A Microsimulation of the Impact of Tax Reforms on Child Poverty: the Case of Italy

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Abstract

Microsimulation models have been used in order to find efficient counteractive instruments to poverty. The objective of this paper is to analyse the impact of fiscal policy on poverty, insisting on child poverty rates. Empirical analysis suggests that in fighting poverty, a mix of policies need to be in place, fiscal reforms increasing tax allowances such as child benefit granted to parents with dependent children, are not sufficient to reduce child poverty.

I. Introduction

Unemployment has become an increasing concern, worldwide. High unemployment rates do have a negative effect on poverty rates and social inequality, although the relationship is quite complex. In the long-run, high persistent unemployment deteriorates human capital and induces labour market withdrawal. In the short-run, high unemployment rates put increasing pressure on the welfare systems and family dynamics, while insecure labour market conditions induce recurrent poverty. 24% of the European Union population is at the risk of poverty, of which 27% are children (European Commission, 2013). The most exposed to poverty are children with single or unemployed parents. But unlike adults, children experience poverty in a more dramatic manner.

This can be explained by the fact that children depend on their family in terms of income provision. Furthermore, poverty may have a vicious aspect such that the children brought up in poor families may have difficulties of exiting poverty. Therefore it is important to identify and reduce child poverty in the short term. As a further implication, long term poverty can be eliminated, or at least significantly reduced. The reduction of child poverty does not have only an ethical implication for social policy, but comes actually as an investment with higher future benefits for overall society.

In order to reduce child poverty, US, Canada and EU member states have been implementing tax reforms, according special attention to child benefits. In US the main instrument in assisting poor families is based on Earned Income Tax Credit, while in Canada the federal government pays a monthly Child Tax Benefit as well as a quarterly credit to low income families and individuals (Bradshaw and Finch, 2002).Within the EU, several types of measures have been taken, varying from one country to another. Austria updated family allowances in accordance with the number of children, allocating 3% of its GDP towards family and child allowance. UK also enacted a series of policy reforms such as: Child benefit increase and allocation of a complement for the first child; introduced a Child Tax Credit (means-tested benefits for families with children), Work tax credit (means-tested in-work benefit, refund for child-

care costs) and Housing & Council tax benefits. Greece, Italy, Portugal and Spain are less generous in terms of child benefit (OECD, 2013). However, in 2013 the UK has reformed the child benefit scheme, withdrawing child benefit from families with one or both higher-rate taxpayer parents, in order to cut public spending. With persistent economic crisis it is likely that child poverty will increase in the near future (UNICEF, 2012).

The main objective of this paper is to investigate the effect of tax benefits on reducing child poverty. To this purpose, child poverty in Italy is analysed, as it is one of the countries that do not allocate many resources in fighting child poverty but it is also by definition a family oriented country, among other South European ones. The Italian tax system has as a tax unit each individual, therefore couples are taxed separately. With regard to family benefits, the most important ones are the family allowances which are means tested, depend on the household income and number of components, and are granted to employees and to individuals that receive social security benefits (e.g. unemployed).

There have been three major personal income tax reforms: 2003, 2005, and 2007. In 2003, the Personal Income Tax Reform started, introduced by the Financial Law which sets a "no tax area" that results from the calculation of income related tax allowances, increasing threshold levels. This set of new measures leads to tax savings for low/middle income earners. The tax credits for dependent family members were maintained. In 2005, family-related tax credits were substituted by deductions (linearly decreasing with income like the no-tax area deductions) and decreased the number of tax brackets, among several other provisions. Under this reform, the highest income earners benefitted. Overall, with both reforms tax revenue was estimated to decrease by €6 billion each. The 2007 reform targeted a flat-tax plan, but was not completed due to extreme revenue-loss fears. Once again, tax deductions have been replaced by tax credits.

The novelty of the later reform is that it restructured children tax benefits, increasing the amount, as before the reform transfers to households with children decreased with income inducing high risks of poverty, especially given that there is an increased dependence of children on their families, youngsters entering late the labour market. However, over time and three reforms, child poverty is approximately at the same rate. In Italy, child poverty was around 16.6%

during 1990-2000 period (UNICEF, 2005) and decreased to 15.9% in 2012 (UNICEF, 2012); that is it decreased by 0,7% in more than 10 years, which is negligible.

In this case several questions arise: who are the poor and what is the degree of child poverty? What is the effect of child benefit on poverty and what would have happened if child benefits would have been doubled with the first reform, is it a sufficient instrument to reduce child poverty? In order to answer to these questions, we go back to the first personal income tax reform.

Firstly, we need to identify who are the poor and the incidence of poverty.

We do this by using a series of computed relative poverty measures such as Head Count Ratio, Poverty Gap and Squared Poverty Gap to study poverty and moreover, child poverty. Secondly, using microsimulation[1], the "what if" question is asked: what would have happened in terms of poverty if child benefit would have been not only increased as in the last income tax reform, but doubled. After simulating the increase in child benefit, the same poverty indexes are applied in order to investigate poverty and more precisely, child poverty. Lastly, the effect of child benefit on child poverty is analysed, using Logit and Probit econometric models.

To sum up, this paper examines poverty and child poverty statistics before and after the simulated child benefit increase as well as the effect of child benefit on child poverty, before and after simulating the doubling of child benefit. For the remaining sections, the paper is structured as follows. In Section II, a review of previous literature is provided, while in Section III the theoretical framework and methods of the paper are discussed. Section IV presents the data used and descriptive statistics. Empirical results are reported in Section V, while conclusions are presented in Section VI.

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[1] Microsimulation models, by definition, are econometric models using micro data in order to answer a question referring to a possible/alternative policy effect. As such it is a simulation of a policy effect, using microeconomic data. Therefore the denomination, microsimulation models.

