to hold work constant, whereas many of the detrimental effects may be due to increased employment, so in that sense their findings of no effects are less surprising.

Conclusion

As more and more countries consider whether and how to invest in early childhood education and care, childcare subsidies are becoming an important policy tool. It is important to not only understand their impact on parental employment and child development, but also on parental well-being. Mothers' and fathers' well-being is important in and of itself, as governments should strive to improve their citizens' welfare. But it is also relevant for the future of our economies, as happier and healthier parents have been shown to have a positive effect on their children's cognitive and non-cognitive development. The evidence reviewed in this article reports both positive and negative effects found in the literature. This ambiguity reflects the diversity of institutional contexts and government interventions. Detrimental effects have been found in cases where subsidies give less-educated women incentives to work, leading them to juggle the dual tasks of market work and household responsibilities such as in the United States (although not in Canada). Positive effects have been found for the average parent, especially when the labour market accommodates mothers' part-time work more readily, as in Germany. Yet negative effects have also been found among highly educated mothers and fathers in Quebec, perhaps echoing changing gender roles, and evidence that the ideal of "having it all" may be pushing parents who try to pursue a career and raise a family at the same time to higher levels of stress and lower happiness. More than ever, we need to tackle the issue of the adequate balancing of work and personal life, if we want to be able to raise children to their full potential while allowing women to achieve the same labour market outcomes as men.

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Childcare and Child Development

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Introduction

Reforms of the public childcare system have ranked high on the political agenda of many countries in recent decades. While expansions of pre-schools (care centers for children aged three-two-five years old) were the major objective in the 20th century,[2] in the first decade of the 21st century growing attention has been devoted to expanding early childcare (care centers for toddlers aged zero-to-two years old). Barack Obama, for instance, pledged USD 10 billion to early childhood education during his 2008 presidential campaign. In 2005 the German government enacted a day care expansion law to deal with the severe shortages of early care centers. In 2008, the law on support for children also announced that all children aged one year and older would be entitled to a childcare place by August 2013. A similar claim exists in Norway, where children born before September 1 are entitled to a place in childcare by mid-August of the year that they turn two years old. In the UK debates on extensions of free nursery entitlement to disadvantaged two-year-olds are ongoing.

The recent expansions of and interest in early childcare are largely motivated by the widely advertised success of a few model programs, including the Abecedarian and Perry Preschool programs. These programs provide generally large-scale multidimensional packages of interventions to disadvantaged families. Yet such targeted interventions are very different from the care centers at the core of the latest childcare reforms, and extrapolating their findings may lead to very misleading conclusions. This article therefore provides an overview of the literature on the consequences of implementing or expanding universal childcare. Most of the literature to date has analyzed the consequences of expanding pre-schools. However, findings for pre-school children cannot merely be extrapolated to toddlers, as both are at very different developmental stages. Given that early care constitutes the core of recent and upcoming reforms, this article will pay particular attention to the latter.

Lessons from the last century - reforms of pre-schools (children aged three-to-five years old)

The effects of pre-school on children are almost certainly not the same for every child. The quality of the care provided by the pre-school in comparison to the care provided by the counterfactual care mode – in other words the care mode that is crowded out – shapes the benefits of pre-school attendance. Besides differences in the employed methodologies, differences in the findings of existing studies on the consequences of pre-school on children's development are likely to be attributed to both differences in the quality of pre-schools and in the quality of the counterfactual care mode. However, while there is little information on the quality of pre-schools, existing studies can be classified according to the type of care being crowded out by the expansion of public care: private pre-schools, targeted care, informal care, or family care.

The seminal study by Baker, Gruber and Milligan (2008) focuses on the introduction of highly subsidized child-care in Quebec, a setting in which public childcare replaced mainly private (paid) childcare arrangements. The Quebec Family Policy envisaged an introduction of highly subsidized childcare staggered by age groups, starting with four-year-olds in 1997 and ending with under-two-year-olds in 2000. The authors find negative effects on children's short-run health and well-being. Cascio (2009) documents reductions in high school dropouts and institutionalization after the introduction of public childcare in the United States in the 1960s and 1970s. Yet the positive effects are only found among whites, but not among other groups of the

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[2] Norway was among the first countries to expand its supply of public pre-school seats in 1975. Many other countries followed suit during the 1990s: in 1996 Germany, for instance, introduced a legal claim on a slot in pre-school for children turning three years old. Similarly, the province of Quebec introduced universal subsidies for childcare over the 1997–2000 period for two-to-five year old children. In the United States, universal preschool initiatives have only been passed by a few states like Georgia (1996) and Oklahoma (1998).

population that are likely to enjoy targeted (and thus higher quality) care. Fitzpatrick (2008) and Havnes and Mogstad (2011) analyze the consequences when public childcare crowds out mainly informal care (that is, nannies or childminders). Both studies document positive effects on children's educational outcomes. Havnes and Mogstad (2011) also report positive effects on children's labor force participation when they reach adulthood. These effects are mostly driven by girls and children raised by low-educated mothers. Moreover, employing a non-linear difference-in-difference method, Havnes and Mogstad (forthcoming) find that effects are only positive in the lower and middle part of the earnings distribution of exposed children as adults, but negative in the uppermost part.

There are also several studies that focus on settings in which public childcare crowds out mainly family care. Datta-Gupta and Simonsen (2010) focus on three-year-old children in Denmark and find no significant short-run impact of attending pre-school on children's socio-emotional development. Dustmann, Raute and Schönberg (2013), who focus on the short-run effects of expanding pre-schools in Germany, do not find any significant effects for native children either. Nevertheless, pre-school attendance significantly reduces language and motor skill problems and improves overall school readiness among children of immigrant ancestry. Drange, Havnes and Sandsør (2012) analyze the consequences of a reform in Norway in 1997 that lowered the mandatory school starting age from seven to six. They find no significant effect on children's cognitive outcomes at the end of mandatory schooling. Yet one should bear in mind that their context was an already high level of initial supply, such that parents might have sorted relatively efficiently into the existing programs, i.e. children who are not in such programs might, in fact, opt out, partly because they stand to benefit little from them. In contrast, In contrast, Felfe, Nollenberger and Rodriguez-Planas (2014) focus on the expansion of pre-school for three-year-olds in Spain in the 1990s – a context where pre-schools were expanded from zero to basically full coverage over a decade. They find strong evidence for sizeable improvements in children's reading skills at age 15 and weak evidence for a reduction in grade retentions during primary school.[3]

[3] Berlinski, Galiani and Gertler (2009) also find positive effects, both in terms of cognitive skills and non-cognitive skills, of expanding pre-school in Argentina in the 1990s. Unfortunately, the level of initial supply, as well as the counterfactual care mode, is unclear.

Lessons from a decade of early childcare reforms (children aged zero-to-two years old)

The early childcare system is at the heart of recent policy reforms. Yet research on the consequences of expanding early childcare is still scarce. Here again, extrapolating the findings from targeted interventions, or from reforms of the pre-school system may lead to false conclusions. The first years in a child's life are not only a crucial phase for its cognitive, emotional and social development, but also a phase of great attachment to the primary caregiver, typically the mother.[4]

The a priori expectation for early childcare centers is that they represent an intervention with potentially large benefits relative to their cost (Heckman and Masterov 2007). However, analogue to the context of pre-schools, the consequences of early childcare on children's development are likely to depend on the quality of the care provided by the care center in comparison to the quality of the care provided by the counterfactual care mode. The few existing studies on this topic can be basically divided into two types: studies where the quality of the early care is unclear – these are studies in the Canadian and the US American context (Baker et al. 2008; Herbst 2013); and studies where the quality of the early care is heavily regulated, and thus can be assumed to be of higher quality – these are studies in the Chilean, German and Norwegian contexts (Noboa-Hidalgo and Urzua 2012; Felfe and Lalive 2014; Drange and Havnes 2014). Distinguishing between these two contexts is crucial.

Consequences for children's development when the quality of early care is unclear

The aforementioned study by Baker et al. (2008) also analyzed the consequences of expanding public childcare for zero-to-two years old children in Quebec. As mentioned above, highly subsidized childcare for under-two year olds was introduced in 2000. Unlike pre-school children, who were usually placed in care centers, toddlers were usually taken care of with home-based care. Results indicate an overall negative impact of home-based care on children's contemporaneous development: children performed worse in terms of emotional stability, physical aggression, motor and social development, and finally in terms of a variety of health indicators, particularly communicable illnesses.

[4] For an introduction to the attachment theory, please refer to Bowlby (1969) or Mercer (2006).

Herbst (2013) studies the contemporaneous impact of moving children from parental care to any type of non-parental care including regular care from relatives (inside or outside the focal child's home), non-relatives (e.g., friends, neighbors, nannies, or family-based care inside or outside the focal child's home), or center-based services (e.g., nursery or preschools, for-profit centers, or non-profit church organizations). Using a panel of infants and toddlers from the birth cohort of the Early Childhood Longitudinal Study, he attempts to provide causal estimates by leveraging seasonal variation in childcare participation. His instrumental variable estimates point to the sizeable negative effects of non-parental care on children's cognitive development.

Consequences for children's development when quality of early care is regulated

The few studies that analyze the consequences of early childcare exposure in contexts where early care is strictly regulated draw a more positive conclusion. The context of all these studies is a context where early childcare is still severely rationed, the early childcare system is highly regulated, and the counterfactual care is family care, or more specifically, maternal care. In other words, the findings of the studies described have to be interpreted as the consequences of substituting maternal care with high quality center-based care in a context where the children attending early care are potentially (positively) selected.

Using the exogenous growth in the public supply of childcare centers in Chile as sources of exclusion restrictions, Noboa-Hidalgo and Urzua (2012) find short-term gains from center-based care targeted at children aged 5-14 months, particularly in terms of motor and cognitive skills. They only find negative effects in the area of adult interactions, which they relate to the low quality of individual care provided by a limited number of teachers and caregivers at public childcare centers. In addition, they find strong heterogeneities in the magnitude and significance of the effects depending on the age of the children and the length of their exposure to the program.

A recent study in Norway confirms the positive effects of early childcare exposure on children's cognitive development. Drange and Havnes (2014) use childcare assignment lotteries to estimate the effect of childcare starting age on early cognitive achievement in Oslo. Getting a lottery offer lowers the starting age by about four months, from a mean of about 19 months in the control group. Lottery estimates show substantial and significant cognitive performance gains for children at age seven.

Both studies, the study on Chile and the study on Norway, explore the impact of expanding childcare on the average child attending the average childcare center. As pointed out above, however, strong heterogeneities may exist in the consequences of early childcare depending on the quality of the care provided by the care center and on the quality provided by the mother. In other words, one cannot simply extrapolate from the average child to the marginal child reacting to alternative reforms of the early childcare system. Felfe and Lalive (2014) address this niche in the literature on this topic and discuss the full range of heterogeneity in the effects of early center-based care exposure on child development using a marginal treatment effect (MTE) framework. They particularly highlight how child or family background, center quality, and parents' demand for early care affect the MTEs. They also use MTEs to simulate the effects of alternative reforms of the early childcare system.

Based on administrative data from school entrance examinations in one large West German state for over 36,000 children and on administrative data on the structural quality features of childcare centers, their empirical analysis yields the following results. First, early childcare is particularly beneficial for children from a family with a low socio-economic status (SES). Early childcare works particularly well for low-SES children whose parents have a high preference for sending their child to early care; in other words in the West German context in the early 2000s sorting into early childcare is based on selection-on-gains (it is worth noting that this finding is in line with the findings by Drange, Havnes and Sandsør (2012), cited above). Effects for low-SES children are quantitatively important: they are large enough to close the development gap between low and high SES children, or between native and immigrant children. Second, centers with smaller playgroups and with older or better-trained staff, or with more full-time staff, produce the best effects. The effects of early center-based care are downward biased without controls for care center quality. Third, simulation of alternative reforms reveals an inverse relation between the number of slots provided and the benefits to the children attending early care: a modest increase in the number of early care places benefits low SES children, whereas a strong expansion has no significant effect. It should be noted

that the differential effects across the alternative reforms reflect the selection into childcare based on gains. Finally, conventional linear instrumental variables (IV) estimates do not measure the effects of expanding the early care system.

Overall, the main lesson to be learned from a decade of childcare reforms is that one cannot simply extrapolate from one context to the other. The following margins are crucial when anticipating the consequences of a specific reform: what is the targeted age group, what is the family background of the targeted children and most importantly, what is the quality of the care centers provided. These margins should be taken into consideration when designing a childcare reform.

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Provision of Childcare Services: A Comparative Review of EU Member States

Janneke Plantenga and Chantal Remery[1]

Introduction

Over the last decade, the rising female participation rate has changed the family support programmes of EU Member States rather dramatically in terms of their focus. Instead of simply providing cash benefits to families in need, family support programmes now also include childcare services and time-related provisions such as parental leave. The extent of public involvement, however, differs extensively among EU Member States, both in terms of generosity and in terms of the specific policy packages. Some countries provide elaborate systems of parental leave for example, while others are far more oriented towards financial support and/or childcare services (e.g. OECD 2007, 2011; Plantenga and Remery 2009; Ray, Gornick and Schmitt 2010; Thévenon 2011). The aim of this article is to provide an overview of the provision of childcare services for the youngest age group in the European Member States and to assess the developments that have occurred over the last decade. For simplicity's sake, the focus is on formal childcare services for the youngest age group of zero to two year-olds. The main form of formal childcare for this age group is care provided in a day care centre. Older children are often (also) in pre-school arrangements, which complicates data collection and interpretation. The article is structured as follows: firstly, it takes stock of the current state of affairs and describes the use of formal childcare in the Member States. It assesses how many Member States are meeting the target set by the European Council at the Barcelona Summit in 2002; that is to provide childcare to at least 33 percent of children below the age of three (EC 2002). The following section covers developments over the last decade. An important factor to take into account is the economic crisis, which affected all Member States, albeit to differing degrees. Based on the available data, the differential impact of the crisis on the use of childcare services for the youngest children is evaluated. The subsequent section provides a fuller analysis of the family policies pursued by EU Member States by taking into account the parental leave system. Long periods of (paid) leave lower demand for childcare services; not taking into account the leave system might therefore lead to an overestimation of the differences in family policies between EU Member States. The last section of the paper summarises its main conclusions.

