Labour Economics: An European Perspective
Inequalities in EU Labour Market

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November 20, 2018

The theory of efficiency wages

There exists several models explaining why in a labour market with imperfect information on the quality of workforce and/or costly monitoring of workers' effort the level of real wage is higher than the marginal productivity of labour.

Moral hazard The basic idea is that in a perfectly competitive marker in absence of (involuntary) unemployment workers have not an incentive to produce the maximum effort because the possible sanction is not effective given that they can find an occupation at the same wage with certainty. Firms must pay a higher wage to discipline workers, which at the same time produces unemployment in the market and increase the cost of firing for workers.

Therefore the level of wage in market with imperfect information is not equal to marginal productivity of labour but higher to avoid shrinking (Shapiro,Stiglitz).

The theory of efficiency wages (cont.d)

Consider a model where labour supply is constant, i.e. $N^S = \bar{N}^S$ and labour demand is given by the usual condition $W/P = \partial Y/\partial N$.
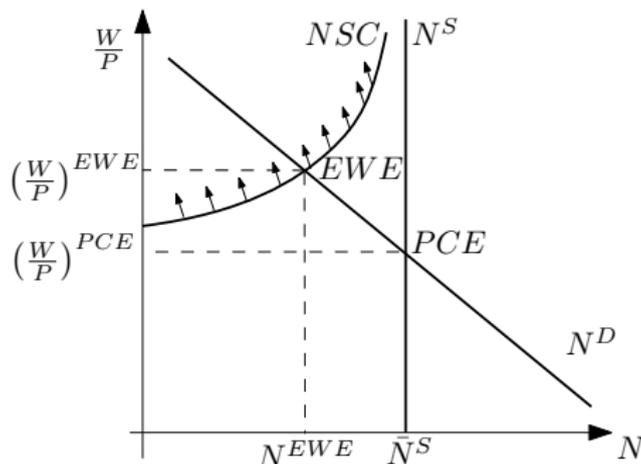

Figura: Equilibrium in the labour market with possible shrinking

In Figure 1 *PCE* represents the perfectly competitive equilibrium without any asymmetric information.

The theory of efficiency wages (cont.d)

Suppose that worker can choose to produce an effort or not. To produce an effort is costly for the worker. Assuming that effort can take only two values, 0 and 1, i.e. $e \in \{0, 1\}$ and that the utility of not produce effort denoted by $U(e = 0)$ is higher that the utility of producing an effort denoted by $U(e = 1)$.

Firm monitors worker with a constant probability p. Worker found to produce an effort equal to zero is immediately and without cost fired. This implies that fired worker has an expected utility depending on the state of labour market, i.e. $(1 - u)\frac{W}{P} + U(e = 0)$.

The condition to incentive a risk-neutral worker to produce an effort is:

$$\frac{W}{P} + U(e = 1) \geq p\left[(1 - u)\frac{W}{P} + U(e = 0)\right] + (1 - p)\left[\frac{W}{P} + U(e = 0)\right] \tag{1}$$

The theory of efficiency wages (cont.d)

Therefore the No-Shrinking Condition (NSC), which identifies the region where optimal effort is equal to 1:

$$\frac{W}{P} \geq \frac{U(e=0) - U(e=1)}{p\left(1 - N/\bar{N}^S\right)} \tag{2}$$

The Efficiency-Wage Equilibrium(EWE), which is at the cross between the curves N^D and NSC, satisfies the condition of maximization of profits and the condition to provide the incentive to worker to produce effort.

The introduction in the framework of **unemployment benefits**, **employment protection legislation**, etc. produces intuitive effects on equilibrium level of wage and occupation.

The theory of efficiency wages (cont.d)

Other theories leading to a similar equilibrium in labour market:
Adverse selection The basic idea is that higher wages are needed to attract the best workers when firm cannot observe the quality of workers (Stiglitz, Weiss)

Less turnover Higher wages incentive workers to not change their job (Stiglitz).

Fairness Higher wages incentives workers to worker harder (Akerlof).

