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Dirk Baur
Institute for International Intregration Studies,
Trinity College Dublin

Sibylle Lehmann
Institute for International Intregration Studies,
Trinity College Dublin

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Dirk Baur[1], Sibylle Lehmann

Institute for International Integration Studies,

Trinity College Dublin

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Abstract

This paper is motivated by the observation that there is a large discrepancy among football nations regarding the number of football players that play in the national team and also in their home league. Two extreme examples are Argentina and Italy: Almost all members of the national team of Argentina play in a foreign football league and all national team players of Italy play in their home league. We focus on the question whether a country's success in international competitions significantly depends on the mobility of its football players. More specifically, we analyze whether a country's success is influenced (i) by the number of national team players that do not play in the home league and (ii) by the number of national team players from other countries that play in the home league. Our study is based on data of all 32 national football teams qualified for the FIFA World Cup in Germany 2006 including more than 700 players with a total estimated market value of almost four billion Euros. The main finding is that a country's success crucially depends on both imports and exports. This suggests that all countries that qualified for the World Cup gain from trade.

Keywords: football, international trade, transfer market

JEL classification: F13, F16, L80

[1] Corresponding author: Address: IIIS, The Sutherland Centre, Arts Building, College Green, Dublin 2, Ireland, email: baurd@tcd.ie

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1. Introduction

In summer 2006, 31 survivors of the 196-nation qualifying tournament and the host Germany did compete for the FIFA World Cup 2006. The media coverage gave a hint how widespread this sport is all over the world and why it is regarded as the most popular sport over all. However, although most nations have their own national league and a national team that competes in international tournaments, the World Cup seems to be strongly dominated by just a few nations. The champions of seventeen World Cups since the first tournament in 1930 came from only two continents, South America and Europe while teams from North and Middle America, Africa, Asia and Oceania failed to win so far. Even in Europe and North America only seven countries won, and five of them more than once.

Finding explanations for the concentration of success on just these few nations or the performance of teams in general seems to be a bigger sport than football itself. (Hoffmann, Ging and Ramasamy, 2002) provided the first and as far as we are concerned the only quantitative study that is supposed to shed light on the question what determines a national team's performance in World Cups. They found evidence that variables such as culture, demography and GDP per capita influence a countries' success, although not necessarily in a linear way. Richer countries seem to have more success beyond a certain level, while greater wealth can harm a countries performance.

This paper has a different objective and is motivated by two legends which are repeatedly quoted in order to explain or predict a national team's success: countries, which have more players of their national team permanently playing abroad, perform better in international tournaments than countries where most of the players play in the national league. An obvious example of this hypothesis is Brazil which won the World Cup five times and has almost no player playing in the Brazilian national league. The German case from 1990 is also quite often mentioned in this context: almost all important players played somewhere abroad and it is often argued that this was one reason why Germany won the World Cup in that year. Assuming there is a relationship between the export of players and the performance of the national team it is likely that it became even stronger after the Bosman decision, which led to a huge increase in the mobility of football players (Milanovic, 2005).

The second legend is that imports improve the performance of a team as well, because players would benefit from knowledge spillovers. Oliver Bierhoff, Germany's team manager, said to Spiegel online in an interview concerning the World Cup in June 2006, that Germany's club managers failed to hire top players from whom the German players could have learned new

techniques (Gödecke, 2006). That applies even more as the transferred players are usually more experienced than the average player (Carmichael, Forrest and Simmons, 1999).

Motivated by these two hypotheses we first develop a theoretical framework based on standard trade theory in order to find an explanation for the legends and second we test empirically whether the legends can be confirmed.

The paper is structured as follows. The next section provides and discusses the theoretical framework. Section 3 describes the econometric framework, the data set, descriptive statistics and presents the empirical result. Finally, section 4 concludes the paper with final remarks.

2. Theoretical framework

The labour market for football players does not seem to follow the rules of an ordinary labour market. It rather seems to resemble a normal goods market as it is rare to find a transfer fee attached to the migration decision of a worker. The recipient employer does not usually pay compensation to a previous employer for the loss of the workers services (Carmichael, Forrest and Simmons, 1999). However, although the Bosman decision restricted transfer fees to players, who resign an existing contract, it does not happen often that players move to another club without any compensation. The Bosman decision rather led to extended contracts to avoid loosing a player without getting compensation (Amir and Livne, 2005). Thus, it seems appropriate to treat the market of football players like a market for traded services.

Unfortunately, there is no trade theory to analyse trade of services that correspond to the market for football players. Therefore, we apply standard Ricardian trade theory which rests on the age-old principle of comparative advantage, the idea that countries are better off when they export the goods they are best at producing, and import the rest. This approach seems to fit quite well for many countries. One example is Brazil where the education of football players starts at a very early age and is carefully pursued in order to detect new talents (Muller, 2004). Furthermore they all start with Futsal, a slightly different sport. Futsal is football on a much smaller pitch and is known as technically catchier (Arbena, 1988). In terms of trade theory, one can say that the ‘production’ techniques of football players are more advanced giving Brazil a comparative advantage in producing talented players. Brazil thus exports more players than other nations and not just in absolute terms, but relative to the total of active players. Furthermore, we assume that this comparative advantage can be measured with the performance of the national team. The bigger the advantage in producing football players, the better does the national team perform in international tournaments.

However, one might argue that trade patterns do not correspond to the different techniques, but rather to different factor endowment and Heckscher Ohlin was the appropriate model[3]. Assuming the major factor one needs to 'produce' a football player is another football player to teach and train, one could say that countries that are relatively abundant in football players also export more football players. One presupposition of Heckscher Ohlin would be that football players, as factors of production, would be perfectly mobile between sectors. Since this does not apply and there is no positive relationship between the number of active football players and exports (see Appendix 1) we follow the Ricardian approach. Note that the comparative advantage could also arise from missing alternatives for a relatively large group of the population in emerging countries such as Brazil compared to high-income European countries such as England, France or Italy. Finally, the success of the national team could also be explained with clusters as developed by Porter (e.g. see Porter, 2000).

For the second legend we consider knowledge spillovers as an external effect of trade. (see (Grossman and Helpman, 1990) and test the hypothesis whether this general finding also applies to the football market. More specifically, we examine whether imported players increase a national team's performance and whether there is an optimum of imported players. One reason for an optimum and thus a non-linear relationship could be due to a crowding-out effect of younger players. The more imported players play in a team, the less likely it is that younger native players get the opportunities to play in their clubs regularly. That probably has a negative effect on the performance of the national team in the long run as young players do not get the relevant match practise to improve their skills. It thus seems possible that the relationship between imports and performance of the national team resembles an inverted u-shape where there is an optimum number of imported players. If the national leagues' clubs import too less players than is optimal knowledge spillovers cannot be fully reaped. If, on the other hand, too many players are imported, younger native players do not get enough opportunities to play which is likely to harm their future career as a professional football player.

