
**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”

Existing Evidence is Extremely Scarce

- 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 most 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. External Validity:

Mobility costs are low for football players → upper bound on the location response to taxation

Contributions and Findings

First compelling evidence of the impact of taxation on migration:

- Reduced-form graphical evidence showing clear migration effects of country-specific tax reforms
- A theoretical model of taxation and migration, which is structurally estimated:
 - a. Overall location elasticity with respect to the net-of-tax rate is positive and large [**migration effect**]
 - b. Location elasticity is extremely large at the top of the ability distribution, but negative at the bottom [**ability sorting effect**]
 - c. Cross-effect between foreign and domestic players is negative [**displacement effect**]
- Estimation of Laffer rates and policy implications

Outline of Talk

1. Background and data
 - European football: institutional background
 - Data
2. Reduced-form graphical evidence
 - Bosman ruling
 - Spanish “Beckham Law”
 - Danish “Researchers’ Tax Scheme”
3. Theoretical model of taxation and migration
4. Structural estimation
5. Laffer rates 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 2-5 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: Universe of Top Football Players

- Data on the universe of first-league football players and the performance of first-league clubs in 14 EU countries since 1980:
 - **Countries:** Austria, Belgium, Denmark, England, France, Germany, Greece, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland
 - **Player information:** nationality, date of birth, club affiliation, transfer type and date, position in team, #games played, #goals scored, national team selection
 - **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

Data on Top Income Tax Rates

- Salaries of top football players are very high compared to the highest bracket threshold of progressive income tax schedules, e.g.
 - Average annual earnings in the French *Ligue 1* in 2008 = €564,000
 - Threshold of top income tax bracket = €69,505

→ top MTR is a good proxy for the ATR for this population

- We have collected top MTRs by combining
 - Top income tax rate
 - Uncapped payroll tax rate on employees and employers
 - Value-added tax rate

- Importantly, we account for special rules applying to immigrant workers and athletes

