A THIRLWALL'S LAW APPLICATION TO INTERNATIONAL TRADE IN SERVICES

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ABSTRACT

The international trade in services has grown exponentially, both in developed and developing countries, outpacing the manufacturing growth. According to the literature, there are two waves of growth in the services sector: A first wave in developing countries specializing in traditional services; a second wave in developed countries and producers of modern services. Using the multisectoral Thirlwall's law model for 90 countries, modern services have the highest income-elasticity. The role of relative prices is not significant. Also, the two waves of growth are verified. Countries that are more competitive in international services grow less relative to global growth but have a higher level of development. In less developed countries with a higher share in tourism exports, the higher the surplus of the balance of services, the lower the current account balance.

Keywords: Thirlwall's law, trade in services, competitiveness, convergence.
JEL Classification: E12, F43, O10.

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APLICACIÓN DE LA LEY DE THIRLWALL
AL COMERCIO INTERNACIONAL DE SERVICIOS

RESUMEN

El comercio internacional de servicios ha crecido exponencialmente, tanto en los países desarrollados como en los países en desarrollo, superando el crecimiento de la manufactura. Según la bibliografía, existen dos olas de crecimiento en el sector servicios: la primera en los países en desarrollo especializados en servicios tradicionales; la segunda en los países desarrollados y productores de servicios modernos. Utilizando un modelo multisectorial de la ley de Thirlwall para 90 países, los servicios modernos tienen una mayor elasticidad-renta. El papel de los precios relativos no es significativo. También se verifican las dos olas de crecimiento. Los países más competitivos en los servicios internacionales crecen menos en términos relativos, pero tienen un mayor desarrollo. En los países menos desarrollados, con mayor participación en las exportaciones turísticas, cuanto mayor es el superávit de la balanza de servicios, menor es el saldo de la balanza por cuenta corriente.

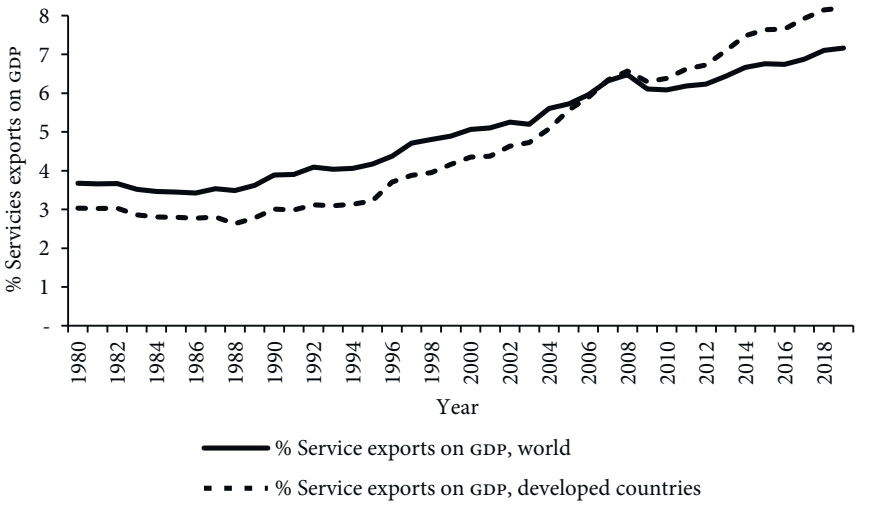
Palabras clave: ley de Thirlwall, comercio de servicios, competitividad, convergencia.

Clasificación JEL: E12, F43, O10.

1. INTRODUCTION

International trade in services has grown strongly since the end of the last century, increasing its weight in the balance of goods and services, and in the total wealth created. According to the International Monetary Fund (IMF) data, the share of services exports in total goods and services exports almost doubled between 1979 and 2014, from 9 to 14%. More recently, the growth of service exports has also had a positive and statistically significant relationship with Gross Domestic Product (GDP) per capita growth (Loungani *et al.*, 2017). Data collected from the *World Development Indicators* (WDI) database allow us to realize that services' exports have gained weight in the world's GDP, especially in developed countries (Figure 1).

Figure 1. Share of services exports in GDP, worldwide and in developed economies



Source: Author's elaboration with *World Development Indicators*.

