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Demand-led growth decomposition and trade structures: towards a spectrum of export-led models

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Introduction

- **Demand and growth regimes, growth models, growth drivers** and other concepts have been increasingly used in PKE, CPE and IPE, sometimes with multiple meanings
- Hein (2023) proposes distinguishing the following complementary levels of analysis:
 1. **National income and financial accounting (NIFA)** decomposition: sources of demand growth and financing, based on accounting conventions
 2. **Sraffian supermultiplier (SSM)** growth decomposition: distinguishing between autonomous and induced components of demand growth
 3. **Growth drivers**: determinants of the dynamics of the different demand components (distribution, financial boom-bust cycles, house prices, commodity prices, MNEs and FDI, government policies, macroeconomic policy regimes...)
 4. **Political economy**: socio-institutional forces behind growth drivers (growth strategies, growth coalitions, dominant social blocs...)

Focus and contribution

- **Focus:** first and second levels of analysis, NIFA and SSM demand-led growth decompositions
- **Contributions:**
 - Review of different levels of DGR analysis and synthesis of results from previous studies
 - Systematic comparison of NIFA and SSM demand-led growth decomposition approaches, application to seven advanced and emerging economies (Germany, Spain, Argentina, Brazil, India, South Africa, Turkey) before and after the GFC and the GR, 2007-2009
 - Integration of demand-driven growth regimes and structural features: extension towards export structures
- We recognize **heterogeneity across export-led regimes** and highlight the **limitations of universal analytical frameworks** that might obscure **important structural differences**

The national income and financial accounting (NIFA) approach

- **Growth contributions and financial balances**
 - Structure of **demand dynamics** reveals potential **imbalances**
 - **Financial balances** are linked with **debt dynamics**
 - **Complementarity of regimes** may generate regional/global current account imbalances
 - Approach based on accounting conventions, **compatible with different theories about growth drivers**

$$(1) \quad \hat{Y}_t = \frac{\Delta Y_t}{Y_{t-1}} = \frac{\Delta C_t}{Y_{t-1}} + \frac{\Delta G_t}{Y_{t-1}} + \frac{\Delta I_t}{Y_{t-1}} + \frac{\Delta X_t}{Y_{t-1}} - \frac{\Delta M_t}{Y_{t-1}} = \frac{\Delta C_t}{Y_{t-1}} + \frac{\Delta G_t}{Y_{t-1}} + \frac{\Delta I_t}{Y_{t-1}} + \frac{\Delta NX_t}{Y_{t-1}}$$

$$(2) \quad FB_P + FB_G + FB_E = 0$$

- **Four regimes:** Export-led mercantilist (ELM); Weakly export-led (WEL); Domestic demand-led (DDL); Debt-led private demand boom (DLPD)

NIFA approach: previous studies

Table 2. Shift of DGRs in advanced economies according to studies making use of the NIFA decomposition approach

		Post 2007-09 crisis			
		Debt-led private demand (DLPD)	Domestic demand-led (DDL)	Weakly export-led (WEL)	Export-led mercantilist (ELM)
Pre-2007-09 crisis	DLPD		New Zealand ⁷ UK ^{4,6,7} USA ^{4,6,7}	Australia ⁷ Greece ^{4,7,8} Portugal ⁷ Slovakia ⁷ Spain⁷	Estonia ^{4,5,7} Hungary ⁷ Ireland ^{7,8} Latvia ⁵ Spain^{6,8}
	DDL		France ^{4,6,7,8}	Italy ^{4,7} Poland ^{1,4,7,10} Portugal ^{4,8}	EA-12 ^{6,8} Italy ^{2,8} Hungary ^{4,10}
	WEL	Canada ⁹		Czech Rep. ⁷ Iceland ⁷ Norway ⁷	Denmark ^{5,7} Slovenia ⁷
	ELM		Finland ^{7,8}	Austria ⁷ Belgium ⁸ Japan ^{4,7} Sweden ^{4,6,7}	Austria ⁸ Belgium ⁷ Germany^{3,4,6,7,8} Korea ⁷ Luxembourg ⁷ Netherlands ^{7,8} Switzerland ⁷

Sources: ¹Akçay and Jungmann (2023), 1999-2008, 2009-20, ²Bramucci (2024), 2001-09, 2010-19, ³Campana and Hein (2025), 1999-2009, 2010-20, ⁴Dodig et al. (2016), 2001-08, 2009-14; ⁵Dünhaupt and Hein (2019), 1995-2008, 2009-16; ⁶Hein (2019), 1999-2007, 2008-16; ⁷Hein et al. (2021), 2000-08, 2009-16; ⁸Hein and Martschin (2020), 2001-09, 2010-19, ⁹Klassen (2024), 2001-09, 2010-20, ¹⁰Kühnast (2024), 2000-08, 2009-19

NIFA approach: previous studies

Table 3. Shift of DGRs in emerging economies according to studies making use of the NIFA decomposition approach

