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## Government and the Distribution of Skills

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## Abstract

Individuals' life chances in the future will very much depend on how we invest in our children now. An optimal human capital model would combine a high mean with minimal variance of skills. It is well-established that early childhood learning is key to adult success. The impact of social origins on child outcomes remains strong, and the new role of women poses additional challenges to our conventional nurturing approach to child development. This paper focuses on skill development in the early years, examining how we might best combine family inputs and public policy to invest optimally in our future human capital. I emphasize three issues: one, the uneven capacity of parents to invest in children; two, the impact of mothers' employment on child outcomes; and, three, the potential benefits of early pre-school programmes. I conclude that mothers' intra-family bargaining power is decisive for family investments and that universal child care is key if our goal is to arrive at a strong mean with minimal variance.

## Keywords

Human capital, inter-generational mobility, parental investments, child outcomes, mothers' employment

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## 1. The Challenge Ahead

Postwar society was very youthful and, yet, its welfare state privileged mainly the elderly. Now, as we are aging, there is a strong argument in favour of prioritizing children. This may sound like a tortured paradox, but consider the following.

The postwar elderly faced widespread poverty, not only because pensions were modest but also because of cohort-effects. They were a luckless generation; born at the end of the 19th Century they reached adulthood around WWI; their working life evolved through the tumultuous '20s and the Great Depression, climaxing with WWII. Such a biography will not produce much accumulated retirement wealth.

Now contrast them with their children. As members of the small 1930s birth cohorts, they came of age in the postwar boom and enjoyed sustained wage growth and plentiful jobs. And as wage growth flattened, returns to savings began to rise. These cohorts were blessed with a lucky life course that generated substantial retirement wealth and, on top of that, generous pension entitlements.

We can draw important lessons from this contrast. Firstly, risks later in life derive from earlier stages and, most importantly, from the starting point. The latter, in turn, combines exogenous period effects (the lottery of history) and nurturing effects (the lottery of parenthood). One did not necessarily require a lot of human capital to do well in the 1950s, but in the 21st Century, yes. If we are posed to reinvent our social model, we need to consider how the life course of the cohorts that are now children will evolve. Those who will retire at mid-century are already young adults, and those that must finance *their* old age are infants. Will they look more like the unlucky or the lucky cohorts?

To forecast the coming risk profile we need not seek recourse to a crystal ball. We already now have substantial data with which we can predict, with some degree of plausibility, welfare distributions at mid-century. The analytical challenge is to match known trends against known distributions among today's children and youth.

In a Paretian sense, a redesigned welfare edifice needs, at a minimum, to promote individual life chances and improve collective welfare. The coming cohorts will face a more hostile retirement scenario and must therefore count on having good careers. The latter, in turn, necessitates strong skills. But also the social value of children should rise. The future labour force will be numerically small and must shoulder huge dependent populations. By mid-Century, the EU working age population will diminish by almost 50 million (or by 15%+) in tandem with a 50% growth of elderly. Sustainability will depend on maximum participation and on the quality of our human capital stock.

So the individual and social returns to investments in children should rise substantially. A recent estimate suggests that an average US child produces a positive externality equivalent to \$100,000 (Preston, 2005). One may have doubts about the reliability of this figure. Wonder-kids will undoubtedly yield substantial returns, but these must be

held up against the potentially large net cost of the failures. For example, the price of one year’s incarceration in the US hovers around \$50,000. The dispersion – and its skewedness – is obviously key. I take it as given that no one prefers a skill scenario of ‘islands of excellence in a sea of ignorance’. The model that most would favour is perhaps best embodied by Finland which combines a high skill mean with minimal dispersion. The proportion of today’s youth with inadequate skills signals the likely size of tomorrow’s social exclusion problem.

A quick glance at the skill distribution of today’s youth suggests substantial international differences. I present two key indicators in Table 1: the share of young adults with no more than compulsory education (ISCED 1-2), and the ‘cognitive’ performance among 15 year olds from the 2000 PISA study.

**Table 1. A Skill Profile of Tomorrow’s Workforce in Representative OECD countries.**

	<b>% with only ISCED 1-2 (age 20-24)score</b>	<b>PISA (Math) Performance: mean natives</b>	<b>% below PISA minimum</b>	<b>%PISA ‘Elite’</b>
<b>Denmark</b>	<b>16</b>	<b>521</b>	<b>15</b>	<b>8</b>
<b>Finland</b>	<b>8</b>	<b>547</b>	<b>7</b>	<b>19</b>
<b>Germany</b>	<b>15</b>	<b>527</b>	<b>21</b>	<b>9</b>
<b>Netherlands</b>	<b>22</b>	<b>552</b>	<b>10</b>	
<b>Spain</b>	<b>31</b>	<b>487</b>	<b>19</b>	<b>4</b>
<b>Sweden</b>	<b>10</b>	<b>518</b>	<b>12</b>	<b>11</b>
<b>UK</b>	<b>8</b>	<b>511</b>	<b>13</b>	<b>16</b>
<b>US *)</b>	<b>20</b>	<b>499</b>	<b>18</b>	<b>12</b>

ISCED data from OECD (2003: Table C5.2). PISA data directly from raw data files. PISA elite refers to the percent scoring in the top 5th level (in mathematics).

\*) To achieve comparability, the US figure refers to those who did not complete highschool (12%) plus those who obtained only GED diplomas (8%) (Haveman et.al., 2004: Table 4.8).

Falling below the PISA minimum captures cognitive dis-functionality, difficulties in understanding even basic information. The size of this group is about a fifth in many countries and could evidently be reduced to less than half. The early school-leaver group is, in some cases, huge and could likewise be limited to less than 10 percent. Since unemployment – and especially long-term unemployment – is more than twice as high among those with less than upper secondary schooling, this indicator also signals the scope of the problem that may lie ahead. Analyses of the IALS data show that low cognitive test scores are similarly associated with a high incidence of

unemployment (OECD, 1997). Finland, as noted, is a vanguard performer on all dimensions while Spain and the US, with low overall means, are saddled with a very sizable problem group.

A striking feature is that the skill dispersion seems unrelated to a country's mean performance. In other words, greater homogeneity need not be achieved at the expense of a low common denominator. Finland suggests that polarization can be minimized even when the average performance is very high.<sup>1</sup>

If the knowledge economy raises the 'human capital-ante', those with inadequate skills will face ever poorer life chances. There are, however, structural trends that to varying degrees jeopardize the pursuit of an optimal skill equilibrium. One important menace comes from rising income inequality and how it influences parental investment in children and inter-generational mobility. Another comes from demographic change, particularly rising marital homogamy, immigration, and more lone parenthood – all of which are likely to heighten inequalities in child outcomes. To illustrate, in Sweden the school system has ambitiously sought to rectify immigrant children's learning disadvantages and, yet, the probability of school failure is roughly 5 times higher for immigrants than for natives.<sup>2</sup>

### *Skills and the knowledge economy*

If the 'skills-ante' is rising this will affect individual life chances. In highly regulated labour markets, the low skilled are more likely to experience joblessness; in deregulated markets they are more likely to experience low pay. In either scenario mobility opportunities will primarily depend on skills. The returns to skills have climbed remarkably over the past decades and the penalty for being low skilled has risen as well, no doubt more dramatically in the US than in most EU countries (Autor and Katz, 1999).

There is substantial controversy over which skills are salient. The need of formal educational credentials continues to rise although this may in part be for their signalling value. We can probably assume that upper-secondary equivalent education will be *sine qua non* for any decent job. Yet, standard earnings regressions show that formal education is only a very small part of the story. As Juhn et.al. (1993) suggest, the rising returns lie mainly in unobserved abilities. Much attention has, for obvious reasons, focused on cognitive skills. Firstly because cognitive stimulation in early childhood is determinant for school success and, secondly, because knowledge intensive production implies the capacity to understand, interpret and apply information. Farkas (2003) and Pryor and Schaffer (2000) insist that cognitive skills are becoming key to economic success. Carneiro and Heckman (2003) emphasize non-cognitive abilities.

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<sup>1</sup> See also Woessmann (2004)

<sup>2</sup> This evidence derives from the author's participation in an OECD mission to Sweden in February 2005.

Using the Wisconsin longitudinal data, Warren et.al. (2002) show that formal educational credentials matter most for the initial career steps while cognitive skills remain salient throughout a person's career moves. Green and Riddell (2001) and Esping-Andersen (2004) have re-estimated standard earnings equations with the inclusion of data on cognitive skills and find, for Canada and the US respectively, that the cognitive variable: a) reduces the education effect by 30 percent; b) eliminates the negative effect of immigrant status; and c) it increases the explained earnings variance by almost 20 percent.

Cognitive skills, as with an array of other difficult-to-observe abilities, are partially genetically transmitted and partially the result of nurturing – that is of environmental stimulus (Bowles et.al., 2001; 2005; Bjorklund et.al., 2005). It may be futile to aspire towards an exact differentiation of the two effects but there is little doubt that nurturing or institutional effects are very large. How else can we account for the performance gap between, say, Finland and Spain? There is, for this reason, a strong case in favour of identifying good policy.