Formal childcare in European Member States: current state of affairs

Childcare services encompass a variety of formal and informal arrangements, with fluid and country-specific transitions between social support services, the educational system and the actual care system. With regard to the youngest age category in particular, the European Member States show a highly diverse picture, with some countries having a well-developed system of leave arrangements and affordable high-quality care services, while parents in other countries have to rely on informal solutions (e.g. EC 2013; Plantenga and Remery 2009). Harmonised data are needed to analyse the provision of childcare services in Europe. An important source in this respect is the EU-SILC database (European Statistics on Income and Living Conditions). Within the database a distinction is made between formal childcare and other childcare. Formal arrangements refer to care organised/controlled by a structure (public, private). It includes childcare at day-care centre, education at pre-school, education at compulsory school and childcare at centre-based services outside school hours (before/after). Care provided by childminders is also included if such care is organised and controlled; an example is the 'assistantes maternelles' in France who are paid directly by parents, but who have to be registered (see Eurostat 2010 for a fuller description of the definition used).

The data provided by EU-SILC refer to the percentage of children cared for in childcare arrangements as a pro-

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portion of all children in that age group. Figure 1 gives information about the formal childcare arrangements for the youngest age category and illustrates the large variation in the European Member States. Based on these data, only nine countries meet the Barcelona target of 33 percent; namely Denmark, Sweden, Belgium, Luxembourg, the Netherlands, France, Slovenia, Spain and Portugal.

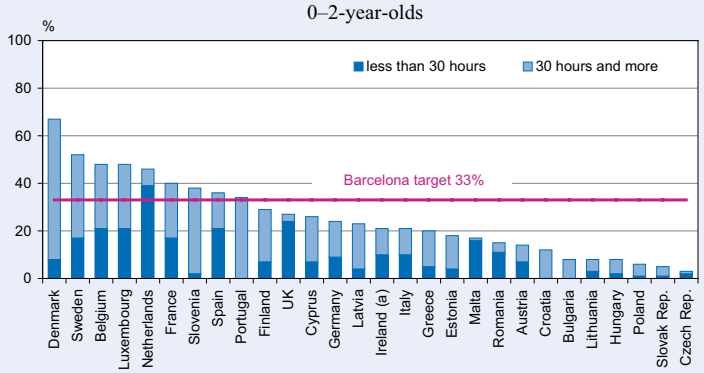
The highest rates are found in Denmark, with 67 percent of all children in the age group zero to two making use of formal childcare facilities, and Sweden, with a user rate of 52 percent. In both countries childcare facilities are seen as an important part of the social infrastructure. In Denmark, all Danish municipalities have to offer a childcare guarantee when a child is six months old; in Sweden all children aged 1–12 have the right to public childcare. Belgium and Luxembourg also score high with 48 percent of the youngest children using a childcare facility. The user rate of childcare services is fairly high in Slovenia too. Unlike in many other countries in Eastern and Central Europe that underwent economic and political transition at the end of the last century, the availability of public care services did not diminish in Slovenia after the transition (Devčič and Lokar 2008). At the lower end of the ranking is the Czech Republic; where only three percent of zero to two year-olds make use of a childcare service. Other countries with low user rates (below ten percent) are all East European member states and include Slovakia, Poland, Hungary, Lithuania and Bulgaria.

Figure 1 also provides information on the number of hours that the services are used. This is important information, as it indicates the coverage over the week and whether or not childcare services are compatible with a full-time working week. Again, there is significant variation. In countries such as Denmark, Slovenia and Portugal, most formal arrangements are used for 30 hours or more. In other countries part-time arrangements are more common. In the Netherlands, childcare services are provided on a full-time basis, but the use of the facility may be limited to a few days per week, reflecting the high level of part-time employment in the Netherlands. As a result, only seven percent of children make use of formal arrangements on a full-time basis. In the United Kingdom, employed mothers typically work part-time too, which corresponds to a high part-time use of childcare services.

Figure 1

Use of formal childcare services in the European Member States by hours, 2012

0–2-year-olds



(a) 2012 data not available, 2011 is included.

Source: Eurostat, EU-SILC 2012 [ilc_caindformal].

Formal childcare in European Member States: developments over the last decade

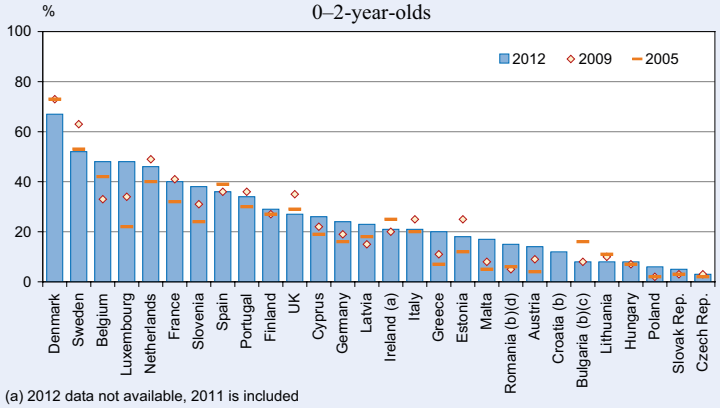
Childcare has been on the policy agenda for quite some time now; with the main policy focus on increasing the female participation rate. The crisis of 2008 and fiscal austerity had a huge impact on actual labour market patterns and on the nature of social policy. Higher unemployment rates meant a lower demand for childcare services, while Member States also adjusted their budgets to the changing circumstances.

To illustrate the changes in the use of childcare services, we have analysed the yearly EU-SILC data available, which cover the period 2005–2012. At EU25 level, the use of formal arrangements increased between 2005 and 2011 (from 25 to 30 percent), but decreased in 2012 (28 percent). Figure 2 provides data on the use of childcare in the Member States in this period; as the economic crisis started in 2008, and the European economy fell into a recession in 2009, we include figures on 2005, 2009 and 2012. Surprisingly, there does not appear to be a uniform trend in EU Member States. Based on the three points in time, some countries show a significant increase in the use of formal childcare; clear examples are Luxembourg, Slovenia, Cyprus, Denmark, Austria and, remarkably, Greece. Despite the severe crisis, with the help of the European Social Fund, Greece managed to increase the number of (subsidized) places, leading

to steady growth in the user rate from seven percent in 2005, to 11 percent in 2009 and 20 percent in 2012 (information provided on the website of the European Platform for Investing in Children (EU 2015)). In other countries the user rate increased between 2005 and 2009, but subsequently decreased. This trend was seen in Sweden, the Netherlands, the United Kingdom and Estonia, for example. In the Netherlands the use of childcare rose considerably after a change in the financing system in 2005; leading to a sharp increase in public expenditure on childcare and to the implementation of budget cuts since 2011. A recent study shows that the increased parental costs of 2011 constituted an important reason for parents to substitute formal childcare for informal arrangements in 2012. In addition, parents who became (part-time) unemployed used less formal childcare (Portegijs, Cloïn and Merens 2014). Figure 2 also indicates that the difference between the lowest and the highest ranking country has decreased over time; in 2005 the difference was 71 percentage points (highest user rate of 73 percent in Denmark, lowest of two percent in the Czech Republic), in 2009 it amounted to 67 percent (70 percent in Denmark and three percent in the Czech Republic), whereas in 2012 it was 64 percentage points (67 percent in Denmark and 3 percent in the Czech Republic). It is worth noting, however, that this slight 'convergence' is due to a decrease in best performing countries, and not to an increase in childcare in countries with low user rates.

Figure 2

Use of formal childcare services in the European Member States by hours, 2005, 2009 and 2012



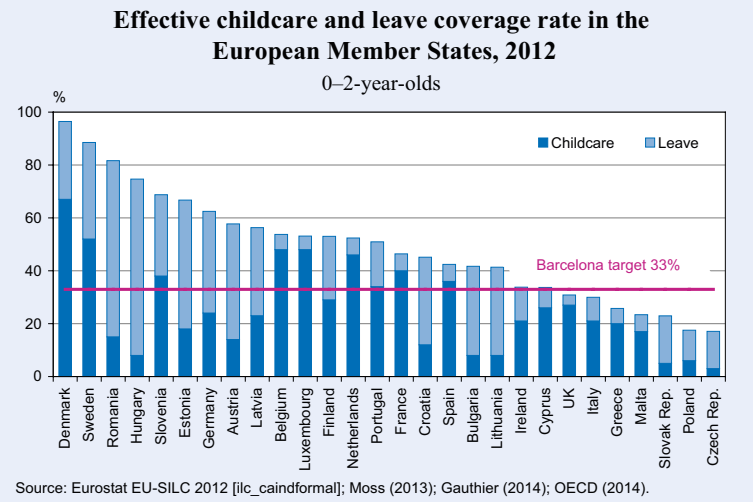
(a) 2012 data not available, 2011 is included
(b) 2005 data not available (c) 2006 is included (d) 2007 is included

Source: Eurostat, EU-SILC 2005–2012 [ilc_caindformal].

Formal childcare in European Member States: taking parental leave into account

While the share of children in formal childcare provides useful information on the importance of those services in a Member State, it does not take the wider care system into account. When parents have access to long periods of leave, they can more easily take care of their child(ren) themselves, which lowers demand for childcare services. In Finland, for example, the user rate of formal arrangements for the youngest age category is, according to Figure 1, 29 percent, which is below the Barcelona target of 33 percent. Yet childcare facilities are not in short supply. In fact, since 1990, Finnish children under the age of three have been guaranteed a municipal childcare place, irrespective of the labour market status of their parents. In 1996, this right was expanded to cover all children under school age. This entitlement complements the home care allowance system, which enables parents to stay at home to care for their child with full job security until the child is three years old. Partly due to the popularity of the home care alternative, the supply of public day-care services has met demand since the turn of the 1990s (Plantenga and Remery 2009). In order to provide a full picture of the extent of the policies targeted at young children, the effective childcare and leave coverage rate is calculated in this section. This is, however, a somewhat complex exercise, partly because of the diversity that exists in leave arrangements. Although the European Directive on parental leave (CEU 2010) guarantees a certain minimum standard, leave arrangements appear to vary considerably across Europe, with some countries offering parents extensive paid leave, covering the first three years after the birth of a baby, whereas in other countries leave is limited to only a few months and unpaid or very poorly compensated (e.g. OECD family database 2014; Moss 2013). In addition, the formal statutory regulations say little about their actual impact. We know, however, that the use of leave is related to payment. We therefore assume that parents make use of the parental leave entitlement in cases where such leave is well paid. Taking this as point of departure, we calculate effective parental leave as the period of paid – that is covering at least two thirds of the salary– , post-natal leave per household (including post-natal maternity leave, paternity leave and parental leave; see appendix). In the next step, we calculate the effective childcare and leave coverage rate

Figure 3



Source: Eurostat EU-SILC 2012 [ilc_caindformal]; Moss (2013); Gauthier (2014); OECD (2014).

for children in the age category zero to three. The calculation is made as follows. In the case of Denmark for example, parents are entitled to a period of effective leave of 46 weeks. As we focus on children in the age category zero to three this leave entitlement covers 46/156 weeks, which is almost 30 percent. As the use of childcare is 67 percent (see figure 1) the full coverage rate is 97 percent. Figure 3 indicates that Denmark is followed by Sweden, where the leave is somewhat longer and the use of childcare lower. In third and fourth place in the ranking are now Romania and Hungary. These countries have rather low use of formal childcare, but offer long, paid leave arrangements covering two years. A more mixed picture is seen in Slovenia and Latvia, whereas in countries like Belgium, Luxembourg, the Netherlands, France and the United Kingdom, leave is fairly short. At the lower end are the Czech Republic and Poland, where working parents have both very limited access to formal childcare facilities and can take only a short period of paid parental leave.

The scores in figure 3 once again illustrate the disparities in child-related policies within EU Member States. Taking into account leave policy does not lower the differences, but instead seems to strengthen them: when leave is taken into account, the difference between the highest (96.5 percent) and the lowest ranking country (17.1 percent) increases to 79 percentage points (compared to 64 percentage points if only formal childcare is taken into account). It should be noted, however, that when leave entitlements are taken into account, 21 Member States meet the Barcelona target of 33 percent, compared to nine when only the use of formal childcare is taken into account. The countries that still score below the target of 33 percent are the United Kingdom, Italy, Greece, Malta, Slovakia, Poland and the Czech Republic.

Conclusions

Formal childcare is an important facility for working parents in Europe. Based on harmonised EU-SILC figures on the use of formal childcare facilities, this paper has illustrated the highly diverse reality for the youngest children in EU Member States. Denmark and Sweden – where childcare is framed as a social right – have the highest user rates; the majority of young children are cared for in a day care facility during the week. Formal childcare for the youngest age group is not common in most East European Member States; user rates below ten percent are found in countries like the Czech Republic, Slovakia and Poland. When analysing developments over the last decade, no general trend emerges. Some countries show a steady increase in formal childcare, while a decrease is visible in others; no clear evidence of the impact of the crisis can be ascertained on the basis of the EU-SILC data. Over the 2005–2012 period, there are indications of a slight convergence, mainly due to a decrease in the user rate of the highest ranking country. Information on the use of childcare facilities is helpful in assessing the relative importance of this particular reconciliation policy; it does not, however, answer the question of whether demand is fully met. Actual demand for childcare is influenced by factors such as the participation rate of parents (mothers), levels of unemployment, the length of parental leave, and the availability of alternatives such as grandparents and/or other (informal) arrangements. When parental leave entitlements are taken into account, the policy differences between countries seem to widen. Differences in the provision of childcare services are therefore not 'explained' by differences in parental leave entitlements.

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Appendix

Post-natal leave in weeks (including post-natal maternity leave, paternity leave and parental leave), covering at least 2/3 of salary, per household

BE	9
BG	52,6
CZ	22
DK	46
DE	60
EE	76
IE	20
GR	9
ES	10
FR	10
HR	51,7
IT	14
CY	12
LV	52
LT	52
LU	8
HU	104
MT	10
NL	10
AT	68,2
PL	18
PT	26,4
RO	104
SI	48
SK	28
FI	37,5
SE	57
UK	6

Source: The authors.