Social relationship Wages are the result of social conventions (Solow)

Wages in an imperfect factor and good markets

Suppose that in the market there is a cartel of firms and an union of workers, and wage is decided by a bargaining between these two organizations.

There exists a theory on the result of this bargaining called **Nash-bargaining solution** giving us a very simple result due to a paper by John Nash in 1953.

For example, consider the following Nash product NP:

$$NP \equiv \left(Y(N) - \frac{W}{P}N - OOF \right)^{\gamma} \left(\frac{W}{P}N - OOW \right)^{1-\gamma} \tag{3}$$

where $Y(N) - W/PN$ are the **profits** for the cartel of firms if the bargaining is successful, OOF is the **outside opportunity of the cartel of firms** in the case the bargaining is unsuccessful, $(W/P)N$ are the **total amount of wages** used as proxy for the utility of union, OOW is the **outside opportunity of union** in the case the bargaining is unsuccessful, and γ is the **bargaining power** of the cartel of firms.

Wages in an imperfect factor and good markets (cont.d)

The Nash-bargaining solution states that the NP should be maximized with respect to N and W/P.

Maximizing with respect to W/P we get:

$$\frac{W}{P} = (1 - \gamma)\left[Y(N)/N - OOF/N\right] + \gamma OOW, \tag{4}$$

i.e. real wage captures a share $1 - \gamma$ of total output net of outside opportunity of the cartel of firms augmented by the outside opportunity of union OOW.

Maximizing with respect to N we get:

$$\frac{W}{P} = (1 - \gamma)\left[\frac{Y/N - OOF/N}{1 - OOW/(NW/P)}\right] + \gamma\frac{\partial Y}{\partial N}. \tag{5}$$

Setting $OOF = OOW = 0$ we get that real wage is a **weighted mean of average** and **marginal productivity of labour** Under decreasing labour marginal productivity $W/P \geq \partial Y/\partial N$

Wages with human capital

$$Y = AF(K, H) = AF(K, hN), \tag{6}$$

where h is the average quality of workforce. If real wage are equal to marginal productivity of labour then:

$$\frac{W}{P} = \frac{\partial Y}{\partial N} = \frac{\partial Y}{\partial H}\frac{\partial H}{\partial N} = \frac{\partial Y}{\partial H}h. \tag{7}$$

Taking Cobb-Douglas technology then:

$$\frac{W}{P} = (1 - \alpha) Ah \left(\frac{k}{h}\right)^\alpha \tag{8}$$

Therefore real wage depends on

- level of technological progress
- level of human capital
- level of the ration between physical and human capital
- technological parameter α

$\Rightarrow$ no direct relationship between W/P and h.

Figura: Compensations per employee versus GDP per worker in 2008

Compensation per Employees in 2008 (Relative)
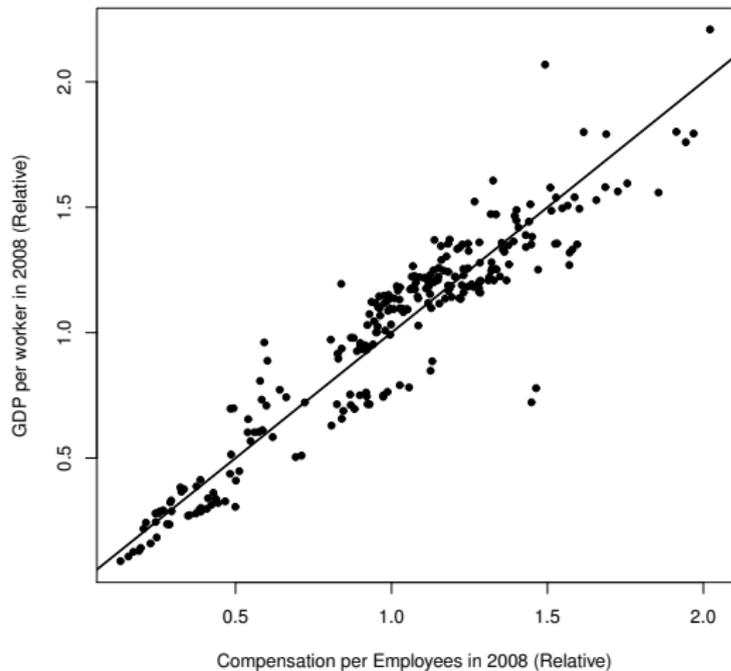
It is not so strict the relationship between compensations per employee and GDP per worker