Sources of Identification

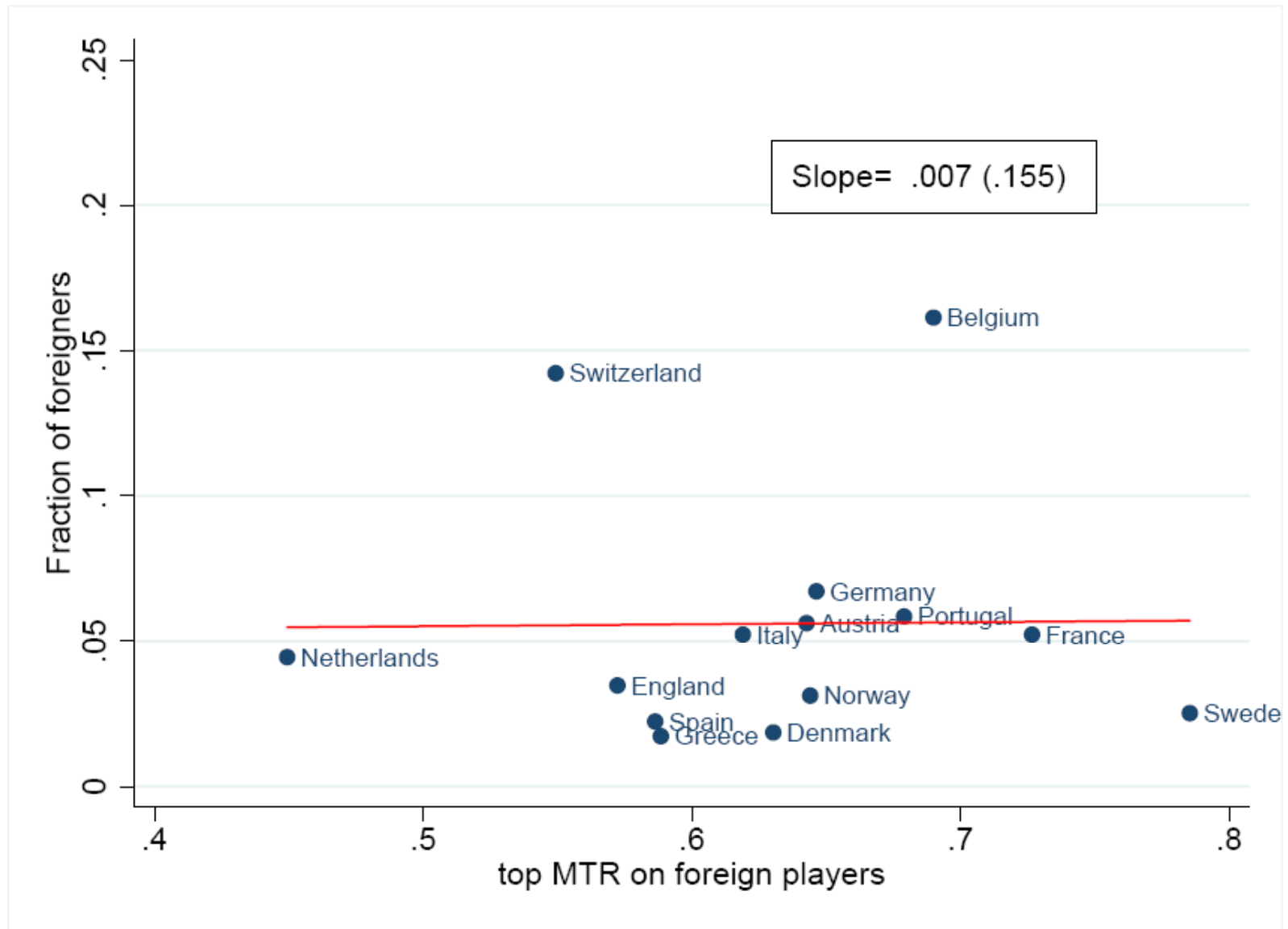
■ **Bosman Ruling:**

- 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

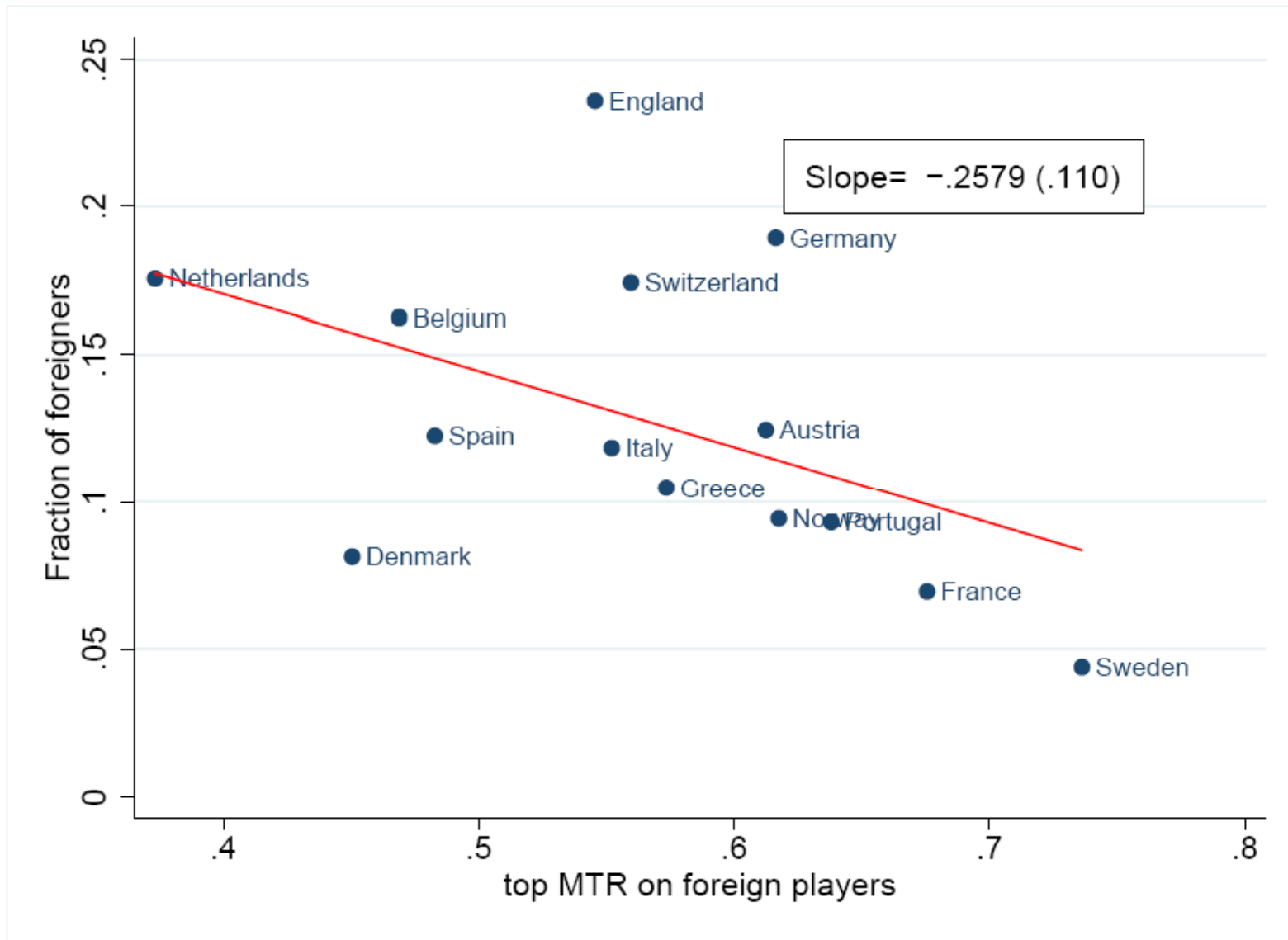
■ **Tax reforms with intra-country variation in top MTRs:**

- Special tax schemes to foreigners: Netherlands (1980s), Denmark (1992), Belgium (2002), Spain (2004), France (2008)
 - A cohort-based tax reform in Greece (1993)
- can fully control for country fixed effects varying over time

Fraction of Foreign Players and Top MTR on Foreign Players: Before the Bosman Ruling (1985-1995)



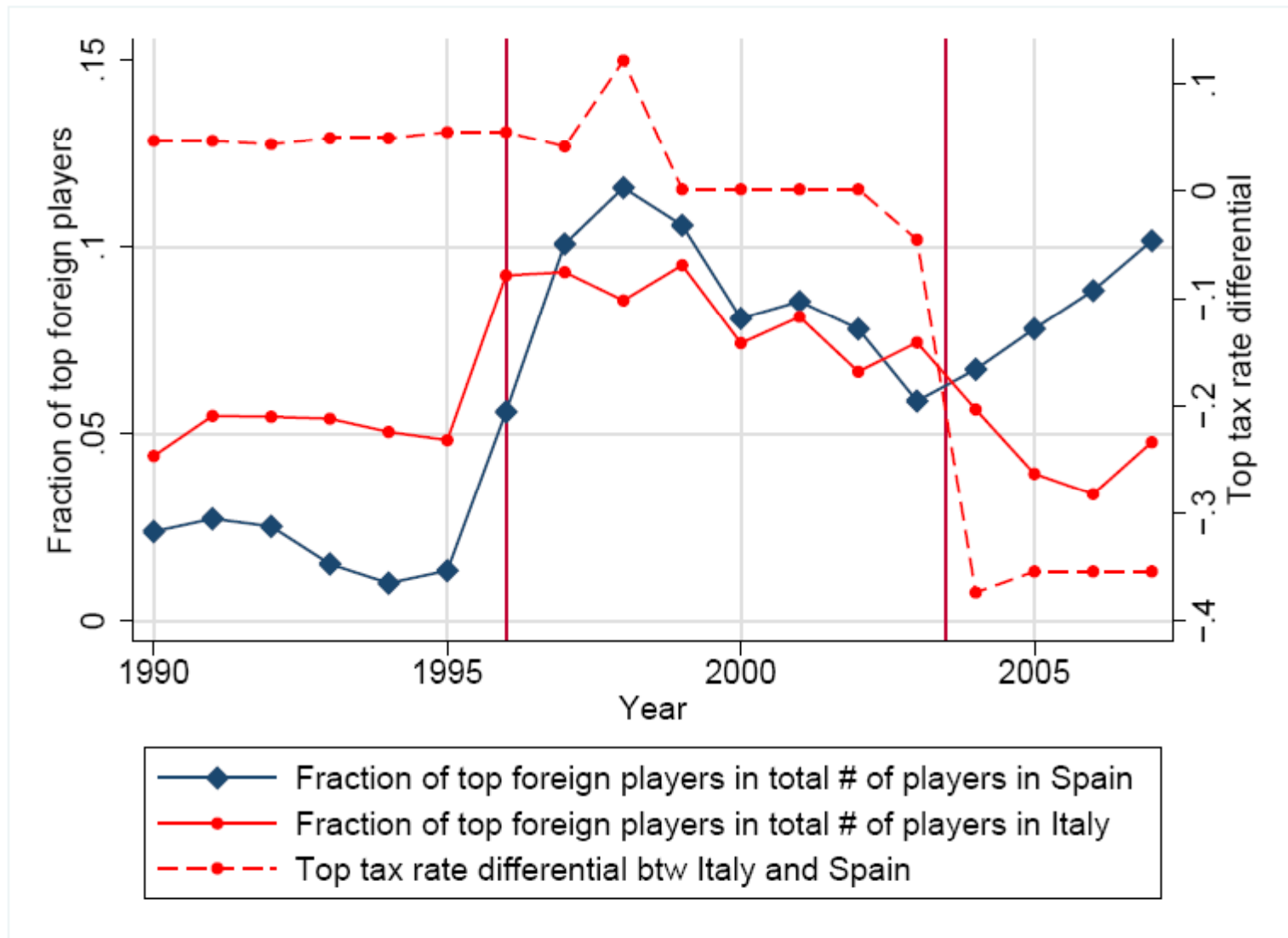
Fraction of Foreign Players and Top MTR on Foreign Players: After the Bosman Ruling (1996-2008)