The Role of Coworker-based Networks in the Labour Market

Albrecht Glitz [1]

Introduction

In 1974, Mark Granovetter published his highly influential monograph "Getting a Job: A Study of Contacts and Careers" (Granovetter 1974) in which he showed that in the sample of professional, technical and managerial workers he surveyed in the Boston area, 56 percent found their current job through personal contacts. Similar numbers have since been documented for many other countries, identifying social networks as one, if not the most important channel through which workers find their jobs. The prominent role played by informal contacts in the job search process naturally raises the question of whether their use leads to better labour market outcomes for workers. On the one hand, social networks may foster the exchange of information about suitable employment opportunities and improve the match between workers and firms. On the other hand, if social contacts are maintained primarily for purposes other than providing information on jobs, they may only help workers to find jobs in a limited set of occupations or segments of the labour market – those that are prevalent in their social network – and thus prevent them from fully exploiting their productive potential (Bentolila, Michelacci and Suarez 2010). In addition, favouritism towards social network members may lead to job matches that are worse than those obtained through formal channels. A priori, it is therefore unclear whether the extensive use of informal contacts in the labour market is economically beneficial.

The theoretical ambiguity regarding the role of social networks in this context has motivated a substantial body of empirical analyses (see Topa 2011, for a comprehensive survey of the literature). The first such studies were usually based on data from surveys, in which respondents were directly asked about the channel through which they obtained their jobs. Comparing different labour market outcomes like wages or job stability across different search channels would give a first indication of their relative effectiveness in creating good job matches. While the evidence is not unambiguous, a majority of such survey-based analyses suggests that informal job finding methods play a positive role in workers' labour market outcomes (Ioannides and Loury 2004). However, a fundamental problem in these types of studies is that workers of different abilities tend to self-select into different job search methods, making it hard to distinguish the effect of a particular job search method from that of the workers' abilities themselves.

In the absence of direct survey information on job finding methods and social interactions, an alternative approach followed in the literature is to focus on the specific dimensions of one's social network that are likely to proxy for such interactions, and indirectly test for the presence of network effects in the labour market. The network dimensions studied include such diverse social groups as neighbours (Bayer, Ross and Topa 2008; Damm 2014; Schmutte 2015), individuals with the same ethnic background (Munshi 2003; Edin, Fredriksson and Aslund 2003; Dustmann, Glitz and Schönberg 2011), close friends (Cappellari and Tatsiramos 2010) and family members (Kramarz and Skans 2015). The evidence from these studies, which typically relate the employment status of a worker to the prevailing employment rate in his network, again points to a positive role of social networks in the labour market.

Despite its extensive coverage, an important dimension of a worker's social network that has long been neglected in the empirical literature is work-related contacts. In fact, in Granovetter's original study, 69 percent of the social contacts through which workers found their jobs were actually work-related contacts such as former colleagues or bosses, and only 31 percent were family members or friends. The strong reliance on work-related contacts is not surprising given that former coworkers are likely to have relatively accurate information about a worker's skill set by having worked alongside this work-

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er for some time. Because they are usually attached to a similar segment of the economy, former coworkers are also more likely to hear about relevant job openings than, say, neighbours or family members.

Despite their potential importance, until recently, a lack of suitable data prevented a systematic analysis of the role of coworker-based networks in the labour market. Only the access to large administrative data sets that was provided to the scientific community in several countries over the last decade has allowed researchers to accurately measure workers' networks of former coworkers and analyse their impact on labour market outcomes. In the following section, I will briefly outline the two main theoretical mechanisms through which coworker-based networks may affect labour market outcomes.[2] In the remainder of this report, I will then summarise two of my own recent studies (Glitz 2013; Glitz and Vejlin 2015) and relate them to the still relatively nascent literature on coworker-based networks. Both studies show that coworker-based networks contribute positively to workers' labour market outcomes, both through their positive effect on the flow of information about job opportunities, and through their ability to reduce uncertainty by means of referrals.

Theoretical mechanisms

The theoretical literature distinguishes two primary mechanisms through which social networks may affect workers' labour market outcomes. The first set of models views informal contacts as additional sources of information about job opportunities. A key reference in this literature is the work by Calvó-Armengol and Jackson (2004, 2007) who embed a model of informal job search into an explicit network structure. The basic idea is the following: in every period, agents hear about job openings with an exogenous probability. If the agent is unemployed, he takes the job. If the agent is employed, and if the job opportunity does not dominate his own current job in terms of wages and job characteristics, the agent forwards the information about the job to one of his unemployed network contacts. The network thus effectively increases an unemployed worker's job offer arrival rate, which leads to faster transitions out of unemployment and higher starting wages due to higher reservation wages. In Glitz (2013), I investigate precisely this mechanism by comparing the speed with which unemployed workers in Germany exit unemployment as a function of the number of employed contacts in their coworker-based network.

The second theoretical mechanism through which social networks affect labour market outcomes is through their ability to reduce uncertainty. The starting point here is that firms are not able to perfectly observe a job applicant's skills before hiring, and that workers, in turn, do not have full information about an employer's characteristics. In this situation, social networks, by means of referrals, can provide additional information about the suitability of a worker for a given job. There are two ways in which the reduction in uncertainty in this type of framework is modelled. In Montgomery (1991), the starting point is the assumption that employers are able to identify high-ability workers in their own workforce. In the presence of assortative matching in social networks, which implies that high-ability workers tend to be connected to other high-ability workers, firms then have an incentive to ask their high-ability workers for referrals, since this increases their chances of hiring other high-ability workers. By relying on referrals, firms are thus able to mitigate the typical adverse selection problem they face when hiring new workers. Using Swedish matched employer-employee data, Hensvik and Skans (2013) systematically test this particular mechanism of employee referrals in the context of coworker-based networks, providing strong support for the key predictions of the model.

In contrast to Montgomery (1991), Simon and Warner (1992) argue that referrals more generally reduce the initial uncertainty about the match-specific productivity when workers and firms meet, allowing the latter to hire workers that are, on average, better matched than those hired through external channels. This higher match quality is reflected in initially higher wages and greater job stability for referred workers relative to externally hired workers. However, a key empirical prediction of this type of model is that, due to the subsequent on-the-job learning about workers' true match-specific productivity, the initial differences in wages and job stability diminish over time. This is because those workers who turn out to be bad matches, most of which were hired through the external market, are successively laid off over time, so that in the long run only sufficiently good matches remain in the firms, independent of their initial hiring channel. In Glitz and Vejlin (2015), we systematically test these predictions using Danish administrative

[2] There are additional conceptualisations of the role of social networks and referrals in the labour market that have been studied in the literature such as their mitigating influence on moral hazard through monitoring (Heath 2013) and their impact through favouritism towards network members (Beaman and Magruder 2012).

Table 1

Summary statistics

	Mean	Standard deviation	10 th percentile	50 th percentile	90 th percentile
Before closure					
No. of coworkers (last 5 years)	132.6	228.1	9	43	379
Share of coworkers working in t (in %)	58.4	18.0	35.1	60.0	79.1
Duration of cowork	3.0	2.9	1	2	7
Last log wage in closing establishment	4.37	0.47	3.90	4.35	4.91
After closure					
Share of coworkers in mass-layoffs (in %)	71.6	45.1	0	1	1
Log wage in t+1	4.38	0.44	3.93	4.35	4.90
Instrumental variable					
Share of coworkers in mass-layoffs (in %)	4.2	10.9	0.0	0.0	10.0

Source: Glitz (2013), table 2.

data, proxying whether or not a worker obtained his job through a referral by the presence of former coworkers in the firms by which they were hired.

Coworker-based networks as providers of information about job opportunities

The objective of the study in Glitz (2013) is to assess the role of coworker-based networks as providers of information about job opportunities, building on the aforementioned theoretical work by Calvó-Armengol and Jackson (2004, 2007). As a natural starting point for the empirical analysis, I focus on a sample of displaced workers who are pushed into unemployment as the result of a firm closure, and thus start looking for a new job through both formal channels and their social network at the same time. The theory predicts that those workers who are embedded in a strong network characterised by a high employment rate should exit unemployment more quickly than workers who, at the time of displacement, are embedded in a weak network characterised by a low employment rate. Furthermore, conditional on working, the starting wages of workers with a strong network should be higher than those of workers with a weak network because the former set higher reservation wages due to their higher job offer arrival rate.

The set-up of the empirical analysis is closely related to Cingano and Rosolia (2012) who were the first to operationalise the notion of coworker-based networks using comprehensive social security data and to estimate their impact on labour market outcomes. For my analysis, I exploit high-quality German administrative data covering the universe of workers in the German labour market between 1980 and 2001 to obtain an accurate picture of each worker's coworker-based network. Focusing on the four largest metropolitan areas in West Germany (Hamburg, Cologne, Frankfurt, and Munich), I start by selecting all establishments that closed down in either 1995 or 1996 and had between 5 and 50 workers in their last year of operation. This gives a sample of 1,814 closing establishments from which 10,916 workers are being displaced. For each of these workers, I then find every other worker whom they worked with in the same establishment during the so-called network building period, which, in this paper, is defined as the five-year period prior to the year of displacement. These former colleagues form the respective coworker-based network of each displaced worker. Table 1 provides a selection of summary statistics. On average, a displaced worker's network consists of around 133 former coworkers, with a median number of 43, indicating that the network size distribution is strongly right-skewed. At the time of displacement, the average employment rate in these networks is 58.4 percent, but again there is substantial variation, with some networks featuring employment rates of less than 35 percent (10th percentile) and others boasting employment rates of over 79 percent (90th percentile). The empirical question is whether these differences in network employment rates at the time of displacement have a significant effect on a displaced worker's re-employment probability and starting wages in subsequent years.

Figure 1 illustrates the empirical set-up. In this stylised example, in which the horizontal axis represents the time line, the sample of displaced workers consists of

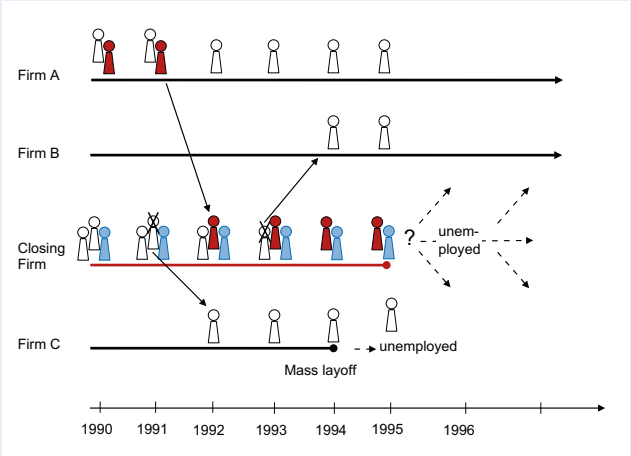
two workers, red and blue, who become unemployed in 1995 as the result of a firm closure. During the network building phase between 1990 and 1994, both established links with two other workers (co-displaced workers are excluded from the network). The red worker met one of his network contacts in Firm A (first row from the top) and the other contact in the closing firm (third row from the top), just before that contact left for Firm B (second row from the top) in 1993. The blue worker met both his contacts while working in the closing firm, before they then left for Firm C (fourth row from the top) in 1991 and for Firm B in 1993. The contact moving to Firm B is thus a member of both displaced workers' networks, so there can be partial overlap in the networks of former coworkers. However, due to their distinct employment histories, different displaced workers generally tend to have different networks of former coworkers. Now, at the time of displacement in 1995, both network contacts of the red worker are employed, so that the employment rate in his network is 100 percent. By contrast, one of the contacts of the blue worker is unemployed in 1995, so that the employment rate in his network is only 50 percent. According to the theory, the red worker should therefore be more likely to be employed and earn higher wages in 1996 (and potentially subsequent years) than his blue counterpart.

To assess these predictions, I first estimate a standard OLS regression, regressing either an indicator variable for being employed one year after displacement or the log wage in the new job on the network employment rate, the log size of the network and a comprehensive set of individual control variables. To account for any unobserved shocks at the time of displacement that may be specific to the workers of a given establishment, the specification also includes a full set of closing establishment fixed effects, ensuring that the comparison in post-displacement labour market outcomes is between workers who are laid off from the same establishment and therefore face presumably comparable labour market conditions.

However, even after conditioning for establishment fixed effects and a comprehensive set of control variables, it may still be that the relationship between a worker's outcomes and the prevailing employment rate in his network is a reflection of common unobserved skills that are shared by these workers. If high-ability workers tend to work in the same establishments, then a positive correlation between the network employment rate and the labour market outcomes of a displaced worker may simply reflect these common unobserved skills, rather than a causal network effect. To deal with this endogeneity issue, as well as potential measurement error that may bias the estimates towards zero, I exploit the occurrence of mass-layoffs – the reduction in a large firm's workforce by over 30 percent from one year to the next – as exogenous shocks to the employment rate in a network. Figure 1 again illustrates the key idea. After moving to Firm C, one of the blue worker's network contacts was laid off from that firm in 1994 as part of a mass-layoff and, as a result, continued to be unemployed in 1995. Under the assumption that, conditional to establishment fixed effects and observable characteristics, mass-layoffs are unrelated to the displaced workers' unobserved skill sets, they can serve as exogenous shocks for a given worker's network employment rate, qualifying them as suitable instruments in an instrumental variable (IV) framework.

Figure 1

Schematic overview of the empirical set-up



Source: The author.