		Post 2007-09 crisis			
		Debt-led private demand (DLPD)	Domestic demand-led (DDL)	Weakly export-led (WEL)	Export-led mercantilist (ELM)
Pre-2007-09 crisis	DLPD	South Africa ²	South Africa ⁴		
	DDL	Turkey ^{1a,2,4}	India ^{2,3}	Brazil ³ Mexico ² Turkey ^{1b}	
	WEL		Brazil ²		Russia ^{2,3}
	ELM		Argentina ^{2,5}	China ^{2,3}	

Sources: ¹ Akcay and Jungmann (2023), 1999-2008, ^{1a} 2009-13, ^{1b} 2014-20; ² Akcay et al. (2022), 2000-08, 2009-19; ³ Campana et al. (2024), 2001-10, 2011-19; ⁴ Dodig et al. (2016), 2001-08, 2009-14; ⁵ Ianni (2024), 2002-09, 2010-19

- **Advanced:** shift towards ELM or WEL, or DDL with high public deficits after GFC and GR
- **Developing:** tendency towards/continuation of domestic demand-led regimes stabilised by government deficits and even debt-led private demand regimes. Classification of some developing countries unclear: Brazil, South Africa, Turkey

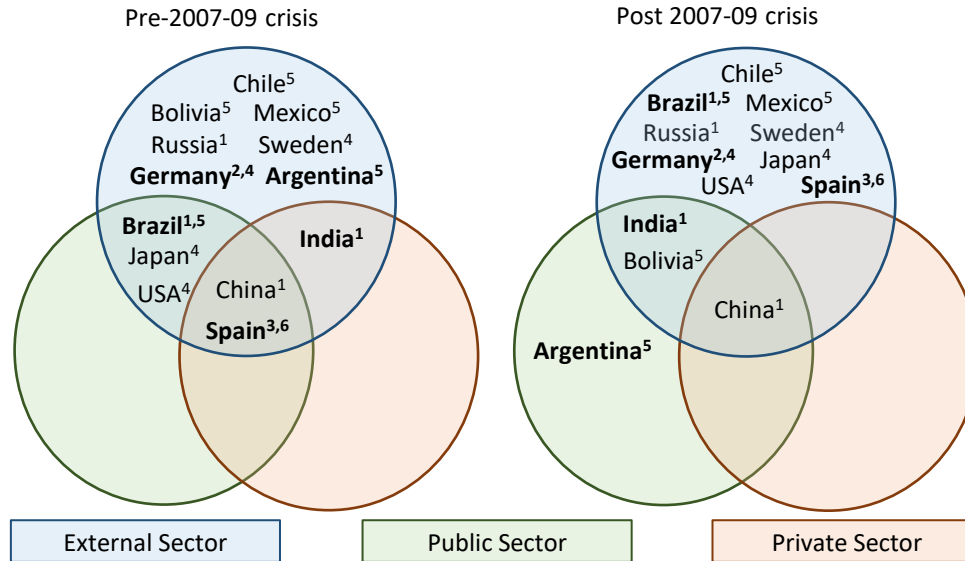
The Sraffian supermultiplier (SSM) approach

- Theoretically informed growth decomposition: long-run growth is based on **autonomous non-capacity creating demand, not financed or induced by current income** (Serrano 1995, Freitas/Serrano 2015, 2017): autonomous private consumption, residential investment, exports or government consumption and investment expenditures
- Income financed private consumption, corporate investment and imports are **fully induced**
- Links with **economic structure and political economy**: determination of autonomous components and changes in the components of the supermultiplier. Provides grounds for **systematic analysis of growth drivers**
- **Relative importance** of the different components of autonomous demand **changes over time**
- **Supermultipliers are not constant** and show trends caused by changes in income distribution and behavioural parameters (i.e. inducement to consume, to invest or to import)

$$(7) \quad \hat{Y}_t = \mu_t \left(\frac{C_{a,t-1}}{Y_{t-1}} \right) \hat{C}_{a,t} + \mu_t \left(\frac{I_{a,t-1}}{Y_{t-1}} \right) \hat{I}_{a,t} + \mu_t \left(\frac{GC_{a,t-1}}{Y_{t-1}} \right) \widehat{GC}_{a,t} + \mu_t \left(\frac{GI_{a,t-1}}{Y_{t-1}} \right) \widehat{GI}_{a,t} + \\ \mu_t \left(\frac{X_{a,t-1}}{Y_{t-1}} \right) \hat{X}_{a,t} + \mu_t \left(\frac{C_{i,t-1}}{Y_{t-1}} \right) \hat{c}_t + \mu_t \left(\frac{I_{i,t-1}}{Y_{t-1}} \right) \hat{\beta}_t - \mu_t \left(\frac{M_{i,t-1}}{Y_{t-1}} \right) \hat{m}_t + \mu_t \left(\frac{E_{t-1}}{Y_{t-1}} \right) \hat{E}_t$$

SSM approach: previous studies

Figure 1. Dominant autonomous demand components in pre and post 2007-09 crisis periods - results of previous studies



Notes: concepts, definitions and periodization may vary among studies. *Sources:* ¹ Campana et al. (2024), 2001-10, 2011-19; ² Campana and Hein (2025), 1999–2009, 2010–2020; ³ Labat-Moles and Summa (2024), 1998-2007, 2008-2019; ⁴ Morlin et al. (2024), 2000-2008, 2010-2018; ⁵ Passos and Morlin (2022), 1996-2008, 2010-2018; ⁶ Segarra and Uxó (2025). Authors' presentation.

