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Working but Poor: A Reassessment

by
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Summary: It is widely held that people who work have no difficulty in avoiding poverty and guaranteeing their family a decent standard of living. This idea has proved false, as many authors have shown that the ranks of the poor are filled with active people, sometimes even working full time. But, previous studies have failed to consider the extent of poverty among the active and inactive poor people. Estimating Gini indices and poverty gaps for those groups gives a different idea of the working poor. To some extent it also modifies the conclusions drawn solely from the headcount ratios.

1. Introduction

It is commonly held that people who work cannot fall into poverty. Furthermore, it is believed that if you work hard, especially full-time and full-year, you will be able to guarantee your family a decent standard of living. The traditional idea of the poor is one of inactive, lazy, disabled or dependent people.

Therefore, systems of protection for the dependent, the elderly or the disabled have been settled in order to ensure an acceptable income to these categories (Rainwater et alii, 1987). Considering this social net, it is now argued that people who work enjoy less favorable conditions than people who don't (Levitan and Shapiro, 1987; Shapiro, 1989). For O'Connor and Smeeding (1993) the fall in the real wage is the direct cause of poverty among full-time workers. They show that, even when working full-time and full-year, a large fraction of heads of household will not succeed in bringing their families out of poverty. Their study is the first international comparison up to now and they draw a very pessimistic portrayal of the situation, especially in the United States.

But, they only use the headcount ratio as the poverty measure, one of the less reliable index of poverty. Though this measure is easy to compute and to use as a tool for international

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comparison, it desperately lacks information about how poor people are, and about the income distribution of the poor[1]. As Sen (1976) explains, the intensity of poverty and the inequality among the poor has also to be taken into account.

We view these two informations as particularly relevant for the analysis of the people working full-time full-year, vis-à-vis the other categories of (non-)workers. First, poor people working full-year full-time should benefit from an income closer to the poverty line than people working part-time, not to speak of the non-working. Second, the income distribution among the poor should be more equal for full-time workers than for part-time workers.

O'Connor and Smeeding (1993) present a wide range of questions concerning people working full-year, full-time. Among these questions we choose to answer the most crucial ones from a different approach: 'How important is work for avoiding poverty?', and 'Can a head who works full-year, full-time support his own family?'. Relating to these two questions we go further than the headcount ratios of O'Connor and Smeeding, and compute poverty gaps and Gini indices. That is to say we attempt to construct some form of the Sen index of poverty.

In the following section, we briefly present the datasets and the measurement concepts. The third section concerns the answer to the first question about the importance of full-time work in avoiding poverty. Section four considers the poverty when one deals only with the earnings of the head of household. Some conclusions end up the paper.

2. LIS datasets, definitions and measurement concepts

The data used in this paper are drawn from the Luxembourg Income Study (LIS). To follow fully O'Connor and Smeeding (1993), we choose the same countries: Canada, Netherlands, Sweden, United Kingdom and United States. These countries present two important similarities: two time periods are available for each and their survey is of comparable nature. Furthermore, the periods are very close: the first wave goes from 1979 (for the USA and the UK) to 1983 (for the Netherlands), and the second, from 1986 (for the USA) to 1987 (for the four other countries).

The selection of families and the definition of income variables are identical to those of O'Connor and Smeeding (1993). The income sharing unit is the household, defined as all the persons sharing the same living quarters. Two income concepts have been considered: head's earnings and disposable personal income (DPI). Only households with able-bodied head, between 25 and 55, and working full-year, full-time have been kept.

Income variables used in this study are on the one hand disposable personal income, representing the global income of the household minus direct income and payroll taxes, and on the other hand head's earnings, limited to wage, salary and self-employment income.

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[1] Nevertheless, we must admit that the poverty line was drawn at half the median income, a rather strict level. Taking two-third of the median would have produced even more striking figures. See Förster (1994) for a sensitivity analysis of poverty rates to different percentages of the median.

The household is defined as poor if the adjusted disposable personal income is less than one-half of the adjusted median income of all households. All the incomes have been adjusted for family size (f) by a factor of $f^{.5}$. Thus, a family of three persons (regardless of the characteristics of these individuals) would require 1.73 (i.e. $3^{.5}$) times as much income as a family of size 1. All monetary values have been converted in real term dollars[2].

