Giorgio Di Pietro

The Impact of Social Welfare Expenditure on Participation Rates in University Education among Low-income Students: Case Studies on the US and Italy

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Giorgio Di Pietro
PhD Program in Comparative Welfare Systems
Department of Social Sciences
Roskilde University

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The impact of social welfare expenditure on participation rates in university education among low-income students: case studies on the US and Italy.

Adviser: Lars Fuglsang

Candidate: Giorgio Di Pietro

We analyse the effect of social welfare expenditure on university enrolment rates, focusing on participation among low-income students. The rationale for this study is that in some industrialised countries the combination of the increased dependence of a larger number of households on redistributive programmes and the failure of student aid policies to provide subsidies all needy students could have made participation rates among low-income students increasingly dependent on and affected by changes in welfare social expenditure. We focus on the US and Italy and we set up two time-series enrolment models in which social welfare expenditure is added to the other variables used by previous economic studies to account for changes in participation rates in university education. The empirical findings support the hypothesis that university enrolment rates among low-income students are highly responsive to changes in social welfare expenditure in the US and in Italy.

Two are the ways through which social welfare expenditure is likely to exert a positive influence on university attendance among low-income students. First, it may increase the ability of low-income households to pay for university education. Low-income parents whose children attend university education receiving little or no financial aid may be forced to use part of the money coming from transfer programmes to cover the cost of tuition and fees and other education-related expenditure. Even if indirectly, the provision of non-cash social benefits could also help low-income families to keep university still affordable. For instance, public health insurance could enable low-income families to save some money that can be used to cover the direct and indirect costs of university education. Second, social welfare programmes could make it less likely for low-income

students not to enrol in the university or to drop out of university in order to support themselves and their family. In terms of our case-studies, by providing an acceptable standard of living to the least advantaged families generous welfare programmes in Italy may encourage low-income people with a high school degree and who wish to continue studying to postpone job search until they have finished their university studies.

The impact of social welfare expenditure on university enrolment rates among low-income students is likely to stem from the present multipurpose nature of social welfare programmes. Social welfare programmes were originally designed as targeted policies (i.e. they tried to solve a specific problem with a corresponding programme) but with the passing of time it turned out that recipients were progressively using them to address many social problems at once. In turn, the wider scope of current welfare provisions may derive from the incapacity of the welfare state to satisfy new social needs. The supply of social services has not been able to keep pace with the demand for social services. As a consequence the real impact of each single welfare provision may go significantly beyond the sole goal which is theoretically supposed to accomplish. Although none of the present welfare provisions has been designed to increase participation rates in university education among children of the least advantaged families, the significant economic, demographic and social transformations that have affected several industrialised countries might have broadened the scope of the welfare measures encompassing consequences that were totally unexpected at the time the welfare state was created.

The impact of social welfare expenditure on participation rates in university education among low-income students is increasingly significant in the light of the importance given to education, skills and human capital in the emerging knowledge-based society. The increased effects of education on labour market outcomes (i.e. unemployment affects a greater proportion of less-educated people and workers with a high level of skills are likely to enjoy higher earnings) could

push a significant number of low-income parents to decide –and in the absence of student aid- to shoulder entirely the cost of education for their children.

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Chapter I

INEQUALITY, SOCIAL WELFARE EXPENDITURE AND UNIVERSITY PARTICIPATION

1. Introduction

This work analyses the interrelationships between social welfare expenditure and education. More precisely, it brings together two issues (i.e. human capital formation and the present multipurpose nature of social welfare programmes[1]) governments of several industrialised countries are currently confronted with. The importance of the first is more evident whereas the importance of the second emerges after careful analysis. It is suggested here that there might be an important linkage between them and that it is important that policy makers do not neglect it. This study asks whether in some industrialised countries social welfare expenditure is one of the determinants of university enrolment rates among low-income students[2].

The goal of this thesis is to shed light on the role of social welfare expenditure in buttressing participation rates in university education among children of the least advantaged families. To the best of our knowledge, the research issues addressed in this work have not been covered by previous papers. There are several studies dealing with the impact of US social welfare programmes on child development in low-income families. In these works the effectiveness of a specific social welfare programme is tested. In other words, the capacity of a given social welfare provision to satisfy the need for which it was specifically designed to respond is analysed. In a recent paper Currie (Currie, 1997) provides an excellent synthesis of the existing economic literature on this topic.

This work diverges from the aforementioned studies in two ways. First, it focuses on different types of social welfare programmes. Second, we test the

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[1] The terms "social welfare programmes", "social welfare provisions", "social welfare measures", "social welfare services", "social welfare policies" and "social welfare benefits" are used here interchangeably.

[2] Of course one should not forget the well known impact of other factors (for more information see the second chapter) on university enrolment rates.

capacity of social welfare provisions to satisfy a need that is clearly different from the ones each of them has been specifically designed to address.

More specifically, in this study social welfare expenditure refers to a measure comprising the following main categories of publicly funded programmes: old-age cash benefits, unemployment benefits, sickness benefits, disability cash benefits, family cash benefits, family services, services for elderly and disabled people and health care insurance. The reason why such broad measure of social welfare expenditure is used is because we want to consider all types of cash and non-cash social welfare benefits potentially having a direct and indirect, respectively, positive effect on the ability of low-income households to pay for university education. On the one hand, low-income households could spend a proportion of the money they receive from social welfare provisions to cover the cost of tuition and fees and other education-related expenditure. On the other hand, one may note that if the government provides specific goods or services, such as free or heavily subsidised health care, low-income parents may redirect what they would have spent on providing these goods to keep university affordable for their children. One might argue that in countries characterised by generous old-age cash benefits (e.g. Italy), thereby in which in many households headed by an elderly person pension accounts for most of total family income, there might be a correlation between social welfare expenditure and university enrolment rates. The rise in the average age at which people have children and longer life expectancy could have in fact led to a large number of pensioners having children enrolled at the university.

Two messages emerging from the existing literature serve as the point of departure of this study.

(a) Social welfare programmes play a key role in offsetting the rise in household market income inequality.

(b) Parental income is positively correlated with students' level of educational achievement.

In several industrialised countries significant economic transformations (mainly due to the deteriorating situation of low-paid workers in relative terms, or even in absolute terms) and demographic changes (e.g. the growth of single parents households) have led to a rise in household market income inequality and poverty rates. This has forced an increasing number of households to rely on social welfare programmes as their main source of income. The relative scarcity of specific student aid policies, providing subsidies to needy students wishing to study at university, could have made participation rates in university education among low-income students increasingly susceptible to changes in social welfare expenditure.

The rise in poverty rates could have put at risk especially participation rates in university education among low-income female students. The evidence for the completion of secondary school in Great Britain (Rice, 1987) indicates that the demand for females is more sensitive to households income and student aid than it is for males of the same age group.

Generous social welfare benefits may be an important way to ensure that students with a low socio-economic background and who wish to continue studying will continue investing in human capital (their own). A recent survey (OECD, 1997a) shows that in the 1980s the only OECD countries where the increased accessibility of tertiary education was accompanied also by a weaker correlation between socio-economic origin and educational attainment were Sweden and the Netherlands. Jonsson (Jonsson, 1987 and 1990) reports that in Sweden the decline of children's dependence on their family in making (and financing) educational decision can be attributed to a general policy of equalisation of the living conditions for different social strata. Housing policy, for example, is often considered to be critical in terms of delineating patterns of poverty and the residential distribution of social problems including educational failure and under-achievement.

The structure of the remainder of the chapter is as follows. Section 2 deals with the efforts made by governments to offset the rise in household market income inequality. This Section presents also several explanations for the positive trend in social welfare spending experienced in many industrialised countries in the 1980s and in the first half of the 1990s. Section 3 suggests reasons for the insufficiency of student aid programmes to provide financial support to all needy students in several industrialised countries. Section 4 presents a few background observations highlighting the importance of the research question addressed by this thesis (i.e. the link between university education and social welfare expenditure). Section 5 concludes.

2. Inequality and the role of social welfare expenditure

Despite the fact that many industrialised countries experienced higher earnings dispersion, higher unemployment and the growth of single parents households over the last decade[3], a significant rise in household disposable income inequality has not been observed. Several studies have shown that in relatively highly developed welfare systems social welfare and taxation policies have a key role in offsetting the rise in household market income inequality. For instance, Gottschalk (Gottschalk, 1993) provides evidence that in first half of the 1980s the Swedish government managed to fully offset the increase in inequality through changes in the distribution of nonwage income and changes in government transfers. Significant efforts towards the reduction in wage inequality through social welfare and taxation policies have been made in the aforementioned period also by the French and the Australian governments.

A major explanation for significantly lower poverty rates and inequality among families in Canada than in the US in the 1980s, despite a common upward trend

in wage inequality, could be found in the effect of a more generous social safety net in Canada (Card and Freeman, 1994).

Furthermore, a study from the European Commission (European Commission, 1998), highlights the importance of social welfare programmes as a source of income for the least advantaged families. According to this study, in 1993 in the European Union (Austria, Finland and Sweden are here excluded) social welfare programmes (including private pensions, but excluding benefits in kind, such as health care) accounted for 30 per cent of net household income[4]. For some 35 per cent of households, they were the main source of income and without them just under 40 per cent of households would have had a level of income of under half the national average (the conventional measure of poverty). After social welfare programmes, around 17 per cent of households had a level of income below this.

Using data from the Luxembourg Income Study Database Kenworthy (Kenworthy, 1998) calculates the rates of relative poverty after and before taxes/social welfare programmes[5] in fifteen countries in 1991 (the author uses 40 per cent of the median within each nation as the poverty line). The significant role of social welfare programmes in reducing poverty can be observed (see Table 1). The post-taxes/social welfare programmes relative poverty rate is less than seven per cent in every country except the US.

[3] In the appendix some basic features of possible sources of income inequality and poverty (i.e. unemployment, earnings dispersion, and monoparental households) are comprehensively explained.

[4] Social welfare programmes were the highest in Belgium and France, at over 36 per cent of net household income, and next in Italy, at just under 33 per cent.

[5] Non-cash social welfare provisions are here excluded.

Table 1: Relative Poverty Rates (per cent), 1991.

	Post-taxes/social welfare programmes Relative Poverty	*Pre-taxes/ social welfare programmes Relative Poverty*
Australia	6.4	21.3
Belgium	2.2	23.9
Canada	5.6	21.6
Denmark	3.5	23.9
Finland	2.3	9.8
France	4.8	27.5
Germany	2.4	14.1
Ireland	4.7	25.8
Italy	5.0	21.8
Netherlands	4.3	20.5
Norway	1.7	9.3
Sweden	3.8	20.6
Switzerland	4.3	12.8
Great Britain	5.3	25.7
United States	11.7	21.0

Source: Kenworthy, 1998.

Theoretically, any assessment of the impact of social protection on the distribution of family disposable income can be satisfactorily made only by considering the revenue side of the public sector accounts as well as expenditure. This is because social welfare programmes are increasingly subject to tax or social changes in a large number of countries and, accordingly, part of the expenditure incurred by governments reappears as tax or other receipts. Nevertheless, estimating the scale of such so-called tax expenditure

and revenue generated by taxes on benefits is a difficult task and this is the reason why most works on social protection focus only on the expenditure side.

The increase in the proportion of income for lower income households coming from social welfare programmes has gone hand in hand with the growth of all categories of social welfare spending. In the 1980s and in the first half of the 1990s most industrialised countries have been characterised by an overall upward trend in social welfare expenditure, despite widely different starting points (Scherer, 1994). Table 2 shows the rate of growth of total social expenditure as a proportion of GDP between 1980 and 1995 in some selected industrialised countries[6]. It can be observed that Great Britain displayed a relatively large increase in social welfare expenditure. Between 1970 and 1985 the alternations of the Conservative Government and the Labour Government did not lead to any substantial change in British social security policy (Atkinson, Hills and Le Grand, 1986). Among the different components of social welfare expenditure, some elements of housing policy have been mostly reversed by successor governments. Basically, it is possible to argue that that welfare cuts have been quite limited - in effect there have been no radical changes to the welfare state, not even in Thatcherite Britain.

[6] It is important to note that 1980 was a recession year for some countries. In a recession year social welfare expenditure as a proportion of GDP is artificially high because automatic stabilisers push social welfare expenditure up while GDP goes down.

Table 2: Rate of Growth of Total Social Expenditure[7] as a Proportion of GDP in selected Industrialised Countries, 1980-95.

	GROWTH OF TOTAL SOCIAL EXPENDITURE AS A PROPORTION OF GDP 1980-95 (per cent)	ANNUAL AVERAGE GROWTH (per cent)
France	28.12	1.76
Italy	29.05	1.82
Sweden	10.84	0.68
Australia	33.94	2.12
US	17.78	1.11
Great Britain	22.93	1.43

Source: Author's calculations using OECD data (1999).

The rise in social welfare expenditure not only reflects increased take-up rates as many of industrialised countries experienced greater demand of social protection because of widening inequality, but it has been mostly the result of some demographic, economic and societal transformations which have taken place since the beginning of the 1980s. A substantial increase in structural unemployment (mainly in Europe), population ageing as well as the increasing cost of health care system[8] have made the rise in social welfare expenditure practically unstoppable.

[7] We rely on the definition of Total Social Expenditure used by the OECD.

[8] The development of medical technologies and the growth in expenditure on incomes of the medical profession have caused an enhancement in health expenditure.

Besides the aforementioned exogenous shocks, other important explanations for the rise in social welfare expenditure could lie in endogenous factors. All kinds of work disincentives created by very generous social protection systems -e.g. the 'unemployment' trap and the 'poverty' trap (OECD, 1996) - may have also contributed to a higher level of social welfare expenditure (Phelps, 1994). In the unemployment trap, benefits paid to the unemployed and their families are high relatively to expected earnings in work so they have little incentive to find a job. Empirical evidence from OECD (OECD, 1996) suggests that in highly developed welfare states during the period 1961-91 there is a strong lagged correlation between growth in unemployment benefits entitlements and the rise in unemployment. High replacement rates[9] and a relatively long duration of entitlement could be responsible for this result. The poverty trap case occurs when incremental increases in earnings or income lead to the withdrawal of benefits, so people on low income receiving benefits are discouraged from additional efforts.
The increase in early retirements programmes could have also drifted upwards social welfare expenditure. France has been one of the front-runners in the development of flexible and early-retirement programmes, while access to early retirement has remained far less attractive in the US and Great Britain.

Clayton and Pontusson suggest that even if in most industrialised countries social welfare expenditure, measured as a proportion of GDP, showed a positive trend over the past two decades, a deceleration of the rate of growth of social welfare expenditure can be observed. To demonstrate the deceleration of social welfare expenditure growth, Clayton and Pontusson calculated government spending in constant US dollars at 1990 prices and exchange rates, and then divided this figure by the total number of people who were either unemployed or above the age of 65 in any given year. They conclude that

[9] The replacement rate can be defined as the ratio of total net income when unemployed to that when working.

increased social welfare expenditure in Sweden, Great Britain, West Germany and the US in the 1970s and in the 1980s is associated with a reduction of entitlements as a result of the augmentation of beneficiaries. Nevertheless, the aforementioned indicator of social welfare expenditure per adult is a very rough measure because it does not take into consideration any other social spending category of beneficiaries besides unemployed people and pensioners and no distinction is made between beneficiaries of the public social protection system and beneficiaries of private social protection systems. This could strongly bias the results Clayton and Pontusson have obtained. For instance, the proportion of disabled people with respect to total number of beneficiaries is higher in Sweden relative to the US, Great Britain and West Germany. Additionally, in the US the proportion of old people receiving a pension from private social protection systems is very high relative to the other countries under examination. As a consequence, for the US case using individuals older than 65 as a proxy for beneficiaries of the public social protection system could lead to biased estimates.

On the other hand, it is reasonable to think that in the period 1990-93 the rise of total spending on social protection, measured as social welfare expenditure as a proportion of GDP, could have reflected in large measure the slowdown in GDP growth.

3. University education: student aid and the role of parental income

Several theories have examined the determinants of individuals' choice to invest in education and more particularly in university education. Clearly, there are well known factors such as, for instance, the wage differential between high school and university graduates, that strongly and demonstrably influence participation rates in university education. Accepting the importance of these factors as our point of departure, this paper focuses on a perhaps less studied factor which is the impact of social welfare expenditure.

Following the human capital theory advanced by Nobel Prize winner Gary Becker (Becker, 1967), individuals' decisions to invest in education are mainly affected by the direct and indirect costs of obtaining education and by the expected future returns to education. With investment in education, the income stream would commence later but earnings are expected to be at higher level reflecting increased human capital. It would be economically profitable for an individual to take part in additional education if the present value of additional expected future earnings due to the higher level of education (i.e. marginal benefits) is higher than the relative costs (i.e. marginal costs).

Family income influences the affordability for individuals of investing in human capital. The cost of education is in fact easier to bear for rich individuals (families) relative to poor ones. This means that students from lower income families may find their schooling choices constrained by financial pressure. Additionally, capital market imperfections may prevent these students from obtaining loans from private banks to finance their investment in education. Two main reasons are often put forward by the economic literature[10] to explain this situation. First, private banks in general place limits on the credit they are

[10] See, among the others, Oosterbeek 1998 and Checchi 1999 and 1997.

willing to extend to finance education. The repayment of a loan depends, among other things, on students' ability and efforts to earn a high income. The lender cannot measure directly either of them. Since there is no collateral, the lender cannot secure repayment. Second, a private bank will have to add a risk premium to the interest rate to deal with cases of default, otherwise it will end up losing money. Some students may find the risk premium too high and withdraw.

To compensate for the capital market imperfections, governments or private institutions have instituted a number of student aid policies to provide support for lower income students, thereby smoothing the correlation between family income and educational attainment. These policies include grants, scholarships, loan programmes that have been issued at or below market interest rates, the expansion of state-supported university that charge below-market tuition rates as well as other measures.

Governments throughout the world provide financial support for university students, to enable them to pay tuition and living expenses. Nevertheless, there are considerable differences between countries in the extent of subsidisation of education and in the provision of the various types of student aid measures. Student loans are the most important form of financial aid for students in several European countries (e.g. Sweden, Denmark, Finland and Norway), in Canada and they are widely used in Latin America. On the other hand, some countries (e.g. Italy, Spain, Great Britain[11] and France) make scarce use of student loans at present, but they rely almost exclusively on means-tested grants to students (OECD, 1997b p.82).

[11] Great Britain introduced a student loan programme for the first time in 1990.

Nevertheless, the effectiveness of student aid programmes has been called into question by several studies[12]. These argue that in a relatively large number of countries the probability of attending university still remains closely linked with family income. Clearly, low family income is likely to make more difficult completing university education for students from poorer income families. For instance, in 1996 US high school completers from low-income families were less likely to go to a two- or four-year college or university immediately after high school (49 per cent) than were their peers from middle-income families (63 per cent), who, in turn, were less likely to enrol than completers from high-income families (78 per cent)[13] (National Center for Education Statistics, 1998).

There might be at least five explanations for the failure of student aid policies to provide funding to all those who need it.

First, students of the least advantaged families may not be able to fully take advantage of student aid programmes because of a lack of information. For instance, several studies cited in Orfield (Orfield, 1992) suggest that low-income families are often unaware of eligibility rules and procedures of student aid programmes.

Second, in the case of loan programmes short repayment periods may also act as a strong disincentive to borrowing to pay for education. For instance, Hansen (Hansen, 1986) argues that an explanation for the decline in enrolment rates among black people in the US in the first half of the 1980s could lie in their greater difficulty in fulfilling fixed-term loans in the US system. 'Most student loans have to be repaid within ten or twenty years but in Sweden

[12] See, among the others, Taubam 1989.
[13] Low income is the bottom 20 per cent of all families; high income is the top 20 per cent; and middle income is the 60 per cent in between.

students have until their fiftieth birthday to repay their loans, which means more than twenty years in some cases' (Woodhall, 1987 p.447).

Third, it is often argued that students from lower income families experience a debt as a psychological barrier that may discourage them from getting a loan. To tackle this problem, some countries (e.g. Australia and Sweden) have introduced a graduated tax system[14] and income-contingent loan schemes[15]. Thanks to these programmes[16] students obtain a loan which they repay as a fixed percentage of their future earnings. In Australia government may forgive the remainder of a loan for those people whose earnings lie below a certain threshold. In Sweden students may postpone repayment if their earnings fall below a certain minimum level because of illness, unemployment or other reasons.

Fourth, *and perhaps most crucially*[17], in some countries there is evidence of the failure of grants and scholarships as an instrument to increase the access to university education to all needy students. Despite the increase in the number of grants given by national and local governments to assist the children of lower-income families, in many cases the supply has not been able to keep pace with the relative demand[18] triggered by a growing number of families falling below the poverty line. In most industrialised countries the number, if not the share, of students from less-privileged socio-economic backgrounds has in fact increased with the rise in the demand for university education. For instance, in

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[14] For more information on graduate tax system see Morris 1989.

[15] For more information on income-contingent loan schemes see Chapman 1997.

