Why Doesn't Labor Flow from Poor to Rich Countries? Micro Evidence from the European Integration Experience

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Question of the Paper

- **General Question**:

  How effective are legal restrictions to labor mobility?

⇒ **Natural experiment**: southern European integration of 1986

- **Specific Questions**:

  Why doesn't migration happen in presence of persistent real wage differentials and free labor mobility?

  What are the (observable and unobservable) characteristics of those who decide to migrate?

Relevance of the Paper (1)

- Literature focus:
  - absence of capital flows in presence of productivity differentials (Lucas, AER 1990)
  - impact of European integration on economic growth, trade, capital flows, institutional harmonization (too long a list!)

$\Rightarrow$ focus on determinants and characteristics of labor flows created by joining EU fills gaps in literature

Relevance of the Paper (2)

- Existing studies of migration determinants are performed at macro level

  $\Rightarrow$ instead this paper uses individual-level data to analyze patterns of migration - as Hunt (JEEA 2007), but we consider assimilation patterns and unobserved heterogeneity

- Implications for EU's Eastern and other enlargement processes or other integration processes allowing free labor mobility (NAFTA in the future?)

Main Results of the Paper

- **simple theory explains stylized facts**:
  observed migration flows behave exactly as predicted by neoclassical model with migration costs

- **empirically identify individual-level migration costs** based on theoretical model:
  higher for older and less educated individuals

- **negative self-selection migration patterns**:
  evidence supportive of negative self-selection on unobservables - income inequality matters too!

Plan of Talk

1. Background and Main Stylized Facts

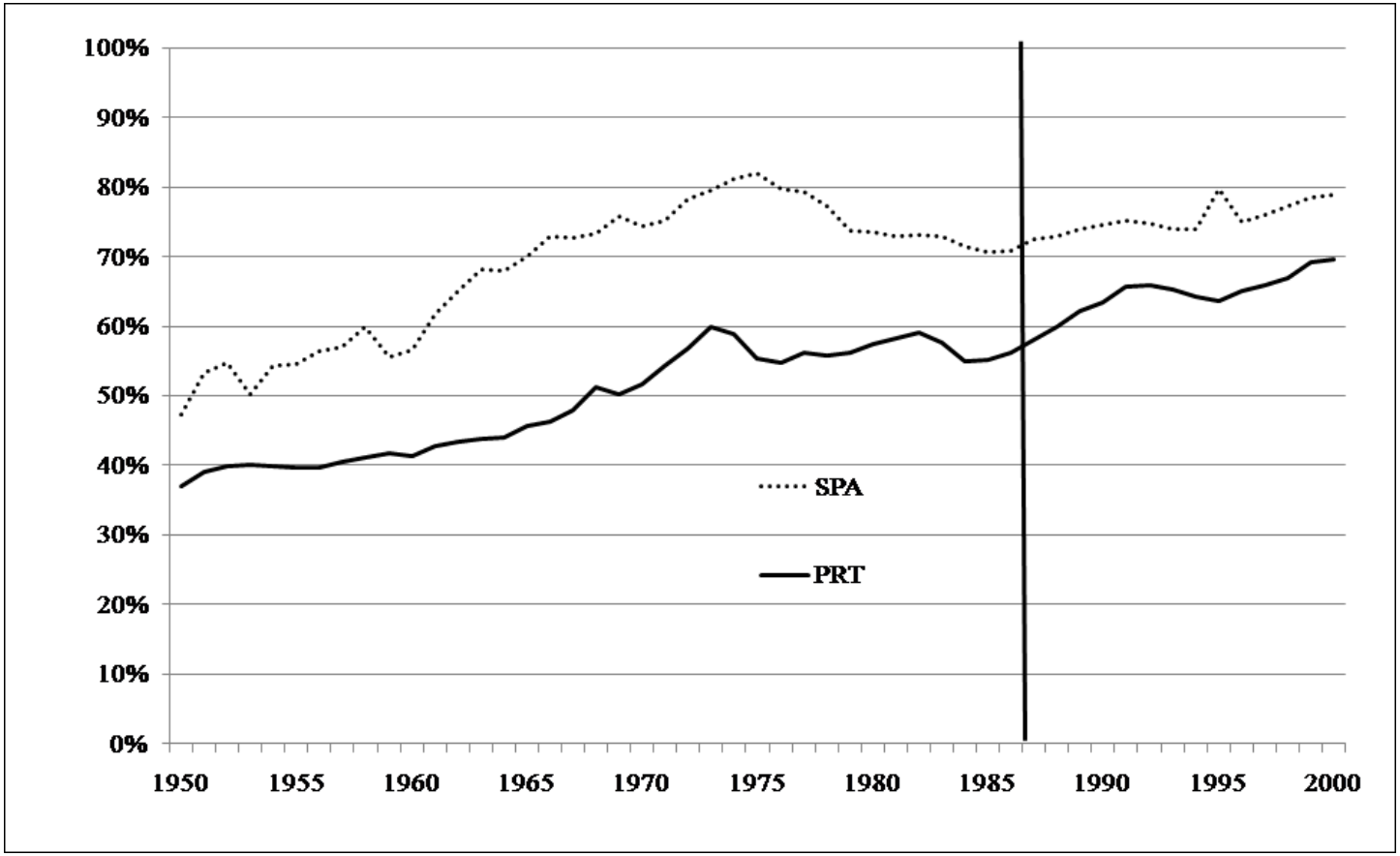
2. Model of a Small Economy Open to Factor Flows

