A Cohort Perspective of Youth Poverty in the United States

Maria Sironi, University of Oxford
Daria Mendola, University of Palermo
Arnstein Aassve, DONDENA and Bocconi University

1. Introduction

There has been considerably interest in child poverty over recent years - much less is known about the poverty experience of older children and young adults. This is unfortunate since it is of interest to understand to which extent young adults may experience economic disadvantage as they are making the transition to adulthood. Measuring economic disadvantage among young adults is not as straight forward compared to other age groups. Child poverty is for instance a direct function of the income of the parents, whereas for adults it depends on the household income - again being driven mainly by the incomes of the adults. Young adults, however, are in a critical passage of life, and their economic situation depends on their demographic status, which would include whether they have left the parental home or not, whether they have a partner and children - and not least whether they have gained stable employment. There is now a growing literature on youth poverty and disadvantage in Europe (Colley *et al.*, 2007; Iacovou and Aassve, 2007, Mendola *et al.*, 2009) - and it is an issue that has received increased interest lately - not least because of the soaring unemployment rates among those aged between 16 and 24. Less is known about youth poverty in the US (Korenman *et al.*, 1995; Dalaker and Proctor, 1999; Smeeding and Vleminckx, 2001; Lobao *et al.*, 2012).

This paper makes two important contributions to this literature. First, the standard way of measuring poverty is a rather crude measure of disadvantage. Incidence of poverty may not represent disadvantage in so far it is a short-lived state (Hulme and Sheperd, 2003). Moreover, poverty is defined over set poverty threshold, and consequently individuals are classified as disadvantage if their income falls below a certain level not taking into account that individuals may differ substantially the extent they deviate from the threshold. Arguably, the economic situation of an individual just below the poverty threshold is different from someone who stands way below it. Our analysis presents an alternative poverty measure that takes into account both the duration

and the depth of poverty. Second, we compare the experience of disadvantage of two different cohorts. We do so by making use of two surveys - National Longitudinal Surveys of Youth - of the United States, Bureau of Labor Statistics: NLSY79 and the NLSY97. For these two cohorts we find that severity of poverty has increased over time. There was a higher level of youth poverty between 2002 and 2009, and the poverty is more persistent - compared to the earlier period measured by the NLSY79.

2. Data and Methods

2.1. Data

The National Longitudinal Survey of Youth (NLSY) is a nationally representative sample of young men and women that gathers information at multiple points in time on their labor market activities and other significant life events. In this study, we use both the NLSY79 and NLSY97 to compare poverty persistence among young adults in two different points in time. The NLSY79 began in 1979 with the survey of 12,686 young men and women aged 14–22 (born between 1957 and 1964). These individuals were interviewed annually through 1994. The NLSY97 consists of a nationally representative sample of approximately 9,000 young people who were aged 12–16 on December 31, 1996 (born between 1980 and 1984). Round 1 of the survey took place in 1997 and respondents are interviewed annually. All of these surveys are intended to document the transition from school to work and into adulthood. While substantial differences exist between the data sets, they all collect essential demographic and socioeconomic information. Hence, we know respondents' educational attainment, employment and earnings, partnership status, living arrangements, and family background, including parents' education level.

Using data from these surveys, we compare individuals in 1982-1989 and 2002-2009. We obtain two samples with an almost identical age range but in two distinct historical contexts. For the NLSY79 we follow young adults of ages between 17 and 25 (in 1982) for eight years. So in 1989 they are between 24 and 32 years of age. For the NLSY97 we follow respondent 18-23 years old (in 2002) until they are 24-30 eight years after (in 2009). The NLSY79 cohorts (late baby boomers) were born in a period in which the U.S. economy was still growing and expanding. However, by the time they reached adolescence and early adulthood, many of the forces that contributed to the prolongation of adult transitions were in play. Nonetheless, labor market prospects were still relatively good at the end of the 1980s, after a severe recession earlier in the decade during which wage stagnation started and income inequality rose. The NLSY97 cohorts were raised in a period of varying prosperity and at a time when a two- or four-year college education became increasingly essential to enter the middle class.