[16] The important difference between the graduate tax system and income contingent loan schemes is that in the latter a person never repays more than the sum of the loan and interest.

[17] This argument will be more comprehensively outlined in the case studies analysis.

[18] A higher participation among older age groups, a higher economic prosperity, a higher participation of females in the labour force, rising aspirations among young people and an increase in the proportion of the age cohort completing secondary education are often used to explain the considerable increase in the demand for university education experienced in several countries in the last two decades.
In most industrialised countries the 1985-1995 period has been characterised by a high growth in women participation in higher education. In 1995 in a majority of OECD countries, most students enrolled in higher education were women (OECD, 1997c p.86).

the US between 1977-1979 and 1991-1993, the participation rate of 18- and 19-year-olds from families in the top income quartile rose from sixty-nine per cent to seventy-five per cent, while that of young people from the bottom quartile remained stable at twenty-six per cent (Kane, 1995).

Fifth, an increase in tuition and fee levels can be observed in several countries. In some cases (e.g. university education in the US[19]), the cost of education in real terms has risen faster than the real value of total aid available to students. This means that the average amount of aid received by each student may have become insufficient to cover fully the cost of education.

It is suggested here that in some countries the failure of student aid programmes to provide subsidies to all needy students could have enhanced the role of parental income in supporting children's university attendance. Besides covering the direct cost of education, parental income might have other positive effects on children's level of schooling. Higher parental income may be used to improve nutrition and living conditions. Higher income may make it possible for a single mother to stay at home instead of working outside home. Higher income will make it less necessary for poor children to drop out of school or university in order to support the family or to care for younger siblings.

The effects of parental income on children's educational achievement have been analysed by a large number of empirical studies. Some of these[20] suggest that parental income greatly influences children's educational achievement even after controlling for parental education and other observable parental characteristics.

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[19] For more information see the third chapter.

[20] See, among others, Corcoran, Gordon, Laren and Gary, 1992 and Hill and Duncan, 1987.

It should be noted that the aforementioned findings have been called into question by the results of other recent studies (Mayer, 1997 and Shea, 1997). Several new strategies for controlling for the observed parental traits in fact lead to the conclusion that conventional models overstate the importance of income to children outcomes.

However, for the purpose of this study it is important to observe that the considerable influence exerted by parental income on children's investment in human capital within lower income households has never been brought into discussion. Although new empirical evidence (e.g. Mayer and Shea) shows that, on average, the effect of income on children's years of schooling is smaller than many researchers have thought, none of the aforementioned recent studies denies the key role of parental income in positively affecting children's educational attainment in lower income families. The results of Mayer's research imply that only when children's basic material needs are met, do other characteristics of their parents become more important for children's educational attainment than extra money. Shea demonstrates that parental income does have a beneficial impact on children's educational achievement among lower income families. This result might be interpreted as a consequence of the fact that parental investment in their children is more likely to be liquidity constrained at low level of parental income.

According to another point of view (known as the "parental stress" theory), the positive effect of parental income on children's educational attainment operates not through lowering the cost of the investment in human capital but through decreasing the probability that stressful events (e.g. the separation or divorce, incarceration, or unemployment of parents) may create 'emotional uncertainties that impede normal individual development' (Haveman and Wolfe, 1995 p.1835).

There is another theory (known as the "good parent" theory) which holds that because of their position at the bottom at the social hierarchy, low-income

parents develop values, norms, and behaviours that hurt children's chances for success.

Both these theories assume that particular economic conditions of parents are the cause of a form of children's deprivation or maladjustment.

Nevertheless, one should note that it is very difficult to separate the effect of parental income on children's educational attainment from the one triggered by parental time and the quality of parental time. For instance, a low-income single mother may have an adverse effect on her children's educational attainment not only because she earns a low income but also because she may not have the physical or emotional reserve to care for her children properly at the end of the day. Likewise, an unemployed father may provide less than adequate parenting not only because his income has been reduced, but also because of the loss of self-esteem (or even depression) that may accompany unemployment (Goldsmith et al., 1996).

This thesis asks whether the increased dependence of a growing number of families on social welfare policies, coupled with the insufficiency of student aid policies to provide subsidies to needy students, has made participation rates in university education among low-income students increasingly affected by changes in social welfare spending. Low-income parents whose children attend university receiving little (if any) financial aid might be forced to use part of the income coming from social welfare programmes to keep university still affordable. Even if indirectly, the provision of non-cash social welfare benefits could also help low-income families to pay for university education. For instance, thanks to free or subsidised health care parents may redirect the money they would have spent on providing this service to cover the direct and indirect costs of university education. It is possible to consider the two facts mentioned above as an unintended, but perhaps significant, effect of social welfare programmes.

4. Background observations on the increasing importance of the university enrolment-social welfare expenditure link

In this Section we provide background information on human capital formation and the present multipurpose nature of social welfare programmes. Two subsections follow. In the first subsection we present briefly some of the effects caused by the progressive diffusion of information and communication technologies in our society on the present features of labour market. This calls for an increased interest of policy makers in increasing the access to university education. In the second subsection some information on the multipurpose role of present social welfare programmes is provided. One may note that both the aforementioned issues are currently at the centre of an intense political debate in several industrialised countries.

4.1 Education and labour market

Empirical evidence from several industrialised countries suggests that education has considerable effects on labour market outcomes. Two of these effects can be summarised as follows. First, workers with a high level of education are likely to enjoy higher earnings. Second, unemployment is more likely to hit less-educated people.

In the 1980s and in the beginning of the 1990s several industrialised countries experienced a growing wage gap between high- and low- skilled workers. There has been a significant increase in wage inequality within groups defined by age (experience) and education. The classical argument here is that, in general, an educated or experienced worker is able to adapt more easily to new processes and new techniques and hence allows productivity to rise more

rapidly. The importance for firms of having the ablest workers in their key positions managing new technologies is confirmed also by at least one recent article (Entorf and Kramarz, 1997). According to the authors, who have used data coming from the 1985-87 Enquête Emploi' (French Labour Force Survey), higher average wages are related to higher quality of workers. Ability gets compensated by enterprises. There is also convincing macroeconomic evidence on the positive effect of skilled labour on productivity growth. For instance, Kahn and Jong-Soo (Kahn and Jong-Soo, 1998) find that over the period 1958-1991 US manufacturing industries with high shares of skilled labour experienced a significant productivity growth.

Besides the rise in wage inequality, another important fact suggests that the situation of low skilled workers has worsened relative to that of high skilled workers. This is the proportion of less-educated workers among the unemployed. The problem of unemployment is faced mainly by new entrants to the labour force, especially those without a university degree or unskilled and older workers who need to acquire new skills.

There is consensus among economists that future years will see increasing effects of education on labour market outcomes. Reports such as the Hudson Institute Workforce 2000 indicates that in the US by twenty-first century, one out of three jobs will require schooling beyond the secondary level. There are mainly two considerations suggesting that in Europe as well as in other industrialised countries the demand for skilled labour will continue increasing at an even faster pace than now.

First, rising competition from developing countries in manufactured products is likely to push industrialised countries to increasingly specialising in skill intensive capital goods where they have a comparative advantage. The implementation of multilateral rules liberalising trade in goods and services (e.g. WTO Agreements) and the reduction in availability costs (i.e.

communication and transportation costs) could further accelerate the speed of this process.

Second, technological change – particularly in the application of information technology- is increasing the pace of transformation of the industrialised countries into a service-based economy. New services jobs (mostly in sectors like computers, software programming, telecommunications and biotechnology) are increasingly geared to highly educated workers. Moreover, it is also important to note that a substantial proportion of people engaged in manufacturing is made of highly skilled workers. They do not themselves "make things" but provide services to the manufacturing process (e.g. robotics, information technologies, design, marketing, legal services).

Even though for a long time the question of access to higher education has ranked at the very top of policy makers' list of preoccupations, the considerations mentioned above have made it an even more critical concern. This is the reason why the governments of many industrialised countries have taken additional measures to increase participation rates in university education.

4.2 The multipurpose nature of present social welfare provisions

It is almost universally recognised that industrialisation, and more precisely the progressive diffusion of the fordist production process, underscored the need for social welfare programmes. Industrialisation made in fact the need to relieve poverty an even more critical concern relative to past centuries. A large proportion of the employees working in factories had no longer subsistence agriculture as a fallback.

The risks covered by social welfare provisions were identified to be mainly four: unemployment, sickness, old age and poverty. It is important to note that all social welfare provisions were designed to respond to a specific need

created by industrialisation. The risk of being unemployed was covered by unemployment benefits; pensions guaranteed an acceptable standard of living to retired people; the risk of illness was covered by the public provision of health care; income transfer programmes and in kind measures were targeted towards supporting poor people.

Since the birth of the first social welfare programmes and especially over the last two decades, significant economic, demographic[21] and social transformations have taken place. The incapacity of the welfare state to adapt itself to changing situations might have brought important consequences for its provisions. One of these consequences is that the real impact of each single social welfare measure may go beyond the sole goal which is theoretically supposed to accomplish[22]. For instance, Paci and Melone (Paci and Melone, 1997) suggest that in Italy in a significant number of cases a pension serves not only as a guarantee of an acceptable standard of living for pensioners themselves but it may also have a key role in improving the standard of living of their grown-up children. The tough labour market faced by young adults today (i.e. difficulty not only in finding a job but also in earning wages sufficient to cover basic needs) in conjunction with the trend towards early retirement and certain demographic factors (e.g. the rise in the average age at which people have children and longer life expectancy) may be making a considerable number of people aged 18 to 25 dependent on the pension received by their parents.

The wider scope of current social welfare provisions may stem from the incapacity of the welfare state to satisfy new social needs[23]. The supply of

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[21] For instance, in the beginning of the 20th century in Great Britain, Italy and France life expectancy for those who reached 40 years of age was approximately 68 while in 1992 the corresponding figure was around 76.

[22] Rossi (Rossi, 1997) speaks about 'paradoxes' of the present Italian welfare state.

[23] One of the explanations for the incapacity of the welfare state to satisfy new social needs could lie in the rigidity of social policy. More precisely, the welfare state may meet strong resistance to abandon programmes designed to satisfy social needs existing at the time of its birth but that, with the passing of

social welfare services has not been able to keep pace with the demand for social welfare services. Since governments do not provide additional services to respond to new emerging social needs, citizens tend to use all kinds of public resources they receive to satisfy the entire range of their social needs. For instance, as more extensively analysed in the previous subsection, the progressive shifts towards a knowledge-based society has increased the extent to which education and training affect labour market perspectives. As a consequence, the cost of human capital formation (especially for young people) is significantly higher today relative to the past. The increase in the average years of schooling has in fact shifted the overall cost of education shouldered by households upwards.

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time, are progressively disappearing. This, in turn, may hinder the allocation of part of the available resources to respond to new social needs.

For instance, it is often argued that longer life expectancy and the real rise in economic prosperity have significantly reduced the social risk behind the rationale for old-age benefits. In the beginning of industrialisation it used to be the case that not only the proportion of the population older than 65 (the retirement age in many countries) was relatively low but those individuals were also likely to be poor because of impossibility of saving some money during their productive period which, in turn, was due to very low wage levels (living wages). Old-age cash benefits were specifically designed to address this problem. Nevertheless, this is no longer the case. On the one hand, because of ageing the proportion of the population being over the retirement age has grown tremendously. On the other hand, higher wage levels have offered the possibility to a larger proportion of individuals of making some savings during their working period.

5 Conclusion

In several industrialised countries significant economic (e.g. the rise in unemployment and the deteriorating situation of low-paid workers relative to high-paid workers as well as in absolute terms) and demographic transformations (e.g. the rise in the number of single parent households) have caused greater inequality in the distribution of household market income and higher poverty rates respectively. Despite increased household market income inequality, a significant rise in household disposable income inequality has not been observed thanks to social welfare and taxation policies. This means that a growing number of households have seen social welfare expenditure becoming increasingly important as a determinant of their gross income. In particular, several studies have reported a substantial increase in the proportion of households in which social welfare expenditure has become the primary source of their gross income. The upward trend in social welfare spending has favoured the increased dependency of lower income households on social welfare policies.

Additionally, several studies observe a positive relationship between parental income and going to university. This may be a consequence of the failure of student aid programmes to provide support to lower income students, to enable them to pay tuition and fees or to cover part or all of their living costs. The increased participation in university education (also among individuals from less-privileged socio-economic backgrounds) could have made the number of available grants insufficient to satisfy the demand of all lower income students. Moreover, short repayment periods, fear of assuming large debts, asymmetric information and liquidity constraint problems are indicated by some studies as being the main barriers preventing lower income students from asking for a loan. A few countries have introduced new forms of student

loan programmes (e.g. graduate tax system and income-contingent loan schemes) to address these problems.

It is suggested here that the combination of the rise in household market income inequality and the insufficiency of student aid programmes to provide funding to needy students could have made participation rates increasingly susceptible to changes in social welfare spending. In lower income households' budget the proportion of income coming from social welfare programmes might have an important role in covering the direct and indirect costs of university education.

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Appendix

The following three possible sources of income inequality and poverty are considered: unemployment, earnings dispersion and monoparental households.

A) Unemployment

Over the last two decades unemployment have risen sharply in Europe and almost all industrialised countries have seen shifts in employment structure that have adversely affected relatively unskilled workers. The unemployment rate among workers without high school diplomas is in fact considerably higher than that among workers with university degrees. According to a recent study[1] in 14 out of 26 OECD countries male labour force participants aged 25 to 64 without an upper secondary qualifications are found to be 1.5 times more likely to be unemployed relative to their counterparts who have completed upper secondary education.

In Europe the main problem seems to lie in the transformation of cyclical unemployment into long-term unemployment. It used to be the case that job growth, which accompanies upswings, was likely to benefit more those less skilled workers who were unemployed, underemployed or employed part time relative to skilled workers. But this is no longer the case in Europe. Unemployment rates tend to rise during recessions but not to fall again in the recovery[2].

[1] OECD 1997, *Education at Glance. OECD Indicators*, Paris, p.340.

[2] Feldstein M. 1998, *Income Inequality and Poverty*, Working Paper, No. 6770, National Bureau of Economic Research, p.6.

As a general observation, it should be noted that the extent to which long-term unemployment creates poverty may go beyond the value reported by labour statistics. This is because in several countries (e.g. the US) most individuals who have been out of work for considerable periods of time are classified as "not in the labour force" rather than unemployed.

B) Earnings Dispersion

Over the past two decades, one of the major labour market developments in the industrialised countries is the broad tendency towards rising wage inequality. Several explanations for rising wage inequality have been put forward by the economic literature[3]: some relate to country-specific institutional features such as the abandoning of centralised wage-setting systems or declining union membership[4]; others refer to forces of a more universal nature, such as technology-driven shifts in demand for labour[5] or trade with low-wage developing countries[6].

Less obviously perhaps, the question arises whether public-sector restructuring has been a factor contributing to rising wage inequality[7]. Cutbacks in

[3] Levy F. and Murnane 1992, "US Earnings Level and Earnings Inequality: A Review of Recent Trends and Proposed Explanations", in *Journal of Economic Literature*, Vol. XXX, pp. 1333-1381.

[4] See, for example, Freeman R. B. 1993, "How Much Has De-Unization Contributed to the Rise in Earnings Inequality?", in Danzinger S. and Gottschalk P. (eds), *Uneven Tides: Rising Inequalities in America*, Russell Sage Foundation, New York, pp. 99-164.

[5] See, for example, Katz L. M. and Murphy K. M. 1992, "Changes in Relative Wage, 1963-87 Supply and Demand Factors", in *Quarterly Journal of Economics*, 107(1), pp. 35-78.

[6] See, for example, Wood A. 1995, "How Trade Hurts Unskilled Workers", in *Journal of Economic Perspectives*, 9(3), pp. 57-80.

[7] Clayton R. and Pountusson J. 1997, *Welfare State and Public Sector Restructuring in Advanced Capitalist Societies*, Paper presented at the annual meeting of the American Political Science Association, Washington D.C., August 28-31 1997.

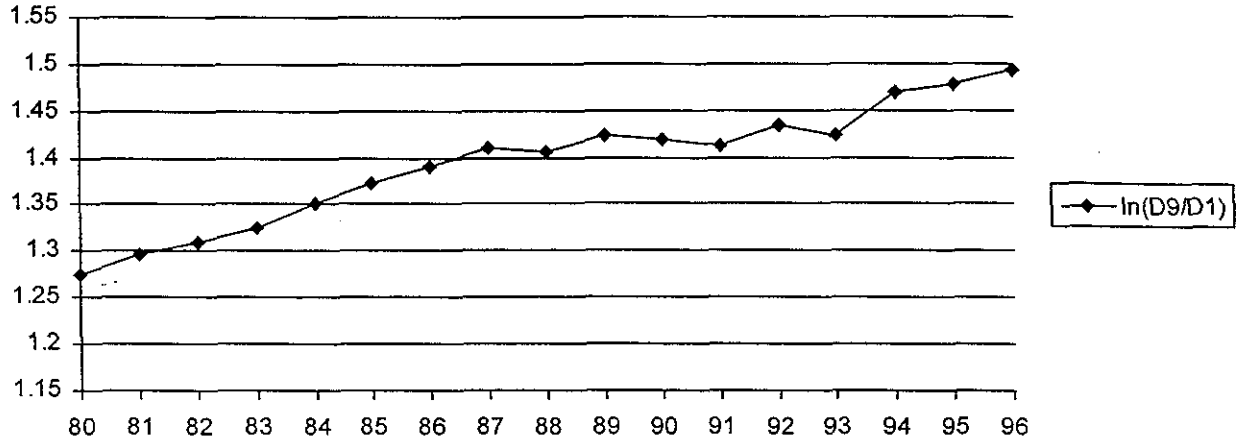
public sector employment may have shifted labour from the more compressed public-sector earnings distribution to the wider private-sector earnings distribution. Reforms within the public sector may have also played an important role in increasing wage inequality. For instance, in Sweden public sector negotiations were de-linked from private sector wage talks in the late 1980s and in the early 1990s pay levels in the public sector fell sharply in real terms[8].

Figures 1-6 show the trend in after-tax earnings dispersion in some selected industrialised countries. Earnings dispersion is measured here by the ratio of the ninth decile (D9) of full-time workers (male and female) to the first decile (D1). During the 1980s and the first half of the 1990s wage inequality increased most dramatically in the US (see Figure 1) and in Great Britain (see Figure 2). In Sweden[9] (see Figure 3) and in Italy (see Figure 4) wage dispersion showed a rising tendency in the beginning of the 1990s. The rise in earnings dispersion in Italy could be the result of substantial labour markets reforms such as the abolition of automatic cost-of-living wage indexation *(scala mobile)* and the ending of synchronised wage bargaining across different sectors.

[8] OECD 1995, *Trends in Public Sector Pay in OECD Countries*, Paris.

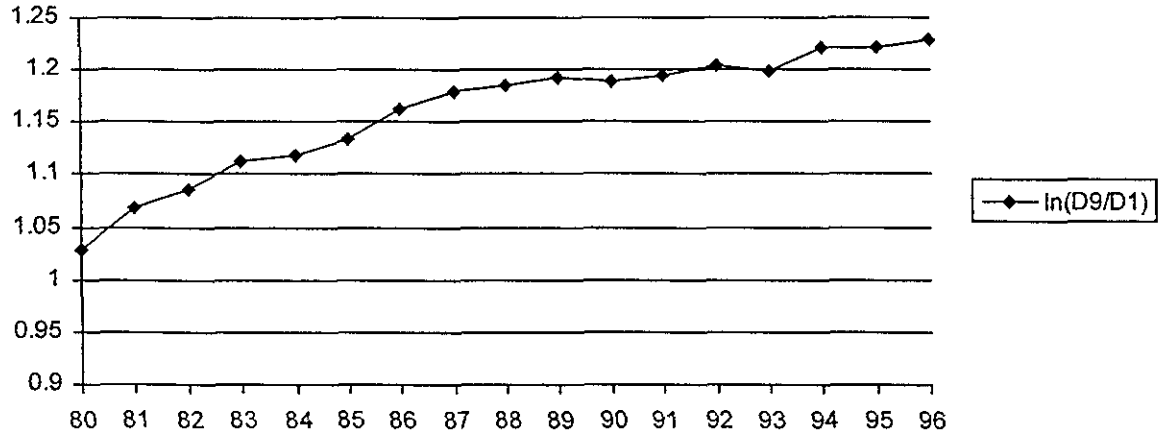
[9] During the 1980s in Sweden the 'solidary wage policy' led to a relatively narrow wage distribution (For more information see Jespersen J. 1992, "The Scandinavian Model- Past and Present", in Amoroso B. and Jespersen J. (eds), *Macroeconomic Theories & Policies for the 1990s*, Macmillan, London).

Figure 1: Trends in earnings deciles (ln D9/D1) (male and female), 1980-96, United States.