II.   Literature review

In determining child poverty, different approaches have been adopted using several measurement instruments as well as data sets. The subject of child poverty has multidimensional aspects enclosing factors such as education, child support, health care as well as parent employment. Researchers worldwide have been analysing child poverty causes, measurements and counteractive instruments. In Italy, Chiara Saraceno (1990) provides a picture of child poverty using data from 1950 up to 1990. The main advantage of using data for such a long period is that child status as well as child labour can be analysed during social, demographic, family structure and economic changes.

For the 1950-1970 period, there is a marked difference between Northern and Southern region in terms of family income and number of children: in the Southern part which was less developed, the number of children is higher than in the Northern South which was more industrialized. Child mortality rate decreased, which suggested an increase in the family welfare and therefore, of children welfare. Kindergarten services as well as schooling process became more and more widespread across the country which proved to improve child status. Child labour was regulated by a 1967 law, establishing as the minimum working age, 15. However, child labour continued to be used traditionally in agriculture or as street sellers. The period 1970-1980 is characterized by an increasing economic uncertainty, creating regional disparities and decreasing fertility rates. In 1978 the National Health Program was introduced, with the aim of covering the entire population and as a consequence, infant mortality rate continued to decrease. In 1983, the school enrolment rate was of 95%. All in all, in Italy the health care, child-care services and educational system has been improving over time. However, the author suggests that improvements needed also to be made in terms of child economic protection.

Wen-Hao Chen and Miles Corak (2006) adopt a more empirical approach as well as a wider range of countries in studying child poverty over the 1990s. Their paper employ data form the Luxembourg Income Study and perform a cross-country analysis of child poverty. Changes in child poverty and public policy impact within 13 OECD member countries, among which Italy was

studied. The analysis is based on the 1990 Convention on the Rights of the Child. The authors focus on income poverty analysis, even if the awareness of the multidimensional aspect of child poverty exists. The authors considered both fixed and moving poverty lines, computed as 50% of the mean and median income, respectively. In the sample, the children are considered to be the individuals bellow 18 and child poverty is measured by the Head Count Ratio computed as the number of poor children divided by the overall number of children. Three important factors are considered: the labour market, family components and public transfers. The main findings are that family composition play only a limited role in determining child poverty rates, adult employment may or may not decrease child poverty, but increased family support for sure will decrease child poverty rate, regardless of its magnitude. In Italy, the child poverty rate is found to be above 10% and the parent education and father earnings discrepancies seem to increase the child poverty rate.

A perspective on child poverty regarding Southern European countries as well as a new approach in terms of instruments used is offered by Matsaganis, O'Donohue, Levy, Coromaldi, Mercader-Prats, Farinha Rodriguez, Toso and Tsakloglou (2004). The novelty of their paper consists in applying a EUROMOD microsimulation model to study the effect of family transfers on child poverty in countries as Spain, Greece, Italy and Portugal. The authors analyse initially the distributional impact of family transfers and furthermore the impact of a reform, basically by applying the child benefit system existing in countries like UK, Denmark and Sweden. The data used vary for each countries and the income has been indexed for 1998. Household heterogeneity has been adjusted by using the modified OECD equivalence scale (used by EUROSTAT).

Children are considered to be the individuals below 18 (UNICEF), while poor individuals are considered to be the ones with income below 60% of the median per capita equivalent disposable income. In order to assess the effectiveness of social policies, microsimulation was used. As main findings, the authors underline that the current benefit systems, in the given countries, is weak and that the reforms have a positive impact on child poverty, however achievable with substantial costs. The policy implications of such simulations are considerable, given the

improvements which can be realized if a cost reduction mechanism could be found.

Focusing on the UK, where the Labour Government set as an important goal the reduction of child poverty, Sutherland and Piachaud (2000) apply microsimulation method to assess the policies effectiveness. The main approach in combating child poverty is increasing the parent employment rate, motivated by the high rates of child poverty in families without paid work. Moreover, children tax credit were newly introduced, child benefit and income support (for families with children under 11) were increased. Using a POLIMOD microsimulation model, the effect of policy changes is analysed. As main result, child poverty considerably decreased. Cross-country comparison between Austria ("top country for child benefits packages"), Spain ("least generous child benefit package") and UK (in 1999 set as goal "the elimination of child poverty by 2020") is performed by Levy, Lietz and Sutherland (2006), in terms of reform measures taken for the reduction of child poverty. To this matter, a EUROMOD microsimulation model is applied. The question which is asked is what impact would have had the actions taken by one country if they would have applied the other two countries systems? The reforms under discussion cover the 1998-2003 period. As main findings, the child average expenditures has increased in all countries, while child poverty rates have been decreasing the most in UK, Austria and lastly, in Spain. Generally, the UK reform (means-tested benefits) is the most effective for both the other two countries. This approach is relevant and has interesting policy implications, as other countries may borrow the "recipe" of fighting child poverty, given that it provides efficient results.

A broader look at child poverty rates is taken by applying EUROMOD, at the level of 15 European Union member countries in 2001 (Corak, Lietz, Sutherland 2005). The role of age is considered and it is documented that children receive more governmental attention than other subgroups in terms of transfers, in most of the countries. Furthermore, children are protected from entering poverty by the benefits received: indeed, in countries with higher child benefits, child poverty rates are lower. This is obtained surprisingly, by using general benefits and not specific measures, targeted towards poor household.