The samples we analyzed include fewer individuals than their respective first rounds owing to attrition. Moreover, NLSY79 contains a military sample (individuals born between 1957 and 1961 and serving in the military as of September 30, 1978) and a group of oversampled economically disadvantaged whites. We excluded both these groups to make the samples more comparable. We also exclude the oversamples of Blacks and Hispanics surveyed in both the NLSY79 and NLSY97, to avoid any biased result. After dropping these individuals and those with missing information on essential variables, we are left with 3,387 individuals in the NLSY79, and 2,848 respondents in the NLSY97 sample. It is worth mentioning that we excluded also respondents who had missing information on income for more than two years. For those having missing values just for one year, we imputed their income through linear interpolation.

2.2. Methods

As mentioned in the previous sections, the aim of this paper is to study the degree of poverty persistence of American young adults during an eight-year time span, comparing conditions in the 1980s and in the 2000s. To do this we compare a sample of individuals followed from 1982 (17-25 years old) to 1989 (24-32), with individuals followed from 2002 (18-23 years old) to 2009 (24-30).

To evaluate the severity of poverty persistence over time we use an index of longitudinal poverty (*LPI*) belonging to the class of indices by Mendola et al. (2011). This set of indices is based upon the idea of "cumulative hardship", stating that the closer (and the more severely) two years of poverty hit, the more they contribute to the overall measure of persistence in poverty. Hence this class of indices takes into account the sequencing of poverty statuses (poor/not poor), associated with each observed year (wave), for each individual. The index is flexible in that it depends on four parameters: Moreover it depends on three parameters which can be set in order to exclude or modulate the effects of the severity of the poverty spells. These are 1) the way they follow each other (i.e. sequencing), 2) the extent in which more recent poverty spells should be given a stronger weight, and 3) the effect of the context in terms of estimated probability to escape poverty from one year to another. As part of the sensitivity analysis, we experiment with different values of these parameters, though we do not give any particular weight to the recentness to the poverty spells.

The index takes values in [0,1], where 0 refers to an individual who is never poor along the whole observation period, whereas 1 refers to an individual always poor, with zero income (i.e. maximum poverty gap), being the only one among the poor in each wave who was not able to escape poverty in the following waves. The longer the persistency (the number of subsequent spells), and the more the poverty gaps increase, and the closer the episodes of poverty are, and the fewer are the subgroups of individuals remaining poor along the waves, the faster the index approaches to 1.

The index uses poverty thresholds to determine if young adults are in poverty in a specific year and how severe their poverty is (poverty gap). In our study we used the poverty threshold computed by the U.S. Census Bureau. The Census Bureau updates poverty thresholds annually. Values of the poverty thresholds for the years 1960–2012 for families of different sizes are available on the Census Bureau's website, and they differ by age (distinguishing between families with members under and over age 65, and by members below age 18). Thresholds are the same for the 48 continental states, regardless of regional differences in the cost of living, and are updated annually for price changes using the Consumer Price Index for All Urban Consumers (CPI-U). Hence we determined whether an individual is in poverty or not in a specific year comparing the household income to the poverty thresholds of that year, adjusting household income by the family size and the number of household members below 18 years of age.

Once the index is computed we can assess how the poverty persistence changed between the two time periods. In essence, we are investigating to what extent the poverty profile in 2000s compares to the 1980s, and which are the factors that contributed to shape it. To do this we computed a set of initial conditions for both samples, measured in 1981 and 2001 respectively. In this way we have information on the year preceding the start of the eight-year time span in which we measure poverty.

Figure A

Poverty Persistence Measurements

Initial conditions
1981/2001

1982/2002

1989/2009
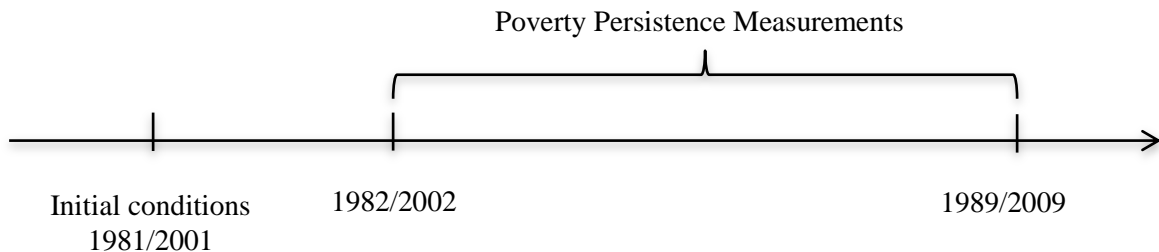
The initial conditions include: age at the beginning of the survey, gender, race (white, black, Hispanic, other race), living arrangements (classified as: living with parents, being single and living alone, being married, cohabiting, being separated or divorced), years of education, employment status (as: unemployed, working part-time, working full-time), parents' years of education, family size and number of household members under the age of 18. We think that all these variables have to be taken into account when considering the probability of young adults to enter and stay in poverty. Moreover, the role of these conditions might have changed over time.

