Measuring Income Mobility over Equivalent Adults

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ABSTRACT

The amount of flexibility in the ”earnings market” has attracted the interest of many researchers during the last two decades. Given a heterogeneous population, it has been shown that results strongly depends on equivalence scales and related initial definitions. In this paper we argue that in order to rank income distributions over income mobility there are strong theoretical and empirical reasons to support the idea of equivalent adult. It is shown that the implementation of the individual equivalent income approach causes over-weightening of income mobility in the case of a high proportion of large families. Then, income mobility is estimated considering equivalent adults over seven countries and five waves (ECHP - PSID) in such a way to allow for an immediate comparison with existing empirical studies.

NON-TECHNICAL SUMMARY

Income mobility represents a crucial information in order to allow for permanent inequality considerations. Indeed, it has been observed that inequality is strongly affected by expectations about future incomes. As a result, income mobility turns out to be crucial even for welfare measurement.

In the literature on lifetime welfare two main approaches have been developed in the recent years. In the case of social welfare functions (Atkinson (1982) - Dardanoni(1993)) income mobility issues are involved in the measurement of welfare through the definition of the lifetime utility vector. From the other side, income distributions may be ranked through social welfare indices involving mean income inequality and mobility. In the latter, the definition of an efficient income mobility index turns out to be crucial. In this paper we mostly refer to this problematic,ie, measurement of income mobility. The starting point consists of the joint consideration of axioms related to the equivalizing and mobility transformation. Both procedures are compulsory when the initial population differ in needs. Then, following the equivalent adult approach which have been widely supported in the existing literature on income inequality (Ebert (1997)), we find that only when a population of equivalent adults is involved axioms related to the two transformations above hold at the same time.

In particular, in the new scenario some new fair axioms are required. From a theoretical point of view it is easy to observe that the traditional approach (equivalent income - individual) automatically entails over-weightening of income mobility in large family proportion populations. Intuitively, given equivalized income in order to get a homogeneous population fron a heterogeneous one it is necessary to consider a homogeneous agent, i.e. the equivalent (standard) adult not the individual. Then the Fields and Ok's absolute income mobility index has been adapted to the new normative/axiomatic scenario. In particular, we find empirical support, in the sense that at least two of main existing income mobility puzzles disappear.

Finally further possible extensions to relative and positional income mobility measures are underlined.

Introduction

In the recent years there has been an increasing interest in measuring income mobility from longitudinal data. As Friedman [1962] observes income inequality in one population can be worst if income units are supposed to stay forever in the same position. It is well known that comparing absolute or relative income mobility when needs differ may be worthless without an initial *equivalizing transformation*. This notation leads to the use of equivalent scales[1], by which the analysis usually involves two steps: i) get a homogeneous population, ii) measure income mobility. Ebert [1999] shows that the first stage may strongly affect the final result. This is mostly due to sensitivity of results to equivalence scales. Indeed the first stage involves at least three crucial choices: time unit, income measure and income unit.

In the existing literature on intragenerational mobility these three choices generally correspond respectively to annual income, equivalent income and individual. In this scenario, one of the most interesting issue has been the so called mobility "puzzle" in comparing Germany and the United States, as one would expect higher income mobility for the latter. Burkhauser and Poupore [1997] shows that when Germany and United States are compared using both static and permanent inequality it is not the case that income mobility reduces the existing difference in the static scenario. In this sense income mobility in Germany would be higher than in the United States.[2]

[1] Atkinson and Bourguignon [1987] propose an alternative solution by which different needs are taken into account through the imposition of different utility functions associated to groups ordered over needs.

[2] Fabig [1998] shows that the higher gross equivalent income mobility measured in Germany with respect to US disappears when net equivalent income is considered. This study is strictly referred to persons aged 18 through 59, using a cut-off income value, then it is hardly extendable to the whole population.