A nonlinear effect could also exist for exports. If too many national team players play in different foreign national leagues there could be a negative effect due to a lack of homogeneity or identification with their home country. Another explanation could be that an excessive number of exported players increase the likelihood of super stars in a team that might negatively influence the team spirit. It is also possible that exports must exceed a

[3] For an overview over standard trade models see (Helpman, 2004)

certain number or fraction in order to have a significant effect on a national team's performance. This could also lead to a non-linear relationship.

3. Empirical Analysis

This section first outlines the econometric framework followed by a description of the data and the empirical results.

We apply a standard regression model to investigate whether imports and exports can predict the ranking of a national team. We use three different rankings: one that is based on the success in previous World Cups given by the position in the FIFA ranking, another one that is based on a weighted average of a FIFA ranking for the years 2003, 2004 and 2005. Finally, a third ranking is based on the estimated market values of the national teams. We assume that the estimated market value of a football player and the national team strongly corresponds to its quality. Although there is some literature about inflationary wages that do not exactly fit the real value, the so-called superstar effect (Lucifora and Simmons, 2003), the general relationship between value and quality is robust. The correlation of the FIFA rankings with the total estimated market value is 0.6314 and 0.6688, respectively.

The different rankings are related to the explanatory variables in the following equation:

$$Ranking = c + a\,Exports + b\,Imports + d\,X + e$$

where *Ranking* denotes the ranking of the national team, *Exports* the number of exports and *Imports* the number of imports both as a fraction of the total number of players in the national team. X is a regressor matrix that contains additional variables such as the squared Exports and Imports terms in order to account for non-linearity such as a u-shape or an inverted u-shape relationship. It also includes variables such as the average age of players, the number of players that can play both with the left and the right foot and the average number of games for the national team. The parameters c, a, b and d are to be estimated. The parameter d is a vector depending on the number of columns of the regressor matrix X. We assume that Exports and Imports are truly exogenous variables. Thus, players are not exported or imported because of a high or low country ranking.

3.1. The Data

Our analysis is based on data of 32 national teams qualified for the FIFA World Cup in Germany. The data was published by www.transfermarkt.de. We also use the official FIFA homepage and Spiegel Special edition Football for additional information to verify the data.

Table 1 provides an overview of the players with the highest market values in Euro. The table contains the club, name, age[4], nationality, height, preferred foot, the market value and the number of games played in the national team. Ronaldinho playing for FC Barcelona in Spain leads the list of the twenty most expensive players followed by Henry playing for the FC Arsenal London and Shevchenko playing for FC Chelsea. Most of the players are playing in the Spanish, English or Italian league and the majority of players come from Brazil, England, France and Italy. There is only one player in the list of the 20 most expensive players who is playing in Germany and he is now playing for FC Chelsea: Michael Ballack. Another interesting case is Francesco Totti playing for AS Rom. He never played for another club and his transfer value is only based on his salary and declined offers from other clubs.

Name	Club	Age	Nationality	Height	Foot	Transfer Value in million Euro	Number of Games
Ronaldinho	FC Barcelona	26	Brazil	1,80	L/R	70	62
Shevchenko	FC Chelsea	29	Ukraine	1,83	L/R	51	63
Henry	FC Arsenal London	28	France	1,87	L/R	45	73
Totti	AS Rom	29	Italy	1,80	R	37	49
Essien	FC Chelsea	23	Ghana	1,80	R	36,5	14
Van Nistelrooy	Manchester United	29	The Netherlands	1,89	R	36	49
Rooney	Manchester United	20	England	1,78	R	35,75	29
Kakà	AC Milan	24	Brazil	1,83	L/R	35	37
Lampard	FC Chelsea	27	England	1,83	L/R	35	38
Ballack	FC Chelsea	29	Germany	1,89	L/R	35	65
Adriano	Inter Milan	24	Brazil	1,89	L	32	31
Buffon	Juventus Torino	28	Italy	1,91	R	30	57
Gerrard	FC Liverpool	26	England	1,88	L/R	30	40
Trézéguet	Juventus Torino	28	France	1,87	L/R	30	58
Nesta	AC Milan	30	Italy	1,87	L/R	29	72
Terry	FC Chelsea	25	England	1,86	R	28	21
Xavi	FC Barcelona	26	Spain	1,68	R	28	33
Vieira	Juventus Turin	29	France	1,93	R	28	83
Ronaldo	Real Madrid	29	Brazil	1,83	L/R	27,5	91
Robben	FC Chelsea	22	The Netherlands	1,85	L/R	27,5	18

Source: www.transfermarkt.de

Table 1: Top 20 football players according to estimated market value.

[4] Dubner and Levitt (2006) analyzed the effect of the birthday of elite soccer players and found that most of the top players were born in the first three months of the year.

3.2. Descriptive Analysis

In this section we first present some preliminary tables and statistics and then show and discuss the econometric results. Table 3 contains a list of all teams and their number of players that play in their national league, the number of imported players and the number of exported players plus the estimated market value of the whole national team. The teams are ranked according to their market value. The highest value has Italy followed by Brazil, Spain and England. The lowest market values have the teams from Ecuador, Angola, Trinidad and Tobago and Saudi Arabia. The values seem to mirror well the success of past World Cups: the countries on which the success is heavily concentrated can all be found on the top of the list.
Note that imports and exports are only counted if they are from countries that are part of the sample. If a player of the Argentinean team permanently plays in a country that has not qualified for the World Cup, he does not appear in exports. The same is true for imports. Players only appear in the import statistics if they are in a national team in one of the 32 teams qualified for the World Cup in 2006. Moreover, national team players have to play in the top league of a country to be counted as exports. Some countries' national teams have players who play in the second or third division of a league. Thus exports and players playing at home do not always add up to 23 which is the size of each national team. This is the case for Serbia and Montenegro, Croatia and many others. A counterexample is Argentina for which all national team players appear in the (trade) statistics: 3 players play at home and 20 players in a foreign club.

