The Impact of an International Competitive Pressure on the French Exports Portfolio

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Context & Broad Motivation (1)

- Since the mid-1990s, emerging countries have :
  - opened their economies ;
  - improved their connectedness to world trade networks ;
  - increased their exports much faster than the leading developed ones.

- The spectacular trade performance and the quick integration into the global trade network explain the fact that emerging countries tend to catch up the developed ones and to reduce their gaps with respect to the previous leaders.

Share of emerging countries in the commodities' world trade flows : 26% in 1995 to 44% in 2014 - Share of the most developed countries has decreased by 18% over the same period (WTO, 2015)

Context & Broad Motivation (2)

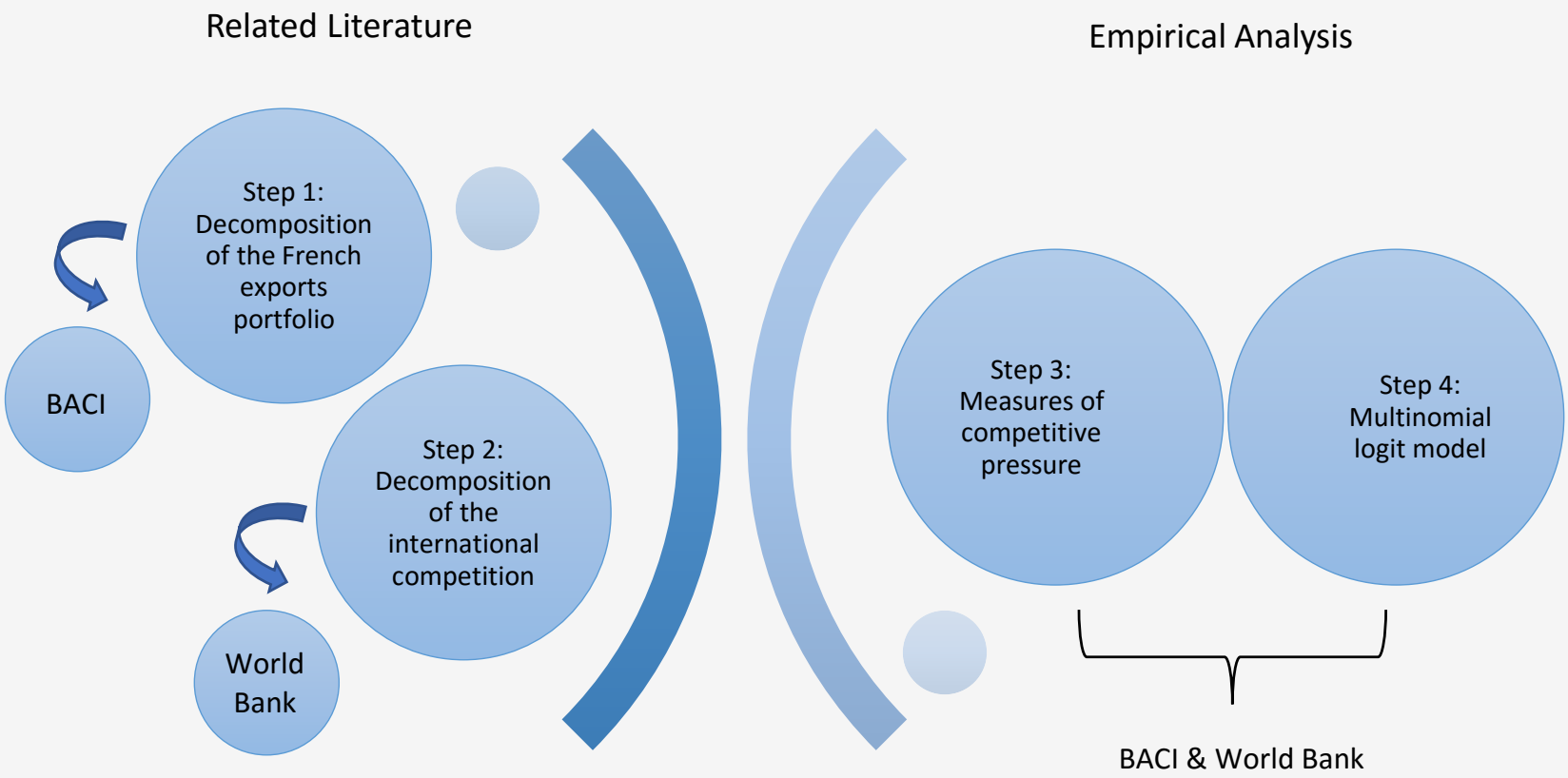
- Developed countries should also face an increased competition within them.
- Although they are important trading partners, they are formidable competitors to each other.
- In the recent years, export performances of developed countries have been questioned and compared with each other.
  - European countries are not free from comparisons.
  - The ability to distinguish their products and to increase their exports in existing markets explains their export divergences.