III. Theoretical framework

This paper contributes to the previous literature and sets as main goal to analyse poverty in Italy, insisting moreover on child poverty. In this framework, we want to assess the effectiveness of family allowance[2] in reducing child poverty. The underlying assumption is that transfers made to poor families may reduce either the poverty incidence or poverty depth. Precisely we want to investigate if by increasing child allowance, the poverty rate is reduced. Therefore we simulate[3] the doubling of child allowance and using relative poverty measures, firstly we want to identify the extent and incidence of poverty and moreover child poverty before and after the simulation. Secondly, using as dependent variable the children living in poor families and as independent variable a set of demographic characteristics, Probit and Logit model are applied in order to study what is the effect of child benefit on child poverty before and after doubling child benefit.

As a starting point, the net income as well as disposable income for 2004 using 2003 tax structure[4] is computed. Taxable income is obtained by extracting from the gross income, the no tax area deductions. The gross tax is computed according to the tax rates applied to the taxable income brackets. The net tax is computed extracting all the family allowances out of the gross tax, and finally the net income is obtained by extracting the net tax out of the gross income. The disposable income is given by the sum of gross income plus exemptions, evasion and other undeclared income.

In order to identify who are the poor, the concept of poverty line is introduced. We consider a fixed poverty line, computed as 60% of the median net income. Households with the disposable income below the poverty line are considered to be poor and children living in families below the poverty line are considered to be poor. We then apply Foster, Greer and Thorbecke (1984) index in order to test the sensitivity of the estimates. In this sense, different measures of relative poverty are applied such as Head Count Ratio (HCR), Poverty Gap (PGI) and Squared

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[2] Appendix 1 – Table 2 Initial Child Tax Credit
[3] Appendix 1 – Table 3 Simulated Child Tax Credit
[4] Appendix 1 – Table 1 Tax schedule

Poverty Indexes (SPI) firstly on the overall sample, and secondly restricting the sample to children living in poor families.

The Head Count Ratio measures the incidence of poverty, as the proportion of population that lives in poverty. Precisely, it measures the percentage of population that has a disposable income below the poverty line. The child head count ratio is computed as the percentage of children living in families with disposable income below the poverty line, divided by the overall children in the sample; we consider all the children in the sample given the high degree of attachment of Italian children to the household they were born in. A shortcoming of the HCR Index is that it does not measure the degree of poverty, being insensitive to changes in poverty severity. In general, it measures how widespread the poverty is and is closely related to the Poverty Gap and Squared Poverty Indices.

The Poverty Gap Index measures how poor the poor are, or poverty depth. It is the mean distance separating the population from the poverty line, with the non-poor being given a distance of zero. Depending on the specific authority degree of pro-poorness, the budget amounts targeted to reduce poverty can be set. In conclusion, the smaller is the poverty gap, the easier it is to alleviate poverty by according benefits to the poor. The Squared Poverty Index measures the severity of poverty. It actually gives the mean of squared proportionate poverty gap. This index puts more weight on the observations below the poverty line.

IV. Data and statistics

The data set used in the present paper, is provided by the Survey of Italian Households' Income and Wealth 2004 (SHIW) which has been conducted by the Bank of Italy. It encloses microdata describing the economic behaviour of Italian households in 2004. A wide range of information including personal characteristics of household members are included such as age, gender, education, civil status, number of family components, as well as information regarding income and labour market status are available, the data set being rich.

In the sample there are 20583 observations available of household heads, out of which 10003 are men, 10578 women; in terms of household components, there are predominant families with 3 or 4 members, large families having a small number of observations, which may allow for them to be underrepresented. The observations are distributed approximately even among different areas, around more or less 20% in each region[5], with small differences existing in the population density and one exception regarding the Islands (12.7% of population). The data set is quite balanced between men and women. In terms of civil status[6], the majority of individuals are married (51.3%), a large part of the population is single (36.9%), while a smaller share of population is either widowed or divorced. Regarding education[7], the highest part of population has graduated from middle school (28.44%) and only small shares are university graduates (6%). Our particular interest regards mostly the children; they represent 31% of the entire sample.

It can be noted that most households do not have children aged more than three[8] in their composition, and those families who do have children, mostly have only one (24.4% of households), or two (20% of households). Not surprisingly, both for children under and above three years old, the highest share of one child exists among married couples[9], however it is unexpected to find that as the number of children increase, they tend to be raised by single parents, therefore in the sample existing a large percentage of children living in one parent family. Moreover, it can be observed that the highest share of children above three years old live in households in which parents have a medium level of education[10], while individuals with a short university degree or higher education have by far fewer children. For children aged less than 3, individuals with no education detain the highest share in the sample. In terms of region[11], one child families are spread approximately smooth across areas. As the number of children increase, the share of families with an increasing number of children increases in the South.

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[5] Appendix 1 – Figure 1 Sample distribution, by regions
[6] Appendix 1 – Figure 2 Sample distribution, by civil status
[7] Appendix 1 – Figure 3 Sample distribution, by education level
[8] Appendix 1 – Figure 4 Sample distribution, by households with children aged more than three
[9] Appendix 1 – Table 4 Children no. distribution, by household, age and parent civil status
[10] Appendix 1–Table 5 Children no. distribution by household and parent education
[11] Appendix 1–Table 6 Children no. distribution by household and region

V. Simulation results

Firstly, the poverty line is obtained as 60% of the median net income. The value of the poverty line is set at 4257.7 EUR. Secondly, the HCR index is computed. As main finding, the Head Count Ratio indicates that 38.97% of families live below the poverty line. The highest share of poor households as well as poor children is registered to be the ones which have 4 members, given in Tables 1 and 2. Furthermore, from Tables 3 and 4 it can be observed that the highest share of poor households and poor children are located in the Southern part of the country (31.01%). Therefore, this may imply the fact that different policies should be adopted according to regions to tackle poverty.