O'Connor and Smeeding (1993) estimated only headcounts as poverty rates. In the following sections we attempt to show their approach is far too restrictive. As they observe only one facet of poverty, namely the number of persons under the poverty line, they miss two important dimensions of the phenomenon: its intensity, and the way income is distributed among the poor.

The former dimension relies on the poverty gap (GAP) defined by:

$$(1) \qquad GAP = \sum_{i=1}^{q} \frac{1}{q} \frac{z - y_i}{z}$$

where q is the number of the poor, z the poverty line and y_i the income of the household. The latter dimension is represented by the Gini index of income inequality, computed only on the incomes of the poor. Together the three components of poverty can be aggregated in Sen's index of poverty (Sen, 1976):

$$(2) \qquad S = H(GAP + (1 - GAP) * G_p \frac{q}{q+1})$$

where H is the headcount ratio, GAP the poverty gap, and G_p the Gini index of the poor.

Though we do not await striking results by taking into account the poverty gap and the Gini index, some reordering of the countries can be expected. The results of Förster (1994) on LIS data show that countries performing well on the basis of the headcount ratio can appear less successful according to the Sen index.

3. How important is work in avoiding poverty?

In Table A.1, we have recomputed the Table 1 of O'Connor and Smeeding (1993). We do so for two reasons. First, we want to assess the conformity of our results to those of the aforementioned authors. Second, we extend their Table 1 by presenting results for both time periods.

This table shows that, from the first period to the second, only the Netherlands have lowered the overall poverty rate. USA and Canada have the highest poverty rates, but they have reduced the poverty among the households whose head is non working. As for the UK, this result is detrimental to the households whose head is working full year, full time (FYFT). The

[2] See O'Connor and Smeeding (1993) for more details on the data handling.

households whose head is non working seem to have rather largely benefited from an increased concern and support for populations at risk.

In the sequel we will only draw attention on some population groups. We will not distinguish between singles and couples with children, as O'Connor and Smeeding do, nor will we present the figures for less than FYFT or non working heads. The reason is simple. Making both distinctions leaves us with too little observations to compute the Gini and the Sen indices[3].

A. Intensity of poverty

Table 1 What is the influence of work on the intensity of poverty?

Countries and family types	Poverty gaps in first year		Poverty gaps in second year		Poverty gaps over time	
	Overall	FYFT	Overall	FYFT	Overall	FYFT
USA (1979-1986)						
All Households	38.001	29.356	39.528	29.817	1.527	0.461
All Households with Children	35.864	26.875	35.580	27.306	-0.284	0.431
All Households no Children	42.745	36.688	48.633	40.546	5.888	3.858
Canada (1981-1987)						
All Households	36.573	33.414	34.010	28.673	-2.563	-4.741
All Households with Children	33.944	30.264	30.959	27.390	-2.985	-2.874
All Households no Children	41.236	41.099	37.919	30.594	-3.317	-10.505
UK (1979-1986)						
All Households	31.994	44.391	49.354	60.117	17.360	15.726
All Households with Children	29.499	43.159	44.443	55.160	14.944	12.001
All Households no Children	39.435	49.110	60.850	70.029	21.415	20.919
Sweden (1981-1987)						
All Households	40.497	32.416	41.283	37.119	0.786	4.703
All Households with Children	32.055	28.080	30.147	29.315	-1.908	1.235
All Households no Children	45.806	37.913	44.519	40.854	-1.287	2.941
Netherlands (1983-1987)						
All Households	65.697	74.530	51.797	37.640	-13.900	-36.890
All Households with Children	63.405	73.391	37.102	39.453	-26.303	-33.938
All Households no Children	68.987	76.758	68.326	31.692	-0.751	-55.504

Table 1 presents poverty gaps[4] for both years. If we consider overall poverty gaps, in the first period, the UK quite surprisingly displays the lowest gap. Last come the Netherlands, far above Sweden. In the second period, the Netherlands have closed the gap but remain the

[3] Sometimes less than 20 households are left in a category.
[4] Results for less than FYFT and non working heads of households can be obtained upon request.

worst country. The Canada, though only improving a little, presents the lowest gap, as the UK has experienced an increase in the poverty gaps, a well-known fact attributed to "the Thatcher years". Despite an increase in the intensity of poverty the USA show very positive figures, except for what concerns the households without children.