Focus of the Research

- Origin and effect of the international competitive pressure on the modification in the composition of the French exports portfolio.

- The paper aims to close two gaps in the literature :
  - *(i)* it studies not only low costs competitors but all exporter countries and classifies them in terms of income levels ;
  - *(ii)* it studies the effect of the international competition on a developed country, not on an emerging one.

Synopsis of the Methodology



Related Literature

- Closely related papers :
  - Bernard et al., 2006 : Role of international trade in the reallocation of U.S. manufacturing within and across industries from 1977 to 1997.
  - Bloom et al., 2012 : Impact of the Chinese manufacturing competition on Western countries.
  - Iacovone et al., 2013 : Surge in Chinese exports from 1994 to 2004 to evaluate the effects of a competition shock from a low wage competitor for producers in a middle-income country, Mexico.

- Level of the analysis : Single pairwise of product-destination.

Step 1 : Decomposition of the French exports portfolio

- **Intensive margin** : Change in the **value** of export flows (Hummels and Klenow, 2005 ; Berthou and Fontagné, 2008).
  - Existing export flows that have been maintained, whose value has increased : 84,439.
  - Existing export flows that have been maintained, whose value has decreased : 47,033.

- **Extensive margin** : Change in the **number** of export flows (Hummels and Klenow, 2005 ; Berthou and Fontagné, 2008).
  - Exits of existing export flows : 43,358.
  - Entries of new export flows : 61,551.

BACI data → Two sub-periods of time : 1996-1998 & 2011-2013 (Besedes and Prusa, 2011)

Step 2 : Decomposition of the international competition

- **Cost competition** : From **developing** countries.
  - Cost competition 1 (Continuously lower than 5%) : 53.
  - Cost competition 2 (Not continuously less than 5%) : 11.
  - Cost competition 3 (Continuously between 5-25%) : 43.

- **Technological competition** : From **developed** countries.
  - Technological competition 1 (Continuously between 25-50%) : 17.
  - Technological competition 2 (Continuously between 50-75%) : 11.
  - Technological competition 3 (Continuously higher than 75%) : 21.

World Bank data → Quartile distribution (Reference country : France) → per-capita GDP → Additional restriction : 5% threshold (Bernard et al., 2006; Lelarge et Nefussi, 2010)

Empirical analysis

- **BACI (HS6, 1992 revision)** :
  - Country/Product level.
  - Harmonized world trade flows.

- **World Bank** :
  - Country level.
  - Income data.

- Sample : 156 exporter countries from 1996 to 2013.
  - Note : OPEP countries are excluded.

Step 3 : Measures of competitive pressure

Relative market shares

→ Traditional competition measure.

→ Double scale of products & destinations.

$$ms^{\alpha}_{kj,t} = \frac{x^{\alpha}_{kj,t}}{X_{kj,t}}$$

Imports penetration

→ Competition in the domestic market (Bernard et al., 2006).

→ Single scale of products.

$$ip^{\alpha}_{k,t} = \frac{M^{\alpha}_{Fr,k,t}}{M_{Fr,k,t} + Y_{Fr,t} - X_{Fr,k,t}}$$

Exports sophistication

→ Competition in foreign markets (Hausmann et al., 2007).