3. Wage Differential Analysis of Heterogeneous Migration Costs and Selection Patterns

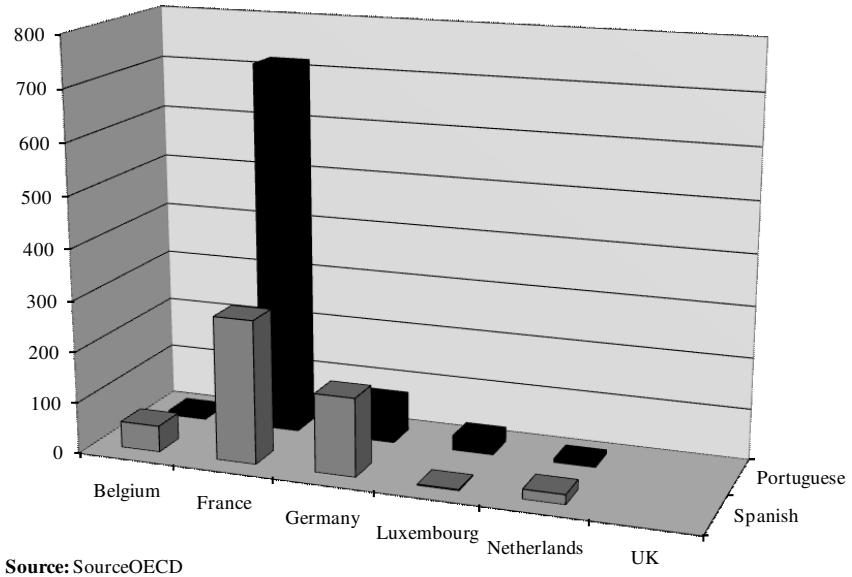
4. Summary and Directions for Further Research

1. Main Stylized Facts

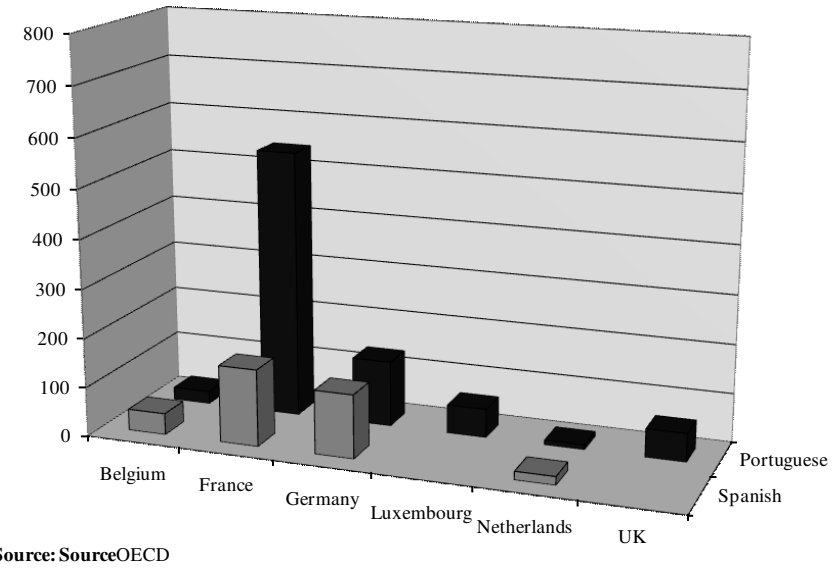
(PPP-adjusted) GDPpc of Portugal and Spain relative to EU average