Considering the FYFT group, the UK displays an important increase, as expected. Quite surprisingly though, this country has higher poverty gaps for the households with a FYFT working head than for the other groups, for both years and each family category. This was also the case for the Netherlands in the first period.

For all countries and both periods, the households without children experience greater poverty gaps (except for the Netherlands in 1987) than families with children. This means that, in general, families with no children have lower adjusted income than families with children, even when the head works full-year, full-time. As the head of household is between 25 and 55, no old-age effect can be found. An explanation could be based on the fact that people have children as soon as they have a "sufficient" income. These households would be childless because of their small income.

B. Distribution of income

A pattern similar to that observed for the poverty gap can be seen on Table 2 for the Gini index of the poor. We can see a substantial increase in the inequality of the poor in the UK, going from an overall value of 23.04% to 41.74%. The result for households with a head working FYFT is even worse: from 33.59% to 51.74%. The increase is inequally shared by the two family groups: households without children suffer more than the other group.

On the opposite, the Netherlands have significantly reduced income inequality, from 61.67% to 45.79% for the whole sample, and from 70.65% to 31.24% for households whose head works FYFT. Nevertheless, the figures for the whole sample in the second period remain close, even greater, to those of the UK. For households with a FYFT working head, this is no longer the case. All figures are lower, but still close, for the Netherlands. They are, though, far from those obtained for the other three countries. Canada, USA and Sweden display indeed very similar features: lower levels of inequality for households with a FYFT working heads, reduction of inequality over time and relatively worse state for households without children.

This is an interesting point. As for the poverty gap, the families with no children experience the worst situation. The inequality index of the distribution of income among this family group is each time several points higher than for the other group. For all the countries, the inequality raises over time for the whole sample (except for Sweden), and for the FYFT subsample (except for Canada and the Netherlands).

The results concerning the poverty gaps and the Gini indices show that some doubts can be cast on the bad performance of households whose head works FYFT, especially in Canada and the USA. Though the poverty rates (headcount ratios) of these countries are rather high, other dimensions of poverty tend to mitigate the conclusions of O'Connor and Smeeding (1993), and show that these two countries can fare better than the other countries.

Table 2 The distribution of income among the (DPI-)poor households

Countries and family types	Gini indices in first year		Gini indices in second year		Gini indices over time	
	Overall	FYFT	Overall	FYFT	Overall	FYFT
USA (1979-1986)						
All Households	0.2618	0.2153	0.2574	0.2160	-0.0044	0.0007
All Households with Children	0.2413	0.1972	0.2153	0.1934	-0.0260	-0.0038
All Households no Children	0.3107	0.2835	0.3560	0.3358	0.0453	0.0523
Canada (1981-1987)						
All Households	0.2319	0.2326	0.2103	0.1833	-0.0216	-0.0493
All Households with Children	0.2140	0.2056	0.1872	0.1844	-0.0268	-0.0212
All Households no Children	0.2606	0.2916	0.2390	0.1888	-0.0216	-0.1030
UK (1979-1986)						
All Households	0.2304	0.3359	0.4174	0.5174	0.1870	0.1815
All Households with Children	0.2100	0.3220	0.3662	0.4560	0.1562	0.1340
All Households no Children	0.2848	0.3874	0.5359	0.6388	0.2511	0.2514
Sweden (1981-1987)						
All Households	0.2794	0.1722	0.2821	0.2402	0.0027	0.0680
All Households with Children	0.1916	0.1254	0.1815	0.1566	-0.0101	0.0312
All Households no Children	0.3264	0.1878	0.2974	0.2476	-0.0290	0.0598
Netherlands (1983-1987)						
All Households	0.6167	0.7065	0.4579	0.3124	-0.1588	-0.3941
All Households with Children	0.5987	0.6976	0.2872	0.3059	-0.3115	-0.3917
All Households no Children	0.6397	0.7294	0.6710	0.5468	0.0313	-0.1826

C. Sen's poverty indices

The purpose of Sen's index is to aggregate the three dimensions of poverty (number, intensity and distribution). The results are shown in Table 3. At an overall level, Canada and the USA present the worst results in the first period, with the Netherlands not far below. In the second time period, the situation in the USA has worsen. This is also the case for the UK, which exhibits now a more unfavourable state than Canada. For the whole samples, only the Netherlands significantly reduce their poverty levels over time. We reproduce with this index some of the crucial results of O'Connor and Smeeding (1993). This tends to show that the headcount ratio exerts a greater impact on the Sen index than the poverty gap and the Gini index[5].