→ Single scale of destinations.

$$es^{\alpha}_{j,t} = \sum_{k} \left(\frac{x^{\alpha}_{kj,t}}{X^{\alpha}_{j,t}} \right) \times PRODY_{k,t}$$

Details

Step 4 : Multinomial Logit Model

$$Pr(y_{kj,t_1/t_2} = m | X^{\alpha}_{kj,t_1/t_2}) = \frac{exp^{(\beta X^{\alpha}_{kj,t_1/t_2})}}{\sum_{m=1}^{3} exp^{(\beta X^{\alpha}_{kj,t_1/t_2})}}$$

$y_{kj,t_1/t_2}$	:	Multinomial qualitative dependent variable associated with each single pairwise of product-destination kj.
$\Delta ms^{\alpha}_{kj,t_1/t_2}$	:	Growth in the relative market shares held by each category of competitors α for each product-destination pairwise kj served between t_1 and t_2.
$\Delta ip^{\alpha}_{k,t_1/t_2}$	:	Growth in imports penetration associated with each category of competitors α for each product k exported towards France between t_1 and t_2.
$\Delta es^{\alpha}_{j,t_1/t_2}$	:	Growth in exports sophistication associated with each category of competitors α for each destination j served between t_1 and t_2.

Estimation results & Discussion

	LT		MLT		MHT		HT	
	m=2	**m=3**	**m=2**	**m=3**	**m=2**	**m=3**	**m=2**	**m=3**
$\Delta ms^{CC1}_{kj,t_1/t_2}$	1,003*	0,993***	1,000	0,988***	0,997***	0,989***	1,002	1,007***
	(0,00167)	(0,00196)	(0,00125)	(0,00223)	(0,00125)	(0,00168)	(0,00171)	(0,00221)
$\Delta ms^{CC2}_{kj,t_1/t_2}$	1,005***	0,978***	0,999	0,972***	1,003*	0,975***	1,002	0,972***
	(0,00152)	(0,00212)	(0,00168)	(0,00280)	(0,00136)	(0,00218)	(0,00143)	(0,00252)
$\Delta ms^{CC3}_{kj,t_1/t_2}$	1,007***	0,995***	0,997**	0,987***	1,000	0,991***	0,994***	0,989***
	(0,00165)	(0,00208)	(0,00146)	(0,00181)	(0,00139)	(0,00160)	(0,00155)	(0,00203)
$\Delta ms^{CT1}_{kj,t_1/t_2}$	0,997*	0,984***	0,997*	0,981***	0,996**	0,976***	1,001	0,974***
	(0,00152)	(0,00214)	(0,00170)	(0,00200)	(0,00148)	(0,00175)	(0,00166)	(0,00210)
$\Delta ms^{CT2}_{kj,t_1/t_2}$	0,996**	0,996	0,998	0,999	0,995***	0,991***	0,995***	0,989***
	(0,00183)	(0,00271)	(0,00160)	(0,00203)	(0,00124)	(0,00144)	(0,00207)	(0,00203)
$\Delta ms^{CT3}_{kj,t_1/t_2}$	0,977***	0,974***	0,975***	0,960***	0,970***	0,953***	0,953***	0,951***
	(0,00334)	(0,00524)	(0,00472)	(0,00677)	(0,00411)	(0,00670)	(0,00544)	(0,00833)
$\Delta ip^{CC1}_{k,t_1/t_2}$	0,989***	0,984***	0,995***	0,987***	0,996***	0,984***	0,996***	0,997**
	(0,000897)	(0,000959)	(0,00106)	(0,00122)	(0,000632)	(0,00111)	(0,00118)	(0,00125)
$\Delta ip^{CC2}_{k,t_1/t_2}$	1,003**	0,989***	1,002**	0,995***	0,995***	0,982***	1,002*	0,986***
	(0,00114)	(0,00169)	(0,000904)	(0,00151)	(0,000648)	(0,00122)	(0,00119)	(0,00161)
$\Delta ip^{CC3}_{k,t_1/t_2}$	0,999	0,989***	0,994***	0,987***	0,995***	0,987***	0,988***	0,996**
	(0,00119)	(0,00124)	(0,00120)	(0,00138)	(0,000878)	(0,000831)	(0,00151)	(0,00147)
$\Delta ip^{CT1}_{k,t_1/t_2}$	0,993***	0,988***	0,995***	0,988***	0,995***	0,985***	0,994***	0,988***
	(0,000910)	(0,00110)	(0,000971)	(0,00130)	(0,000737)	(0,00107)	(0,001000)	(0,00138)
