



What Migration Policy for Innovation?

Lesson 5

Economics of Migration in Europe

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The objective of this section is:

- To understand if migration policies can spur innovation;
- if research results and common wisdom match



In the European debate the role played by migrants in **strengthening the competitiveness** seems the last resort to find a positive contribution of migrants in the destination economy.

Claims on the **larger use of the welfare state by migrants, their potential competitive role** in the labour market, the **difficult integration** has diverted the attention versus policies **restricting the immigration** and of limiting the inflows not only to the workers in demand but only to **highly skilled** which could reduce the negative effect previously mentioned and **spur the competition** .



The debate on the Highly-Skilled migrants legislations is very rich

In the USA H1B visa for STEM

if you are not Stem a lottery

EU Blue Card, no regional preferences (NRP)

Dutch Highly Skilled Migrants Scheme (NRP)

Belgian Permit B

Swedish HSM

What is the Common wisdom?



- Low skilled migrants cope with the drawbacks of an aging society working in agriculture, construction, care and health sector;

Highly skilled migrants favour innovation and growth



Why migrants should spur innovation?

- Quantity interpretation
 - ***Migrants are equal productive than natives***
- Excess demand for labour in quantity or prices; more flexible quality as individual and as group
 - ***Migrants are different from natives*** (Human capital, self selection, motivation, soft skills, network, brain waste);
- Complementarity between sectors
 - **Jacob (1968)**: Migrant as group-diversity of migrants



Definition of Innovation

“An innovation is the implementation of a new or significantly improved product (good or service) or process, a new marketing method or a new organizational method in business practices, workplace organization or external relations”

Source: OSLO Manual, OCDE 2005, pag. 12



HOW to measure?

Innovation is a multi-faced phenomenon. Popular indicators of innovation are:

1. The number of Patent applications (*Innovative capacity of a country*):

It provides valuable information on technological activities of inventors and companies are a **good proxy for the technological effort of companies and non-firm organizations aiming to create new products and processes (LIMITED TO THE MANUFACTURING SECTOR)**;

2. Total Factor Productivity (*Technical progress in its broadest sense*)

It is the residual after subtracting from the growth rate of value added the growth rates of capital and labour, weighted by their respective shares in the aggregate value added (**FOR ALL THE ECONOMY**)

3. Firms' Survey as the Community Innovation Survey



Robert Schuman Centre for Advanced Studies

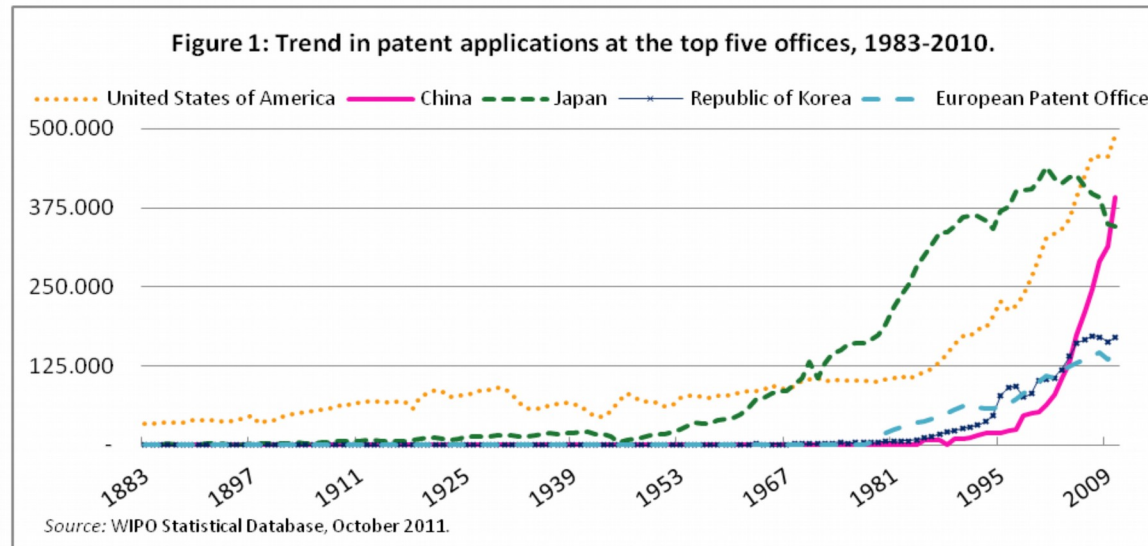
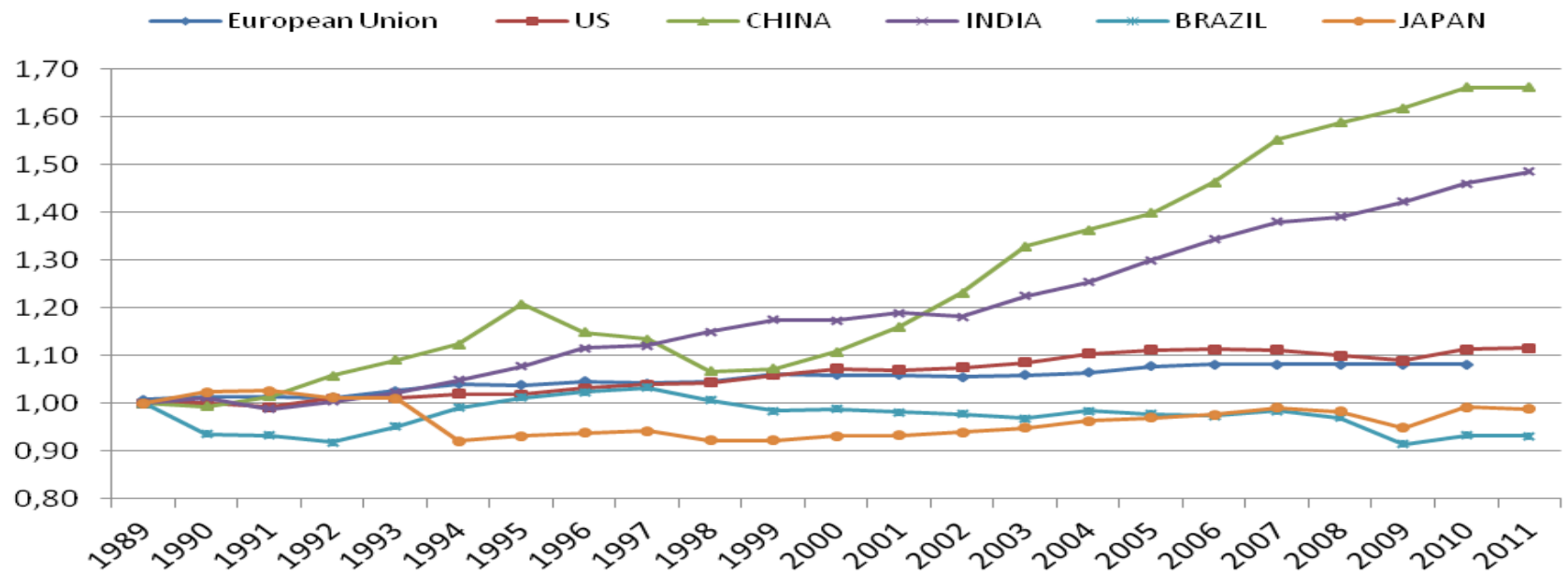