A worthwhile explanation for empirically detected income mobility puzzles can be found in Hountenville [2001]. For working individuals aged 25 through 59 it is showed that ranking countries over income mobility strongly depends on the implemented notion of mobility, i.e. positional or non-positional.[3]

From the other side, in order to find an alternative explanation to such a "strange" empirical result, Schluter and Trede [1999] mainly concentrate on the presence of heterogeneous population and on a local definition of income mobility. Obviously, measuring positional mobility involves a first big issue related with the definition of income classes.[4]

In this paper we argue that ranking countries over income mobility[5] is possible if and only if a population of equivalent adults not individuals is considered. Indeed, a researcher may be alternatively interested in ranking income distributions over income mobility or over the perception of income mobility. In the first case, in line with absolutism, the basic structure of the initial (non-equivalized) income distribution is expected to hold even after the equivalizing transformation. In order to get this result we add to the traditional axiomatic approach reference independence, between different types *positive* asymmetry and consistency.

Then, it is showed that inconsistent initial definitions[6] may be source of misleading empirical results which are not significant in terms of earnings flexibility. Also, the most part of empirical puzzles seems to disappear when the population of equivalent

[3]When changes in income deciles are considered Germany and USA show approximately the same income mobility, while Germany turns out to be clearly less income mobile in the case of non-positional mobility.

[4]In this paper we will mostly refer to non-positional income mobility, even if crucial aspects may be easily extended to the positional one. When dealing with transition matrices the commonly used approach consists of the fractile matrix [Atkinson, 1980], i.e. relative income mobility. However it has been observed that many problems occurs when structural and exchange mobility issues are involved as the use of fractile matrices does not allow for structural mobility by definition. In this sense, fractiles allows just for measuring re-ranking.

[5]Indeed, our main concern is exchange mobility as it better reflects flexibility of the earnings market from intra-generational data.

[6]Income unit, income measure and time unit.

adults is considered.

In practice, the population of equivalent adults implies a re-weighting procedure which turns out to allow i) for a better consideration of differences in household composition between countries and ii) for the definition of a more robust measure of income mobility.

This paper is organized as follows. In section II the theoretical framework and basic reasons for the application of a different income unit are discussed through a normative/axiomatic approach. Empirical results and the basic manipulation of the data (ECHP - PSID) are discussed in section III. Also, results are compared with existing empirical studies. Section IV concludes.

Normative issues

In his seminal paper Shorrocks [1978a] demonstrates the impossibility of an efficient mobility index using an axiomatic approach to highlight the existing contrast between monotonicity and complete reversal conditions. Following this line many authors tried to define efficient mobility measures through the manipulation of initial axioms.[7] Far from the measurement of positional income mobility, the axiomatic approach seems to be much more successful in dealing with absolute income mobility. As it will be discussed, Fields and Ok [1996] show that by imposing *fair* axioms a unique efficient mobility index can be defined.[8]

Let $\Re_+^n$ be the set of possible income distributions for population composed of N individuals, with $N = 1, 2, ..., n$, $x = (x_1, x_2, ..., x_n) \in \Re_+^n$ indicating the initial income distribution in ascending order and $y = (y_1, y_2, ..., y_n) \in \Re_+^n$ corresponding to a second period. Let define by $\Gamma := 1, 2, ..., H$ the set of possible individuals in the household. Given the *equivalizing transformation* $\psi_h : \Re_+^n \times \Gamma \to \Re_+^n$, where h

[7]For further readings about main problems arising with the efficiency positional income mobility measures see Van de gaer et al. (1998).

[8]Obviously this result cannot be directly extended to the case of relative income mobility, which probably represents a more useful measurement of income mobility when income mobility is related to inequality and welfare issues.

is the size of the reference household, then the *income mobility transformation* is $\psi_h(\bar{x}|\bar{m}) \rightarrow \psi_h(\bar{x}|\bar{m})$ where $m \in \Gamma$ indicates the household type.[9] In line with Ebert and Moyes [2002] the equivalizing transformation is usually required to be i) invariant with respect to the reference household type, i.e. $\psi_h(x|h) = x$, ii) continuous and increasing in x, iii) decreasing in m, iv) transitive with respect to the household type in the sense that $\psi_h(x|m) = \psi_h(\psi_l(x|m)|l)$ and v) invariant in the definition interval with respect to m.

