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

Henrik Kleven (London School of Economics)

Camille Landais (Stanford University)

Emmanuel Saez (UC Berkeley)

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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 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

Presentation Outline

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. Multinomial 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

European Football Data

- 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

Tax Rate Data

- 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:**

  - 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

In-Migration of Foreign Players:
**Before Bosman Ruling (1985-1995)**

Elasticity= .00 (.86)
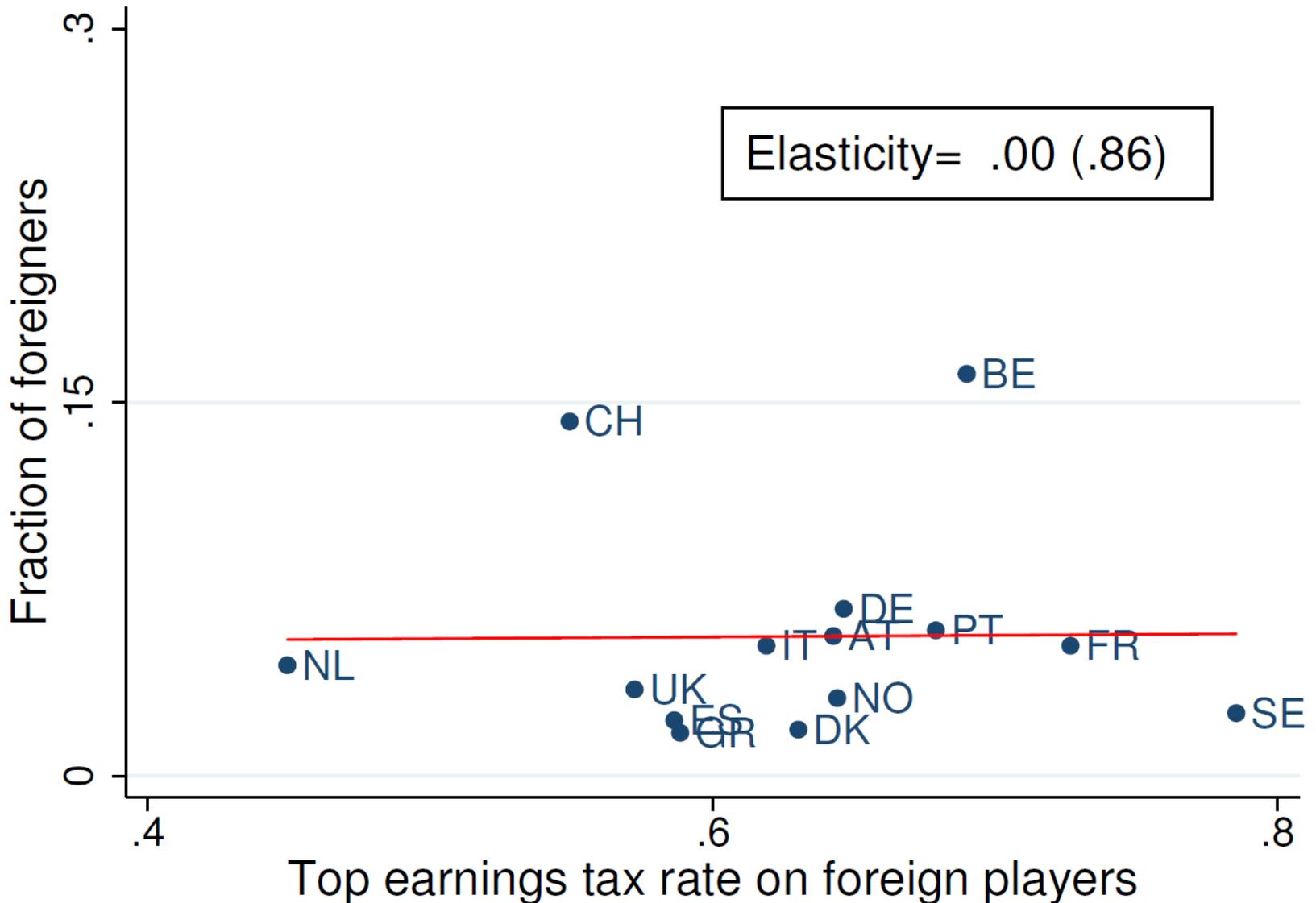
In-Migration of Foreign Players:
After Bosman Ruling (1996-2008)

Elasticity= 1.22 (.45)

Scatter plot of Fraction of foreigners (y-axis, 0 to .3) versus Top earnings tax rate on foreign players (x-axis, .4 to .8). Data points labeled: UK, DE, CH, NL, BE, ES, IT, AT, GR, NO, PT, DK, FR, SE. Red downward-sloping fitted line.
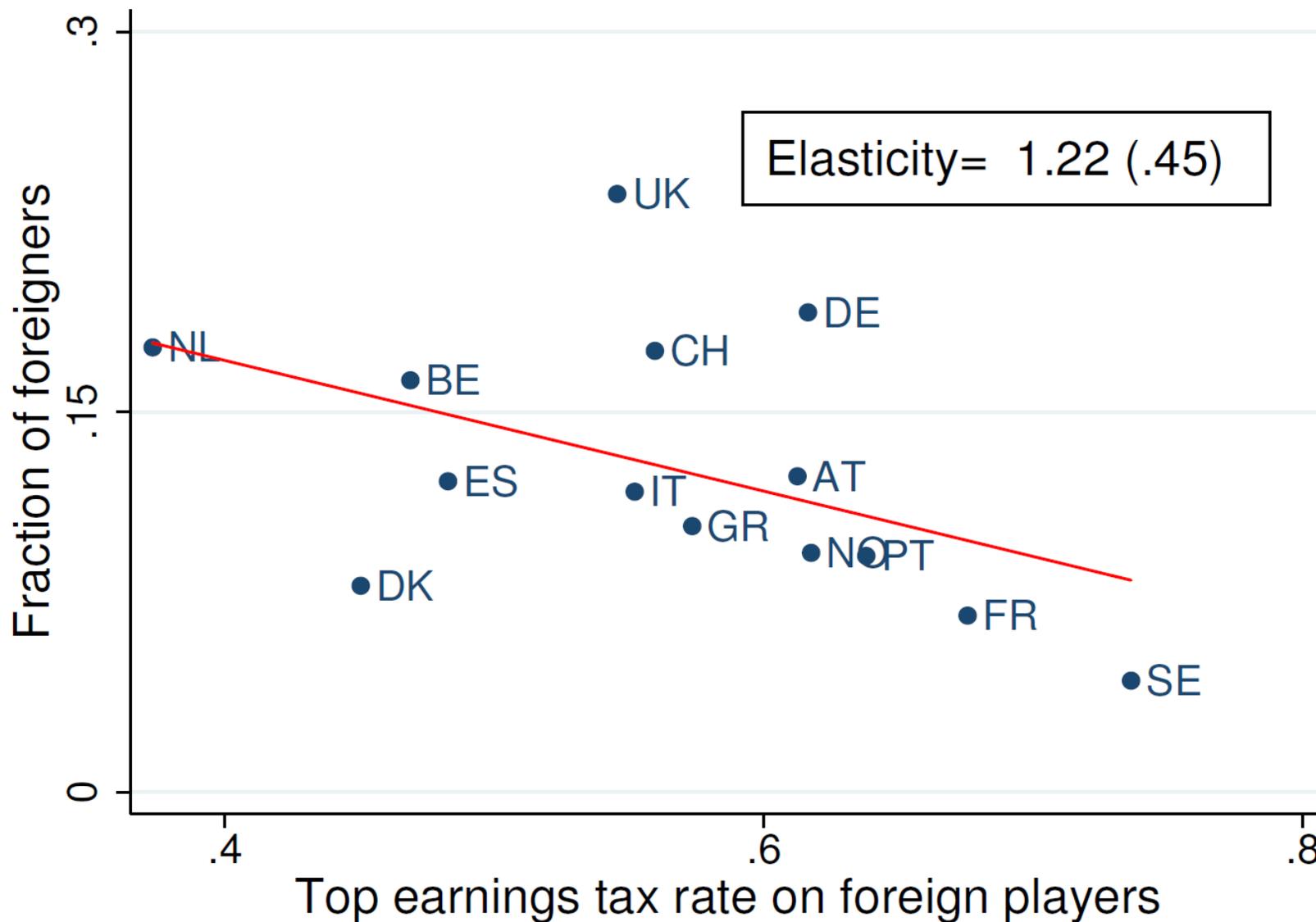
Out-Migration of Domestic Players:
Before Bosman Ruling (1985-1995)

