Taxation and International Migration of Superstars: Evidence from the European Football Market

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Why Focus on Tax-Induced International Migration?

- High-skilled labor potentially very responsive to tax differentials when migration barriers are low.

- Such responses increase the efficiency cost of taxation and limits the redistributive ability of governments [Mirrlees (1982), Bhagwati-Wilson (1989)].

- Internationally mobile labor may induce socially suboptimal labor tax competition between countries [Wildasin (2006)].

- Very salient issue in the policy debate.
Recent Policy Debate in the United Kingdom

In April 2010, the top MTR increased from 40% to 50% on annual income above £150k. This has triggered a heated debate.

The Times, February 2, 2010:
“The Chancellor's announcement [of the 50p tax rate] sparked ... warnings that hedge fund managers and bankers would lead an exodus to friendlier tax regimes”

Arsene Wenger in The Sunday Times, April 25, 2009:
“With the new taxation system, ... , the domination of the Premier League will go, that is for sure”
A small literature on migration across tax jurisdictions *within countries* [Kirchgassner and Pommerehne (1996), Feldstein and Wrobel (1998)]

But no work on tax-induced migration *across countries*

Why this gap in the literature?

- Lack of micro data containing citizenship information
- Critical issues regarding how to identify causal effects on migration
Why Football?

1. **Salient policy issue:**
   A highly visible segment of the labor force; people care about the movements of footballers in and of itself

2. **Data availability:**
   Extensive data on the careers and mobility of football players can be gathered for many countries over long time periods

3. **Identification:**
   Many compelling sources of variation in tax policy and labor market regulation over time, within and between countries

4. **Upper bound:**
   Mobility costs are low for football players → upper bound on the migration response to taxation
Main Contributions and Findings

1. **Theoretical model** of taxation and migration allowing for rigid labor demand and sorting effects

2. **Reduced-form graphical evidence** showing clear migration effects of country-specific tax reforms

3. **Multinomial regressions** using quasi-experimental variation from many countries simultaneously
   
   a. **Migration overall**: the location elasticity with respect to the net-of-tax rate is positive and large, especially for foreign players
   
   b. **Ability sorting**: the location elasticity is extremely large at the top of the ability distribution and negative at the bottom
   
   c. **Displacement**: cross-effect between foreign and domestic players is negative
1. Context and data
   - European football: institutional background
   - Football and tax data

2. Graphical (non-parametric) evidence
   - Cross-country evidence: Bosman Ruling
   - Within-country evidence: Spanish “Beckham Law” & Danish “Researchers’ Tax Scheme”

3. Theoretical framework
   - Migration effects under flexible vs. rigid labor demand

4. Multinominal regression analysis
   - Migration, ability sorting and displacement effects

5. Revenue-maximizing tax rates on high-income foreigners and policy implications
European Football: The Basics

- Football clubs are attached to a particular city and a local stadium.
- Each club has a squad of about 25-40 players.
- Within each country, there is a top national league including between 12 and 22 national clubs depending on country.
- On top of national leagues, there are two Europe-wide competitions gathering the best clubs from each country.
- Clubs and players sign contracts, which specify a duration (typically 2-4 years) and an annual salary.
Transfers and the Bosman Ruling

- Until 1995, the market for football players was heavily regulated:
  - **3-Player Rule**: no more than three foreign players could be aligned in any game in the UEFA club competitions
  - **Transfer-Fee Rule**: transfer fees applied to out-of-contract players

- **Bosman Ruling** by the European Court of Justice on Dec 15, 1995: No restrictions on the **free movement of labor** →
  - Elimination of the 3-Player Rule for EU players in EU clubs
  - Elimination of the Transfer-Fee Rule for EU players in EU clubs
Data on the universe of first-league football players and first-league clubs in 14 European countries since 1985:

- **Countries:** Austria, Belgium, Denmark, England, France, Germany, Greece, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland

- **Player information:** nationality, date of birth, club affiliation, performance stats, national team selection. Data also includes salary information for a subsample and subset of years

- **Club information:** position in national league in each year, results from all games played in international competitions

- Players cannot live far away from the hometown of their club → easy to track down the tax residence status of players
The appropriate tax rate for migration decisions is the ATR, but this is not observed for the full sample due to incomplete salary data.