For what concerns households whose head works FYFT, USA and Canada are doing well in

[5] See Förster (1994) or Tsakoglou (1988) for more evidence of this effect.

the first period. Once more, the situation of the USA has worsen over time, as in the UK. On the contrary, Canada improved the standing of the households with a FYFT working head. This country presents similar results to Sweden and the Netherlands, and sometimes even better.

Table 3 Sen's poverty indices for the (DPI-)poor households

Countries and family types	Sen indices in first year		Sen indices in second year		Sen indices over time	
	Overall	FYFT	Overall	FYFT	Overall	FYFT
USA (1979-1986)						
All Households	5.92723	1.71978	7.76239	2.05950	1.83516	0.33972
All Households with Children	6.62739	2.01035	8.92025	2.78316	2.29286	0.77281
All Households no Children	4.93862	1.30451	6.26964	1.17267	1.33102	-0.13184
Canada (1981-1987)						
All Households	5.31516	1.79608	5.29890	1.39982	-0.01626	-0.39626
All Households with Children	5.27480	1.98580	5.16109	1.53607	-0.11374	-0.44973
All Households no Children	5.32547	1.43874	5.41824	1.24341	0.09277	-0.19533
UK (1979-1986)						
All Households	2.87935	1.89202	5.43676	4.74066	2.55741	2.84864
All Households with Children	3.01111	2.20321	5.89352	5.17353	2.88241	2.97032
All Households no Children	2.55971	1.24728	4.64318	4.05907	2.08347	2.81179
Sweden (1981-1987)						
All Households	2.49404	1.05013	3.13918	1.46363	0.64514	0.41350
All Households with Children	1.53808	0.92823	1.14784	0.79466	-0.38524	-0.13357
All Households no Children	3.32983	1.10082	4.66017	2.05303	1.33034	0.95221
Netherlands (1983-1987)						
All Households	4.74946	3.81432	3.49456	1.54555	-1.25490	-2.26877
All Households with Children	4.19548	3.67639	2.54937	2.17194	-1.64611	-1.50445
All Households no Children	5.60117	4.02999	4.33047	0.90512	-1.27070	-3.12487

It is also by no means a surprise to verify the excellent behaviour of Sweden, even able to lower the poverty of the households with children. Finally, it seems that the Netherlands have put a particular emphasis on households without children, obtaining an exceptionnally low level of poverty.

Except in Sweden where the social net seems to favour families with children, this family group displays relatively bad figures both for the whole samples and for the FYFT subsamples. Considering the previous evidence favourable to families with children, this aggregate result may seem paradoxical. It is logical with respect to equation (2), first because the headcount ratio plays a much more important role in the index, and second because of the correction for the number of the poor, as sometimes the category of households without children is close to an

empty set.

4. Can a head of household who works full-year, full-time support his own family?

As O'Connor and Smeeding (1993), we conduct the following simulation: what would be the extent of poverty, were the head the only income earner of the household? During decades a household composed of a FYFT working head, a housewife and children was the norm. Although the standard of living could not be very high, it was supposed to permit decent life, out of poverty. We extend the analysis of O'Connor and Smeeding by estimating the same poverty indicators as in section 3. Table A.2 reproduces the headcount ratios in a more detailed way as in O'Connor and Smeeding.

A. Intensity of poverty

Table 4 To what extent are head earnings insufficient?