Table 2 presents the most important empirical results from both the OLS and IV regressions. The OLS estimates show a small positive effect of the network employment rate on both the re-employment probability and the starting wages of displaced workers. According to the specification that includes establishment fixed effects reported in columns (2)

Table 2

Employment and wage effects

	(1)	(2)	(3)	(4)	(5)	(6)
	Employment probability			Log wages		
	OLS		IV	OLS		IV
Employment rate coworkers	**0.073****	**0.051**	**0.753***	**0.054****	**0.067***	**0.174**
	[0.031]	**[0.048]**	**[0.387]**	**[0.023]**	**[0.036]**	**[0.264]**
Log number of coworkers	0.002	0.004	-0.015	0.006	0.008	0.005
	[0.005]	[0.007]	[0.013]	[0.004]	[0.005]	[0.009]
Establishment fixed effects		yes	yes		yes	yes
Observations	10.916	10.661	10.659	7.789	7.435	7.433
1st stage statistics employment rate coworkers						
Share coworkers in mass-layoffs			-0.131***			-0.138***
			[0.016]			[0.021]
F-stat 1st stage			65.1			42.7

Note: The instrumental variable for the coworker employment rate is the share of working former coworkers who, after separation, worked in a large establishment (>50 employees) and separated from that establishment as a result of a mass-layoff. Standard errors are robust and clustered at the closing establishment level. A (*) denotes statistical significance at the 10% level, a (**) at the 5% level, and a (***) at the 1% level.

Source: Glitz (2013), table 2.

and (5), a 10 percentage point increase in the network employment rate is associated with a 0.51 percentage point and 0.67 percent increase in the re-employment probability and starting wages of displaced workers, respectively (with the coefficient for the employment effect, however, not being statistically significant at conventional levels).

In the presence of endogeneity or measurement error in the network employment rate, the estimated OLS parameters are likely to be biased. Columns (3) and (6) show the results when the network employment rates are instrumented with the shares of coworkers who were themselves part of a mass-layoff after separation from the displaced workers.[3] As the summary of the first stage regression at the bottom of the table shows, this share has a strong negative effect on a network's employment rate in the year of displacement: a ten percentage point increase in the share of laid-off coworkers during the network building phase reduces their employment rate in 1995/1996 by 1.3 percentage points. Exploiting the variation in employment rates that is driven by these mass-layoff shocks, the second-stage results indicate a strong positive effect of the network employment rate on the re-employment probability of a displaced worker: a 10 percentage point increase in the employment rate, which corresponds to about half a standard deviation, leads to a 7.5 percentage point higher probability of being employed in the first year after displacement (p-value 0.052). This estimate is larger in magnitude than both the main estimate in Cingano and Rosolia (2012) and the corresponding figure in a recent study for Austria by Saygin, Weber and Weynandt (2014), both of which, however, restrict their analysis to the baseline OLS regression.[4] In contrast to the positive employment effect, the IV estimate for the effect on starting wages reported in column (6) of Table 2 is not estimated precisely enough to draw any strong conclusions.

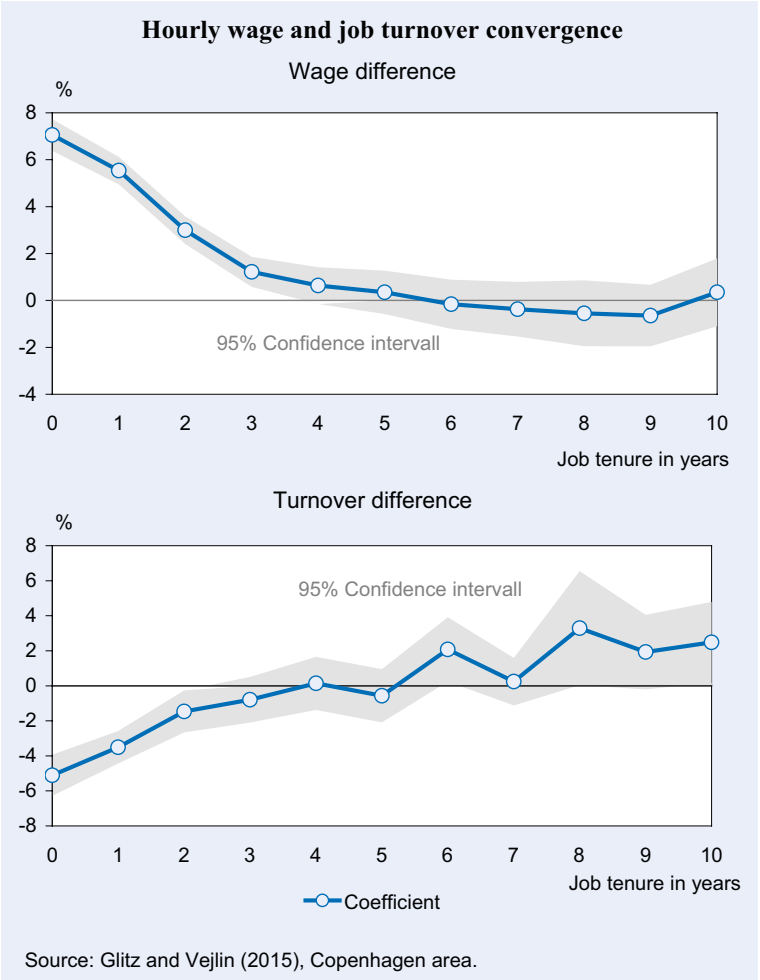
Further analysis shows that these results are very robust to changes in the way the instrumental variable is constructed, as well as different functional form assumptions and sets of included control variables. More importantly, a number of placebo estimations provide strong suggestive evidence of the exogeneity of the instrumental variable, by showing that contemporaneous mass-layoffs are unrelated to past labour market

[3] It is worth noting that, in the absence of a suitable separate instrument, the network size is included as a potentially endogenous control variable. I provide more details of the conditions under which this leads to consistent estimates of the coefficient on the network employment rate in the paper.

[4] For a recent analysis that focuses explicitly on the role of coworker-based networks for immigrants' labour market outcomes in Italy, see Colussi (2013).

outcomes and that future mass-layoffs are unrelated to current labour market outcomes. Although statistically inconclusive, there is also some indication that low-educated workers, immigrant workers and young workers benefit relatively more from increases in the employment rate in their networks. Looking in greater detail at heterogeneity across different sources of information, the evidence also suggests that female coworkers, coworkers from the same age cohort as the displaced workers, and coworkers with whom prior interaction was more intensive are particularly important for post-displacement employment outcomes. Finally, an analysis looking at the longer run effects reveals that the positive impact on the employment probability of a displaced worker is short-lived, only persisting for the first year after displacement.

Figure 2



Source: Glitz and Vejlin (2015), Copenhagen area.

Overall, the findings of this study suggest that a strong network of coworkers provides valuable information about labour market opportunities and can serve as a useful resource to accelerate transition out of unemployment in times of economic distress.

Coworker-based networks as providers of information on match quality

Rather than focusing on job offer arrival rates and transitions out of unemployment, Glitz and Vejlin (2015) investigate the extent to which coworker-based networks help reduce uncertainty about match-specific productivity in the labour market, building on the theoretical framework by Simon and Warner (1992) and its extensions by Dustmann et al. (2011). By providing information on network contacts' otherwise unobservable skills to their employers, incumbent workers can, through referrals, help to increase the match quality between new hires and their firms, ensuring that the right worker is matched to the right firm. As discussed above, in a world of initial uncertainty about match-specific productivity and subsequent learning by the employers about the quality of a match, being hired through a referral is predicted to lead to higher starting wages and more job stability in the initial phase of the employment relationship than being hired through external channels, but that this difference subsequently declines with tenure in the firm.

To take these predictions to the data, we use comprehensive administrative records on the entire Danish population, spanning the period 1980 to 2005, and, similar to Glitz (2013), define each worker's network as every person with whom s/he worked together in the same establishment during the network building phase (which, in this study, comprises the previous ten years). In the absence of direct information about referral use – a typical feature of this type of administrative data – we argue that observing a worker who follows one of his/her former coworkers into the same establishment can be used as a proxy for a referral (see also Hensvik and Skans 2013 and Saygin et al. 2014, for a similar strategy). In the data, over 30 percent of new hires start at

a firm with at least one of their former colleagues already present. Obviously, such mobility patterns could also arise in the absence of an actual use of referrals, for example by chance when labour markets are very thin or because workers who used to work in the same establishment share similar skills which, in turn, make them prone to look for jobs with similar employers. However, we show that only about half of the observed propensity of workers to move where their former coworkers are already working is due to either random meetings or similarity in workers' characteristics, so that this type of mobility can indeed be viewed as being driven, at least in part, by personal interactions of workers with their network members.

In the next step of the analysis, we estimate several OLS regressions in which we relate either the log wage of a worker or an indicator variable for leaving one's firm by the next period to a dummy variable that takes the value one if there is at least one former coworker present in the firm at the time of hiring (our proxy of having obtained the job through a referral). Besides the dummy for the presence of a former coworker, we also include its interaction with individual dummy variables for each year of tenure in the firm. The estimated coefficients of these interaction terms allow an assessment of the convergence predictions derived from the theoretical model, according to which the initial wage and job stability advantage of referred workers declines with tenure in the firm; and converges eventually to zero due to employers' learning about match-specific productivity. Besides these key variables of interest, the regressions, which we initially only estimate for the largest regional labour market in Denmark (the Copenhagen area), also control for a comprehensive set of worker characteristics and, importantly, firm fixed effects to account for permanent differences in firms that hire more or less intensively through referrals.

Figure 2 plots the parameter estimates of our referral proxy for each year of tenure, as well as their confidence intervals, both for log wages and the job turnover probability. Focusing on wages first, the depicted profile shows that having started a job in a firm with a former coworker present increases the initial wage by around 7 percent. In subsequent years, and as predicted by the theory, this advantage declines steadily until, after about four years of tenure, the wage profiles between referred workers and externally hired workers have fully converged. The corresponding findings for job turnover show the expected opposite pattern. In the first period, referred workers are about 5 percentage points less likely to leave their firm compared to externally hired workers. Once more, this initial difference then converges to zero, suggesting that the learning process about the true match-specific productivity of workers is completed within about three to four years.

Further analysis documents these convergence patterns for various subgroups of the population, with particularly large initial gains from referrals for young workers and those with low education levels, suggesting that for these groups of workers, uncertainty may be particularly large; so they have the most to gain from the information-relaying property of referrals. In addition, there is some evidence that referrals by former coworkers with whom the prior personal interaction was more prolonged or recent are particularly efficient in reducing match-specific uncertainty. Overall, this study documents how the use of referrals within coworker-based networks positively affects the matching of workers to firms, giving rise to higher paid and longer lasting jobs and increasing overall efficiency in the labour market.

Conclusion

With the arrival of administrative data that provide comprehensive longitudinal information on individual work relationships, the systematic analysis of coworker-based networks and their role in the labour market has experienced an enormous boost in recent years. Moving ever closer to capturing actual personal interaction, several researchers have studied this important dimension of social networks within the context of established theoretical models, providing strong overall evidence that coworker-based networks play a positive role in labour market outcomes. My own findings show that this happens both through these networks' positive effect on the flow of information about job opportunities (Glitz 2013), and through their ability to reduce uncertainty about match-specific productivity (Glitz and Vejlin 2015).

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On Greek Crisis, Growth, Market-access and Debt-forgiveness

Michael G. Arghyrou [1]

Introduction

The recent Greek election reintroduced in the European public debate the question of Greece's future economic direction and place in the euro zone. At the time of writing, events are still unfolding with no clear outcome in sight. The purpose of this article is not to speculate on the likelihood of each possible scenario. Instead, it assesses the optimal course of future economic policy to be pursued in Greece, assuming that its stated objective to remain in the EMU is observed. This paper argues that, for the Greek economy to achieve sustainable high growth rates within the euro area, two inter-related problems must be addressed. Firstly, Greece needs to replace its pre-crisis economic structure with a new model of economic growth aiming at higher competitiveness and technology levels. Secondly, the legacy of Greece's high level of public debt must be tackled in a way that does not create moral hazard, cancelling out the first objective, but facilitates its achievement. Finally, and assuming that the foundation in relation to the objectives listed above has been laid, the question of Greece's re-integration into international financial markets needs to be addressed.

The discussion that follows focuses on these areas. The next section analyses *The causes of the Greek crisis*, an understanding of which is indispensable for determining a credible strategy for its successful resolution. The section entitled *A new growth model for Greece* describes the main features of a new, sustainable growth model for Greece. The subsequent section *(Greece's return to international sovereign bond markets*) puts forward a proposal describing key requirements for Greece's return to the international sovereign bond markets. The section entitled *The debt legacy issue* outlines a debt-forgiveness proposal, relevant not only to Greece, but to all crisis-hit periphery EMU countries, whose main feature is mutual economic benefit for debtors and creditors. The last section offers some concluding remarks.

The causes of the Greek crisis

The roots of the Greek crisis lie in the 1980s, when Greece followed a traditional, demand-driven Keynesian economic policy. Greece was not the only country that started the 1980s by implementing such policies: most Western European countries followed suit in the 1970s and the early 1980s. These policies, however, proved ineffective in dealing with the high unemployment and inflation rates that followed the oil shocks of the 1970s. That experience showed that the traditional Keynesian approach is not suitable as a credible framework for economic policy, as it does not account for fundamental determinants of macro-performance such as the rational expectations of the private sector and the latter's ability to take optimal economic decisions based on them. As a result, western countries, starting with the United States and the United Kingdom, introduced policies geared towards stabilising inflation and public debt expectations, as well as improving their economies' supply side through reforms aimed at higher competition and productivity. In this context, demand-management policies remain an important stabilisation tool, provided that their use does not result in expectations of high future inflation and unsustainable public/external deficits. However, modern mainstream macroeconomics accepts that demand management policies do not increase long-term growth prospects.

These important changes in global economic thinking did not affect Greek policy in the 1980s. The latter remained anchored to the increasingly outdated traditional Keynesian approach, characterised by a significant expansion of the state's role in the country's economic life and strong monetary and fiscal activism, leading to double-digit inflation rates and a public debt-to-GDP ratio increase from 22.5 percent in 1980 to 94 percent in 1989. At the same time, Greece recorded the lowest

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average growth rate among European Union countries. Overall, the policies followed in the 1980s left a strong legacy of state intervention in micro- and public debt at the macro-level, which the country still has not managed to cast off.