Given generally accepted axioms for the equivalizing transformation, in order to define an efficient index of absolute income mobility further axioms related to the income mobility transformation are expected to hold. In line with Fields and Ok [1996] the mobility index must be a) linearly homogeneous, b) translation invariant,[10] c) normalized with respect to the income measure, d) decomposable in intra and between groups mobility, e) population consistent in the sense that given $d_n[\psi_h(x|m), \psi_h(y|m)] = d_n[\psi_h(z|m), \psi_h(v|m)]$, and adding the same income unit to both populations, it must be $d_{n+1}[\psi_h(x^*|m), \psi_h(y^*|m)] = d_{n+1}[\psi_h(z^*|m), \psi_h(v^*|m)]$, f) growth sensitive so that given two populations which are equal in each single income movement unless for one income unit it must be the case that overall mobility is different, and g) individual consistent, that is given $x_1 = x_1'$ and $y_1 = y_1'$ it is the case that the contribution of both income units to overall income movement is the same.

By imposing these axioms the following efficient index of per capita absolute income mobility is obtained[11]

$$d_n(x, y) = \frac{1}{n} \sum_{j=1}^{n} |x_j - y_j| \quad \forall\, x, y \in \Re_+^n \tag{1}$$

[9] For the rest of the paper we drop vector-bar.

[10] Notice that when axioms i-v are involved in the definition of an efficient mobility index some differences arise in terms of translation invariance (b). Indeed, this axiom holds if $d_n(\psi_h(x + \alpha 1_n|m), \psi_h(y + \alpha 1_n|m) = d_n(\psi_h(x|m), \psi_h(x|m))$, i.e. giving at t and t+1 one unit of income to each individual does not affect mobility ranking. In Fields and Ok [1996] this axiom automatically entails that $d_n(\cdot)$ is a linear function. In the framework above, instead, the mobility index may respect translation invariance, under specific conditions, also in case of nonlinearity.

[11] A log-income transformation of this index has been investigated in Fields and Ok [1999], by which relaxing some axioms a weakly absolute income mobility index is obtained.

and, considering the equivalizing transformation,

$$d_n[\psi_h(x|m), \psi_h(y|m)] = \frac{1}{n}\sum_{j=1}^{n} |\psi_h(x_j|m_j) - \psi_h(y_j|m_j)| \; \forall \, x, y \in \Re_+^n, m \in \Gamma \qquad (2)$$

Then given the absolute income mobility index (2), in order to calculate absolute income mobility properly there are more than one feasible equivalizing transformations. If we disregard the household income - household and individual income - individual, there at least three feasible solutions: A) individual income - equivalent adult, B) equivalent income - individual and C) equivalent income - equivalent adult. Indeed, when needs are involved some other aspects may be crucial. For instance, it seems reasonable that whatever the reference household, h, two income distributions are always ranked the same.

vi) (*Reference Independence*)

Let $\psi_h : \Re_+^n \times \Gamma \rightarrow \Re_+^n$, if $d_n[\psi_h(x|m), \psi_h(y|m)] \geq d_n[\psi_h(z|m), \psi_h(v|m)]$, then $d_n[\psi_l(x|m), \psi_l(y|m)] \geq d_n[\psi_l(z|m), \psi_l(v|m)] \; \forall h \neq l \in H$ and $x, y, v, z \in \Re_+^n$.