Countries and family types	Poverty gaps in first year		Poverty gaps in second year		Poverty gaps over time	
	Overall	FYFT	Overall	FYFT	Overall	FYFT
USA (1979-1986)						
All Households	70.205	68.973	69.346	65.386	-0.859	-3.587
All Households with Children	70.167	64.534	67.915	60.440	-2.252	-4.094
All Households no Children	70.283	80.277	72.011	76.965	1.728	-3.312
Canada (1981-1987)						
All Households	78.743	82.114	71.639	70.776	-7.104	-11.338
All Households with Children	78.092	80.744	70.641	68.532	-7.451	-12.212
All Households no Children	79.983	85.585	72.858	74.057	-7.125	-11.528
UK (1979-1986)						
All Households	88.622	71.837	93.426	83.867	4.804	12.030
All Households with Children	87.669	69.016	92.148	79.090	4.479	10.074
All Households no Children	91.140	82.299	95.808	91.487	4.668	9.188
Sweden (1981-1987)						
All Households	75.169	80.442	75.921	81.166	0.752	0.724
All Households with Children	71.767	81.698	70.083	77.996	-1.684	-3.702
All Households no Children	78.119	78.549	80.394	85.102	2.275	6.553
Netherlands (1983-1987)						
All Households	97.223	97.505	96.221	96.487	-1.002	-1.018
All Households with Children	96.860	96.949	94.941	95.388	-1.919	-1.561
All Households no Children	97.810	98.796	97.600	98.963	-0.210	0.167

Quite obviously, the poverty gaps shown in Table 4 are much higher than in Table 1.

But the most striking feature can be observed for the Netherlands. The poverty gap approaches 100%, meaning that the very few households in poverty, shown in Table A.2, are very far from the poverty line. No significant improvement over time can be seen.

If we concentrate our attention on the overall results, the USA show very encouraging figures, even improving the situation of the households with children over time. Canada presents uncontrasting results, with a strong reduction of the poverty gaps, whereas the UK gives an expected increase.

Considering the FYFT subsample, results are very similar to those described for the whole samples. The Netherlands exhibit quite the same levels of poverty gaps. The USA and Canada have proved quite successful in fighting poverty, at least for this particular dimension. The UK shows a greater increase for this subsample than for the overall population. Sweden and the Netherlands show no clear pattern over time. Finally, the less favourable results are seen for the group of households without children.

Table 5 Income distribution when head earnings are insufficient

Countries and family types	Gini index in first year		Gini index in second year		Gini index over time	
	Overall	FYFT	Overall	FYFT	Overall	FYFT
USA (1979-1986)						
All Households	0.6290	0.6439	0.6172	0.6046	-.0118	-.0393
All Households with Children	0.6286	0.5961	0.5991	0.5494	-.0295	-.0467
All Households no Children	0.6314	0.7689	0.6523	0.7387	.0209	-.0302
Canada (1981-1987)						
All Households	0.7351	0.7917	0.6338	0.6575	-.1013	-.1342
All Households with Children	0.7272	0.7757	0.6254	0.6215	-.1057	-.1503
All Households no Children	0.7501	0.8316	0.7065	0.6495	-.0436	-.1251
UK (1979-1986)						
All Households	0.8614	0.6829	0.9230	0.8203	.0616	.1374
All Households with Children	0.8477	0.6490	0.9089	0.7696	.0612	.1206
All Households no Children	0.8970	0.8072	0.9490	0.9003	.0520	.0931
Sweden (1981-1987)						
All Households	0.6770	0.7331	0.6691	0.7421	-.0079	.0090
All Households with Children	0.6444	0.7434	0.6158	0.7075	-.0286	-.0359
All Households no Children	0.7043	0.7175	0.7028	0.7735	-.0015	.0560
Netherlands (1983-1987)						
All Households	0.9622	0.9652	0.9488	0.9465	-.0134	-.0187
All Households with Children	0.9572	0.9590	0.9345	0.9319	-.0227	-.0271
All Households no Children	0.9706	0.9788	0.9636	0.9813	-.0070	.0025

B. Distribution of income

The values of the Gini indices are shown in Table 5 and present a more clear-cut pattern. The USA and Canada improve over time, ending up with comparable figures. Relative to the three other countries, they experience low levels of income inequality. As expected, the inequality raises in the UK, reaching rather high levels. Sweden and the Netherlands present stagnant values.

As in Table 2, the households without children experience the highest degree of income inequality. In absolute terms, with respect to the other household group, the difference might appear more important in Table 5 than in Table 2. Nonetheless, in relative terms, the differences between groups are less striking in Table 5, as the values are generally lower in Table 2.