Elasticity= .09 (.04)
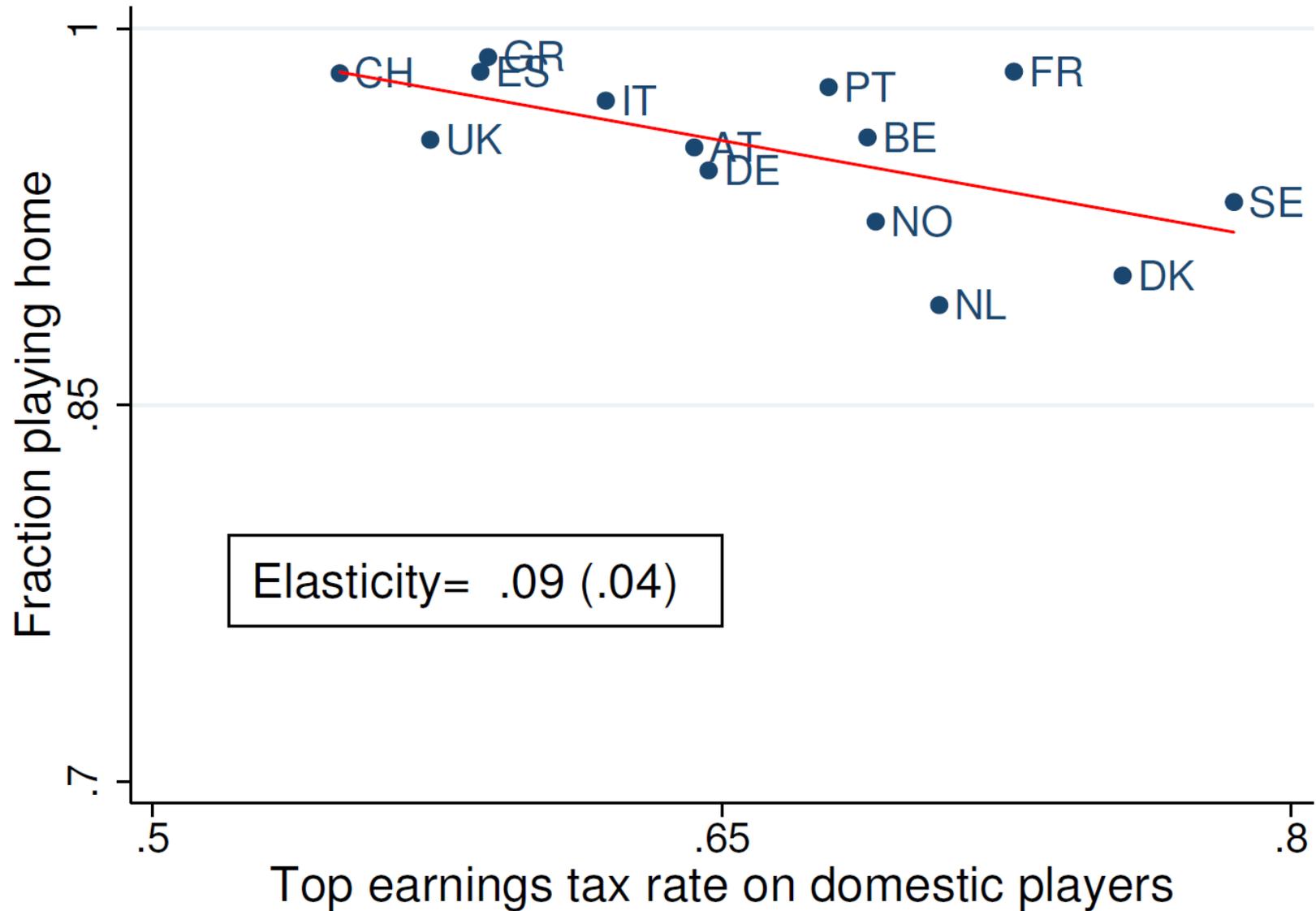
**Out-Migration of Domestic Players:
After Bosman Ruling (1996-2008)**

Fraction playing home

Elasticity= .29 (.08)