Figure 2: Total Factor Productivity growth in the largest countries.



Source: The Conference Board Total Economy Database and EU KLEMS Database. 1989 arbitrarily set to 1, the time series are constructed in the following way: $A(t+1) = A(t) (1 + \Delta A(t)/A(t))$



What is relevant for the destination country?

The production of patents?

Its implementation which can produce employment and surplus in the balance of payment?

Whithout the first is difficult to have the other but not always



What the Government should do?

Invest in research? (Small country vs. large countries);

Invest in education? Which type of education? STEM or general?;

Favouring the entrance of Highly Skilled Foreigners?;

Only Foreigners specialized in STEM? Or only Foreign students?



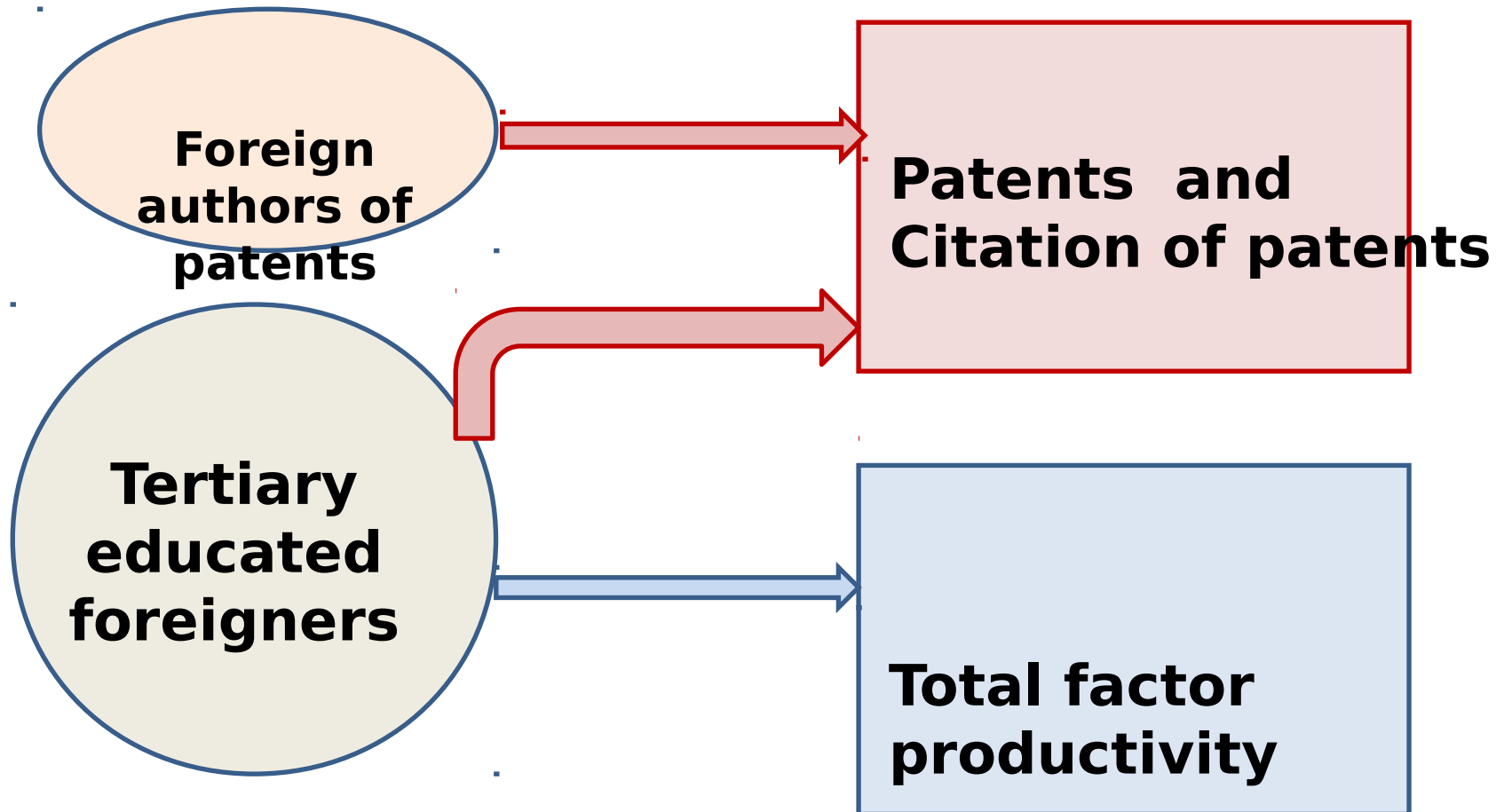