$\Delta ip^{CT2}_{k,t_1/t_2}$	0,983***	0,989***	0,995**	1,007***	0,993***	0,991***	1,000	0,986***
	(0,00191)	(0,00185)	(0,00180)	(0,00246)	(0,00116)	(0,00132)	(0,00208)	(0,00218)
$\Delta ip^{CT3}_{k,t_1/t_2}$	0,931***	0,910***	0,968***	0,954***	0,952***	0,938***	0,942***	0,950***
	(0,00416)	(0,00470)	(0,00274)	(0,00420)	(0,00282)	(0,00284)	(0,00435)	(0,00349)
$\Delta es^{CC1}_{j,t_1/t_2}$	0,972	0,915**	0,924***	0,849***	0,940**	0,864***	0,943**	0,917**
	(0,0252)	(0,0367)	(0,0278)	(0,0435)	(0,0241)	(0,0373)	(0,0239)	(0,0311)
$\Delta es^{CC2}_{j,t_1/t_2}$	0,978	0,774**	0,853*	0,687**	0,886	0,726**	0,839**	0,687***
	(0,0989)	(0,0809)	(0,0709)	(0,110)	(0,0667)	(0,0934)	(0,0647)	(0,0687)
$\Delta es^{CC3}_{j,t_1/t_2}$	1,088*	0,822**	1,080	0,795**	1,090	0,796**	1,132**	0,855**
	(0,0532)	(0,0736)	(0,0653)	(0,0906)	(0,0594)	(0,0787)	(0,0627)	(0,0633)
$\Delta es^{CT1}_{j,t_1/t_2}$	1,046	1,015	1,129**	0,976	1,095*	0,986	1,175***	0,993
	(0,0553)	(0,0730)	(0,0663)	(0,0866)	(0,0558)	(0,0790)	(0,0609)	(0,0605)
$\Delta es^{CT2}_{j,t_1/t_2}$	1,019	0,908	0,963	0,883	0,911	0,898	0,981	0,948
	(0,0836)	(0,0758)	(0,0866)	(0,108)	(0,0710)	(0,105)	(0,0787)	(0,0668)
$\Delta es^{CT3}_{j,t_1/t_2}$	0,862	1,011	1,019	1,227	0,953	0,937	0,970	1,020
	(0,0974)	(0,196)	(0,161)	(0,275)	(0,135)	(0,201)	(0,125)	(0,176)
Constant parameter	0,580	3,286**	0,846	5,603***	0,905	8,010***	0,534**	4,054***
	(0,202)	(1,606)	(0,268)	(2,916)	(0,249)	(4,345)	(0,157)	(1,814)
Observations	58 206		34 708		63 092		18 818	
Wald $\hookrightarrow \chi^2(18)$	$Pr > \chi^2 = 0,000$ for all outcome combinaisons							
Small-Hsiao (for IIA)	24,027#	21,877#	26,417#	14,596#	38,629	28,606#	20,368#	16,244#

Estimation results & Discussion

- Low- and middle-income countries exert a negative competitive pressure on the French exports portfolio.
  - A negative competitive pressure on the double scale of products and destinations for LT and MHT markets (from China for instance).
  - A negative competitive pressure on the single scale of destinations for all markets (from Chile or Hungary for instance).

- High-income countries with similar export and productive structures do not exert a negative competitive pressure on the French exports portfolio.

Estimation results & Discussion

- Restriction 1 : I narrow the model around the hearty sample.

- Restriction 2 : I narrow the model around three new categories of competitors.
  - CC1 + CC2 = Low-income countries;
  - CC3 + TC1 = Middle-income countries;
  - TC2 + TC3 = High-income countries.

Sum-up & Steps forward

- The origin of international competition does not affect in the same way the changes in the French exports portfolio composition.
- No evidence for countries included in cost competition 1, cost competition 3 and technological competition 2.
- Results need to be confirmed with :
  - a strongest control in terms of destination (demand side);
  - a thinnest imports penetration measure.