Stocks of Portuguese and Spanish immigrants (in thousands) in 1985 and 2000 in several EU countries

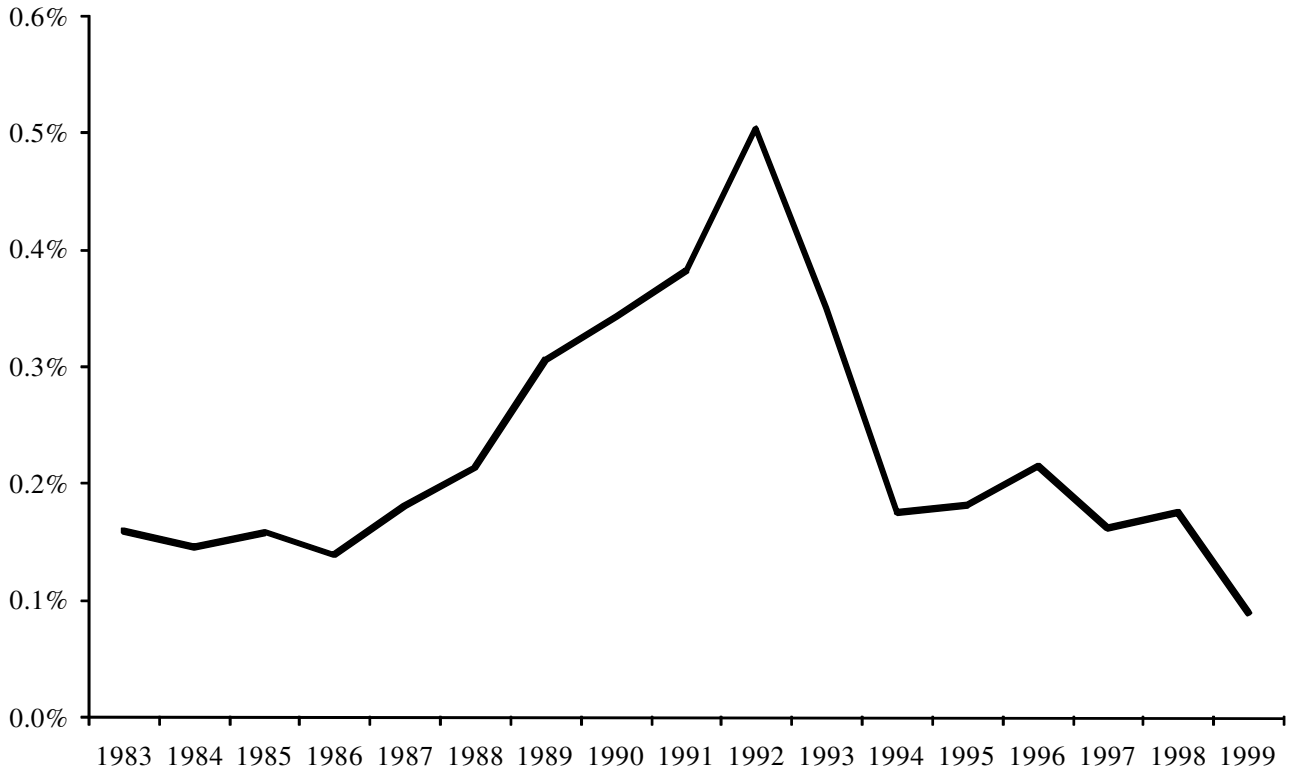


Source: SourceOECD



Source: SourceOECD

Permanent Emigration from Portugal as a Fraction of Total Workforce



Source: Permanent Emigration Data from INE, and Estimates by Carrilho and Patricio (2003) for 1989-91; Workforce calculated from PWT 6.1.