The 1990s were better. The centre-right government of 1990–1993 introduced policies aimed at macro-stabilisation, which were continued by the centre-left governments of 1994–2000. These policies, however, suffered a serious drawback, especially during the second period: Macro-improvement was not accompanied by micro-restructuring, i.e. reforms in the markets of labour, goods and services, as well as an improvement in Greece's institutional performance in key areas such as tax collection and the judicial system. Hence, Greece joined the euro in 2001 without having met the necessary prerequisites set by the theory of optimum currency areas (TOCA). More specifically, the Greek supply side did not have the required degree of flexibility, the Greek business cycle was not synchronised enough with the EMU average and, finally, economic activity remained concentrated in the non-traded sector, which meant that Greece remained a relatively closed economy. At the same time, unsatisfactory institutional performance and excessive bureaucracy/corruption (as measured by metrics such as the World Bank's Ease of Doing Business Index and Transparency International's Corruption Perception Index) continued to pose significant challenges for achieving the necessary restructuring of the Greek supply-side.

Unfortunately, these weaknesses were not addressed in the 2000s, a decade during which Greece returned to policies similar to those of the 1980s. The significant reduction in interest rates following Greece's accession to the euro in 2001 was not used as a platform to reduce the high stock of Greece's public debt. By contrast, it was used to increase the size of the Greek state further, both in terms of public-sector employment and nominal wage increases. This put Greek public debt on an upwards path well before the onset of the global financial crisis in summer 2007. The excessive nominal wage increases given to public sector employees caused similar excessive wage increases in Greece's private sector. As a result, over the period 2001–2009 average nominal labour compensation in Greece grew at a cumulative rate of 47 percent, the highest among EMU member states and almost double the EMU average (27 percent). One third of this increase was given in excess of the sum of productivity growth and inflation (Arghyrou 2014a). At the same time, Greece's natural output deteriorated significantly: the distortions caused by the state's excessive participation in economic life persisted; institutional performance remained unsatisfactory; and the country's human capital deteriorated, as indicated by a declining performance in education quality rankings (e.g. the OECD's PISA Tables, global university rankings etc.). Hence, and in contrast to other European countries of a comparable size (e.g. Ireland, Portugal and the Czech Republic), during a decade that saw an explosion in foreign direct investment, Greece did not attract significant volumes of foreign capital, which would have boosted sustainable employment and technology levels.

Overall, the demand shock caused by increased public expenditure, excessive wage growth and private borrowing (caused by the reduction in nominal and real interest rates following euro-accession), combined with the deterioration in supply conditions resulted in a positive output gap whose cumulative sum over the period 2001–2009 is estimated to be in the range of 40 percent (Arghyrou 2014a). It is often argued that since the beginning of the Greek crisis in 2009, the country's real GDP has fallen by approximately 30 percent, an unprecedented recession in post-war European economic history. This is true and very regrettable. But it is also equally true and regrettable that, prior to the onset of the crisis, Greece experienced a demand bubble of equal size and equally unprecedented duration in European economic history.

From that point of view, the Greek debt crisis and the recession that followed it over 2009–2013 were predictable as an equilibrium phenomenon restoring domestic spending to levels consistent with the country's production capacity. The extent of the recession could have been smaller if serious policy mistakes had not been made (both within Greece and at the union level) during the crisis' crucial early stages (Arghyrou and Tsoukalas 2011). But there is no doubt that the causes of the Greek crisis are primarily internal. The crisis is the result of an outdated, state-centred model of economic growth having run its course. This model could not be maintained any longer within the current globalised, highly-competitive international economic system, especially in an environment of international financial crisis where markets scrutinise each country's economic fundamentals (Arghyrou and Kontonikas 2012). It is even truer to say that this model cannot be restored, no matter how strong the political will of the new Greek government is to regain the state's central position in Greek economic life, or the effort of strong vested interests that have benefited from it (Arghyrou 2014b) to reverse its decline.

A new growth model for Greece

Before we discuss the key features of a new, sustainable growth model for Greece it is necessary to make a distinction between two different objectives. Firstly, and in relation to the short-run, there is the question of the upwards stabilisation of Greek economic activity to the country's natural GDP. According to the calculations of most international economic organisations, Greek GDP is currently approximately ten percent below its natural level. Closing this negative output gap presupposes an increase in demand which, in turn, is conditional to two factors. Firstly, the creation of positive expectations regarding future economic outcomes, so that consumption and investment decisions are not postponed. Secondly, positive credit growth rates which, consistent with standard monetarist theory, are strongly correlated with output and unemployment in the case of Greece (Arghyrou 2014a). On both fronts significant progress was made during the period June 2012 – September 2014. In recent months, however, increased political uncertainty has reversed this positive trend. This uncertainty must be eliminated without delay, so that the positive growth rate and reduction in unemployment recorded in 2014 can be maintained.

Secondly, there is the question of increasing Greece's natural output, and this is what I mean when I refer to a new sustainable growth model. To that end, the Greek economy must be restructured away from the non-traded and towards the traded sector, to produce tradable goods and services that can compete successfully in domestic and international markets. Greece is not the only country looking to restructure its economy under crisis conditions. In past decades a number of countries have managed to do so. Examples include the UK and Ireland in the 1980s, Sweden, Finland and Canada in the 1990s, Germany and a number of Central Eastern European countries in the 2000s and, more recently, the Baltic countries. The experience of these countries and modern mainstream macroeconomics, suggest that the main features of a successful growth model should include the following characteristics:

Firstly, a continuation of the fiscal adjustment process of 2010–2014 and a further reduction in state intervention in economic activity. Fiscal adjustment should be mainly pursued by reducing expenditure, as this will create fiscal space for a reduction in the taxation imposed on firms and households. Lower taxation incentivises increased labour participation and internal/foreign direct investment, both of which will contribute to upgraded supply conditions, increasing firms' profitability and households' disposable income. It is also important to establish a stable tax system fostering firms' ability to reach optimal, long-term investment decisions. Finally, it is vital to successfully tackle the extensive problem of tax evasion, both for reasons of ensuring fiscal sustainability, as well as to establish a sense of tax fairness among the full range of Greek tax-payers.

Secondly, it is essential to increase the competitiveness of Greek goods and services which, in addition to lower taxation, is also a function of the following factors:

a) Reducing the high mark-ups incorporated in the prices of goods and services through increased market competition. According to the IMF data discussed in Arghyrou (2014a), Greece has almost fully recovered the competitiveness losses sustained in the 2000s when competitiveness is measured using real effective exchange rates (REER) based on unit labour costs (ULC). By contrast, when competitiveness is measured using REER calculated based on consumer price indexes, Greece has recovered only five percent of the cumulative losses sustained following its euro-accession; so that relative to its initial euro-accession value back in 2001, in 2014 the Greek REER was still overvalued by 16 percent. This difference suggests that when it comes to the internal devaluation achieved by Greece over 2010–2014, the contribution of labour income has been much higher than that of monopolistic mark-ups. Therefore, reducing the latter is not only vital for further competitiveness gains but, also, for a fairer distribution of the burden of adjustment. Hence, it is necessary to lift barriers to entry to many hitherto protected sectors; abolish remuneration floors imposed by trade unions for the provision of many services; and further privatisations, as per the recommendations of the report prepared by the OECD (2013).

b) Competitive levels of unit labour costs. This, in turn depends on two conditions:

• Flexible labour market conditions reducing the exposure of employment levels to adverse economic shocks. As suggested by the TOCA, labour market flexibility is a major determinant of a country's competitiveness and contributes to higher employment and income levels within a single currency area. Flexibility is often resisted by trade unions on the basis that it exerts downward pressure on wages and employment. However, existing evidence points in the opposite direction (Di Tellla and MacCulloch 2005).

At any event, the introduction of further flexibility in the Greek labour market is unlikely to lead to downward pressure on Greek wages, as the latter's reduction in 2010–2013 seems not only to have fully offset, but actually to have reversed the excessive wage awards of 2001–2009 (Arghyrou 2014a).

• Improvement in the technology level of Greece's aggregate production function. To this end, it is necessary to attract new capital investment and upgrade the country's human capital. Necessary prerequisites for the latter include reducing the still high levels of corruption and bureaucracy, and a significant improvement in the Greek education system.

c) A substantial upgrade in the institutional performance of the Greek state, particularly in functions directly related to attracting domestic and foreign investment projects. In addition to reducing bureaucracy and corruption, key areas in which Greece is lagging well behind its peers are the speedy resolution of legal differences by the Greek judiciary system, the protection of investors' rights and default resolution (Arghyrou 2014a).

Greece's return to international sovereign bond markets

Assuming that the current uncertainty regarding Greece's economic direction is resolved and Greece's participation in the EMU is credibly reaffirmed, a key prerequisite for implementing the growth strategy described in the previous section is the country's return to international sovereign bond markets. A major step in that direction was taken in April 2014, when, after excellent preparation, Greece successfully placed a five-year bond issue for three billion euros for the first time since the onset of the crisis in 2009 at an interest rate just below five percent (Mourmouras 2014). However, the political uncertainty created in the second part of 2014 did not allow the outgoing Greek government to pursue its plans for further bond issues. In the wake of the recent Greek election the five-year bond yield returned to 15 percent, while that of ten-year government bonds shot up from six percent in July 2014 to 11 percent in January 2015. Hence, international sovereign bond markets are once again closed to Greece and the process of the latter's re-integration will have to be repeated.

The following three key conclusions can be drawn from Greece's (and other European countries') experience with the sovereign debt crisis (Arghyrou and Kontonikas 2012): firstly, uncertainty regarding future economic developments destabilises national bond markets; secondly, guarantees for the fiscal liabilities of crisis-hit countries stabilises them; and thirdly, markets price national bonds by evaluating country-specific developments and reject political agreements that they deem unsustainable.

On the basis of the above, a credible plan aiming to achieve Greece's return to open-market debt finance should be based on the following points:

Firstly, the plan must be announced as soon as possible and be totally transparent, so as to eliminate uncertainty regarding the conditions of Greece's return to the markets.

Secondly, the plan must be agreed upon by Greece's international partners and should include a precautionary credit facility. These two elements will provide markets with the necessary guarantee of Greek fiscal liabilities for the vital period that will immediately follow Greece's return to open-market debt financing.

Thirdly, Greece's return to markets and the subsequent removal of the precautionary credit facility must take place within a timeframe approved by the markets, otherwise it may be regarded as premature and consequently fail. Therefore the timing must be made conditional to terms exclusively determined by markets. These terms should refer to: (a) the level of Greek government bond yields, which must be defined in such a way so that the condition of public debt sustainability is met on the date of the transition's announcement; and (b) the ability of the Greek banking system to operate without the support of the Euro system's Emergency Lending Assistance (ELA) facility.

Finally, the plan must include automaticity clauses, according to which Greece's transition to market debt financing and, later on, the withdrawal of the precautionary credit line, will happen automatically as soon as the terms described above are met. Without automaticity, uncertainty regarding the conditions of Greece's return to market debt-finance will persist and the market signals relating to Greece's readiness to perform the transition will be diluted.

The debt legacy issue: a proposal for debt restructuring conditional to reforms

We end our analysis by discussing an actively debated topic, namely the question of granting Greece debt for-

giveness on the loans provided by its official lenders. Academic debate on the subject is defined by two opposing views. On the one hand, economists like Stiglitz et al. (2015) argue for an outright reduction in Greece's nominal debt obligations, along with the continuation of structural reforms, as a means of kick-starting growth. On the other hand, authors like Gros (2012) argue that Greece does not need debt forgiveness, as the current burden of servicing its debt does not exceed six percent of GDP, a figure lower than Greece's historic average and in line with countries such as Italy and Ireland. Proponents of this view argue that debt forgiveness will create moral hazard blocking necessary reforms. Finally, a third view, advocated by Sinn (2014, 343–53), regards debt forgiveness for Greece and other periphery EMU countries as necessary, but effective in terms of restoring growth only if accompanied by euro-exits. Without the latter debt forgiveness will operate as permanent fiscal transfers that discourage reforms, as per the moral hazard warning.

Based on provisional figures for 2014 and projected figures for 2015, Greece is set to meet the debt sustainability condition in both years (Arghyrou 2014a). This adds weight to the view that debt forgiveness is not necessary. But nevertheless, the high level of Greece's public debt implies that any exogenous external shock can easily put the latter back on an unsustainable path, even assuming an extension of the maturities of Greek public debt of up to 50 years and a lowering of their interest rates to zero (Darvas, Sapir and Wolff 2014). Further lightening of Greece's debt burden could therefore reduce the risk premia associated with Greek investments (capital and financial), thus contributing to higher growth and, in turn, an improvement in debt dynamics. But why should creditor countries agree to offer Greece such assistance? And how does one deal with the moral hazard issue? Economists arguing in favour of further debt relief for Greece have not answered these questions convincingly.[2] Without doing so, calls for granting Greece further debt appear to be asking for something for nothing and, as such, they are unlikely to succeed.

An alternative approach would be to develop a strategy that would apply not only to Greece, but to the whole of the euro zone's periphery countries and would call upon all parties' well-meant self-interest. The basic idea is to make debt forgiveness explicitly conditional to supply-side reforms. This approach has the following important advantages. Firstly, it deals with the moral hazard issue in a positive way, as it incentivises necessary reforms on debt forgiveness. Secondly, by fostering reforms in debtor countries, it creates a positive consumption externality for creditor countries.

The proposal can be analysed within a standard, open economy dynamic stochastic general equilibrium model such as the one by Corsetti and Pesenti (2009). Let us assume two identical symmetric countries, a debtor and a creditor one, where firms determine prices by imposing a monopolistic mark-up on marginal costs and the representative agent consumes, in both countries, a composite basket including domestic and foreign goods. Under flexible prices and constant money supply, structural reforms reducing monopolistic mark-ups in the debtor country increase equilibrium labour input, but also consumption through a reduction in the prices of domestic goods. This is welfare-enhancing for the debtor country because at the initial (pre-reform) equilibrium, the distortions caused by monopolistic mark-ups imply that the representative agent is willing to work more in exchange for higher consumption. At the same time, the reduction in the prices of the debtor-country goods allows the representative agent of the creditor country to increase her consumption without changing the level of her equilibrium labour input. This is a welfare-enhancing gain caused by an increase in the terms of trade of the creditor country. The same result is derived if we assume a positive technology shock in the debtor country following, say, an increase in investment due to lower taxation made possible because of debt forgiveness. Higher technology reduces the debtor-country's marginal costs and, thereby, its goods prices. This increases welfare in the debtor country as the representative agent achieves a higher level of consumption without increasing labour input. At the same time, lower prices for the goods of the debtor country improve the terms of trade of the creditor country, also allowing the latter's representative agent to increase her consumption of debtor-country goods without increasing her labour input.