- Tendency towards exports as dominant autonomous demand source. Important exceptions: China and India

Demand-led growth decomposition: NIFA results

Table 4. NIFA demand-led growth decomposition. Annual averages for the periods 2000-2007 and 2011-2019

	Germany		Spain		Argentina		Brazil		India		South Africa		Turkey	
	2000-2007	2011-2019	2000-2007	2011-2019	2000-2007	2011-2019	2000-2007	2011-2019	2000-2007	2011-2019	2000-2007	2011-2019	2000-2007	2011-2019
Real GDP growth, %	1.57	1.73	3.63	1.20	3.46	0.41	3.62	0.77	6.49	6.43	4.29	1.60	5.52	5.57
Growth contributions by demand aggregates, pp.														
Domestic demand, including changes in inventories	0.59	1.62	4.36	0.58	3.11	0.51	3.21	0.70	6.75	6.07	5.16	1.87	6.02	5.28
Private consumption	0.44	0.74	2.27	0.29	1.90	0.61	1.84	0.94	3.22	3.81	3.12	1.31	2.75	2.95
Public consumption	0.17	0.39	0.76	0.03	0.26	0.21	0.54	0.11	0.42	0.58	0.74	0.37	0.69	0.75
Investment	0.07	0.51	1.34	0.23	1.01	-0.15	0.62	-0.23	2.68	1.98	1.29	0.14	2.58	1.58
Inventories	-0.09	-0.03	-0.01	0.02	-0.06	-0.16	0.21	-0.12	0.43	-0.29	0.01	0.04	-	-
Net exports of goods and services	0.90	0.11	-0.84	0.64	0.79	-0.09	0.41	0.18	-0.10	-0.04	-0.66	-0.34	-0.76	0.85
Exports	2.32	1.39	1.22	1.31	1.45	0.10	0.92	0.25	2.39	1.09	1.42	0.42	1.95	1.80
Imports	-1.42	-1.27	-2.06	-0.66	-0.66	-0.20	-0.51	-0.06	-2.49	-1.13	-2.09	-0.76	-2.71	-0.95
Balance of goods and services as % of nominal GDP	3.86	6.29	-3.68	2.84	6.23	0.06	1.19	-0.82	-1.91	-3.64	1.06	-0.32	-1.01	-2.75
Sectoral financial balances as % of nominal GDP														
Private sector	5.47	6.71	-6.20	7.38	2.21	2.35	3.48	2.68	8.68	5.11	-1.23	0.53	2.79	-1.65
Public sector	-2.64	0.73	0.35	-5.89	0.07	-4.72	-3.84	-5.76	-8.70	-7.18	-0.51	-4.05	-5.68	-1.81
External sector	-2.83	-7.44	5.85	-1.49	-2.28	2.38	0.35	3.08	0.02	2.07	1.74	3.53	2.89	3.46
Demand and growth regime (DGR)	ELM	ELM	DLPD	ELM	ELM	DDL	DDL	WEL	DDL	DDL	DLPD	DDL	DDL	WEL

Notes: Contributions may not sum to the growth rate of real GDP due to rounding, approximation, price adjustments and statistical discrepancies not included in expenditure estimates of GDP. Demand and growth regimes (DGR): Export-led mercantilist (ELM); Weakly export-led (WEL); Domestic demand-led (DDL); Debt-led private demand boom (DLPD).

Sources: World Bank (2025), IMF (2024), European Commission (2024); authors' calculations and presentation.