2. Theoretical Model:
Small Economy Open to Factor Flows

Simple model:

- **Neoclassical**: no human capital externalities or other forms of increasing returns to scale
- **Dynamic**: because we are interested in what happens during the transition
- **Costly investment**: in human capital accumulation, in migration (costs endured each period of migration)
- **Small open economy**: destination countries are not modelled, assumed to be large enough
- **Opening to factor flows**, free trade is not explictly modelled

Technology and Problem of Representative Firm

- **Technology**

$$Y(t) = A(t).F[K(t), U(t), S(t)]$$

$$y(t) = A(t).f[k(t), s(t)]$$

- **Profit maximizing conditions for competitive firms**:

$$r(t) = A(t).f_1[k(t), s(t)]$$

$$w_z(t) - w_u(t) = A(t).f_2[k(t), s(t)]$$

Problem of the Representative Household

- **Introducing Migration**:
  - assume $w_i^*(t), \quad i = z, u,$ initially high enough (so that representative household optimally chooses to emigrate);
  - let $0 \leq m_z(t) \equiv \frac{M_z(t)}{L} \leq 1;\ 0 \leq m_u(t) \equiv \frac{M_u(t)}{L} \leq 1;$
  - define migration costs (local amenities, assimilation, and psychic costs of migration) for skilled and unskilled workers: ψ_z and ψ_u.

- **Implications of Openness to Capital Inflows**:
  - $A.f_1[k(z, m_z, m_u), s(z, m_z, m_u)] = \delta + \rho$
  - representative household can borrow and lend at the world interest rate
    $\Rightarrow$ investment and consumption decisions can be thought of as separated

Consumption Problem

$$\max_{\{c(t),\, t \geq 0\}} \quad \int_0^{\infty} e^{-\rho t} \frac{c(t)^{1-\sigma} - 1}{1-\sigma} dt$$

$$s.t. \int_0^{\infty} e^{-\rho t} c(t) dt \leq \int_0^{\infty} e^{-\rho t} \left[\begin{array}{c} w_z(t).[z(t) - m_z(t)] \\ +w_u(t).(1 - z(t) - m_u(t)) \\ +w_z^*(t).m_z(t) + w_u^*(t).m_u(t) \\ -\psi_z.m_z(t) + \psi_u.m_u(t) - I_z(t) \end{array} \right] dt + k_0$$

given k_0.

Solution:

$$\frac{\bar{c}}{\rho} = V(z_0) + k_0$$

where $\bar{c}$: constant stream of consumption;

$V(z_0)$: maximized value of objective function in investment problem.

Investment Problem

$$\max_{\{I_z(t),\, m_z(t),\, m_u(t),\, t \geq 0\}} \int_0^{\infty} e^{-\rho t} \left[\begin{array}{c} w_z(t).[z(t) - m_z(t)] \\ +w_u(t).[1 - z(t) - m_u(t)] \\ +w_z^*(t).m_z(t) + w_u^*(t).m_u(t) \\ -\psi_z.m_z(t) + \psi_u.m_u(t) - I_z(t) \end{array} \right] dt$$

$$s.t. \qquad \dot{z}(t) = BI_z(t)^{\phi} - \eta.z(t)$$

taking $z_0, \{w_z(t), w_u(t), w_z^*(t), w_u^*(t), t \geq 0\}$ as given; $0 < \eta < 1$; $0 < \phi$; $B < 1$.

Optimality Conditions Required by Investment Problem

$$w_z(t) = w_z^*(t) - \psi_z \qquad if \quad m_z(t) > 0$$

$$w_u(t) = w_u^*(t) - \psi_u \qquad if \quad m_u(t) > 0$$

$$\dot{z}(t) = BI_z(t)^{\phi} - \eta.z(t)$$

$$\frac{\dot{\mu}(t)}{\mu(t)} = \eta + \rho - \frac{1}{\mu(t)}.Af_2[k(t), s(t)]$$

Qualitative Implications of Opening the Economy to Labor Flows:

- Opening economy to labor movements ensures cross-country wage convergence up to a wedge (dependent on local amenities, assimilation, and psychic costs of migration):

$$w_z = w_z^* - \psi_z$$
$$w_u = w_u^* - \psi_u$$

- During transition to the steady-state, as wage differentials fall, there is return migration.