Table 1. The distribution of poor with respect to the family components number

| *Poor* | *Household Components Number* | | | | | | | | | |
	1	2	3	4	5	6	7	8	9	Total
0	14.49	30.36	24.41	22.3	6.4	1.62	0.2	0.17	0.05	100
1	0.81	12.85	24.42	39.08	16.4	4.71	0.91	0.54	0.26	100
Total	9.16	23.53	24.41	28.84	10.3	2.83	0.48	0.31	0.13	100

Table 2. The distribution of poor children with respect to the family components number

| *Poor Children* | *Household Components Number* | | | | | | | | | |
	1	2	3	4	5	6	7	8	9	Total
0	12	29.67	24.76	23.4	7.57	1.89	0.32	0.29	0.08	100
1	0	3.72	23.29	46.4	19.12	5.85	0.97	0.37	0.29	100
Total	9.16	23.53	24.41	28.84	10.3	2.83	0.48	0.31	0.13	100

Table 3. The distribution of poor with respect to regions

Poor	Regions NW	NE	Centre	South	Islands	Total
0	25.66	22.18	23.03	18.88	10.25	100
1	18.95	15.54	17.89	31.01	16.59	100
Total	23.04	19.59	21.03	23.61	12.72	100

Table 4. The distribution of poor children with respect to regions

Poor Children	Regions NW	NE	Centre	South	Islands	Total
0	24.12	20.44	22.13	21.70	11.59	100.00
1	19.57	16.86	17.46	29.76	16.35	100.00
Total	23.04	19.59	21.03	23.61	12.72	100.00

However, the Head Count Index represents just one dimension of poverty. Further measures are needed in order to build a more complete framework. Using different estimation methods, we have obtained robust estimates for Head Count Ratio, Poverty Gap and Squared Poverty Gap Index given in Table 5. Before simulating the increase of child benefit, HCR indicate that 38.97% poor exist in the sample. The Poverty Gap is of 36.46% and the Squared Poverty Gap Index, 35.42%. The PGI could suggest that in order to eradicate poverty, on average transfers equal to 36.47% of the poverty line should be given to the poor, which in practice is hard to implement due to several reasons, such as additional tax revenues needed and high taxation that could suppress economic growth.

Table 5. Poverty Measurement

Poor -before simulation		Poor- after simulation
The poverty line is set at 4257.7 units		
Headcount ratio %	38.979	38.979
Poverty gap ratio %	36.463	36.771
Index FGT(2.0) *100	35.426	36.795

After doubling the child benefits, the poverty indices have similar values to those when using different estimation procedures: HCR 38.97%, PGI 36.77%, and Squared Poverty Gap 36.79%. However, comparing the new values with the initial poverty indices it can be noticed that in terms of Head Count Ratio nothing changed, but there is a small increase regarding the Poverty Gap and Squared Poverty Gap. Therefore, the implication on the overall population of doubling of benefits is that the proportion of poor is still the same however poverty depth has increased by 0.31% and poverty severity has increased by 1,37%. Once more this indicates that benefits should be targeted towards the neediest. However, the easiest way to reduce the headcount index would be to target the benefits towards people that are just below the poverty line, as are the first to exit poverty and the cheapest to move over the line. There exists also an equity-efficiency trade off, as the share of poor individuals just below the line does not represent the poorest of the poor.

Table 6. HCI, PGI, Squared Poverty Gap Index

Poor -before simulation: Foster-Greer-Thorbecke poverty indices, FGT(a)	Poor- after simulation: Foster-Greer-Thorbecke poverty indices, FGT(a)
All obs a=0 a=1 a=2	All obs a=0 a=1 a=2
0.38979 0.36463 0.35426	0.38979 0.36771 0.36795
FGT(0): headcount ratio (proportion poor)	FGT(0): headcount ratio (proportion poor)
FGT(1): average normalized poverty gap	FGT(1): average normalized poverty gap
FGT(2): average squared normalized poverty gap	FGT(2): average squared normalized poverty gap

Table 7. Robust Standard errors for FGT poverty indices

	Poor- before simulation				Poor-after simulation			
Mean	Estimate	Std. Err.	[95% Conf.	Interval]	Estimate	Std. Err.	[95% Conf.	Interval]
p0	.389	.003	.3831245	.3964509	.389	.003	.3831245	.3964509
p1	.364	.003	.3581992	.3710537	.367	.003	.3611142	.3742967
p2	.354	.003	.3478895	.3606267	.367	.005	.3575813	.3783245

After analysing the degree of poverty in the overall sample, Foster, Greer and Thorbecke indexes are applied to the restricted sample, composed only of children and young adults living in poor families, before and after tax benefit simulated increase (i.e. doubled tax benefit). The underlying assumption is that if child benefits are granted to parents in order to reduce child poverty, increasing child benefits may help reduce the number of children living in poor families, or minimise the poverty depth, i.e. the poor becoming less poor. Table 8 presents Stata output.

The Head Count Ratio before doubling tax allowances is 76.26%, the Poverty Gap, 74.23% and Squared Poverty Gap, 73.50%. In this sample, more than 50% of the children live in poor households. Increasing child benefit does not have the desired outcome, the HCR being unchanged after doubling child benefit while Poverty Gap is 74.32% and Squared Poverty Gap, 74.23%.

Table 8. Child Poverty Measurement

Poor children-before simulation		*Poor children-after simulation*
The poverty line is set at 4257.7 units		
Headcount ratio %	76.269	76.269
Poverty gap ratio %	74.232	74.324
Index FGT(2.0) *100	73.508	74.232

Therefore, doubling child benefits did not decrease the number of poor children but did increase poverty depth among children by 0.9% and poverty severity by 0,73%. The only expected outcome that was met was that the fiscal revenues decreased after doubling the child allowance. This implies the fact that increasing child benefits is not an efficient instrument, which may be partially explained by the fact that by just increasing child benefit, the level of income will also increase accordingly for all households.