Research Approaches and Results

Lesson 5 -Migration and Innovation

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The case of Foreign inventors

Are highly skilled contributing to innovation?
Is migration policy playing a role?

On this issue the research is very clear foreigners has a positive effect and over-perform natives

In the USA the change in Visa (H1-B) policy which favoured the entrance of highly skilled in **Science and Technology migrants** favoured the growth of foreign inventors

(Hunt and Gauthier-Loiselle, 2010; Kerr and Lincoln 2010)

Note: Lissoni & al. will try to replicate their research for Europe.



Figure 2

Share of Foreign born employment by schooling group, 2000

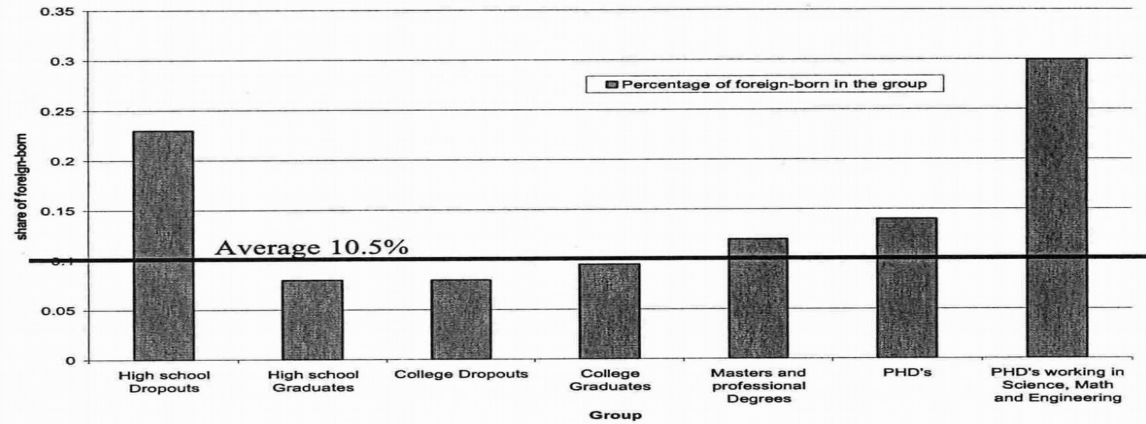
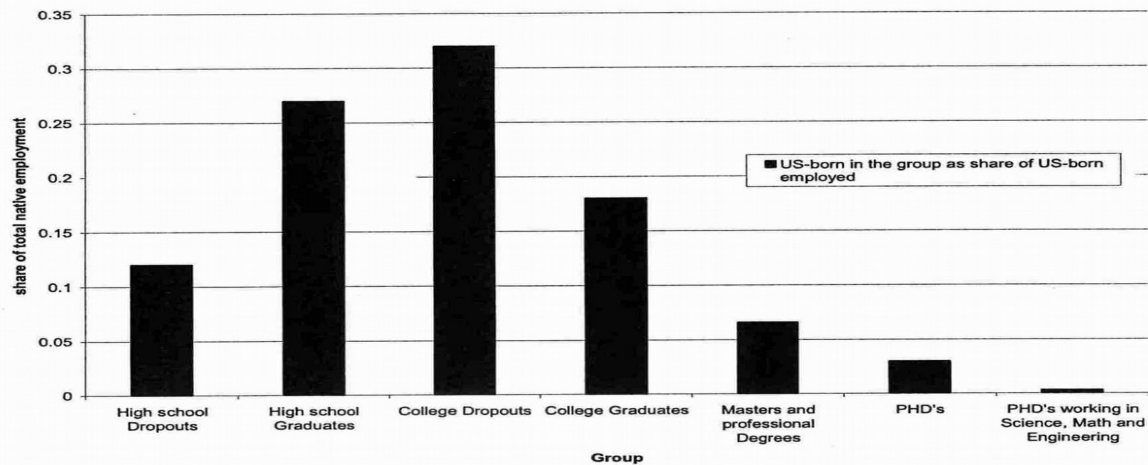