Since the returns to formal education and to unobserved abilities are rising, and since the latter are a precondition for school success to begin with, the policy challenge is to minimize inequalities in the 'unobservables' to the extent that they affect life chances. It may be true, as Carneiro and Heckman (2003) argue, that non-cognitive skills are decisive. Yet, such attributes as social skills, leadership abilities, discipline and motivation are likely to be similarly correlated with parental stimulus as are cognitive skills.

The first step, then, is to identify the family mechanisms that generate positive and negative outcomes. For policy, the challenge is to identify what measures may effectively equalize opportunities and outcomes around a high (rather than low) common denominator. And will such measures produce positive externalities that outweigh the cost? The individual returns to early childhood investments are fairly easy to identify. It is far more difficult to assess the social returns.

The accounting method that Carneiro and Heckman (2003) propose is very persuasive since it incorporates the positive synergy effects (learning begets learning) of early investments on the cost of later ones. The rate of return rises exponentially the younger is the child, suggesting that pre-school and early-school investments yield disproportionately high net returns.<sup>3</sup> If, then, the standard rate of return to schooling hovers around 10 percent (Card, 1999), we could anticipate returns to pre-school investments that are possibly twice this magnitude. And if, as Card suggests, the marginal returns are much greater for those who are likely to fail in school, then early investments should produce a homogenization pay-off, an equal opportunities gain.

Research shows that inequalities in schooling and career attainment are powerfully influenced by social origins – especially in early childhood (Shavit and Blossfeld,

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<sup>3</sup> Krueger's (2003) argument that some adult programmes can also yield high returns does not challenge this point as much as it makes a persuasive case in favour of (well designed) learning programmes throughout peoples' lives.

1993; Karoly et.al., 1998; Breen, 2004). There are four major mechanisms that individually and jointly influence opportunities: family income, family structure, parental dedication, and what we might call ‘cultural capital’, or the learning milieu within which children grow up. These family mechanisms may be adversely affected by ongoing trends in income distribution and demographic behaviour.

### ***Rising Income Inequality***

There are two reasons why we should worry about rising income inequality. Firstly, it is well established that economic need in the parental home can be harmful. We shall be swimming upstream if income distributions produce more poverty and want in child families. Secondly, the degree of income inequality within one generation will spill over into the next. As inequality rises, parents’ capacity to invest in their children’s fortunes will become more unequal. It is evident that the effect is non-linear, being especially pronounced at the top and bottom of the pyramid (Couch and Lillard, 2004). The rich can buy a secure future for even the dumbest offspring; the poor become ever more distanced from the opportunity structure.

Rising income inequality is generally ascribed to the widening of earnings differentials. But their effect may be greatly magnified within families by more assortative mating and highly asymmetric patterns of labour supply across income quintiles (Karoly and Burtless, 1995; Juhn and Murphy, 1997; Burtless, 1999; Gregg and Wadsworth, 2001). To illustrate, US couples in the top quintile work 2-3 times as many annual hours as do those in the lowest (Smeeding, 2004). Hyslop (2001) shows that marital homogamy accounts for 23 percent of the rise in US household income inequality.

With two notable exceptions (France and the Netherlands) the Gini of household market incomes has surged (a 20+ percent rise in the past two decades) in Germany, Sweden, the UK and the US; in others, less so (a 6-7% rise in Denmark and Italy).<sup>4</sup> The U-turn is very much driven by the top pulling ahead of the rest (Katz and Autor, 1999; Gottschalk and Smeeding, 1997). The ratio between the top and middle decile rose from 1.8 to 2.2 in Britain; from 2.6 to 3.0 in the US; and from 1.5 to 1.7 in Sweden. The bottom is now losing ground in the US, Finland, Italy, the Netherlands, Sweden and the UK, but anything that approximates *de facto* polarization is limited to the UK and US.

Aggregate indicators fail to recognize that young adults bear much of the brunt, facing an erosion of relative wages at all skill levels while being hugely over-represented among the unemployed and those with precarious, short term employment contracts (Juhn et.al., 1993; Wasmer, 2002; Polavieja, 2003). The relative disposable income of young adults (18-25) has declined by 7 percentage points on average in the OECD

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<sup>4</sup> These calculations are based solely on households with head aged 25-65, i.e. the working age population.

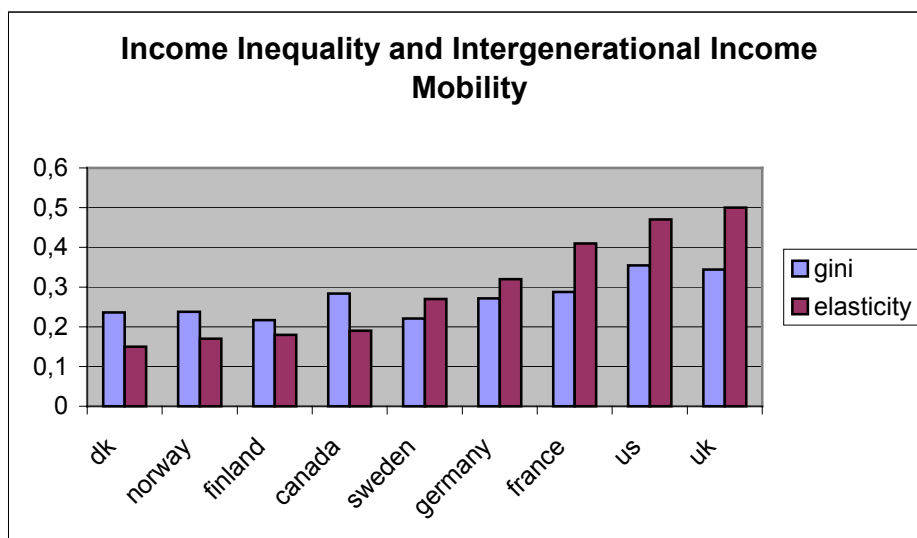
(Forster and d'Ercole, 2005: Annex Table A6). There is a clear over-representation of young workers within the low-wage population. Lucifora et.al. (2005) show that about 60 percent of youth (under 25) are low wage in the Netherlands, UK, and the US, and about 40 percent in France and Germany. These are very large numbers, however interpreted.

It is of course unlikely that inequalities will continue to rise for ever and some day the U-turn may very well reverse itself again. In any case, today's and tomorrow's children are being brought into a World that is far more unequal than in earlier generations. And if this will affect the quality of their lives, it is cause for concern on welfare and efficiency grounds alike.

The deteriorating position of young workers has direct welfare consequences, in particular since they are the parents of small children. Indeed, here we see a major explanation for growing child poverty. Via redistribution and little unemployment, the Nordic welfare states manage to minimize child poverty. Elsewhere it has risen sharply: by 4-7 percentage points in Germany, the Netherlands, Italy, and the U.K; and the US, starting at a very high level (19 percent in 1980), saw child poverty growing an additional 3 points.<sup>5</sup>

Since rising inequality influences the distribution of parental investments in their children it will also affect life chances in the future (for an overview, see Solon, 1999). The logic is illustrated in Figure 1 where I compare countries in terms of Gini coefficients and parent-child income correlations.<sup>6</sup>

**Figure 1. Income Inequality and Intergenerational Income Elasticities\*)**



<sup>5</sup> Estimated from LIS data.

<sup>6</sup> The income elasticity measures how much of the variance in offsprings' income is explained by the variance of parental income. A value of .5 (as in the UK) implies that 50% of the inequality in the parental generation was inherited by the children's generation.



\*) Income inequality is the Gini coefficient for disposable household income in the mid-1990s. Intergenerational mobility is the elasticity of parental income on children's income. Source: Ginis are from Luxemburg Income Study, Key Figures; Parent-child income correlations, from Corak (2005)

We can say nothing about the causal direction between inequality levels and mobility. The twain are bound to reinforce each other in any case. But the important point is that welfare and efficiency concerns come together here. From an equity perspective, childrens' life chances should depend less on the luck of birth than on their own latent abilities. From an efficiency point of view high parent-child income correlations imply that society is under-investing in a sizable share of its children (and possibly also over-investing in some).

The single most important point lies in the *collusion* of non-linearities. If inter-generational mobility is non-linear, and if changing income distributions disfavour the bottom-end and youth, then the trends underway are cause for major concern.

There is evidence that rising inequalities affect mobility adversely. Harding et.al. (2005) suggest that US mobility rose during the era of narrowing differentials only to widen again as the U-turn got underway. Blanden et.al. (2004) show pretty much the same for the UK. But the coincidence need not be universal since, in some countries (the Nordic especially) there are, as yet, no signs of diminished mobility (Bratberg et.al., 2005). Examining trends in educational attainment, Shavit and Blossfeld (1993) concluded that the parental effect has diminished significantly in Sweden and possibly also in the Netherlands. Breen (2005) suggests this may also have occurred in a few other cases among the most recent cohorts. Esping-Andersen (2004) finds supportive evidence for this within all three Scandinavian countries. Undoubtedly, the welfare state makes a substantial difference, in part with regard to minimizing the role of private education and, in part, via income redistribution that especially favours families with children. To illustrate, the rise in pre-fisc income inequality has pretty much been cancelled out by income redistribution in all Scandinavian countries.