Given the very high salaries of top football players, the ATR is closely approximated by the top MTR:
- The difference is less than 10% for two-thirds of the sample.
- The top MTR has the advantage of being easy to compute and exogenous.

Our strategy:
- Use top MTRs including the top income tax rate, uncapped payroll taxes, and value-added taxes (always accounting for special rules applying to immigrant workers and athletes).
- Robustness check: use ATRs based on imputed earnings (obtained from actual earnings observed for a subsample).
Sources of Identification

- **Bosman Ruling:**
  - Sudden liberalization of the European football market in Dec 1995 → expect top players to go from high-tax to low-tax countries
  - But inability to control for unobservable (time-varying) country characteristics that affect mobility patterns

- **Tax reforms with intra-country variation in top MTRs:**
  - A cohort-based tax reform in Greece (1993)
  → can fully control for country fixed effects varying over time
In-Migration of Foreign Players:

Elasticity = 0.00 (0.86)
In-Migration of Foreign Players:
After Bosman Ruling (1996-2008)

Fraction of foreigners

Top earnings tax rate on foreign players

Elasticity = 1.22 (0.45)

Fraction playing home vs. Top earnings tax rate on domestic players

Elasticity = 0.29 (0.08)
“Beckham Law” in Spain


- Imposes a **flat tax of 24%** in lieu of the regular progressive income tax with a top rate of 43% in 2008.

- Eligibility requires that the individual has **not been a Spanish tax resident** for the preceding **10 years**.

- **Synthetic control approach** (Abadie et al. 2010)
  - Compare Spain to a synthetic control country constructed to minimize the pre-reform distance between treatment and control in terms of the outcome variable and a football league quality index.
  - Synthetic control: largest weight on Italy; small positive weights on England, France and Portugal; zero weights on the rest.
Migration Effects of 2004 Beckham Law: Lower-Quality Foreign Players in Spain vs Synthetic Control

DD elasticity = 1.426 (0.88)
Migration Effects of 2004 Beckham Law: Eligible Foreign Players in Spain vs Synthetic Control

DD elasticity = 1.29 (0.219)

Share playing in the country

Top tax rate differential

Year


Spain Synthetic Spain Δ top tax rate
Migration Effects of 2004 Beckham Law: Non-Eligible Foreign Players in Spain vs Synthetic Control

Placebo elasticity = 0.575 (0.5)
“Researchers’ Tax Scheme” in Denmark

- Passed in 1992 and applying to foreign researchers & high-income foreigners in other professions moving to Denmark after Jun 1, 1991

- Imposes a flat tax of 30% (25% after 1995) in lieu of the regular progressive income tax with a top rate of above 60% for a maximum duration of 3 years

- Eligibility requires annual income above a cutoff of 103,000 Euros (2009 prices), or about the 99th percentile of the income distribution

- We again take a synthetic control approach, and in this case the synthetic control country consists mostly of Sweden with small weights on Norway, England, and Italy
Migration Effects of Danish Foreigner Tax Scheme: Top-Quality Foreign Players in Denmark vs Synthetic Control

Before reform

After reform
Before Bosman

After reform
After Bosman

DD elasticity = 3.013 (.779)

Year

Share of top-quality foreign players

Top tax rate differential
Migration Effects of Danish Foreigner Tax Scheme: Lower-Quality Foreign Players in Denmark vs Synthetic Control

![Graph showing the share of lower-quality foreign players and top tax rate differential over time. The DD elasticity is noted as $-0.697 (0.544)$.](image-url)
We have argued that the football market is characterized by low mobility costs and hence provides an upper bound on migration responses for the high-skilled labor market as a whole.