$\Rightarrow$ **Model matches stylized facts**.

3. Empirical Analysis

- Use individual and household level data to **identify migration costs** (ψ_u **and** ψ_z) **based on theoretical model**.

- For this purpose, need to **explain wage differentials** accounting for:

  - **observable characteristics**: education, age;

  - **assimilation effects**: migrants catching up to their productivity potential (translates into negative wage premium relative to natives depending on length of migration spell);

  - **unobservable characteristics**: ability, quality of education, entrepreneurship.

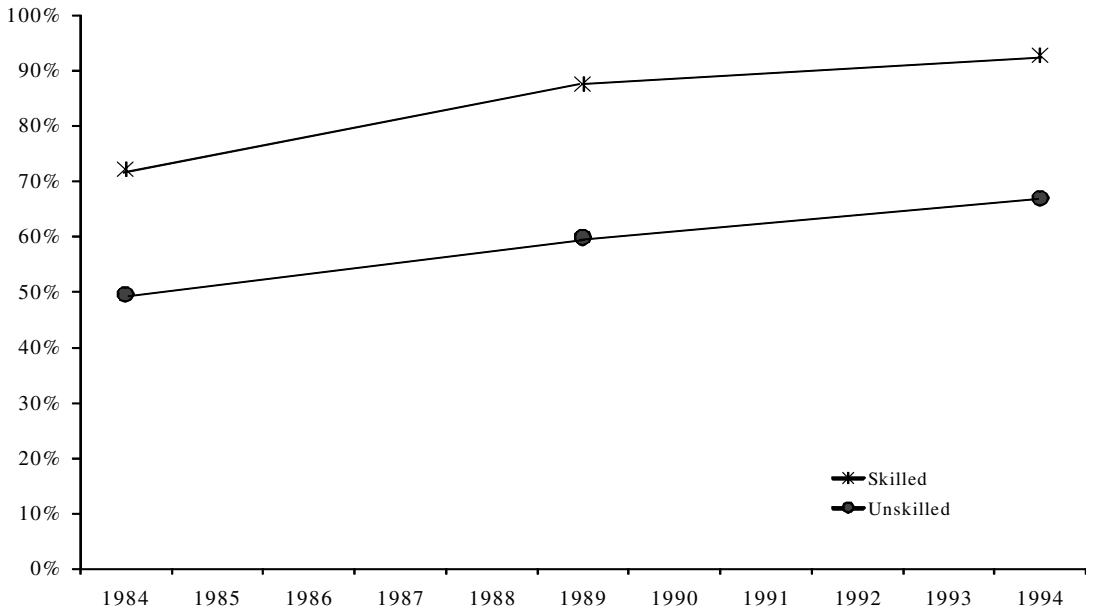
3. Empirical Analysis: Datasets

1. **LIS**: **Luxembourg Income Survey**
   - collects household surveys from various sources
   - covers most European and some non-European countries
   - time coverage: variable for each country, no continuous coverage

2. **ECHP**: **European Community Household Panel**
   - household survey panel
   - covers original 15 EU countries
   - time coverage: 1994-2001

3.1. Results using LIS only

Real median annual wage convergence between Portugal and France
(per level of education, males aged 25-54 working full-time)



Source: LIS (France) and INE (Portugal).

3.1. Results using LIS only

- **Simplest measure for assimilation costs** of Portuguese immigrants in France in 1994: 4.5% of French wages

  (calculated using Mincer median regressions including a dummy for Portuguese immigrants)

  (magnitude and significance of assimilation effects decrease over time, for all skills together and separately)

- Implied relevant **wage gap for unskilled workers**: 42%
  (migration cost no smaller than 4066$-PPP at 1996 prices)

  Implied relevant **wage gap for skilled workers**: 3%
  (migration cost no smaller than 550$-PPP at 1996 prices)

3.2. ECHP using LIS Weights

- **LIS**:
  - no duration of migration spells (date of immigration);
  - little information on household and individual characteristics (particularly retrospective)

- **ECHP**:
  - provides most desirable information,
  - but does not identify country of nationality or birth (anonymity concerns): instead identifies region of nationality or birth