Demand-led growth decomposition: NIFA results

Table 5. NIFA Demand and growth regimes (DGRs) changes

		2011-2019			
		Debt-led private demand (DLPD)	Domestic demand-led (DDL)	Weakly export-led (WEL)	Export-led mercantilist (ELM)
2000-2007	DLPD		South Africa		Spain
	DDL		India	Brazil, Turkey	
	WEL				
	ELM		Argentina		Germany

Source: authors' presentation

- **Polarization of post-crisis regimes:** on the one hand, export-led mercantilist or weakly export-led; on the other hand, domestic demand-led.
- **Complementary regimes:** ELM with CA surpluses, and WEL and DDL accepting CA deficits
- Contribution to continuing **current account imbalances**
- Results for countries already studied are in line with previous studies, except some results on Brazil, South Africa and Turkey (which already had classification differences)

Demand-led growth decomposition: SSM results

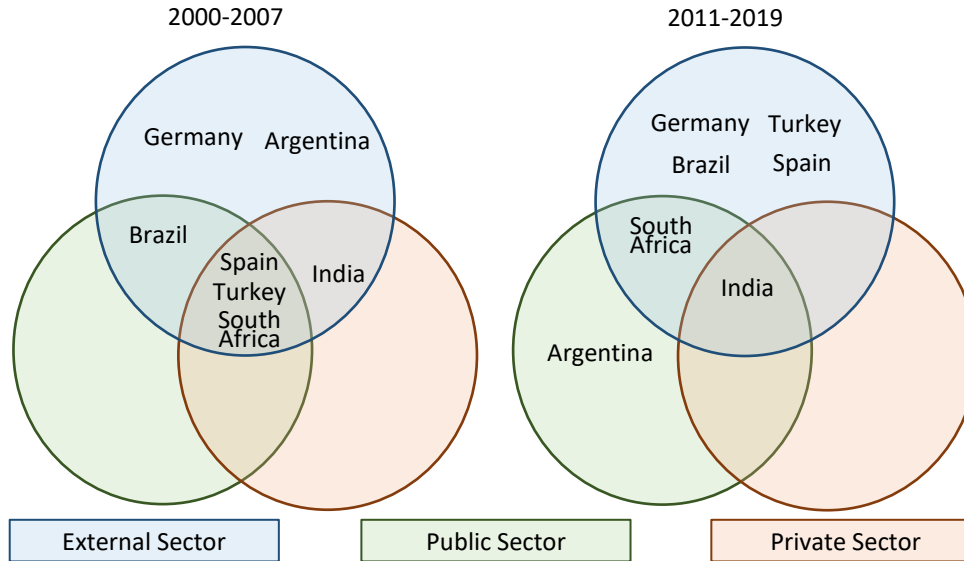
Table 6. SSM demand-led growth decomposition. Annual averages for the periods 2000-2007 and 2011-2019

		Germany		Spain		Argentina		Brazil		India		South Africa		Turkey	
		2000-2007	2011-2019	2000-2007	2011-2019	2000-2007	2011-2019	2000-2007	2011-2019	2000-2007	2011-2019	2000-2007	2011-2019	2000-2007	2011-2019
Real GDP growth, %		1.57	1.73	3.63	1.20	3.46	0.41	3.62	0.77	6.49	6.43	4.29	1.60	5.52	5.57
Total autonomous, pp.		2.78	3.12	5.23	1.50	5.01	0.57	4.80	0.32	9.55	4.65	5.92	1.44	7.77	5.86
Autonomous components	Exports	3.83	1.95	1.88	2.31	3.32	0.19	2.14	0.59	4.62	1.79	2.41	0.76	3.78	3.42
	Government consumption	0.29	0.55	1.16	0.03	0.55	0.49	1.27	0.25	0.78	1.03	1.27	0.68	1.30	1.44
	Government investment	-0.01	0.06	0.31	-0.41	0.33	-0.11	0.26	-0.34	0.39	0.49	0.37	0.02	0.63	0.32
	Household (residential) investment	-0.15	0.19	0.97	-0.43	0.52	0.06	0.13	0.02	1.00	1.31	0.61	0.06	1.28	0.87
	Credit-financed consumption	-1.17	0.37	0.91	0.00	0.29	-0.05	1.01	-0.21	2.76	0.04	1.25	-0.08	0.77	-0.19
Total induced, pp.		-1.16	-1.34	-1.74	-0.31	-0.23	0.22	-1.66	1.02	-3.54	1.57	-1.34	-0.04	-2.66	0.78
Induced components	Consumption out of disposable income	0.50	-0.60	-0.35	-0.72	-0.96	0.78	-1.41	1.42	-3.20	0.67	-0.09	0.67	-1.88	-0.41
	Corporate investment	-0.07	0.18	0.05	0.90	0.34	-0.48	0.24	-0.53	2.12	-0.11	0.53	-0.17	1.33	-0.01
	Imports	-1.59	-0.93	-1.44	-0.49	0.39	-0.08	-0.49	0.13	-2.46	1.00	-1.78	-0.55	-2.11	1.20
Inventories, pp.		-0.18	-0.05	-0.03	0.04	-0.14	-0.37	0.44	-0.30	0.72	-0.51	0.05	0.08	-	-

Notes: Contributions may not sum to the growth rate of real GDP due to rounding, approximation, price adjustments and statistical discrepancies not included in expenditure estimates of GDP. *Sources:* World Bank (2025), MECON (2025), INDEC (2025), OECD (2025), European Commission (2024), BIS (2025), MoSPI (2025); authors' calculation and presentation.