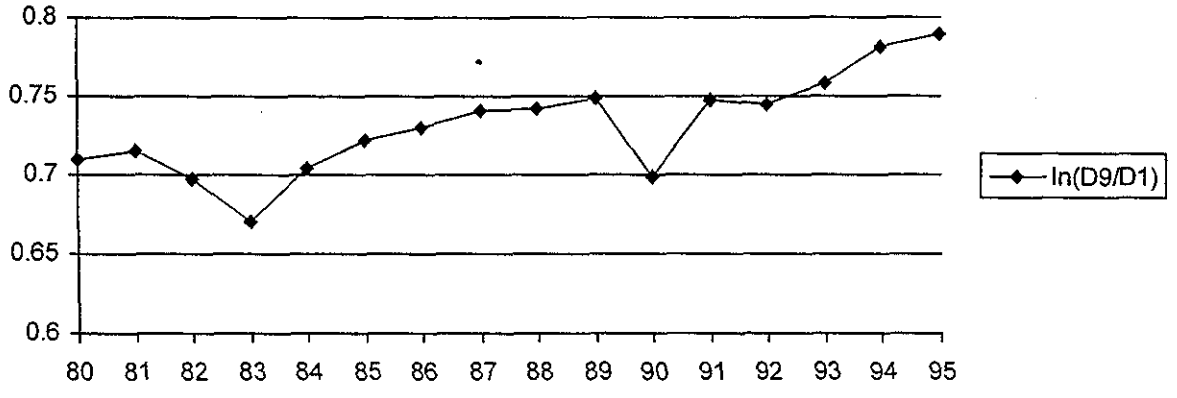
Source: OECD 1996, *Employment Outlook*, Paris.

Figure 2: Trends in earnings deciles (ln D9/D1) (male and female), 1980-96, Great Britain.



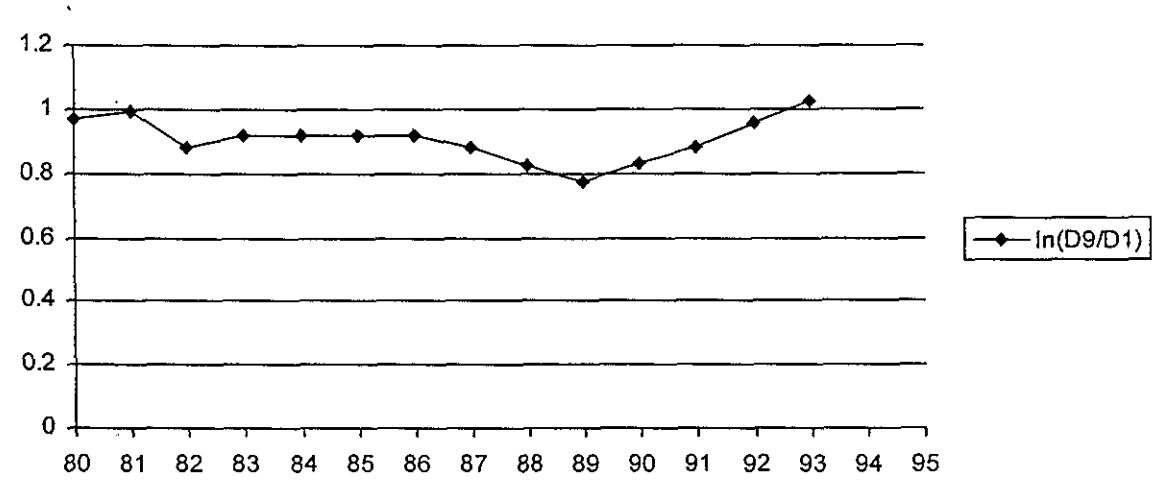
Source: OECD 1996, *Employment Outlook*, Paris.

Figure 3: Trends in earnings deciles (ln D9/D1) (male and female), 1980-95, Sweden.



Source: OECD 1996, *Employment Outlook*, Paris.

Figure 4: Trends in earnings deciles (ln D9/D1) (male and female), 1980-93, Italy.



Source: OECD 1996, *Employment Outlook*, Paris.

One of the most puzzling aspects of widening wage distribution is that wage inequality not only reflects the higher rate of earnings growth of workers in the top of earnings distribution relative to the ones in the bottom of it, but it is often the result of negative real wage growth of the latter with respect to a positive real wage growth of the former. Table 3 and Table 4 report the changes in the annual real after-tax wage growth of low-paid workers (first decile of full-time male workers) relative to high-paid workers (ninth decile of full-time male workers) in the period 1981-1996 in some selected industrialised countries.

In Italy, for instance, between 1990 and 1993 low-paid workers displayed a significant negative real wage growth, while high-paid workers experienced a considerable real wage growth. In France, between 1986 and 1989 real wages for low-paid workers, on average, decreased by approximately 0.4 per cent annually, while real wages for workers in the top of wage distribution, on average, rose by approximately 0.6 per cent annually.

Table 3: Earnings deciles D1, D9 (Male Workers) Rate of Annual Real Growth 1981-1996 (1980 prices) France and Italy.

	FRANCE		ITALY	
	D1 rate of annual real growth (per cent)	*D9 rate of annual real growth (per cent)*	*D1 rate of annual real growth (per cent)*	*D9 rate of annual real growth (per cent)*
1981	1.79	1.85	7.54	0.75
1982	2.02	2.08	0.76	6.64
1983	1.71	0.42	-3.57	-7.17
1984	0.34	-0.53	5.68	9.11
1985	1.46	2.26	-0.05	-2.22
1986	-1.02	0.25	0.19	-1.69
1987	0.017	0.28	3.89	7.19
1988	-0.91	0.64	2.25	-0.59
1989	0.25	1.35	1.98	-0.49
1990	2.11	1.42	-3.5	-2.21
1991	1.49	0.86	-3.64	-2.39
1992	0.89	-0.006	-2.91	6.52
1993	-1.21	-0.915	-2.77	5.6
1994	3	-0.04	-	-
1995	0.06	-0.04	-	-
1996	1.04	0.24	-	-

Source: Author's calculations using OECD data (OECD 1996, *Employment Outlook*, Paris).

Since wage earnings are the most important component of family income, the worsening situation of low-paid workers could have negative consequences in terms of the distribution of total family income and thereby on the distribution of economic well-being of the population. 'The expansion from individual earnings to households disposable income, however, raises a whole host of analytical as well as measurement issues. Economic and demographic decisions within the household are endogenous and so complex that empirical research is far from being able to sort out the linkages' [10].

In contrast to France, the US and Italy in Great Britain real wages for low-paid workers showed an overall positive tendency between 1982 and 1992 (see Table 4). Nevertheless, a quantitative change is taking place in Great Britain. There is evidence that the proportion of workforce earnings less than poverty-wage level is rising significantly. Available data show that the proportion of workers earning wages below 66.6 per cent of the median wage increased from 19.2 per cent to 25.5 per cent over the period 1974-86[11]. According to an OECD study[12] in 1995 the percentage of low-paid workers in total employment (the low-paid threshold is defined as 0.65 times median earnings) was 5.2 per cent in Sweden, 7.2 per cent in Belgium, 11.9 per cent in the Netherlands, 12.5 per cent in Italy, 13.3 per cent in Germany and France and 25 per cent in the US. The increase in the proportion of low-wage jobs, as argued previously for the decline in real earnings for low-paid workers, could have also negative consequences in terms of the distribution of income in the population.

[10] Gottschalk P. and Smeeding T. M. 1997, "Cross-National Comparison of Earnings and Income Inequality", in *Journal of Economic Literature*, Vol. XXXV (2), p.635.

[11] ILO 1997, *World Employment 1996/97*, Geneva, p.67.

[12] OECD 1996, *Employment Outlook*, Paris.

Table 4: Earnings deciles D1, D9 (Male Workers) Rate of Annual Real Growth 1981-1996 (1980 prices), United States and Great Britain.

	UNITED STATES		GREAT BRITAIN	
	D1 rate of annual real growth (per cent)	*D9 rate of annual real growth (per cent)*	*D1 rate of annual real growth (per cent)*	*D9 rate of annual real growth (per cent)*
1981	-3.6	-1.61	-0.41	3.95
1982	-2.94	2.88	0.5	2.45
1983	-1.5	-1.45	2.06	3.64
1984	-0.53	3.65	2	4.31
1985	-1.25	0.29	0.44	1.79
1986	0.05	3.45	2.63	4.84
1987	-0.05	1.83	0.83	3.79
1988	-1.21	2.62	1.66	3.66
1989	-1.48	-2.93	1.22	2.96
1990	-0.24	-2.12	2.65	3.71
1991	-1.05	-2.17	0.28	2
1992	-1.61	2.6	1.52	2.71
1993	0.83	1.4	-0.69	0.86
1994	-2.65	1.85	5.82	5.39
1995	1.98	3.29	0.91	3.02
1996	0.9	2.72	0.03	4.57

Source: Author's calculations using OECD data (OECD 1996, *Employment Outlook*, Paris).

Two further comments may suggest that the situation of low-paid workers could be even worse than the one reflected in statistics on earnings distribution.
First, part-time workers are often left out by statistics on earnings distribution. This is an important limit since a shift from the standard full-time employee status to a variety of part-time and temporary jobs is taking place in most industrialised economies. Since part-time workers are likely to earn less than similar full time workers, the inclusion of the former in the statistics on earnings distribution could further boost wage inequality. In particular, the inclusion of part-time low-skilled workers is likely to widen the bottom part of the earnings distribution.
Second, the recession which hit most industrialised economies in the early 1990s could have masked an underlying upwards trend in earnings inequality. During an economic downturn, lay-offs are likely to be concentrated among workers in the bottom of the earnings distribution. This could have the mechanical impact of lowering earnings inequality, particularly in the bottom half of the distribution. As a consequence, one might expect the deteriorating situation of low-paid workers in Sweden and Italy in the beginning of the 1990s being even worse than the one showed by the previous figures.

C) Monoparental households

Over the last decade several indutrialised countries have experienced an increase in the number of monoparental households. A possible explanation for it could lie in the increase in divorce rates. The role of monoparental households as a possible cause of the rise in household market income inequality and poverty rates is also particularly relevant[13]. 'Single parents families face a triple disadvantage. First, there is only one adult who can go to work in these families, which limits

[13] Gottschalk P. 1997, "Inequality, Income Growth, and Mobility: The Basic Facts", in *Journal of Economic Perspectives*, 11(2), pp. 21-40.

their potential earned income. Second, the fact that the one adult is female typically means that her wages are well below those of equivalent less skilled men. Third, because there is no adult to provide child care, a substantial share of earnings often will go to pay for child care, which does little to improve the overall resources available to the family from work'[14].

[14] Blank R. M. 1996, "Labour Markets and Public Assistance Programs", in *National Bureau of Economic Research Reporter*, Fall 1996, p.12.

Chapter II

CASE-STUDIES: RATIONALE AND METHODOLOGY

1. The demand for university education: time-series models

A significant number of "time series" studies[1] have examined the determinants of the aggregate demand for university education. The main set of variables used by these studies to explain changes in the demand for university attendance are summarized below.

A large group of studies[2] analyses the effect of changing cost of education on university enrolment patterns. It is often suggested that changes in net cost (i.e. the average tuition and fees less per student aid expenditure) are a better indicator of the price elasticity of student enrolment demand than are changes in tuition and fees. An enhancement in student aid expenditure could in fact explain the relative insensitivity of student enrolment to an increase in tuition and fees. Research results[3] generally indicate that in the US changes in university enrolment are not very sensitive neither to tuition and fees changes nor to net cost changes. Nevertheless, several works[4] report that low-income students show the strongest price response, followed by middle-income and then high-income students. For instance, McPherson and Schapiro (McPherson and Schapiro, 1991), employing data for the separate groups of the lower, the middle and upper income families over the 1974 and 1984 period, find that a $100 net cost increase, in 1978-79 dollars, resulted in a 2.2 per cent enrolment decline for low-income students. Additionally, further evidence indicates that the elasticity of university demand is greater for students in two-year universities, for mature students and for women. It should be noted that freshmen tend to be more responsive to tuition changes than are upperclassmen. The reasons are two: (1) upperclassmen will be required to pay

[1] "Time series" studies use data which describe the movement of a variable over time.
[2] See, among the others, Hight 1975.
[3] See, among the others, Becker 1990.
[4] See, among the others, Manski and Wise 1983.

the increase for fewer years and (2) only a substantial increase in tuition is likely to push upperclassmen to switch to lower priced institutions of higher education.

Besides the cost of education, university enrolment rates are likely to be strongly affected by changes in labour market perspectives. Three sets of labour market variables are likely to play a key role in explaining changes in enrolment patterns: wage differentials between high school and university graduates, unemployment rates for high school graduates and unemployment rates for university graduates[5].

Higher wage differentials between high school and university graduates represent an important incentive for students to decide to enrol at university[6]. An increase in wage differentials means that better paid jobs are increasingly for highly educated workers. Nevertheless, the university wage premium is often considered as being an imperfect measure of the private gains from university education because it does not take into consideration the progressivity of the taxation system. High income tax rates may discourage people from attending university. This is the reason why a significant number of studies[7] use the expected after-tax university wage premium as a proxy for returns to university education.

A higher proportion of high school graduates among the unemployed is likely to increase participation in university education. Lower employment

[5] The basic idea behind this argument is that educational attainment is recognised by employers as an indicator of skills- this is the so-called 'screening theory'. Educational attainment can in fact signal to employers the potential knowledge, capacities and workplace performances of candidates for employment. In other words, more education is a signal to potential employers (Riley, 1979).

[6] For more information on some studies evaluating the responsiveness of demand for university education to changes in the returns to university education see Hoenack and Weiler 1979.

[7] See, among the others, Edin and Holmlund 1993 pp.45-46.

opportunities for high school graduates can decrease the opportunity cost of engaging in education by deferring the entry to the labour market.

Conversely, an increase in the proportion of people with a university degree among the unemployed is likely to yield a drop in enrolment rates. An important reason why people decide to enrol at university is in fact because university graduates are likely to face a lower risk of unemployment relative to high school graduates. But if, on the contrary, individuals perceive difficulties in getting a job after completing university education, they might choose to not attend university.

A way of taking into account simultaneously the effects of changes in the proportion of both university and high school graduates among the unemployed on university enrolment yields is to consider the ratio of employment rates for university graduates with respect to employment rates for high school graduates. This indicator is likely to be positively correlated with university enrolment rates. If the employment differential between university and high school graduates increases, this means that unemployment is increasing faster among the latter relative to the former thereby enhancing the relative attractiveness of university.

2. The US and Italy

In the following chapter we provide an empirical analysis of the impact of social welfare expenditure on participation rates in university education among low-income students in two countries: the US and Italy.

One has to bear in mind that this is not strictly speaking a comparative study. It is in fact impossible to find truly comparable data at international level dating back to the very beginning of the 1980s.

An important reason why we focus our attention on these countries is because they have been characterised by a different historical development of social policy[8]. In the US the expansion of social welfare services has been limited whereas in Italy the progress of social reform has never come under real attack, at least until the beginning of the 1990s. According to Pierson (Pierson, 1996) in the US the combination of weak parties, separation of powers, and federalism has created an institutional environment which may have restricted welfare state development. Additionally, since the 1970s the US social security system has faced challenges from critics who have objected to growing costs, unstable financing patterns, and a heavy reliance on public as opposed to private saving (Berkowitz, 1997).

More specifically, as far as our analysis is concerned, it should be noted that the US and Italy differ substantially in university education pricing, labour market outcomes and the composition of social welfare expenditure and its impact on reducing poverty rates.

a) University education pricing

In Italy overall participation in university education is not put at risk by high tuition and fees, whereas in the US cost is often considered to be one of the main barriers keeping children of the least advantaged families out of university[9]. 'The great difference between the US and most of Europe with regard to costs and student financial assistance is that students in the latter pay almost no part of the cost of instruction- that is, pay zero or minuscule tuition fees- whereas in the former students pay a small but noticeable portion of these costs in the public sector and a very large portion in the private, or independent, sector' (Johnstone, 1989 p.30). This is the result of two completely different educational policy approaches.

The Italian government implements an indirect student aid policy. A high proportion of educational resources are awarded to universities in order to keep tuition and fees low. By contrast, the US is characterised by a direct student aid policy. Most educational resources are in fact invested in programmes that provide direct awards to needy students.

Moreover, since university student mobility is significantly higher in the US relative to Italy, the burden of university cost on US households often comprises not only high tuition and fees but also room and board rates.

As far as student aid policies are concerned, one should bear in mind that the US basically rely on fixed loans (mostly administered through the banking system) and grants. An increase in the proportion of students using income-contingent loan schemes to finance their studies can be observed only in the beginning of the 1990s. Italy relies mainly on grants covering tuition and fees as

[8] For more information see Esping-Andersen 1990.

[9] One should also bear in mind that the proportion of private universities is significantly higher in the US than in Italy (See p.60). Additionally, the higher cost of university in the US relative to Italy could reflect

well as living expenses. A very little number of students receive financial aid in the form of loans.

b) Labour market outcomes

Trends in labour market outcomes in the US are quite different from the ones observed in Italy. Italy is characterised by both a higher unemployment rate and by a narrower wage distribution relative to the US[10]. In 1993 in the US full-time workers (male and female) in the ninth decile of after-tax earnings distribution earned 4.14 times more than those in the first decile whereas in Italy the similar figure was 2.79 (OECD, 1996). Furthermore, the incidence of long-term and youth unemployment is much higher in Italy relative to the US. The long-term (one year or more) component of US unemployment was 5.6 per cent in 1990 while the corresponding figure for Italy was 71.1 per cent (see OECD 1993, p.87 for these and other data). Unemployed teenagers are about three times more numerous than their adult counterparts in the US, and up to nine times in Italy (see OECD 1994, p.22 for these and other data). These distinct features of the labour market could play an important role in accounting for differences in university enrolment rates between the US and Italy.

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the fact that US universities have, on average, much more extensive physical plants, non-academic student support services and administrative support than their Italian counterparts.

[10] It is important to note that there is a close relationship between unemployment and wage dispersion. A lower rate of unemployment is generally associated with higher wage dispersion. Increased dispersion in earnings tends to create opportunities for low-skilled workers to find a job. This situation is known in the economic literature as the trade-off between inequality and unemployment (Esping-Andersen, 1998 p.17).

c) Social welfare expenditure

The capacity of social welfare expenditure to reduce the incidence of poverty is significantly higher in Italy relative to the US. According to the calculations made by Kenworthy[11], in 1991 social welfare programmes[12] and taxation systems succeeded in reducing the relative poverty rate[13] by more than seventy-five per cent in Italy whereas in the US the corresponding reduction was approximately fifty per cent[14].

Nevertheless, the omission of in-kind social welfare benefits from the calculation of poverty measures could have biased this result. In particular, since the proportion of in-kind expenditure with respect to social welfare expenditure is higher in the US relative to Italy, the efforts made by the US government in reducing poverty rates could have been underestimated. One should note that in the US in-kind expenditure as a proportion of total social welfare expenditure increased significantly between 1965 and 1980 as a result of the reluctance of policy makers to provide cash benefits to needy individuals (Browning, 1988 p.23).

In the US universal social welfare services are a good deal less developed than they are in Italy. For instance, in Italy there is a general health insurance for the whole population, whereas in the US this service is provided only to those individuals older than 65 (Medicare). Income maintenance programmes such as maternity benefits and family allowances for children, which are a commonplace in most industrialised countries including Italy, have not been instituted in the US. Not surprisingly, mean-tested services account for a higher proportion of social welfare expenditure in the US relative to Italy.

[11] See Table 1 in the first chapter.
[12] Non-cash social welfare provisions are here excluded.
[13] The relative poverty rate is defined as the percentage of individuals in households with incomes (adjusted for household size) below 40 per cent of the median within the country considered.
[14] It is important to note that in the US in the first half of the 1990s sustained economic growth could have contributed to reduce poverty rates.

The proportion of private social welfare expenditure with respect to total social welfare expenditure (provisions from public and private sources) is substantially higher in the US relative to Italy, i.e. 43 per cent against 14 per cent (Artoni et al., 1999 p.193). Two reasons could explain the greater diffusion of the private social insurance in the US relative to Italy.

First, the higher proportion of means tested provisions[15] with respect to social welfare programmes in the US relative to Italy could have pushed a large number of middle class people in the former to choose a private social protection system. The poor certainly benefit from non-means tested programmes, but is not the expressed purpose of these programmes.

Second, overall, social welfare provisions are significantly more generous in Italy relative to the US. For instance, in the US pensioners receive a maximum of 40-45 per cent of their wage whereas in Italy the corresponding figure is, on average, 60 per cent (Paci, 1998 p.31)[16]. As a consequence, in the US private social benefits are often seen as measures supplementing public support. For example, approximately 71 per cent of Americans have private heath insurance. Medicare is the primary public insurer, with two thirds having some form of private supplement to Medicare (Cutler, 1995 p.34).

It is interesting to note that there are significant differences in the composition of total social welfare expenditure (provisions from public and private sources) between the US and Italy. For instance, in 1994 in Italy pension benefits accounted for approximately 15.5 per cent of its GDP whereas in the US the corresponding figure was around 9.5 per cent. By contrast, in 1994 the

[15] Unlike means-tested programmes (three well-known US antipoverty programmes using mean-tested eligibility criteria are: Medicaid, Food Stamps Programme and Supplementary Security Income Programme), which have an income test for benefit eligibility and are targeted towards the poor, non-means tested policies base eligibility on some other criteria and are primarily directed towards the middle class.