Mincer approach to the determination of wages

There exists a complementary approach to study the determination of wages in presence of different individual human capital: **the Mincer approach**.

Mincer approach to the determination of wages takes as granted that individual wages are only a function of individual stocks of human capital on the base of the idea that each worker has access to the same level of technology and physical capital, i.e. differences in technology and capital across firms where workers are employed are random.

According to this approach we can calculate:

- **the rate of return to education** (where education is a source of accumulation of human capital)
- **the rate of return to experience** (where experience is a source of accumulation of human capital)

Stylized Facts about Italian migration

- Italy is at the centre of both **ingoing and outgoing migration flows**

- **Internal migration** is also important: about 2% of the Italian population per year

- **Inter-regional migration** accounts for 24% of total migration, which corresponds to approximately 320.000 people moving from one region to another

- **Northers regions**, such as Lombardy, Piedmont and Veneto, are the most chosen destination regions, while Southern regions such as Campania, Puglia, Basilicata, Calabria e Sicilia have more outflows than inflows

- Persistence of **large disparities among regions**, particularly North-South
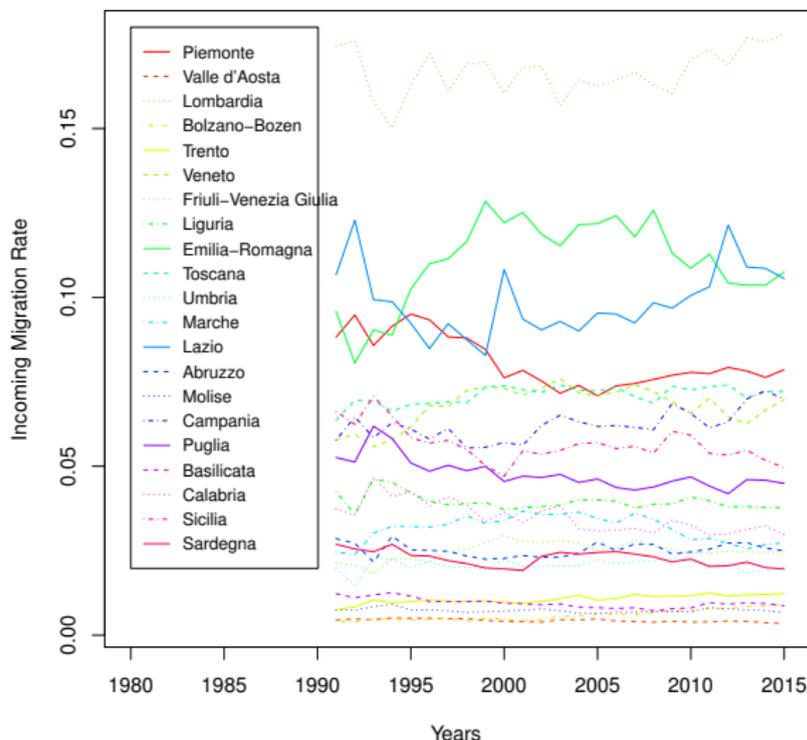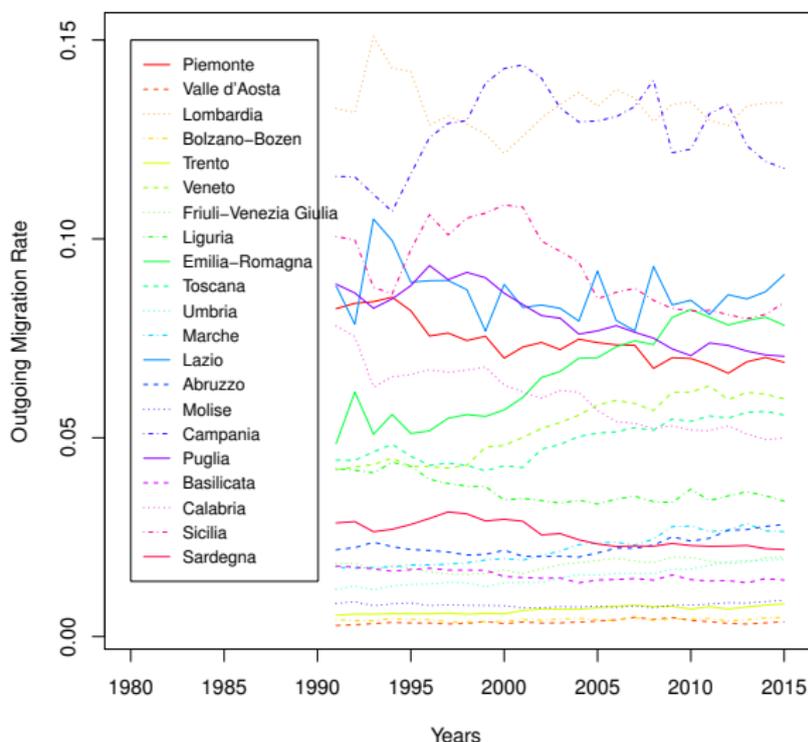
Migration rate and Shorrocks' Index
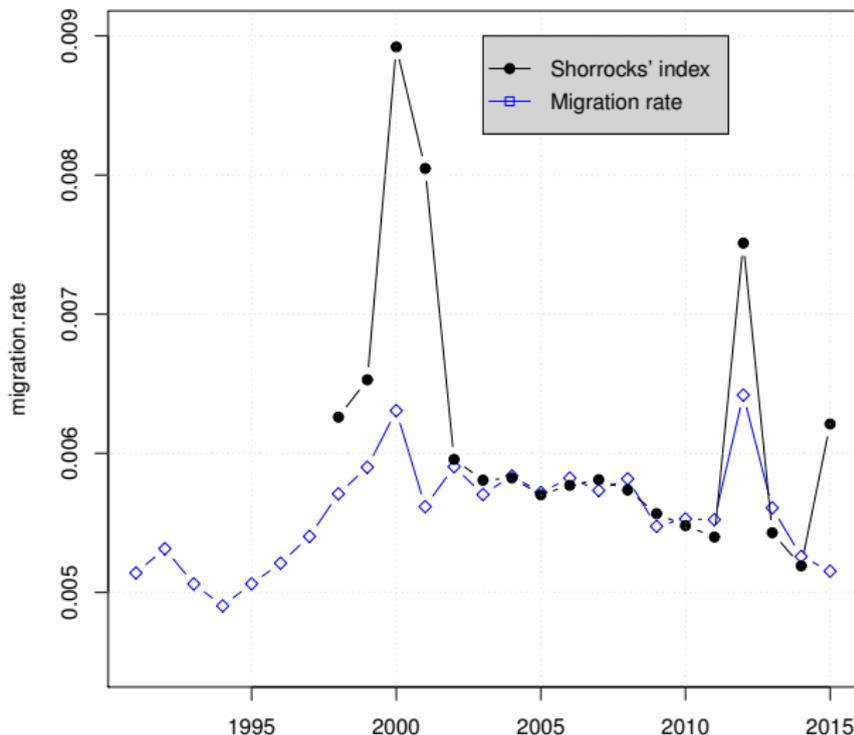
Net interregional migration rate by region
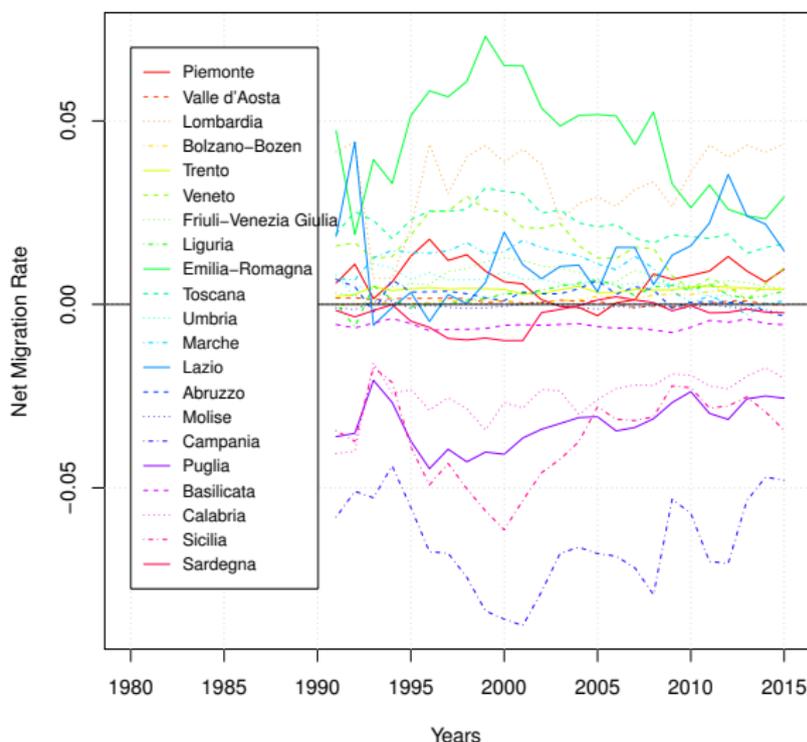
Net interregional incoming rate by region