Another important aspect is symmetry. In particular, when the population is characterized by differing needs the existing literature on inequality mostly refers to partial symmetry [Cowell, 1980], in the sense that this axiom is required to hold only between same type households. In line with that,

vii) (*Partial Symmetry*)

Let $\psi_h : \Re_+^n \times \Gamma \rightarrow \Re_+^n$ and $g_i, g_{i+1}, ... \in N$ indicate ordered groups with decreasing needs, if $d_{g_i}[\psi_h(x|m_i), \psi_h(y|m_i)] = d_{g_i}[\psi_h(z|m_i), \psi_h(v|m_i)]$, then it must be the case that $d_{g_i}[\psi_h(x|m_i), \psi_h(y + \triangle|m_i)] = d_{g_i}[\psi_h(z|m_i), \psi_h(v + \triangle|m_i)] \; \forall \Delta \in \Re^n$[12]

In other words, given two equally sized families with equal absolute income mobility, then it must be the case that they have also the same equivalized income mobility.

viii) (*Between Different Types Positive Asymmetry*)

[12]Notice that as we focus on absolute indices $d_n(\cdot)$ must be a linear aggregation of each single income movement.

Let $\psi_h : \Re^n_+ \times \Gamma \to \Re^n_+$, $g_i, g_{i+1}, ... \in N$ indicate ordered groups with decreasing needs and $x, y, z, v \in \Re^n_+$, if $d_{g_i}[\psi_h(x|m_i), \psi_h(y|m_i)] = d_{g_{i+1}}[\psi_h(z|m_{i+1}), \psi_h(v|m_{i+1})]$, then it must be $d_{g_i}[\psi_h(x|m_i), \psi_h(y + \triangle|m_i)] \geq d_{g_{i+1}}[\psi_h(z|m_{i+1}), \psi_h(v + \triangle|m_{i+1})]$ $\forall \triangle \in \Re^n$, where $\triangle$ is concord with the direction of the initial income mobility.

As we will see later on, this axiom turns out to be crucial for a consistent decomposition of the absolute income mobility index.

ix) (*Consistency*)

In absence of structural mobility ($\bar{x} = \bar{y}$), given two income distributions $x, y \in \Re^n_+$, an equivalizing transformation such that $\psi_h : \Re^n_+ \times \Gamma \longrightarrow \Re^n_+$ and a distance function $d_n : \Re^n_+ \times \Re^n_+ \longrightarrow \Re_+$ mobility is consistent if in absence of structural mobility

$$\begin{aligned} &\sum_{i \in \Theta} d_1[\psi_h(x_i|m_i), \psi_h(y_i|m_i)] - \sum_{i \in 1-\Theta} d_1[\psi_h(x_i|m_i), \psi_h(y_i|m_i)] = \\ &\sum_{i \in \Theta} d_1[\psi_h(x^*_{\sigma i}|m_i), \psi_h(y^*_{\sigma i}|m_i)] - \sum_{i \in 1-\Theta} d_1[\psi_h(x^*_{\sigma i}|m_i), \psi_h(y^*_{\sigma i}|m_i)] \end{aligned} \tag{3}$$

where $x^*, y^* \in \Re^n_+$ and (3) holds for all $\sigma' s$. In another way, for measuring income mobility itself no matter who's the loser and who's the winner.

Then, given (also) reference independence, general positive asymmetry and consistency, it is straightforward that the only feasible income measure and income unit are respectively equivalent income - equivalent adult, i.e. only in this case vi)-ix) are both satisfied.[13]

In order to show which are main problems related with the usual approach (A),

[13]Given (2) and the equivalizing transformation $\psi_h(x|m) = w_i(X/s_i)$, where X stands for household income, reference independence holds if and only if $f(h) = (w_2(h)/s_1(h)) \times (s_2(h)/w_1(h))$ is constant for all h's. As a result, reference independence holds always for C), while in B) and A) it just holds between same type households. Also, in C) $\bar{\psi}_h(x|m) = \bar{\psi}_h(x^*_\sigma|m)$ and $\bar{\psi}_h(y|m) = \bar{\psi}_h(y^*_\sigma|m)$ which allows for consistency.
In order to show that partial symmetry and general positive asymmetry hold in all three cases above, it is sufficient observing that if $d_{g_i}[\psi_h(x|m_i), \psi_h(y|m_i)] = d_{g_{i+1}}[\psi_h(x|m_{i+1}), \psi_h(y|m_{i+1})]$ then it must be the case that $(X - Y) \geq (Z - V)$ when $s_{g_i} \geq s_{g_{i+1}}$. Also, notice that issues about the failure of (A) have been already investigated in the literature on inequality and tax progressivity. For further references see Glewwe [1991] and Lambert [1993].