[16] An explanation for the lower poverty rates among elders (over 65) showed by Italy relative to the US could lie in the higher degree of generosity of pension benefits in the former relative to the latter.

proportion of health expenditure with respect to GDP was higher in the US relative to Italy, i.e. 14 per cent against 8 per cent (Artoni et al., 1999 p.193).

In Section 3 we set up two new time series enrolment models (i.e. for the US and Italy respectively) in which social welfare expenditure is added to the variables used by previous enrolment models and described in Section 2 to account for changes in participation rates in university education.
We use econometrics to measure the impact of social welfare expenditure on participation rates in university education among low-income students. Econometrics deals with the empirical measurement of relationships postulated by economic theory. More precisely, it quantifies the strength with which various factors at the same time work to determine changes in a given variable. On the contribution of econometrics to the science of economics and, more in general, to society at large, in a recent paper Nobel Prize winner Trygve Haavelmo argues that 'the task of econometrics from the point of human welfare is to try to extract from past data useful information for whatever economic society it should be found desirable to reach' (Haavelmo, 1997 pp.14-15).

3. Modelling the influence of social welfare expenditure on participation rates in university education in the US and in Italy: preliminary thoughts

According to the considerations made the previous section, in developing the model to test the demand for university education in the US and in Italy the following three ideas should be kept in mind.
First, while overall participation in university education is unlikely to be affected by changes in tuition and fees in Italy, we might observe US enrolment rates,

especially among low-income students, to be partially explained by changes in cost.

Second, given the relatively low level of unemployment in the US one might interpret having a university degree as being crucial not for finding a job but especially to get a better paid job. By contrast in Italy, since unemployment is high and hits especially low-skilled people, having a university degree is often perceived as a means to reduce the risk of unemployment and economic marginalisation[17]. Accordingly, changes in employment differential between university and high school graduates are likely to strongly account for changes in university enrolment rates especially in Italy.

Third, in the US the top of the wage distribution is characterised by a higher dispersion relative to Italy. This means that higher levels of educational attainment are likely to be better rewarded in the US relative to Italy. As a result, changes in wage differential between university and high school graduates are likely to have a stronger impact on participation rates in university education in the US relative to Italy.

In summary, changes in market incentives (i.e. wage and employment differentials) are likely to be crucial in explaining changes in university enrolment yields in Italy whereas in the US changes in public educational policy (tuition, fees and subsidies) could be at least as important in determining changes in the participation in university education as changes in market incentives.

The mechanism through which social welfare expenditure makes its major contribution in buttressing participation rates in university education is also likely to operate in a different way in the US than in Italy. In the US the main task of

[17] The Italian Parliament is soon expected to vote a proposed law on making specific educational or vocational training compulsory to obtain certain types of jobs. If this law is approved, this would make the impact of education and training on labour market outcomes even more evident relative to the present circumstances (*La Repubblica*, 2/12/98, p.2).

social welfare expenditure could be to increase the ability of low-income households to pay for university education. By contrast, in Italy the major role of social welfare benefits could be to make it less necessary for low-income students not to enrol in the university or to drop out of university in order to support themselves and their family[18]. By providing an acceptable standard of living to the least advantaged families generous social welfare programmes in Italy may encourage low-income people with a high school degree and who wish to continue studying to postpone the decision to look for a job until they have finished their university studies.

Changes in participation rates in university education may also be attributed to compulsory schooling laws. Evidence presented by Angrist and Krueger (Angrist and Krueger, 1991) suggests that a major explanation for the trend in completed schooling attainment for men born between 1930 and 1960 in the US could lie in changes in compulsory education laws. Since under the period in examination in the US as well as in Italy no changes in compulsory schooling laws have occurred, the effect of this variable is not taken into account in our analysis[19].

We use the log-linear model to test the demand for university education because this is one the most efficient ways to measure the response in terms of number of people enrolled at university to changes in social welfare expenditure. In fact, in the log-linear model the elasticity of the independent variable with

[18] In particular, in Italy generous pension benefits could relieve low-income students having old parents of the burden of supporting them.
Kaganovich and Zilcha (Kaganovich and Zilcha, 1999) argue that there is a close relationship between parents' retirement benefits and their children's human capital. Parents derive utility from human capital of their children and hence invest during their productive period in their children education. This is so because when parents retire, the labor income of their children's generation is taxed to finance their social welfare benefits. They also suggest that the preceding consideration is often disregarded in each parental decision.
[19] Very recently (i.e. December 1998) in Italy the compulsory schooling age limit has been raised from 14 years old to 15 years old.

respect to changes in the dependent variable coincides with the estimated value of the regression coefficient of the dependent variable[20].

The general university enrolment model is given by:

ENR=(W, EMP, NCOST, SOC)

where ENR is the university enrolment yields, W the wage differential between high school and university graduates, EMP the employment differential between high school and university graduates, NCOST the net cost of university education (tuition, fees, room and board rates minus per student aid) and SOC the social welfare expenditure.

The model adjusted to the US case is:

ENR=(W, NCOST, SOC)

while the model adjusted to the Italian case is:

ENR=(W, EMP, SOC).

To estimate the effect of social welfare expenditure on participation rates in university education in the US and in Italy two different indicators are employed.

In the US case an indicator linking directly changes in social welfare expenditure to changes in GDP is used (i.e. the annual rate of growth of the ratio of social welfare expenditure as a proportion of GDP). This is because this

[20] In the log linear model ($\ln y = \alpha + \beta \ln x$) the elasticity of y with respect to changes in x coincides with the regression coefficient β.
$\eta = [(dy/y)/(dx/x)] = (d\ln y)/(d\ln x) = \beta$

measure enables us to capture satisfactorily the positive effect of social welfare expenditure on university enrolment rates over downswings. During recessions a higher demand for university education triggered by a reduction in the opportunity cost of engaging in education could be in fact matched by an enhancement in social welfare expenditure, which in turn increases due to automatic stabilizers[21] (e.g. unemployment benefits and a progressive taxation system).

The reason why we do not use simply the ratio of social welfare expenditure as a proportion of GDP is because this variable might be correlated with the wage differential between university and high school graduates. Again in economic downturns, high values of the ratio of social welfare expenditure as a proportion of GDP could be associated with a reduction in the wage differential. Two different assumptions are implicitly made here. First, wages mirror the quality of labor performances. Second, among those workers with a high school degree one can distinguish different levels of quality of labor performances. During downswings the workers with lower skill/performance are likely to lose their job. If during economic recessions workers in the bottom of the earnings distribution drop out of the sample, this will have the automatic effect of increasing the average wage paid to workers with a high school degree and this, in turn, will reduce the wage differential (the average wage paid to workers with a university degree is held here constant).

Moreover, for those low skilled workers who are likely to lose their job over downswings the following observation can be made. They will unlikely take up a job paying less than their reservation wage which of course depends on national social welfare legislation[22]. Therefore, during a period in which social welfare expenditure goes up (e.g. recessions) the wage differential between skilled and unskilled workers not only will decrease (as explained above) but is also likely to

[21] For more information on the impact of automatic stabilizers on social welfare expenditure over downswings see Whynes 1993.

stay at a relatively low level for some time (this strengthens the unwanted correlation between these two variables). This is because the wages of unskilled labor (i.e. the denominator of the wage differential) will be artificially higher since workers who would have accepted very low paid jobs would not do so and would prefer to stay unemployed and receiving unemployment benefits. The structure of the replacement rates could make this effect even stronger. In many industrialised countries the lower-paid are entitled to higher unemployment benefits relative to their income than those in higher-paying jobs. This is because benefits are either subject to ceiling or because benefits rates are graded by earnings. As a result of these practices, the mechanism by which wages are influenced by the benefits system could be particularly strong for lower-paid and virtually non-existent for the higher paid, thus potentially compressing the wage structure.

Psacharopoulos (Psacharopoulos at al., 1996) studied the relationship between returns to education and the macro-economic cycle in Mexico during the 1980s. He finds empirical evidence that earnings differentials between skilled and unskilled workers are lower in economic downswings.

It should be noted that another advantage of using the log-linear model is that by employing the logarithm of the annual rate of growth of the ratio of social welfare expenditure as a proportion of GDP we avoid a possible correlation arising between this variable and the constant term. In a hypothetical steady-state growth (i.e. where social welfare expenditure and GDP grow at the same constant rate) the annual rate of growth of the ratio of social welfare expenditure as a proportion of GDP is in fact equal to one.

The same indicator used to estimate the effect of social welfare expenditure on university enrolment yields in the US could not be employed for Italy. One obstacle is in fact the strong correlation that might arise between, on the one hand,

[22] The generosity of unemployment benefits is often measured in terms of the replacement rate and of the maximum length of benefit periods. Entitlements usually vary by age and by family circumstances (being

the employment differential between university and high school graduates and, on the other hand, the annual rate of growth of the ratio of social welfare expenditure as a proportion of GDP. In downturns high values of the annual rate of growth of the ratio of social welfare expenditure as a proportion of GDP may be correlated with an increase in the employment differential. During downswings unemployment is likely to hit less-educated workers harder and this will push the employment differential up[23].

For this reason, in order to examine the effect of social welfare expenditure on participation rates in university education in Italy we use simply the level of net social welfare expenditure (i.e. social security expenditure minus social-security taxes).

The enrolment rate is the dependent variable in the regression model and is used as indicator of participation in university education. Freshman enrolment rates[24] and drop-out rates are both considered here. Entry into and exit from the population of university students are in this way taken into account.

We rely on the definitions of social welfare expenditure used by the US and the Italian main statistical services[25]. Clearly, these are slightly different definitions but, as said earlier in this chapter, this work is not strictly speaking a comparative exercise. One should note forget that we concentrate our attention on a broad indicator of social welfare expenditure because we want to take into consideration all types of cash and non-cash social welfare benefits potentially influencing the university education affordability for children from lower income

higher for a head of household). The benefit level tends to decline during a long spell of unemployment.

[23] Blank and Blinder (Blank and Blinder, 1986) find that nonwhite and young workers are more severely affected by economic recessions in the US.

[24] It is important to note that in Italy it is quite hard to estimate university freshman enrolment rates. This is because a relatively high proportion of men enrolls in the first year at university having the only purpose of postponing one year the military service. This could yield a significant bias in the results of freshman enrolment models.

families[26]. In both case studies we deliberately exclude from social welfare expenditure those categories of benefits aimed at supporting children by-passing their parents. Examples of these are given by education expenditure as well as other programmes designed to help children outside the home.

4. Limitations of the study

Some of the challenges faced by using the time-series approach are that aggregate measures conceal several factors at individual level which may have an important role in explaining changes in participation rates in university education. A study using data from longitudinal surveys would certainly provide better estimates on the impact of social welfare programmes on university enrolment rates among low-income students. Many longitudinal surveys collect information on several monetary and nonmonetary characteristics of individuals and their families which are likely to exert a strong influence on their level of schooling. An example of these is given by parental education. One of the factors contributing to how much education someone attains is in fact the educational attainment of his or her parents. A highly intellectual stimulating environment at home (proxied by a high level of educational achievement of the parents) is likely to be reflected in higher educational achievement of the children. This might be interpreted as a result of the day-to-day interactions of higher "intellectual quality" between parents and children. Additionally, a longitudinal analysis would be capable of separating the beneficial effect of the parental income coming from social welfare

[25] For a detailed description of the various categories of social welfare expenditure in the US and in Italy see p.82 and p.113, respectively.
[26] See p 3.

programmes on children's years of schooling from the one triggered by other sources of income.

The level of aggregation of our analysis is relatively high. For instance, in the case of Italy it has not been possible to perform an analysis at regional level because data on unemployment for high school and university graduates are available at regional level only starting in 1993. For previous years, data referring to unemployment for high school and university graduates have been put together and it is not possible to separate them. By contrast, data on unemployment for both high school and university graduates by main geographical area (i.e. north, centre and south) are available since the very beginning of the 1980s.
In the US case the analysis is carried out at national level. Here again the choice has been determined by data availability. The selection, based on a different criterion from the geographical one used in the case of Italy, of the proxy for low-income students has made impossible an empirical analysis at a more disaggregated level[27].

. As in most previous studies modelling participation rates in university education, we also assume that enrolment demand has a linear functional form and that its parameters can be estimated using the ordinary least squares (OLS) method.

4.1 Omitted variables

Econometrics relies heavily on the assumption that the model to be estimated is correctly specified. When relevant variables are omitted from the

[27] For more information see subsection 4.2.

regression, one faces the so-called "specification error". A brief discussion on possible omitted variables in our university enrolment specification follows.

In the model the effects of the level of university resources on enrolment yields are not taken into account.

A large inequality in spending per-student could have a negative effect on university participation rates among low-income students. The argument is that inequality in the provision of educational resources across universities undermines the quality of schooling received by students from lower-income families thereby having an effect on their educational performances[28] and, in turn, on their employment prospects. Differences in the quality of education could show up in the different labour market performances of otherwise identical workers who received the same quantity of education at different places or at different times.

This issue is currently hotly debated in the US where children of the least advantaged families without a grant are likely to attend universities with a lower per-student spending[29] (e.g. Community Colleges[30]) relative to the national average.

Low per-student spending could have a detrimental effect on participation in university education in two ways.

First, universities with little resources per student might offer an environment that is less conducive to learning relative to universities with high per-student spending. This could lead to high drop-out rates in the former. An environment that is less conducive to learning could in fact discourage students from participating in class, could dampen career aspirations and could undermine self-confidence. Numerous empirical works show that school resources are likely to

[28] For more information see Card and Krueger 1996.

[29] Poor universities are often characterized by a higher ratio of students per professor, by higher class sizes and by worst paid professors.

[30] 'Compared to students who first enroll in a four-year college, community college students are more likely to be first in their family to attend college and are much less likely to have parents to have graduated

have a positive impact especially on the performances of low-income students. For instance, Hanushek (Hanushek et al., 1998) finds that smaller classes improve educational attainment for lower income but not for higher income students.

Second, since employers tend to recognise the higher capacities of people who have attended universities with higher resources per student relative to the ones who were enrolled at poorer universities, one might argue that the former have better employment prospects with respect to the latter. For instance, Altonji and Dunn (Altonji and Dunn, 1995) find empirical evidence that differences between siblings in the quality of high school attended have a substantial positive relationship with differences in the wages of high school graduates. Murray (Murray et al., 1998) argues that an increase in spending of 11 per cent in the poorest 5 per cent of all US school districts could lead to an enhancement in future earnings for this group of 1.5 per cent.

It seems very likely that the impact of university expenditure on enrolment rates will be stronger in the US than in Italy[31]. Since the proportion of university students enrolled at private institutions with respect to total enrolment is higher in the US relative to Italy, one may conclude that the former is characterised by a larger inequality in spending per-student relative to the latter. In the US private institutions account for approximately 21.8 per cent[32] of total university enrolment whereas in Italy the corresponding figure is around 3.5 per cent[33].

Nevertheless, it is important to note that whether the level of school resources has an effect on student outcomes is still a very controversial issue. Several authors[34] argue in fact that, after controlling for the effects of family background,

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from a four-year college. Almost 36 per cent of community college students are at least 30 years old, compared to only 22 percent of public four-year college students' (Kane and Rouse, 1999 p. 66).

[31] The last ten years have seen a substantial increase in the number of universities in Italy. Since this increase has not been accompanied by the same enhancement in the level of educational resources, the result has been a higher dispersion of resources among universities thereby leading to a lower per-student spending relative to past years. This could have undermined the overall quality of schooling.

[32] Fall enrolment in 1993.

[33] Fall enrolment in 1994.

[34] See, among the others, Blau 1996, p.6 and Hanushek 1986 p.1150.

differences in school resources could have little to do with differences in students' performance. This is because students from wealthier families are likely to enrol at schools with more resources per student while students from poor families are likely to attend schools with little resources per student.

Another argument for not including the level of university resources among the explanatory variables of an aggregate enrolment model is that it is not possible to control for changes in the distribution of these resources. Suppose that spending per student increases significantly in a few US states due to differing educational policies thereby leading to an enhancement in the overall level of university resources in the US. Empirical studies using aggregate national data on university expenditure would not be able to capture this effect. The model would probably consider the higher resources per student as equally distributed across the US thereby yielding quite misleading results.

Other important omitted variables in the model are ability, talent, aspiration and motivation. They pose serious problems of estimation also for micro analyses which have not been able to solve them yet in a satisfactory way. For instance, individual ability may greatly affect participation rates in university education. Across individuals with differing abilities, those with higher levels of ability choose higher levels of schooling. Nevertheless, to the extent that ability and talent may be inherited or directly affected by family background (Lentz and Laband, 1989) one might expect a strong correlation between these two variables. For instance, Chiu (Chiu, 1998) argues that material possession is likely to have a determining effect on how one's talent is developed. Accordingly, while all children who grow up in richer families have the opportunity to develop their talent, this possibility may be denied to some children from lower income families. Various sociological models of student choice to participate or not to participate in university education focus on the factors that influence aspiration. Several

studies[35] indicate that expectations of others, such as parents, teachers and friends, are likely to have a strong influence on student aspirations.

Other variables such as neighbourhood and the presence of a nearby college[36] might also be important determinants of changes in university enrolment rates. Aggregate analysis cannot take these factors into consideration. Nevertheless, it is important to say that one might expect a strong correlation between these variables and the level of income. Children from wealthier families are likely to live in better neighbourhoods. Especially for the rural poor university proximity may act as an important facilitation in enrolling at university (Holleb, 1972).

Effective schooling might be an important factor for disadvantaged students, because of the weaker foundation for learning represented in their home and community backgrounds and because they are likely to be concentrated geographically in areas with the greatest educational problems.

4.2 Low-income students: methodology and data issues

In both case studies the idea is to compare the results stemming from an analysis at national level with the ones emerging from a study in which only a subset of the university population is considered. Since we expect social welfare expenditure having a stronger impact on participation rates in university education among children of the least advantaged families, the attention is focused here on those students who are likely to have lower income relative to their peers. Students

[35] See, among the others, Hossler, Braxton, and Coopersmith 1989.

[36] Card (Card, 1993) uses a simple indicator for the presence of a nearby college as an instrument for schooling. According to him children who grow up near a four-year college have significantly higher education and earnings than other children. Rouse (Rouse, 1994) shows that college proximity is an important determinant of college attendance.

enrolled at historically black colleges and universities and students enrolled at southern universities are used as proxies for low-income students respectively in the US and Italy.

Since data on social welfare expenditure are broken down by region in Italy, we have a good indicator of the amount of social welfare benefits allocated to households in the south of Italy. By contrast, data on social welfare expenditure are not broken down by race of beneficiary in the US. As a consequence, we are forced to use data on social welfare expenditure at national level also for estimating the effect of social welfare benefits on participation rates in university education among low-income students.

Additionally, since there are no available data on wages by educational attainment and by geographical area in Italy, we are forced to employ data on the wage differential between university and high school graduates at national level for the analysis on the south of Italy. Clearly, this is only a rough approximation of reality; according to Checchi (Checchi, 1998 p.500), average wages are in fact likely to be lower in the south of Italy relative to Italy as a whole also within the same group defined by age (experience) and education[37]. In a recent work Del Colle (Del Colle, 1998 pp.37-50) calculates the average yearly wages of workers in the private sector by major occupations, by geographical area, by branch of economic activity and by size of firm in Italy between 1990 and 1996. Even controlling for major occupations, branch of economic activity and size of firm wages are found to be lower in the south relative to the north. Nevertheless, it should be noted that Del Colle finds that major occupations, the branch of

[37] It is important to note that returns to education differ significantly also between genders. Nevertheless, in the analysis we cannot control for gender because data on social welfare expenditure are not broken down by gender of beneficiary neither in the US nor in Italy.

economic activity and the size of firm have a greater impact on wages relative to the geographical area.

In the US data on earnings by educational attainment, sex, race and Hispanic origin come from the Current Population Survey. Unfortunately, for 1992 and 1993, earnings data by educational attainment, sex, race and Hispanic origin are not available. This is the reason why we are forced to use data on wages by educational attainment for all races to estimate enrolment rates at historically black colleges and universities.

As it has been already observed in several studies[38] (and this is also confirmed looking at the data from the aforementioned survey), in the US white workers have, on average, better employment prospects relative to black workers. Besides educational attainment, race is also likely to have an important role in affecting wages.

Gender is likely to have an important impact on employment prospects. Using the 5 per cent of the 1990 US Census, Fain (Fain, 1999) finds that gender and education have the greatest impact on occupational outcomes, followed by full-time work status.

[38] See, among the others, Glazer 1986 and Mason 1999.

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Chapter III

CASE-STUDIES

THE US CASE

1. Introduction

We start the case studies analysis with the US. The US is characterised by a relatively low unemployment rate but shows the highest earnings dispersion and the highest poverty rate among industrialised countries.