Demand-led growth decomposition: SSM results

Figure 2. SSM demand-led growth decomposition: dominant autonomous demand components

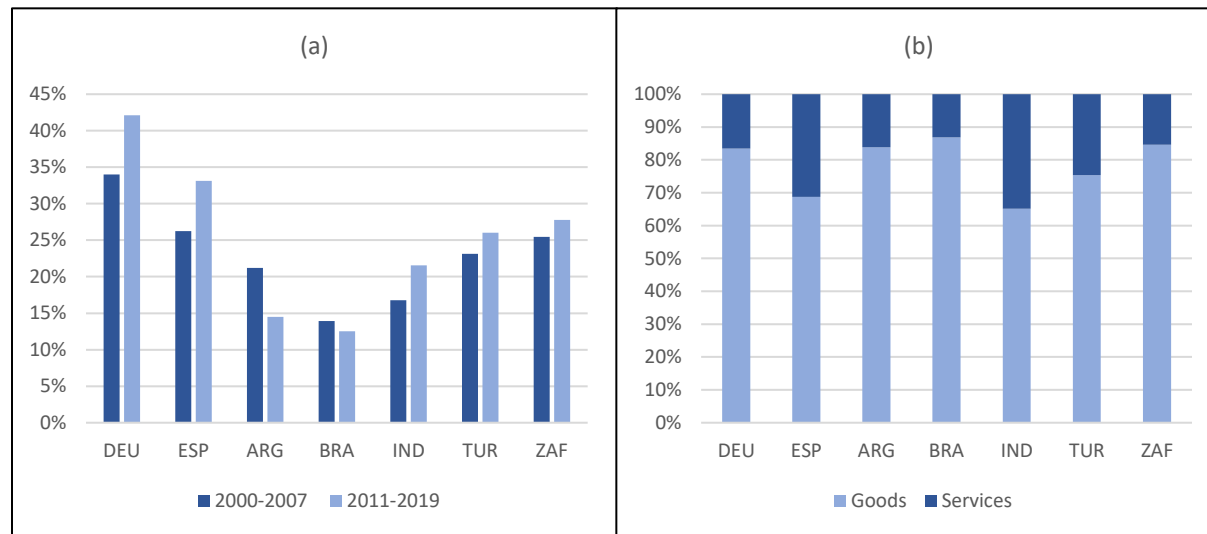


Source: authors' presentation

- **Exports** are dominant in both periods, and become even slightly more relevant in several countries in the second period. Exception: Argentina
- For countries studied in previous literature, results are similar, with exception of India in the second period
- Key importance of exports for growth, which seems to have even increased over time, is somewhat hidden in the NIFA approach

Export structure and international trade – Goods and services

Figure 3. Exports of goods and services. Annual averages. (a) Periods 2000-2007 and 2011-2019. Percentage of GDP. (b) Period 2000-2019. Percentage of total exports

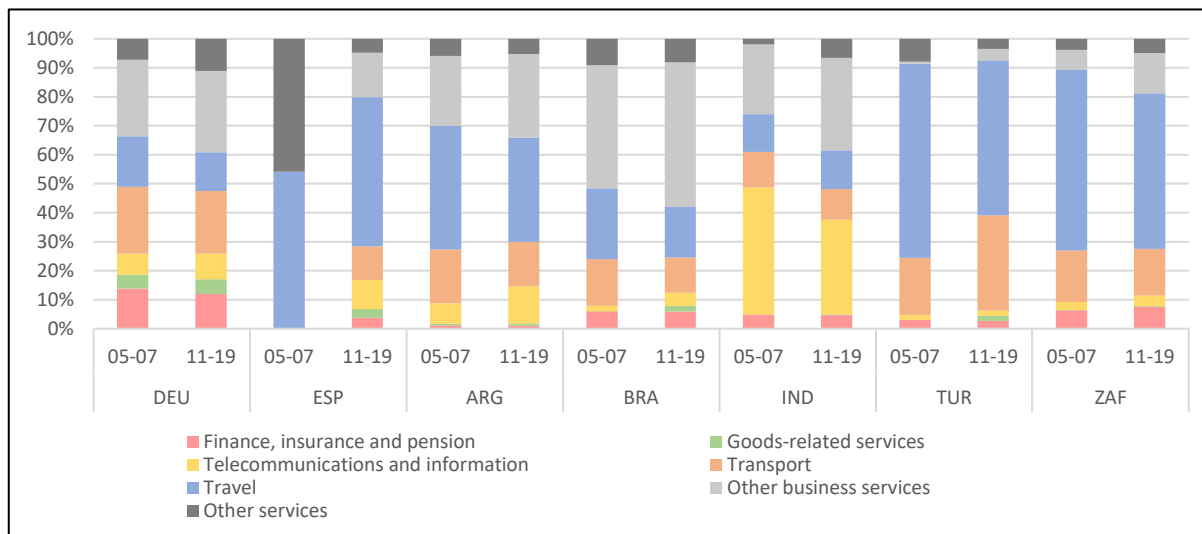


- **Increasing share of exports in GDP between periods**, except for Argentina & Brazil
- **Shares of goods and of services in exports rather stable**, with clear dominance of goods
- Higher relative importance of services in Spain, India & Turkey (shares 25-35%)

Notes: panel (b) is based on BoP data in current US\$. Sources: WITS (2025); authors' presentation.