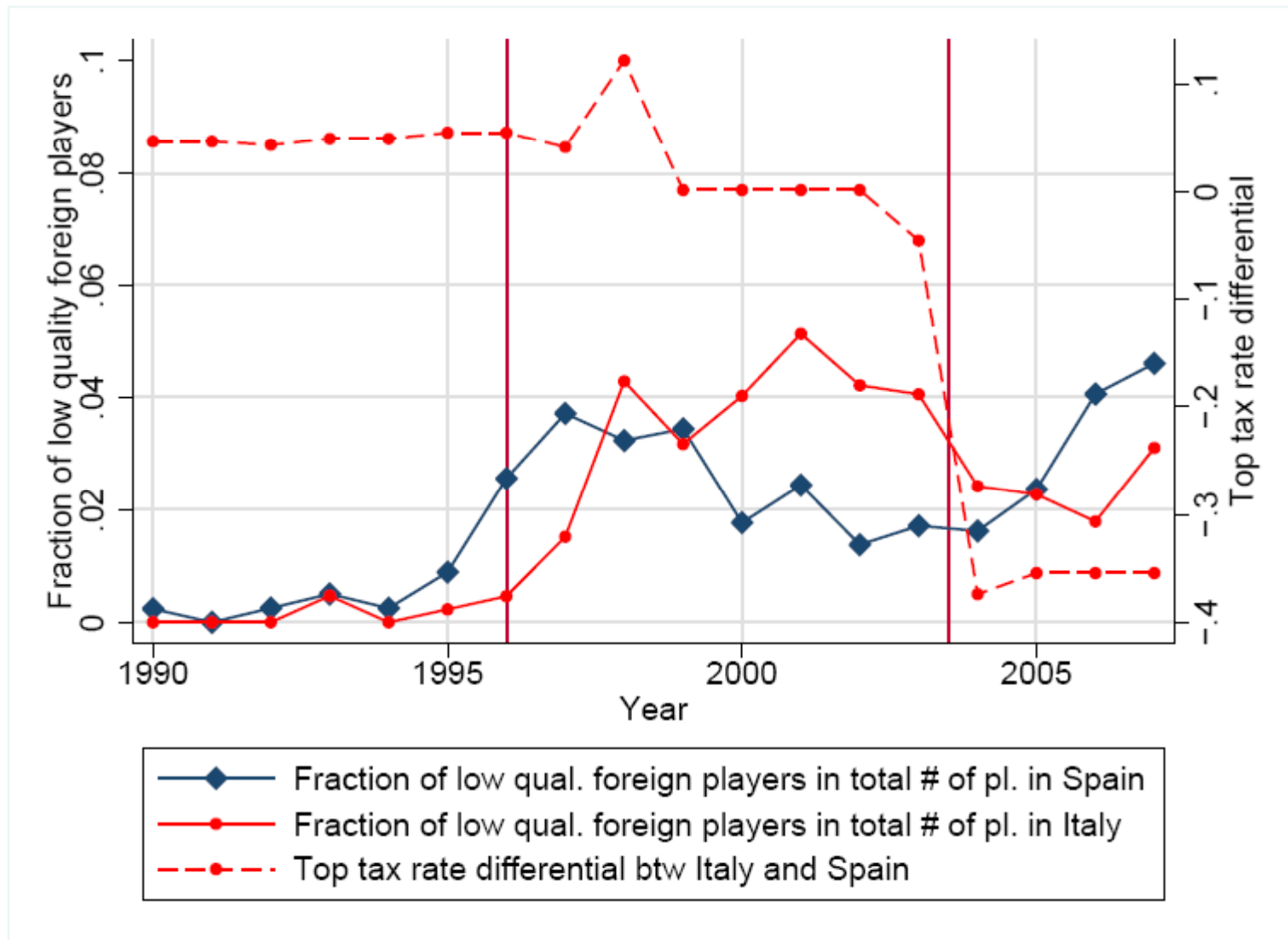
“Beckham Law” in Spain

- Passed in 2005; applicable to foreign workers moving to Spain after January 1, 2004
- Imposes a **flat tax of 24%** (in lieu of the regular progressive income tax with a top rate of 43% in 2008)
- The scheme can be used **for up to 6 years** after which the taxpayer becomes subject to the ordinary income tax
- Eligibility requires that the individual has **not been a tax resident in Spain for the preceding 10 years**