This chapter explores one aspect of the present multipurpose nature of the US social welfare system; it asks whether higher social welfare benefit levels increase university enrolment yields of children from low-income families. Although none of the present social welfare provisions has been designed to increase participation rates in university education among children of the least advantaged families, the significant increase in inequality and poverty rates experienced in the US over the last two decades might have broadened the scope of the social welfare measures encompassing consequences that were totally unexpected at the time the welfare state was created. 'Children of college age are in fact no longer eligible for welfare as dependent children, although higher guarantees may allow young adults more financial freedom if their parents and younger siblings who continue to receive welfare are supported with higher guarantees' (Butler, 1990 p.199).

The effect of social welfare benefits on participation rates in university education among children from low-income families is likely to be stronger in countries where all students who have successfully completed postsecondary education gain the automatic right of entry to the university and in which students receive financial aid mainly in the form of grants. In these countries, given the large participation in university education, the number of grants and scholarships available could not satisfy the entire demand. This could make more difficult the access to university education for low-income students. Children raised in affluent families have an important advantage compared with those raised in poor families, both because rich parents pass superior

endowments and because they can invest more in their children. These findings are potentially consistent with models in which credit market imperfections constrain low-income households to make suboptimal investments in their children's human capital accumulation. Accordingly, generous social welfare programmes, being an important income source for low-income households, could facilitate parents' investment in their children thereby representing an important tool for increasing participation rates of low-income students in university education[1].

One may criticise this approach by saying that parents are likely to spend most transfer income on themselves or on other goods and services that do not increase their children human capital. A 1988 US study (Lazear and Micheal, 1988 p.87 and p.94) reports that, on average, households spend about 38 percent of their income on children while the remaining 62 per cent is spent on the adults.

Empirical evidence (Mayer, 1997), however, shows that rich parents allocate a smaller proportion of their expenditure to children than poor parents. Note that this may provide an extra rationale for redistributive policies (i.e. transferring income from the rich to the poor) because such policies would increase total human capital investment.

The structure of the remainder of the chapter is as follows. Some basic explanations for the rise in inequality and higher poverty rates in the US over the last two decades are presented in Section 2. Section 3 develops a model for university education enrolment including social welfare expenditure as a proportion of GDP among the explanatory variables. Section 4 describes the data and presents some empirical results. Section 5 concludes.

[1] In a recent book Rossi (Rossi, 1997 p.17) argues that in Italy there is a close relationship between welfare state provisions and the educational system. As a consequence, any plan for the reform of the welfare state should take this situation into consideration.

2. Inequality, social welfare policies and university education

Over the past two decades the percentage of the US population living below the poverty line has increased considerably. Major explanations for it basically lie in 'lacklustre economic growth and deterioration in the labour market for less-skilled workers (diminished labour union power, competition from low-wage countries, technological change, etc.)'(Triest, 1998 p.112).
The highest poverty rates are found among black, Hispanic, single mother, and low-education families (Haveman and Bershadker, 1998).

In the 1980s and during the first half of the 1990s the US experienced a significant and continuous increase in wage inequality. Workers at the bottom of the earnings distribution faced a significant deterioration of their real earnings.
US low-paid workers (first decile of male workers) displayed a continuous negative real wage growth over the period 1981-1994. In the aforementioned period real wages for low-paid workers, on average, decreased by approximately 1.23 per cent annually, while real after-tax wages for workers in the top of wage distribution (ninth decile of full-time male workers), on average, rose by approximately 0.73 per cent annually[2].
Going deeper into this issue, it can be noted that the age-income profile in the US has become steeper across the working ages. The situation of younger households (under age 30) has deteriorated since the end of the 1970s while in the same period elders (over age 65) have greatly improved their relative and absolute income position, with the largest difference occurring at older age (Smeeding and Sullivan, 1998 p.255).

A wider earnings distribution is likely to have produced negative consequences especially among young monoparental households. The reason

[2] Calculations are made using data contained in Table 4 in the appendix of the first chapter.

for it is twofold. First, the rise in wage inequality could have undermined the potential earned income of the only adult who can go to work in these families. Second, since the one adult is likely to be a less-educated woman, the rise in wage inequality could be interpreted as a sign of her worsened position in the labour market. Therefore, it is possible to argue that the combined effect of the increase in the number of single parents families with the rise in wage inequality further increased poverty rates.

The increase in poverty rates would have been much larger if all social welfare programmes would have been removed. In fact, even though a relatively small increase in US social welfare spending can be observed between 1980 and 1994[3], several studies[4] highlight the key role of social welfare programmes in reducing poverty rates. In particular, Weinberg (Weinberg, 1991) uses data from surveys that measure multiple public-transfer programme participation and finds that, for the years 1979, 1984 and 1986, poverty rates are reduced by two-thirds once public transfers are added to pre-public transfer income.

Besides the rise in earnings inequality and higher poverty rates, the last two and half decades have also seen an increase in the burden of university cost on individual students and their families. Over the last two decades average charge for tuition, room and board at two- and four-year colleges and universities increased faster than family income, especially at private institutions (US Department of Education and National Center for Education Statistics, 1997). From 1971 and 1995 average tuition and fees at public institutions of higher education escalated from $1.438 to $2.178 (in 1995 dollars) representing 51 per cent increase (Alexander, 1998 p.397). Rising institutional expenditures due to technological advances, faculty salary and

[3] For the trend in social welfare expenditure as a proportion of GDP between 1980 and 1995 see table 2 in the first chapter.

[4] See, among the others, Smeeding, 1997 and Center on Budget and Policy Priorities, 1998.

other labour cost increases are often cited as important explanations for the persistent increase in university costs.

Moreover, it should be noted that, although the real value of total aid available to university students has increased since 1980, this growth primarily in the form of loans has not kept pace with growth in tuition and fees levels or in the eligible student population (Gladieux and Hauptman, 1996). Several authors[5] have expressed their concern about the growing importance of loan programmes relative to grants as forms of financial aid for US students[6]. They argue that loans, even when subsidised, are less effective in inducing minority and low-income students to enrol at university than do grants. Therefore, they conclude that in the US the increased reliance on student loans may threaten the equal opportunity goal.

Figure 1 reports data on average annual household subsidies per student at tertiary level[7] in selected OECD countries between 1994 and 1995. The following categories of subsidies are included: scholarships, grants, loan-related subsidies, family or child allowances contingent on pupil/student status, tax reductions and public subsidies specifically for housing, meals, transport, books... etc. With the exception of Mexico, household subsidies per student at tertiary level in the US are significantly lower than in other OECD countries. Furthermore, in the US the access of low-income students to higher education is exacerbated by the higher level of tuition costs relative to other OECD countries (OECD, 1997 p.84).

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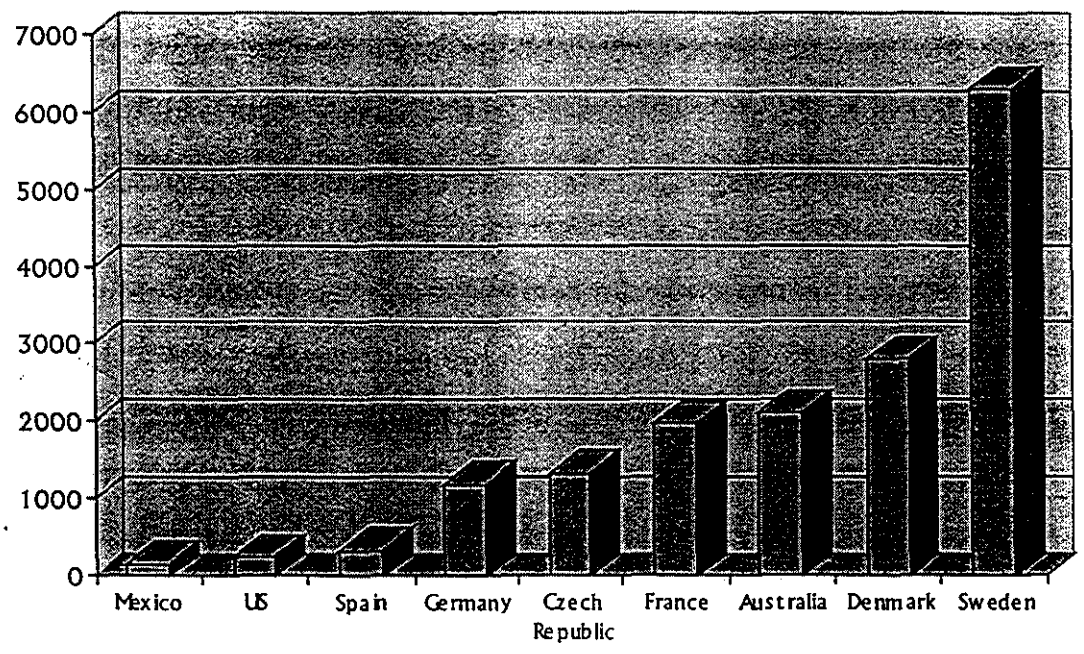
[5] See, among others, Hansen 1989.

[6] Loan programmes accounted for about 20 per cent of total student aid in the middle of the 1970s and they reached almost 50 per cent in the end of the 1980s.

[7] One should note that tertiary education (also referred to as higher education) comprises three (5-6-7) International Standard Classification of Education (ISCED) levels. Basically ISCED level 5 is non-university higher education and it includes education beyond the secondary school level involving programmes (e.g. vocational) that terminate in less than a 4-year degree. ISCED level 6 comprises education programmes that lead to a 4-year undergraduate degree. The highest level, ISCED level 7, includes graduate and professional degree programmes. Only full-time students are taken into account.

The combination of the rise in poverty rates and the failure of student aid policy to guarantee the access to university education to all low-income students could have produced the effect of making participation rates of children of the least advantaged families in university education susceptible to changes in social welfare expenditure.

Figure 1: Average annual household subsidies per student at tertiary level, 1994-1995, US dollars converted using PPPs.



Values for certain sub-categories of specific subsidies are missing in the US, Germany and Australia.

Source: OECD, 1997.

3. The model

In estimating university education enrolment rates we consider the influence exerted by both changes in net cost and by changes in returns to university education. The term "cost" covers not only tuition and fees but it includes also room and board rates. To measure the changes in the returns to university education we use the expected after-tax wage differentials between university and high school graduates.

Not all categories of social welfare spending provide resources which can be used freely by parents for any purpose including to take care of their children (i.e. income transfer programmes) or which are likely to affect families' budget (i.e. noncash assistance programmes). Social welfare spending includes also programmes to help children that by-pass their parents. These are basically educational programmes and programmes providing money to institutions, such as orphanages, that try to compensate for deprivations at home, rather than providing money to a child's family to alleviate those deprivations. Consequently, total social welfare expenditure is not a good measure to evaluate the impact of social welfare programmes on participation rates in university education among children from low-income families. To have a more efficient indicator we shall create an adjusted social welfare spending indicator. Within social welfare programmes we consider only those provisions providing cash and noncash support to families. Accordingly, we deduct education expenditure as well as expenditure on other programmes for children outside the home (i.e. Child nutrition and Child care) from total social welfare expenditure.

Following the considerations mentioned above and those presented in the second chapter, the enrolment specification applied is:

$$\ln ENR = \alpha + \beta \ln [Wu(1-\tau u)/Wg(1-\tau g)] + \eta \ln SOC + \lambda \ln NCOST + \varepsilon$$

where ENR is the university education enrollment yield, W the weekly wages, τ the average income tax rate, SOC the annual rate of growth of the ratio of the adjusted social welfare expenditure as a proportion of GDP, NCOST the real net cost of university education (i.e. the average undergraduate tuition, fees, room and board rates minus per student aid expenditure) and ε the error term; subscripts u and g denote university and high school, respectively.
A previous study (Edin and Holmlund, 1993) suggests that the after-tax wage differentials between university and high school graduates should be lagged one year. In other words, it is hypothesized that students' formation of their expectations of the rates of return to university attendance starts one year before they actually enroll at university .

The model is tested empirically using three different university education enrolment ratios as dependent variables: enrolment yields of all students, enrolment yields of students at historically black colleges and universities[8] and enrolment yields of students at historically black public colleges and universities. The rationale for it is to estimate the impact of social welfare expenditure on participation rates in university education of low-income students with respect to all students. Identifying two subsets of the US university and college students population (i.e. black students and black students enrolled at public institutions) we employ two different proxies for low-income students. First, since the probability of living in poverty in the US is approximately two and a half times higher for black Americans relative to all Americans (see Table 1), we use the black student enrolment yields as a first proxy for enrolment yields of low-income students. Second, since private

[8] In 1990 historically black college and universities enrolled 17 per cent of all black students but produced 27 per cent of all bachelor's degree awarded to black students (Hoffman et al., 1992). In 1993 historically black college and universities enrolled about one fifth of all black college students (Ehrenberg and Rothstein, 1994 p.90; Constantine, 1995).

institutions are higher priced than public institution, low-income students are more likely to be enrolled at the latter. As a consequence, black students enrolled at public institutions are a second proxy for low-income students.

Table 1: Distribution of the Poor by Race, US: 1990-1996, Selected Years.

Years	*Persons in poverty (Number in thousands)*	*Poverty rates (percent)*	*Black in poverty (Number in thousands)*	*Black Poverty rates (percent)*
1990	33,585	13.46	9,837	32.12
1992	36,880	14.47	10,613	33.35
1994	38,059	14.62	10,196	31.22
1996	36,529	13.77	9,694	28.92

Source: Author's calculations using US Census Bureau data.

Table 2 provides data on changes in real net cost of historically black colleges and universities in the US between 1979 and 1993. It can be observed that in the aforementioned period the real net cost rose by approximately 127 per cent. The increase in net cost together with a larger proportion of people in poverty could have undermined the participation of children from lower income families in university education.

Note that public institutions showed a higher increase in real net cost than private institutions; while real net cost of the former increased by about 174 per cent, real net cost of the latter rose by approximately 105 per cent.

Table 2: Changes in yearly real net cost of historically black colleges and universities: 1979-1993, Constant 1979 dollars.

Years	*Public and Private Institutions*	*Public Institutions*	*Private Institutions*
1979	533.16	281.27	1189.71
1980	566.47	319.47	1202.39
1981	620.12	332.25	1354.40
1982	706.93	369.29	1603.02
1983	756.38	412.34	1664.89
1984	789.23	431.48	1715.28
1985	814.06	451.36	1769.68
1986	973.10	608.72	1937.48
1987	963.36	598.59	1929.07
1988	973.90	580.29	2004.70
1989	1011.97	595.45	2123.01
1990	1032.71	584.40	2228.83
1991	1114.61	676.09	2329.55
1992	1153.54	721.85	2340.02
1993	1213.44	771.94	2444.62

Source: Author's calculations using National Center Education Statistics data.

4. Data description and empirical results

The model is tested empirically using US yearly data from 1979 to 1993[9]. Data on wages for both university and high school graduates have been provided by the US Bureau of Labor Statistics. These data refer to the annual average of mean "usual"[10] (sic) weekly earnings of full-time workers (male and

[9] 1993 is the last year for which data on aid expenditure and average tuition and fees paid by students at historically black colleges and universities and by students at historically black public colleges and universities are available.

[10] Source: Bureau of Labor Statistics, Current Population Survey, Table 4-A and 4-B, 1979-93.

female) 25 years and over. By high school graduates we refer to individuals whose educational history comprises just 4 years of secondary school while university graduates refer to people having successfully completed 4 years of college/university or more.

Data on enrolment ratios[11], on student aid expenditure[12] and on average undergraduate tuition, fees, room and board rates[13] paid by students are from the National Center for Education Statistics (NCES). Black student enrolment yields are measured by enrolment ratios in historically black public and private colleges and universities[14]. Student aid[15] includes Supplemental Educational Opportunity Grants and State Student Incentive Grants, but it excludes Pell Grants. Both two- and four- year universities are taken into account[16]. All ages and both sexes are considered.

The data source for the ratio of the adjusted social welfare expenditure as a proportion of GDP is the US Social Security Administration[17]. State, federal and local government expenditures are included. The following categories of

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[11] Data on enrolments yields of all students come from Table 173, *Digest of Education Statistics*, National Center for Education Statistics, available on the web http://nces.ed.gov./pubs/digest97/d97t173.htm.

[12] Data on aid expenditure come from Table 321, *Digest of Education Statistics*, National Center for Education Statistics available on the web http://nces.ed.gov./pubs/digest97/d97t321.htm.

[13] Average undergraduate tuition, fees, room and board rates are measured in constant 1979 dollars. Data on average tuition and fees and room and board rates paid by all students are from Table 312, *Digest of Education Statistics*, National Center for Education Statistics, available on the web http://nces.ed.gov./pubs/digest97/d97t312.htm.

[14] The data source for enrolments yields of students at historically black colleges and universities and enrolments yields of students at historically black public colleges and universities is Table 220, *Digest of Education Statistics*, National Center for Education Statistics, available on the web http://nces.ed.gov./pubs/digest97/d97t220.htm. Data on average tuition and fees paid by students at historically black colleges and universities and by students at historically black public colleges and universities come from Hoffman 1996, Table 49, pp.82-84 and Hoffman 1996, Table 50, pp.85-87. Data on aid expenditure for students at historically black colleges and universities and by students at historically black public colleges and universities are from Hoffman 1996, Table 52, pp.91-93 and Hoffman 1996, Table 53, pp. 94-96.

[15] Student aid is measured in constant 1979 dollars.

[16] It is important to note that, since we consider average earnings differential between people having successfully completed four years of university/college and more and high school graduates, it would be better to take only four-year institutions of university education into consideration. Nevertheless, we don't do so because we do not want to exclude two-year colleges. These are in fact attended by a large number of students from a low socio-economic background.

[17] Social Security Administration (Office of Research and Statistics) 1995, *Social Welfare Expenditures Under Public Programs 1929-90*, July (Data on the 1979-1990 period come from Table 1, pp.3-5). More recent data are available on the web http://www.ssa.gov/statistics/supp97/pdf/t3a1.pdf.

social welfare programmes are included: social insurance[18], public aid[19], veterans' programmes and health and medical programmes. Both GDP and adjusted social welfare expenditure are expressed in nominal terms but, since we consider the ratio of adjusted social welfare expenditure as a proportion of GDP, variations in prices are automatically eliminated.

Data on average income tax rates are from the US Department of Treasury, Internal Revenue Service[20]. It is a composite rate which reflects all of the various income taxes that are levied in the US by the state, federal and local governments.

Before presenting the empirical results, a further comment should be made.

While for all students there are data on average tuition, fees, room and board rates, for historically black colleges and universities only data on tuition and fees are available. In order to use homogenised data we have added to the latter the average cost of room and board rates paid by all students[21].

Table 3 gives the results of ordinary least squares (OLS) alternative regressions for the 1979-1993 period where three different university enrolment ratios are used as dependent variables. The first column shows estimates of university enrolment yields of all students enrolled at both public and private institutions. In running the second regression, whose results are presented in the

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[18] Social insurance comprises unemployment benefits, old-age benefits and sickness benefits.

[19] Public aid comprises Food Stamps Programme, Supplemental Security Income Programme and Aid to Families with Dependent Children Programme.

[20] Department of the Treasury, Internal Revenue Service (Statistic Division), *Statistics of Income, SIOI Bulletin*, Various Issues: 1(1) 1981; 2(3) 1983; 6(4) 1987; 9(4) 1990; 11(4) 1992; Spring 1994, Spring 1996.

[21] Data on average cost of room and board rates come from Table 312, *Digest of Education Statistics*, National Center for Education Statistics, available on the web http://nces.ed.gov./pubs/digest97/d97t312.htm. We add to average tuition and fees paid by students at historically black colleges and universities the average cost of room and board rates paid by all students. By contrast, we add to average tuition and fees paid by students at historically black public colleges and universities the average cost of room and board rates paid by students enrolled at public universities.

second column of Table 3, we narrow our field of interest focusing just on university enrolment yields of students at historically black public and private colleges and universities. Finally, we further restrict our analysis to enrolment ratios of students at historically black public colleges and universities. The results of this estimate are shown in the third column of Table 3. The same specification is employed in all the estimates.

The regressors in the equation include the annual rate of growth of the ratio of the adjusted (as explained in the previous section) social welfare expenditure as a proportion of GDP, the expected after-tax wage differentials between university and high school graduates and an indicator of the cost of attending university (i.e. the real net cost). The model fits quite well and the estimated coefficients on the explanatory variables have the expected sign.

Empirical results show that increases in the returns to university education, through a rise in university wage premium and via reductions in top tax rates, lead to higher enrollment yields of all students, black students and black students enrolled at public institutions.

The estimated values of the coefficients on the annual rate of growth of the ratio of the adjusted social welfare expenditure as a proportion of GDP are 0.429, 0.624 and 0.743 on enrolment yields of all students, enrolment yields of black students and enrolment yields of black students at public institutions, respectively. They are all significantly different from zero[22]. These results demonstrate that university education enrolment yields of low-income students are more responsive to changes in the annual rate of growth of the ratio of the adjusted social welfare expenditure with respect to GDP than university education enrolment yields of all students. Enrolment ratios of black students

[22] The 95 percent confidence intervals for enrolment ratios of all students is 0.721 - 0.137; for enrolment ratios of black students 1.087 - 0.161; and for enrolment ratios of black students at public institutions 1.215 - 0.271.

are found to be 1.75 times more responsive to changes in the annual rate of growth of the ratio of the adjusted social welfare expenditure as a proportion of GDP than are enrolment ratios of all students. Moreover, the sensitivity of enrolment ratios to changes in the annual rate of growth of the ratio of the adjusted social welfare expenditure with respect to GDP is higher among black students at public institutions relative to all black students.