Export structure and international trade - Services

Figure 4. Exports of services by category. Annual averages for the periods 2005-2007 and 2011-2019. Percentage of total

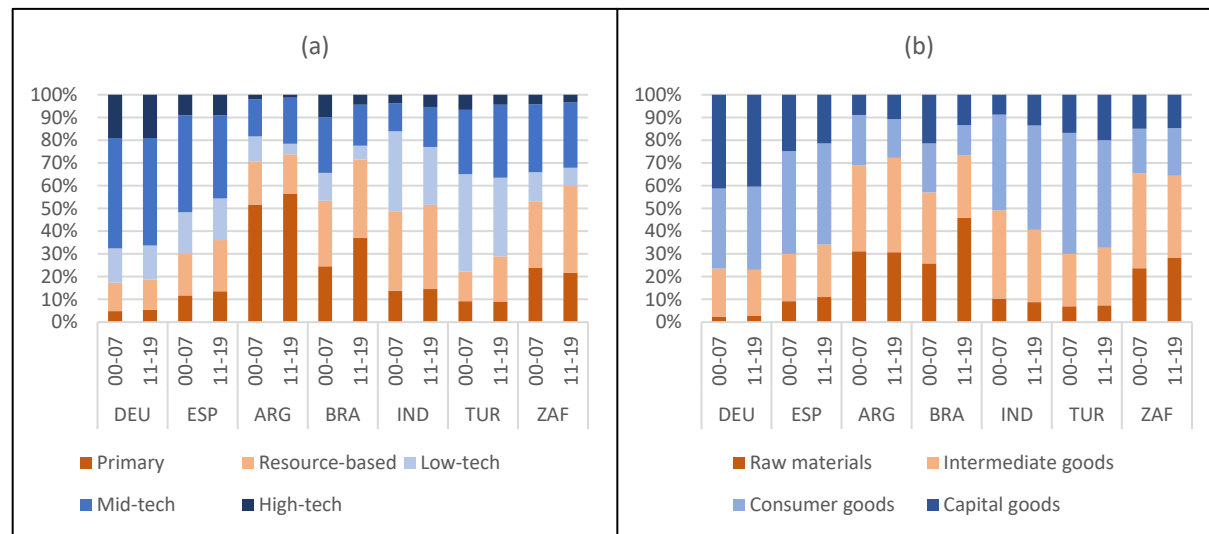


Notes: Spain only has data on travel services for the first period. Category names were modified for presentation purposes. Sources: UNCTAD (2025); authors' presentation.

- Different types of exported services embody **varying levels of value added** and reflect **different degrees of sophistication**
- **Travel services** (incl. tourism) represent more than half of total service exports in **Spain, Turkey, and South Africa**, and were also significant in **Argentina**
- In all four countries, the share of **travel services declined in the second period**

Export structure and international trade – Goods by technology

Figure 5. Exports of goods. Annual averages for the periods 2000-2007 and 2011-2019. Percentage of total. Classification by (a) technology and by (b) product group.



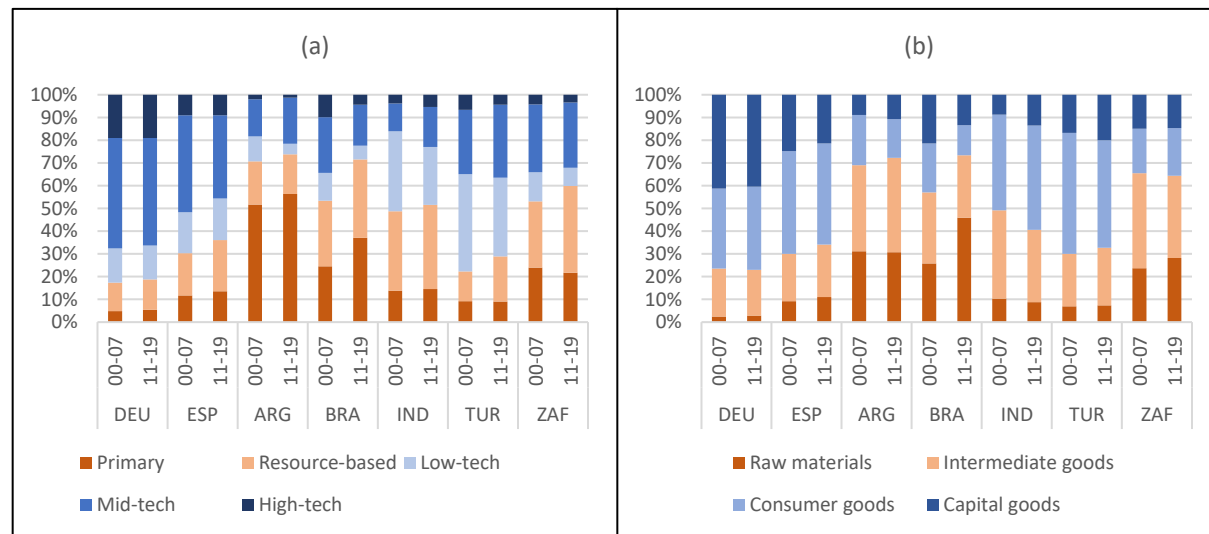
Sources: WITS (2025); authors' presentation.