Migration Effects of Beckham Law: Top-Quality Foreign Football Players in Spain vs Italy

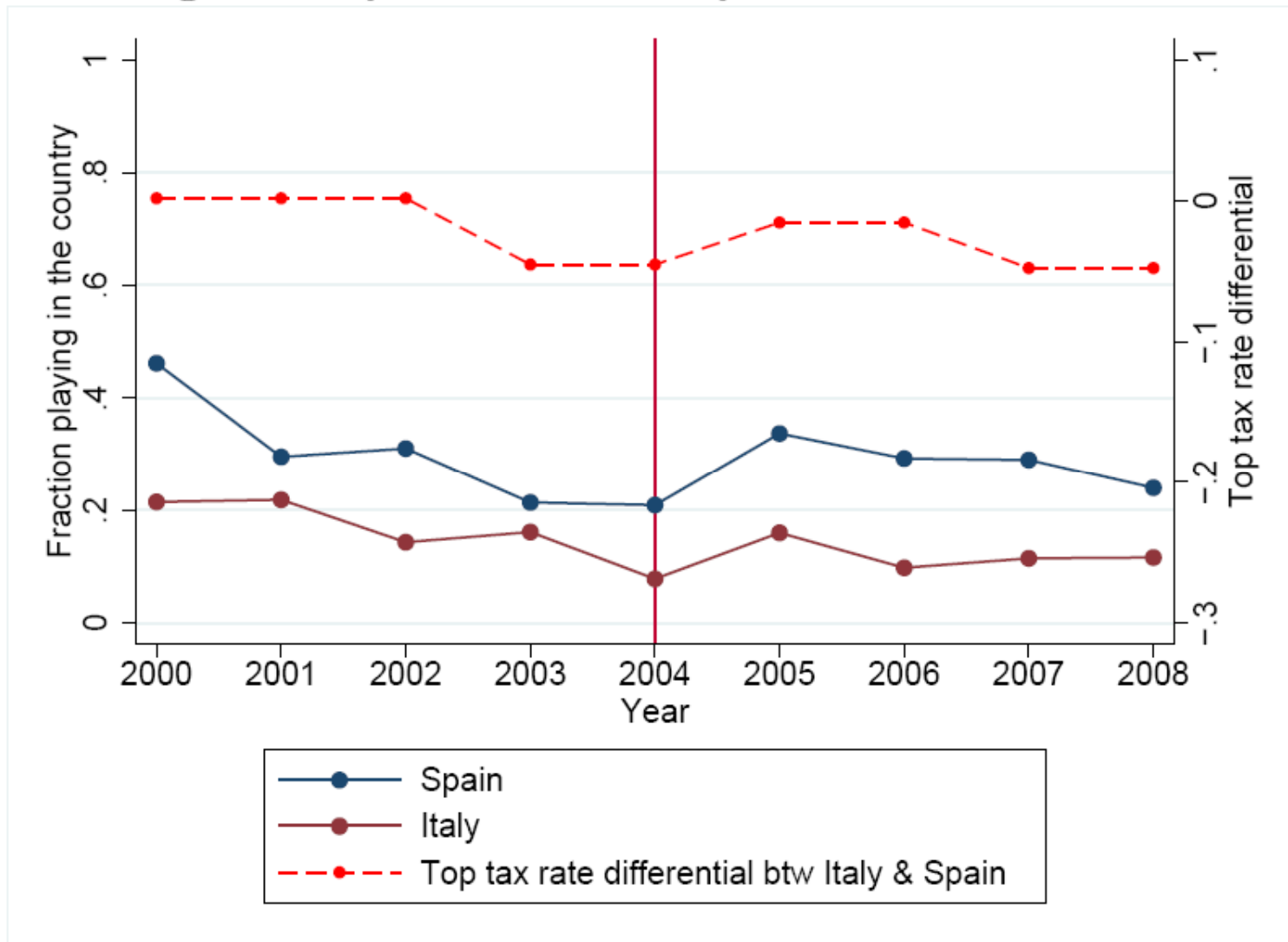


Migration Effects of Beckham Law: Lower-Quality Foreign Football Players in Spain vs Italy