Thank for your attention

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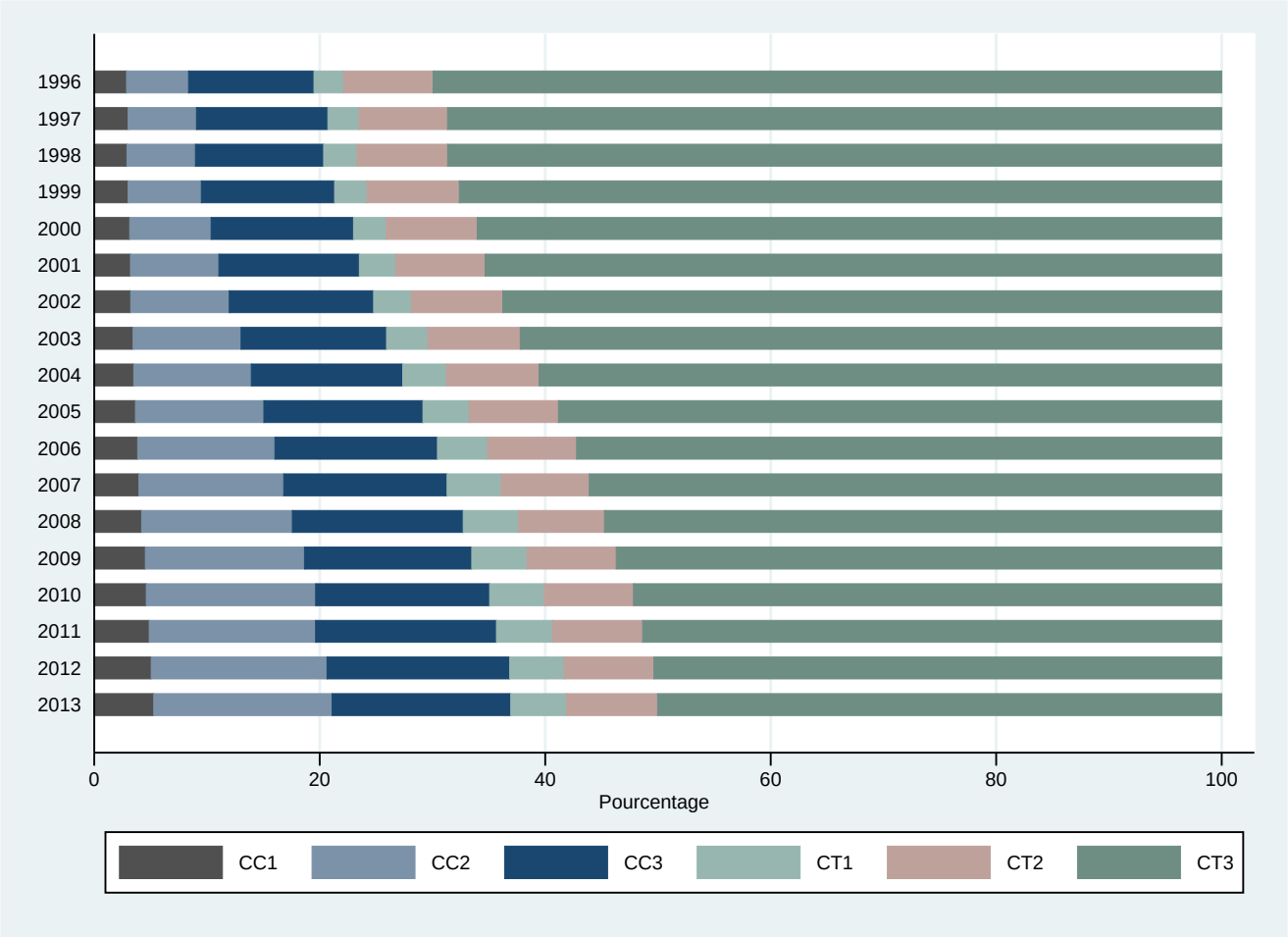