Overall, in the framework described above, the debtor country does not get something for nothing; it provides creditor countries with a consumption gain in return for debt forgiveness fostering reforms and technology improvement. Therefore, this mutually beneficial framework provides a theoretical basis for developing

[2] A number of observers have argued that creditor countries have an incentive to provide debt relief to Greece because, in the event of a direct conflict, they may have to write-off the full value of their existing loans. This view, however, is mistaken because it assumes that a stand-off between Greece and its international creditors is a one-shot game, with symmetrical negative pay-offs and in which only economic considerations come into play. All three assumptions are false and, as a result, Greece cannot rationally impose a debt restructuring programme on its partners without their agreement (Arghyrou 2014c).

a debt-forgiveness programme. Of course, for this to be considered, the proportion of the goods of the debtor country to the consumption basket of the creditor country must be substantial. That is why the proposal outlined above cannot be applied to Greece in isolation, as Greece's contribution to the intra EMU total exports of goods and services is just 0.7 percent and 2.4 percent respectively (2013 Eurostat figures). If, however, we consider the whole of the crisis-hit periphery EMU countries (i.e. Greece, Ireland, Italy, Spain and Portugal) the figure rises to 21.5 percent for goods and 32.3 percent for services. With imports of goods and services accounting for 40.5 percent of the EMU's GDP in 2013, and more than half of this figure representing intra EMU trade, the EMU's average consumption basket includes a proportion of goods and services produced in the crisis-hit countries of around ten percent, a figure that may rise if demand for their goods and services has sufficiently high price elasticity. Overall, a programme of explicitly linking debt forgiveness to structural reforms could be part of the emerging new European economic/financial architecture, along with banking union, further fiscal integration and other institutional reforms in the euro-governance system.

Concluding remarks

This article discussed a number of topics related to the Greek debt crisis and the prospects for its successful resolution. I argued that the roots of the crisis primarily lie in misguided past internal policies; and for Greece to restore conditions of sustainable economic growth it should continue the process of reform replacing its outdated pre-crisis economic structure with a new one that aims at achieving higher competitiveness and technology levels. Assuming that this condition is in place, and Greece's position within the euro-area is re-affirmed, I outlined the main features of a proposal aimed at resuming Greece's re-integration into international sovereign bond markets. Finally, I put forward a proposal that aims at dealing with the debt-legacy issue, and applies not only to Greece, but to all EMU periphery countries. This makes debt forgiveness explicitly conditional to structural reforms. The element of conditionality addresses the potential moral hazard problem created by debt forgiveness. It also provides a positive consumption externality for debtor countries, incentivising the latter to consider it as an integral part of the emerging new EMU economic and financial architecture.

Despite its undisputed importance, the discussion of Greek debt forgiveness has perhaps assumed dimensions that exceed the latter's ultimate significance for Greece's future economic prosperity. Without eliminating the debt generation process, debt forgiveness (even if granted) will be of temporary assistance only. The key to a permanent resolution of the Greek debt crisis is the development of a successful new growth strategy; and for that to happen, it is vital that Greece persists in its efforts to reform its economy. As I have argued elsewhere (Arghyrou 2014a), this task will be easier for Greece to achieve within the euro area. Past experience shows that the vast majority of beneficial reforms taking place in Greece resulted from the commitments undertaken by the country to secure its participation in the European integration project. Given the existence of strong vested interests standing in the way of reforms and a strong populist streak in Greek politics, Greece's participation in the euro remains the most effective binding modernising force from which, despite the cost of adjustment, the average Greek citizen benefits tremendously.

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Provision of Childcare Facilities in the European Union – An Analysis of Member States' Progress Towards Meeting the Barcelona Targets[1]

In 2002 a meeting of the European Council in Barcelona set targets to improve the provision of childcare in the European Union (Mills et al. 2014, 1). The intention of the so called `Barcelona targets´ was to encourage EU member states to remove disincentives to female labour force participation. Taking into account the demand for childcare facilities, it was agreed to provide childcare by 2010 to at least 90 percent of children between three years old and the mandatory school age, and to at least 33 percent of children under three years of age (Barcelona European Council 2002, 12).

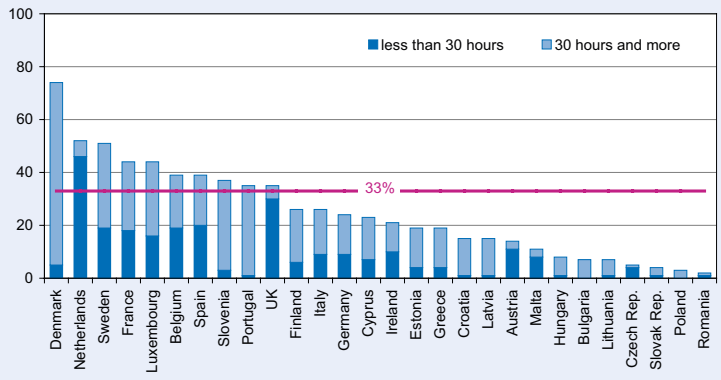
The indicator used for measuring progress towards the Barcelona targets is defined as the *number of children cared for under formal arrangements as a proportion of all children in the same age group* (European Commission 2013, 26). This means that the indicator measures the actual use of existing childcare provision (i.e. coverage rates) and not the number of available childcare places (Mills et al. 2014, 3). Formal arrangements include all kinds of care organised and/or controlled by a structure, which means that direct arrangements between the carer and the parents have been excluded from the definition. It therefore encompasses education at preschool, centre-based services, a collective crèche or daycare centres, including family daycare and professional certified childminders (European Commission 2013, 26). The indicator is further broken down by two levels of usage (children cared for up to 30 hours a week; and children cared for 30 hours or more a week) and two age groups (children aged under three; and children aged between three years and the mandatory school age) (Mills et al. 2014, 3).

In 2011, the usage of childcare facilities was still not in line with the Barcelona targets in many EU member states. Looking at childcare services for children aged zero-to-two years, Figure 1 shows that only ten member states (Denmark, Netherlands, Sweden, France, Luxembourg, Belgium, Spain, Slovenia, Portugal and United Kingdom) achieved or surpassed the objective of a 33 percent coverage rate. 16 member states were below 25 percent and Slovakia, Poland and Romania did not even reach the five percent limit. Figure 1 highlights that there are not only considerable cross-country differences in childcare coverage, irrespective of the number of hours spent in formal childcare arrangements, but that there is also large variation between member states in the weekly time children spend in care. In Denmark, Slovenia, Portugal, Croatia, Latvia, Bulgaria and Poland the services are essentially used on a full-time basis (30 hours and more). Usage of part-time formal childcare (less than 30 hours) is predominant in the Netherlands, the United Kingdom, the Czech Republic and Austria. It is interesting to note that Denmark, the Netherlands, Sweden, Belgium and Spain complied with the targets for the first age category as early as in 2005, while France, Portugal and the United Kingdom were close to achieving them by this time. Member states that made considerable progress towards meeting the objectives between 2005 and 2011 include Slovenia (+13 percentage points), Luxembourg (+22 percentage points), Greece (+12 percentage points) and Austria (+10 percentage points).

Analysing facilities for children from three years of age to the mandatory school age, Figure 2 shows that in 2011, nine member states (Belgium, Denmark, France, Italy, Sweden, United Kingdom, Estonia, Slovenia and

Figure 1

Percentage of children cared for under formal arrangements by weekly time spent in care, 2011
aged 0–2 years



Source: DICE Database (2015), based on Eurostat (ilc_caindformal).

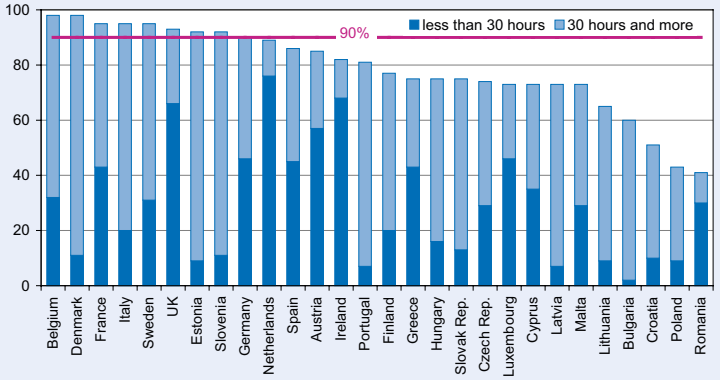
[1] Please see also the article by Plantenga and Remery in this issue.

Germany) achieved the Barcelona target of a 90 percent coverage rate irrespective of the weekly time spent in care. Most of the other member states, however, still need to make substantial efforts in order to meet the defined objectives, especially Croatia, Poland and Romania. As far as the second age group is concerned, the member states differ greatly in terms of hours spent in formal childcare arrangements. In Denmark, Estonia, Slovenia, Portugal, Latvia, Lithuania and Bulgaria formal childcare facilities are mainly used on a full-time basis (30 hours and more), whereas member states like the United Kingdom, the Netherlands, Austria, Ireland and Romania are characterised by a part-time usage (less than 30 hours) of formal childcare services. While Belgium, France, Denmark, Spain and Italy met the targets established for the second age category as early as 2005, the United Kingdom, Germany and Sweden were merely approaching the objective by this time. The extent of the childcare services used by children from three years of age to the mandatory school age declined in some countries between 2005 and 2011: Spain (-8 percentage points), Hungary (-4 percentage points) and Cyprus (-5 percentage points). But several EU member states also made huge progress towards meeting the Barcelona target regarding the second age group during the period between 2005 and 2011: Portugal (+51 percentage points), Malta (+18 percentage points), Austria (+16 percentage points) and Slovenia (+15 percentage points).

Figure 2

Percentage of children cared for under formal arrangements by weekly time spent in care, 2011

from 3 years to the mandatory school age

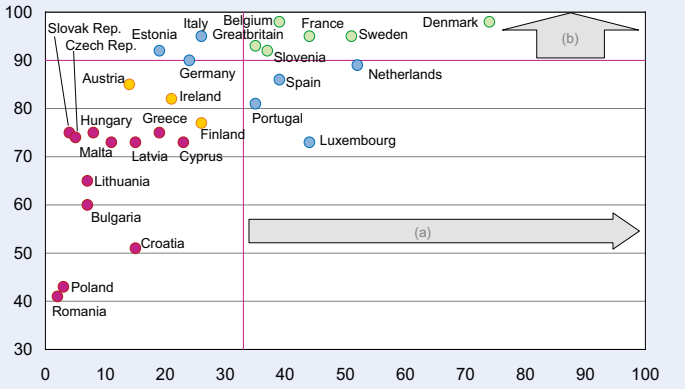


Source: DICE Database (2015), based on Eurostat (ilc_caindformal).

Figure 3

Formal childcare by age group, 2011

from 3 years to minimum compulsory school age in %



(a) Barcelona objective for first age category achieved.
(b) Barcelona objective for second age category achieved.

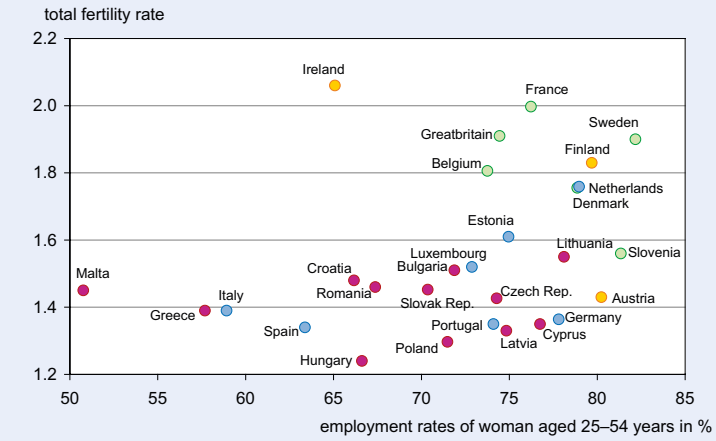
less than 3 years in %

Source: DICE Database (2014). Figure following European Commission (2013).

Member states that joined the European Union after 2002 (Estonia, Lithuania, Latvia, Poland, Czech Republic, Slovakia, Hungary, Slovenia, Malta, Cyprus in 2004; Bulgaria and Romania in 2007; and Croatia in 2013) were not represented at the meeting of the European Council in Barcelona, but in 2008 the importance of the Barcelona targets was reaffirmed in the employment guidelines adopted by the Council (Plantenga and Remery 2009, 7). Nevertheless it is striking that in 2011 the "new" EU member states still performed poorest in terms of progress towards the Barcelona targets (with the exception of Slovenia for children aged zero-to-two years and Estonia for children from three years of age to the mandatory school age).

Figure 3 summarises the results discussed above and gives an overview of the progress of each EU member state towards the Barcelona targets with respect to both age categories in 2011. The horizontal axis represents the coverage rate for the first age group (children aged under three) and the vertical axis represents the same for the second age group (children aged between three years and the mandatory school age). The axes inter-

Figure 4



Source: OECD (2014).

sect at its corresponding threshold values of 33 percent and 90 percent respectively. This implies that EU member states that are located at the bottom left panel of Figure 3 were unable to meet either target. This group consists of the following 15 countries: Romania, Poland, Croatia, Bulgaria, Lithuania, Slovakia, Czech Republic, Hungary, Malta, Latvia, Greece, Cyprus, Austria, Ireland and Finland. While the latter three are approaching at least one of the targets, the other member states still need to make considerable progress to achieve the established objectives. Countries that complied with only one of the two targets are Portugal, Spain, Luxembourg and the Netherlands for the first age category and Estonia, Germany and Italy for the second age category. Only six countries achieved both targets in 2011: the United Kingdom, Slovenia, Belgium, France, Sweden and Denmark (see upper right panel of Figure 3). It is interesting to note that these countries also combine high fertility rates and high rates of female employment (see Figure 4). Nevertheless care must be taken when interpreting these results. Fenge and Ochel (2001) stress that besides the provision of good-quality childcare facilities, various other factors influence the reconciliation of the employment of women and family life: generous systems of paternity and maternity leave, flexible working arrangements and an adequate income for families to afford formal childcare arrangements (earned income, childcare allowances, tax reductions, subsidies of childcare fees). In combination with these measures, the availability of affordable and quality childcare services is essential to achieve a work-life balance; and thereby removing disincentives to female labour force participation, as stated in the Presidency Conclusions of the Barcelona European Council (European Commission 2013, 4).