3.2. ECHP using LIS Weights

Estimating LIS Weights:

1. Using LIS, estimate:

$$\Pr(Ctry\_Birth\_PT_i = 1) = \alpha + \beta' X_i + \varepsilon_i$$

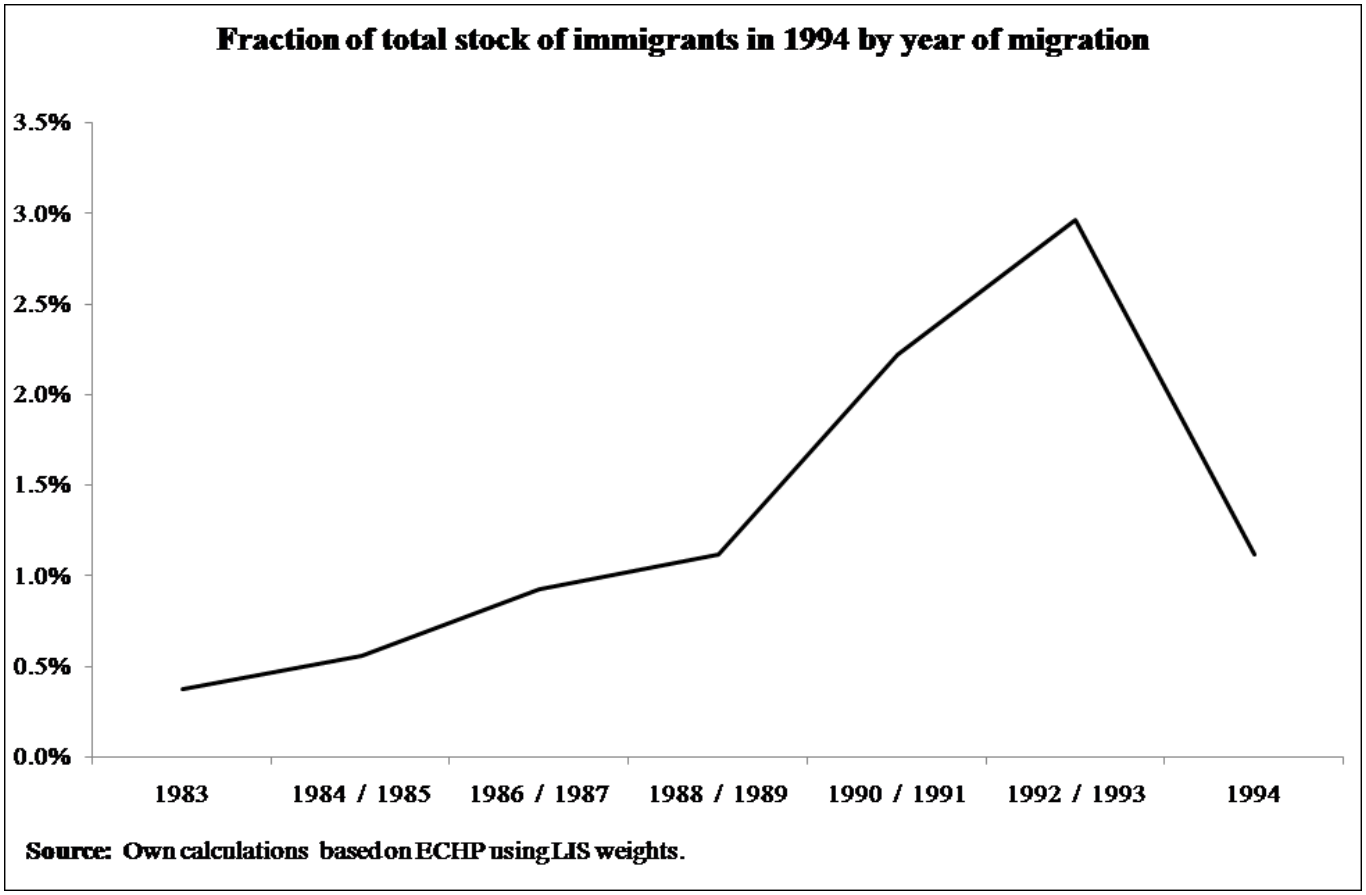
2. Using ECHP, predict:

$$\widehat{\Pr(Ctry\_Birth\_PT_i = 1)} = \alpha + \beta' X_i$$

3. Construct LIS weights:

$$LIS\_weight = sample\_weight * \widehat{\Pr(Ctry\_Birth\_PT_i = 1)}$$

Implied Flow of Portuguese Immigrants to France from ECHP using LIS Weights



3.2. ECHP using LIS Weights

Median Regressions on Log Net Monthly Wages (PPP-Adjusted) for Male Full-Time Employees using ECHP