For the Danish scheme, this can be verified using full population administrative data from Kleven-Landais-Saez-Schultz (2011).

Empirical strategy:

- Identify migration responses using the income eligibility threshold by comparing the number of foreigners above the threshold to the number of foreigners between 80-99.5% of the threshold.

- Compare migration responses in “Sports & Entertainment” to migration responses in all other sectors.
Migration Effects of Danish Foreigner Tax Scheme: Sports & Entertainment

Number of foreign workers (basis 1=1990)

Before reform
After reform
Before Bosman
After Bosman


Control Treatment
Migration Effects of Danish Foreigner Tax Scheme: All Other Industries

Before reform
Before Bosman
After reform
After Bosman

Number of foreign workers (basis 1=1990)


Control
Treatment
Theoretical Framework

Supply side:

- N countries; a continuum of football players from each country; each player endowed with ability = a; salary in country n = \( w_{na} \)

- A player from country m playing in country n gets utility
  \[ u_{nma} = u(w_{na}(1-\tau_{nm})) + \mu_{nm} \quad \text{for all } n,m \]

- This player chooses country n iff
  \[ u_{nma} \geq u_{n'ma} \quad \text{for all } n' \]

- A joint distribution of \((a,\mu_{1m}, \ldots, \mu_{Nm})\) for each country m
  - supply of players \( p_{nma}(w_{na}(1-\tau_{nm})) \)
  - foreign players \( p_{nfa}(w_{na}(1-\tau_{nf})) \), domestic players \( p_{nda}(w_{na}(1-\tau_{nd})) \)
Theoretical Framework

Flexible demand side (standard model)

- Linear perfect substitution technology: \( w_{na} = a \)
- Concave perfect substitution technology: \( w_{na} = a \times w_n \)

Rigid demand side

- Football market in each country hires measure one of players [a continuum of clubs of measure one hires one player each]
- Positive club surplus \( s_n \); player salary \( w_{na} = a - s_n \)
- Rigid-demand equilibrium:
  \[
P_{nd}(s_n, 1-\tau_{nd}) + P_{nf}(s_n, 1-\tau_{nf}) = 1 \Rightarrow s_n = s_n(1-\tau_{nd}, 1-\tau_{nf})
  \]
Comparative Statics

Flexible-demand model (linear technology):
- At any ability level, the number of foreign players in country n is decreasing in $\tau_{nf}$ and unaffected by $\tau_{nd}$
- (similarly for domestic players)

Rigid-demand model:
- Number of foreign players in country n decreases with $\tau_{nf}$ at high abilities, increases with $\tau_{nf}$ at low abilities, and increases with $\tau_{nd}$ at all abilities
- Total number of foreign players in country n decreases with $\tau_{nf}$ and increases with $\tau_{nd}$
- (similarly for domestic players)
Multinomial Regression Analysis: Baseline Model without Sorting and Displacement Effects

Based on the model, player $i$ playing in country $n$ at time $t$ gets utility

$$u_{i,n,t} = \alpha \cdot \log((1-\tau_{i,n,t})w_{i,n,t}) + \mu_{i,n,t}$$

$$= \alpha \cdot \log(1-\tau_{i,n,t}) + \alpha \cdot \log(w_{i,n,t}) + \text{home}_{i,n} + \beta_n \cdot x_{i,t} + \gamma_n + \nu_{i,n,t}$$

How to control for unobserved wage variation?