Figure 3

Distribution of US-born employed by schooling group, 2000





Policy prescription

More liberal entrance of S&T migrants

But other conditions are even more important:

- **Highly Skill Jobs available;**
- **Wage premium** (wage dispersion in the US is high wage 5 times low wage; France and Netherland 2.9, Demark and Switzerland 2.7 Belgium and Sweden 2.4);
- **Language;**
- **Open «Society» culture;**
- **Open «Firm» Culture;**



Are migrants contributing to innovation?

Only STEM workers or also Tertiary educated foreigners?



Patents

- Variables used
- Quantity of migrants level or share
- Quality of foreign workers: education, occupation
- Age
- Diversity of country of origin
- Regional/sector/firm level



Theoretical background

- **Immigrant diversity (Alesina et al. 2012)**
 - Contacts and interchanges between culturally diverse individuals foster creativity (Jacobs, 1969)
 - Culturally diverse environment attract creative individuals (Florida, 2010)
 - Diversity in production or diversity across sectors ? (Jacob 1969, Griliches, 1979)
 - Difficulties in communication (language) reduce social capital
 - Positive impact more likely for high skilled
- **Innovation has important sectoral specificities**
 - Knowledge base, technological opportunities, appropriability conditions
 - Waves of Immigrants contribute differently in different sectors and diversity at the 'production level' plays an important role
 - Help disentangling the 'black box' of the positive coefficients for diversity at the territorial level



Jacobs (1961): New York after WWII

- externalities
- importance of the environment
- *also low skilled and migrants not in the labour force*

- ***Diversity Index_{jc} = 1 - $\sum_{i=1}^N \text{Share}_{ijc}^2$***



Table 1 Summary of results in studies on patents and migrants				
	<i>Est. effect</i>	<i>Study</i>	<i>Unit of analysis</i>	<i>Inst.</i>
<i>Area approach: Multi-ethnic society</i>				
Share of Migrants	positive	OP (2013)	188 countries	Gravity
	no effect	ONP (2012)	EU NUTS2 regions	MacDonalds
	negative	BC (2012)	Italy NUTS3	Antonji and Card (1991)
Share of Highly Skilled Migrants	no effect	BC (2012)	Italy NUTS3	Antonji and Card (1991)
	positive	G (2012)	UK, TTWA 7digit post code	Card (2005, 2007)
Share of Highly Skilled Migrants (H-1B visa)	positive	KL (2010)	USA city level	N/A
Share of Migrants in Top Occupation	positive	BCV (2012)	EU 20 countries	Card (2001)
Share of Highly Skilled in High Tech	positive	BCV (2012)	EU 20 countries	Card (2001)
Share of Low Skilled Migrants	negative	BC (2012)	Italy NUTS3	Antonji and Card (1991)



Diversity Index (without natives)	positive	ONP (2012)	EU NUTS2 regions	MacDonalds
Diversity Index (with natives)	positive declining	DG (2014)	EU regions, 27 country	N/A
	negative	BC (2012)	Italy NUTS3	Antonji and Card (1991)
	positive	Na (2014)	UK, individual inventors	N/A
	positive	N (2010)	Germany NUTS3	5Ylag, space lag /latitude



<i>Sector approach: Multi-ethnic production</i>				
Highly Skilled Migrants	positive	FMV (2015)	19 Sectors for 13 years in in UK, DE, FR	GMM
Diversity Index (without natives)	no effect	FMV (2015)	19 Sectors for 13 years in in UK, DE, FR	GMM
<i>Firm approach: Multi ethnic team.</i>				
Immigrants' participation in ownership	no effect	M (2011)	Germany, firm level	N/A

Note: The following abbreviations are used OP Ortega and Peri (2014); BC Bratti Conti (2012); G Gagliardi (2011); KL Kerr, Lincoln (2010); BCV Bosetti, Cattaneo, Verdoloni (2012); ONP Ozgen, Nijkan, Poot (2012); N Neibuhr (2010); M Mueller (2011); DG Dohse and Gold (2014), Na Nathan (2014); FMV Fassio, Montobbio Venturini (2015).