if we consider the decomposition of (2) in structural and exchange mobility[14]

$$\begin{aligned} d_n[\psi_h(x|m), \psi_h(y|m)] &= K[\psi_h(x|m), \psi_h(y|m)] + T[\psi_h(x|m), \psi_h(y|m)] \\ &= \frac{1}{n}\sum_{i=1}[\psi_h(y_i|m_i) - \psi_h(x_i|m_i)] + \frac{2}{n}\sum_{i\in\Theta}[\psi_h(x_i|m_i) - \psi_h(y_i|m_i)] \end{aligned} \tag{4}$$

where $\Theta_n(\psi_h(x|m), \psi_h(y|m)) = j \in 1, 2, \ldots, n|\psi_h(x_i|m_i) - \psi_h(y_i|m_i) > 0$, then it can be observed that the second term does not explain structural mobility but just structural mobility's effects. In a way there would be no more reason to expect a country like the United States to be more mobile than Germany because the real structural mobility term should be $2/n\sum_{i\in\Theta}(x_i - y_i)$, while using the equivalent income - individual approach automatically entails over-weightening of structural mobility for countries with a higher proportion of large families. Moreover, comparing the traditional approach and the equivalent adult one it is intuitive that the same effect occurs also in terms of exchange mobility.

Finally, it's worth noticing that the absolute income mobility index as discussed by Fields and Ok [1996] is not immediately applicable to equivalent adults. This is mostly due to the fact that in the last case there are two income movements over the bivariate distribution, i.e. weight attached to each individual can change over the bivariate income distribution. So that, given $\psi_h(x_i|m_a) = w_i(m_a, h)[\frac{x_i \cdot m_a}{s(m_a,h)}]$ where $i \in a$ it is the case that $\sum_{i\in a} w_i = s_a \leq m_a$.[15] In practice we are dealing with two sets of weights ($w_{i,t}$ and $w_{i,t+1}$). For this reason, we will consider *mean needs* over two distributions (w_i^*) and, as a result, $s_{i,t}^* = w_i^* \times m_t$ and $s_{i,t+1}^* = w_i^* \times m_{t+1}$.
By easy simplifications and considering longitudinal weights, (w_i^l),

$$d_n[\psi_h(x|m), \psi_h(y|m)] = \frac{1}{\sum_{i=1}^n w_i^*}\sum_{j=1}^{n}|\frac{x_j}{m_{j,t}} - \frac{y_j}{m_{j,t+1}}| \times w_j^l \; \forall\, x, y \in \Re_+^n, m \in \Gamma \tag{5}$$

[14]Fields and Ok [1996] do not directly use these terms. Indeed, the existing literature on the decomposition of mobility, far from being mature yet, is characterized by strong debates. In particular, the *decomposing transformation* has been mainly investigated in the case of positional income mobility. However we will stick with the two terms without any further implication.

[15]In order to avoid confusion notice that w stands for family weight and not longitudinal one.

where it is clear that only inter-societies differences in needs are considered, not intra ones.

In the next section (5) has been implemented.

Empirical results

Absolute income mobility has been calculated over seven countries: Denmark, France, Germany, Italy, Spain, United Kingdom and United States. In order to allow for comparability with the existing empirical literature, data (ECHP - PSID) are from 1994 to 1998 and results in Table 1 are in mean values from each bivariate income distribution.[16] The adopted concept of income is that of disposable household income employing the implicit hypothesis that all individuals belonging to the same household enjoy the same level of welfare. In line with the existing literature yearly income has been considered, even if this choice is not straightforward [Shorrocks, 1978b]. Finally, the income unit is the equivalent adult.