Top earnings tax rate on domestic players
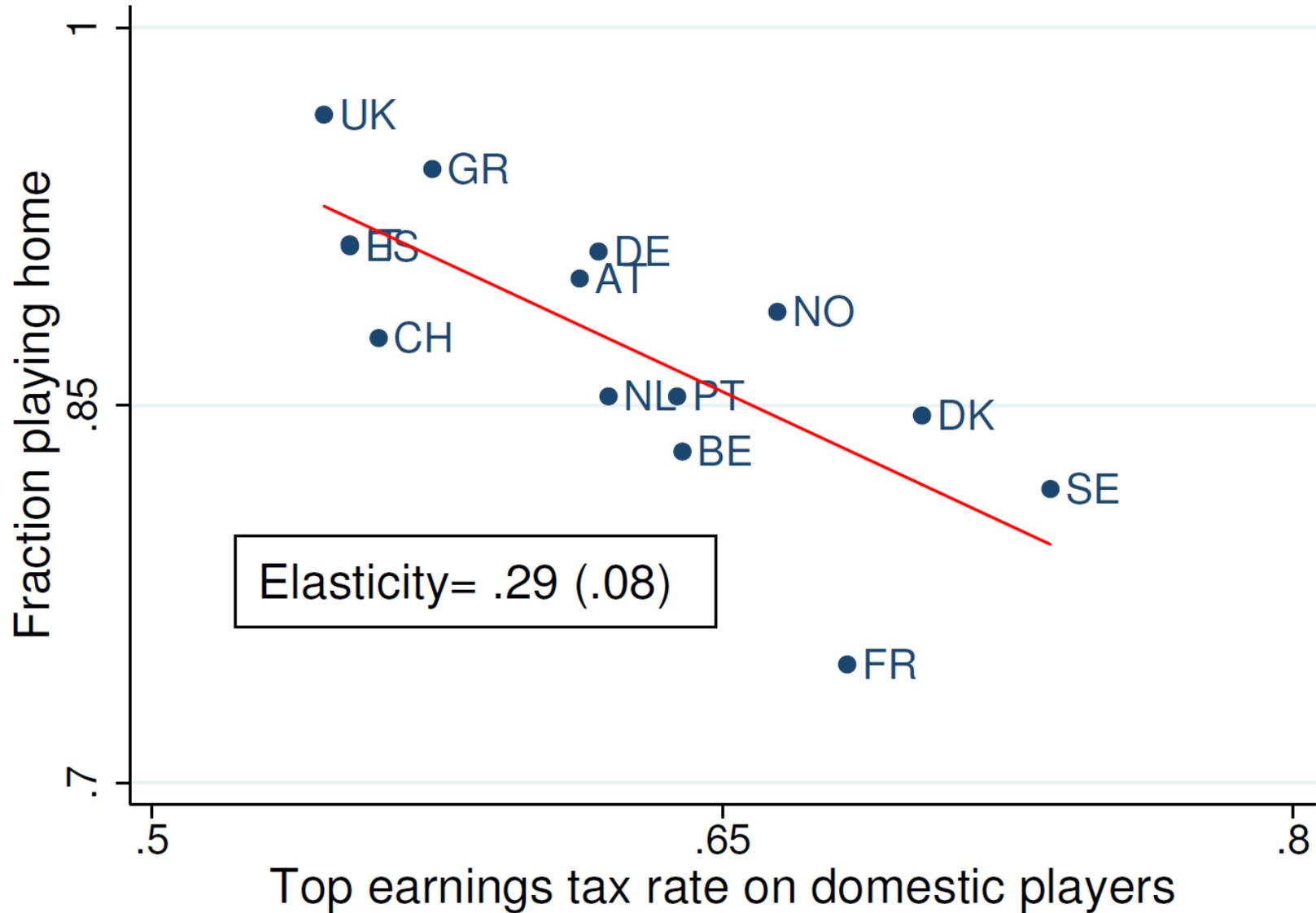
"Beckham Law" in Spain

- Passed in 2005 and applying to all foreign workers moving to Spain after Jan 1, 2004. Anticipation of scheme from the 2004-05 season.

- 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:
Top-Quality Foreign Players in Spain vs Synthetic Control

DD elasticity= 1.489 (.34)
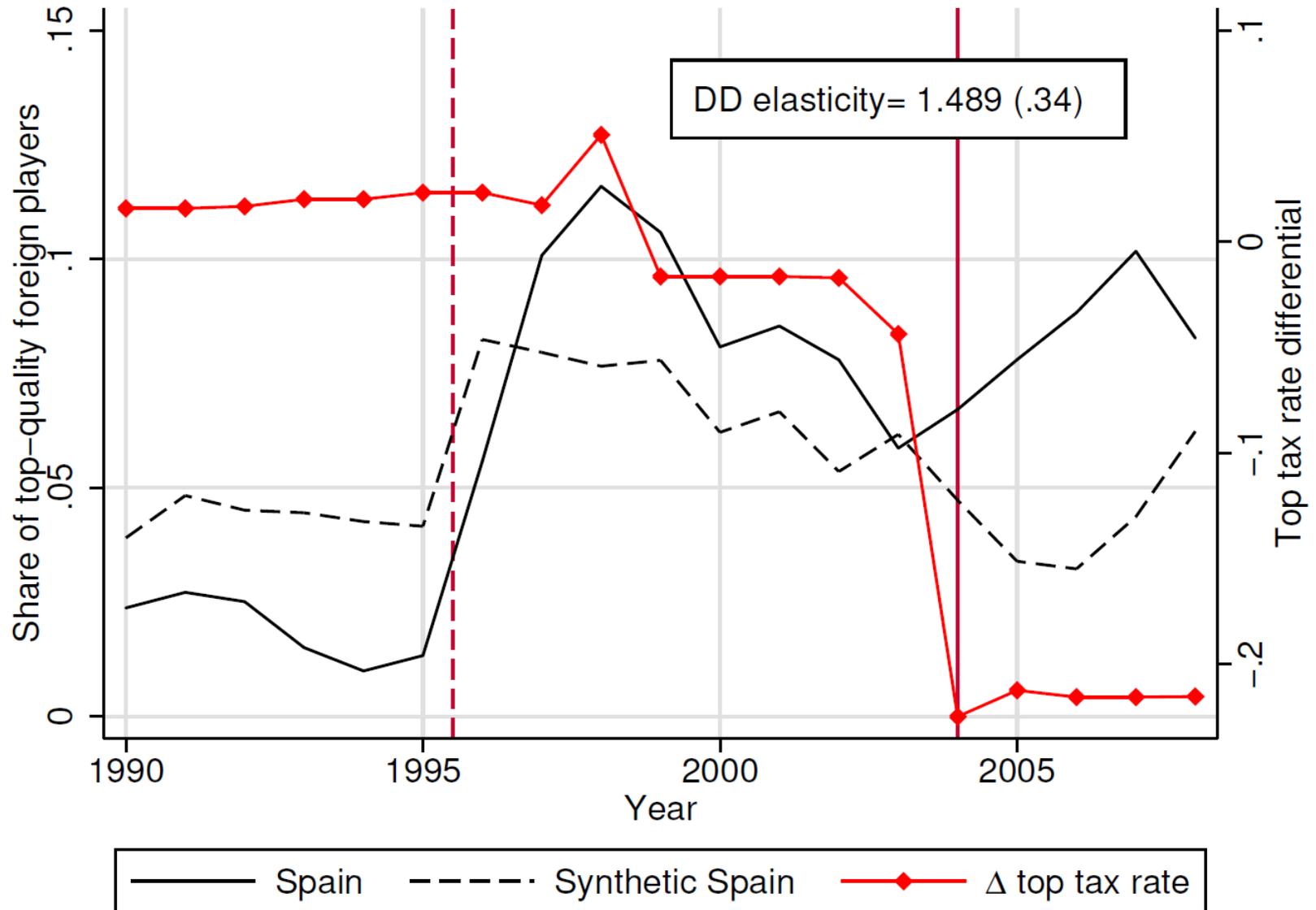
Migration Effects of 2004 Beckham Law:
Lower-Quality Foreign Players in Spain vs Synthetic Control