C. Sen's poverty indices

Table 6 Sen's poverty indices when head earnings are insufficient

Countries and family types	Sen indices in first year		Sen indices in second year		Changes in indices over time	
	Overall	FYFT	Overall	FYFT	Overall	FYFT
USA (1979-1986)						
All Households	21.43558	11.93667	25.29659	12.55805	3.86101	0.62138
All Households with Children	24.71904	13.95543	29.83511	15.18471	5.11607	1.22928
All Households no Children	16.83764	8.83682	19.84926	9.17148	3.01162	0.33466
Canada (1981-1987)						
All Households	31.47858	19.47417	25.85076	14.43448	-5.62782	-5.03969
All Households with Children	34.13498	22.17313	26.73056	15.26335	-7.40442	-6.90978
All Households no Children	27.39979	14.78175	25.28427	13.43530	-2.11552	-1.34645
UK (1979-1986)						
All Households	22.85117	6.32499	35.90577	11.16711	13.05460	4.84212
All Households with Children	24.84023	7.35021	39.27397	11.96383	14.43374	4.61362
All Households no Children	18.87964	4.11437	30.95120	10.20020	12.07156	6.08583
Sweden (1981-1987)						
All Households	19.46401	10.55235	18.49092	10.21505	-0.97309	-0.33730
All Households with Children	18.13618	12.04829	17.14219	11.64924	-0.99399	-0.39905
All Households no Children	20.76787	8.86590	19.46332	8.96330	-1.30455	0.09740
Netherlands (1983-1987)						
All Households	27.08071	15.18010	21.89643	7.33116	-5.18428	-7.84894
All Households with Children	26.80244	16.37632	21.05725	8.99895	-5.74519	-7.37747
All Households no Children	27.64043	13.07601	22.72857	5.21762	-4.91186	-7.85839

Table 6 presents Sen's indices of poverty when we verify if the earnings of the head is

sufficient to keep his household out of poverty. O'Connor and Smeeding (1993) argue, on the basis of headcount ratios, that due only to larger average family sizes, households with children experience harder times and fall more often into poverty. We indeed show evidence of this effect, in every cases for household with a FYFT working head, and most of the times at the overall level.

From headcount ratios it also appears easier for a head working FYFT to allow a decent living standard to his family. Sen's indices, computed on the FYFT subsample, decrease more than indices for the whole sample (see Canada or the Netherlands), or increase less in the opposite case (USA and UK). Figures for Sweden remain stable over time. It should be noted that contrary to O'Connor and Smeeding we are not able to relate variations in the Sen's indices to changes in unemployment over time. The rate of unemployment falls over time for the Netherlands but increases a little for Canada, and these two countries significantly reduce poverty from one period to the other. Sweden lowers its unemployment rate too, but shows no betterment in the Sen's index.

To conclude, we must point out a crucial feature of the figures we computed. Though working full-year, full-time does not ensure that the household will stay out of poverty, evidence throughout this note shows that their situation appears far from being as painful as for the other groups (working less than FYFT, non working). For the second time period, Sen's index of poverty is often three times as large as the index for the FYFT subsample. The hugest difference is seen for households without children in the Netherlands, with respectively 22.73% and 5.22%.

5. Conclusions

O'Connor and Smeeding (1993) have presented the first international comparison of poverty rates when the head of household works full-year, full-time. A recent literature on the US case had stressed the fact that working FYFT was not sufficient to avoid poverty. The aforementioned authors brought some evidence that poverty among households whose head was working FYFT is common, and that the USA were not faring as well as Sweden or the Netherlands. Furthermore, they show that a sole source of income, namely the earnings of the head, would lead to a much higher level of poverty. One limitation of their study was the exclusive use of the headcount ratio to measure poverty.

Extending their approach to the computation of Sen's index of poverty, we are able to give a more complete view of poverty. The intensity of poverty and the inequality of the distribution of income among the poor modify the pessimistic conclusions of O'Connor and Smeeding on the USA and show that the state of the Netherlands is less desirable.

Having aggregated the three dimensions of poverty in one index, we are able, up to small differences, to confirm their findings. Households without children enjoy a much better condition, especially in the FYFT subsample. Canada and the Netherlands have improved their situation over time, and the USA and the UK (under the 'Thatcher' years) see an increase of their poverty rates, regardless of the category under study. Though, relative to the overall values (and to the other categories of workers), households whose head works FYFT have

improved their status.

Further work should emphasise other relevant aspects of poverty, i.e. the influence of age or of diploma, whether the household has been enlarged to produce economies of scale necessary to avoid poverty, etc. One should also try to extend the analysis with respect to a third time period, additional countries or new measures of poverty.

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