The multivariate analysis is based on a zero-inflated negative binomial regression (ZINB). With this approach we are able to analyze the way the initial conditions influence the persistence of poverty in the following years and how their role changed over time, comparing 1980s and 2000s cohorts. ZINB are mixture models obtained by the combination of a negative binomial model (explaining values different from zero) and a

logit model (to explain the excess of zero in the distribution). In our case the coefficient of the negative binomial model will explain the intensity of the persistence. A positive coefficient indicates that that covariate is a *risk factor* because it is associated to an increase in the intensity of the persistence (i.e. increases the value of LPI). On the other side, the logit model explains the odds to be never poor along the observation period. In other words, a positive coefficient would indicate that the covariate is a *protective factor* because it is associated to an increase of the probability to be never poor.

3. Results

Before we start analyzing the distribution of the poverty persistence index and how it changed over time, it is important to look at initial conditions in the two samples. As we can see from the table below (Table 1) the composition of the samples shows some differences.

**Table 1. Initial Conditions, descriptive statistics**

	NLSY79 (Year 1981)	NLSY97 (Year 2001)
Sample Size	3,387	2,842
Mean Age (years)	19.7	19.0
% Female	53.6	51.4
% White	74.0	67.4
% Hispanic	5.3	12.4
% Black	9.1	1.4
% Other Race	11.6	18.8
% Living with Parents	60.0	77.2
% Single	74.5	85.1
% Cohabiting	1.8	8.6
% Married	21.1	6.0
% Separated or Divorced	2.6	0.3
Mean # Years of Education	11.9	11.8
% Unemployed	38.8	14.5
% Working Part-time	27.5	53.9
% Working Full-time	33.7	31.6
Mean # Years of Education, Mother	11.3	12.4
Mean # Years of Education, Father	11.2	11.4
Average Family Size	3.7	3.9
Average # Children < 18 yrs.	1.1	1.0

First of all the percentage of whites is lower in 2001 rather than in 1981 (from 74% to 67.4%), and the decrease is more than compensated by a substantial increase in

the percentage of Hispanics (from 5.3% to 12.4%) and other races (from 11.6% to 18.8%). These facts are in line with the increase of immigration in the United States, especially from Latin America, that occurred in the last decades. Moreover, living arrangements have shifted a lot over time. Young adults living with parents between age 16 and age 24 went up from 60 to 77.2%, the percentage of people cohabiting also increased (from 1.8% to 8.6%), while people married decreased from 21% to 6%. The other important change observed between 1981 and 2001 is the employment status of young adults. While the proportion of young adults working full-time has remained roughly constant, people unemployed (those not in the labor force or still in school are included in this category) went down from 38.8% to 14.5%. Also the percentage of people working full-time increased from 27.5% to 53.9%.

The histograms reported show the distribution of the poverty persistence index for all values of the index (Figure 1), for those who have been poor at least once in the eight years of observation (Figure 2), and for values of the index above 0.5 (Figure 3). The left panel of each figure shows the histogram for 1982-1989 and the right panel the one for 2002-2009. The breakdown in three different figures allows us to understand what happens when the index is not close to zero, where most of the distribution is concentrated.