The literature tends to point to international trade in goods as one of the sources of economic growth. However, the liberalization of trade and finance, enhanced by the emergence of free trade zones (such as the European Union), China's accession to the World Trade Organization (WTO) in 2001, the information and communication technology (ICT) revolution and the digital technology (digitech) and, more recently, the COVID-19 pandemic, have changed global value chains and trade in terms of products, partners, and dynamics. The services sector have contributed more to growth in both developed and developing countries than the goods sector over the last three decades (Flaaen, Ghani and Mishra, 2013). Given the reconfiguration of international trade, it is time to reflect on whether services have gained momentum.

According to Eichengreen and Gupta (2011), there are two waves of service sector growth: The first wave occurs in countries with low income per capita, and the second wave occurs in countries with higher income per capita. The first wave comprises countries exporting traditional services (public administration and defense, wholesale and retail trade, transportation and storage); the second wave comprises modern

services (financial, communication, computer, technical, legal, advertising, and business).

The main objective of this article is to shed more light on the recent development of trade in services, using data available in the IMF's database for international trade in services. Using this data, we test the hypothesis of the existence of different waves of service sector growth, according to the multisectoral Thirlwall's law (MSTL) [Araujo and Lima, 2007]. To the best of our knowledge, MSTL applications in the literature use data by type of goods. Here, we apply the same methods using data by type of service. According to Thirlwall's law, the long-run growth rate of GDP is predicted by the ratio between the income-elasticity of exports times the growth rate of world GDP and the propensity to import, measured by the income-elasticity of imports (see also Thirlwall, 1979, 2011). The advantage of a multisector application is that changes in the composition of demand or in the structure of production, which are not reflected in changes in income-elasticities but come through changes in the share of each type of good or service in aggregate exports or imports, also matter for economic growth.

The ratio of the income export-import elasticities captures the non-price competitiveness of the economy associated with supply-side characteristics such as quality, design, liability, and variety (Soukiazis, Muchová and Leško, 2017). Modern services are expected to have a higher income-elasticity of exports than other sectors, ensuring higher levels of non-price external competitiveness for countries with a higher weight in the services sector. It is also expected that more developed countries (in the second wave) have higher levels of non-price external competitiveness, and the opposite for countries in the catching-up process (in the first wave, with higher values of relative growth of GDP per capita).

The paper is organized as follows: Following the introduction, section 2 reviews the literature on the role of services trade in economic growth, as well as the origins and applications of Thirlwall's law; section 3 presents the data used and the methodology for estimating the multisector Thirlwall's law; section 4 discusses the results obtained in estimating the MSTL, and conducts quantitative analysis on the relationship between non-price competitiveness in services, growth, and the external accounts for different groups of countries; finally, section 5 concludes.

2. LITERATURE REVIEW

2.1. A growing role of services in international trade

The classical literature looks at the transition to the manufacturing goods as the main driver of economic growth. Kuznets (1957), for example, argued that the weight of services in the national product did not vary significantly with income per capita. Other authors saw in this sector little potential for productivity, exports, and value creation (Baumol and Bowen, 1966). Only the growth of the labor-intensive manufacturing sector would guarantee economic prosperity. For Kaldor, the manufacturing sector is the only one with increasing returns to scale (higher productivity gains), while the agricultural sector shows decreasing returns and some services constant returns. The manufacturing sector improves the productivity of other sectors (Kaldor, 1966, 1967). Even recent theories of structural transformation of the economy also point to the manufacturing sector as the leading sector of development and the engine of growth (Rodrik, 2011).

However, some recent analyses point to the growing volume of global service transactions (Loungani *et al.*, 2017) and its importance in productivity growth and as a vehicle for economic catching-up processes, both concerning modern services (Di Meglio *et al.*, 2015) and traditional ones, such as tourism (Burgisser and Di Carlo, 2023). Services are increasingly interdependent on industry and tradables, and the evidence for this is their growth in total exports. The growth of modern service exports has outpaced manufacturing, the biggest reason being the revolution in ICT (Loungani and Mishra, 2014). The authors add that the weight of services is higher in developed countries, but its growth is much higher in developing countries. They highlight countries such as India, Malaysia, Nigeria, Cambodia, or Sri Lanka, which have emerged in the technological service sectors. Moving the economy towards services that guarantee high growth rates can be a way out of middle-income traps (Flaaen, Ghani and Mishra, 2013).