Prevailing results with all the approaches are:

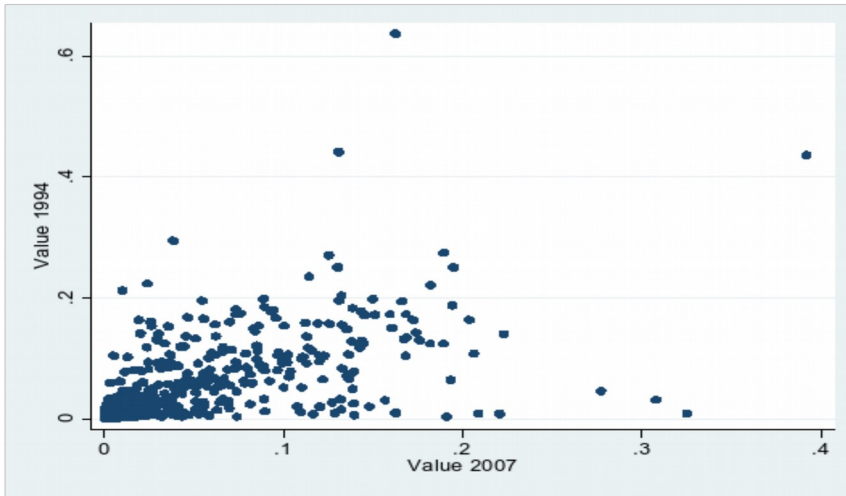
- **Highly skilled migrants hold a positive role**, but when the comparison with the natives is done, they hold a **lower coefficient than natives**;
 - **Low skilled migrants has a negative effect in low tech sector**
- At sector level different effect according to the sector

Diversity is not significant at sector level

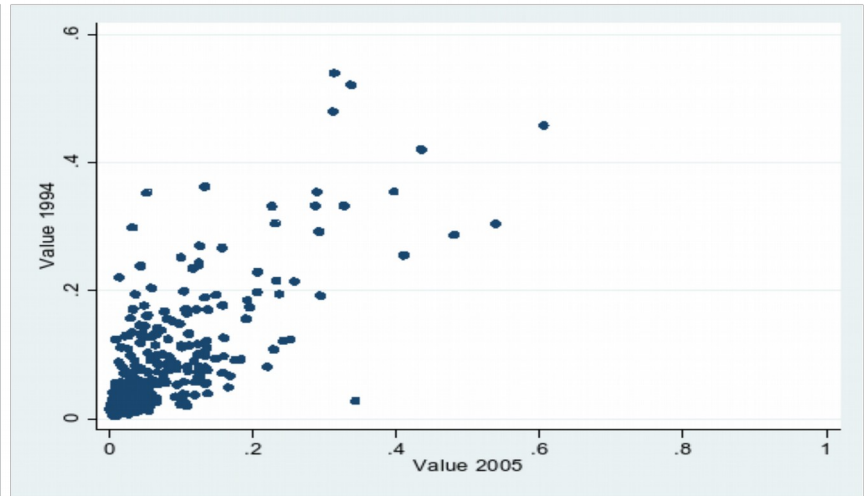
Migration in Europe

MigrEU Jean Monnet Module

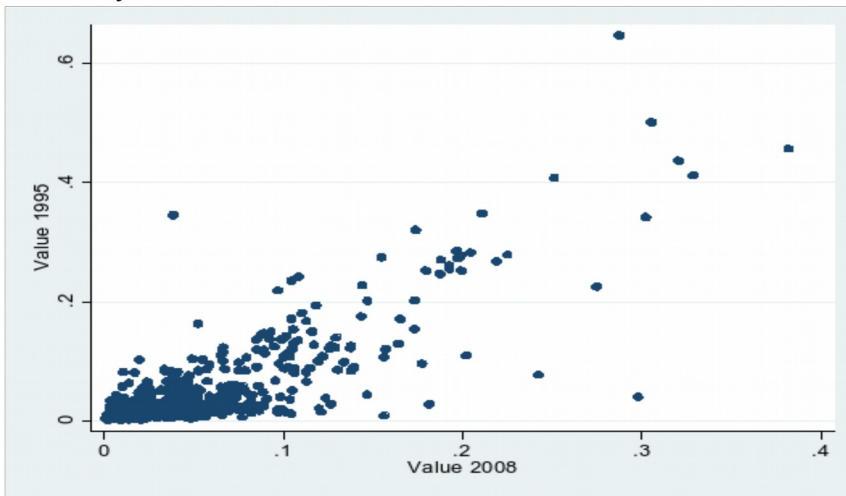
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Country: UK



Country: France





Additional evidence of sector complementarity:

Foreign low skilled workers in the family services are complement to native high skilled woman.

Source: (Baroni and Mocetti, 2011, Cortes and Tessada 2010, Romiti and Rossi 2011, Farre' etc 2009.)