As one would have expected the coefficients on net cost are negative in all regressions. The obtained results indicate that the impact of the net cost is higher among black students enrolled at public institutions. This estimate is consistent with the results obtained by Weztel, O'Toole and Peterson[23] (Weztel, O'Toole and Peterson, 1998).

Nevertheless, these estimates present also some unexpected results.

Almost the same degree of responsiveness to changes in net cost is found between enrolment rates of all students and enrolment rates of black students. Since low-income student enrolment typically demonstrates the highest elasticity with respect to price[24], one would have expected a higher price elasticity among black students relative to all students. There might be at least two explanations for it.

First, we did not include among the regressors any variables on the distribution of student aid expenditure. Accordingly, the very small difference between the values of the coefficients on net cost might be attributed to the larger proportion of students receiving financial aid among black students relative to all students. Since a significant number of black students might receive subsidised loans, scholarships or grants, their participation is less likely to be influenced by the cost of attending university.

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[23] Weztel, O'Toole and Peterson find that, although enrolment yields are relatively insensitive to changes in net cost for all students, black student enrolment yields are two-thirds more responsive to changes in net cost relative to enrolment yields of white students.

[24] Private schools typically show less student price response than do public ones. This is due, in part, to the average higher family incomes of students attending private institutions and to higher base costs (Leslie and Brinkman, 1987 p. 193).

Second, there might be a measurement error in the net cost of historically black universities and colleges. As said earlier, the estimates of black student enrolment rates did not account for changes in the average cost of room and board rates paid by students enrolled at historically black universities and colleges.

Clearly, if the main goal one has in mind is to increase participation rates in university education our estimates indicate that 1000$ benefit spent on tuition subsidy are more efficient than the same amount spent on social welfare expenditure. Nevertheless, the magnitude of the differential effect is found to be relatively low. This emphasises the significant role of social welfare expenditure in enhancing university participation rates.

Besides the limitations of the model described in the second chapter, this empirical analysis should be accompanied by three additional caveats.

First, it would be premature to place confidence on the estimate obtained using only fourteen data points.

Second, there are several potential problems with merging the cost of education at two-year universities and four-year universities. This might have yielded a measurement error thereby biasing our estimates. The cost of attendance is in fact substantially higher at four-year universities relative to two-year universities. There are two main reasons for it. First, the average tuition and fees at two-year universities have been traditionally lower than four-year universities[25]. Second, the proportion of students living at home while attending university is higher in two-year universities relative to four-year universities.

Third, the disparities in the level of educational resources devoted to historically black colleges and universities relative to other institutions of university education could have significantly biased our estimates. Large

differences in the level of educational resources between institutions of university education may affect enrolment decisions. Think, for instance, of low-income black students receiving a significant amount of financial aid from the state or federal government. They are likely to be attracted by wealthy colleges and universities having higher resources per student and better paid professors.

Table 3: OLS, Dependent Variable: ln(University Enrolment Yields)

	of all students (both public and private institutions)	of black students (both public and private institutions)	of black students (only public institutions)
Constant	19.446 *(1.767)	14.411 *(0.717)	18,195 *(2.057)
ln [Wu(1-τu)/Wg(1-τg)]	1.732 *(0.429)	2.530 *(0.462)	2.800 *(0.545)
ln SOC	0.429 *(0.131)	0.624 *(0.208)	0.743 *(0.212)
ln NCOST	-0.466 **(0.239)	-0.448 *(0.132)	-0.935 *(0.292)
R Squared	0.954	0.916	0.922
SE	0.016	0.027	0.028
DW	2.159	1.829	2.048

Number of observations: 14
SE in parentheses.
(*) denotes significance at five percent.
(**) denotes significance at ten percent.

[25] However, it should be noted that the fiscal pressure faced by many states and localities in the early 1990s forced many two-year universities to raise their tuition and fees, sometimes faster than their four-

5. Conclusions

This study demonstrates that in the US, black student university education enrolment yields are more responsive to changes in the annual rate of growth of social welfare expenditure relative to enrolment yields of all students. This result may have significant policy implications because it provides empirical evidence regarding the effectiveness of social welfare provisions as a tool for increasing participation rates in university education among low-income students. Social welfare benefits are seen here as being complementary to scholarships and grants which play a major role towards increasing enrolment for low-income and minority students. Over the past fifteen years the high rate of growth of university enrolment yields, which might have led to the incapacity of the available number of scholarships and grants of keeping pace with the demand, as well as the increase in the percentage of US population in poverty might have strengthened the importance of social welfare expenditure as a tool for providing 'equal access' to university education.

What lessons can be learnt for Europe from the US experience? Many European governments (e.g. Sweden, France and Italy) have chosen to counter possible rises in household market income inequality through social welfare programmes, thereby raising the state-provided part of income for low-income households. Hence it is quite reasonable to expect also in these countries (especially in those providing funding to students mainly in the form of grants and in which income-contingent loan schemes and the graduate tax system have not been introduced such as, for instance, Italy) a correlation between university enrolment rates of children of the least advantaged families and social welfare expenditure, though the low and/or subsidised cost of university education there, may make the effect less evident.

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year counterparts did.

As a consequence it can be argued that those European governments in the process of reorganising the public sector should be aware of all the possible consequences of cutbacks in social welfare spending especially if it is accompanied by measures to reduce the public role in university education or subsidies to it, bringing the costs of education closer to their market value, mimicking the case of the US. Either of the two policies separately (reducing subsidies to university education, or reducing social welfare expenditure in general) may not have a dramatic impact on enrolment but the two applied together could have a detrimental effect on human capital formation, especially in the light of the absence in Europe of US-type grants, donations from alumni and other private-initiative aid programmes.

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Appendix

In this appendix we estimate enrolment rates at historically black colleges and universities using data on earnings by educational attainment for black people. Because of the lack of data for 1992 and 1993 the period under examination (i.e. 1979-1991) is shorter relative to the one taken into account in Section 4. We employ the same enrolment model presented in Section 3. Table 4 reports the results of the OLS estimates. The first and the second columns show the results of enrolment rates at historically black public and private colleges and universities and enrolment rates at historically black public colleges and universities respectively. It is interesting to note that the estimated coefficients on adjusted social welfare expenditure as a proportion of GDP are positive, statistically significant and their values are relatively close to the ones shown in the second and third column of Table 3. This confirms our previous finding according to which enrolment rates at historically black public colleges and universities are more sensitive to changes in adjusted social welfare expenditure relative to enrolment rates at historically black public and private colleges and universities. Comparing the results of Table 4 with the ones depicted in the second and third column of Table 3, one may note that the regression coefficients on wage differential between high school and university graduates are lower once one controls for the race. This may explain why the sensitivity of enrolment rates of black students to changes in the wage differential has been found in Table 3 considerably higher relative to all students.

Nevertheless, there are two main problems with this estimation. First, contrary to what one would have expected, the coefficient on the real net cost is higher for historically black public and private colleges relative to historically black public colleges and universities. Second, the Durbin Watson statistics are low in both regressions indicating a problem of autocorrelation.

Table 4: OLS, Dependent Variable: ln(University Enrolment Yields)

	of black students (both public and private institutions)	of black students (only public institutions)
Constant	17.198	16.395
	*(1.7)	*(1.902)
ln (Wu/Wg)	1.924	1.752
	*(0.7)	*(0.513)
ln NCOST	-0.532	-0.462
	*(0.226)	** (0.26)
ln NSOC	0.691	0.736
	* (0.226)	*(0.247)
R Squared	0.848	0.841
SE	0.032	0.035
DW	1.29	1.049

Number of observations: 13

SE in parentheses.

(*) denotes significance at five percent.

(**) denotes significance at ten percent.

To eliminate the autocorrelation problem we apply the Hildreth-Lu[1] procedure selecting as value of ρ (correlation coefficient associated with errors of adjacent time periods) 0.5 for both enrolment rates at historically black public and private colleges and universities and enrolment rates at historically black public colleges and universities. This value is used to perform two separate generalised differencing transformation processes, and two new regressions are run. The results of the transformed equations are depicted in Table 5. Looking at Table 5

[1] For more information see Hildreth G. And Lu J.K. 1960, "Demand Relations with Autocorrelated Disturbances", *Michigan State University Agricultural Experiment Station, Technical Bulletin*, No 276.

four main comments can be made. First, the Durbin Watson statistic has significantly increased and hence the autocorrelation problem has disappeared. Second, coefficients on the wage differential remain largely unchanged. Third, coefficients on adjusted social welfare spending are still positive and statistically significant. The sensitivity of enrolment rates to changes in adjusted social welfare spending has increased for students enrolled both at historically black public and private colleges and universities and at historically black public colleges and universities. Fourth, in both regressions the estimated values of real net cost have the expected sign but are not statistically significant.

Table 5: OLS, Dependent Variable: ln(University Enrolment Yields)

	of black students (both public and private institutions)	of black students (only public institutions)
Constant	6.711	6.707
	*(0.853)	*(0.81)
ln (Wu/Wg)	1.246	1.337
	*(0.396)	*(0.381)
ln NCOST	-0.012	-0.02
	(0.21)	(0.203)
ln NSOC	0.74	0.858
	* (0.233)	*(0.232)
R Squared	0.8	0.826
SE	0.022	0.022
DW	2.432	2.369

Number of observations: 12

SE in parentheses.

(*) denotes significance at five percent.

THE CASE OF ITALY

1. Introduction

After having dealt in the previous chapter with the US, we switch our attention to Italy. Italy is a very interesting case study especially because, by including prosperous areas (i.e. the north-eastern regions) as well as less prosperous ones (i.e. southern regions), it enables us to make a good comparison between the impact of social welfare spending on overall participation rates in university education and the impact of social welfare spending on participation rates in university education among low-income students.

Four are the main policies implemented by the Italian government in the past years to provide educational opportunities to university students of all socio-economic backgrounds.

First, the cost of university education in Italy, fixed by the government, is relatively low, average tuition and fees are in fact significantly lower relative to many other countries (e.g. the US). The assumption behind this measure is that price is the primary barrier keeping low-income students out of university.

Second, the absence of selective barriers to entry to university - the so-called 'open admission policy' (Mumper, 1998) - is also aimed at guaranteeing access to a larger number of students. Only the access to a very few number of Faculties such as the Faculty of Medicine or the Faculty of Architecture is in fact restricted to a limited number of students. The general rule is that all students who have successfully completed secondary school gain the automatic right of entry to the university.

Third, the possibility of participating to university education is also offered to those students who have attended non-traditional secondary schools (e.g. technical secondary schools). Since most students of non-traditional secondary schools have a low socio-economic background, the rationale of this measure is

to leave the door open to children of the least advantaged families having successfully completed non-traditional secondary schools and willing to attend university.

Finally, in 1991 two-year university courses[1] were introduced for the first time in Italy. The aim of this provision is to give the opportunity to participate in university programmes to people who wish to continue investing in education but at the same time willing to invest in it less than four years. In other words, the major role of two-year university courses is to provide a place in university education to non-traditional students who probably would not have attended four-year institutions.

The present chapter analyses an important but often neglected[2] aspect of social welfare expenditure: generous social welfare benefits may have an important role in encouraging university participation among students from low-income and disadvantaged backgrounds. Because of the very limited amount of public subsidies per university student in Italy, social welfare expenditure may end up having the key function of helping low-income students who are not benefiting from any type of financial aid to cover the cost of university education and related expenditure. Generous social welfare provisions are important not only to increase the ability of low-income families to pay for university education but also to help their children to resist the temptation to drop out of university. Favourable labour market conditions could in fact encourage students who do not maintain an acceptable standard of living[3] to look for a job thereby increasing the probability of dropping out of

[1] In Italian they are called 'Diplomi di laurea breve'.

[2] In recent years, much of the research on Western European welfare states have focused on the economic implications of the significant work disincentives produced by generous social benefits (see, among the others, Phelps, 1994 and OECD, 1996). By contrast, little research has been conducted on the effects of tax and transfer programmes on low-income participants' well-being.

[3] For instance, housing conditions directly affect individuals' standard of living and hence they may have an impact on their educational attainment. A recent study (Currie and Yelowits, 1997) finds empirical evidence that public housing projects have a positive impact on poor children's academic achievement.

university. A survey (ISTAT, 1994 p.26) indicates that in 1989 in Italy more than 40 per cent of males older than 19 who discontinued their studies did so in order to start working. Another survey (Centro Documentazione Ricerche Lombardia, 1992) reports that 21.8 per cent of students (males and females) who dropped out of university in the first year did so because they needed to work. Furthermore, one might expect that a significant proportion of students, who dropped out of university for lack of time for studying (46.5 per cent), might have decided to do so because they discovered attending university incompatible with working.

Additionally, social welfare provisions may also facilitate persistence and attainment by enabling students to attend full-time and work fewer hours or not at all.

The main intuition behind this case-study is to use students enrolled at universities located in the south of Italy as proxies for low-income students. More precisely, the paper asks whether social welfare expenditure had a role in explaining the changes in participation rates in university in the south of Italy between 1983 and 1995. In this period, and especially over the last five years, three factors could have progressively made university less affordable for students (and for their families) enrolled at universities situated in the south of Italy. First, the number of households living in a state of poverty in southern Italy increased significantly over this period. Second, the burden of university cost on families increased because of a rise in tuition and fees between 1993 and 1995. Third, the proportion of grants awarded to students enrolled at universities located in the south has been progressively decreasing over the 1992-95 period.

Except for Greece- Italy has the highest proportion of households living in overcrowded conditions (more than one person per room) in the European Union (Eurostat, 1998). There is a good deal of evidence that overcrowding leads to higher incidence of respiratory illness and stomach infections.

Despite what has been noted above, empirical evidence suggests that the increased burden of university cost on southern families had a scarce influence on the overall university participation rates over the past twelve years. Over the aforementioned period, enrolment showed in the south, on average, an annual rate of growth of approximately 3.53 per cent while the corresponding figure for Italy as a whole was around 4 per cent. If the 1990-1995 period is considered (see Table 1), the result is even more surprising. On average, enrolment grew in fact faster in the south relative to Italy as a whole (the former increased by approximately 3.28 per cent while the rise in the latter was about 3.22 per cent). To which factors can be attributed the insensitivity of university participation rates in the south to changes in costs? Had social welfare expenditure a role in keeping university affordable for southern students (and for their families)?

The structure of the remainder of the chapter is as follows. Section 2 provides a basic description of the three factors that increased the burden of university cost on southern households over the 1990-1995 period. Section 3 reports briefly the efforts made by the government to reduce the household market income gap between the north and the south of Italy through social welfare and taxation policies over the period under examination. Section 4 presents an enrolment model to test the demand for university education. Section 5 describes the data and presents some empirical results. Section 6 concludes.

Table 1: Annual Change in Enrolment Rates at Universities in Southern and Northern Italy by Region, 1990-1995.

(per cent)

Region	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*
Calabria	5.02	22.03	2.36	2.36	8.35	11.59
Campania	4.43	6.81	2.83	-11.78	-3.17	11.39
Puglia	8.82	5.71	5.57	4.93	0.04	-2.09
Sicilia	5.49	5	2.08	5.78	3.11	4.41
Sardegna	6.76	7.41	2.48	16.58	-0.77	6.78
Molise	12.93	4.92	46.19	28.91	-7.74	44.74
Abruzzi	8.13	7.29	6.32	3.11	-4.45	0.66
Basilicata	18	9.18	5.02	17.20	6.18	8.39
South	**6.15**	**6.8**	**3.59**	**0.55**	**-0.16**	**5.66**
Piemonte	7.49	6.86	8.53	5.75	-4.64	0.21
Emilia-Romagna	8.74	8.15	5.30	10.12	2.32	1.10
Friuli-Venezia Giulia	10.7	7.57	6.78	6.98	4.44	0.18
Lombardia	4.61	6.6	3.02	3.48	1.27	-1.07
Veneto	6.44	5.66	2.36	-2.74	5.63	-0.67
Liguria	2.64	4.26	2.12	1.99	3.14	-2.30
Trentino Alto Adige	13.05	7.29	4.35	24.86	5.94	4.50
North	**6.4**	**6.7**	**4.30**	**4.59**	**1.64**	**-0.25**
Italy	**6.92**	**6.76**	**3**	**3.72**	**1.68**	**0.95**

Source: Author's calculations using ISTAT data.

2. The increased cost of university for students in Southern Italy

2.1 Poverty rates

On average, students enrolled at universities in northern Italy are better off than the ones enrolled at universities in southern Italy.

Table 2 shows that not only the proportion of poor households with at least one child aged between 18 and 29[4] living in a state of poverty[5] in the south of Italy is significantly higher relative to the north, but it also reports that the gap between these two variables widened over the 1990-96 period[6]. In the aforementioned period while in the south the proportion of poor households with at least one child aged between 18 and 29 rose by about 25 per cent, in the north the similar increase was approximately 10.2 per cent. In 1996 the probability of being a poor household with at least one child aged between 18 and 29 in the south was about 1.62 times higher than in the north.

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[4] In Italy more than 80 per cent of university students is aged between 18 and 29.

[5] The analysis of poverty is based upon a relative standard according to which the state of poverty is defined in relation to mean consumption expenditure of the population. More precisely, households with two members are classified as poor if their mean expenditure for consumption is less or equal than the national per capita average; by the use of standardising factor (the 'equivalence scale') it is possible to obtain poverty line values for single person households or for households with more than two members. The 'equivalence scale' used here is the one estimated by Carbonaro in 1985 (Carbonaro, 1985). The following coefficients are employed: 1 for households with two members, 0.6 for single person households, 1.33 for households with three members, 1.66 for households with four members, 1.9 for households with five members, 2.16 for households with six members and 2.4 for households of more than seven members

[6] An important reason for the higher rate of growth of the proportion of poor households in the south relative to the north during the 1990-1996 period can be found in the significant increase in the proportion of working poor in the former. According to the calculations made by Del Colle (Del Colle, 1998 p.100) in the aforementioned period the south is the only geographical area of Italy where the proportion of blue-collar workers (in private sector only) earning less than the national average wage increased (more precisely, it passed from 73.3 per cent to 75.5 per cent). Employees account for a large number of the proportion of working poor. According to recent estimates (Rossi, 1998 p.XV) less than 9 per cent of all Italian self-employed workers are poor.
Furthermore, it should be noted that if workers in the black economy are also considered (it has been estimated that the number of workers in the black economy in the south of Italy is approximately equal

Table 2: Poor Households with at least one child aged between 18 and 29 in Southern and Northern Italy, Selected Years.

(percentage distribution)

Years	*Italy*	*North*	*South*
1990	19.8	15.7	22.4
1996	25.5	17.3	28

Source: ISTAT, 1997.

2.2 Tuition and fees

Recent years have seen a substantial increase in tuition and fees at Italian universities. A main explanation for it lies in the entry into force of a new Act of Parliament (537/93) which increased the role of tuition and fees as universities' source of revenue. On the one hand, this act decreased the share of revenues provided by state government through appropriations to universities. The declining share of government contributions has resulted in large part from sustained pressure on state budget, the product of resistance of paying taxes, on the one hand, and of increasing pressure for the government to finance pension benefits, on the other. On the other hand, the new Act of Parliament compensated for contractions in government support by letting universities free to set their own tuition and fees[7].

Table 3 shows the changes in average tuition and fees of universities located in northern as well as in southern Italy between 1993 and 1995[8]. On average, tuition and fees showed a higher rate of growth in the south relative to

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to 33 per cent of all officially registered workers in this area), this proportion would increase considerably.

[7] ISTAT 1997, *Annuario Statistico Italiano*, pp.125-126.

[8] Unfortunately data on annual average tuition and fees are available only for 1993 and 1994.

the north. In particular, the academic year 1994-1995 has been characterised by a remarkable increase in the cost of universities located in the south (Silvestri, Catalano and Bevilacqua, 1996).

Table 3: Average annual changes in tuition and fees in Southern and Northern Italy by Region, Constant 1990 Italian Liras, 1993-95.

(per cent)[9]

Region	*1993-1994*	*1994-1995*
Calabria	3.15	43.83
Campania	23.42	25.91
Puglia	11.65	112.92
Sicilia	-1.83	74.19
Sardegna	43.01	14.03
Molise	-10.70	172.78
Abruzzi	3.52	51.80
Basilicata	-12.70	41.49
South	**20.54**	**43.73**
Piemonte	30.85	11.19
Emilia-Romagna	8.01	23.21
Friuli-Venezia Giulia	46.65	35.07
Lombardia	-3.26	4.81
Veneto	32.20	21.39
Liguria	42.23	-10.02
Trentino Alto Adige	28.59	12.26
North	**25.67**	**7.81**

Source: Author's calculations using IRES data.