Nation	Home	Imports	Exports	Value in million Euro
Italy	23	37	0	378
Brazil	3	4	20	365
England	21	90	2	341
Spain	18	34	5	329
France	10	51	13	270
Portugal	8	12	15	234
Argentina	3	2	20	228
The Netherlands	14	10	9	207
Germany	19	55	4	180
Czech Republic	1	1	22	128
Sweden	10	2	13	106
Cote d'Ivoire	0	0	23	98,9
Serbia and Montenegro	4	0	19	99,4
Croatia	2	0	21	93,5
Ukraine	13	2	10	81,4
Poland	8	0	15	66,4
Switzerland	6	7	17	66,5
Ghana	3	0	20	60
Australia	2	1	21	54,8
Mexico	19	4	4	44,9
Japan	17	2	6	41,6
USA	11	4	12	38
Tunisia	5	1	18	31,7
South Korea	16	0	7	26
Iran	17	0	6	19,3
Paraguay	6	0	17	20,6
Togo	2	0	21	11,3
Costa Rica	20	0	3	7,8
Ecuador	17	0	6	9,3
Angola	9	0	14	7,5
Trinidad and Tobago	4	0	19	4,3
Saudi Arabia	22	1	1	1

Table 2: Number of players at home, imports, exports and estimated market value of team

As a precursor of our regression models we present a scatter plot of the relation of imported and exported national team players denoted as “imports” and “exports” in the graph. Figure 1 shows that there is a negative relationship implying that countries either export players or

import players but do not equally import and export players. An obvious exception is France which exports more than ten players and imports around 40. The most extreme cases are the Ivory Coast and the Czech Republic that have no national team players from other countries playing in their home leagues but almost all national team players playing in foreign football leagues. On the other end of the scale is Italy that has no player who is "working" in a foreign country, that is, exports are zero.

The scatter plot also shows that there are two classes of countries. One class could be termed "rich" countries and can be characterized by a relatively large number of imports. This group is represented by England, Germany, France, Italy, Spain and Portugal to name the six countries with the largest number of imports (in descending order). The other class of countries could be termed "emerging" countries and can be characterized by a relatively large number of exports and a low number of imports. This group includes heavy exporters like the Ivory Coast, Czech Republic, Brazil and Argentina (in descending order).

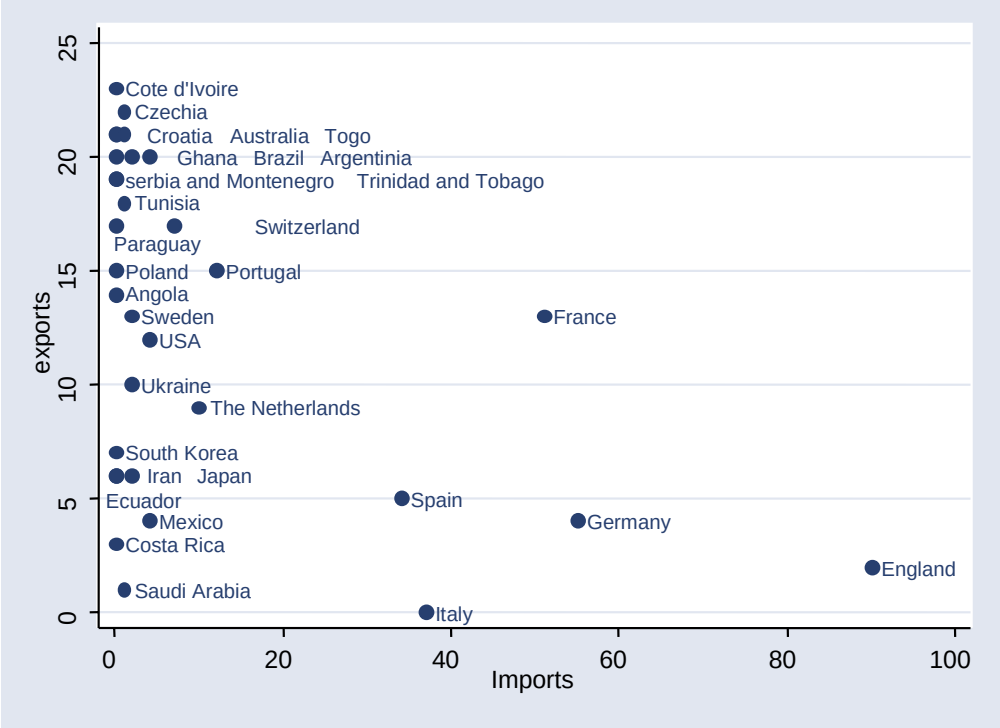

Figure 1: Scatter plot imports and exports for all countries.

Figures 2 and 3 illustrate the relationship of a country's position according to the official FIFA ranking and the number of imports and exports, respectively.

Figure 2 shows that exports are not clearly related to the ranking of a national team. For example, Angola has the lowest ranking but a relatively high number of exported players. On

the other hand, Brazil has the highest ranking but a relatively high number of exported players as well. Other examples are the Ivory Coast and Italy. The former has a relatively low ranking but a high number of exported players and the latter has a relatively high ranking but no exported players at all.

Figure 3 suggests a positive and non-linear relationship of imports and the ranking. The countries with the highest number of imports are among those with the highest rankings. However, the two countries with the highest ranking (Brazil and Czech Republic) have a very low number of imports. The same is true for countries with a very low ranking such as Angola and Togo.