Figure 1. Distribution of the Longitudinal Poverty Index, 1980s and 2000s
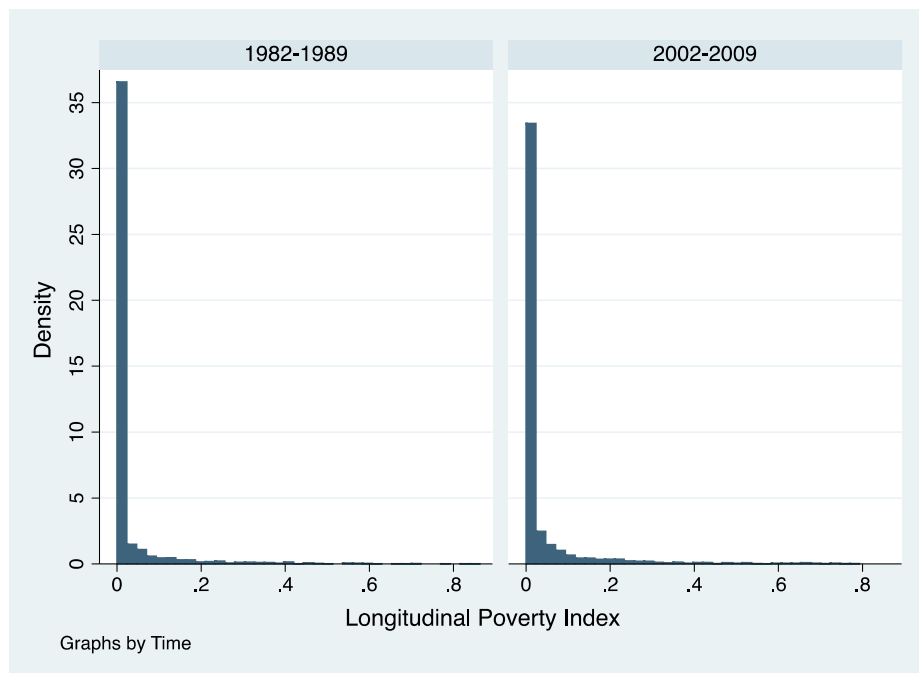
Figure 2. Distribution of the Longitudinal Poverty Index, 1980s and 2000s, at least once poor

Graphs by Time

Figure 3. Longitudinal Poverty Index > 0.1, 1980s and 2000s

Graphs by Time

As we can see from Figure 1, the proportion of young adults never poor during the observation window is higher in 1980s, showing some increase in youth poverty. The severity of poverty has also increased over time. If we look at Figures 2 and 3 (without

those never poor or with a very low index), we can see how the distribution is more skewed for the index in 1980s, compared to the one in 2000s. This indicates that not only there is more youth poverty in 2000s, but also that there is more inequality in the NLSY97 sample.

After having shown that there is an actual increase in poverty and poverty severity over time, our final step is to investigate the key factors associated with these two phenomena in both 1980s and 2000s, and to check if the role of these variables has remained the same over time. In Tables 2 and 3 we show the results of the ZINB regression models, introduced in subsection 2.2.

Table 2 shows the regression coefficients for both parts of the model, the first one indicating the role of each variable in the severity of the persistence of poverty, the second one looking at the odds of being never poor. For a more intuitive reading of the results we built Table 3 that gives an interpretation of the coefficients in terms of sign and significance. In the second and third columns of Table 3 we interpret the coefficients related to the persistence of poverty for NLSY79 and NLSY97 respectively. Age shows a negative effect on the persistence of poverty, meaning that older young adults, other things being equal, face a worse experience of persistence in poverty. As we can see, women in the 1980s experience more persistent poverty than men, while this is not the case in 2000s. This might be justified by the increase in female labor force participation rate that has happened in the U.S. and in most developed countries in the last forty years. Also interestingly, race and ethnicity seems to have become more relevant in 2000s with respect to 1980s, widening the distances from Whites. In fact, taking whites as a reference category, in 1982-1989 only blacks had higher poverty persistence, while the coefficient for Hispanics and others is not significant. In 2002-2009 instead, Withes are less likely to face persistent poverty compared to all other races. So if there has been an increase in gender equality in terms of poverty, the opposite has happened for different races: the inequality between whites and minorities has widened.

As expected, living arrangements also play a role in protecting young adults from severe poverty. In the 1980s being single or cohabiting was associated with a higher risk to be persistently poor with respect to being married. Whereas being separated, divorced or widowed did not make any difference (however it is worth noting that the percentage of young adults in these circumstances was very low, around 2.6%). Also living with parents (or not) did not make any difference. In the 2002-2009 period living arrangements do not seem to have any strong impact on persistence in poverty As expected education is very important in avoiding long spells of poverty. The higher the number of years of education the lower the poverty persistence, and this is true in both time periods. Moreover, an increase in the level of education during the observation windows reduces significantly the persistence in poverty in both periods. Parental education, more precisely father's education reduces the risk to stay in poverty in 1982-1989, while it has no significant effect in 2000s.