As we observed in the previous section in order to satisfy reference independence and consistency, each weight attached to each individual must be coherent with the implemented equivalent income scale. In the specific case, the sum of all weights attached to household members equates the corresponding equivalence scale coeffi-

[16] As PSID data are not available for the 1997 (wave 1998) results for the US are obtained as mean of results from each of three bivariate income distributions. While for all other countries four bivariate income distributions have been considered. Notice that for both ECHP and PSID the reference period for income is the year prior to the interview. The interviews corresponding to the first five waves of both ECHP and PSID was performed in years 1994, 1995, 1996, 1997 and 1998, meaning that corresponding incomes refer to, respectively, 1993, 1994, 1995, 1996 and 1997. In order to get disposable household income from PSID data the Federal Income Tax has been used. In order to avoid mobility due to inflation, the "Harmonized Consumer Price Index" (HCPI) and the "Consumer Price Index" (CPI) have been applied respectively to European countries and United States (100=1996). The employed equivalence scale is that known as the "modified OECD scale", which assign the value of 1 to the first adult in the household (head), 0.5 to other adults and 0.3 to each child under 16. In order to take into account the effect of attrition or gradual fall in the sample of observations present in the initial year, estimation have been conducted using longitudinal weights as recommended by EUROSTAT. In line with Cowell [1998] and in order to avoid strong sensitivity to outliers, the sample has been truncated symmetrically below the first percentile and above percentile 99. Finally, PPPs as foreseen by ECHP have been applied in order to compare income mobility over countries.

cient.[17]

	Overall Mobility	**SM(%)**	**EM(%)**	**EM (USD)**
Denmark	2618.22	0.066	0.934	2444.17
France	2415.12	0.083	0.917	2213.71
Germany	2637.03	0.114	0.886	2335.32
Italy	2696.85	0.115	0.885	2385.49
Spain	2280.02	0.089	0.911	2077.89
UK	3084.66	0.177	0.823	2540.10
USA	3052.47	0.072	0.928	2833.73

Table 1.: Estimated level of income mobility in USD (1996). In order to get robust results, the amount of mobility is specifically referred to one year, even if they have been obtained as mean value from three (four) bivariate income distributions for available waves in ECHP (1994-1998) and PSID (1994-1997).

It is worth observing that these results are not in per capita, but in per equivalent adult. In the case of per capita income mobility we say that a single English individual, no matter if single or married, is expected to meet on average earnings flexibility equal to 2540.10 USD (1996) per year. Here we say that an English equivalent adult, characterized by a specific quantity of needs (homogeneous), is expected to meet an earnings flexibility of 2540.10 USD (1996) per year, which is the case of a single, but not a married agent. Then we are dealing with a population of equivalent adults not individuals anymore.

Table 1 shows some results which are in contrast with previous empirical analyses. First we find low-medium income mobility for Italy and Spain, while these two countries are usually regarded as very mobile. Germany is clearly less mobile than United States. Even if Hountenville [2001] shows that the income mobility puzzle

[17]In the measurement of income mobility it has been generally observed that the use of household as income unit does not make sense, as changes in the family composition may be directly source of mobility. Then, the use of a equivalent adult approach automatically entails a simple re-weighting procedure over each individual not household. In order to isolate the mobility movement we have attached the same weight to each member of the same family in such a way to be consistent with the "modified OECD equivalence scale".

between Germany and United States disappears in the case of positional mobility, Table 1 supports same evidences despite of the whole population analysis. Among European countries the highest amount of exchange mobility is detected in the United Kingdom, which is not a common result too. Finally, income mobility in Denmark does not appear to be extremely high as it has been usually shown.