The income effects on opportunities work through different mechanisms. Firstly, the salience of parental purchasing power will rise the greater is the role of private education (Solon, 1999; Davies et.al., 2005). Poverty has, undoubtedly, severe adverse effects on educational attainment simply because of resource lack. US research estimates that poor children will have two years less schooling than the non-poor (Mayer, 1997; Duncan and Brooks-Gunn, 1997). Similar, if rather less dramatic effects have been found for Europe, too (Gregg and Machin, 2001; Maurin, 2002; CERC, 2004).<sup>7</sup> Thirdly, income insecurity will produce risk adversity and this leads low income parents to shun the risks of school failure and curtail children's participation prematurely (Breen, 2001). In either case, the result is pretty much the same. Hence, if child poverty and parental economic insecurity rises we should expect negative mobility and educational attainment effects.<sup>8</sup>

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<sup>7</sup> For the Netherlands, the Nederlandse Gezinraad shows that 15% of children from long-term low income families manifest poor developmental outcomes.

<sup>8</sup> Insecurity and low incomes may, alternatively, reduce parents' propensity to have children.

## *Demographic Change and Family Structure*

Ongoing demographic trends mediate and easily reinforce the link between income distribution and child investments. Some are also likely to influence child outcomes. There are three that in particular deserve attention: immigration, assortative mating, and lone parenthood.

### *Immigration*

Most EU countries have become multi-ethnic very recently but at neck-breaking speed. Traditionally very homogenous countries, like Denmark, the Netherlands or Sweden, now host sizable immigrant populations. In Copenhagen, for example, immigrant kids account for 27 percent of all in the 6-16 age range (Schindler-Rangvid, 2006). It is difficult to sort out the immigrant effect from rival ones but one thing is clear, namely that immigrant children usually do poorly. Table 2 presents comparisons of the 'raw' and 'adjusted' immigrant deficit based on analyses of the 2000 PISA survey of 15-year olds' mathematics scores (chosen because they are more culture neutral than literacy test scores). The 'raw' deficit derives from regressions with no controls; the 'adjusted' controls for sex, mother's education, parents' socioeconomic status and the family's 'cultural capital' (number of books in the home).<sup>9</sup>

**Table 2. The Immigrant Deficit in Different Countries (difference from country mean)**

	<b>Raw Immigrant Effect</b>	<b>Adjusted Immigrant Effect</b>
<b>Austria</b>	<b>-60</b>	<b>-36</b>
<b>Belgium</b>	<b>-82</b>	<b>-56</b>
<b>Denmark</b>	<b>-33</b>	<b>-17</b>
<b>Finland</b>	<b>-18</b>	<b>-22</b>
<b>France</b>	<b>-33</b>	<b>-20</b>
<b>Germany</b>	<b>-68</b>	<b>-40</b>
<b>Ireland</b>	<b>15</b>	<b>13</b>
<b>Netherlands</b>	<b>-73</b>	<b>-43</b>
<b>Spain</b>	<b>-21</b>	<b>-23</b>
<b>Sweden</b>	<b>-37</b>	<b>-25</b>
<b>UK</b>	<b>-21</b>	<b>-21</b>
<b>US</b>	<b>-35</b>	<b>+14</b>

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Source: PISA 2000 data files. Adjusted effect includes controls for mother education, parental SEI, sex, and books in home.

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<sup>9</sup> I focus on mother's education since this is routinely shown to affect child learning far more than father's. Instead of the standard years-of-schooling measure I prefer to use a levels measure based on the ISCED system. I include a sex dummy since girls normally do worse on math tests (and better on reading).

The immigrant deficit is partly compositional since in most cases it narrows substantially when including socio economic controls. It is evident that the deficit is modest in some countries and huge in others – in Ireland, immigrant children actually outperform the locals, and this is also true for the adjusted US data. This surely also reflects some interaction effect between immigrant composition and how it meets the host country. We note, for example, that the deficit is especially huge in Austria, Belgium, Germany and the Netherlands while comparatively modest in the Nordic countries, Britain and Spain --- language or cultural barriers are undoubtedly at work. Along these lines, the Danish-German contrast is informative since the ethnic profile of immigrants is quite similar in the two countries.

Segregation may offer an alternative explanation of the gaps. There is evidence that ethnic and minority residential segregation is comparably lower in the EU than in the US (Musterd, 2005). Yet, school segregation appears to be similar to the high levels found in the US -- at least in the case of Sweden, Denmark and the Netherlands (Soderstrom and Uusitalo, 2004; Schindler-Rangvid, 2006).

In any case, immigrant children clearly risk falling behind in terms of cognitive abilities and school attainment. The gap that remains even when we control for standard socio-economic variables is quite substantial in Belgium and the Netherlands. The raw gap in these two countries is almost equivalent to one standard deviation (89 points in the Netherlands) and with controls, equal to one half standard deviation. This suggests that conventional remedies like income redistribution would be insufficient to close the gap effectively in these countries. In other countries with fairly similar immigrant profiles, such as Denmark or Sweden, the gap (after controls) ends up fairly modest – only a fifth of the standard deviation.

### ***Marital Homogamy and Fragile Families***

There is a general trend towards more assortative mating, in particular at the top and bottom of the socioeconomic pyramid (Blossfeld and Drobnic, 2001). To exemplify, the education correlation among Dutch couples is .50 in the top income quintile and .61 in the bottom. Marital homogamy contributes additionally to polarization if unemployment and low pay tends to come in couples (Gregg and Wadsworth, 2001). The share of working age *couples* with no employed adult varies between 6-8 percent in Scandinavia, Germany and the US to 13-15 percent in the UK and the Netherlands.<sup>10</sup>

This should generate two problematic effects for the opportunity structure. On one hand, parental human capital may polarize. On the other hand, family earnings power will become far more unequal *if* there are strong assymetries in total family labour supply and wage income. The income gap between work-poor and work-rich households will be especially large in countries where dual career couples are mainly found at the top, or in countries like the US where welfare state support is ungenerous.

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<sup>10</sup> The figures would be far higher were we to include also single person and lone parent households (see OECD, 1998: Table 1.7).

As mentioned above, there is substantial evidence in favour of this scenario, certainly for the US. This means that the gap in parental monetary investment in their offspring will widen. Table 3 illustrates this effect for select EU countries.

**Table 3. Women’s role in Household Income: Couples aged 25-59.**

	<b>Earnings ratio: top/bottom quintile</b>		
	<b>Men</b>	<b>Women</b>	<b>Household</b>
<b>Denmark</b>	<b>5.8</b>	<b>4.3</b>	<b>5.2</b>
<b>France</b>	<b>5.7</b>	<b>8.5</b>	<b>6.3</b>
<b>Germany</b>	<b>4.1</b>	<b>4.8</b>	<b>4.3</b>
<b>Ireland</b>	<b>9.3</b>	<b>12.0</b>	<b>9.7</b>
<b>NL</b>	<b>5.2</b>	<b>7.7</b>	<b>5.7</b>
<b>Spain</b>	<b>8.8</b>	<b>23.2</b>	<b>10.6</b>
<b>UK</b>	<b>7.0</b>	<b>5.3</b>	<b>6.4</b>

Estimated from the ECHP (1996 wave)

The big difference lies in the combination of wives’ earnings and labour supply across the income distribution. Where social asymmetries are pronounced, as in France, Ireland, the Netherlands, and Spain, the top-bottom earnings ratio of wives ends up very large. Where, instead, female employment is near universal (as in Denmark), the ratio becomes small. Put differently, in Denmark wives’ employment helps diminish overall household inequality while in France, the Netherlands and Spain the effect is to additionally widen the gap between bottom and top.<sup>11</sup> Educated women display high activity rates almost everywhere; the challenge lies in raising labour supply among the less educated.

Family instability means that more and more children will experience marital splits. Denmark exemplifies high instability: at age one, 92% of children live with both parents, but already by age 9 the share drops to 75%. More than 11 percent of pre-school kids live in lone mother households (Kampmann and Warming Nielsen, 2004). Lone parenthood is undoubtedly a major contributor to inequalities in child well-being. The share of children in single mother households now ranges from a low of 5 percent in Southern Europe to a high of 15-20 percent in Scandinavia and North America.<sup>12</sup>

<sup>11</sup> For more detailed analyses, see Esping-Andersen (2006).

<sup>12</sup> From LIS Key Figures ([www.lisproject.org/keyfigures](http://www.lisproject.org/keyfigures))

Child poverty in lone mother families is everywhere exceptionally high, almost 50 percent in the US, and between 30-40 percent in many EU countries (35 percent in the Netherlands). Scandinavia, unsurprisingly, occupies the low end with roughly 10-13 percent. The problematic effects of growing up in lone mother families have been widely documented for the United States (McLanahan and Sandefur, 1994). Coleman (1988) reports that school drop out rates are 30 percent higher in these families. While the effects are clear, it is less easy to sort out the precise mechanisms. Biblarz and Raftery (1999) argue that the adverse effects are mainly related to poor socioeconomic conditions rather than to solo parenthood *per se*. Bernal and Keane (2005), in turn, emphasize negative nurturing and socialization effects.