Finally, it is important to note that when interpreting the indicators used to measure the progress towards the Barcelona targets, certain aspects should be borne in mind. Mills et al. (2014) highlighted that a relatively low coverage rate in certain countries does not necessarily mean that there is a shortage of childcare, because it can also indicate that parents use alternative strategies to care for children like extended parental leave options or informal care. Furthermore, progress towards the Barcelona objectives is measured irrespective of the number of hours spent in formal childcare arrangements. The previous discussion showed that the services are mainly used on a part-time basis (less than 30 hours) in many member states. This lack of full-time care could act as an obstacle for women seeking to acquire and sustain full-time employment (European Commission 2013, 10). The fact that the Barcelona targets only focus on young children below compulsory school age without taking into account the out-of-school services for school-going children is also problematic, because in many countries school hours are part-time and generally not compatible with full-time employment (Plantenga and Remery 2013, 7).

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Early Childhood Education and Care: Public Expenditure, Private Costs and Enrolment Rates

On average 53 percent of those European women with children cite expensive childcare facilities as the main reason for their failure to return into work (Mills et al. 2014, 20 and DICE Database 2015a). Female labour market participation, as well as the improvement of the development of young children, is the main motivation behind early childhood education and care (ECEC) programs. In the "Barcelona Target" (Barcelona European Council 2002, p.12) the European Commission supports and encourages the placement of children until the beginning of compulsory schooling in formal childcare (zero-to-two years) and pre-primary (three-to-six years) institutions. Apart from this unitary target, ECEC varies immensely across the EU member states with regard to quality, fees and subsidies. Progress in care for the younger age group (aged zero-to-two years) in particular reveals how diverse the systems are. The average enrolment rates in that age group vary between 78 percent in Denmark and only two percent in Poland, with an EU average of 29 percent (Mills et al. 2014, 20 and DICE Database 2015b, see also Table 1).

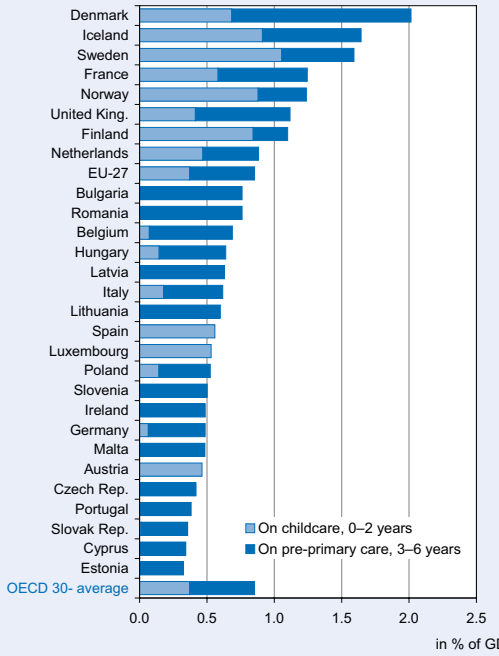
An analysis of childcare costs remains difficult due to the variety in subsidy and benefit systems that range from direct subsidies for ECEC facilities (supply-led systems) to indirect benefits like tax reliefs, family allowances or vouchers for parents (demand-led systems). Supply-led systems lead to lower fees charged by ECEC facilities. In demand-led systems, by contrast, parents have to pay higher fees for ECEC, but receive public compensation via the tax or voucher system. Depending on the system in place, private for-profit or public and private non-profit facilities are predominant. In most countries, benefit systems are adjusted depending on family status and income, leading to further differences in the cost burden for parents across and within countries. To give an overview, this article restricts its attention to a small number of key figures related to ECEC: public expenditure on ECEC as a percentage of GDP as a measure of its fiscal costs, the net costs for parents as a measure of the *financial burden on families* and *childcare enrolment rate* as the main outcome variable.

Public expenditure on ECEC as a percentage of GDP reveals that the Scandinavian countries, France, the Netherlands and the United Kingdom spent more than the EU average (0.8 percent of GDP) on ECEC (Figure 1). While the expenditure on pre-primary education (three-to-six year olds) is relatively equal among the countries, there are major differences in childcare expenditure for the younger age group (zero-to-two-year olds). Nearly half of the European countries listed in Figure 1 spent hardly anything on early childcare. Again, the higher public expenditure in Scandinavian countries is evident, which seems to be in line with the above mentioned high enrolment rates for childcare, for example, in Denmark. In most Eastern European countries, as well as in Portugal and Ireland, no public expenditure is reported for early childcare.

Apart from the public expenditure, the private costs for parents for ECEC arrangements are most relevant for understanding the country-specific outcomes. The ECEC costs used in the following account for both fees and granted monetary benefits, which facilitates the comparison of supply-led and demand-led systems, like for example between Germany and the United Kingdom. Figure 2 shows the net costs of childcare as a percentage of the family's net income for single and

Figure 1

Public spending on early childhood education and care, 2011



Source: DICE Database (2015c), based on OECD Family Database (PF3.1).

dual-parent families (100 percent average earner). The EU average of childcare costs for a classic dual parent family are 10.3 percent of the average wage, with a wide range extending from two percent in Austria up to over 20 percent in the Netherlands, Ireland, Switzerland and the United Kingdom. The financial burden varies greatly for single and dual-parent households: In the United Kingdom, for example, a dual-parent family has to spend 29 percent of their average wages on childcare, whereas a single-parent family only has to spend 13 percent of its average wage. However, in over half of the European countries surveyed, the net costs of childcare expressed as a percentage of average wages increases for single-parent households compared to dual-families. In Denmark and Norway the costs of childcare as a percentage of wages are on an average level, whereas public expenditure is exceptionally high compared to other European countries. One explanation might be that both countries have higher quality standards, i.e. lower staff to child ratios and higher education requirements (DICE Database 2015d,e).

Due to the large differences in public spending and private costs for ECEC, enrolment rates in childcare vary considerably across European countries (EU27). As shown by Table 1, 29 percent of children aged between zero and two years are enrolled in childcare arrangements on average. The lowest enrolment rates from two percent to ten percent are mostly seen in Eastern European countries (Poland, Check Republic, Slovak Republic, Croatia, Romania, Bulgaria) and in Greece and Austria at the other end of the scale, northern European countries (Denmark, Norway, Netherlands, Sweden), along with France and Slovenia tend to show the highest enrollment rates, with Denmark on topping the list at 78 percent.

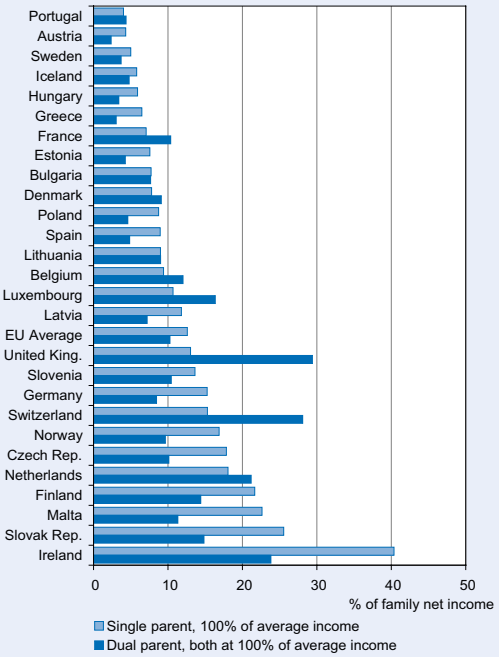
Table 1 also displays the percentage of children enrolled in formal childcare arrangements (zero-to-two years) by income quintiles (1st and 5th). For most countries the data show that the 1st (poorest) quintile has the lowest enrolment rates and the 5th (richest) quintile mostly has enrolment rates above the country average. Denmark and Sweden are notable exceptions, with higher enrolment rates for the 1st than for the 5th quintile. Germany, Slovenia, Estonia, Iceland and Austria have at least similar enrolment rates across the income quintiles.

Quantifying childcare costs across countries remains difficult due to the variety of systems, complex specifications and numerous exceptions. Against this background, it is unlikely that enrolment rates can be relied on exclusively as the only measure of a country's success as regards ECEC. However, the comparison reveals some insights into the existing challenges for the improvement of childcare and pre-primary education across borders that might help to achieve higher labour market participation rates among women and promote the favourable development of children across the board.

Silke Sturm

Figure 2

Net costs of childcare for single- and dual-parent families, 2012



Note: Corresponds to the situation of a family with two children, aged two and three. See source for further details.

Source: DICE Database (2015f), based on OECD (2014).

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Table 1

Formal childcare enrolment rate in percent, children younger than three, by income quintile, 2010

	Average	1st Quintile (poorest)	5th Quintile (richest)
Denmark	78	87	83
Norway	50	34	53
Netherlands	49	27	70
Sweden	48	44	32
France	45	15	64
Slovenia	39	41	38
United Kingdom	38	20	53
Luxembourg	38	23	56
Iceland	38	37	34
Spain	37	29	45
Belgium	36	17	57
Portugal	31	14	36
Average (EU27)	29	17	36
Switzerland	28	9	53
Finland	27	18	41
Italy	23	17	28
Estonia	22	16	14
Cyprus	22	16	30
Germany	20	21	23
Ireland	17	8	34
Latvia	15	7	11
Lithuania	12	2	10
Hungary	11	7	15
Malta	11	0	15
Austria	9	10	9
Bulgaria	9	0	15
Greece	8	6	12
Romania	8	5	13
Croatia	8	6	13
Slovak Republic	3	2	0
Czech Republic	3	3	4

Source: DICE Database (2015g), based on Mills et al. 2014.

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Part-time Work And Family Building in OECD Countries

Part-time work enjoys different levels of popularity across OECD countries and is a controversial workplace practice. The share of part-time workers[1] and the reasons why family earners decide to work part-time vary across OECD countries. On average, part-time employment in OECD countries accounted for 16.8 percent of the working age population in 2013. Between 2000 and 2013 the share of part-time employment increased by five percent in the whole OECD area. During the financial crisis part-time employment rose, especially in Southern European countries and Ireland (DICE 2015a).

On the one hand, part-time work is a family-friendly working-time arrangement and allows parents to maintain their job and spend more time with their family. This may lead to rising parental employment rates and higher fertility rates due to the improved reconciliation of work and family. Most people choose voluntarily to work part-time in order to care for their children or for elderly family members. Furthermore, part-time work increases labour force participation, especially of women, and offers an alternative to inactivity.

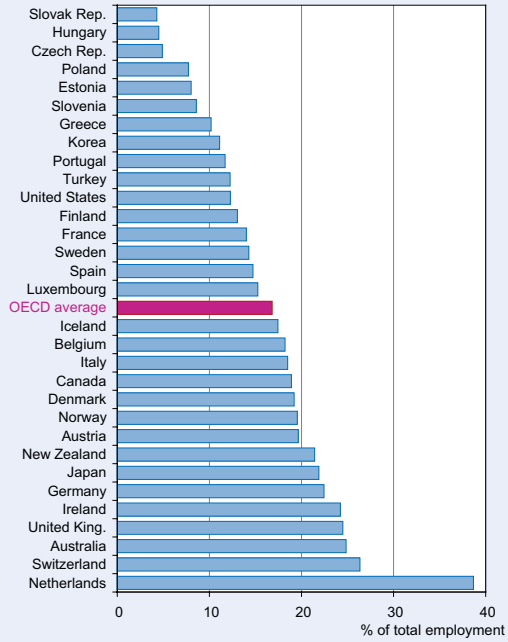
On the other hand, it reduces total family income (as opposed to cases where two parents have full-time jobs) and parents wishing to work part-time often have to accept a lower-ranking job. Part-time workers are often disadvantaged compared to full-time workers in terms of job-security, promotion, training and unemployment benefits. Furthermore, there is a clear trend towards women making the sacrifice of reducing their full-time job to a part-time position, rather than men, which is often due to the gender gap that persists in income. Moreover, the "voluntary" choice by family earners to work part-time is often provoked by a supply constraint in public childcare services or not-affordable nursing homes for the elderly (OECD 2013).

This article shows the distribution of part-time work across OECD countries in general and in terms of gender differences. Secondly, different family-employment-models are introduced in order to depict the pop-

[1] Persons who work less than 30 hours per week in their main job are regarded as part-time workers. According to the ILO guidelines of measuring employment this refers to employees and self-employed workers within the working age population of 15-64 years (OECD 2013).

Figure 1

Part-time employment rate, 2013

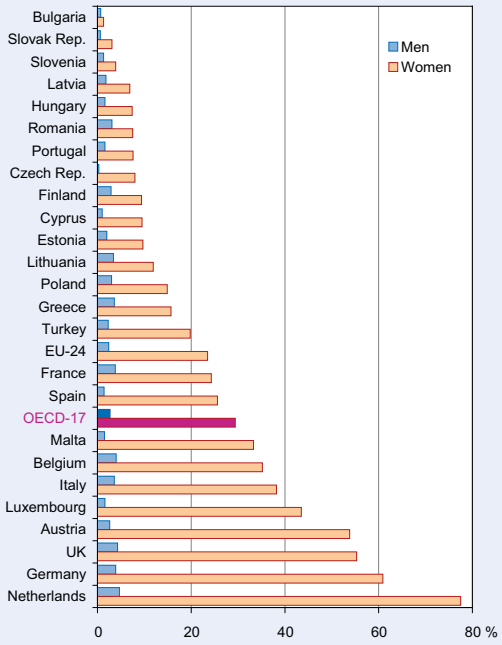


Note: Persons who usually work less than 30 hours per week in their main job. Data include only persons declaring usual hours.