- **High technology products** tend to **grow faster** in world trade and present **higher income elasticities** (Lall, 2000)

- **Structural changes** occur over long periods, but certain **trends are observed** in different countries
- **Germany** remains strong in high & mid-tech
- **Brazil** strongly primarizes, while **Argentina** does so to a lesser extent
- **Spain** lost mid-tech production to primary and resource based
- **Turkey and India** increased their mid-tech share, the latter also increasing high tech, and both increasing resource based
- **South Africa** reduces its shares in all tech groups at the expense of resource based production

Export structure and international trade – Goods by product group

Figure 5. Exports of goods. Annual averages for the periods 2000-2007 and 2011-2019. Percentage of total. Classification by (a) technology and by (b) product group.



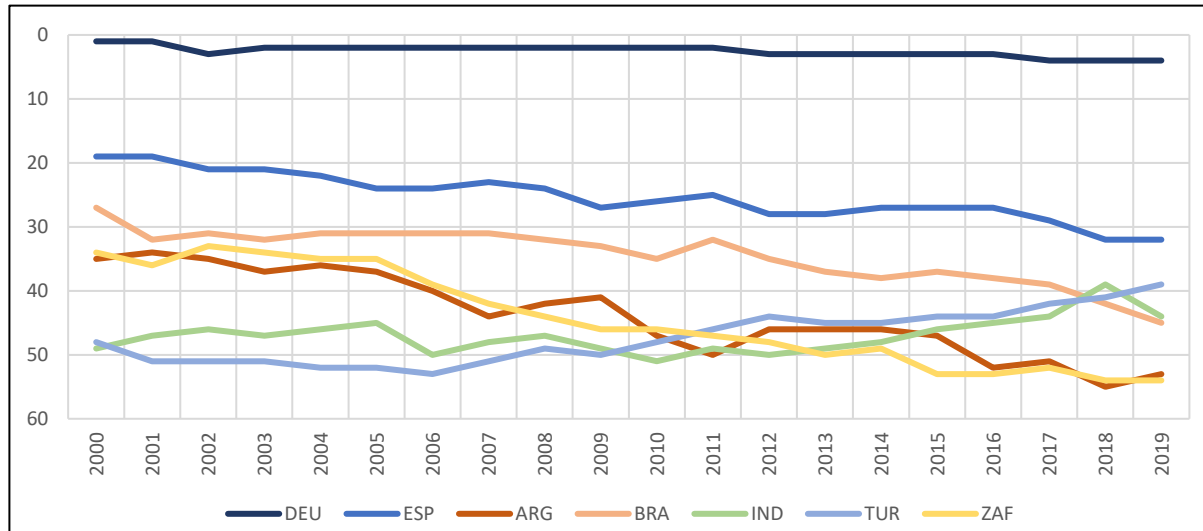
Sources: WITS (2025); authors' presentation.

- The **classification by product group** captures differences in the processing stage and the use of exports as intermediate or final goods

- Similar tendencies already noted in the analysis of technological content
- **Germany:** consistently strong in final capital & consumer goods
- **Spain:** slight increase in raw materials and intermediate goods exports, but consumer goods continue to be most important
- Greater relative importance of **raw materials** in Argentina, Brazil and South Africa
- **Turkey:** Decrease in final consumption goods, increase in capital goods
- **India:** increase in both final consumption and capital goods

Export structure and international trade - ECI

Figure 7. Ranking Economic Complexity Index (ECI) - Trade



Notes: OEC (2025); authors' presentation.