Neither is it clear whether US findings can be generalized. The PISA data are, once again, useful. In most countries, the lone mother effect (controlling for immigrant status, SEI, and mother's education) shows a negative (but statistically insignificant) sign. When we add a dummy for whether the mother is employed, the sign actually turns positive *and* significant in several cases (Denmark, the Netherlands, and the UK in particular). This seems to support Biblarz and Raftery's argument and it also questions the transportability of US findings to Europe. One tempting hypothesis is compositional in nature, namely the high incidence of teenage motherhood and young male incarceration in the US -- phenomena that are marginal in most of the EU. In line with Bernal and Keane's (2005) conclusions I will also argue that positive effects of lone motherhood (when she works) are related to the quality of external child-care.

## ***2. How Social Origins Influence Skills Acquisition***

If poverty and income inequality are problematic for child outcomes, the promotion of employment among women at the low end of the income distribution would amount to a very effective remedy. In fact, the incidence of child poverty falls by a factor of 3-4 when mothers work – in particular in the case of lone mothers (Esping-Andersen, 2002).

But money is not everything. The income advantage that two-career parents produce may be cancelled out by a nurturing deficit, i.e. less time dedicated to the children. If that were so there would be some stimulus redistribution in favour of children at the bottom end of the pyramid (where unemployment is greater and total family labour supply is lower). This, however, depends on three other crucial factors. One, on sibling size. With the exception of the Nordic countries, low educated women tend to have more children. It depends, secondly, on differences in the quality of parent-child interaction and, thirdly, on the quality of external care. There is no doubt that the quality of parents' cognitive stimulus is powerfully related to their level of education – and of course to their 'unobserved' talents. A rise in educational homogamy at the top and bottom may, accordingly, widen the 'quality-gap' of nurturing. Most surprisingly, data from such diverse countries as Denmark and the US show that total *parental* time devoted exclusively to children has risen since the 1960s, but especially among higher educated

couples where the father's time investment has risen spectacularly in the past decades (Bianchi, 2000; Bianchi et.al., 2004; Deding and Lausten, 2004).<sup>13</sup>

Less nurturing may also result from rapid return to work after births. There is considerable evidence that external care during the child's first year can be harmful (Ruhm, 2004; Waldfogel et.al., 2002). The good news, however, is that motherly employment *after* the first year has no harmful effects *if*, that is, external care is of good quality and *if* her job conditions are stable and good (Waldfogel, 2002; Mayers et.al., 2004). Although the PISA tests refer to 15-year olds, it is nonetheless telling that the effects of mothers' employment (including full-time jobs) are positive in most countries.<sup>14</sup>

Money is not everything in a different but equally important sense. Families' 'cultural capital', understood as the prevailing learning milieu, has been shown to have a powerful influence on children's school success (de Graaf, 1998). Parental cultural capital is not necessarily related to either parents' education or income (school teachers earn little). Cultural capital operates through various channels. One is the ability of parents to transmit the proper 'middle class' cultural baggage – such as self-presentation or language skills -- to their children. A second has to do with parents' knowledge and appreciation of education and how this helps them make the best school choices for their offspring. Low educated parents may have difficulties in navigating their children through the complexities of an education system, especially if they were early school leavers (Erikson and Jonsson, 1996). A third refers to the quality of parental stimulation. The international PISA data, once again, help shed light on such effects since they include three measures of 'culture': number of books in the home, participation in elite culture, and everyday discussions around cultural topics. The 'elite culture' variable has virtually no effect on children's test performance and the impact of everyday cultural communication is ambiguous. But the 'books in the home' measure yields surprising explanatory power – as also emphasized by de Graaf.

Analyses of the PISA data show, for all countries, that cultural capital overpowers socioeconomic status in accounting for cognitive differences among 15-year olds. Comparing the Betas from regression analysis (with standard controls for sex, mother's education, and immigrant status), the 'culture' Beta is generally twice as strong as the SEI Beta. I use the Dutch regressions to illustrate the point: children from a family with less than 10 books would enjoy a 9% improvement in their reading comprehension if parents were to arrive at the national average in terms of books in the home.

The magnitude of the 'cultural' problem is in any given country related to the size of the parental generation that lacks the resources to adequately stimulate their children's learning abilities. In some EU countries – like Spain and Italy – there

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<sup>13</sup> The same data show a rising gap between low and high educated father's time commitment.

<sup>14</sup> The mother-works effect is especially positive in the US (if part-time) and in the UK. Spain is a rare country where the effect is very negative, possibly related to widespread job precariousness among female workers (Polavieja, 2003). A rider on these findings is needed since it turns out that the mother-employment effect is mainly positive for girls. In a few countries, in fact, her employment appears to affect boys negatively.

remains a very large number of adults with only minimal education. Within the typical parenthood age bracket (35-44), 54 percent of Spanish mothers have no more than compulsory education – compared to only 12 percent in Sweden but a fairly high 33 percent in the Netherlands (OECD, 2003). The leap in female educational attainment will diminish this gap in the decades to come. In Spain, for example, the percent of women 10 years younger with no more than obligatory schooling is now 13 points lower; in the Netherlands, 8 points. But we also face counter-tendencies that emanate from the large waves of generally low educated immigrants that, in addition, face multiple cultural and educational disadvantages that can seriously jeopardize their children's chances.

### ***3. The Welfare State Challenge***

How can we ensure that today's children will come to possess a level of human capital that is adequate for tomorrow's labour market? From a policy perspective, the challenge is to influence the key mechanisms that dictate skill acquisition.

There are two major insights from contemporary research that must guide us in this endeavour. One comes from extensive evaluation research on early intervention and later remedial 'activation' programmes.<sup>15</sup> The gist of this research is that a strong start in *early* childhood is key not only to successful schooling but also beyond. If children in the early years suffer from inadequate cognitive stimulus or motivation to learn, they are most likely to fall behind as the school experience progresses. This is, for at least three reasons, a crucial insight. First, it helps explain why even the best-intentioned education reforms generally fail to rectify performance inequalities. School and 'neighborhood' effects pale in comparison to the family effect (Brooks-Gunn et.al., 1997). Second, it alerts us to the fact that key mechanisms lie buried in the very early stage of life when children depend primarily on the stimulus structure within the parental home. Moreover, the cost of later remedial measures is likely to rise in proportion to the initial learning deficit – Heckman's learning-begets-learning dictum. And, thirdly, it provides a very important corrective to the narrow monetary approach to human capital investment. As noted, the correlation between income and 'cultural capital' in the parental home is everywhere modest.

Here we come to the second major insight. A policy based exclusively on income redistribution will probably fail if parental time dedication and cognitive stimulus also are key mechanisms behind social inheritance and unequal outcomes. Income support may usefully be regarded as a necessary but insufficient strategy. The income effect is likely to sharpen, considering rising household income gaps and intensifying poverty in child families. If Europe is converging towards US-level inequalities will it also experience rising inter-generational income correlations and educational penalties of family poverty? Will Europe regress in its battle against social inheritance?

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<sup>15</sup> For comprehensive overviews, see Karoly et.al. (1998), Heckman and Lochner (2000), Currie (2001), Waldfogel (2002) and Mayers et.al. (2004).

The nation-comparison framework adopted in this paper serves two purposes. One, international differences aid us to see that no outcome is written in stone. Two, countries that perform well can be useful benchmarks from which we can learn. With Finland in the vanguard, few would disagree that the Nordic countries outperform most others in terms of combining a fairly high mean skill level with minimal dispersion – and, not to forget, there is no indication that this is achieved at the expense of elite-level performance.

With reference to my opening remark it is tempting to seek the answer in the fact that Scandinavian social policy has already for decades privileged families and children. Has this paid off and, if so, how? In the following I examine the income, culture, and parental time investment effects separately.

### *The income effect*

Child poverty and inter-generational inheritance are both intimately connected to overall levels of income inequality. The Nordic countries have, for decades, enjoyed internationally very low child poverty rates. It is tempting to ascribe this to heavy welfare state redistribution. Public spending in favour of families is 3-4% of GDP (3.8% in Denmark) compared to 0.4% in the US and 1.1% in the Netherlands (calculated from OECD's SOC-X data). France comes fairly close with 2.8%. This is of course only a small part of the overall income redistribution effect. Considering the non-linearity of income effects, the most revealing figure lies in child poverty trends: stable at very low levels despite rising earnings inequalities and the very unfavorable 1990s business cycle that hit Finland and Sweden.