The digitech revolution, driving down the transaction costs of services, has increased the service trade and decreased the manufacturing trade in relative terms. Baldwin and Forslid (2020) see the transition to services as a process involving many structural changes, which is an

opportunity for developing countries. According to the authors, the service-led development path (as in the case of India in ICT services) may become the norm rather than the exception. The service sector has no transport restrictions, no explicit import and export barriers, has been tax-relieved, and requires no proximity to major international markets. Alongside the autonomous growth of services, they have grown in coexistence with industry, especially during and after the pandemic crisis: Digital services are used to control production processes, facilitate transactions, and create networks between companies. The growth of services such as e-commerce, consumer support, research and development (R&D), telemedicine, and e-learning, in countries such as China, Hong Kong, South Korea, India, and Singapore, stands out (United Nations, 2021).

Eichengreen and Gupta (2011) found two waves of service sector growth. They use panel regressions for a wide range of economies, where the explained variable is the share of services in GDP, and the explanatory variables are related to income per capita levels (measures of development). The first wave comprises countries with low-income per capita levels that export traditional services (public administration and defense, wholesale and retail trade, transportation, and storage). The second wave comprises countries with high income per capita levels and exporting modern services (financial, communication, computer, technical, legal, advertising, business) and being receptive to applying new information technology. This last group is characterized by countries that are more open to trade, democratic, and closer to financial centers.

They find different behavior patterns of three categories of services when set against income per capita levels: A negative relationship for traditional services; and a positive for hybrid (of which tourism is included) and modern services. Buera and Kaboski (2012) sorted services into two categories of skill intensity. Low skill, where tourism, transportation, commercial intermediation, or government services are included; and high skill, such as education, financial intermediation, healthcare, technical advertising services, or other business services. Services are heterogeneous. They differ according to skill intensity, information, communication technology, and exchange form (tradability), so different services show different growth patterns.

2.2. The balance of payments constraint to the growth rate (BPCG)

Following a Post-Keynesian approach to the economic growth rate, a country could only grow faster than the rate consistent with a balanced external account if it could finance consecutive deficits, which financial markets would not allow (Thirlwall, 2011). This "constraint" imposed by foreign markets and by the external performance of the economy would limit growth more than domestic conditions, such as unemployment.

An economy that faces balance of payments problems while expanding demand, before it reaches its capacity for resource-based growth, will have to solve these problems by contracting demand. According to Thirlwall's law (Thirlwall, 1979), the growth rate compatible with the balance of payments equilibrium is given by the growth of exports —which in turn depends on the growth of external income and the foreign income-elasticity of exports— divided by the income-elasticity of imports. It is implicit that the same growth rate of exports in two countries does not mean that they will grow at the same rate: The products imported by the two countries, necessary to satisfy the same level of exports, may differ, that is, both may differ in terms of the income-elasticity of imports (McCombie and Thirlwall, 1999).

Both heterodox and mainstream economists have criticized this model (see Blecker, 2016). The former group criticizes the infinite elasticity of supply mechanisms in determining exports (McGregor and Swales, 1986), and the negligent role attributed to relative prices (or the real exchange rate) —see Razmi (2015). Mainstream economists prefer, in general, to emphasize total factor productivity as the engine of growth (Krugman, 1989) and criticize the assumption that the current account tends to be balanced in the long run. As is well known, the United States enjoys an "exorbitant privilege". Its currency is a global reference nowadays in terms of a store of value, and it can continually finance its external deficits by seeking short-term liquidity from countries with current account surpluses, such as China (Baccaro, Blyth and Pontusson, 2022).

Despite this, there is a panoply of further applications of Thirlwall's law from its original version. Other versions introduce capital flows and terms of trade (Thirlwall and Hussain, 1982; Garcimartin, Kvedaras and Rivas, 2016), and multisectoral (Araujo and Lima, 2007; Gouvêa and Lima, 2010), or multiproduct (Gouvêa and Lima, 2013; Romero and

McCombie, 2016) applications. Several studies show a proximity between the simple BPCG and the observed growth rate (McCombie and Thirlwall, 1997; Alonso, 1999; Perraton, 2003).

In this paper, we apply Thirlwall's multisectoral law not to check its validation against observed growth rates but to determine the external non-price competitiveness ratio of each country, given by the ratio between the weighted income-elasticities of exports and imports of each country, only for the service sector. This ratio captures supply-side characteristics such as quality, design, liability, and variety (Soukiazis, Muchová and Leško, 2017). Since this is a sector in significant expansion and has yet to be explored in the literature on the balance of payments constrained growth rate, we cross this ratio with some indicators of development and external performance of a large set of countries, testing the hypothesis of the presence of two waves of growth in the service sector.