Migration Policy should not favour country of origin diversity, thus they should not use QUOTA preferences

- A. USA no national preferences
- B. Eu Blue card universal, no geopolitical preferences however used by Germany, Belgium and France with geo-political limitation
- **Bilateral partnership agreements** and **Neighbourhood policies** which have territorial limitation do not pursue this objective



Total Factor Productivity

- Variables used
- Share of migrants
- Quality of foreign workers: education, occupation
- Age
- Diversity of country of origin
- Regional/sector/firm level



Table 2 Summaries of results in studies of Total Factor Productivity and Migrants

		<i>Est. effect</i>	<i>Study</i>	<i>Unit of analysis</i>	<i>Inst.</i>
<i>Area approach: Multi-ethnic society</i>					
Share of Migrants	positive	AHR(2012)	195 countries	Gravity	
	positive	OP (2013)	188 countries	Gravity	
	no effect	OP(2009)	OECD countries	Gravity	
Share of Highly-Skilled Migrants	positive	OP(2012)	OECD countries	Gravity	
	no effect	AHR (2014)	195 countries	Gravity	
Share of Low-Skilled Migrants	positive	AHR (2014)	195 countries	Gravity	
Diversity Index (without natives)	no effect	AHR (2014)	195 countries	Gravity	
Diversity Index Highly-Skilled (without natives)	positive	AHR (2014)	195 countries	Gravity	
Diversity Index Low Skilled (without natives)	no effect	AHR (2014)	195 countries	Gravity	



Sector approach: Multi-ethnic production

Share of Migrants	positive	FKV(2015)	89 Sectors, 13 years FR, DE, UK	Card (2005, 2007)
Share of Highly-Skilled Migrants	positive	FKV(2015)	89 Sectors, 13 years FR, DE, UK	Card (2005, 2007)
Diversity Index (without natives)	positive/no effect	FKV(2015)	89 Sectors, 13 years FR, DE, UK	Card (2005, 2007)

Note: The following abbreviations are used

AHR Alesina, Harnoss and Rapoport (2013); OP Ortega and Peri (2009); OP Ortega and Peri (2012); OP Ortega and Peri (2014); FKV Fassio, Kalantaryan and Venturini (2015).



Results of TFP

- Positive effect of highly skilled migrants but not in all sectors;
- Diversity significant at regional but not at sector level;
- Age of migrants;
- Negative in High tech sectors; Young workers are more productive,
- positive in services Old workers are more productive.



Firm level

Results are very different for different sampling and different environment

→ ***diversity can be significant only outside the firm***



Which migration policy could favour innovation?

The migration policy should be **demand driven**, no quota limitation is necessary (diversity is not an innovation driver), while the **highest human capital** should lead the selection.

If the country is in search of **foreign inventors** who overperform natives, it should implement a clear migration policy which focus on **STEM and needed expertise**.

But also **highly skilled migrants** will contribute to patent production even if less than the natives.



- If the priority is the growth and the TFP is the appropriate measure
→ the policy should be open to **tertiary educated migrants who spur growth in all the sectors**
- **Complementarity between sectors** of different intensity in human capital and the **complementarity of soft skills** play an important role.
- **Low-skilled workers contribute to the creation of a synergic environment, which favors the increase in productivity**



- The instruments to be used are at disposal, the EU Blue Card, the national HS system but they should be led by the demand.
- An open only to highly skilled migration policy as a supply side policy will produce a lot of brain waste which is not what is needed.
- Both native and migrants suffer of brain waste