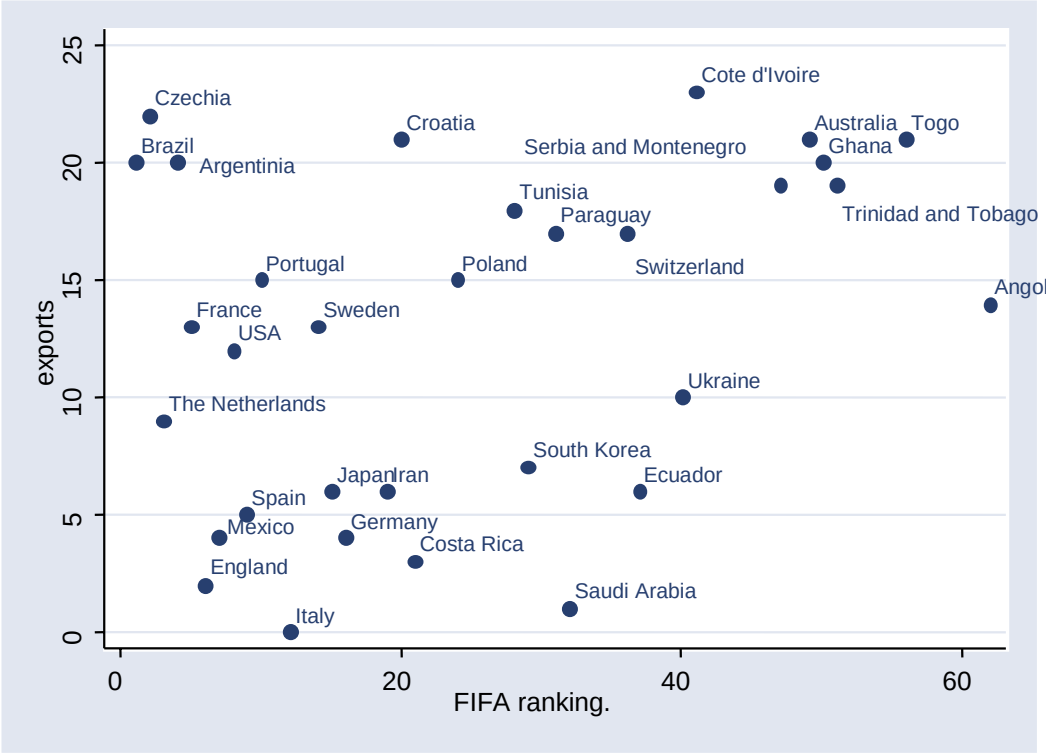

Figure 2: FIFA ranking and number of exports

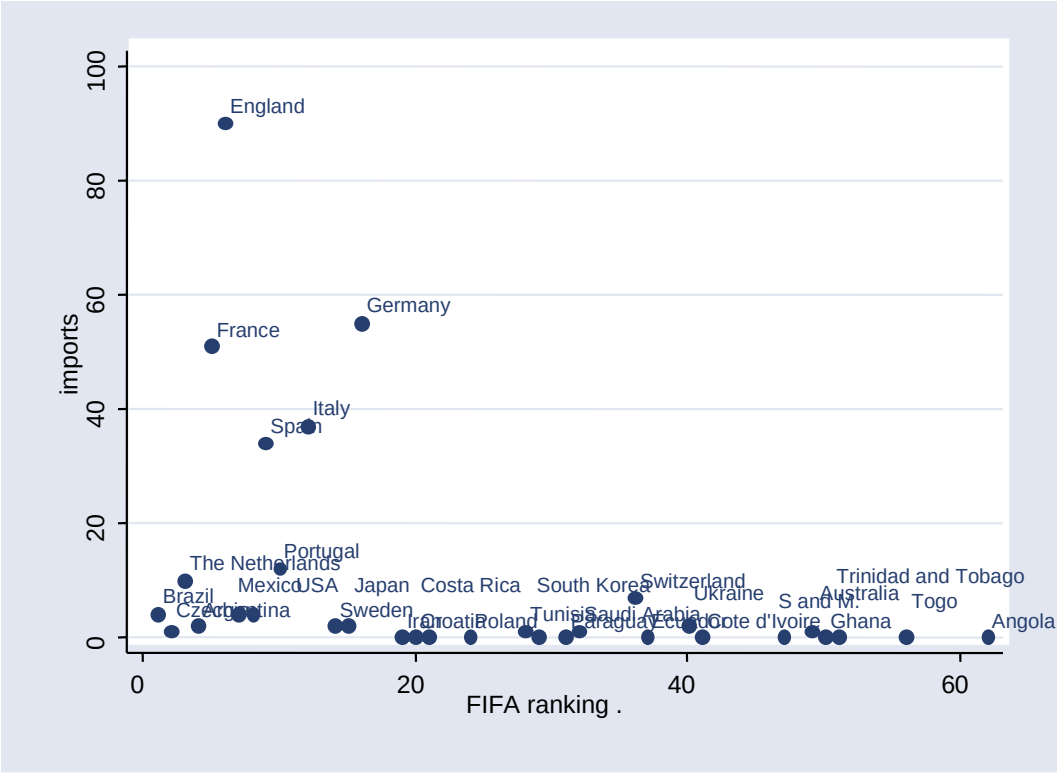

Figure 3: FIFA ranking and number of imports

An alternative ranking measure is the market value of a national team. The scatter plots of imports and exports with this ranking measure are shown in the Appendix. The scatter plot depicting the relation of imports and the market value shows that a larger number of imports is associated with a higher market value. This relationship is essentially driven by a few countries that belong to the group of “rich” countries as classified above. The relationship of imports and the market value is weak for the majority of countries.

The scatter plot for the relation of the market value and exports shows that higher exports are associated with a higher market value for the majority of countries, that is, the ones that have a market value below 200 million Euros. Conversely, there seems to be a negative relationship for estimated market values of the national team with more than 200 million Euros. More exports lead to a lower estimated market value. Portugal, France, Spain, England and Italy seem to lie on a straight line representing such a relationship.

Finally, figure 4 shows the relation of a country’s trade balance (exports-imports) and the estimated market value. The graph summarizes both scatter plots for exports and imports.

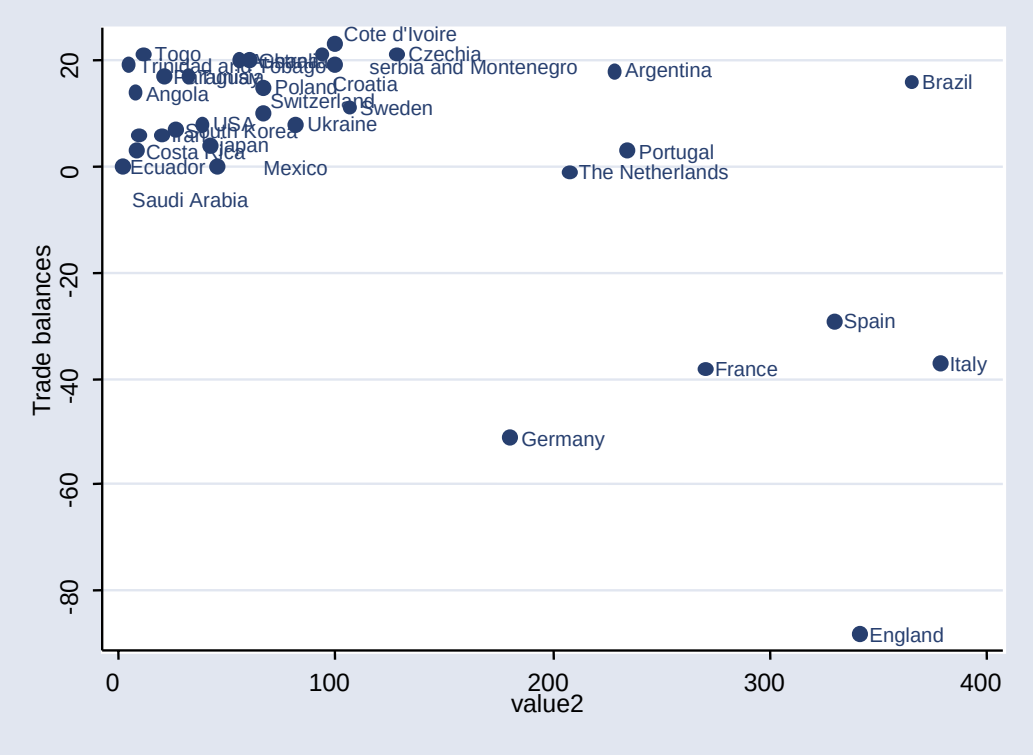

Figure 4: Trade balance (Export-Import) and estimated market value of national team.