[9] This indicator has been calculated by making a non weighted mean of the average changes in tuition and fees of the universities located in each region of the south and north of Italy. The following universities have been taken into consideration: for the south : Sardegna (Sassari and Cagliari), Puglia (Bari, Bari Politecnico and Lecce), Sicilia (Messina, Catania and Palermo), Basilicata (Potenza), Calabria (Cosenza and Reggio Calabria), Campania (Napoli-Federico II; Napoli II -Ateneo, Napoli - Navale, Napoli-Orientale and Salerno), Molise (Campobasso) and Abruzzo (l'Aquila and Teramo); for the north: Piemonte (Torino and Torino Politecnico), Lombardia (Milano, Milano Politecnico, Bergamo, Brescia and Pavia), Trentino Alto-Adige (Trento), Veneto (Venezia Ca' Foscari, Venezia Architettura and Padova), Friuli-Venezia Giulia (Udine and Trieste), Liguria (Genova) and Emilia-Romagna (Parma, Modena, Bologna and Ferrara).

Nevertheless, even considering the recent trends, average tuition and fees of universities located in the north remain higher relative to the south. Table 4 shows that the former are approximately two times higher relative to the latter.

Table 4: Average Annual tuition and fees in Universities in the southern and northern Italy, Constant 1990 Liras, 1993-95.

Geographical Area	*1993*	*1994*	*1995*
North	660.197	829.703	894.490
South	296.234	357.100	513.261

Source: Author's calculations using IRES data.

2.3 Student aid and grants

A survey (Fondazione Rui and Università di Camerino, 1998) on the socio-economic conditions of university students (8.984 students were interviewed) in Italy reports that in 1995, on average, approximately 17 students out of 100 received some kind of financial aid. Most student aid, namely 75 per cent, consisted in total or partial exemption from tuition and fees while grants (Ibidem, p.99) accounted for approximately 30 per cent. Among the other forms of aid, work-study programmes were relatively important accounting for about 12 per cent of total student aid. Conversely, the proportion of students using guaranteed loans as an instrument for financing their studies was close to 0.2 per cent.

Table 5 reports the regional distribution of grants from Dsu, the agency which monitors the right to study in Italy, over the 1992-95 period[10]. It is important to say that Dsu grants accounts for approximately 75 per cent of the total number of grants (public and private) awarded to university students. Available data show that the number of grants awarded to students attending universities located in southern Italy decreased in the aforementioned period. Conversely, an increase can be observed in the number of grants awarded to students attending universities situated in the north of Italy.

These facts do not necessarily imply that a larger number of grants has been progressively given to students in the north relative to the ones in the south, but it is likely to be the result of an increasing movement of the latter to universities located in the north[11]. Some figures from the aforementioned survey on the socio-economic conditions of university students in Italy confirm this argument. According to these figures the proportion of students having a grant from Dsu is about 4 per cent, but this value reaches approximately 9 per cent if, among the students who have moved to a university located in different areas from the one they come from, the proportion of those having a Dsu grant is considered (Fondazione Rui and Università di Camerino, 1998 p.101).

The reason why the attention has been focused here especially on grants relative to other forms of student aid such as the total or partial exemption from tuition and fees lies in the idea that the former are the best financial instrument for guaranteeing the success of university students in the completion of their studies. Grants, which cover not only the cost of tuition and fees but also student living expenses such as room and board rates, are in fact likely to be more successful in discouraging low-income students from looking for a job relative to other forms of student aid.

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[10] Unfortunately data on university grants from Dsu are available only from 1992.

[11] According to the calculations made by Brunetta (Brunetta, 1995 p.45) the proportion of southern students enrolled at universities located in the centre and north of Italy is approximately 20 per cent.

Table 5: University Grants from Dsu per 100 students enrolled in Northern and Southern Italy by Region, 1992-95.

Region	*1992*	*1993*	*1994*	*1995*
Calabria	2.09	2.64	2.76	3.19
Campania	2.48	2.93	3.53	3.23
Puglia	2.73	2.61	2.63	1.29
Sicilia	4.35	3.38	2.43	3.30
Sardegna	2.62	2.72	2.74	3.04
Molise	3.93	4.70	4.05	4.41
Abruzzi	0.78	1.11	1.17	2.19
Basilicata	8.80	8.73	8.71	0.09
South	**2.91**	**2.87**	**2.80**	**2.77**
Piemonte	3.02	2.70	2.72	1.89
Emilia-Romagna	2.98	2.71	2.40	3.82
Friuli-Venezia Giulia	1.49	1.63	2.29	4.01
Lombardia	2.29	2.19	2.22	2.04
Veneto	3.88	3.81	3.63	4.40
Liguria	2.65	2.58	2.49	2.83
Trentino Alto Adige	2.74	3.03	6.23	7.98
North	**2.16**	**2.64**	**2.58**	**3.18**

Source: Author's calculations using IRES and ISTAT data.

3. Market income inequality and social welfare expenditure

Available data show that in the 1980s as well as in the beginning of the 1990s the Italian government made strong efforts in offsetting the decline in household market income in southern regions through social welfare spending and direct taxation.

Table 6 presents some estimates of the redistributive effect of social welfare policies[12] in the north and south of Italy at regional level between 1983 and 1992. One may observe that, as a result of these support measures, in 1983 as well as in 1992 the proportion of household disposable income for southern Italy with respect to the entire country was significantly higher than the proportion of household market income. It should be also noted that the magnitude of the redistribution increased slightly over the aforementioned period. While in 1983 the gap between household disposable income and household market income in the south was approximately 2.6 per cent, the corresponding figure in 1992 was about 2.71 per cent. The greater redistributive effect of direct taxes and social welfare programmes is likely to be a response to the rise in household market income inequality. Over the aforementioned period in fact the proportion of household market income in southern Italian regions with respect to household market income in all Italian regions dropped from about 25 per cent to approximately 24.43 per cent.

Between 1983 and 1992 the pressure of taxation in the north, on average, rose by about 1.5 per cent while in the south the increase was less than 1 per cent.

In the aforementioned period the proportion of social welfare benefits allocated to southern households increased by 0.3 per cent while the corresponding figure in the north remained practically unchanged.

[12] Non-cash social welfare provisions are here excluded.

Table 6: Distribution of Household Market Income and Disposable Income in Northern and Southern Italy by Region, 1983-1992.

	1983		*1992*	
Regions	*Household Market Income (per cent)*	*Household Disposable Income (per cent)*	*Household Market Income (per cent)*	*Household Disposable Income (per cent)*
Calabria	2.36	2.73	2.14	2.59
Campania	7.08	7.60	6.74	7.33
Puglia	4.76	5.20	4.76	5.27
Sicilia	5.71	6.50	5.77	6.55
Sardegna	2.14	2.33	2.17	2.30
Molise	0.42	0.48	0.43	0.47
Abruzzi	1.79	1.93	1.75	1.88
Basilicata	0.74	0.85	0.68	0.76
South	**25.01**	**27.61**	**24.43**	**27.14**
Valle d'Aosta	0.26	0.26	0.25	0.25
Piemonte	9.32	9.17	9.08	8.84
Emilia-Romagna	8.57	8.38	8.59	8.42
Friuli-Venezia Giulia	2.41	2.42	2.31	2.35
Lombardia	19.80	18.17	20.66	19.12
Veneto	8.44	8.13	8.67	8.34
Liguria	3.48	3.55	3.38	3.49
Trentino Alto Adige	1.73	1.72	1.74	1.70
North	**54.01**	**51.80**	**54.68**	**52.51**

Source: ISTAT, 1995.

As far as the distribution of social welfare provisions is concerned, it can be noted that in 1992 southern households benefited from a higher proportion of disability and family provisions relative to the north. By contrast, given the higher percentage of elderly in the north relative to the south in 1992, a higher proportion of pension benefits was allocated in the former. Moreover, because of the higher concentration of workers in the industrial sector in the north relative to the south, a higher proportion of unemployment benefits was also allocated in the former.

According to a recent study (De Carli R. et al, 1998 p.126) at national level, in 1997 about 20 per cent of Italian households relied on social welfare programmes[13] for more than half of their disposable income. The average income tax rate was approximately 28.2 per cent. Income tax rate was especially high for those people ranking at the last three deciles of the market income distribution.

A recent study (Centro Europa Ricerche, 1999) emphasises the increasing importance of elderly family members' income as source of total family income. According to this study, considering households in which there is at least one elderly person, in Italy, on average, the proportion of old people's income with respect to total family income is approximately 47 per cent. In the south of Italy this figure is higher reaching 57 per cent. The key role of pensions as source of income for old people, in conjunction with the trend towards early retirement, and the rise in the average age at which people have children might lead to a correlation between pension benefits and university enrolment yields. A recent survey (ISTAT, 1997 p.58) shows that in 1995 91.9 per cent of Italian households headed by a person aged between 65 and 74 relied on pension benefits as their main source of income. The proportion of

[13] Non-cash social welfare measures are here excluded.

households headed by a person aged between 65 and 74 living with at least one child is 27.9 per cent (Ibidem, p.18).

4. The model

Following the aforementioned considerations and those presented in the second chapter, the enrolment specification applied is:

$$\ln ENR = \alpha + \beta \ln (Wu/Wg) + \eta \ln (1-Uu/1-Ug) + \lambda \ln NSOC + \varepsilon$$

where ENR is the university enrolment yield, W the yearly after tax wage, U the unemployment rate, NSOC the net social welfare expenditure (i.e. social security expenditure minus social-security taxes) and ε the error term; subscripts u and g denote university and high school respectively.

Being indicators of labour market perspectives, wage and employment differentials should be lagged variables[14].

As far as unemployment is concerned, it should be noted that we take into consideration only the young unemployed (aged between 20 and 29). This is to control for the effect of experience on employment prospects. In other words, by taking into consideration an indicator of unemployment exclusively for young people we attempt to isolate the effect of education on employment opportunities.

[14] Following the approach used by Edin and Holmlund (Edin and Holmlund, 1993), we have chosen one-year as the appropriate lag.

In Section 5 the model is tested empirically using as dependent variables enrolment yields of universities located in the south of Italy and enrolment yields of universities in Italy as a whole respectively.

Before testing empirically the model, a further comment should be made. In the regression analysis we use net social welfare expenditure rather than social welfare expenditure as independent variable because the former, accounting for differences in social-security taxes, is more efficient for comparative purposes[15].

Suppose we use social welfare expenditure. Our estimates will underestimate the elasticity of enrolment rates to changes in social welfare benefits at universities in the south of Italy relative to Italy as a whole. Since social-security taxation revenue is, on average, higher in Italy as a whole relative to the south, by employing social welfare expenditure we are concealing the positive effect of the lower burden of social-security taxes in the south on the parents' ability to pay for university education.

5. Data description and empirical results

The model is tested empirically using yearly data from 1983 to 1995[16]. Data on after tax-wage for both high school and university graduates come from the Bank of Italy's Survey of Household Income and Wealth[17]. The term high school graduate describes a person whose educational history comprises 5 years of secondary school while for university graduates only people having

[15] One of the reasons why we have focused our analysis on Italy as a whole relative to the north of Italy is because net social welfare expenditure in the former is often a negative value and the log-linear model cannot be employed with negative numbers.

[16] In the appendix the model is tested over the 1981-1996 period.

[17] For a detailed description of the Bank of Italy's Survey see Brandolini and Cannari (Brandolini and Cannari, 1994).

successfully completed at least 4 years of university are taken into account. These data refer to the annual average of mean yearly earnings of full-time employees (male and female) who have worked continuously for the whole year. No information on the different tax rates levied on these wages is provided by the aforementioned survey.
Unfortunately in Italy data on after tax-wage by educational attainment are only available at national level.

Data on unemployment by educational attainment for young people aged between 20 and 29 come from the Italian National Statistical Centre (ISTAT)[18].

The data source for net social welfare expenditure[19] and university enrolment yields[20] is the ISTAT. Net social welfare expenditure is expressed in constant 1980 Italian liras. The following categories of social welfare

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[18] Unemployment by educational attainment: 1983 Table 67 pp. 118, 121, 122, in ISTAT 1984, "Statistiche sulle rilevazioni delle forze di lavoro. Media 1983", *Supplementi al bollettino statistico*; 1984 Table 49 pp. 90, 93, 94 in ISTAT 1985, "Statistiche sulle rilevazioni delle forze di lavoro. Media 1984", *Supplementi al bollettino statistico*; 1985 Table 50 pp. 91, 94, 95 , in ISTAT 1986, "Statistiche sulle rilevazioni delle forze di lavoro. Media 1985", *Supplementi al bollettino statistico*; 1986 Table 50 pp. 93, 96, 97, in ISTAT 1987, "Statistiche sulle rilevazioni delle forze di lavoro. Media 1986", *Supplementi al bollettino statistico*; 1987 Table 1986 Table 50 pp. 93, 96, 97, in ISTAT 1988, "Statistiche sulle rilevazioni delle forze di lavoro. Media 1987", *Supplementi al bollettino statistico*; 1988 Table 50 pp. 86, 89, 90, in ISTAT 1989, "Statistiche sulle rilevazioni delle forze di lavoro. Media 1988", *Supplementi al bollettino statistico*; 1989 Table 50 pp. 86, 89, 90, in ISTAT 1990, "Statistiche sulle rilevazioni delle forze di lavoro. Media 1989", *Supplementi al bollettino statistico*; 1990 Table 2.2 pp. 82, 85, 86, in ISTAT 1991, *Statistiche delle forze di lavoro*; 1991 Table 2.2 pp. 82, 85, 86, in ISTAT 1992, *Statistiche delle forze di lavoro;* 1992 Table 2.2 pp. 74, 77, 78, in ISTAT 1993, *Statistiche delle forze di lavoro*; 1993 Table 2.2 pp. 1120, 129, 138, in ISTAT 1994, *Statistiche delle forze di lavoro*; 1994 Table 2.2 pp. 112, 121, 130, in ISTAT 1995, *Statistiche delle forze di lavoro.*

[19] Net social expenditure: 1983 Table 3.37 p. 121, in ISTAT 1986, *Annuario Statistico Italiano;* 1984 Table 3.38 p.130, in ISTAT 1987 , *Annuario Statistico Italiano;* 1985 Table 3.23 p. 116, in ISTAT , *Annuario Statistico Italiano 1988;* 1986 Table 3.23 p.116, in ISTAT 1989 , *Annuario Statistico Italiano;*
1987 Table 3.29 p.122, in ISTAT 1990, *Annuario Statistico Italiano;* 1988 Table 3.29 p.116, in ISTAT 1991 , *Annuario Statistico Italiano;* 1989 Table 3.30 p. 118 in ISTAT 1992, *Annuario Statistico Italiano;* 1990 and 1991 Table 3.30 p.120 in ISTAT 1993 , *Annuario Statistico Italiano;* 1992 Table 3.30 p.120, in ISTAT 1994, *Annuario Statistico Italiano;* 1993 Table 3.30 p.122 in ISTAT 1995, *Annuario Statistico Italiano 1995;* 1994 Table 4.6 p.122, in ISTAT 1996 , *Annuario Statistico Italiano;* 1995 Table 4.6. p.102, in ISTAT 1997, *Annuario Statistico Italiano.*

[20] University enrolment yields: 1983, 1984 Table 7.3 p.149, in ISTAT 1985, *Statistiche dell'istruzione*; 1985 and 1986 Table 4.3 pp. 186-87 in ISTAT 1987, *Statistiche dell'istruzione*; 1987 Table 1.2 p.12, 1988 Table 2.2 p.69 and 1989 p.126, in ISTAT 1991, *Statistiche dell'istruzione universitaria*; 1990 and 1991 Table 1.2 p.10, in ISTAT 1995, *Statistiche dell'istruzione universitaria;* 1993-1994 and 1995 Table 2.2 p. 34, in ISTAT 1997, *Statistiche dell'istruzione universitaria.*

expenditure are included: old-age benefits, disability benefits, unemployment benefits, family benefits, sickness benefits, maternity and parental leave, survivors pensions. Cash benefits and in kind measures are both considered. Wages and salaries paid to workers of the Social Security Administration are excluded.

The model is estimated using the ordinary least squares (OLS) method. The results of the estimates are shown in Table 7. More specifically, the first column of Table 7 presents estimates of university enrolment yields in Italy as a whole while in the second column are reported estimates of enrolment ratios of students at universities located in the south of Italy. The same specification is employed in both estimates.

The regressors in the equations include net social welfare expenditure and the expected employment and after-tax wage differentials between university and high school graduates. The model fits quite well and the estimated coefficients on the explanatory variables have the expected sign.

. These results support the hypothesis that net social welfare expenditure has a significant influence on participation rates at universities in the south of Italy. By contrast, for Italy as a whole, the estimate indicates that enrolment rates are not responsive to changes in net social welfare expenditure. More precisely, while the estimated value of the coefficient on net social welfare expenditure for the south is considerably different from zero (0.31) and highly significant, for Italy as a whole the corresponding coefficient is very close to zero (0.02) and statistically not significant.

According to the results obtained, an increase of 10 per cent in net social welfare expenditure in the south of Italy is associated with an increase in enrolment rates at universities located in this area of approximately 3.1 per cent.

The coefficients relating changes in the employment and wage differentials to participation rates in university are positive and highly significant for both the south of Italy and Italy as a whole. It is worthwhile to note that in the south as well as in Italy as a whole the elasticity of enrolment rates are found to be more sensitive to changes in the employment differential rather than to changes in the wage differential. A possible explanation for this result could lie in the strong power of trade unions in Italy. Trade unions might have considerably contributed to keep the wage differential between university and high school graduates low. This, in turn, could have caused some individuals not perceive the investment in university education to be worth the cost.

Nevertheless, between 1991 and 1995 the effect of trade unions on the wage differential is likely to have been less strong relative to the 1983-1990 period as a result of substantial labour market reforms such as the abolition of automatic cost-of-living wage indexation *(scala mobile)* and the ending of synchronised wage bargaining across different sectors.

Enrolment rates in Italy as a whole are found to be more responsive to changes in both the employment and wage differentials than are enrolment rates in the south of Italy. More precisely, the sensitivity of enrolment ratios to changes in the employment and wage differentials is 5.49 times and 1.89 times respectively higher in Italy as a whole relative to the south of Italy.

According to Checchi (Checchi, 1998), although future expected returns to university education are likely to be higher in the north relative to the south, the enrolment gap between these two areas did not grow over the past decade because southern individuals are aware that having a university degree substantially increases the chances of being employed in the public sector (in Italy more than one fourth of university graduates are employed in the public sector). Our estimates provide empirical evidence on this issue. In the south of

Italy enrolment rates are in fact found to be two times more responsive to changes in employment differentials (including the public sector) relative to changes in wage differentials.

Another reason for the higher responsiveness to changes in labour market perspectives in Italy as a whole relative to the south of Italy could lie in the existence of an information gap between these areas. Since new jobs are likely to be generated more in the centre and in the north relative to the south, southern workers face a higher cost of job search compared to the ones coming from other areas of Italy[21]. The higher cost of getting information in the south might prevent southern workers from being fully aware of the significant effect of education on employment opportunities.

Besides the limitations of the model reported in the second chapter, there are two other caveats to this empirical analysis.

First, it would be premature to place confidence on the estimate obtained by using only twelve data points.

Second, we do not control for the effect of grants on university enrolment rates. Suppose, for example, a university student benefiting from a grant and living in a family that relies on social security for most of its income. The model employed here would consider the participation of this student in university education the result of the high level of social welfare benefits received by his family. This leads to an overestimation of the elasticity of net social welfare expenditure to changes in enrolment rates. Nevertheless, it should be noted that this effect is not very important. As it has been already observed in the previous pages, in the south of Italy the proportion of university students having a grant is in fact extremely low (less than 4 per cent). A longitudinal analysis could

[21] Faini (Faini et al., 1997) argues that Italy is characterised by high costs of job search. An important reason for it lies in the inefficiency of the public monopoly on employment agencies. Therefore, an efficient system capable of providing information on employment opportunities in all Italian regions is strongly needed.

solve these problems. It is important to note, however, that the only longitudinal survey on Italian households' income and wealth[22] keeps tracks of grants awarded to the head of the family. No information is reported on grants awarded to other family members. Accordingly, an analysis using data from this source cannot control for the effect of grants on enrolment rates.

[22] Bank of Italy's Survey of Household Income and Wealth.

Table 7: OLS, Dependent Variable: ln(University Enrolment Yields)

	Italy	South of Italy
Constant	11.964	9.595
	*(0.477)	*(0.87)
ln (Wu/Wg)	2.089	1.115
	*(0.7)	*(0.417)
ln (1-Uu/1-Ug)	13.451	2.5
	*(4.189)	*(0.7)
ln NSOC	0.027	0.311
	(0.03)	*(0.132)
R Squared	0.77	0.927
SE	0.087	0.044
DW	1.715	1.829

Number of observations: 12

SE in parentheses.

(*) denotes significance at five percent.