Therefore, one suggestion would be to target the needy and grant benefits accordingly. In terms of equity-efficiency trade off, this analysis suggests that increasing transfers to poor families just below the poverty line may not have the desired effect, the head-count ratio being unchanged, and that would be more equitable to grant more transfers to the poorest and

decrease the poverty gap.

Most importantly, these results explain why child poverty has not been decreasing over time in Italy. Simply put, because it has not been addressed by proper policies. Targeted benefits and regional support could be improved if it is taken in consideration that poverty is predominant in the Southern part of the country.

When trying to answer: what is the effect of tax allowance on child poverty, we apply Probit and Logit[12] models, presenting robust estimates. Here we do not take into account the income, but assume that we can observe only if a child lives in a poor household or not. The regressors included in the estimations explain very well the variance of child poverty, as the R squared is of 82/83% for the Probit and 83/84% for the Logit model (before/after child benefit increase).

Holding as dependent variable the dummy indicating whether a child is poor or not and as regressors a series of dummies regarding demographic and family characteristics, we find that both Logit and Probit estimate that the probability for a child to live in a poor household is around 23%. If child benefit is doubled, when included in the Probit regression we find that there exists a slight decrease of a child probability of being poor, of 0.04%.

As main results, controlling for demographic factors such as age, parents education, civil status, education and number of family components, we find that receiving a child benefit, positively affects child poverty, statistically significant at 1% significance level; after doubling child benefit, the effect decreases. It may be the case that due to very high child poverty, transfers needed to alleviate it, needs to be very high as well.

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[12] Annex 2 - Table 1. Child poverty probability: Probit estimates .
Annex 2 - Table 2. Child poverty probability: Logit estimates

VI. Conclusions

In the present paper we have tried to establish poverty indices for the Italian population. Moreover, we have addressed the effects of tax reforms and doubling the child benefits. Although there have been three major tax reforms in Italy, the main change in addressing child poverty, from the fiscal point of view was the increase of tax allowances parents receive for their children, in 2007. Therefore, this study is useful as it applies a microsimulation model to addresses the "what if" question concerning what would have happened if child benefits would have been doubled after the first reform. Would have been sufficient to reduce child poverty, given the fact that the percentage of poor children has not been changing for the past decade?

To this purpose a microsimulation model has been used. We conclude that doubling tax allowances would not have been enough. On the contrary, although the Head Count Index remains the same, Poverty Gap and Squared Poverty Gap Indexes increase.

Therefore, the overall implication is that poverty depth and poverty severity increases. In the entire sample, poverty depth has increased by 0,31% and poverty severity has increased by 1,37%. Among children, poverty depth has increased by 0,9%, while poverty severity by 0,73%. This suggests that the poverty is accentuating, the poor becoming even poorer and it raises an equity-efficiency trade-off issue: who should be targeted by the policy-makers? Certainly, the most efficient would be to target the poor just below the poverty line, as they are the easiest to redeem, but the moral thing to do would be to target the poorest as they face the hardest difficulties. However, the later solution would not decrease overall poverty, while the former would assuming higher transfers are granted, although may not be equitable.

Most importantly, these results explain why child poverty has not been decreasing over time in Italy. Simply put, because it has not been addressed by proper policies as higher benefits are not sufficient to reduce poverty. For example, since most numerous families reside in the Southern part of the country, where it is also registered the highest share of poor children, regional support could be a good initiative. Furthermore, higher educated individuals have fewer children, while individuals with no education or medium education have more children. This may

be inversely proportional with the child poverty rate, as a higher educated individual generally earn more than an individual which is less educated. This is because a family with less income and higher size, it is more likely to be in danger of poverty, rather than a small family with a high income. As policy implication, depending on the level of parent education and labour market status, training could be provided such that the family earnings increase. Lastly, we also have to take into consideration the fact that it may be more difficult for single parents (including divorced or widowed) to raise children by themselves, and especially small children, which may enhance child poverty: the smaller a child is, the more depends on his parents. Therefore, single parents with more or younger children should benefit more from different social policies, such as discounted child care or housing services.

To conclude, poverty in general or child poverty more precisely cannot be reduced only by one measure. Increasing child benefits only does not suffice. Ultimately, in order for a social planner to successfully in   reducing poverty, several policies must be in place and most importantly parents employment status and income support must be ensured.

Appendix 1

Table 1. Tax schedule

Year: 2003 Bracket (EUR)	Tax rate (%)
Up to 15 000.00	23
From 15 000.00 up to 29 000.00	29
From 29 000.00 up to 32 600.00	31
From 32 600.00 up to 70 000.00	39
Over 70 000.00	45

Year: 2005 Bracket (EUR)	Tax rate (%)
Up to 26 000.00	23
From 26 000.00 up to 33 500.00	33
From 33 500.00 up to 100 000.00	39
Over 100 000.00	43

Year: 2007 Bracket (EUR)	Tax rate (%)
Up to 15 000.00	23
From 15 000.00 up to 28 000.00	27
From 28 000.00 up to 55 000.00	38
From 55 000.00 up to 75 000.00	41
Over 75 000.00	43

Table 2. Children tax credit 2003 (for parent with dependent children)