DD elasticity= 1.426 (.88)
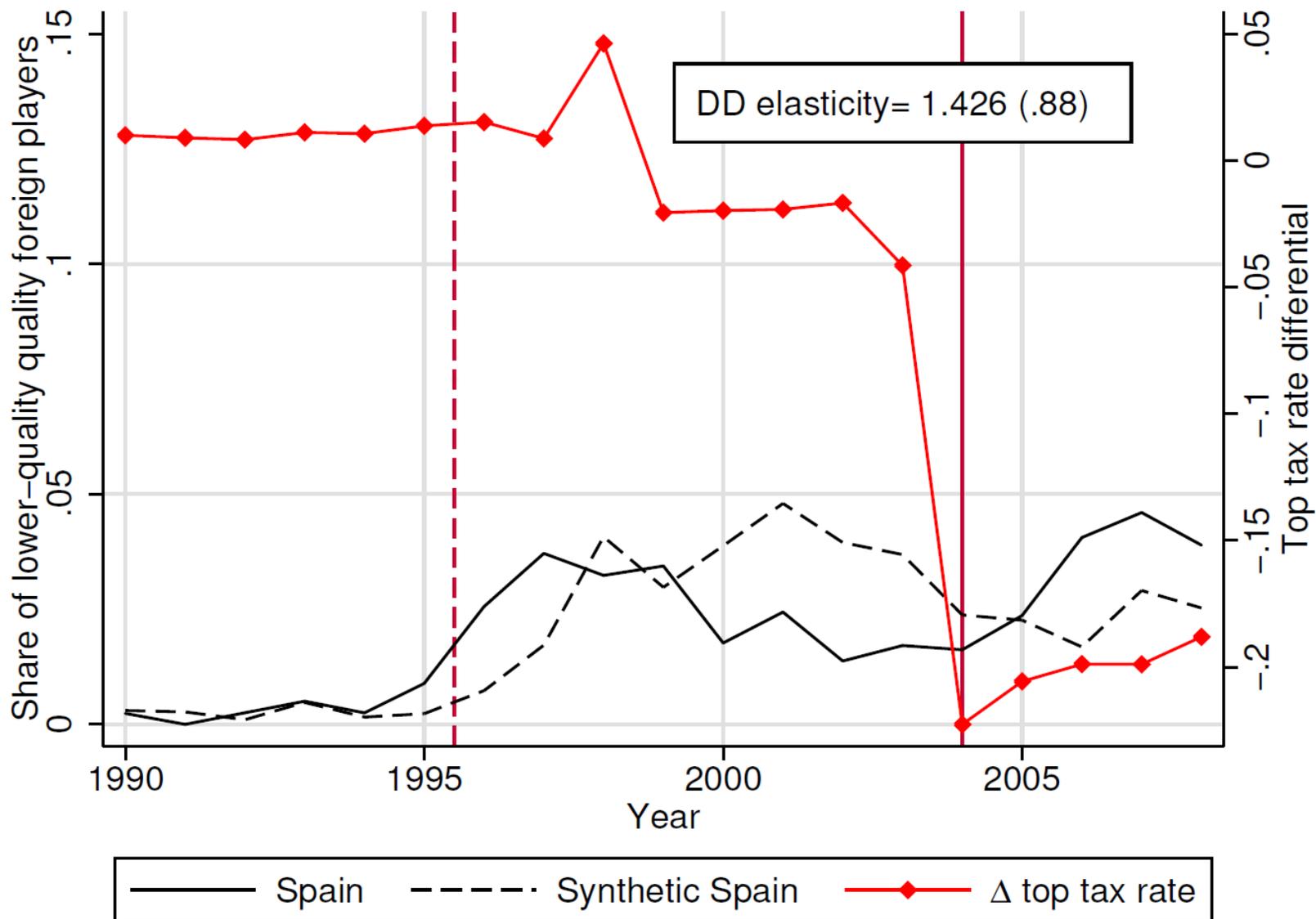
Migration Effects of 2004 Beckham Law:
Eligible Foreign Players in Spain vs Synthetic Control