6. Conclusions

This study provides some empirical evidence on the role of net social welfare expenditure in buttressing enrolment rates at universities located in the south of Italy between 1983 and 1995. In the aforementioned period the increased burden of universities cost on southern households could have been progressively offset by the augmentation of net social welfare expenditure. Changes in labour market perspectives for university and high school graduates are found to be the major determinants of changes in enrolment patterns.

Even if there is evidence that the rising cost of university attendance does not have a detrimental effect on enrolment rates in the south of Italy, one might believe that southern students are finding their choices increasingly constrained by financial pressure. It seems very likely that the only financially viable option for most southern students who do not have a grant is to live at home and attend the local university.
Unfortunately, at present there are no data that can prove this argument. Future research could be oriented towards this direction.

Even if the rate of growth of university participation rates in the south has not lagged behind the one in the north, drop-out rates in the south are still considerably higher relative to the north (see Table 8). Reducing university drop-out rates in the south remains a major challenge for policy makers.

Table 8: University Drop-Out Rates in Southern and Northern Italy by Region, 1992-95.

Region	*Drop-out rates among students in the first year*[23]				*Drop-out rates among students in the second year*[24]			
	1992	1993	1994	1995	1992	1993	1994	1995
Calabria	34.12	35.1	30.63	24.28	18.17	14.90	12.06	18.19
Campania	34.02	27.88	32.43	25.10	20.87	10.51	17.45	9.97
Puglia	27.16	24.37	30.03	24.74	16.02	16.08	17.22	17.19
Sicilia	32.66	30.16	34.74	31.61	19.20	16.35	19.11	14.87
Sardegna	26.17	13.33	31.31	16.86	14.55	0.36	29.71	0.18
Molise	35.65	33.21	42.04	3.35	-15.65	10.81	28.97	5.61
Abruzzi	23.7	22.8	22.16	21.45	11.11	9.38	8.74	8.34
Basilicata	19.78	27.8	37.31	25.87	17.41	29.09	28.17	17.23
South	**30.91**	**26.64**	**31.96**	**25.61**	**21.77**	**15.72**	**22.78**	**13.71**
Piemonte	31.41	28.72	32.20	26.56	22.83	26.78	27.23	23.58
Emilia-Romagna	21.69	17.26	20.69	20.93	7.96	3.74	8.21	6.46
Friuli-Venezia Giulia	21.42	16.12	22.37	19.23	9.65	8.16	10.33	10.71
Lombardia	23.05	20.16	23.04	22.3	13.63	10.19	9.34	11.63
Veneto	26.24	25.5	26.72	26.02	17.86	12.54	13.01	11.28
Liguria	25.53	21.64	21.3	23.00	14.58	9.81	9.33	15.30
Trentino Alto Adige	38.88	27.95	28.61	25.36	27.88	17.83	23.17	19.04
North	**25.09**	**21.94**	**24.54**	**23.13**	**17.12**	**13.19**	**14.57**	**14.18**

Source: Author's calculations using ISTAT data

[23] Drop out rates among students in the first year: (first year enrolment - second year enrolment) / first year enrolment *100
This is a rough indicator of the drop-out phenomenon mainly for two reasons.
First, student mobility is not considered. This means that the indicator does not take into consideration that the reason why some students haven't enrolled in the second year might be that they have moved to other universities which are located in other regions. This leads to an overestimation of drop-out rates. But the other side of the coin needs to be considered too. The second year enrolment is likely to encompass some students who were enrolled in their first year at universities located in other regions thereby yielding an underestimation of drop-out rates. If a wider geographical area is considered (e.g. northern Italy and southern Italy), since the effect of students mobility is likely to be partially captured, the estimates should be more reliable than the ones made at regional level.
Second, this indicator does not control for the number of universities in each region. As a consequence the creation of a new university in a given region could introduce a bias in the estimates.

[24] Drop out rates among students in the second year: (second year enrolment - third year enrolment) / second year enrolment *100
The same considerations made in the previous footnote can be applied here.

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Appendix

In this appendix the model is tested using a larger number of observations with respect to the estimates presented in Table 7. The 1981-1996 period is considered here[1]. Again, the model is tested using two different university education enrolment yields as dependent variables: enrolment rates of students at universities located in the south of Italy and enrolment rates in Italy as a whole. The results of these regressions are shown in Table 9.

The estimates of enrolment yields of students at universities located in the south of Italy show positive and statistically significant coefficient regressions for all the explanatory variables. In particular, the sensitivity of enrolment rates in university education with respect to changes in net social welfare spending is found to be slightly higher here relative to the results of the estimates presented in the second column of Table 7.

By contrast, the estimates of enrolment rates in Italy as a whole present two problems. First, the coefficient on the wage differential between university and high school graduates is not statistically significant. Second, the low Durbin Watson statistic suggests a problem of autocorrelation.

[1] Data on university enrolment yields in 1981 and 1982 come from Table 7.3 p. 149, in ISTAT 1985 *Statistiche dell'istruzione*. Data on university enrolment rates in 1998 stem from Table 4.2 p. 48, in ISTAT 1998 , *Statistiche dell'istruzione universitaria.*

Data on net social welfare expenditure in 1981 and 1982 come from Table 22 and 24 pp. 80, 85-88 in ISTAT 1983 in *Annuario statistico della previdenza, della sanità e dell'assistenza sociale*, Volume XXIII.

Data net social welfare expenditure in 1996 stem from Table 4.6 p.102, in ISTAT 1998, *Annuario statistico italiano.*

Data on unemployment by educational attainment in 1981 and 1982 come from Table 67 pp.118, 121, 122, respecively in ISTAT 1980 "Statistiche sulle rilevazioni delle forze di lavoro. Media 1981." *Supplementi al Bollettino Statistico* and, in ISTAT 1981 "Statistiche sulle rilevazioni delle forze di lavoro. Media 1982." *Supplementi al Bollettino Statistico.* Data on unemployment by educational attainment in 1995 stem from Table 2.2 pp. 102, 111, 117, in ISTAT 1996, *Statistiche delle forze di lavoro.*

Data on wages by educational attainment come from the Bank of Italy Survey of Household Income and Wealth.

Table 9: OLS, Dependent Variable: ln(University Enrolment Yields)

	Italy	South of Italy
Constant	12.77	9.526
	*(0.29)	*(0.82)
ln (Wu/Wg)	0.982	0.741
	(0.65)	*(0.268)
ln (1-Uu/1-Ug)	8.90	2.94
	*(2.82)	*(0.55)
ln NSOC	0.02	0.323
	(0.035)	*(0.105)
R Squared	0.73	0.931
SE	0.104	0.048
DW	0.78	1.839

Number of observations: 15

SE in parentheses.

(*) denotes significance at five percent.

In order to solve the problem of autocorrelation we apply the Hildreth-Lu[2] procedure selecting 0.8 as value of ρ (correlation coefficient associated with errors of adjacent time periods). This value is used to perform the generalised differencing transformation process, and a new regression is run. The results of the transformed equation are reported in Table 10. Several comments can be made. First, the Durbin Watson statistic has substantially increased and therefore the problem of autocorrelation has been eliminated. Second, the significance of the coefficient on the wage differential between university and high school graduates has considerably improved. On the other hand, one should note that the value of the coefficients on wage and unemployment differentials has dramatically increased thereby indicating a problem of robustness in our estimates.

[2] For more information see Hildreth G. And Lu J.K. 1960, "Demand Relations with Autocorrelated

Table 10: OLS, Dependent Variable: ln(University Enrolment Yields)

	Italy
Constant	0.194
	(0.196)
ln (Wu/Wg)	6.19
	** (3.44)
ln (1-Uu/1-Ug)	85.72
	*(15.68)
ln NSOC	0.17
	(0.194)
R Squared	0.97
SE	0.685
DW	2.02

Number of observations: 14

SE in parentheses.

(*) denotes significance at five percent.

(**) denotes significance at ten percent.

Disturbances", *Michigan State University Agricultural Experiment Station, Technical Bulletin*, No 276.

Chapter IV

CONCLUSIONS

This final chapter consists of two sections. In Section 1 a critical examination of the main results of the regression analysis in both case studies is presented. In Section 2 an overview of the principal ideas put forward by this paper is outlined.

1. Critical analysis of the regression results

The following empirical outcomes tending to validate our model and thereby the impact of social welfare expenditure on participation rates in university education among low-income students have emerged from our analysis.

- One may note that in all the regressions the test statistics and the standard error of the estimated coefficients on social welfare expenditure allow us to reject the null hypothesis[1] at the five percent level of significance. Nevertheless, as one would have expected, the empirical results show that, among the independent variables, the value of estimated coefficients on social welfare expenditure is the smallest one. This means that, although a causal relationship between university enrolment among low-income students and social welfare expenditure seems to be plausible, other factors such as, for instance, the wage differential between high school and university graduates, are likely to exert a stronger influence on the former relative to the latter.

- Besides social welfare expenditure, our model includes two further explanatory variables that have been extensively been used by the economic literature to account for changes in university patterns. As a consequence, one important reason why the results obtained might be considered to be quite satisfactory is because the estimated coefficients on social welfare expenditure have been

found statistically significant in the light of the presence of other two crucial determinants of university enrolment. In other words, our analysis has gone beyond proving that there is a correlation between social welfare expenditure and university enrolment among low-income students. Additionally, one may note that correlation techniques do not involve an implicit assumption of causality, while regression techniques do.

- R squared is high in all the regressions. This means that our linear regression model makes a significant contribution to help to explain the variation in university enrolment.

- The Durbin-Watson test indicates that there is no serial correlation. In all the cases in which the Hildreth- Lu procedure has been applied the Durbin-Watson statistics has significantly improved.

On the other hand, one needs to be cautious about interpreting these results. The main caveats of the empirical analysis, often stemming from the use of a macro-model, are summarised below.

- Important variables at the individual level such as, for instance, parental education and parental income, have not been explicitly included.

- A relatively small number of observations have been used.

- The model might not have been correctly specified because of the omission of relevant variables.

[1] The null hypothesis is that the value of the estimated coefficient is zero.

- Some of the variables may be inherently unmeasurable. Examples of these are given by "aspirations" and "motivation".

- Some of the data are likely to have been badly measured (e.g. the cost of university education for black students in the US) or do not correspond exactly to the variables in the model (e.g. unavailability of data on wages by educational attainment and by geographical area in Italy).

2. Final remarks

Imperfect capital markets may prevent children from lower income households from making an optimal investment in schooling. Overcoming the capital market failure hence may well require some type of government intervention. Government intervention can be aimed at relaxing the liquidity constraints keeping low-income students from reaching their optimal schooling levels.

Besides distributional issues, there are two further arguments for public investment in education. First, there is evidence that spillovers from investment in education may provide important socio-economic benefits. Primary and secondary education may in fact produce positive externalities for society at large, for instance in the form of less criminal activity or less drug abuse. Yet tertiary education may provide positive spillover effects that are key to the development of high-technology sectors of the economy and, in turn, affecting economic growth. Second, going beyond purely economic considerations, well-educated people are less likely to follow non-democratic stability. In this sense, public investment in education can be seen as a means to create democratic stability.

Since over the last decade several industrialised countries have experienced greater inequality in the distribution of total family income and higher poverty rates, one might believe that, in the absence of a stronger government intervention, the access to educational programmes (especially higher levels of education) of many children of the least advantaged families could have been put at risk. This could have had serious negative repercussions on young low-income people's labour market perspectives and, in turn, on their future welfare. In the emerging information societies human capital formation is in fact becoming increasingly relevant. Less educated workers are greatly exposed to the risk of being unemployed. There is empirical evidence that people with a university degree have significantly higher chances to find a job relative to the ones with a high school degree. Hence, investment in human capital is often perceived as a means to reduce the risk of economic marginalisation.

This study focuses on the US and Italy. In these countries the deteriorating position of low-skilled workers in relative terms, or even in absolute terms, have led to a significant increase in household market income inequality and poverty rates. Demographic factors (e.g. changes in family structure) have also contributed to this situation. The increase in divorce rates has given rise to an increase in the number of single parent households. Female-headed single parent households are particularly vulnerable to poverty- women are more often left to shoulder the burden of bringing up children alone than men, which is compounded by the fact that their incomes are, on average, smaller.

The Italian and the US governments have made great efforts to offset the increase in inequality through changes in social welfare and taxation policies. Numerous studies provide empirical evidence that in both countries poverty rates are significantly reduced after taxation and social welfare programmes. As a consequence, a larger number of households are increasingly dependent on

redistributive policies. Comparative studies argue that social welfare spending is more effective in reducing poverty rates in Italy relative to the US.

If the intergenerational transmission of income or status is sufficiently decisive and reflects inequality of opportunity, then government intervention may be called for to redress inequity. Significant measures to increase access to university education include lowering tuition and fees and increasing student aid expenditure. Despite the rise in inequality, there is evidence that neither the US nor Italy have implemented any of these two policy options to the extent which the equality of educational opportunity is guaranteed.

In Italy recent years have seen a significant increase in the cost of university education. In the academic year 1993-1994 average tuition and fees increased by more than twenty-five per cent. The increase in average tuition and fees compensated for declining government contributions to universities. In the US between 1971 and 1995 average tuition and fees (in real value) at institutions of higher education increased by approximately 51 per cent.

On the other hand, student aid expenditure has not been able to keep pace with enrolment demand. Evidence from Italy shows that between 1992 and 1995 the rate of growth of the available grants and scholarships for university students was significantly lower than the rate of growth of relative enrolment rates. Even more surprising, statistics suggest that in the aforementioned years the number of grants and scholarships for students attending universities located in the south of Italy decreased while enrolment rates showed a considerable increase. Sustained pressure on state budgets, the product of resistance to paying taxes, on the one hand, and of increasing pressure for the government to finance social welfare benefits, on the other, might have significantly limited the growth of student aid expenditure.

Also in the US student aid has failed to close the gap between family income and college costs. The real value of total aid available to students has increased since 1980. However, the growth has been primarily in the form of loans and has not kept pace with growth in tuition and fees levels or in the eligible student population. Moreover, in some countries future demographic trends could further strain the ability of governments to provide subsidies to students. For instance, in the US the college-age population is projected to rise by one-fifth over the next fifteen years.

In the light of the facts mentioned above, it seems likely that in the US and Italy there is a relatively large number of low-income families whose members are studying at university receiving little (if any) financial aid. Since these households rely on social welfare programmes as their main source of income, they are likely to use a part of the money they get from all types of social welfare provisions to cover not only education-related expenditures (e.g. tuition, fees and textbooks) but also part of their living costs. This may create a direct connection between social welfare spending and education affordability for low-income students. An increase in household market income inequality and poverty rates, on the one hand, and an enhancement in social welfare spending, on the other, by increasing the dependence of lower income families on social welfare programmes could further reinforce this link.

One can also think of examples of complementarity between student aid expenditure and social welfare provisions. Social welfare spending could in fact supplement scholarships, exemption from tuition and fees or loans covering only part of the cost of education.

This study provides econometric models that examine the effect of changes in social welfare spending on university enrolment rates in the US and Italy. It is important to note that, since children of university age are not eligible for welfare

as dependent children, one could argue for an indirect correlation between social welfare programmes and participation rates in university. This is an unintended consequence of social welfare programmes since none of these provisions has been specifically designed to support participation rates in university education among low-income students.

Although the results from the econometric estimates on the US and Italian case studies are not comparable, one could tentatively suggest the following questions to be explored by future research:

- Empirical findings support the hypothesis that social welfare expenditure does buttress overall participation yields in university education in the US but not in Italy. A possible reason for this result could be found in the higher average cost of tuition and fees in the US relative to Italy. Despite greater inequality in the distribution of total family income and higher poverty rates, on the one hand, and the failure of student aid policies to provide funding to all needy students, on the other, in Italy the relatively low cost of university education (at least compared with the US) could have kept university still affordable for middle-income students.

  Nevertheless, in both countries university enrolment rates among low-income students have been found highly responsive to changes in social welfare expenditure.

- The elasticity of participation rates in university education among low-income students to changes in social welfare spending has been found to be higher in the US relative to Italy. Again, an explanation for this result could lie in the higher cost of university education in the US relative to Italy. This may suggest that, given the relatively low cost of tuition and fees, in Italy the major role of social welfare programmes is not to increase the ability of low-income households to pay for university education but to guarantee an acceptable

standard of living to their children enrolled at the university. Generous social welfare benefits could in fact provide incentives to low-income students to resist the temptation of dropping out of university if they receive a good job offer. As a general observation, it can be noted that, if social welfare programmes would be removed, drop-out rates among low-income university students would be much higher relative to the present circumstances. Nevertheless, more precisely, in Italy changes in social welfare spending together with changes in labour market features are likely to be important to explain changes in university participation rates among children of the least advantaged families.

The US estimates show that, although subsidies awarded to students directly are more effective in increasing university enrolment rates among children of the least advantaged families relative to social welfare benefits received by their parents, the differential effect is found to be not that high.

- The sensitivity of participation rates in university education among low-income students to changes in wage differential between university and high school graduates is higher in the US relative to Italy. This also confirms the hypothesis we made in the second chapter. Since, also thanks to a wider wage distribution, less-educated workers have better chances to find a job in the US relative to Italy, the investment in university education is likely to be mainly perceived in the former as a means to enjoy higher earnings. By contrast, in the latter a higher educational attainment is mainly seen as a way to lower the risk of being unemployed.

These findings may have important policy implications. Given the relationship between social welfare expenditure and university education, policy makers should be aware that the combination of increased tuition and fees and cutbacks in social welfare expenditure could undermine participation in university education

among lower income students. This observation could be particularly relevant for those European governments in the process of reforming their welfare systems.

It is also worth to note that increasing participation rates in university education among low-income students may benefit not only those people receiving higher education but also society at large. Given the close correlation between parental socio-economic background (i.e. parental education and income) and children's level of educational attainment, one might argue that those low-income people who are educated are more likely to educate their children (intergenerational transmission of education). In other words, by buttressing participation rates in university education among low-income students social welfare programmes could contribute to breaking the cycle of poverty.

The impact of social welfare spending on university enrolment yields among low-income students is likely to stem from the present multipurpose nature of social welfare programmes. Social welfare programmes were originally designed as targeted policies (i.e. they tried to solve a specific problem with a corresponding programme) but with the passing of time it turned out that recipients were progressively using them to address many social problems at once. As a consequence the real impact of each single social welfare provision may go significantly beyond the sole goal which is theoretically supposed to accomplish.

This study demonstrates that, although none of the present social welfare measures have been specifically designed to improve the access to university education among low-income students, the considerable rise in household market income inequality and higher poverty rates experienced in several industrialised countries might have broadened the scope of the welfare measures encompassing consequences that were not necessarily envisaged at the time the welfare state was created.

The increased competition in the labor market (also due to the rising participation of women in the work force) and the increased effect of education on labor market outcomes (i.e. unemployment hitting especially less-educated people and higher earnings enjoyed by people with a high level of education) may have delayed the entry into the work force of young adults (mainly aged between 18 and 25). Therefore, it seems likely that a large number of young people spend longer in their parents' house as well as in education. This has led to an increase in the costs that are shouldered by parents. Parents have in fact to face a higher cost for their children's education and additional costs related to the material living conditions of their grown-up children. Since in the tight budget of lower income households social welfare benefits are likely to play an important role, one may argue that parents could devote some of the resources they get from social welfare programmes to cover the living expenses as well as the education cost of their grown-up children. Even if indirectly, non-cash benefits could also influence the budget for the education-related expenditure of grown-up children of the least advantaged families. For instance, public health insurance could enable low-income households to save some money that can be used to cover costs such tuition and fees, etc.

In countries characterised by generous old-age cash benefits (e.g. Italy) there might be a correlation between pension benefits and university enrolment yields. The rise in the average age at which people have children and longer life expectancy could have in fact led to a large number of pensioners having children enrolled at the university. Nevertheless, other categories of social welfare benefits received by different family members (e.g. generous family benefits or generous unemployment benefits) may have also an indirect influence on the budget for grown-up children and, in turn, on their participation in university education.

The impact of social welfare programmes on participation rates in university education among low-income students comes partially as a result of the incapacity of the welfare state to adapt to changing circumstances by taking new measures aimed at responding to new social needs. For instance, the economic, demographic and social transformations that have affected several industrialised countries might tend to increase the social risk faced by the young. The increased effects of education on labour market outcomes could push a significant number of low-income parents to decide, - and in absence of student aid-, to shoulder entirely the cost of education for their children. This is a general observation that policy makers that are reforming the structure of the welfare state need to take into consideration.

Although in this study we have concentrated our attention on university enrolment yields, it is important to note that social welfare spending could have a strong influence also on participation rates in secondary education. Some low-income students attending secondary school could be in fact tempted to drop out of school and hence looking for a job once they reach the compulsory age schooling. By guaranteeing an acceptable standard of living, a generous social safety net could defer entry to the labour market of these students.

Given a limited amount of available resources, future research could explore ways of identifying combinations of student aid expenditure and social welfare expenditure enabling the highest number of low-income students to participate in university education. The idea is that the allocation of educational resources and social welfare benefits should take into account its impact on participation rates in university education, and on how to maximize them.