Initial Child Tax Credit	Income brackets	Amount (EUR)
Tax allowance for family burdens (1 child)	Up to 36152	516.46
	36152-51646	303.68
	Above 51646	285.08
Tax allowance for 1 dependent child(under 3 years old)	36152-51646	303.68+123.95
	Above 51646	285.08+123.95
Tax allowance for 2 dependent children	Up to 41317	516.46*2
	41317-51646	303.68+336.73
	Above 51646	285.08+285.08
Tax allowance for 2 dependent children (1child under 3 years)	41317-51646	303.68+336.73+123.95
	Above 51646	285.08+285.08+123.95
Tax allowance for 2 dependent children (both under 3 years)	41317-51646	303.68+336.73+123.95+123.95
	Above 51646	285.08+285.08+123.95+123.95
Tax allowance for 3 dependent children	Up to 46481	516.46*3
	46481-51646	303.68+336.73+336.73
	Above 51646	285.08+285.08+285.08
Tax allowance for 3 dependent children(1 child under 3 years)	46481-51646	303.68+336.73+336.73+123.95
	Above 51646	285.08+285.08+285.08+123.95
Tax allowance for 3 dependent children(2 children under 3)	46481-51646	303.68+336.73+336.73+123.95+123.95
	Above 51646	285.08+285.08+285.08+123.95+123.95
Tax allowance for 3 dependent children(all children under 3)	46481-51646	303.68+336.73+336.73+123.95+123.95+123.95
	Above 51646	285.08+285.08+285.08+123.95+123.95+123.95
Tax allowance for children>3	-	516.46*children number

Note:
-extra-credit for 1 child under 3 of 123.95 EUR is given.
-for more than 3 children, the tax credit is computed as the number of children*516.46.

Table 3. Simulated Children tax credit (for parent with dependent children)

Simulated Child Tax Credit	Income brackets	Amount (EUR)
Tax allowance for family burdens (1 child)	Up to 36152	1032.92
	36152-51646	607.36
	Above 51646	570.16
Tax allowance for 1 dependent child(under 3 years old)	36152-51646	607.36+247.9
	Above 51646	570.16+247.9
Tax allowance for 2 dependent children	Up to 41317	1032.92*2
	41317-51646	607.36+673.46
	Above 51646	570.16+570.16
Tax allowance for 2 dependent children (1child under 3 years)	41317-51646	607.36+673.46+247.9
	Above 51646	570.16+570.16+247.9
Tax allowance for 2 dependent children (both under 3 years)	41317-51646	607.36+673.46+247.9+247.9
	Above 51646	570.16+570.16+247.9+247.9
Tax allowance for 3 dependent children	Up to 46481	1032.92*3
	46481-51646	607.36+673.46+673.46
	Above 51646	570.16+570.16+570.16
Tax allowance for 3 dependent children(1 child under 3 years)	46481-51646	607.36+673.46+673.46+247.9
	Above 51646	570.16+570.16+570.16+247.9
Tax allowance for 3 dependent children(2 children under 3)	46481-51646	607.36+673.46+673.46+247.9+247.9
	Above 51646	570.16+570.16+570.16++247.9+247.9
Tax allowance for 3 dependent children(all children under 3)	46481-51646	607.36+673.46+673.46+247.9+247.9+247.9
	Above 51646	570.16+570.16+570.16+247.9+247.9+247.9
Tax allowance for children >3	-	1032.92*children number

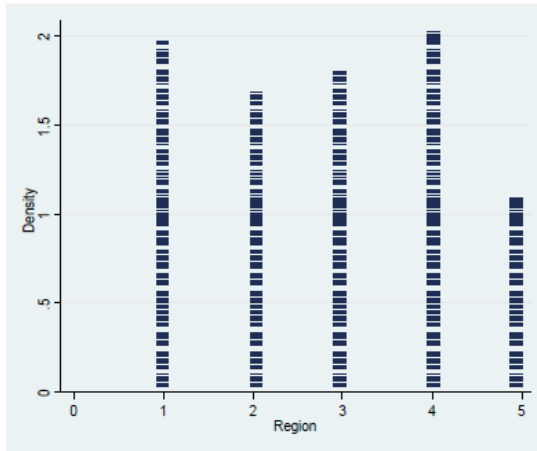**Figure 1 Sample distribution, by regions**

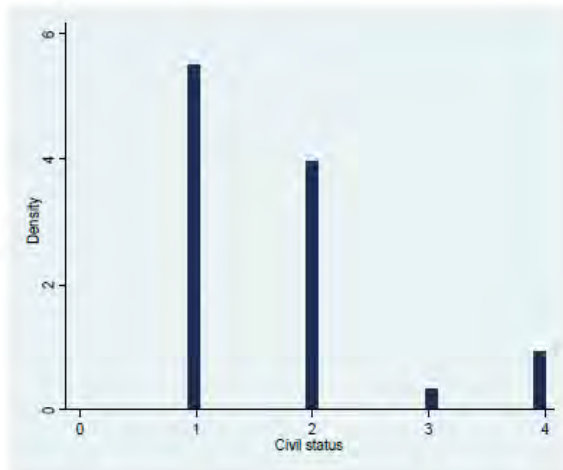**Figure 2 Sample distribution, by civil status**
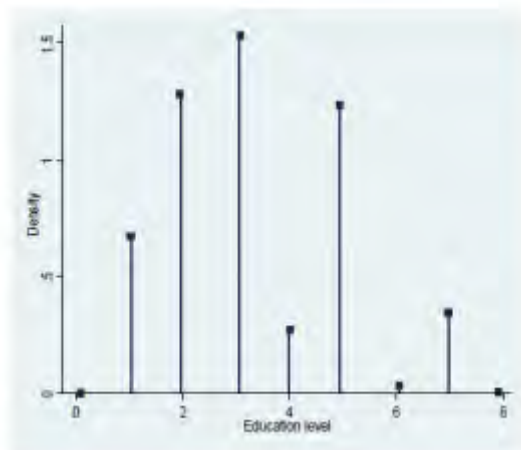