DD elasticity= 1.29 (.219)
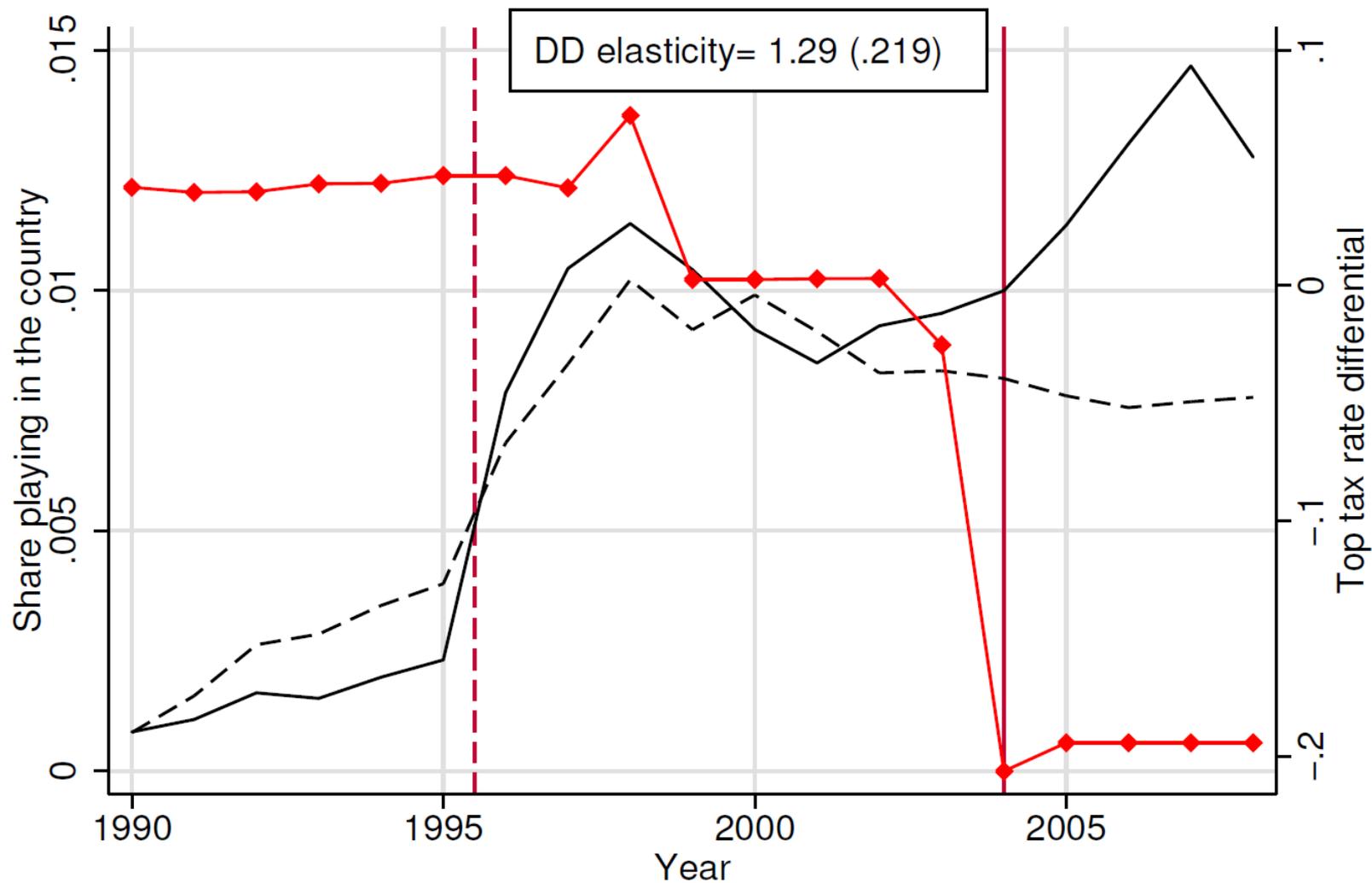
Migration Effects of 2004 Beckham Law: Non-Eligible Foreign Players in Spain vs Synthetic Control

Placebo elasticity= .575 (.5)
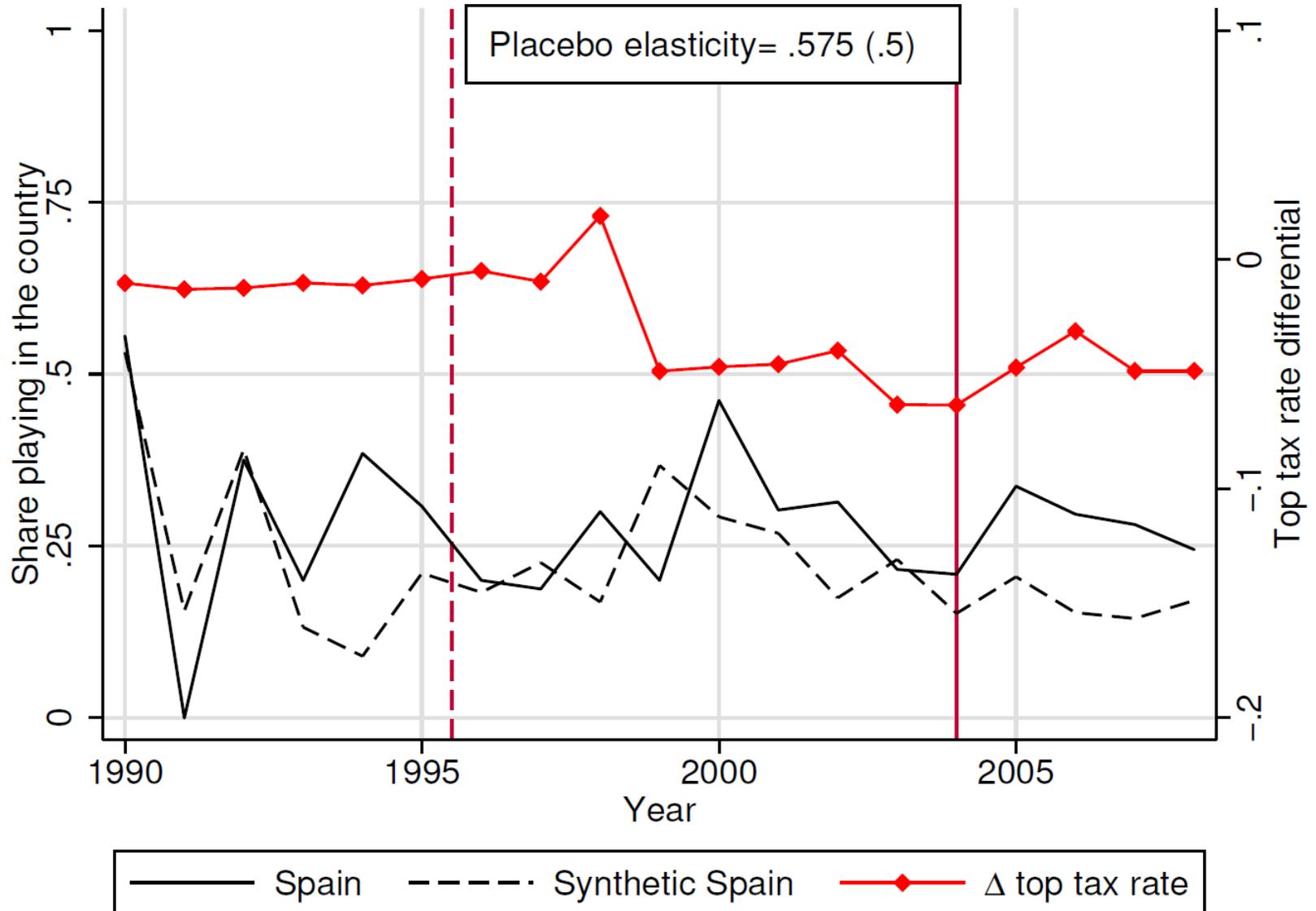
"Researchers' Tax Scheme" in Denmark