3.3. Regression Results

This section presents the regression results with the objective to assess the importance of imports and exports on the performance of the national team in international competitions.

The main regression results are presented in tables 3-5. All three tables report the results of a regression of a ranking measure on the number of imported and exported players and additional variables representing player and country characteristics. The tables differ only in the ranking measure. Table 3 reports estimates for a ranking based on the position in the FIFA ranking, table 4 shows estimates for a ranking based on a weighted average of the results in the time period 2003-2005 and table 5 presents results of a regression with the estimated market value of the national team as dependent variable on the independent variables as specified above. A comparison of the tables shows the sensitivity of the ranking measure on the coefficient estimates and thereby serves as a specification and robustness check.[5]

[5] The estimation results for the ranking based on the position in the FIFA ranking as reported in table 3 has to be interpreted with caution because an ordinary least squares regression does not account for the ordinal nature of the dependent variable. An ordered probit or logit model would be more appropriate but is not employed because the results do not qualitatively differ from the other regression results tabulated in tables 4 and 5.

The tables contain results for different specifications. The first specification contains only imports and exports as regressors. Specification 2 includes player characteristics like age, skills with the foot (a value of 1 for left or right foot and 3 if left and right) and number of games played. Specification 3 contains country specific variables: GDP per capita, the population size and the number of active players in the country. Finally, specification 4 reports the estimates for a restricted model where only imports and exports are included and their squared terms in order to analyze potential non-linearities and the hypotheses whether there is a crowding-out effect of younger players caused by excessive imports or a pulling-in effect of younger players caused by excessive exports.

We first focus on the results obtained with the ranking based on the position in the FIFA ranking. The ranking is inverted implying that a higher number is a higher ranking. In specification 1 imports have a positive (0.5077) and significant effect on the ranking. Exports are also positive and the coefficient is slightly larger (0.7127) but the effect is not significant. The constant is estimated with 27.36. The results imply that if a country imports 20 players, the ranking increases by approximately 10 positions. If a country exports 20 players, the ranking increases by approximately 14 positions. Including player characteristics (specification 2) increases the coefficient estimate for exports and lowers it slightly for imports. Age, the skills with the left and right foot and the number of games all have a positive coefficient estimate but only the number of games played is significant. Specification 3 augments the model with the market value of all players, GDP, the population size of the country and the number of active players. Only the number of games and the market value are significant. Further analysis also shows that the market value is responsible for the effect that imports and exports are insignificant both statistically and for the ranking. If the market value is not included, the ranking effect and statistical effect of imports and exports remain qualitatively the same.

Specification 4 only includes imports and exports and their squared terms in order to analyze non-linearities. Imports and exports are positive with larger coefficient estimates compared to specification 1 due to the inclusion of the squared terms. The coefficient estimate for exports is more than twice as large as the one for imports. The coefficient for the squares is negative for both imports and exports, but the effect is more important for exports. The squared terms are insignificant while imports are significant at the 5% level and exports are almost significant at the 10% level.

The results presented in table 4 are qualitatively similar. The main difference is the significance of exports in specification 1 and 2.

The results reported in table 5 are quantitatively and qualitatively different. This is not surprising since the ranking is based on the estimated market value and not on the FIFA ranking. Specification 1 shows the coefficient estimates of imports and exports that are both positive and significant. Including player characteristics (specification 2) does not change the effects. Now, the number of games is negatively associated with the ranking and not significant. The players' skills have a positive and significant impact. Including country characteristics (specification 3) does not change the results qualitatively. All country-specific effects are positive but insignificant. Finally, specification 4 reports the results including the squared terms of imports and exports. Imports and exports are positive and significant but the difference between the coefficient estimates is less pronounced than in specification 1 due to the inclusion of the squared terms. Both coefficient estimates are negative but only significant for imports. The squared terms increase the goodness-of-fit statistic to 0.69 from 0.61 in specification 1. Finally, we can compute the optimum number of imports and exports for this inverted u-shape relationship. The optimum is around 51 for imports and 23 for exports. The high number of exports confirms the insignificance of the coefficient estimate because almost no country exceeds this number. Using the FIFA rankings to compute the highest point of the inverted u-shape relationship leads to an optimum around 45 for imports and around 14 for exports.

	Spec. 1			Spec. 2			Spec. 3			Spec. 4		
	Coeff.	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**
Const	27.36	5.11	0.00	-53.79	-0.82	0.41	-174.73	-2.70	0.01	20.61	2.97	0.00
Import	0.51	2.77	0.00	0.47	2.62	0.01	-0.10	-0.55	0.58	1.23	2.07	0.04
Export	0.71	1.51	0.13	0.76	1.56	0.12	0.01	0.02	0.97	2.70	1.65	0.10
Age				0.06	0.50	0.61	-0.07	-0.76	0.45			
foot (L/R)				0.39	1.03	0.30	-0.21	-0.63	0.53			
Games				0.04	2.65	0.01	0.04	3.07	0.00			
log(value)							11.51	3.44	0.00			
log(GDP)							1.31	0.66	0.51			
log(inhabit.)							-1.78	-0.64	0.52			
log(players)							2.96	1.40	0.17			
import^2										-0.01	-1.23	0.22
export^2										-0.10	-1.33	0.19
R squared	**0.22**			**0.53**			**0.76**			**0.31**		

Dependent variable is the position in the FIFA ranking (the inverse position).
http://www.mapsofworld.com/2006-fifa-world-cup/fifa-world-soccer-rankings.html

Table 3: Regression 1 (Position of national team as dependent variable)

	Spec. 1			Spec. 2			Spec. 3			Spec. 4		
	Coeff.	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**
Const	10.52	3.97	0.00	-38.17	-1.17	0.25	-100.27	-2.99	0.00	7.65	2.21	0.03
Import	0.29	3.26	0.00	0.28	3.20	0.00	0.01	0.14	0.88	0.67	2.26	0.03
Export	0.42	1.83	0.07	0.45	1.88	0.07	0.07	0.33	0.74	1.24	1.52	0.13
Age				0.04	0.79	0.43	-0.01	-0.28	0.78			
foot (L/R)				0.15	0.84	0.40	-0.10	-0.59	0.56			
Games				0.02	2.46	0.02	0.02	2.89	0.00			
log(value)							5.73	3.31	0.00			
log(GDP)							0.18	0.17	0.85			
log(inhabit.)							-0.81	-0.56	0.57			
log(players)							1.34	1.22	0.23			
import^2										-0.00	-1.29	0.20
export^2										-0.04	-1.10	0.28
R squared	**0.28**			**0.56**			**0.75**			**0.36**		