- Linear perfect substitution technology: $w_{i,n,t} = a_{i,t}$
  $\rightarrow$ non-parametric controls for player ability

- Concave perfect substitution technology: $w_{i,n,t} = a_{i,t} \cdot w_{n,t}$
  $\rightarrow$ non-parametric ability controls + country*year fixed effect

- Robustness check: imperfect substitution technology
  $\rightarrow$ allow for country*year*ability fixed effect

(failure to control for unobserved wage variation $\rightarrow$ downward bias)
Measuring Player Ability

- Age, age-squared, and experience in the football market
- Dummy for selection into the national team of the home country
- Continuous quality index based on the club careers of players:
  1. For each club in country n in season t, compute club quality based on club ranking in national league and league ranking in Europe
  2. Assign to player i in season t, a value $V_{i,t}$ equal to the average quality of the clubs he has played for in prior seasons $t-T,...,t-1$
  3. Assign to each player his quantile position in the distribution of $V_{i,t}$
  4. Include dummies for being located in different quantiles of the V-distribution (quantiles 0-25, 25-50, 50-75, 75-95, 95-100)
Summary of Baseline Estimation Model

Our model can now be specified as

\[ u_{i,n,t} = \alpha \cdot \log((1-\tau_{i,n,t})w_{i,n,t}) + \mu_{i,n,t} \]

\[ = \alpha \cdot \log(1-\tau_{i,n,t}) + \alpha \cdot \log(w_{i,n,t}) + \text{home}_{i,n} + \beta_n \cdot x_{i,t} + \gamma_n + v_{i,n,t} \]

\[ = \alpha \cdot \log(1-\tau_{i,n,t}) + \delta_n \cdot A_{i,t} + \eta_{n,t} + \text{home}_{i,n} + \beta_n \cdot x_{i,t} + \gamma_n + v_{i,n,t} \]

Where we have

\( A_{i,t} \) = non-parametric controls for player ability

\( \eta_{n,t} \) = country*year fixed effect

Check also specifications with \( \eta_{n,t} \cdot A_{i,t} \) (instead of \( \delta_n \cdot A_{i,t} + \eta_{n,t} \))

Assume that \( v_{i,n,t} \) is type I extreme value distributed \( \rightarrow \) multinominal logit model can be estimated by maximum likelihood
## Multinomial Logit Estimates (1996-2008):
### Specifications with Top MTRs

<table>
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<tr>
<td>$\log(1 - MTR)$</td>
<td>1.323***</td>
<td>0.729***</td>
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<td>(0.132)</td>
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<td>$\varepsilon_{domestic}$</td>
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<td>.074</td>
<td>.121</td>
<td>.070</td>
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<td></td>
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<td>(.012)</td>
<td>(.018)</td>
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<td>$\varepsilon_{foreigner}$</td>
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<td>(.072)</td>
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<td>(.154)</td>
<td>(.130)</td>
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<td>YES</td>
<td>YES</td>
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<td><strong>dummies interacted with country F-E</strong></td>
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<td>YES</td>
<td>YES</td>
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<td><strong>Year x country F-E</strong></td>
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<td>YES</td>
<td>YES</td>
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<tr>
<td><strong>Age, age squared, exp., quality</strong></td>
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<td>NO</td>
<td>NO</td>
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<tr>
<td><strong>interacted with year x country F-E</strong></td>
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<td>NO</td>
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<td><strong>Observations</strong></td>
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Multinomial Logit Estimates (1996-2008): Specifications with Imputed ATRs

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<td><strong>log(1 - ATR)</strong></td>
<td>1.599***</td>
<td>0.931***</td>
<td>1.721***</td>
<td>1.123***</td>
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<td>(0.079)</td>
<td>(0.138)</td>
<td>(0.197)</td>
<td>(0.161)</td>
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<td><strong>Implied elasticities</strong></td>
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<tr>
<td>$\varepsilon_{\text{domestic}}$</td>
<td>0.184</td>
<td>0.093</td>
<td>0.184</td>
<td>0.122</td>
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<td>(0.009)</td>
<td>(0.014)</td>
<td>(0.021)</td>
<td>(0.017)</td>
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<td>$\varepsilon_{\text{foreigner}}$</td>
<td>1.582</td>
<td>0.900</td>
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<td>(0.078)</td>
<td>(0.133)</td>
<td>(0.190)</td>
<td>(0.157)</td>
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<tr>
<td><strong>Country F-E</strong></td>
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<td>YES</td>
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<tr>
<td><strong>Age, age squared, exp., and quality dummies interacted with country F-E</strong></td>
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<td>YES</td>
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<tr>
<td><strong>Year x country F-E</strong></td>
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<tr>
<td><strong>Age, age squared, exp., quality interacted with year x country F-E</strong></td>
<td>NO</td>
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<tr>
<td><strong>Observations</strong></td>
<td>55225</td>
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Rigid-Demand Model: Ability Sorting and Displacement Effects