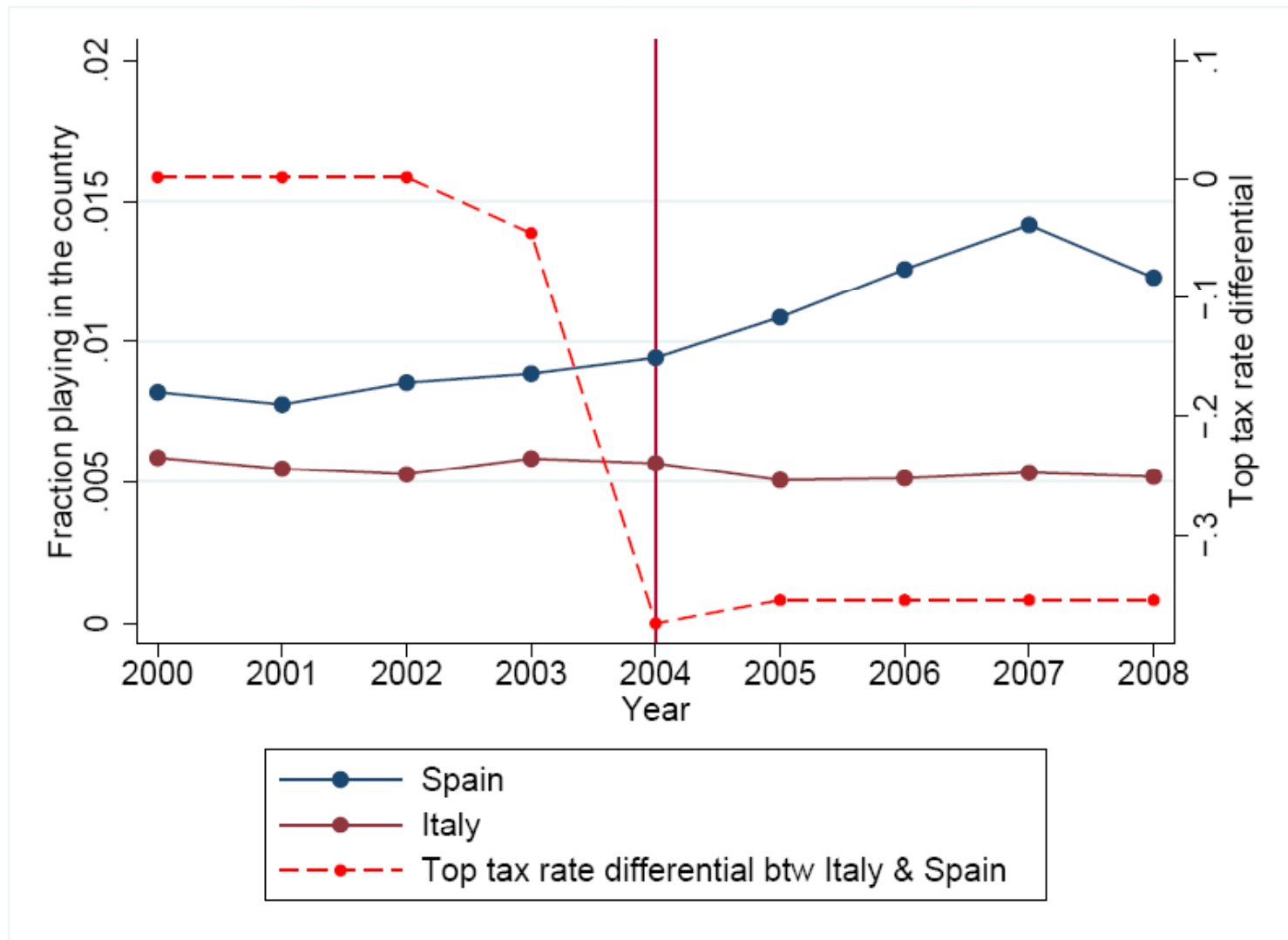
Migration Effects of Beckham Law: Foreign Football Players in Spain vs Italy