Dependent variable is the FIFA 'average points' based on results from 2003-2005.
(http://www.mapsofworld.com/2006-fifa-world-cup/fifa-world-soccer-rankings.html)

Table 4: Regression 2 (weighted average FIFA points, 2003-2005 as dependent variable)

	Spec. 1			Spec. 2			Spec. 3			Spec. 4		
	Coeff.	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**
Const	16.90	73.29	0.00	11.76	3.62	0.00	10.64	3.16	0.00	16.67	58.34	0.00
Import	0.04	6.14	0.00	0.03	4.36	0.00	0.03	3.19	0.00	0.10	4.16	0.00
Export	0.09	4.47	0.00	0.05	2.28	0.03	0.04	1.76	0.09	0.14	2.17	0.03
Age				0.00	1.45	0.15	0.01	1.63	0.11			
foot (L/R)				0.03	1.98	0.05	0.03	1.66	0.11			
Games				-0.00	-1.42	0.16	-0.00	-2.12	0.04			
log(value)												
log(GDP)							0.00	0.06	0.94			
log(inhabit.)							0.15	0.93	0.36			
log(players)							0.05	0.40	0.68			
import^2										-0.00	-2.27	0.03
export^2										-0.00	-0.96	0.34
R squared	**0.61**			**0.69**			**0.74**			**0.69**		

Dependent variable is the total estimated market value (log) of all players in a national team.
(http://www.transfermarkt.de)

Table 5: Regression 3 (log market value as dependent variable)

These results clearly show that imports and exports are an important determinant for the ranking and the success of a national team. GDP per capita, the population size of a country and the number of active players do not explain more than 5% of the ranking. Finally, there is weak evidence that excessive imports and exports negatively influence the ranking and the success of the national team. Based only on the market value there is substantial evidence that excessive imports exhibit a negative impact on the ranking. This is in favour with the hypothesis that too many imported players crowd-out younger talented players.

Table 6 analyzes the effect of the average and extreme individual market value of players in a national team. This analysis potentially answers the question whether very good players make a difference and increase the overall performance of a team. The regressions hence provide information whether it is more important to have one superstar like Ronaldinho or Zidane or a more homogeneous team where the minimum market value of all players is relatively high.

Ranking (Position)				**Ranking (Points)**			
	Coeff.	**t-stat**	**p-value**		**Coeff.**	**t-stat**	**p-value**
Const	32.43	0.59	0.55	**const**	10.76	0.40	0.69
Import	0.92	1.45	0.15	**import**	0.49	1.57	0.12
Export	3.59	2.13	0.04	**Export**	1.67	2.01	0.05
import^2	-0.00	-0.84	0.40	**Import^2**	-0.00	-0.86	0.39
export^2	-0.14	-1.82	0.07	**Export^2**	-0.06	-1.61	0.11
min. value	1.31	2.39	0.02	**min. value**	0.68	2.53	0.01
max. value	-1.70	-0.46	0.64	**max. value**	-0.68	-0.37	0.70
R squared	0.44			**R squared**	0.49		
Dependent variable is the position in the FIFA ranking (the inverse position).				Dependent variable is the FIFA 'average points' based on results from 2003-2005.			

Table 6: Effect of minimum and maximum value of players

Table 6 illustrates that the minimum value exhibits a positive coefficient estimate and the maximum value a negative one. This result provides some evidence that superstars do not increase the ranking. The minimum value is more important. The worst player seems to determine the performance of the team rather than superstars.[6]

[6] We also analyzed whether the team managers are imported or whether they are born in the country they coach. A general finding is that it is more likely that the manager is from another country the lower the ranking is. Including this variable in the regressions above does not have any significant qualitative or quantitative impact on the regressions and the coefficient estimate is insignificant.

One could also argue that exports do not influence the ranking in general but that it is only important where the exports go to. Table 7 analyzes the effect of exports with respect to the country the exports go to. We focus on the biggest five countries: England, France, Germany, Italy and Spain. The regression results show that the effect of exports to Italy and Spain is positive while it is negative for England, France and Germany. For the market value as dependent variable the effect is positive for all countries but only exports to Italy and Spain are significant. While imports and exports are significant for the ranking but statistically insignificant for the FIFA rankings, exports and its square are also statistically significant at the 10 percent level for the market value as a measure of the ranking.

	Ranking (Position)			Ranking (Points)			Estimated market Value		
	Coeff.	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**	**Coeff.**	**t-stat**	**p-value**
Const	19.03	2.43	0.02	6.86	1.80	0.08	16.50	58.11	0.00
Import	0.90	0.73	0.47	0.66	1.09	0.28	0.01	0.41	0.67
Export	3.24	1.44	0.16	1.73	1.57	0.12	0.14	1.81	0.08
import^2	-0.00	-0.40	0.68	-0.00	-0.52	0.60	-0.00	-0.18	0.85
export^2	-0.12	-1.31	0.20	-0.05	-1.16	0.25	-0.00	-1.75	0.09
export to England	0.00	0.00	0.99	-0.28	-0.27	0.78	0.08	1.10	0.28
export to France	-0.58	-0.31	0.75	-0.59	-0.66	0.51	0.06	0.93	0.36
export to Germany	-0.33	-0.18	0.85	-0.58	-0.67	0.50	0.06	0.96	0.34
export to Italy	0.46	0.32	0.74	0.01	0.01	0.98	0.12	2.33	0.02
export to Spain	0.61	0.37	0.71	0.11	0.14	0.88	0.11	1.97	0.06
R squared	0.35			0.42			0.77		

Dependent variable is the position in the FIFA ranking (the inverse position) (left panel), FIFA 'average points' based on results from 2003-2005 (centred panel) and estimated market value (right panel)

Table 7: Country effect of exports

Our findings suggest that there is an optimum level of imports and exports. Excessive imports negatively influence the ranking of a country's national team and an excessive number of exports has the same effect. However, both effects are statistically not significant in most regressions.

The import of players is likely to lead to knowledge-spillovers. Imported players have some skills or qualities from which other players can learn and benefit. This effect explains the positive impact of imports. The negative effect can be explained with a crowding-out effect. If younger talented players do not get enough practice in their home club because highly qualified imported players do always play on their positions. There is some evidence for this in Germany for example. The media regularly hypothesized that younger players like

Schweinsteiger and Deisler both playing for Bayern Munich do not get enough opportunities to play because of the strong competition due to Brazilian, Argentine and French national players.
The fact that excessive exports also harm the performance of national teams might be caused by the fact that exported players play leading roles somewhere abroad and have difficulties to step back in line in the national team. That goes well with the finding that homogeneity of a team is more important than having one super star.