To exemplify, the Swedish child poverty rate at the nadir of the crisis (1995) was 2.5%. In Finland, Norway and Denmark child poverty has hovered between 3-4% over the past decades. This contrasts sharply with levels and trends elsewhere. The Dutch child poverty rate has climbed steadily in the (full-employment) 1990s, from 5.2% in 1987 to 9.8% in 1999, a trend almost perfectly replicated by Germany. In the UK and US, the two most unequal countries, child poverty declined in the latter part of the 1990s but remains nonetheless at 15% in the UK and 22% in the US.<sup>16</sup>

An income redistribution strategy would seem attractive for a number of reasons. If the objective were to eradicate child poverty (defined as less than 50 percent of equivalent median income), the price tag is actually surprisingly small – for the US, with record child poverty, we have estimated it at 0.3% of GDP (Esping-Andersen, 2002). There are several justifications against a targeted approach. One is that it may fail to command broad citizen support. A second is that it clashes with another basic equity principle: if (quality) children produce a sizable social externality while most of the cost of children is internalized to the parents, an equity calculus would conclude in favour of universal, non-

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<sup>16</sup> All estimates derived from LIS.



income graduated, and fairly generous child and family allowances. If those without children are free-riders, they should be asked to pay.<sup>17</sup>

The basic point is that child benefits should not be confused with anti-poverty redistribution. If our aim is to minimize or, indeed, eradicate child poverty we might introduce some form of a guaranteed minimum to families that supplements standard family benefits. If the cost were, say, 0.3% of GDP we would then need to match this against possible second-order effects and the benefits obtained. Would parents respond with less labour supply? Would it effectively narrow the US school attainment gap of poor kids, which is about 2 years? As to the latter, there is cause for skepticism since the 2-year schooling gap is surely not solely the effect of income but also of unobservables, some of which need not be correlated with being poor, and some of which (say, poor health or teenage school drop-outs) may provide the explanation of poverty to begin with.

As part of its MIMIC-based welfare scenario analyses, the Dutch Central Plan Bureau (CPB) has simulated the effects of 3 different income guarantee designs (de Mooij, 2006: 72ff). One is a uniform 1.300 euro transfer to all child families per year, financed by a 1% income tax hike; a second is targeted to low income families and is phased out linearly from 20.000 to 32.000 Euros, requiring a 0.6% tax increase; and a third is conditional on participation of both parents in the labour market, necessitating a 0.4% tax increase. Although these levels are insufficient to lift many families out of poverty, the lessons from the simulations are directly relevant. In terms of ex ante distribution effects, the third option would appear the least effective since it primarily benefits already well-off working couples and is less effective for low income parents. The first option would be especially beneficial for lone parents and the unskilled and amounts to a substantial redistribution towards child households.

As to labour market effects, the first option will reduce parental labour supply by 0.4%, and female participation by 0.5%. The cheaper second option has similar labour supply effects, although it will actually raise female participation by 1.2% and it is neutral with regard to labour supply among second earners. The third option has, unsurprisingly, the most positive labour supply effects – like the former, a 1.2% increase in female participation and a 1.0% increase in labour supply among second earners. But this is partly offset by reduced primary earner supply.

The second option would appear most relevant for the goal of eliminating child poverty, but due to targeting it produces more labour market distortions towards the middle of the income distribution. As an effective anti-poverty measure we would, however, need to contemplate benefit levels far higher than those used here.

In any case, the burden on income redistribution would be lessened significantly if, through alternative means, maternal employment were to increase within low income households. As mentioned, Scandinavia's low child poverty is mainly due to maternal

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<sup>17</sup> Klevermarken (1998) has attempted to cash out the monetary equivalent of parental time investment in children. For Sweden he arrives at a value equivalent to US\$22.000-29.000 for an average family. In aggregate terms this corresponds to 20% of GDP.

employment. In Denmark, for example, the lone mother activity rate is 81%. Let us therefore turn to the correlates of maternal employment.

### *Mothers' employment*

Supporting mothers' employment would produce multiple simultaneous gains. Maximum female participation is, to begin with, a precondition for long-term financial sustainability in our aging societies. But the associated costs are quite steep if the concomitant aim is to invest in child outcomes (and to avoid a major fertility drop). If we take seriously the finding that external care during the child's first year can be harmful, policy would need to ensure a combination of paid maternity and parental leave that approaches the one year duration. Swedish leave policy is far more generous than that; the Danish extends to 48 weeks (at about an 80% income replacement level). In the Netherlands, compensated leave is only 16. It therefore comes as no surprise that a very large group of new Dutch mothers (60%) return to work within 6 months of birth, while the vast majority of Danish mothers return within 10-14 months (Simonsen, 2005). So as to limit the lifetime income penalty of interruptions for women, a parental leave system that effectively encourages fathers to participate would not only be equitable from a gender point of view, but probably also optimizing in terms of joint household lifetime income.<sup>18</sup>

The cost of a Danish-style one-year child leave is relatively steep and rises of course with levels of female employment. Using the OECD's SOC-X data, the cost is about 0.6% of GDP (which is almost 10 times as much as in the Netherlands). To evaluate this we need, firstly, to recognize that it is an important component in society's reimbursement towards the positive externality that parenthood yields. It is, secondly, also an indirect investment in mothers' labor force attachment and hence in their career earnings capacity. Overly brief maternity leaves, like the Dutch, imply not only that many mothers return to work too soon, but also that many – mainly less educated – abandon the labour market altogether. In the Netherlands, the latter amount to about 25% of all (Gustafsson and Kenjoh, 2004). According to Ruhm's (1998) estimations, paid leaves increase female employment rates by 3-4 percent. Waldfogel et.al (1999) suggest that mothers with paid leave provision have higher post-leave wages. In part, therefore, the cost of longer leaves is recuperated further on in terms of mothers' higher career earnings and tax payments.

Finally, we must evaluate the cost in terms of the positive child effects of parental presence during infancy. Ruhm (2004) suggests that motherly employment during the first year has adverse consequences for child health and cognitive development (but mother's employment thereafter may actually help offset some of these negativities). Waldfogel et.al. (2002) find persistent negative effects up to school age, in particular within white, low income families. These and other studies add one crucial modifier, namely that the

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<sup>18</sup> Although such incentives are built into Nordic leave policies, men's take-up is modest. This may have to do with the very highly segregated job structure within which women (and especially mothers) are over-concentrated in secure public sector jobs, while men are concentrated in the competitive private sector.

quality of mothers' jobs matters. Long and irregular hours, as well as work-related stress, are especially harmful.

If we look beyond the first year, the major obstacle to mothers' employment lies in access to child-care. The cost of child-care can, in principle, be interpreted as a tax on mothers' labour supply. It becomes a *regressive tax* if fees are independent of mothers' (or household) earnings. Hence, a maternal employment strategy will need to tailor the fee structure to earnings levels. Tax deductions, which are commonly used, are unlikely to eliminate the regressive incidence since they are of less relevance for low income families to begin with. This implies that direct income-graduated (or full) subsidies are called for.

Kindergarten (age 3+) attendance is quite high in many countries and is often defined as integral to the education system (and thus free of charge). The key question has to do with the under-3s. Here we can broadly discern three options: familiasm, public responsibility, or purchased care. Where public provision is marginal and the cost of quality private care is beyond the reach of most families, the conventional solution has been familial – the grandmother. This is the situation that best characterizes most of Continental Europe, but it is an option that is rapidly becoming obsolete as the reservoir of available non-working relatives is in rapid decline. In some countries, the child-care market can thrive – either, as in the US, because of high price and quality differentiation or, as in the UK, because of public subsidies towards private provision. In others – most of the EU – the licenced child-care market is very limited due to high costs. A full-time, full-year place will typically be priced in the range of 5-9.000 euros. Both in the UK and the Netherlands, private child care is subsidized, but at modest levels. The net parental cost is therefore steep. For a full-time place in the Netherlands the fee is about 60% of the average wife's net earnings, rising to 77% for 2 children (the fees are, however, reduced substantially for low income families). The OECD presents international fee estimates suggesting that the *net* cost of one child, for an average income family, runs to 19% of total family income in the UK, 21% in the Netherlands, and 26% in the US (Immervol and Barber, 2005).

The second model, represented by the Nordic countries, offers heavily subsidized and universal full-day care of high quality to all children. Sweden provides the most generous support, subsidizing 85% of total cost. This means that child-care fees for an average family are reduced to 6% of income. Denmark offers a subsidy of two-thirds with the remainder being parental co-payment – which disappears for low income parents.<sup>19</sup> Participation in Denmark is now near universal (85% attendance by age 2) and this suggests that it is an affordable (and attractive) option for all families. To make it such requires, unsurprisingly, large public outlays – almost 2 percent of GDP (but this figure includes all pre-school level institutions). Sweden eliminates the regressive tax effect by minimizing the parental co-payment; Denmark, by exempting low income families.

The full impact of child care costs on mothers' earnings depends on how they interact with the tax-benefit system. The above-mentioned OECD study estimates the regressivity-incidence (or negative work incentive effect) by calculating at what earnings level a mother will have a minimum 25% net income gain from working. Sweden, predictably, has subsidized away the child penalty since the 25% minimum net earnings gain arrives

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<sup>19</sup> The Danish co-payment system is income graduated and low-income parents are exempted.

already for wages that are only 40% of average. In contrast, the same 25% gain necessitates a wage level of 75% in the Netherlands and 90% in the UK.