A: Not Eligible: Played in the Country Between 5 to 10 Years Before

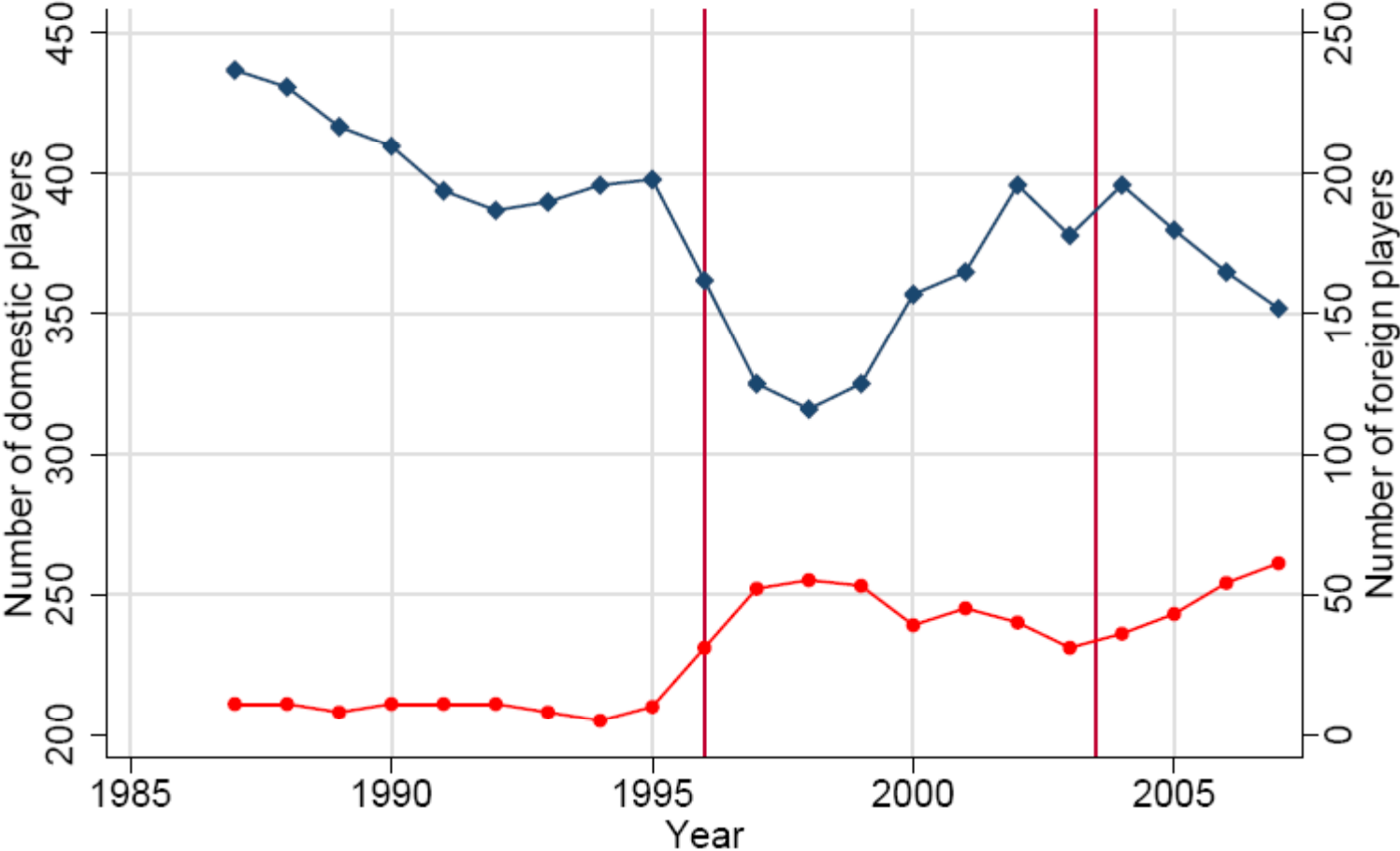


Migration Effects of Beckham Law: Foreign Football Players in Spain vs Italy

B: Eligible: Never Played in the Country Before



Displacement Effects of Beckham Law on Domestic Players

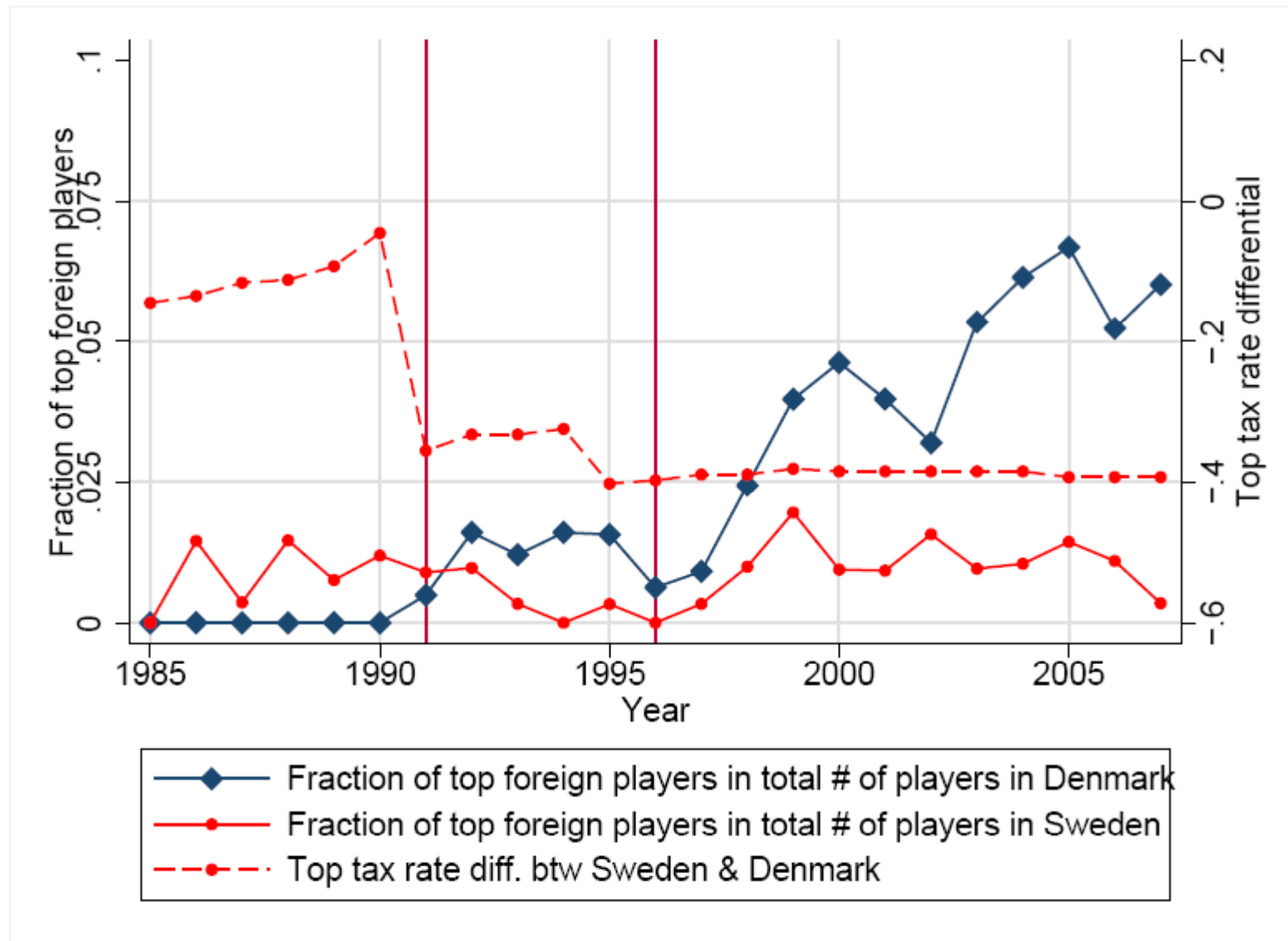


—◆— Number of domestic players in Spain
—●— Number of foreign players in Spain

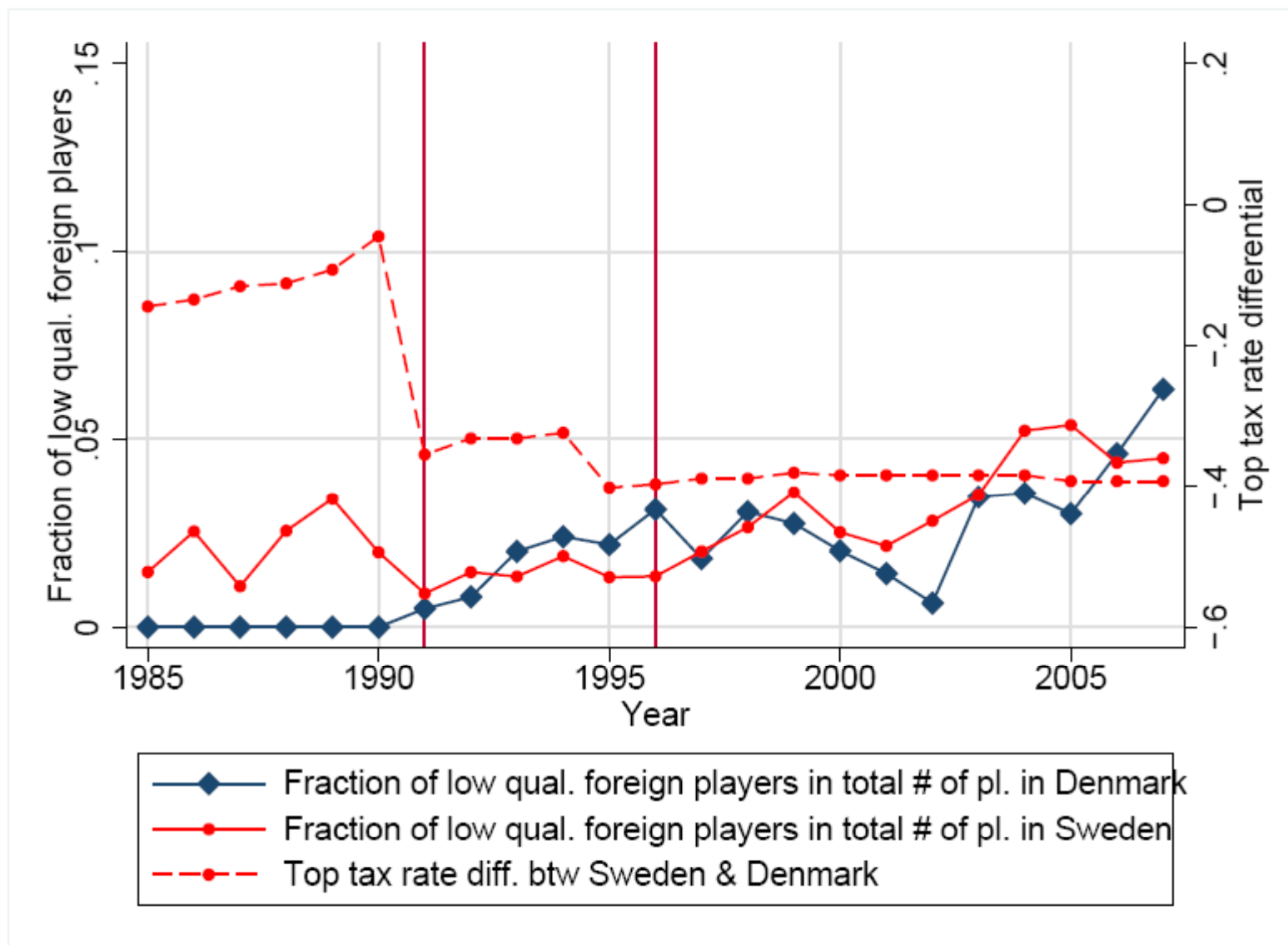
“Researchers’ Tax Scheme” in Denmark