In order to allow for considerations about the evolution of mobility over time, in the Appendix we have reported results for each bivariate income distribution. In particular, it can be observed that globally the amount of income mobility has been reduced from 1994 to 1998 except for Denmark.
Then, it can be concluded that when ranking income mobility the equivalizing transformation is not independent of the mobility transformation. Given the equivalent income distribution, in order to keep the initial structure of the income distribution a counter-equivalizing transformation is required for each income unit. As we discussed in the previous section, when a counter-equivalizing transformation is not implemented, income mobility turns out to be over-weighted in high family-proportion populations. In this sense, the most important result reported in Table 1 is the medium-low amount of income mobility detected for Italy and Spain, which does not find support in the main existing literature.

Remarks

In this paper we have highlighted that the measurement of income mobility strongly depends on main purposes of the analysis. In the relative approach equivalent income can be regarded as the new set of information because the analysis mostly concerns with the perception of income mobility not income mobility itself. A different methodology is required, instead, for the latter, i.e. when earnings market flexibility matters. In the absolute scenario, it might be convenient to preserve reference independence, general positive asymmetry and consistency so that no matter who's the loser and who's the winner.

In line with this idea an empirical analysis over seven countries has been undertaken. The analysis has been conducted using the strongly absolute Fields and Ok's mobility index. We have found that results turn out to be more consistent with what one would expect. In particular, results have been discussed looking specifically at exchange income mobility as we mostly concern with flexibility of the earnings market not growth. During the middle 90's the largest income mobility occurs for United Stated and United Kingdom, while Denmark, France, Germany, Italy and Spain have enjoyed approximately the same earnings flexibility. As showed by Hountenville [2001] we find that the income mobility puzzle between Germany and United States disappears even when a whole population analysis is implemented.

Finally, it is worth observing that even if our considerations have been mostly referred to strongly absolute mobility these can be partially extended to weakly absolute measures and, in some sense, even to relative income mobility.

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APPENDIX

Absolute income mobility over bivariate income distributions

1994-95	**Overall Mobility**	**SM(%)**	**EM(%)**	**EM (USD)**
Denmark	2590.66	0.065	0.935	2421.88
France	2793.67	0.206	0.794	2218.54
Germany	3162.99	0.165	0.835	2641.65
Italy	2985.01	0.155	0.845	2522.81
Spain	2335.43	0.062	0.938	2189.95
UK	3149.19	0.188	0.812	2556.09
USA	3003.60	0.08	0.92	2773.02
1995-96	**Overall Mobility**	**SM(%)**	**EM(%)**	**EM (USD)**
Denmark	2463.73	0.025	0.975	2402.04
France	2377.68	0.044	0.956	2272.36
Germany	2652.16	0.169	0.831	2204.73
Italy	2741.87	0.031	0.969	2656.56
Spain	2301.49	0.022	0.978	2251.09
UK	3067.20	0.072	0.928	2847.15
USA	2916.52	0.06	0.94	2734.35
1996-97	**Overall Mobility**	**SM(%)**	**EM(%)**	**EM (USD)**
Denmark	2433.62	0.078	0.922	2244.96
France	2275.06	0.005	0.995	2264.78
Germany	2472.66	0.122	0.878	2171.60
Italy	2590.45	0.043	0.957	2479.32
Spain	2234.23	0.034	0.966	2158.38
UK	3100.65	0.291	0.709	2197.06
USA	3240.31	0.08	0.92	2991.89
1997-98	**Overall Mobility**	**SM(%)**	**EM(%)**	**EM (USD)**
Denmark	2984.88	0.098	0.902	2691.77
France	2214.08	0.079	0.921	2039.37
Germany	2260.32	0.002	0.998	2254.97
Italy	2470.06	0.233	0.767	1894.65
Spain	2248.92	0.236	0.764	1717.11
UK	3021.62	0.155	0.845	2554.31

Table 2.: Estimated level of income mobility in USD (1996) for three (four) bivariate income distributions from ECHP (1994-1998) and PSID (1994-1997). In order to avoid loss of information each bivariate income distribution has been constructed considering eligible interviews available for both years.