Pulling it all together, paid leaves plus subsidized child care (on a sliding scale) would appear a necessary precondition for maximizing female labour supply in general and among lower earning women in particular. The optimal subsidy level is difficult to assess but considering that Danish child care attendance is universal, Denmark would appear to be a good benchmark from which to proceed. The model, as mentioned, covers 2/3rds of total cost, but the level of the subsidy begins to increase for families below the median income and becomes 100% for low-income families (around 60 percent of the median). According to the latest official data, the average full-day, full-year place costs the exchequer about 8-9.000 euros per year. Is the expense justified? It depends on our accounting method.

Rosen (1996), in a very controversial analysis, claims that the public expenditures destined to help reconcile motherhood and work in Sweden are inefficient, yielding a high *negative return* – which he estimates to be about half of the total. The calculations that underpin this conclusion compare the total public expenditures against the total earnings of the mothers of small children. This is, however, a fallacious analysis because it ignores how mother-friendly programmes influence lifetime earnings (and thus also lifetime tax payments). A dynamic life-cycle method will produce different results.

In a different context, I have made some rough estimates for Denmark using the standard Mincer approach to estimating lifetime income effects. These are to be seen as illustrative and not as genuine cost-benefit assessments. To be on the conservative side, my model mother is a full-time low wage earner (2/3rds average wage) who, at age 30, will have 2 children. I assume she will interrupt for 5 years if she does not have access to childcare, whereas if she does, she will return to employment immediately after her standard maternity leave entitlement terminates. I also assume that she will remain employed until age 60.<sup>20</sup>

Using data from 1995, the cost to government of providing pre-school care for a mother of two (over a five year period) amounts to roughly 67.000 euros. Since this allows the mother to return to employment she receives full earnings during the period plus she avoids substantial experience and human capital loss. Hence over her lifetime she will earn about 290.000 euros more than if she has interrupted. This, in turn, implies that she will also pay an additional 103.000 euros in taxes. Comparing the additional revenue to the exchequer with the original government outlay on daycare yields a net return to government of 35.000 euros. The net return would have been far greater for a median wage earner.<sup>21</sup>

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<sup>20</sup> A very similar study conducted by Price-Waterhouse on behalf of the Blair government arrives at estimates that are very similar to those I present here. Estimating the effect up to age 60 is important since most of the lifetime income recuperation occurs after age 40. For Denmark, we can safely assume continued employment until age 60.

<sup>21</sup> For high income families the net return might be negative since we can assume that such families would purchase private care in the absence of subsidized public provision. My calculations ignore such dead-weight losses. It also assumes identical labour supply elasticities of child-care for all women.

We need also to consider how child-care costs influence labour supply. Gustafsson and Stafford (1992) and Simonsen (2005) find positive employment effects for Sweden and Denmark, respectively. Simonsen's study arrives at a price elasticity of  $-0.17$ , which corresponds to a 0.08% decrease in employment for every one-Euro increase in price. Both studies emphasize the importance of homogenous product quality and suggest that the more ambiguous US estimates may be due to the uneven quality within the US child-care market. The Danish model is arguably optimal for reconciliation in an environment where the vast majority of mothers insist on returning to full-time employment. And the initial high outlays will eventually be recuperated -- but primarily because Danish women do indeed work full-time for most of their lives.

In a context such as the Dutch where the employment rate of mothers is 10 percentage points lower, and where the vast majority opt for part-time jobs, both the expenditure and revenue side of the equation changes. The Dutch reconciliation policies are designed with a part-time economy in mind (and undoubtedly create difficulties for women pursuing full-time employment). It is of course impossible to forecast future employment behaviour. There is little doubt that female labour supply would increase if the Netherlands were to adopt separate taxation of spouses. And considering the rise in female educational attainment, we should expect to see a gradual convergence towards full-time job preferences in the decades to come. The 10% participation gap between the Netherlands and Denmark is also likely to narrow with more childcare and longer maternal leaves. The Dutch-Danish gap is mainly visible among less educated women. And mothers' embrace of full-time work depends also on its normal duration. The leap in full-time employment among Danish women coincided with the introduction of a 37.5-hour week.

A strategy that prioritizes maternal employment via mother-friendly policy may prove ineffectual under adverse labour market conditions. There are two, essentially contradictory facets of labour markets that affect women in general and the less skilled in particular. The first is that rigidities due to employment protection laws and high fixed labour costs are particularly harmful for those who have the loosest connection to employment, low skills, or little experience -- namely first-job seekers and, especially, women workers. Employment regulation may protect even low-skilled insiders but it erects tall entry-barriers for the outsiders (Nickell, 1997; OECD, 1999; Esping-Andersen and Regini, eds. 2000). De-regulation and lowering fixed labour costs should accordingly be beneficial -- if not a precondition -- for a mother-employment type strategy. The contradictory aspect lies in greater job insecurity that -- as I discuss below -- has problematic effects for parenting and also fertility. If mothers are willing to trade off higher lifetime earnings for more job security, as Scandinavian research shows (Jensen, 2002), the contradiction could in principle be resolved by growth of lower-end jobs in the public sector.

This is precisely the Danish scenario, namely an unusually unregulated labour market accompanied by a large and far more mother-friendly public sector job

hierarchy.<sup>22</sup> While welfare state jobs range across the entire skill distribution, their growth is very favourable for less skilled women since it is very much driven by demand for elderly and child-care. Hence, to a degree the policies that will boost female employment to begin with will also create a labour market. Undoubtedly, one unanticipated consequence is heightened gender job-segregation.

### *The Culture Effect*

As discussed above, cultural capital denotes the familial learning milieu and it is only weakly associated with income or parents' education. It captures, in other words, mechanisms that are independent of the standard observables. This is of course what theory posits. Becker and Lewis' (1973) theory of child investments focuses very much on the quality of parental dedication. Inequalities in child outcomes will, besides monetary investments, arise from differences in time dedication and in the talents of parenting. In standard theory, the monetary effect can be lessened via publicly dominated education systems. Yet, as we have seen, its impact may strengthen with heightened income inequalities in the parental generation.

But government financing of education systems will probably have little bearing on the cultural capital effect if the latter operates primarily in the early years of childhood (Farkas, 2003). This said, one might conclude that it lies outside the competence of policy. How, we might ask, can policy induce parents to read with their children or censure television viewing?

One important clue comes, once again, from the large (especially US) early intervention literature. Evaluations of such programmes suggest that very early high-quality intervention on behalf of at-risk children can have substantial and lasting effects in terms of improved social integration, less delinquency, and less school failure (Karoly et.al., 1998; Currie, 2001; Kamerman et.al., 2003; Karoly et.al., 2005). The Perry pre-school programme, which emphasizes early intervention with high quality services targeted to underprivileged children, appears particularly effective in terms of both child outcomes and cost effectiveness. Carneiro and Heckman (2003: 165) suggest that through age 27, it yields a \$5.70 return for every dollar spent – much of this due to less criminal behaviour.

It is quite doubtful whether such findings can be generalized to Europe where inequalities in child conditions are less extreme. But the crucial point is that early intervention programmes that include a strong behavioural and cognitive stimulus component can be effective in equalizing outcomes, especially to the advantage of the most-at-risk.

This is where, again, the experience from the Nordic countries can be of relevance – for good and bad. With Denmark and Sweden taking the lead, the Scandinavian

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<sup>22</sup> To this it is important to add that the Danish flexicurity model works because flexibility is matched by strong income guarantees and generous activation measures.

welfare states began in the early 1970s a massive – and very rapid – expansion of child-care and kindergartens aimed at securing universal access – a goal by and large achieved by the mid-1980s. The aim of the policy was to reconcile motherhood and careers rather than to invest in child outcomes, but in order to cater to the tastes of middle class families, it ensured that standards were high. Denmark, for example, stipulates a 3:1 child-personel ratio for the under-3s.

Nordic child-care policy had to learn many lessons the hard way. Until the 1990s, for example, children were not eligible if the mother was on maternity/parental leave or in receipt of unemployment compensation. This had the undesirable consequence that many of those children who might benefit the most were excluded, considering the selection effects behind unemployment, inactive status of mothers, and high fertility. Over the last decade policy makers have tried to make it especially attractive for immigrant and unemployed parents to place their children in public centres.<sup>23</sup> A second ‘hard lesson’ that the Danish system learned was that parental leaves and childcare needed to be better synchronized. Until the 1990s, the combined maternity-parental leave covered little more than 6 months, which meant that a very large percentage of infants were placed in crèches very early (and that many mothers opted for unemployment benefits). Moreover, the pedagogical principles that underpinned – especially Danish – child-care tended to prioritize sociability and integration over learning and cognitive stimulation. In recent years there has been a concerted shift in favour of strengthening the learning component.