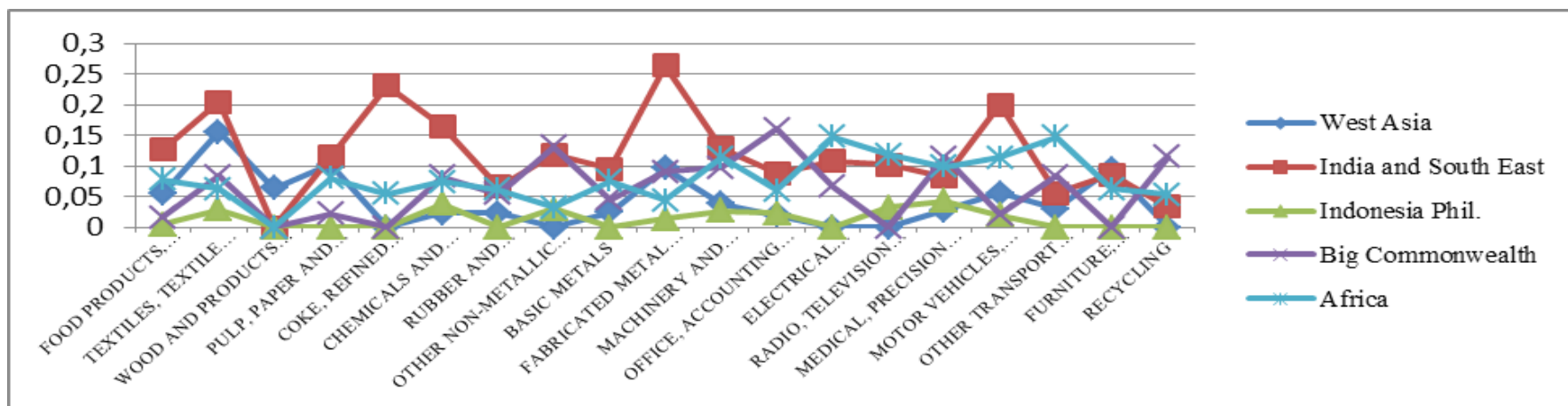
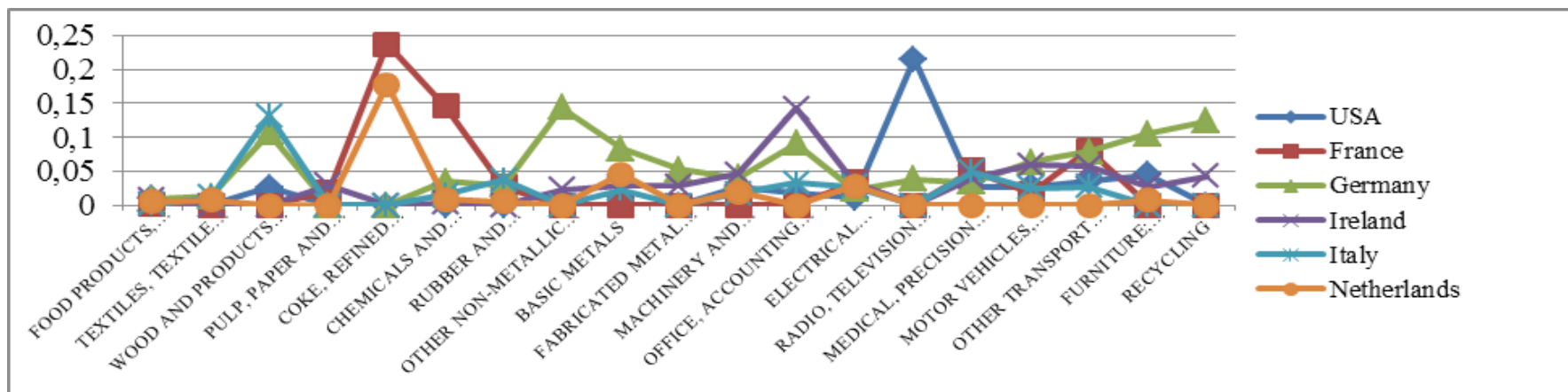
Readings

- C. Fassio, F. Montobbio e A. Venturini. (2015). ***Do native and migrant workers contribute to innovation? Patents dynamic in France, Germany and the UK***, Robert Schuman Centre for Advanced Studies Migration Policy Centre RSCAS 2015/41
- C. Fassio, S. Kalantaryan e A. Venturini. (2015). ***Human resources and innovation: Total Factor Productivity and foreign human capital***, Robert Schuman Centre for Advanced Studies, Migration Policy Centre, RSCAS 2015/43
- P. Fargues e A. Venturini A. (2015). ***Migration in North Africa and the Middle East: Skilled Migrants, Development and Globalisation*** (<http://www.ibtauris.com/Books/Society%20%20social%20sciences/Society%20%20culture%20general/Social%20issues%20%20processes/Globalization/Migration%20in%20North%20Africa%20and%20the%20Middle%20East%20Skilled%20Migrants%20Development%20and%20Globalisation.aspx>)