The supply side of the model is unchanged

Rigid-demand constraint $\Rightarrow$ clubs extract positive surplus $s_n$ that vary with tax rates $\Rightarrow$ players salaries $a - s_n$ vary with tax rates $\Rightarrow$ ability sorting and displacement

**Empirical strategy:**

- Consider specifications with **no country-year fixed effects** (as this would absorb the wage variation driving the effects of interest)

- Test two hypotheses:
  
  1. **Ability sorting:** allow the effect of $\log(1-\tau)$ to vary by ability, and test if the effect is negative at low abilities and positive at high abilities
  
  2. **Displacement:** for domestic (foreign) players, include $\log(1-\tau)$ on foreign (domestic) players, and test if the cross effect is negative
### Rigid-Demand Model Estimates: Ability Sorting, Displacement, and Second Leagues

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<tr>
<td><strong>A. Top leagues (1999-2008)</strong></td>
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<tr>
<td>$\log(1 - \tau)$</td>
<td>1.138***</td>
<td></td>
<td></td>
<td>0.995***</td>
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<tr>
<td></td>
<td>(0.118)</td>
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<td>(0.128)</td>
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<tr>
<td>$\log(1 - \tau) \times \text{low}$</td>
<td>-0.512***</td>
<td>-0.529***</td>
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<td>-0.391*</td>
<td>-0.448**</td>
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<tr>
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<td>(0.149)</td>
<td>(0.145)</td>
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<td>$\log(1 - \tau) \times \text{top}$</td>
<td>1.409***</td>
<td>1.301***</td>
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<td>1.494***</td>
<td>1.409***</td>
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<td></td>
<td>(0.136)</td>
<td>(0.132)</td>
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<td>(0.136)</td>
<td>(0.133)</td>
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<tr>
<td>$\log(1 - \tau^f) \times \text{domestic}$</td>
<td></td>
<td></td>
<td>-0.618***</td>
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<td>-0.635***</td>
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<td>(0.119)</td>
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<td>(0.134)</td>
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<td>$\log(1 - \tau^d) \times \text{foreign}$</td>
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<td>(0.178)</td>
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<td>(0.192)</td>
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Estimation of Revenue-Maximizing Tax Rates (Laffer Rates)

Assume **uncoordinated tax setting**. For each country \( n \), consider both a uniform rate \( \tau_n \) and selective rates \((\tau_{nd}, \tau_{nf})\)

- **Flexible-demand model:**
  - Uniform Laffer rate between 71-89% in all countries

- **Rigid-demand model:**
  - Uniform Laffer rate between 84-98% in all countries
  - Foreigner Laffer rate \(<\) uniform Laffer rate in most countries
    - \(\rightarrow\) special tax schemes to foreigners optimal?

**Caveats and Discussion:**
- Coordination: special tax schemes to foreigners never optimal
- No coordination: productivity spillovers and public good aspects strengthens the normative case for preferential rates to foreign players
Conclusions and Future Work

- First compelling evidence of a link between taxation and migration:
  a. Overall location elasticity is positive and large
  b. Elasticity is very large at the top, negative at the bottom [ability sorting]
  c. Cross-tax elasticity btw foreigners and locals is negative [displacement]

- Football players are relatively mobile ➔ upper bound on the effects for the labor market as a whole

- Ongoing work broadens the analysis to the entire labor market
  [Kleven-Landais-Saez-Schultz (2011)]:
    - Focuses on the Danish Foreigner Tax Scheme
    - Administrative data on the universe of domestic and foreign residents in Denmark over a long time period