	(1) Median PT	(2) Median FR	(3) Median FR
Educated	0.5978	0.2218	0.2238
	(0.0532)***	(0.0867)**	(0.0944)**
Old (Age>40)	0.2231	0.2695	0.2715
	(0.0406)***	(0.0858)***	(0.1014)***
Migration Spell			0.0020
			(0.0049)
Constant	6.1789	6.7047	6.6501
	(0.0290)***	(0.0771)***	(0.1112)***
Observations	2410	78	78

Bootstrapped standard errors in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%

3.2. ECHP using LIS Weights

Wage gain for Portuguese worker of moving to France in 1994

	Actual	Median Estimate	Median Estimate: Zero Spells
Young Unskilled	63.4%	64.1%	60.2%
Young Skilled	29.1%	14.3%	10.2%
Old Unskilled	77.4%	74.4%	68.1%
Old Skilled	30.7%	20.0%	15.7%

3.2. ECHP using LIS Weights

Accounting for unobserved heterogeneity

1. Estimate probability of migration

$$\Pr(Mig_i = 1) = \alpha_0 + \alpha_1' X_i + \alpha_2' Z_i + \varepsilon_{mi}$$

2. Compute Mills Ratio

$$\lambda_i = \frac{\varphi(M_i)}{\Phi(M_i)}$$

3. Run wage regression including Mills Ratio

$$\ln w_i = \beta_0 + \beta_1' Y_i + \beta_2 \lambda_i + \varepsilon_{wi}$$

Wage Regressions Controlling for Unobservable Heterogeneity on Log Net Monthly Wages (PPP-Adjusted) Male Full-Time Employees using ECHP with LIS weights

	(1) First Stage	(2) Median Regression	(3) Heckit FML
Educated	-0.3549	0.6029	0.7026
	(0.2982)	(0.1365)***	(0.2216)***
Old (Age>40)		0.2301	0.1724
		(0.2363)	(0.2867)
Migration Spell		-0.0139	-0.0036
		(0.0129)	(0.0107)
Mills Ratio		-0.2279	-.5834
		(0.1130)*	(.4178)
Age at date of migration	0.0055		
	(0.1073)		
Age at date of migration^2	-0.0013		
	(0.0019)		
Married at date of migration	0.0217		
	(0.5894)		
Change in Marital Status	0.0228		
	(0.2708)		
PT-FR Unemployment Differential	0.3390		
	(0.0540)***		
Constant	-0.5560	7.3964	7.1648
	(1.6000)	(0.3605)***	(0.3660)***
Observations	3417	46/3417	46/3417

Robust standard errors in parentheses, clustered at household level.
* significant at 10%; ** significant at 5%; *** significant at 1%

4. Summing Up & Directions for Further Research

- **simple theory explains stylized facts**:
  observed migration flows behave exactly as predicted by neoclassical model with migration costs

- **empirically identify individual-level migration costs** based on theoretical model:
  higher for older and less educated individuals

- **negative self-selection migration patterns**:
  evidence supportive of negative self-selection on unobservables - income inequality matters too!

4. What did we learn from this natural experiment?

Question: How effective are legal restrictions to labor mobility?

Answer 1: **Importance of Transitional Periods** (Batista, 2007)

Having free trade and capital flows move first promotes wage convergence

$\Rightarrow$ diminished migration incentives from poor to rich countries.

Answer 2: **Understanding Micro Determinants of Migration**

Traditional **macro determinants of migration** (wage gaps, unemployment differentials, income inequality) need complement by **micro characteristics of policy targets** (education, age of potential migrants) with consideration of **specific factors** (migrant networks, language, culture)