Figure 3 Sample distribution, by education

Table 4. Children no. distribution, by household, age and parent civil status

Children>3 by household	Civil status					Children<3 by household				
	Married	Single	Divorced	Widow	Total	Married	Single	Divorced	Widow	Total
1	50.92	42.14	3.01	3.94	100.00	50.76	48.24	0.60	0.40	100.00
2	45.13	51.99	1.21	1.67	100.00	45.45	53.59	0.96	0.00	100.00
3	36.70	61.51	0.57	1.23	100.00	40.00	60.00	0.00	0.00	100.00
4	30.85	67.73	1.06	0.35	100.00	50.76	48.24	0.60	0.40	100.00
5	28.57	71.43	0.00	0.00	100.00	-	-	-	-	-
6	22.22	77.78	0.00	0.00	100.00	-	-	-	-	-
7	22.22	77.78	0.00	0.00	100.00	-	-	-	-	-
Total	51.30	36.92	3.14	8.62	100.00	51.30	36.92	3.14	8.62	100.00

Table 5. Children no. distribution, by household and parent education level

Children by household	Parent Education level								
	None	Elementary	Middle	Professional	High School	Short Univ.	Bachelor	Postgrad.	Total
1	14.09	15.61	29.92	5.29	26.83	0.82	7.32	0.18	100
2	14.1	15.04	33.53	4.14	26.48	0.65	5.96	0.12	100
3	14.72	18.11	36.23	2.74	22.36	0.66	5.19	0.1	100
4	14.89	18.09	41.84	2.13	17.38	0	5.67	0	100
5	14.29	42.86	35.71	0	7.14	0	0	0	100
6	33.33	11.11	55.56	0	0	0	0	0	100
7	22.22	11.11	66.67	0	0	0	0	0	100
Total	12.51	23.79	28.44	5.03	22.97	0.67	6.45	0.14	100

Children<3 by household	Parent Education level							
	None	Elementary	Middle	Professional	High School	Short Univ.	Bachelor	Postgrad.	Total
1	40.61	5.11	23.29	4.45	20.04	0.33	5.97	0.2	100
2	52.15	2.87	15.79	5.26	13.88	0.96	9.09	0	100
3	60	13.33	26.67	0	0	0	0	0	100
Total	12.51	23.79	28.44	5.03	22.97	0.67	6.45	0.14	100

Table 6. Children no. distribution, by household and region

Children by household	Region North-West	North-East	Centre	South	Islands	Total
1	24.36	17.7	20.98	23.15	13.81	100
2	17.81	16.16	17.42	31.47	17.15	100
3	11.51	13.68	11.51	42.26	21.04	100
4	15.25	17.02	6.38	47.87	13.48	100
5	0	0	0	50	50	100
6	0	0	0	100	0	100
7	0	100	0	0	0	100
Total	23.04	19.59	21.03	23.61	12.72	100
Children <3 years, by HH	Region					
1	21.04	19.24	0	0	14.86	100
2	22.49	20.1	18.18	23.44	15.79	100
3	0	33.33	33.33	33.33	0	100
Total	23.04	19.59	21.03	23.61	12.72	100

Appendix 2

Table 1. Child poverty probability: Probit estimates

	Probit Robust Estimation Before Simulation			Probit Robust Estimation After Simulation		
Poor children	Coef.	Std. Err.	P>z	Coef.	Std. Err.	P>z
Age	-0.148	.007	0.000	-0.157	.007	0.000
Age squared	0.001	.000	0.000	0.001	.000	0.000
Single with >4children	-3.057	.333	0.000	-4.015	.356	0.000
Married with >4children	-3.413	.414	0.000	-4.269	.445	0.000
Child benefit	0.003	.000	0.000	0.001	.000	0.000
Married	-1.607	.188	0.000	-1.361	.209	0.000
Single	0.773	.171	0.000	1.033	.192	0.000
Widow	-0.507	.371	0.172	-0.671	.426	0.115
No education	-0.358	.556	0.520	-0.430	.535	0.421
Elementary school	0.475	.553	0.390	0.351	.532	0.509
Middles school	0.363	.545	0.505	0.297	.522	0.569
Professional study	-0.019	.555	0.971	-0.025	.532	0.961
High School	0.276	.544	0.612	0.260	.521	0.618
Short University	0.529	.569	0.352	0.535	.547	0.328
Bachelor	0.268	.547	0.624	0.283	.524	0.588
North West	0.134	.065	0.040	0.170	.067	0.011
Centre	0.119	.065	0.066	0.145	.067	0.032
South	0.424	.066	0.000	0.394	.068	0.000
Islands	0.439	.077	0.000	0.411	.080	0.000
No. family components 2	6.432	.524	0.000	7.067	.544	0.000
No. family components 3	5.674	.480	0.000	6.571	.516	0.000
No. family components 4	4.924	.456	0.000	5.771	.495	0.000
No. family components 5	4.294	.433	0.000	5.051	.474	0.000
No. family components 6	3.650	.390	0.000	4.348	.424	0.000
No. family components 7	2.868	.439	0.000	3.443	.468	0.000
No. family components 8	2.595	.610	0.000	3.303	.647	0.000
Constant	-5.571	.778	0.000	-6.212	.786	0.000
Probability of a child being poor 23.83 %				Probability of a child being poor 23.79%		