- Passed in 1992; applicable to foreigners who sign contracts for work in Denmark after 1 June, 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%
- The scheme can be used **for up to 3 years** after which the taxpayer becomes subject to the ordinary income tax (until 2002, a claw-back applied after 7 years)
- **Eligibility for scheme:**
 1. Not tax liable in Denmark in the 3 years prior to going on scheme
 2. Annual income \geq €103,000 (2009 prices), except for researchers

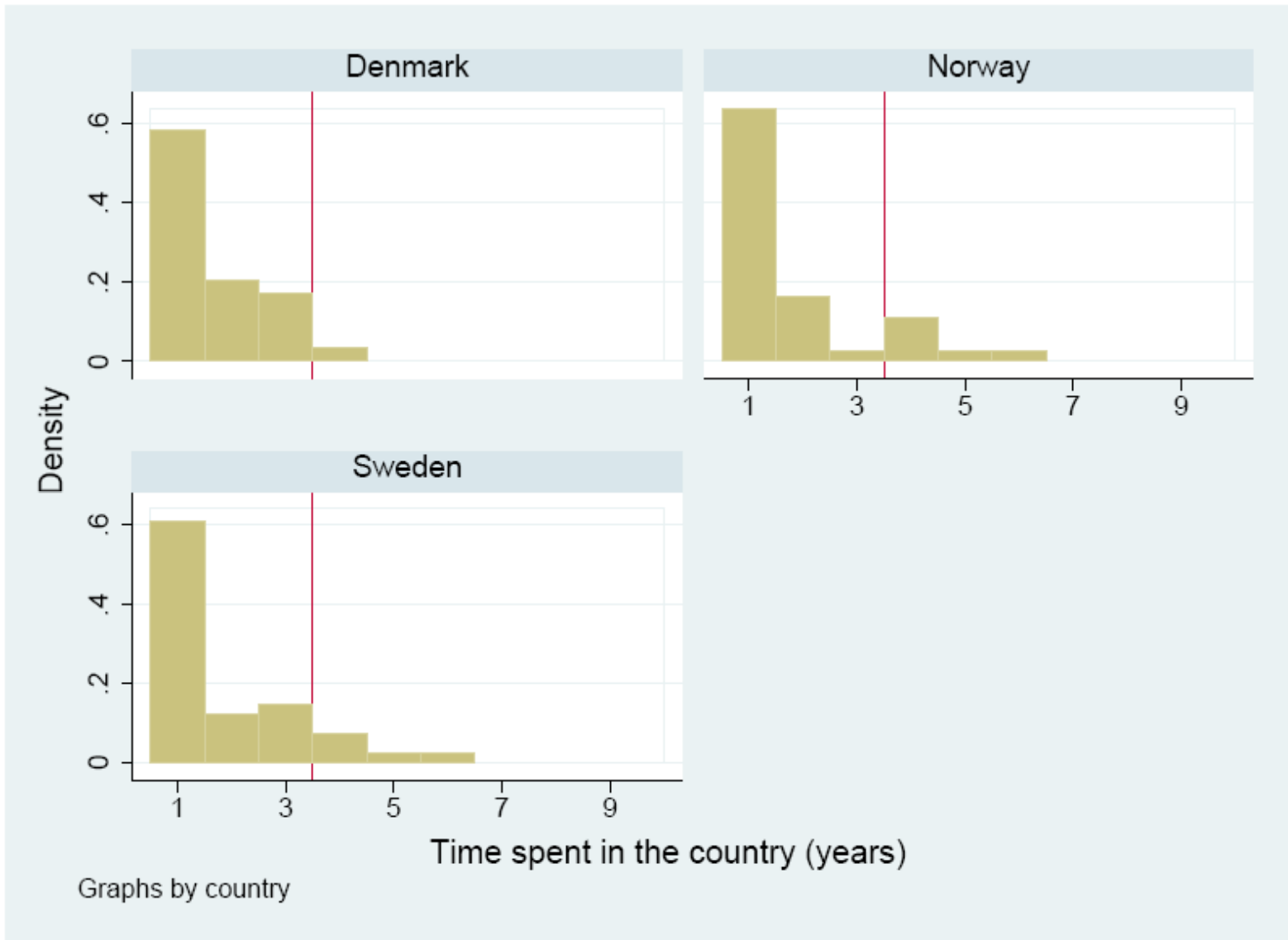
Migration Effects of Researchers' Tax Scheme: Top-Quality Foreign Football Players in Denmark vs Sweden