We lack systematic research on the impact of pre-school participation on child outcomes in these countries.<sup>24</sup> Indirectly, however, there is evidence to suggest that the arrival of universal pre-school attendance is associated with a significant equalization of school attainment and, one can argue, also with the comparably impressive PISA performance. In an earlier study I used the IALS data to compare social origin effects on school attainment across birth cohorts (Esping-Andersen, 2004). The study included three Nordic countries (Denmark, Norway and Sweden), Germany, the UK, and the US. Consistent with Shavit and Blossfeld (1993) and other research, I find a ‘constant flux’ pattern in the latter three countries -- i.e. parent-child attainment correlations have not declined over the past half Century. In contrast, there is a very significant decline in the association in all three Scandinavian countries and this decline coincides almost perfectly with the cohorts that emerged in tandem with the universalization of child-care – those born around 1970 and thereafter. Most telling, perhaps, is the attainment profile of children of very low educated parents. Table 4 focuses on upper-secondary school attainment but the results are quite similar for (some) tertiary level education.

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<sup>23</sup> Denmark is currently experimenting with ‘affirmative action’ policies, such as bussing immigrant children out of high-immigrant concentrated neighbourhoods.

<sup>24</sup> Andersson (1992) provides a rare exception showing that, in Sweden, day care has positive consequences for child development, especially in case of less privileged families.

**Table 4. Low Educated Father Effects: Upper-secondary level attainment, controlling for cognitive test scores, sex and immigrant status (Log odds ratios)**

	USA	UK	Denmark	Norway	Sweden	Germany
Cohort 1	.115***	.185***	.449**	.661*	.320**	.094***
Cohort 2	.097***	.153***	.248***	.447**	.164***	.067***
Cohort 3	.133***	.162***	.213***	.205***	.091***	.098***

Data source: IALS. Cohort 1 is born 1970-75; cohort 2, 1955-64; cohort 3, 1945-54. The cognitive test scores refer to reading comprehension.

Such regressions do not, of course, identify the smoking gun with any precision since the same salutable outcome could have been due to income effects, such as declining child poverty. The IALS data provide no income information and we do not even have comparable child poverty information for the years prior to 1970. But the coincidence of timing is at least suggestive.

The PISA data provide some additional – suggestive – evidence. If early child-care were to compensate for unequal cultural capital, we would expect that the latter’s explanatory weight would be systematically lower in the Nordic countries than elsewhere. The reasoning is that participation in child-centres that are of similar quality across-the-board should, so to speak, help cancel out the stimulus gap that children from low educated and culturally weak homes suffer. In Table 5, I again use the 2000 PISA math tests and rank countries according to the Beta coefficients for the parental cultural capital (books) effect obtained from OLS regressions. Including also SEI Betas allows us to make some assessment of the relative – and combined – impact of cultural capital and economic status.



**Table 5. The relative impact of parental ‘money’ and ‘culture’ on children’s math performance. Beta coefficients from OLS regressions.**

	Cultural capital	SEI
Finland	.11	.10***
Denmark	.17***	.11***
Italy	.19***	.07***
Sweden	.19***	.21***
Belgium	.19***	.16***
France	.21***	.13***
Germany	.23***	.15***
UK	.23***	.19***
Netherlands	.24***	.13***
Ireland	.25***	.13***
Spain	.27***	.09***
US	.27***	.19***

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Source: PISA 2003. Regressions include controls for sex, immigrant status, mother’s education, and lone motherhood.

The results, albeit somewhat ambiguous, do point in the anticipated direction. The Nordic ‘cultural capital’ Betas are uniformly low – but that is also the case in Italy and Belgium. In fact, the Finnish culture Beta is not even statistically significant – the only country in the PISA study where this is the case. Belgium (with France) we should note, boasts the EU child-care enrollment level that is closest to Scandinavia; Italy, however, is difficult to explain. With the surprising exception of Sweden, we also note that socioeconomic status plays an unusually small role. In other words, these data, too, are suggestive but not much more than that.

The PISA data permit yet another indirect measure of child-care effects since it includes information on whether children participated in pre-school education. For most countries such attendance is associated with a major improvement in math test scores (in Denmark, a 40 point – or 10 percent – gain).<sup>25</sup> Additionally it diminishes the explanatory importance of SEI and ‘books’ and also the adverse consequences of being immigrant child or having a low educated mother.

From a cost-benefit perspective, it may not actually matter much whether we have solid evidence in favour of a positive effect of early child-care on outcomes. If Danish-style

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<sup>25</sup> Pre-school enrolment does, however, have no statistically significant effect in the UK or the US, perhaps because child care in these countries is of more uneven quality or because of selection effects whereby attendance in quality programmes is limited to already resourceful children.

universal pre-school care practically pays its own way due to superior lifetime earnings, any positive learning or behavioural effect that it yields comes, so to speak, gratis. In such a context, the evaluation exercise need only examine the marginal learning effects of any improvement in the quality (say teacher-child ratios or pedagogical content) of the system, or of any outreach to needy children (such as those from immigrant origin).

Clearly, this conclusion derives from the assumption that child-care is indeed universal. To achieve more cognitive or schooling equality one might promote a targeted US-style approach as a more cost-effective alternative. The choice for or against targeting depends on the value we place on two related dimensions. For one, targeting services to the most under-privileged children can, as US experience shows, narrow the performance gap for those at the very bottom but it will not contribute much to the creation of overall greater homogeneity and equality of life chances. If, as in the US, the quality of external care for the vast majority of children depends on parental income, the heterogeneity of outcomes will remain large – as will parent-child mobility elasticities. And if high inter-generational mobility correlations, in turn, produce more inequality in the next generation, the inequalities are simply reproduced generation after generation. The choice in favour of the universal approach depends, therefore, on how much we value equality of opportunities.

It depends, secondly, on our political commitment to equity and to mothers' employment. Subsidized child care is one major way of reimbursing parents for the positive externality that parenthood (and female employment) produces, and if we can eliminate the regressive tax effect on mothers' labour supply we will also stave off child poverty – thus also contributing to better child outcomes and less inequality.

But if our goal includes special attention to needy children there may still be a case in favour of targeting additional resources or creating particular incentives. If pre-school attendance is low within immigrant communities due to cultural reasons one may, for example, make social benefit receipt conditional on attendance. Residential segregation may be fairly modest in Europe but school segregation is severe. Redistributing children across pre-school centres and schools would, in this case, loosen segregation effects.

### ***The parental time effect and the nurturing dilemma***

Theory predicts that mothers' career commitment creates high opportunity costs of parental time investment and, hence, it could jeopardize child quality.<sup>26</sup> In the conventional unitary decision model, couples' utility function combines consumption ( $z$ ), number ( $n$ ) and quality ( $q$ ) of children [ $U = U(n,q,z)$ ], and if their lifetime budget constraint [ $I_p = \pi_c nq + \pi_p z + \varphi$ ] is non-linear because  $n$  and  $q$  are interactive, there can be three factors that influence  $q$ : one, the number of children; two, outside gifts ( $\varphi$ ), such as subsidized child-care or social transfers that are received in proportion to number children; and, three, total parental labour supply.<sup>27</sup> The resulting  $q$ -production function for children is

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<sup>26</sup> The following is loosely based on Becker (1981) and Ermisch (2003)

<sup>27</sup> holding parental consumption constant

$$Q = f\left(\frac{X_c}{N}, \frac{t_m}{N}, \frac{t_f}{N}, \phi N\right)$$

where  $N$  is the number of children,  $X_c$  is the total amount of purchased goods for children, and  $t_{mc}$  and  $t_{fc}$  denote, respectively, mother's and father's time dedication to children. Parents' time allocation will depend on opportunity costs in terms of foregone earnings and on their prioritization of  $q$ . We would, all told, expect a shift in favour of  $q$  simply because parents now have fewer children. The income from mothers' employment (and  $\phi N$ ) will also allow more resources in favour of  $q$ . The question is whether such  $q$ -gains are cancelled out by the consequent reduction in mothers' child-time.

Since the parental lifetime budget constraint depends on the composite of mother's and father's time use, weighted by wages, and of outside gifts

$$x_c = (T - t_m - t_{mz})w_m + (T - t_f - t_{fz})w_f + \phi,$$

where  $T$  is the total time each parent has,  $t_{jc}$  is child time, and  $w_j$  is the wage of parent  $j$ . Solving this model (see Ermisch, 2003, for a full derivation) leads to the prediction that child quality is inversely related to the mother's expected opportunity cost of having a child. It is now evident that  $t_{fc}$  can reduce the mother's opportunity cost in terms of foregone lifetime income ( $Y_j^* = w_j + \beta\omega L_j$ ) because  $L_j = f(t_m, t_f, HC)$  where  $HC$  is the human capital level. If  $t_{fc} > 0$ , there will be a marginal decline in mother's opportunity cost (through  $T - t_c$ ). The question is, firstly, the magnitude of  $t_{fc} > 0$  which, of course, will affect father's opportunity cost and, secondly, the degree to which  $\phi$  (in this case, child care) can diminish  $T - t_c$  for both father and mother. Since the opportunity cost for both is

$$\frac{\partial L}{\partial HC} > 0, \frac{\partial L}{\partial t_m} > 0, \frac{\partial L}{\partial t_f} < 0$$

we would, in theory, expect that  $T - t_c$  is smallest for high educated parents and, vice versa, greatest for the low educated. If real world behaviour follows theory we would, then, expect that children of the less educated (conditional on  $N$ ) will receive more time investment than those from highly educated parents – i.e. *theory predicts a redistributive impact for less privileged children in terms of  $q$ .*

Empirically, the question is how mothers' employment combines with  $t_{mc}$  and affects child outcomes. Existing research provides ambiguous findings.<sup>28</sup> To exemplify from

<sup>28</sup> We can pretty much disregard the number of siblings effect. In the advanced societies, social class differences in fertility are narrowing and, indeed, in Scandinavia the low educated women now have fewer children than the highly educated. In addition, analyses of the PISA data do not show any significant effects of number of siblings on test performance once we introduce the standard controls.