3.4. Prediction World Cup 2006

This section examines the (ex post) predicted power of the regressions and the rankings for the World Cup 2006.[7] We focus on the four teams that performed best in the World Cup 2006, that is, Italy, France, Germany and Portugal. None of the four countries was ranked among the first four in the FIFA rankings. The highest ranking had Brazil followed by the Czech Republic, the Netherlands and Argentina. France was ranked fifth. The alternative ranking employed in this paper is based on the total estimated market value of a national team. This measure ranked Italy first followed by Brazil, England, Spain, France, Portugal, Argentina, the Netherlands and Germany. Obviously all top four ranked national teams are in this list.
Finally, using the regression models estimated above and focussing on the specification which only employed imports and exports as regressors shows that France and Germany are ranked first and second while Italy is ranked fifth and Portugal ninth.
These results confirm the importance of imports and exports and the estimated total market value. Prediction error and uncertainty is not surprising and also important to guarantee an interesting competition.

4. Conclusions

Football is a globalised sport. One can hardly find a successful football player who never played somewhere abroad. The variation of the mobility of football players among countries gave reasons for football fans to predict success and failure of national teams using the import and export patterns of the national players. This study aims at investigating two major legends

[7] A study by Goldman Sachs (2006) predicted Brazil, Germany, Italy and Argentina among the last four in a more qualitative assessment.

that often appear in the context of footballer's mobility. The first one is that a country, which has more players permanently playing abroad, performs better in international competitions and the second one is that many top players from abroad are able to generally improve a countries football abilities. The labour market for football players strongly resembles a market for goods, although we are aware of the fact that football players can not be traded involuntary. One famous example is Francesco Totti, who played for Rome all his life and even rejected to move to another Club in Italy. However, despite these discrepancies standard trade theory seems to be the most appropriate framework to analyse the effects of mobility of football players and provides us with the tools to explain some football legends.

We use data from all 32 nations that qualified for the World Cup in 2006 and find that both the number of players that play in a foreign league (exports) and the number of foreign players that play in the home league (imports) positively affect the ranking and the success of the national team. There is some evidence that excessive imports and exports partially eliminate the positive effects. Not surprisingly, neither exports nor imports can predict the outcome of football matches. They influence the performance but with great variability. There are certainly many other factors like, daily performance, the manager of the team, tactical skills and others that determine who wins and who loses a football match. This unpredictability is what makes sports so interesting and football one of the most fascinating sports at all.

Another important finding of more general interest is that all countries in our sample gain from trade. Two countries that are very different in size, GDP, exports and imports confirm this statement. The Brazilian national team has almost no player who plays at home and Italy's national team has no player who plays in a foreign league. However, both countries are extremely successful and rank very high for all ranking measures even though one is a net exporter and the other one a net importer of football players. If general conclusions can be drawn from this example this is good news for all countries that are taking part of globalization through trade.

Future research could extend the analysis to a broader sample of nations and to national football clubs.

References

Amir, Eli and Gilad Livne (2005). Accounting, Valuation and Duration of Football Player Contracts, *Journal of Business Finance & Accounting* Volume 32, Issue 3-4, 549 -.

Arbena, Joseph (1988). *Sport and Society in Latin America.*, Connecticut: Greenwood Press.

Carmichael, Fiona, David Forrest and Robert Simmons (1999). The labour market in association football: who gets transferred and for how much? *Bulletin of Economic Research* 51, 2, 125-150.

Gödecke, Christian (2006). Animateur mit Diplom. *Der Spiegel Online*, 26. Mai 2006.

Goldman Sachs (2006). The World Cup and Economics 2006, Goldman Sachs Economic Research, http://www2.goldmansachs.com/insight/research/reports/docs/WCB2006.pdf

Grossman, Gene M. and Elhanan Helpman (1990). Trade, Innovation, and Growth, *The American Economic Review* 80, 2, 86-91.

Helpman, Elhanan (2004). *The Mystery of Economic Growth*, Cambridge: University Press.

Hoffmann, Robert, Lee Chew Ging and Bala Ramasamy (2002). The Socio-Economic Determinants of International Soccer Performance, *Journal of Applied Economics* 5, 2, 253-272.

Dubner, Stephen J. and Steven D. Levitt (2006). A Star Is Made. The New York Times, May 7, 2006

Lucifora, Claudio and Rob Simmons (2003). Superstar Effects in Sport: Evidence From Italian Soccer, *Journal of Sports Economics*, 4, 1, 35-55.

Milanovic, Branko (2005). Globalization and goals: does soccer show the way? *Review of International Political Economy* 12, 5, 829 - 850.

Muller, Antonio J. (2004). Soccer Culture in Brazil. *The Sport Journal: United States Sports Academy*.

Porter, Michael E. (2000). Location, Clusters, and Company Strategy, Oxford Handbook of Economic Geography (G. Clark, M. Gertler, and M. Feldman, eds) Oxford University Press