Table 2. ZINB models, NLSY79 and NLSY97

Neg. binomial: Intensity of Poverty Persistence	NLSY79 1982-1989	NLSY97 2002-2009
Age 1981/2001	0.083**	0.092**
	[0.026]	[0.035]
Female	0.257**	0.075
	[0.083]	[0.072]
Hispanic (Ref. White)	-0.103	0.286*
	[0.156]	[0.122]
Black	0.540***	0.595*
	[0.108]	[0.263]
Other Race	-0.223	0.547***
	[0.119]	[0.090]
Live with Parents in 1981/2001	-0.093	-0.115
	[0.123]	[0.110]
Years of Education in 1981/2001	-0.192***	-0.181***
	[0.030]	[0.030]
Education increased b/w 1981 and 1989/2001-2009	-0.292**	-0.302**
	[0.095]	[0.097]
Single 1981/2001 (Ref. Married)	0.328*	0.361
	[0.134]	[0.188]
Separated, divorced or widow in 1981/2001	0.317	-1.417
	[0.204]	[0.766]
Cohabiting 1981/2001	0.530*	0.028
	[0.254]	[0.214]
Unemployed in 1981/2001	0.708***	0.343**
	[0.110]	[0.108]
Part-time in 1981/2001	0.506***	0.021
	[0.123]	[0.092]
Mother's years of Education	-0.008	0.005
	[0.013]	[0.010]
Father's years of Education	-0.030**	-0.004
	[0.010]	[0.007]
Family Size in 1981/2001	0.014	-0.017
	[0.035]	[0.037]
Household members < 18 in 1981/2001	-0.018	0.055
	[0.043]	[0.049]
Constant	11.346***	11.391***
	[0.530]	[0.631]

Table 2. Continued

INFLATE: Odds to be Never Poor	NLSY79 1982-1989	NLSY97 2002-2009
Age 1981/2001	-0.009	-0.121**
	[0.033]	[0.045]
Female	-0.317***	-0.199*
	[0.094]	[0.088]
Hispanic (Ref. White)	-0.313	0.21
	[0.193]	[0.140]
Black	-1.008***	-0.558
	[0.147]	[0.338]
Other Race	-0.039	-0.526***
	[0.140]	[0.111]
Live with Parents in 1981/2001	0.743***	0.16
	[0.172]	[0.140]
Years of Education in 1981/2001	0.333***	0.382***
	[0.039]	[0.040]
Education increased b/w 1981 and 1989/2001-2009	0.239*	-0.079
	[0.115]	[0.113]
Single 1981/2001 (Ref. Married)	-0.974***	-0.674**
	[0.165]	[0.221]
Separated, divorced or widow in 1981/2001	-1.550***	-0.109
	[0.271]	[0.847]
Cohabiting 1981/2001	-1.214***	-0.326
	[0.335]	[0.247]
Unemployed in 1981/2001 (Ref. Full-Time)	-1.177***	-0.863***
	[0.126]	[0.140]
Part-time in 1981/2001	-0.912***	-0.575***
	[0.141]	[0.111]
Mother's years of Education	0.017	0.005
	[0.015]	[0.012]
Father's years of Education	0.036**	-0.004
	[0.011]	[0.009]
Family Size in 1981/2001	-0.029	0.064
	[0.050]	[0.047]
Household members < 18 in 1981/2001	-0.185**	-0.235***
	[0.061]	[0.060]
Constant	-1.435*	-0.24
	[0.624]	[0.782]
N	3387	2848

* p<.05, ** p<.01, *** p<.001

Table 3. Direction of the effect of covariates on the intensity of chronic poverty and on the probability to escape permanent poverty.

	Intensity of Poverty		Prob. never poor	
	NLSY79	NLSY97	NLSY79	NLSY97
Age 1981/2001	+	+	ns	-
Female	+	ns	-	-
Hispanic (ref. White)	ns	+	ns	ns
Black	+	+	-	ns
Other Race	ns	+	ns	-
Live with parents 1981/2001	ns	ns	+	ns
Years of Education in 1981/2001	-	-	+	+
Increase in Education (1981-1989/2001-2009)	-	-	+	ns
Single (ref. Married) 1981/2001	+	ns	-	-
Cohabiting 1981/2001	+	ns	-	ns
Separated, divorced or widow 1981/2001	ns	ns	-	ns
Part-time work (ref. Full-time)	+	ns	-	-
Unemployed	+	+	-	-
Years of Education Mother	ns	ns	ns	ns
Years of Education Father	-	ns	+	ns
Family size 1981/2001	ns	ns	ns	ns
Household members < 18 1981/2001	ns	ns	-	-

Mothers' education seems to have no effect on the poverty experiences of the sons but this can be explained by the homogamy in education in couples, the small effect being absorbed by the father's education. Finally, working part-time or not working strengthens poverty persistence with respect to working full-time. This is true in 1980s, while in 2000s the significant relationship does not hold anymore for part-time workers. Being unemployed is still associated with severe poverty persistence, but there is no difference between part-time and full-time workers as far as poverty persistence is concerned.