Migration Effects of Researchers' Tax Scheme: Lower-Quality Foreign Football Players in Denmark vs Sweden



Effect of Researchers' Tax Scheme on Duration of Stay: Distribution of Duration in Nordic Countries



A 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 $u_{nma} = u(w_{na}(1-\tau_{nm})) + \mu_{nm}$ for all n, m
- This player chooses country n iff $u_{nma} \geq u_{n'ma}$ for all n'
- A joint distribution of $(a, \mu_{1m}, \dots, \mu_{Nm})$ 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 $p_{nda}(w_{na}(1-\tau_{nd}))$

A 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 τ_{nf} and unaffected by τ_{nd}
- (similarly for domestic players)

Rigid-demand model:

- Number of foreign players in country n decreases with τ_{nf} at high abilities, increases with τ_{nf} at low abilities, and increases with τ_{nd} at all abilities
- Total number of foreign players in country n decreases with τ_{nf} and increases with τ_{nd}
- (similarly for domestic players)

Structural Estimation: Flexible-Demand Model

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

$$\begin{aligned}u_{i,n,t} &= \alpha \cdot \log(w_{i,n,t}(1-\tau_{i,n,t})) + \mu_{i,n,t} \\ &= \alpha \cdot \log(w_{i,n,t}(1-\tau_{i,n,t})) + \text{home}_{i,n} + \beta_n \cdot x_{i,t} + \gamma_n + v_{i,n,t}\end{aligned}$$

How to control for unobserved wage variation?

- Linear perfect substitution technology: $w_{i,n,t} = a_{i,t}$
→ non-parametric controls for player ability
- Concave perfect substitution technology: $w_{i,n,t} = a_{i,t} \times w_{n,t}$
→ non-parametric ability controls + country*year fixed effect
- Robustness check: imperfect substitution technology
→ allow for country*year*ability fixed effect

(failure to control for unobserved wage variation → downward bias)

Measuring Player Ability

- Age, age-squared, and experience in the football market
- Selection for the national team of the home country (dummy “top”)
- 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 each player in season t , a value V_{it} equal to the average quality of the clubs he has played for in prior seasons $t-T, \dots, t-1$
 3. Assign to each player his quantile position in the distribution of V_{it}
 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 Estimation Model

Our model can now be specified as

$$\begin{aligned}u_{i,n,t} &= \alpha \cdot \log(w_{i,n,t}(1-\tau_{i,n,t})) + \mu_{i,n,t} \\ &= \alpha \cdot \log(w_{i,n,t}(1-\tau_{i,n,t})) + \text{home}_{i,n} + \beta_n \cdot x_{i,t} + \gamma_n + v_{i,n,t} \\ &= \alpha \cdot \log(1-\tau_{i,n,t}) + \text{home}_{i,n} + \beta_n \cdot x_{i,t} + \gamma_n + \delta_n \cdot A_{i,t} + \eta_{n,t} + v_{i,n,t}\end{aligned}$$

$A_{i,t}$ = 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 mixed logit model that can be estimated by maximum likelihood

Baseline Model Estimates

Table 1. Multinomial Logit Estimates (1996-2008)

	(1)	(2)	(3)
log(1- τ)	1.209 ^{***} (0.069)	0.356 ^{***} (0.108)	0.395 ^{***} (0.152)
home	4.630 ^{***} (0.027)	4.875 ^{***} (0.032)	4.842 ^{***} (0.034)
Country F-E	NO	YES	YES
Country F-E * ability	NO	YES	YES
Country * year F-E	NO	NO	YES
Observations	61806	61806	61806

Baseline Model Estimates

Table 2. Robustness Checks

	Baseline	Alternative ability index	Varying wage distribution	Dynamics
log(1- τ)	0.395 ^{***} (0.152)	0.302 ^{***} (0.147)	0.438 ^{***} (0.151)	0.352 ^{***} (0.140)
home	4.842 ^{***} (0.034)	4.888 ^{***} (0.029)	4.904 ^{***} (0.034)	2.912 ^{***} (0.028)
country _{t-1}				3.110 ^{***} (0.032)
Country F-E	YES	YES	YES	YES
Country F-E * ability	YES	YES	YES	YES
Country * year F-E	YES	YES	YES	YES
Country * year F-E * ability	NO	NO	YES	YES

Rigid-Demand Model Estimation

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

Table 3. Ability Sorting and Displacement

	Sorting	Sorting & Displacement
$\log(1-\tau) * \text{ability}_{0-25}$	-0.24 (0.13)	-0.33 ^{**} (0.13)
$\log(1-\tau) * \text{ability}_{25-50}$	-0.61 ^{***} (0.16)	-0.72 ^{***} (0.16)
$\log(1-\tau) * \text{ability}_{50-75}$	0.45 ^{***} (0.17)	0.33 [*] (0.17)
$\log(1-\tau) * \text{ability}_{75-95}$	1.91 ^{***} (0.16)	1.85 ^{***} (0.16)
$\log(1-\tau) * \text{ability}_{95-100}$	2.28 ^{***} (0.34)	2.23 ^{***} (0.33)
$\log(1-\tau_f) * \text{dom}$		-0.96 ^{***} (0.13)
$\log(1-\tau_d) * \text{for}$		-0.14 (0.17)
Country F-E * ability	YES	YES

Estimation of Revenue-Maximizing Tax Rates (Laffer Rates)

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

■ Flexible-demand model:

- Uniform Laffer rate = 75-80% across all countries

■ Rigid-demand model:

- Uniform Laffer rate = 85-99% across most countries
- Foreigner Laffer rate < uniform Laffer rate in most countries, and by a lot in the top leagues → 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 likely to be relatively mobile → upper bound on the effects for the labor market as a whole

- Future work will broaden the analysis to the entire labor market [Kleven-Landais-Saez-Schultz (in progress)]:
 - Zoom in on the “Researchers’ Tax Scheme” to foreigners in Denmark
 - Administrative data on the universe of domestic and foreign residents in Denmark over a long time period