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Appendix

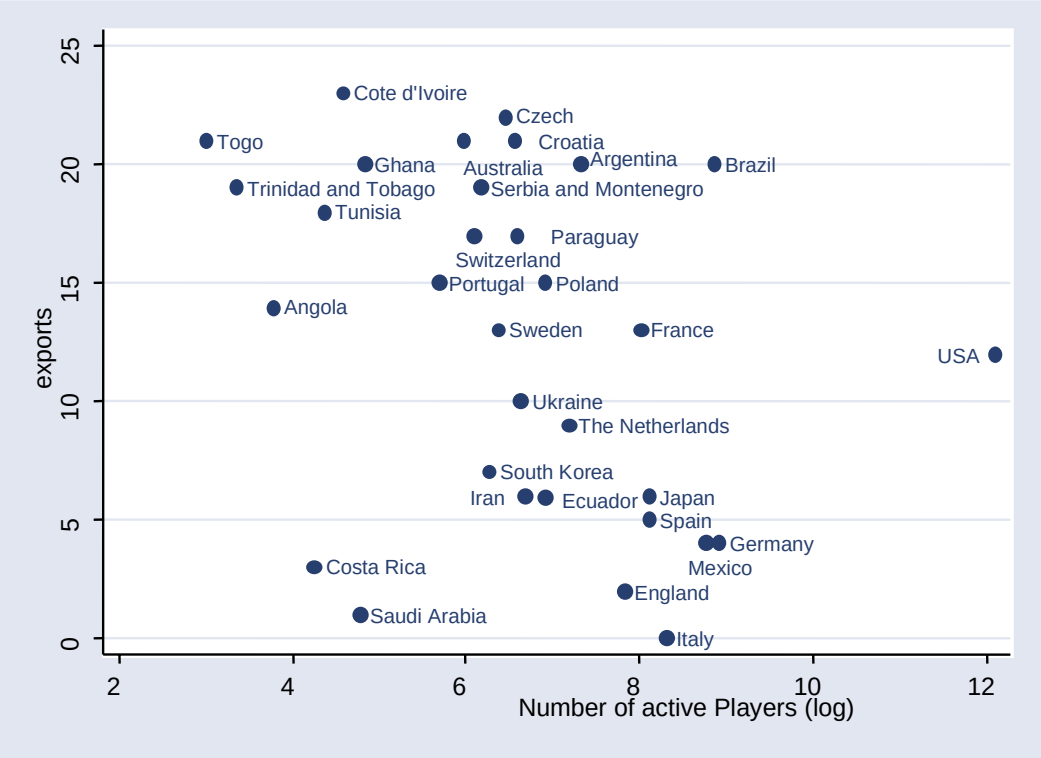

Figure A1: Relationship between active players and exports

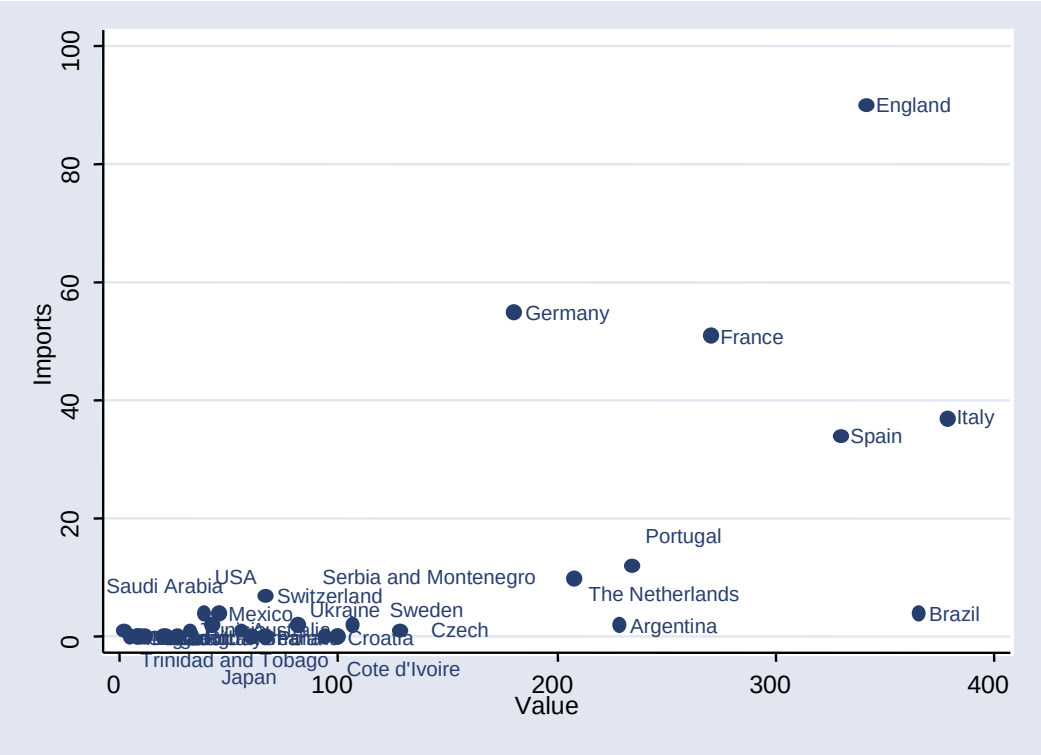

Figure A2: Scatter plot country and number of imports

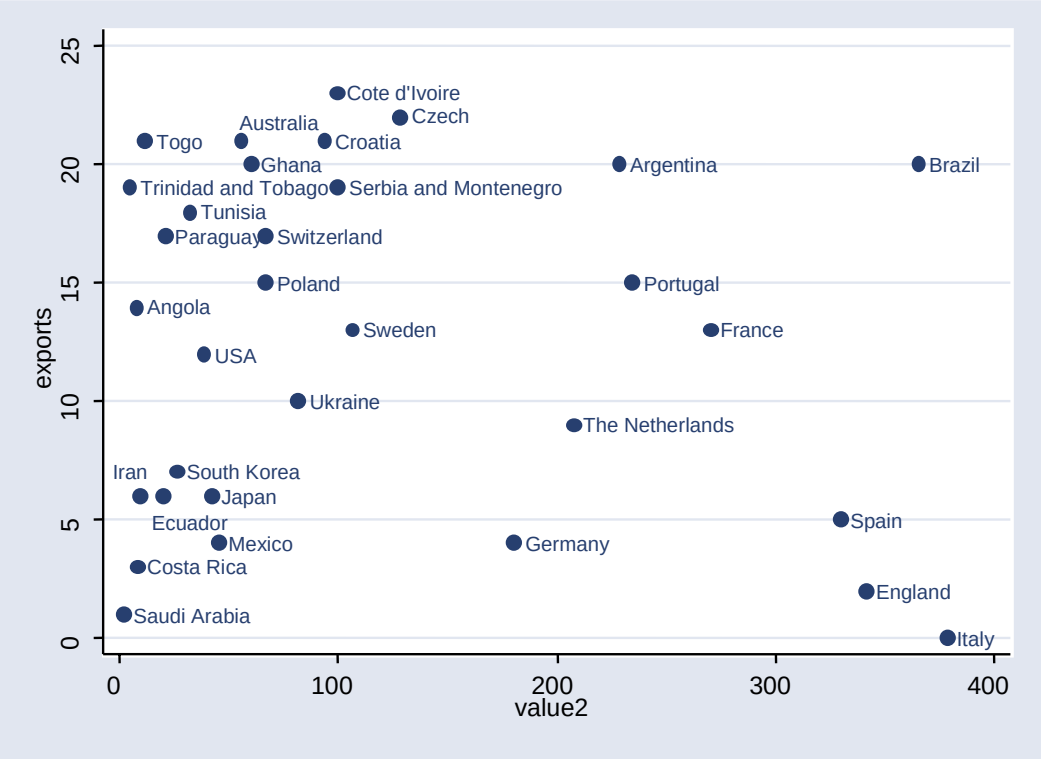

Figure A3: Scatter plot country and number of exports

Institute for International Integration Studies
The Sutherland Centre, Trinity College Dublin, Dublin 2, Ireland