Table 2. Child poverty probability: Logit estimates

Logit Robust Estimation Before Simulation				Logit Robust Estimation After Simulation		
Poor children	Coef.	Std. Err.	P>z	Coef.	Std. Err.	P>z
Age	-.280	.015	0.000	-0.294	.015	0.000
Age squared	0.002	.000	0.000	0.002	.000	0.000
Single with >4children	-6.256	.637	0.000	-8.514	.750	0.000
Married with >4children	-6.301	.957	0.000	-8.317	1.089	0.000
Child benefit	0.006	.000	0.000	0.004	.000	0.000
Married	-3.684	.412	0.000	-3.177	.445	0.000
Single	1.544	.375	0.000	2.164	.407	0.000
Widow	-1.210	1.06	0.254	-1.685	1.189	0.156
No education	-0.794	.968	0.412	-0.769	.890	0.387
Elementary school	.0626	.955	0.512	0.415	.876	0.636
Middles school	0.377	.938	0.687	0.310	.854	0.716
Professional study	-0.367	.958	0.702	-0.317	.878	0.717
High School	0.232	.936	0.804	0.255	.852	0.765
Short University	0.774	.994	0.436	0.826	.909	0.364
Bachelor	0.296	.940	0.753	0.3813	.857	0.657
North West	0.131	.121	0.278	0.184	.125	0.141
Centre	0.206	.125	0.100	0.228	.130	0.081
South	0.807	.129	0.000	0.718	.132	0.000
Islands	0.916	.157	0.000	0.820	.162	0.000
No. family components 2	14.298	1.011	0.000	15.646	1.08	0.000
No. family components 3	12.482	.940	0.000	14.446	1.036	0.000
No. family components 4	10.882	.905	0.000	12.742	1.002	0.000
No. family components 5	9.396	.876	0.000	11.081	.972	0.000
No. family components 6	7.915	.782	0.000	9.471	.854	0.000
No. family components 7	6.183	.786	0.000	7.497	.820	0.000
No. family components 8	5.613	1.299	0.000	6.992	1.393	0.000
Constant	-12.458	1.454	0.000	-14.08	1.479	0.000
Probability of a child being poor 23.65 %				Probability of a child being poor 23.65%		

References

An overview of child well-being in rich countries, A comprehensive assessment of the lives and well-being of children and adolescents in the economically advanced nations, UNICEF Innocenti Research Centre, Report Card 7, Florence, 2007

A Comparison of Child Benefit Packages in 22 Countries, Jonathan Bradshaw and Naomi Finch, Department of Work and Pensions Research Report No. 174. London: CDS, 2002

Baldini, M. and Pacifico, D., 2009, The recent reforms of the Italian personal income tax: distributive and efficiency effects CAP Paper n. 66

Child Poverty and Well-Being in the EU. Current status and way forward, European Commission, Directorate-General for Employment, Social Affairs and Equal Opportunities, 2008

Child Poverty and Welfare in Europe, European Social Network, 2007

Child Poverty and deprivation in Italy: 1950 to the present, Chiara Saraceno, UNICEF, Innocenti Occasional Papers, 1990

Corak, M., Lietz, C., and Sutherland, H., 2005, The Impact of Tax And Transfer System On Children In The European Union, Innocenti Working Paper 2005-04, UNICEF Innocenti Research Centre

Chen, W.H. and Corak, M., 2006, Child poverty and changes in child poverty

Chen, W.H. and Corak, M., 2005, Child Poverty And Changes In Child Poverty In Rich Countries Since 1990, Innocenti Working Paper 2005-02, UNICEF, Innocenti Research Centre

Levy, H., Lietz, C., Sutherland, H., 2006, Alternative Tax-Benefit Strategies to Support Children in the European Union: Recent Reforms in Austria, Spain and the UK Reihe Ökonomie Economics Series

Matsaganis, M., O'Donoghue, C., Levy, H., Coromaldi, M., Mercader-Prats, M., Rodrigues, C. F., Toso, S. and Tsakloglou, P., 2004, Child Poverty And Family Transfers In Southern Europe, EUROMOD Working Paper No. EM2/04

McQuaid, R., Fuertes, V. and Richard, A., 2010, How can parents escape from recurrent poverty?, Joseph Rowntree Foundation

Minujin, A., Delamonica, E., Davidziuk, A. and Gonzalez, E.D., 2006, The definition of child poverty: a discussion of concepts and measurements, Environment and Urbanization

Metcalf, H. and Dhudwar, A., 2010, Employers' role in the low-pay/no pay cycle, Joseph Rowntree Foundation

Measuring child poverty, New league tables of child poverty in the world's rich countries, UNICEF Innocenti Research Centre, Report Card 10, Florence, 2012

Persistence of high unemployment: what risks? what policies, 2011, OECD Economic Outlook, Volume 2011/1

Piachaud, D. and Sutherland, H., 2000, How Effective is the British Government's Attempt to Reduce Child Poverty?, Innocenti Working Papers No.77

Ray, K., Hoggart, L., Vegeris, S. and Taylor, R., 2010, Better off working? Work, poverty and benefit cycling, Joseph Rowntree Foundation

Roelen, K. and Gassmann, F., 2008, Measuring Child Poverty and Well-Being: a literature review, Maastricht Graduate School of Governance

Saunders, P., 2002, The Direct and Indirect Effects of Unemployment on Poverty and Inequality, SPRC Discussion Paper No. 118

The State of the World's Children 2005, Childhood Under Threat, UNICEF

Tomlinson, M. and Walker, R., 2010, Recurrent poverty: the impact of family and labour market changes, Joseph Rowntree Foundation

Understanding child poverty in South-Eastern Europe and the Commonwealth of Independent States. Innocenti Social Monitor, UNICEF Innocenti Research Centre, Florence, 2006