- **Germany:** high, fairly stable, although falling from first to fourth position
- **Spain:** fell from high/upper middle to lower-middle range
- **Argentina, Brazil, South Africa:** all fell to lower region
- **India & Turkey:** improved relative positions. Low, but rising and overtaking Argentina, Brazil and South Africa

- The **Economic Complexity Index** synthesises characteristics related to technological development and the productive structure of the economy. The index ranking accounts for both within-country changes in economic complexity and changes in countries' relative positions

A spectrum of export-led regimes

Table 7. Typology of regimes

Country	Period	NIFA decomposition	SSM decomposition	Export technology (top 3 levels, %)	ECI ranking (1 – 60)	Type of regime
Germany	2000-2007	ELM	Exports	MT (48.3) + HT (19) + LT (15.1)	High	Mid- & high-tech products, high ECI, export-led
	2011-2019	ELM	Exports	MT (47.4) + HT (19.1) + LT (15)	High	Mid- & high-tech products, high ECI, export-led
Spain	2000-2007	DLPD	Exports, Private households, Government	MT (42.6) + RB (18.5) + LT (18.1)	High/Upper middle	Mid-tech and resource-based products, upper-middle ECI, export-, private household- & government-led
	2011-2019	ELM	Exports	MT (36.7) + RB (22.6) + LT (18.3)	Lower middle	Mid-tech and resource-based products, lower-middle ECI, export-led
Argentina	2000-2007	ELM	Exports	PP (51.8) + RB (19) + MT (16.3)	Lower middle	Primary products, lower-middle ECI, export-led
	2011-2019	DDL	Government	PP (56.4) + MT (20.2) + RB (17.4)	Low	Primary products, low ECI, government-led
Brazil	2000-2007	DDL	Exports, Government	RB (29) + PP (24.6) + MT (24.6)	Upper middle	Primary & resource-based products, upper-middle ECI, export- & government-led
	2011-2019	WEL	Exports	PP (37) + RB (34.4) + MT (18)	Low	Primary & resource-based products, low ECI, export-led
India	2000-2007	DDL	Exports, Private households	LT (35.3) + RB (34.9) + PP (13.9)	Low	Resource based & low-tech products, low ECI, export- & private household-led
	2011-2019	DDL	Exports, Government, Private households	RB (37) + LT (25.3) + MT (17.7)	Low/Lower middle	Resource based & low-tech products, lower-middle ECI, export-, government- & private household-led
South Africa	2000-2007	DLPD	Exports, Private households, Government	MT (29.9) + RB (29.1) + PP (24)	Lower middle	Resource-based & mid-tech products, lower-middle ECI, export-, private household- & government-led
	2011-2019	DDL	Exports, Government	RB (38.1) + MT (28.8) + PP (21.8)	Low	Resource-based & mid-tech products, low ECI, export- & government-led
Turkey	2000-2007	DDL	Exports, Private households, Government	LT (43) + MT (28.4) + RB (13.1)	Low	Low- & mid-tech products, low ECI, export-, private household- & government-led
	2011-2019	WEL	Exports	LT (34.7) + MT (32.2) + RB (19.8%)	Lower middle	Low- & mid-tech products, lower-middle ECI, export-led

Notes: PP=primary production; RB=resource-based; LT=low-technology; MT=medium-technology; HT=high-technology Sources: WITS (2025); authors' presentation.

- Despite **exports' overall importance as autonomous source** of economic growth, **export-led growth was by no means uniform** across the countries in our sample
- We found a **spectrum of export-led regimes**, in which the centrality of **exports** is a **common denominator**, yet with a **wide array of structural differences**
- Drawing on this concept and country-specific characteristics (technological content of exports, ECI ranking, dominance of autonomous demand components), we generated a **typology of export-led growth regimes**

A spectrum of export-led regimes

- Considerable **heterogeneity** dominated both with regard to **initial structural conditions** and the **trajectories** observed over the period analysed
- **Germany:** stable export-led regime, consistently high ECI, dominance of exports concentrated in mid- and high-tech products, as well as final capital and consumer goods
- **Spain:** moved toward export-led regime, exports concentrated in mid-tech and resource-based products, decline in ECI
- **Argentina, Brazil and South Africa:** strong relative fall of ECI ranking, high relevance of raw material export
- **India and Turkey:** technological upgrading with a rising ECI ranking
- **No tourism-led regimes** (Bürgisser and Di Carlo, 2023, for the European periphery), not even for Spain or Turkey, with a high share of travel services in total services, because of still much lower share of services as compared to goods according to technological level in total exports, one of our main technology classification criteria

Conclusions

- **Main findings**
 - Autonomous demand growth de-composition reveals the relevance of exports as autonomous source of demand-led growth, which is somewhat hidden in the national and financial accounting approach
 - Exports became even slightly more relevant in the second period (except Argentina)
 - Different types of export-led regimes regarding technology and economic complexity
 - India and Turkey saw some technological improvement. Argentina, Brazil, South Africa and even Spain: towards primary & resource-based products, loss in complexity ranking. No tourism-led regimes
- **Results highlight limitations of treating export-led growth as a homogeneous model, underscoring the importance of considering country-specific structural characteristics shaping different export regimes**
- **Next steps:**
 - extend approach of DGRs and international trade to IO data, considering environmental linkages (largely absent in the literature)
 - extend analysis towards growth drivers to better understand the transition of regimes and provide the bridge to the analysis of political economy factors



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Thank you!

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