Net interregional outgoing rate by region

Literature review

- Faini et al. (1997): coexistence of lower migration rates and increasing employment differentials between North and South in the period 1970-1990 is an **empirical puzzle** $\rightarrow$ the role of the family;

- Basile e Causi (2007) and Etzo (2008, 2011) claim that the increased migration rates since the mid 90s go in parallel with the increased **unemployment differentials** between North and South and identify per capita GDP as the main pull factor;

- Cannari et al. (2010) and Mocetti e Porello (2010) find that other variables such as **house prices**, but also employment rate, temporary contracts, employment in PA and immigration rate are important determinants;

- Biagi et al. (2011) find that **long-distance** migration is driven by economic factors while short-distance migration is mainly motivated by quality o life and amenities;

- Fratesi and Percoco (2014) find that selective migration is a **diverging force** in the regional convergence process.

Descriptive statistics

Migrants are

- **younger**: the majority belongs to the 25-34 age group;
- **less educated**: the majority holds a primary level of education;
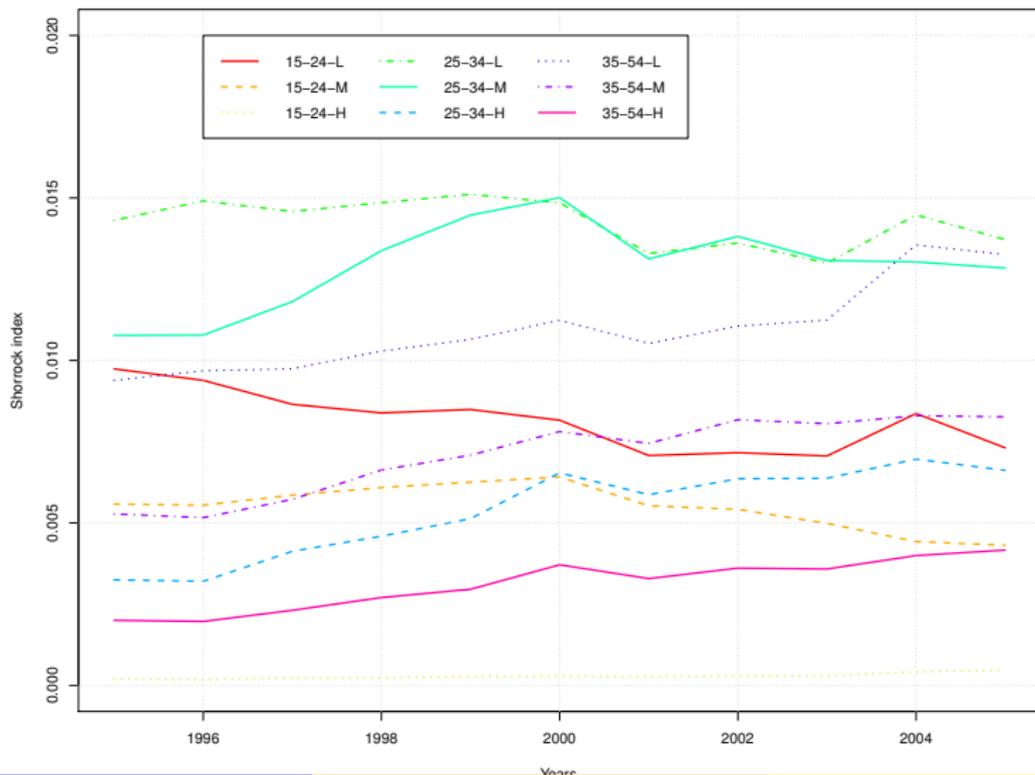- **same share of men and women**;

however in 2005 compared to 1995 among migrants we observe an increased share of

- **age**: individuals in the group 25-34
- **education**: individuals with a tertiary level of education
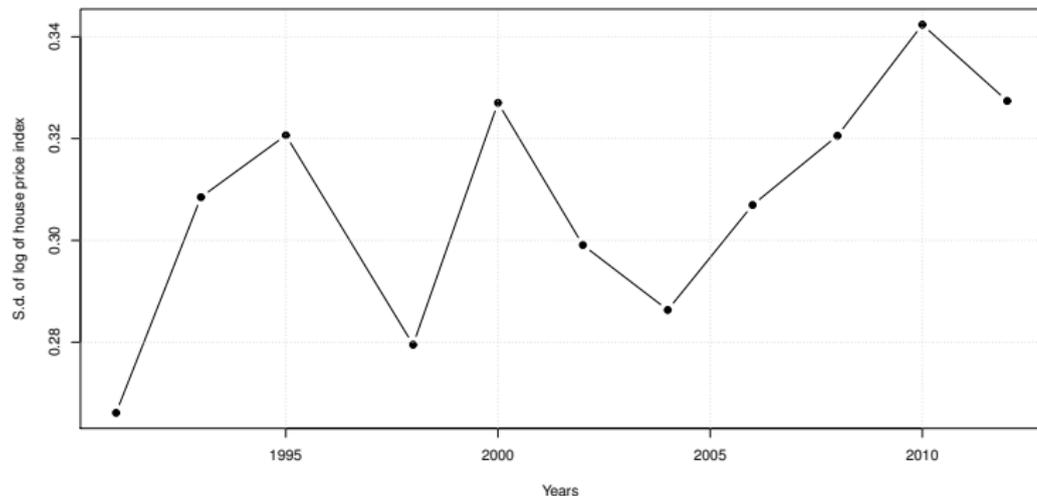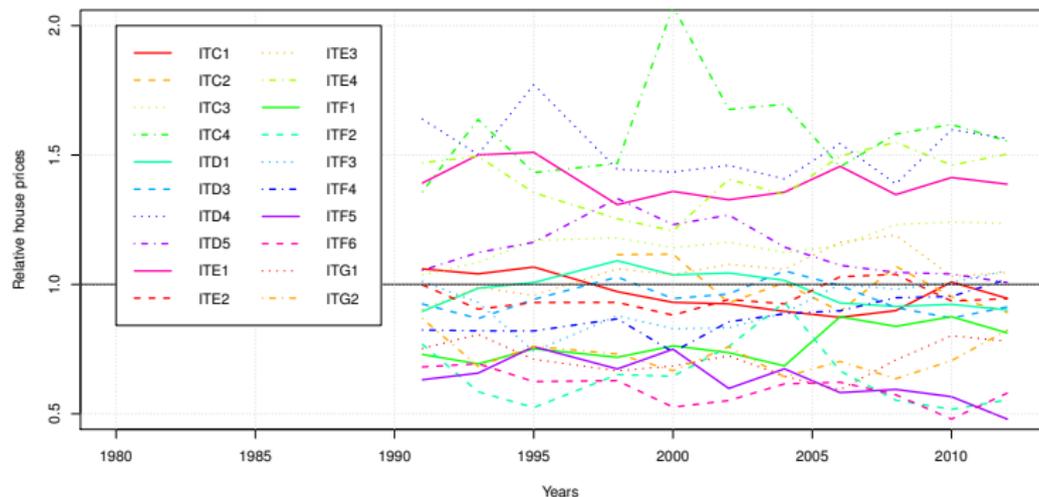- **gender**: women