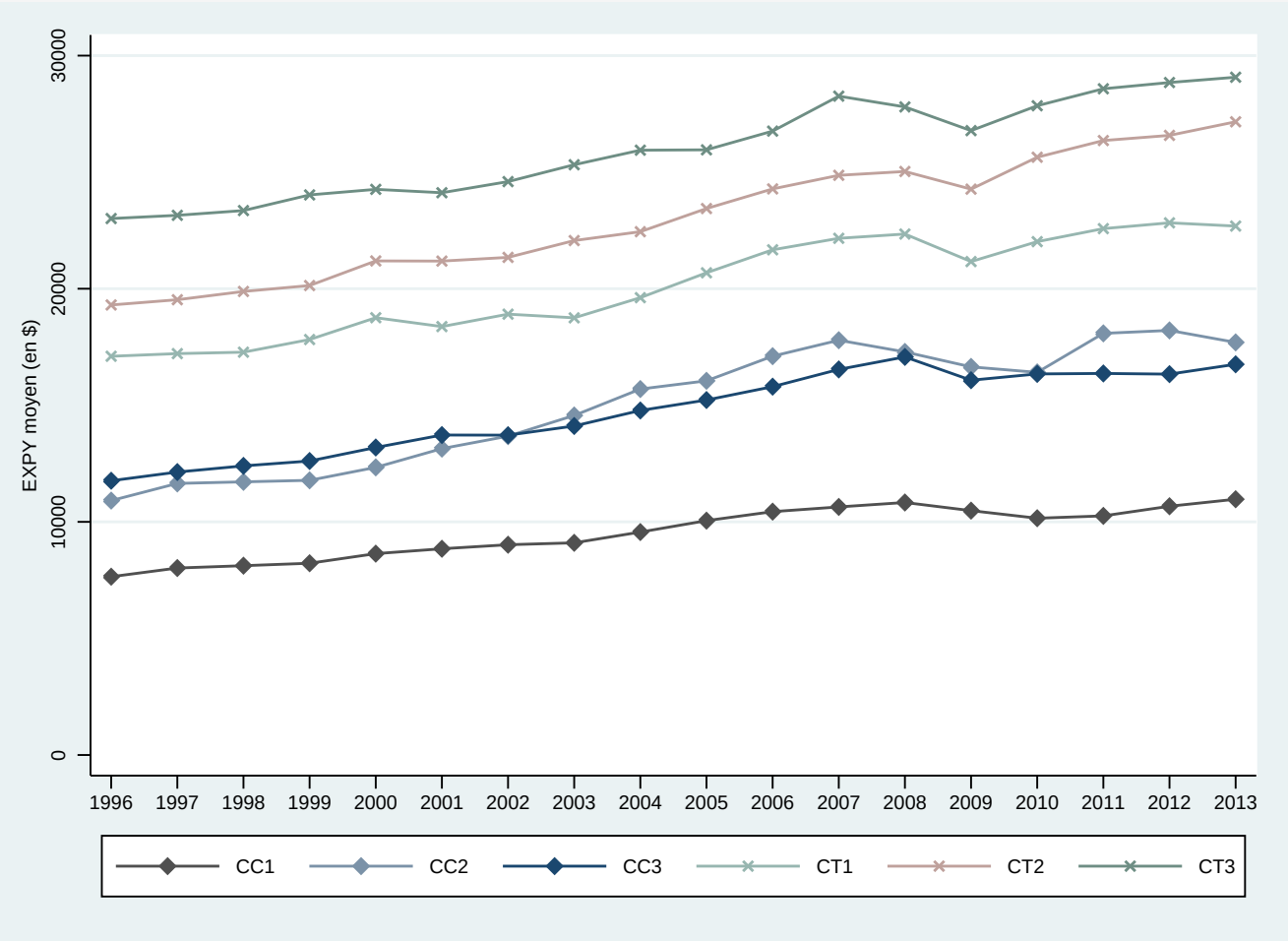
Figure 1 - Relative market shares by competitors