- 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
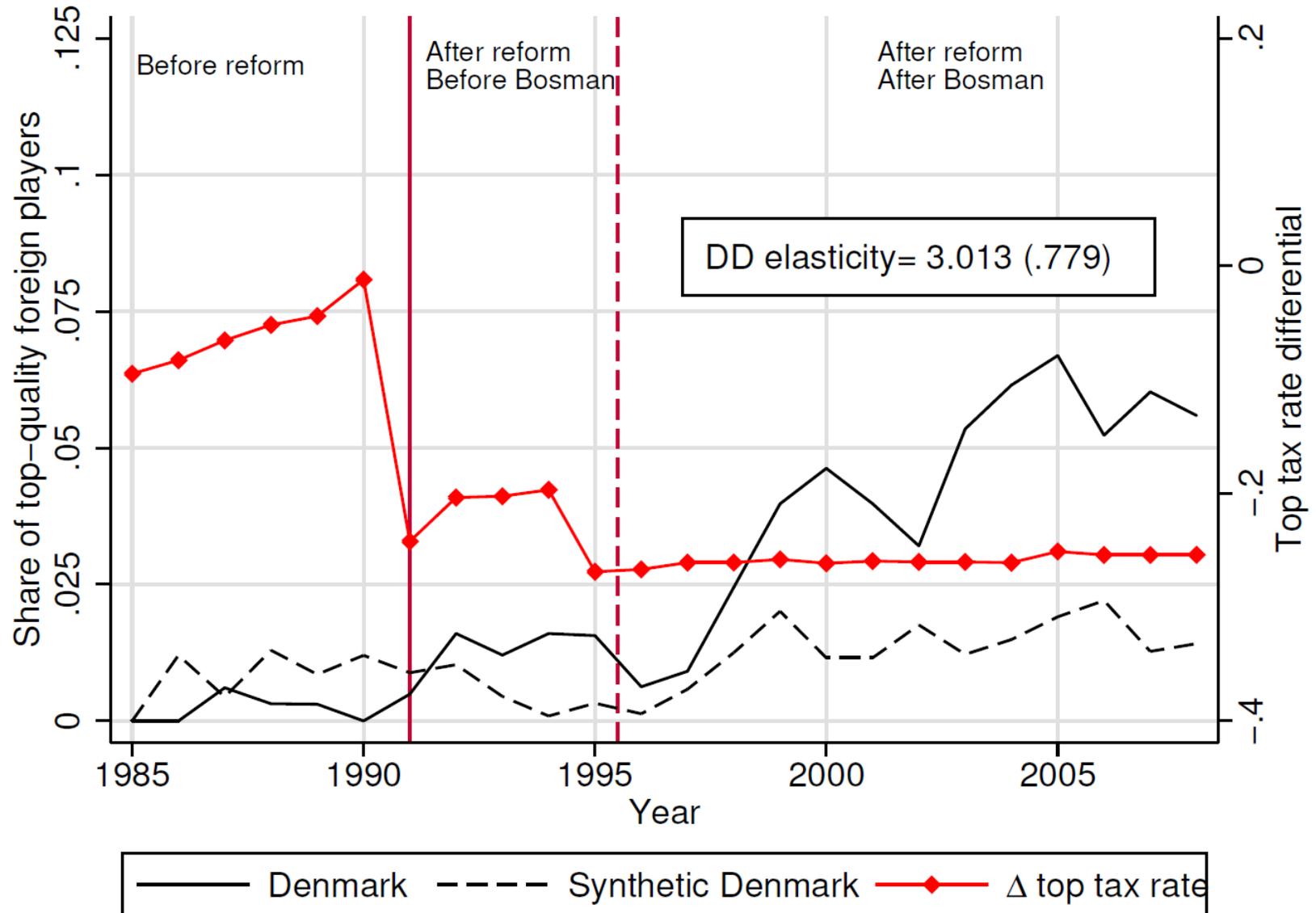
Migration Effects of Danish Foreigner Tax Scheme: Lower-Quality Foreign Players in Denmark vs Synthetic Control
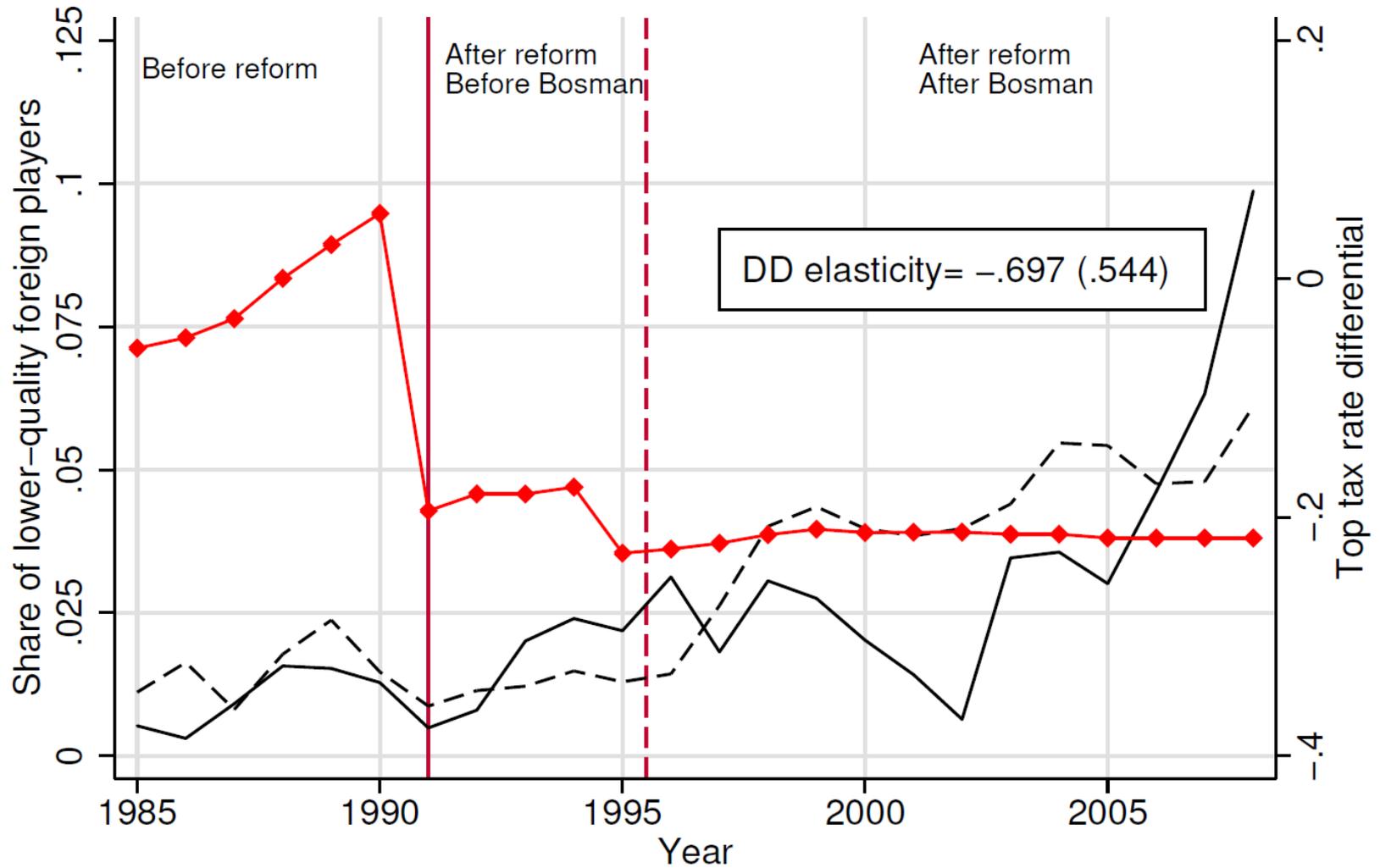
External Validity and Upper-Bound Argument