Looking at the fourth and fifth columns we interpret the coefficients related to the probability (the odds indeed) of never being poor in the 1980s and 2000s, respectively (i.e. "inflate model"). Consistently with what we have seen for factors associated with the intensity of poverty persistence, women have also a higher probability of experiencing poverty at least one year, and this happens in both periods of observation. Increasing age shows again a negative effect, but only in the second time span. In 1982-89 Blacks have a higher probability of being poor, while in 2002-09 both Hispanics and Blacks do not show any difference with respect to Whites. Asians (the more relevant component of the category "other race") show a higher risk to experience poverty at least once in 2000s.

Looking at living arrangements, living with parents is a strong protection factor against falling in poverty, at least in the 1980s. On the contrary, being single and living

alone increases the probability of being poor (at least once) in both time periods, while being separated or divorced and living in cohabitation are negative conditions only in the 1980s. As expected, education has maintained its importance to avoid poverty over time. Moreover an increase in the years of education during the window of observation decreases the probability of experiencing poverty, but only in 1980s. Along similar lines, parents' education has the same impact on the probability of being poor and on the intensity of poverty: mothers' education does not seem to be relevant, while fathers' education in 1982-89 is a protection factor. Not surprisingly working full-time is a fundamental factor to reduce the probability of being poor, and part-time employment is not enough at both times. Finally, if family size and the number of household members under 18 years of age were not relevant for the level of poverty persistence, now the higher the number of children below 18, the higher is the probability to experience at least one year of poverty, whereas family size *per se* has no impact. To summarize, there are some factors that are extremely important in 1980s and that maintain their role over time to avoid poverty: years and improvement of education, employment, and living arrangements other than single living and cohabitation. Some other factors have a different association with poverty over time, like it happens for race and ethnicity. Furthermore some factors explain why you could fall in poverty but do not concur in explaining your permanence in poverty over time (e.g. household size).

5. Conclusions

The estimation and the reported results are still preliminary. Still, the analysis is important in that it shows how the economic situation of young Americans might have changed during the two time periods. This is made possible by having access to two very similar panel surveys implemented at two different periods of time. The next steps of the analysis will involve a range of sensitivity tests so to better understand not only the robustness of the results, but also to get deeper understanding of the nature of youth disadvantage - which is made possible with the help of the poverty indicator used here. Another important extension is to better link youth disadvantage with the transition to adulthood. We will do so by making direct links with the key markers of transitions to adulthood.

References

Colley, H., Boetzelen, P., Hoskins, B. and Parveva T. (2007). *Social inclusion for young people: breaking down the barriers*. Council of Europe Publishing.

Dalaker, J. and Proctor, B.D. (1999) *Poverty in the United States, 1999. Current Population Reports*. Bureau of the Census (DOC), Suitland, MD.

Hulme, D. and Shepherd, A. (2003). Conceptualizing Chronic Poverty, *World Development*, 31(3), 403–423.

Iacovou, M. and Aassve, A (2007). *Youth poverty in Europe*, Joseph Rowntree Foundation, Oxford, UK.

Korenman, S., Miller, J.E. and Sjaastad, J.E. (1995). Long-term poverty and child development in the United States: Results from the NLSY. *Children and Youth Services Review*, 17(1–2), 127–155.

Lobao, L., Wilner Jeanty, P., Partridge, M., and Kraybill, D. (2012). Poverty and Place across the United States: Do County Governments Matter to the Distribution of Economic Disparities? *International Regional Science Review*, 35, 158-187.

Mendola, D., Busetta, A., and Aassve, A. (2009). What keeps young adults in permanent poverty? A comparative analysis using ECHP, *Social Science Research*, 38(4), 840-857.

Mendola, D., Busetta, A. and Milito, A.M. (2011). Combining the intensity and sequencing of the poverty experience: a class of longitudinal poverty indices. *Journal of the Royal Statistical Society - Series A*, 174(4), 953-973.

Smeeding, T.M. and Vleminckx, K. (eds.) (2001) Child Well-being, Child Poverty and Child Policy in Modern Nations: What Do we know?, The Policy Press, Bristol, UK.