Migration Rate by Age and Education
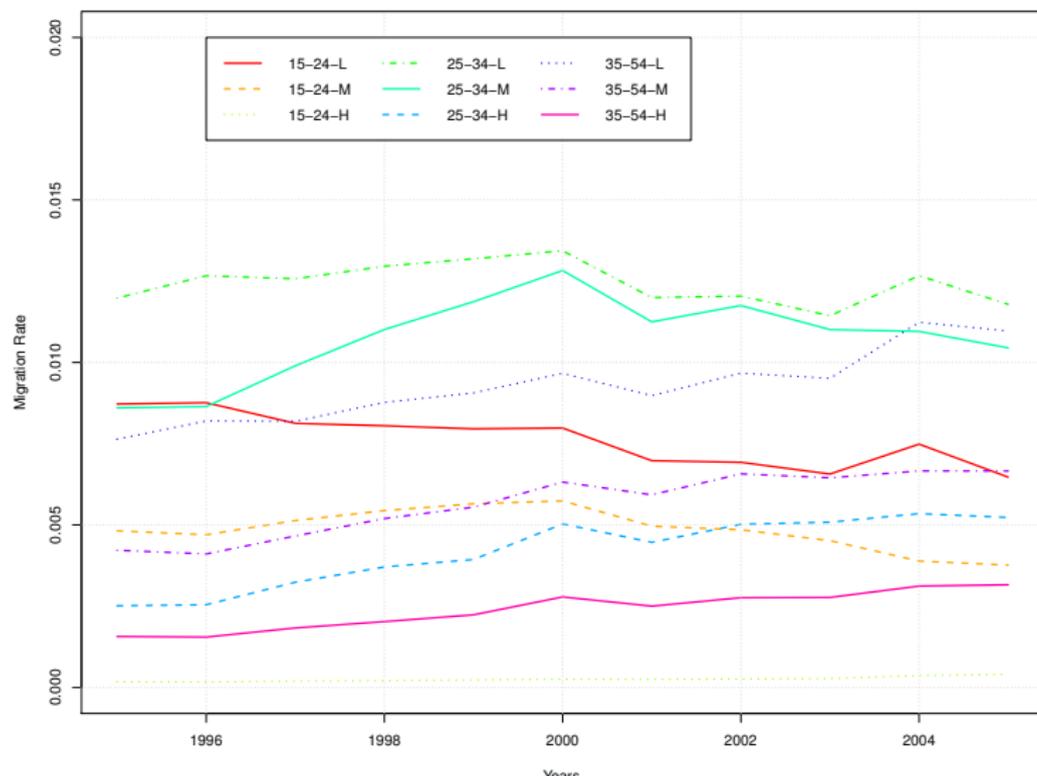
Shorrocks' Index by Age and Education

Standard Deviation of Log House Price

Relative House Price

Percentage of Temporary Contracts