- 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
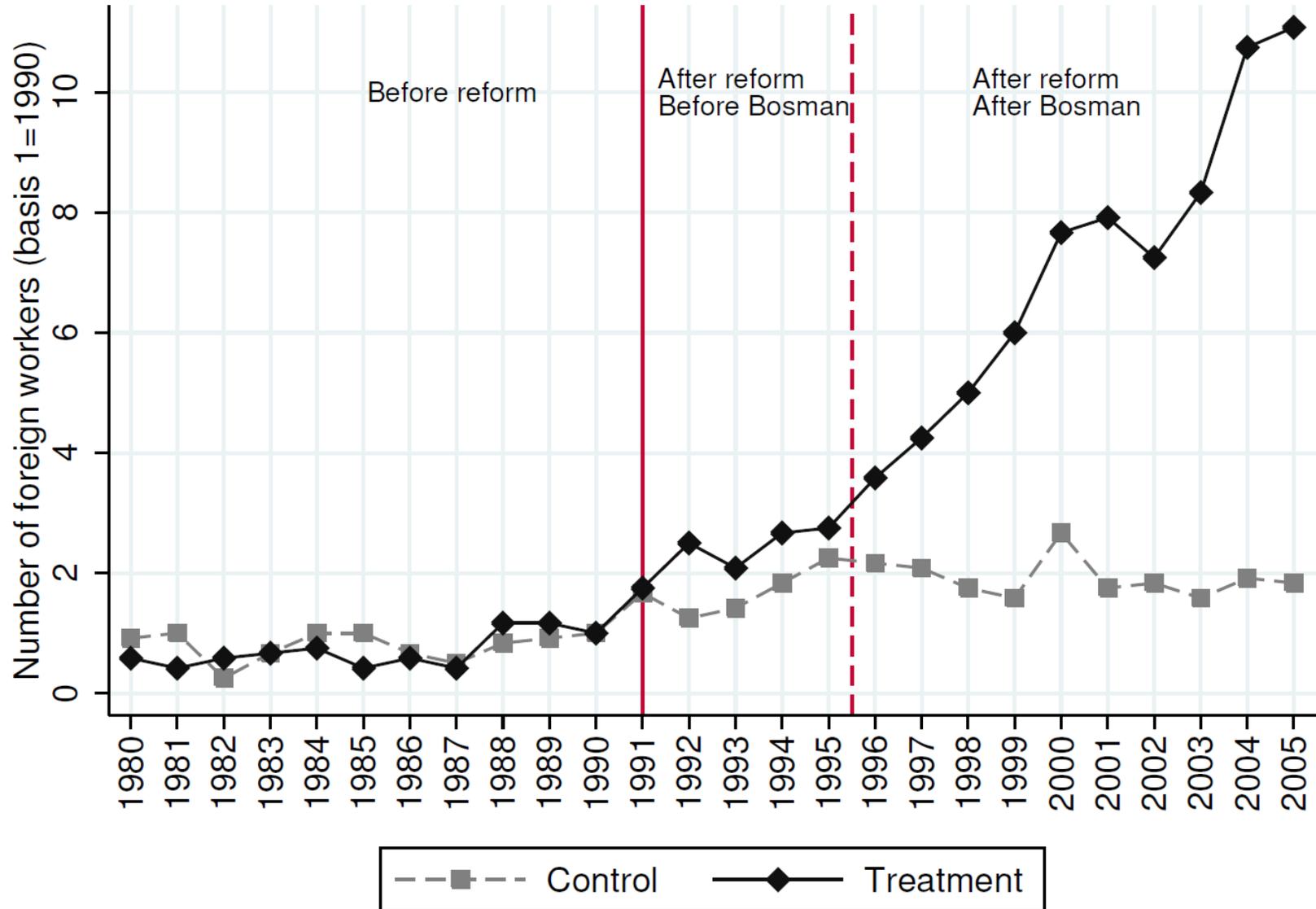
Migration Effects of Danish Foreigner Tax Scheme: All Other Industries
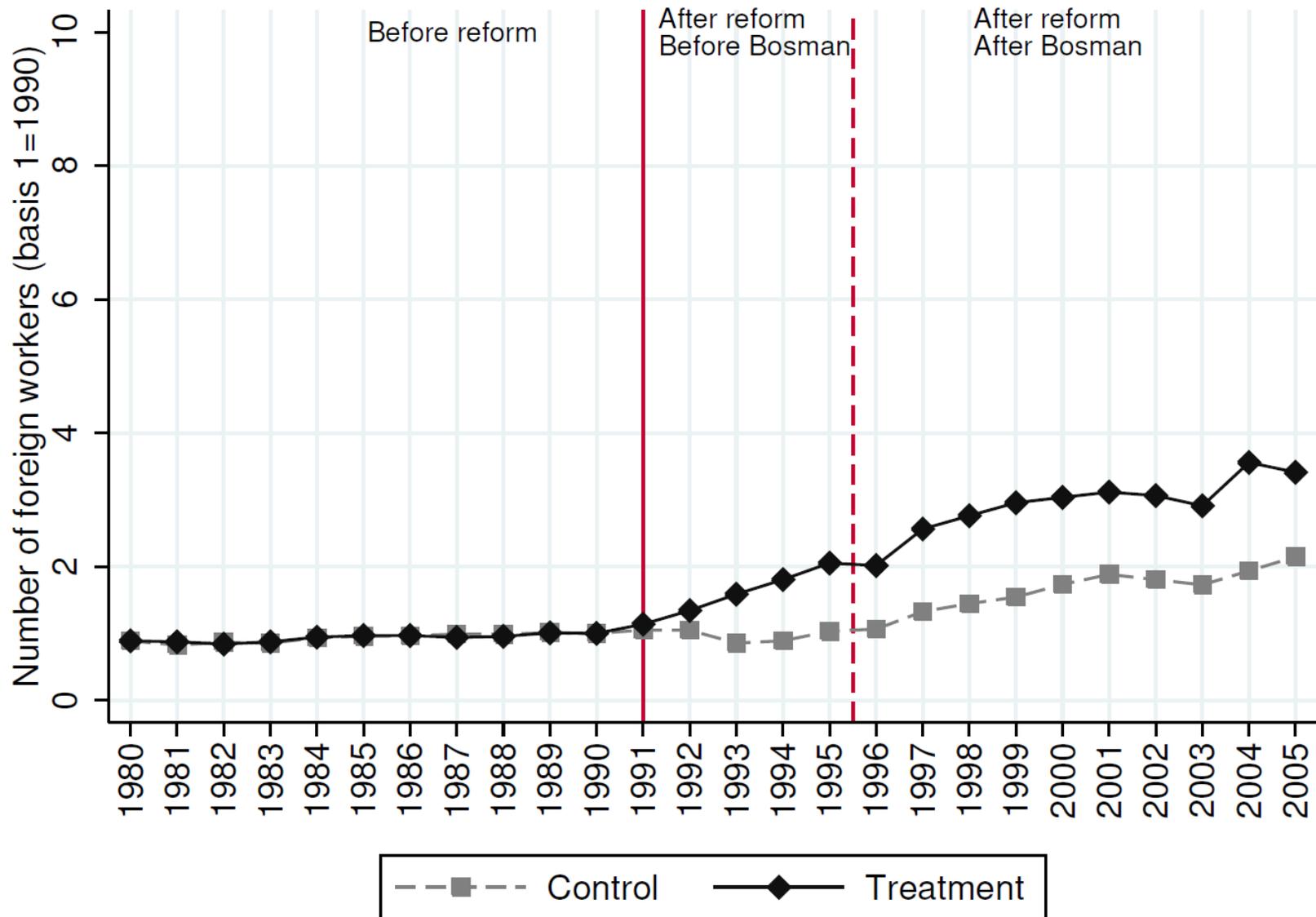
Theoretical Framework