Migration in Europe

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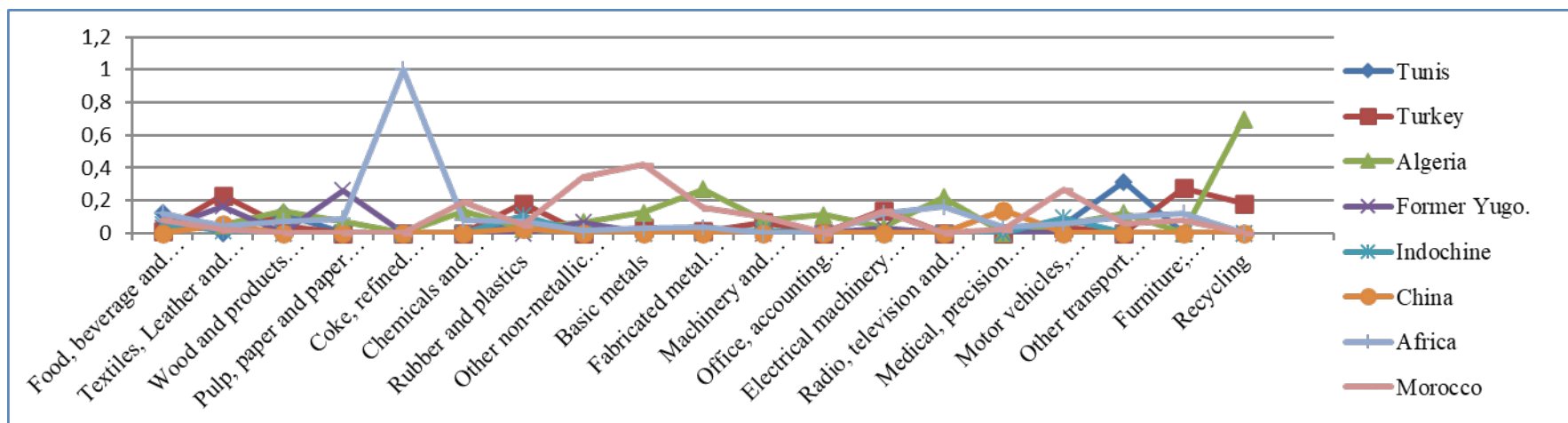
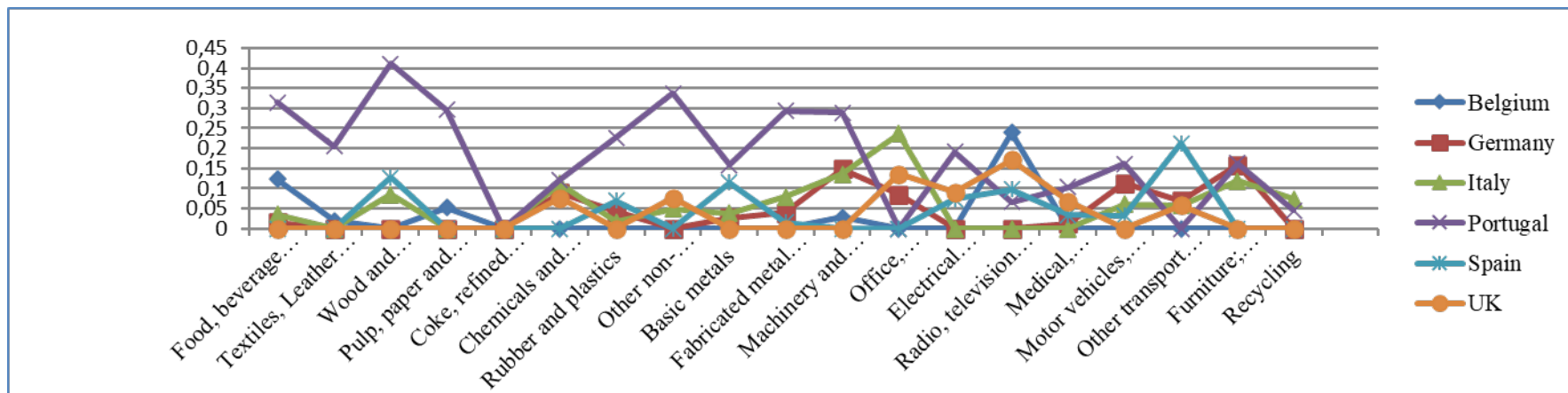
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Industry	USA	NED	Polan d	West Asia	India & South East	Indone sia Philipp.
15-16 Food products, beverages and tobacco	0.75	1.06	1.88	0.97	1.24	1.92
17-19 Textiles, text. prod., leather and footwear	0.52	0.87	0.05	2.27	1.95	0.58
24 Chemicals and chemical products	2.64	0.32	0.11	0.85	0.83	0.00
25 Rubber and plastics products	0.44	0.00	0.59	1.61	1.02	0.00
26 Other non-metallic mineral products	2.01	1.24	2.91	0.22	0.48	0.49
27 Basic metals	0.00	0.00	0.35	1.80	1.69	0.00
28 Fabricated metal products	1.28	0.00	1.36	0.52	0.90	1.40
29 Machinery and equipment, nec	1.05	1.73	0.14	0.80	0.94	1.75
30 Office, accounting and computing mach.	1.90	5.05	0.35	0.09	0.68	0.41
31 Electrical machinery and apparatus	0.06	0.00	0.00	0.00	0.00	0.00
32 (05). Radio, television and communication	0.26	0.00	0.88	0.72	0.61	2.43

Sectoral specialization in UK of immigrants by country of origin (00-

05).



Industry	diversity tertiary educated 1994-1999		diversity tertiary educated 2000-2005	
	UK	FRANCE	UK	FRANCE
15-16 Food products, beverages and tobacco	0.86	0.38	0.85	0.55
17-19 Textiles, text. prod., leather and footwear	0.76	0.71	0.85	0.62
24 Chemicals and chemical products	0.88	0.74	0.91	0.80
25 Rubber and plastics products	0.77	0.61	0.75	0.69
26 Other non-metallic mineral products	0.75	0.77	0.74	0.46
27 Basic metals	0.75	0.22	0.63	0.18
28 Fabricated metal products	0.81	0.71	0.83	0.49
29 Machinery and equipment, nec	0.88	0.37	0.89	0.79
30 Office, accounting and computing mach.	0.87	0.49	0.90	0.59
31 Electrical machinery and apparatus	0.85	0.46	0.81	0.69
32 Radio, television and communication	0.85	0.39	0.90	0.73
33 Medical, precision and optical instr.	0.82	0.36	0.84	0.70
34 Motor vehicles, trailers and semi-trailers	0.81	0.41	0.83	0.64