Source: DICE Database (2015a), based on OECD Statistics (FTPTC).

Figure 2

Gender gap for parents working part-time with children aged 0–14, 2011



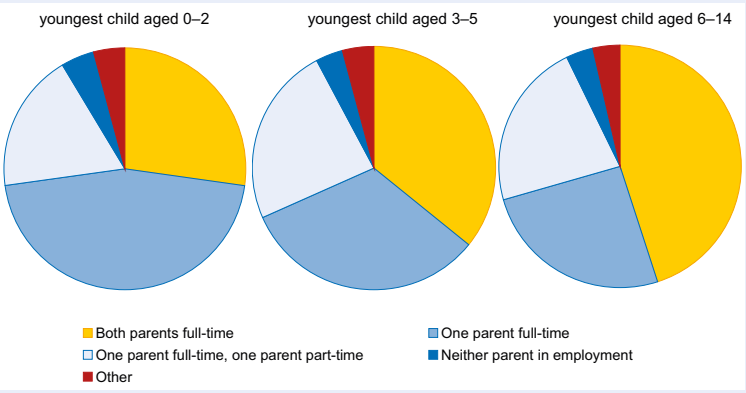
Note: Percentage of all women/men in the labour force who work 1–29 hours.

Source: DICE Database (2015b), based on OECD Family Database (LMF2.2).

ularity of part-time work among families with young children. Thirdly, the relation between part-time employment and public expenditure on childcare is examined for OECD countries. Thus conclusions can be drawn regarding part-time work as a family-friendly workplace practice for young families.

Figure 3

Parental employment patterns by age of youngest child, 2011
OECD-23 average in percent



Note: See source for countries included in the OECD average.
Source: DICE Database (2015b), based on OECD Family Database (LMF2.2).

Distribution of part-time work across OECD countries

The incidence of part-time employment is not evenly distributed across OECD countries (Figure 1). The highest share of part-time employment can be found in the Netherlands, with almost 40 percent of the working population working part-time, followed by Switzerland, Australia and the UK. In Eastern European countries like Slovak Republic, Czech Republic and Hungary the part-time employment rate is below 5 percent and thus plays no important role in those countries. The OECD average of the part-time employment rate lies at around 17 percent (DICE 2015a).

Gender gap in part-time employment

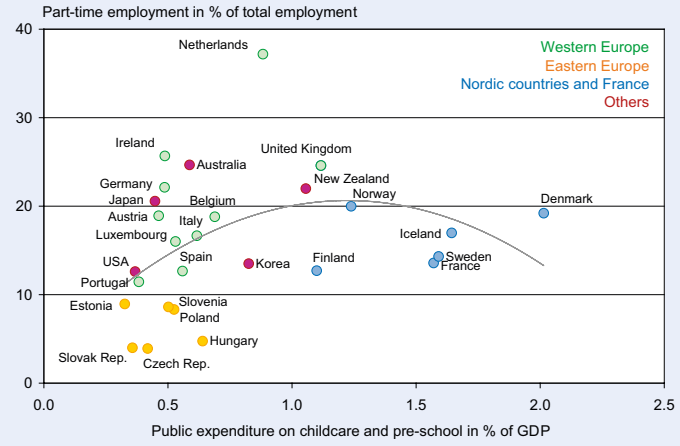
Looking at the gender distribution of part-time work (Figure 2), a deep gender gap can be observed. The majority of parents with children aged 0–14 who work 1–29 hours per week mainly belong to the female labour force in all OECD countries. The gender gap is highest in Western European countries and relatively low in Eastern European countries. In the Netherlands where part-time work as an overall share of employment is highest, almost 80 percent of women in employment work part-time. On OECD average, almost 30 percent of women in employment work part-time, whereas the share of men in employment working part-time is less than three percent (DICE 2015b). Part-time work seems to be popular among mothers with young children everywhere. But part-time work is not the only family-employment-model that enables a better reconciliation of family and work.

Family-employment-models

The choice of a family-employment-model depends on the age of the youngest child and is differently distributed across OECD countries. The first family-employment-model is that one parent works part-time and the other parent works full-time. A second type of arrangement is the modern-couple-family-employment-model in which both parents work full-time. This calls for good and affordable childcare institutions that offer around 40 hours childcare services per week. A third model is a more traditional one in which one parent works full-time and the other one cares for the children. Further possibilities are that neither parent is in employment or other constellation such as both parents work part-time. The choice of one of the various couple-family-employment-models depends on the age of the family's youngest child (Figure 3). In OECD countries on average 45 percent of couple families with the youngest child aged zero-to-two years chose the one-parent-working-full-time-model. This can be explained by the long periods of parental leave during which the parent in leave is not counted as employed. One fifth of parents work according to the one-parent-full-time and one-parent-part-time-model, whereas both parents work full-time in 27 percent of the families in the OECD area. As the child grows up and pre-school public childcare is broadly provided, the distribution of the chosen family-employment-models changes. The parental leave period ends for many parents and thus the one-parent-part-time and one-full-time-model becomes more attractive. With a share of 36 percent, the both-parents-work-full-time-model is the most popular among couple families on OECD average in 2011. Neither parent in employment, or other models combined account for less than 10 percent and seem to show no variation for the ages of the youngest child. When the youngest child enters school

Figure 4

Public childcare expenditure and part-time employment, 2011



Sources: DICE Database (2015a,c), based on OECD Statistics (FTPTC) and OECD Family Database (PF3.1) .

(aged 6–14 years), the share of both parents working full-time rises to 45 percent. The one-parent-full-time and one-parent-part-time-model remains popular with 22 percent, whereas the traditional model of only one parent working full-time declines to 25 percent.

The distribution of working hours within the families strongly varies across the OECD countries. In the Baltic countries, Finland, Portugal, the Slovak Republic and the USA both partners work full-time in 50 percent of the couple families. The heterogenic family model in which one parent works full-time and the other one part-time is very popular in Austria, Germany, Switzerland, UK and especially in the Netherlands. In Southern European countries, as well as Japan, Mexico and Turkey, 40 percent of family households stick to the old traditional model of a sole-earner (DICE Database 2015b).

Part-time work and public expenditure on childcare

The choice of family employment model also depends on the public provision of childcare and pre-school services. Public expenditure on childcare as a percent of GDP is a good indicator for measuring the quantity and quality of the public childcare offering (DICE 2015c). In Figure 4 a scatterplot shows the relation between public expenditure on childcare and pre-school services and the share of part-time employment for a sample of 27 OECD countries in 2011. A parabolic relation can be observed between the two indicators. The turning point lies at around 1.25 percent of GDP spent on public childcare and pre-school. For countries with public childcare expenditure below 1.25 percent of GDP the relationship is clearly positive. A better childcare and pre-school offering increases the number of parents working part-time and offers an alternative to inactivity. If public childcare expenditure lies above 1.25 percent of GDP, the share of part-time work decreases for increasing units of childcare expenditure. Above this threshold public childcare provision seems to decrease part-time work, since more parents can afford to work full-time. The highest public expenditure on childcare and pre-school and relatively low shares of part-time work can be observed in the Nordic countries and in France. In Eastern European countries the least money (in absolute terms) is spent on public childcare, but part-time work is not widespread. In around 60 percent of families with children aged 0-14 both parents work in full-time jobs, which places a great emphasis on informal childcare in Eastern European countries (DICE Database 2015b). In Southern and Western European countries and the Western offshoots, part-time work seems to be a second-best alternative for parents given the limited supply of public childcare and pre-school services.

To sum up, the workplace practice of part-time work offered by many companies and public institutions is differently distributed across OECD countries. In Western European countries part-time work is very popular, whereas in Eastern European countries it is rare. Although part-time work increases participation in the labour force, especially by women, it can be also at the sacrifice of job-related benefits. Part-time jobs nevertheless allow parents to spend more time with their children and can create a better work-family-balance. The occurrence of part-time work seems to depend on the age of a family's youngest child and on public expenditure on childcare and pre-school services. The Nordic countries and France spend the highest share of GDP on public childcare and thus have relatively low part-time work shares because parents can afford to work full-time.

To conclude, in countries with insufficient childcare provision part-time work seems to be a family-friendly, second-best workplace practice in order to raise parents'

labour force participation. If, however, a large amount of high quality public childcare is offered, full-time employment becomes a first-best option for families.

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Inheritance Taxation in Europe

Rules regarding the estate of deceased persons exist in all OECD countries, which can collectively be referred to as succession law. These regulations cover a broad range of aspects that arise with the death of a person. For a detailed compilation of the most important aspects, see DICE table on "Succesion law in Europe: Inheritance and inheritance tax, 2014" (DICE Database 2015). This article focuses on how much inheritance tax has to be paid – as in most countries there is a tax on inheritance.[1]

In a first step, this article discusses the differences in national inheritance taxation laws in Europe and, in a second step, looks at a regulation by the European Union (European Parliament and European Council 2012), which can be seen as a first step towards a harmonisation of succession law in Europe.

National regulation – taxes

As stated above, most European countries have a tax that arises when the estate of a deceased person is transferred to his/her heirs. The amount of tax to be paid heavily depends on the affiliation to different heir-categories. In all countries the tax level increases with a decrease in the degree of family relationship; and the threshold increases with higher degrees of family relationship. The heirs are therefore grouped according to their degree of family relationship in up to four categories. For each category there are different progressive tax rates and different thresholds. For example, spouses and children (in most cases Category 1) are completely exempt from taxation in a majority of cases, whereas for heirs with no family relationship to the deceased, the tax rate can be up to 48 percent (Luxembourg). For a detailed compilation, see DICE table on "Inheritance Taxation, General Characteristics, 2013" (DICE Database 2013).

Cross-border issues

Succession law is a policy area where there has been no harmonisation to date and less coordination between European countries too. In most cases this is not a problem, as only the national law applies. But with free movement in the EU and a growing number of persons owning estates in different countries, there are more cases featuring cross-border issues. A study conducted by the European Commission (2009) states that about ten percent of successions in Europe have an international or European dimension, and therefore have the potential to raise cross-border issues.

A highly problematic cross-border issue occurs when a deceased person owns estates in different countries and heirs are taxed in both countries. This residence-source conflict (Næss-Schmidt et al. 2010) results from the fact that an heir is taxed for total estate s/he inherits according to the regulation where the deceased was resident, and the heir is also taxed according to the regulations of the country where the estate is located.

Some national regulations tackle this problem by allowing unilateral relief for foreign paid taxes. Additionally, there are a number of bilateral inheritance tax treaties in Europe. But as of 2010, there were only 33 out of 351 possible bilateral solutions. Overall the revenues generated by inheritance taxation are relatively low compared to other tax revenues (in OECD average about 0.5 percent of total tax revenues). But, as shown above, there can be huge differences on individual levels.

In addition to the problem of double taxation, cross-border issues lead to additional costs. It is often unclear which national jurisdiction is responsible for a case with cross-border issues. If a person lives in a country where s/he is not a national, both jurisdictions can claim responsibility for the case. Decisions about succession or being an heir in one country may also not be recognised in another country (Bost 2013).

EU regulation

To facilitate cases with cross-border issues, the European countries (except Denmark, UK and Ireland)[2] agreed on a regulation (European Parliament and European Council 2012). The main benefit of the regulation is that only one jurisdiction will be responsible for a succession case in the future. This will be the jurisdiction where the deceased was a "habitual resident". Habitual residence is determined by the state in which the person spent the most time in the years preceding his/her death and was

[1] There are two types of taxes in cases of inheritance: inheritance tax (a tax paid by the recipient of the heritage) and estate tax (a tax paid by the transferor). For simplicity's sake, both are summarized under the term inheritance tax in this article.

[2] These countries opted out.

most closely connected to (European Parliament and European Council 2012). But the successor can also state in a will that the law where s/he is national should apply to his/her case. The court responsible will attest the heirs as legal heir, and this status has to be accepted in all other European countries (European Certificate of Succession).

This regulation leads to lower costs in succession cases, as there is less bureaucracy and more certainty about the applicable law in succession cases with cross-border issues.

But the regulation by the EU does not address problems of double taxation, and can therefore only be seen as a first step towards a succession law that does not hinder free movement and free investment within Europe.

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New at DICE Database

Recent entries to the DICE Database

In the first quarter of 2015, the DICE Database received a number of new entries, consisting partly of updates and partly of new topics. Some topics are mentioned below.

- Childcare systems and quality management
- Enrolment rates in childcare arrangements, by age group and hours
- Demand and supply of childcare places
- Employment impact of parenthood: Family employment patterns
- Family-related working time schemes (flexible work legislation)
- Out-of-pocket costs of centre based childcare, as a percentage of family net income
- Public expenditure on early childhood education and care
- Maternity / paternity benefits / leave entitlements
- Taxation and social security contributions from pension benefits
- Mandatory, old-age income security programmes
- Pension rules for the self-employed in the EU
- Regulatory trade barriers
- Inflation targeting frameworks
- Human development index
- Exchange rate regimes
- Household saving rate
- Status of Basel II / 2.5 / III Adoption
- Judge selection in highest courts

The interactive graphics application **Visual Storytelling** has been further expanded.

Forthcoming Conferences

Ifo Workshop: Public Opinion and the Political Economy of Education
08–09 May 2015, Munich

CESifo Area Conference on Employment and Social Protection
15–16 May 2015, Munich

CESifo-Delphi Conference: Current Account Adjustments
15–16 May 2015, Athens

CESifo Area Conference on Global Economy
22–23 May 2015, Munich

CEMIR Junior Economist Workshop on Migration Research
29–30 May 2015, Munich

Please find details on conferences / call for papers at http://www.cesifo-group.de/ifoHome/events/academic-conferences/forthcoming.html

New Books on Institutions

Divided Sovereignty. International Institutions and the Limits of State Authority
Carmen Pavel
Oxford University Press, 2014

Cutting the Gordian Knot of Economic Reform. When and How International Institutions Help
Leonardo Baccini and Johannes Urpelainen
Oxford University Press, 2015