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 $(a,\mu_{1m},\ldots, \mu_{Nm})$ 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:
  $p_{nd}(s_n, 1-\tau_{nd}) + p_{nf}(s_n, 1-\tau_{nf}) = 1$ ➜ $s_n = s_n(1-\tau_{nd}, 1-\tau_{nf})$

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)

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

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

$\quad = \alpha \cdot \log(1-\tau_{i,n,t}) + \alpha \cdot \log(w_{i,n,t}) + home_{i,n} + \beta_n \cdot x_{i,t} + \gamma_n + v_{i,n,t}$

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

- 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 ➜ multinomial logit model can be estimated by maximum likelihood

Multinomial Logit Estimates (1996-2008): Specifications with Top MTRs

	(1)	(2)	(3)	(4)
	Utility parameter estimates			
$log(1 - MTR)$	1.323***	0.729***	1.089***	0.634***
	(0.073)	(0.116)	(0.159)	(0.132)
	Implied elasticities			
$\varepsilon_{domestic}$	.156	.074	.121	.070
	(.009)	(.012)	(.018)	(.015)
$\varepsilon_{foreigner}$	1.308	.704	1.057	.621
	(.072)	(.112)	(.154)	(.130)
Country F-E	NO	YES	YES	YES
Age, age squared, exp., and quality dummies interacted with country F-E	NO	YES	YES	YES
Year×country F-E	NO	NO	YES	YES
Age, age squared, exp., quality interacted with year×country F-E	NO	NO	NO	YES
Observations	55225	55225	55225	55225

Multinomial Logit Estimates (1996-2008): Specifications with Imputed ATRs

	(1)	(2)	(3)	(4)
	Utility parameter estimates			
$log(1 - ATR)$	1.599***	0.931***	1.721***	1.123***
	(0.079)	(0.138)	(0.197)	(0.161)
	Implied elasticities			
$\varepsilon_{domestic}$	.184	.093	.184	.122
	(.009)	(.014)	(.021)	(.017)
$\varepsilon_{foreigner}$	1.582	.900	1.654	1.100
	(.078)	(.133)	(.190)	(.157)
Country F-E	NO	YES	YES	YES
Age, age squared, exp., and quality dummies interacted with country F-E	NO	YES	YES	YES
Year×country F-E	NO	NO	YES	YES
Age, age squared, exp., quality interacted with year×country F-E	NO	NO	NO	YES
Observations	55225	55225	55225	55225

Rigid-Demand Model: Ability Sorting and Displacement Effects

The supply side of the model is unchanged

Rigid-demand constraint ➜ clubs extract positive surplus s_n that vary with tax rates ➜ players salaries $a - s_n$ vary with tax rates ➜ 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

	(1)	(2)	(3)	(4)	(5)	(6)
		A. Top leagues (1999-2008)			B. Adding the five best second leagues (1999-2008)	
$log(1-\tau)$	1.138*** (0.118)			0.995*** (0.128)		
$log(1-\tau) \times low$		-0.512*** (0.149)	-0.529*** (0.145)		-0.391* (0.158)	-0.448** (0.154)
$log(1-\tau) \times top$		1.409*** (0.136)	1.301*** (0.132)		1.494*** (0.136)	1.409*** (0.133)
$log(1-\tau^f) \times domestic$			-0.618*** (0.119)			-0.635*** (0.134)
$log(1-\tau^d) \times foreign$			-0.149 (0.178)			-0.201 (0.192)

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 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
    - ➜ 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