Source : BACI and World Bank - Author calculations.

Figure 2 - Exports sophistication by competitors



Source : BACI and World Bank - Author calculations.

Table 1 - International competition

Cost Competition 1 Countries with per-capita GDP continuously less than or equal to 5% of that of France, $N_{CC1} = 53$ countries	Bangladesh, Benin, Bolivia, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Chad, Comoros, Congo Dem. Rep., Cote d'Ivoire, Djibouti, Egypt Arab Rep., Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Guyana, Honduras, India, Kenya, Kiribati, Liberia, Madagascar, Malawi, Mali, Mauritania, Moldova, Mongolia, Mozambique, Nepal, Nicaragua, Niger, Pakistan, Papua New Guinea, Philippines, Lao PDR, Kyrgyz Republic, Rwanda, Senegal, Sierra Leone, Solomon Islands, Tajikistan, Tanzania, Togo, Uganda, Uzbekistan, Vietnam, Yemen Rep., Zambia, Zimbabwe
Cost Competition 2 Countries with per-capita GDP initially less than 5% of that of France but not over the whole period, $N_{CC2} = 11$ countries	Armenia, Azerbaijan, Bhutan, Bosnia and Herzegovina, Cabo Verde, China, Georgia, Equatorial Guinea, Sri Lanka, Turkmenistan, Ukraine
Cost Competition 3 Countries with per-capita GDP continuously included between 5 and 25% of that of France, $N_{CC3} = 43$ countries	Albania, Belarus, Belize, Brazil, Bulgaria, Colombia, Congo Rep., Costa Rica, Cuba, Dominica, Dominican Republic, El Salvador, Macedonia FYR, Fiji, Grenada, Guatemala, Jamaica, Jordan, Kazakhstan, Lebanon, Malaysia, Marshall Islands, Mauritius, Mexico, Micronesia, Morocco, Panama, Paraguay, Peru, Romania, Russian Federation, St. Vincent and the Grenadines, St. Lucia, Samoa, South Africa, Suriname, Thailand, Tonga, Tunisia, Turkey, Tuvalu, Uruguay, Vanuatu
Technological Competition 1 Countries with per-capita GDP continuously included between 25 and 50% of that of France, $N_{TC1} = 17$ countries	Antigua and Barbuda, Barbados, Chile, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Oman, Palaos, Poland, Slovak Republic, St. Kitts and Nevis, Seychelles, Trinidad and Tobago
Technological Competition 2 Countries with per-capita GDP continuously or mostly included between 50 and 75% of that of France, $N_{TC2} = 11$ countries	Bahamas, Bahrain, Cyprus, Greece, Hong Kong, Israel, Portugal, Korea Rep., Macao SAR, Slovenia, Spain
Technological Competition 3 Countries with per-capita GDP continuously or mostly higher than 75% of that of France, $N_{TC3} = 21$ countries	Australia, Austria, Belgium-Luxembourg, Bermuda, Brunei Darussalam, Canada, Denmark, Finland, Germany, Iceland, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Singapore, Sweden, Switzerland, United Kingdom, United States

Source : World Bank - Author calculations.

Measures of competitive pressure - More details

Relative market shares

$$ms^{\alpha}_{kj,t} = \frac{x^{\alpha}_{kj,t}}{X_{kj,t}}$$

$\rightarrow \alpha$: Category of competitors.

$\rightarrow kj$: Single pairwise of product-destination.

$\rightarrow x$: Exports value.

$\rightarrow X$: Exports total value.

Imports penetration

$$ip^{\alpha}_{k,t} = \frac{M^{\alpha}_{Fr,k,t}}{M_{Fr,k,t} + Y_{Fr,t} - X_{Fr,k,t}}$$

$\rightarrow \alpha$: Category of competitors.

$\rightarrow k$: Product.

$\rightarrow M_{Fr}$: French total imports.

$\rightarrow Y_{Fr}$: French growth national product.

$\rightarrow X_{Fr}$: French total exports.

Exports sophistication

$$es^{\alpha}_{j,t} = \sum_{k} \left(\frac{x^{\alpha}_{kj,t}}{X^{\alpha}_{j,t}} \right) \times PRODY_{k,t}$$

$\rightarrow \alpha$: Category of competitors.

$\rightarrow j$: Destination.

$\rightarrow PRODY$: Product sophistication index.

$$PRODY_k = \sum_{i=1}^{I} RCA^{i}_{k} \times Y^{i}$$