UK research, Ermisch and Francesconi (2002) find negative effects of maternal employment while Gregg et.al. (2005) conclude the opposite. Such conclusions depend essentially on three or four factors: one, on whether mothers work during the child's first year; two, on the quality of mothers' jobs; three, on sibling size; and four, on how much parents prioritize  $q$  over  $z$  on a lifetime basis. Although  $L$  is likely to be far greater for the high educated, these may also discount it more.

All studies concur that stressful working conditions, irregular or long hours, and job insecurity can be harmful. The bad news here is that labour market de-regulation in Europe, while positive for employment, can be negative in terms of job security and pay, especially for workers in low skill jobs. The good news, however, is that the potentially adverse effects of maternal employment tend to be cancelled out if children are placed in quality care.<sup>29</sup> The all-important factor lies in the quality of external child-care (Waldfogel, 2002). And high-quality care is especially effective for children from less privileged social origins.

On one hand, time investments interact with parental job conditions in producing  $q$  and, on the other hand, these interaction effects are modified by the quality of external care. This interplay questions the validity of the redistributive prediction from theory.

We must assume that the incidence of job-stress is unevenly distributed. It is likely to be far more concentrated at the bottom and top of the occupational hierarchies (say, among textile workers and dentists) and will certainly also vary across industries and sectors. There is clear evidence that Danish mothers move from the competitive hard economy to the soft economy – primarily public sector jobs – even if this entails a sacrifice in life-time earnings (Jensen, 2002). More broadly, it is well established that fertility in Europe is higher among women working in the public sector. This suggests that mothers (and couples) discount the value of future earnings power in order to maximize investments in  $q$  here-and-now. The key question, then, is how  $T-t_{mc}$  and  $T-t_{fc}$  are distributed across the variance in  $L_j=f(t_m, t_f, HC)$  for mothers and fathers alike.

As discussed above, in countries as different as the US and Denmark, parental child caring time is rising. But the rise is very skewed because it occurs mainly among high-educated parents. Most surprisingly, we see an increase in motherly care time. Although not large, this increment is mainly achieved at the expense of  $t_{mz}$ . Concomitantly, we see a substantial leap in fatherly care time – but primarily among the highly educated (Bianchi et.al., 2004; Deding and Lausten, 2004).<sup>30</sup> The difference can be notable. For the EU as a whole, tertiary level educated men are 40% more likely to dedicate 14+ hours to child care than are the low educated (calculated from the ECHP). Bonke et.al. (2003) show, for Denmark, that men in the top income quartile contribute 50% more time to homeproduction and 5 times more on child care, than men in the bottom quartile.

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<sup>29</sup> In my own analysis of the PISA data I come to the surprising finding that the mother-work effect seems orthogonal for boys and girls – systematically positive for the latter but tendentially negative for the former.

<sup>30</sup> US and Danish data show, in fact, that total parental caring time is now greater than in the 1960s-70s.

Highly educated couples are likely to give greater priority to  $q$  even if they face far higher opportunity costs of increasing child caring hours. In part, they sacrifice on personal leisure time, but the sharp rise in fathers' child-care (and homeproduction) suggests that they are also more prone to discount the value of future income relative to the importance of investing in  $q$ . If our aim is to maximize both the levels and homogeneity of  $q$  in a context where mothers work, the two important parameters are  $\varphi$  and  $t_{fc}$ .

The first is straightforward and already discussed at length, namely policy that ensures affordable high quality child-care, especially for low-income parents. The second is more complex. The margin for augmenting working mothers' caring time is limited, at least if they are full-time employed, so any major effects must come from fathers. The problem here is a double one. Firstly, low educated fathers are far less prone to invest in their children despite the fact that their career opportunity cost must be far smaller than for high skilled fathers.<sup>31</sup> Secondly, the self-selection mechanisms that guide women towards soft economy jobs go hand-in-hand with gender segregation in the labour market, and segregation is likely to become especially pronounced where, as in the Nordic countries, the gender wage gap is very small. In essence, males end up manning the competitive private economy and women are concentrated in welfare state jobs. Under such conditions, legislation such as paid father leaves is unlikely to have much of an effect on fathers' behaviour.

The large gaps in child care between high and low educated fathers is, most probably, a function of differences in wives' bargaining power within the household. If we drop the unitary assumption of household utility maximization and adopt a framework within which decisions are negotiated, the key to any outcome must be the relative bargaining power of the partners. The most likely source of bargaining power lies in the partner's degree of economic autonomy and relative contribution to total household income. Economic autonomy means that the partner can plausibly threaten with exit. Her relative income contribution signals how much the other partner depends on her – the greater, the more we would expect the other partner to acquiesce. In other words, as stressed by Lundberg and Pollack (1996), in a non-unitary model with two individual utility functions

$$[U_f(z_f, n, q) \text{ and } U_m(z_m, n, q)]^{32}$$

threat points  $\Phi_j$  can operate in two ways: one being exit from the game via divorce; another being a non-cooperative equilibrium within the partnership. In the latter – and surely more normal case – repeated renegotiation can possibly produce a new cooperative equilibrium.<sup>33</sup>

If  $\Phi_m = f(Y_M, p)$  and if  $U_m(q | n, z_m) > U_f(q | n, z_f)$ ,

<sup>31</sup> There is also substantial evidence that mothers place far more priority on child investments than do fathers. Hence, the elasticity of mothers' income on  $q$  is much greater.

<sup>32</sup> Here, the two partners are assumed to have similar utility with regard to  $n$  and  $q$ . For the analysis to follow it will actually be assumed that  $U_m(q | n, z_m) > U_f(q | n, z_f)$

<sup>33</sup> A Nash-based maximum welfare function is, in this context  $N = (U_m - \Phi_m) \cdot (U_f - \Phi_f)$

Then  $q = f(Y_m + \phi_m / Y_f)$ .<sup>34</sup>

This is where welfare state benefits, once again, become important. The mother-father income ratio may increase due to own earnings and/or to mother-targeted social transfers ( $\phi_m$ ) -- now common practice with regard to child allowances and automatic with regard to maternity leave benefits. Likewise, we would expect that

$$t_{cf} = f(Y_m + \phi_m / Y_f)$$

The difference in women's contribution to household income is quite substantial across the income distribution. In countries like Denmark, their contribution in the top quintile is about 3 times as large as in the bottom. Where, as in Ireland and the Netherlands, low educated women are far less employed, top-quintile women contribute almost 7 times as much (Maitre et.al., 2003). Focusing solely on relative earnings shares, the bottom-quintile Dutch women contribute only 19% (calculated from the 1996 ECHP wave).<sup>35</sup> In contrast, women in the top quintile tend to account for a much larger share of total wage income (roughly 30% in countries like the Netherlands, the UK, or Germany).

There are three possible beneficial outcomes of an increase in  $Y_m + \phi_m$ . Boosting employment among less educated women, coupled to generous welfare state support targeted to mothers, can, for one, counteract rising inequalities in household incomes and thereby be positive for inter-generational mobility. Two, it should direct more family income in favour of  $q$  and reduce the adverse effects of low income on children's school achievement. And, three, it may even stimulate more gender equality in time use.<sup>36</sup>

But it is obviously unlikely that the increase in fathers' child care will offset the decline in mothers' hours (due to her employment). In other words, this alone will probably not ensure a more overall egalitarian  $q$ . But indirectly it might if the leap in low educated mothers' employment promotes more child participation in external care. And here we are back to the importance of assured access to quality child-care as arguably the single most effective policy of homogenizing early child investments.

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<sup>34</sup> 'p' is here a price vector.

<sup>35</sup> The equivalent shares are 23% in France, 39% in the UK, 26% in Germany, and a low of 13% in Spain

<sup>36</sup> Alvarez and Miles (2003) question the positive impact of wives' earnings on husbands' contribution to home production for Spain concluding, instead, that traditionalist gender norms predominate over rational joint welfare maximization. This would, predictably, lead to non-cooperative equilibria that, depending on  $\Phi_m$  should either raise divorce rates or perhaps result in fewer children -- recall that  $n$  and  $q$  are interactive. Another possible explanation is that  $\Phi_m$  is non-linear with respect to  $Y_m + \phi_m / Y_f$ . One should assume that wives' bargaining power begins to be effective only beyond a minimum threshold. Considering the relatively low earnings of Spanish women and the virtual absence of mother-targeted family benefits, it may be that a large share of Spanish wives fail to arrive much above the threshold.

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