3. METHODOLOGY AND DATABASE DESCRIPTION

Starting from the observed equality between exports and imports of goods and services at constant prices, Thirlwall (1979) concludes that the long-run economic growth depends on the price elasticity of exports (μ), the price elasticity of imports (φ), domestic ($\hat{p}_d$), and external ($\hat{p}_f$) inflation, the income-elasticity of exports (ε), the income-elasticity of imports (π), and the economic growth of external trading partners ($\hat{Y}_f$):

$$\hat{Y}_d^B = \frac{(1+\mu+\varphi)\cdot(\hat{p}_d - \hat{p}_f) + \varepsilon \cdot \hat{Y}_f}{\pi} \qquad [1]$$

If it is assumed that capital inflows cannot successively make up current account deficits and that relative prices are constant in the long run (the role of exchange rate is to bring about price equilibrium), then we have:

$$\hat{Y}_d^B = \frac{\varepsilon \cdot \hat{Y}_f}{\pi} \qquad [2]$$

In this way, the relationship between the balance of payments and economic growth is validated; the latter depending on income conditions (internal and external), which determine demand and export and import levels. An unlimited accumulation of current account deficits is not sustainable, even in a country that is part of a monetary union, otherwise this path will lead to stagnation and poverty.

Meanwhile, Araujo and Lima (2007) derived a multisectoral version of equation [1] and called it "multisectoral Thirlwall's law". This multisectoral version of Thirlwall's law asserts that a country's balance-of-payments equilibrium growth rate of income per capita (when long-run external equilibrium is equivalent to current account equilibrium) is directly proportional to the growth rate of its exports, with such proportionality being inversely (directly) related to sectoral income-elasticities of demand for imports (exports). These income-elasticities, in turn, are weighted by coefficients that measure the share of each sector in total exports and imports, respectively. One simplified (and empirically implementable) way of formally representing this multisectoral version of Thirlwall's law is as follows:

$$Y_d^{MB} = \frac{\sum_{j=1}^{n} a_j \cdot \varepsilon_j \hat{Y}_f}{\sum_{j=1}^{n} b_j \cdot \pi_j} \qquad [3]$$

Where Y_d^{MB} is the rate of growth of domestic income consistent with long-run current account equilibrium, ε_j is the income-elasticity of demand for exports of sector j ($J = 1,2,\ldots,n$), π_j is the income-elasticity of demand for imports of sector j, a_j is the share of sector j in total exports, and b_j is the share of sector j in total imports.

That being said, this paper closely follows the work of Gouvêa and Lima (2013), but applies it using data from the disaggregated international trade in services. The significant implication of MSTL is that changes in the composition of demand or the structure of production, which are not reflected in changes in income-elasticities but come through changes in the share of each sector in aggregate exports or imports, also matter in the long-run growth.

The period chosen, between 1996 and 2019, has the benefit of taking advantage of recent data, available in nominal US dollars, in the IMF's macroeconomic and financial statistics database (Balance of Payments and International Investment Position Statistics, BOP/IIP). We have divided the services into four categories following the separation made by Loungani *et al.* (2017), between modern and traditional services. The former aggregates data on computer, information, communication services, royalty licenses, financial, insurance, and pension services and other business services (including, among others, research and development services, professional and management consulting services, technical, trade-related, and other business services). Traditional services are divided into three other categories: Transportation services; travel; other services (comprising traditional services not included in other categories, such as manufacturing and maintenance services, construction services, personal, cultural, and recreational services, or government goods and services).

We are working with a database of 90 countries with balance of payments data available for all the years concerned, for at least one category of services. The database provided on the IMF website does not have data for some service categories in some countries, so subsequent panel estimates will not be fully balanced.

The other variables used in the estimations are country real Gross Domestic Product (GDP), world real Gross Domestic Product (GDPW), country real Gross Domestic Product per capita (GDPPC), world real Gross Domestic Product per capita (WGDPPC), and country real exchange rate (RER). To have as large a sample size as possible, RER is defined as the product between the average official exchange rate (national currency/US dollar) and the implicit US GDP deflator ratio to the countries' GDP deflator. As services data were available only in nominal terms, we have deflated them using the US GDP deflator. All these variables come from the WDI. As we are working with a large number of observations and T fixed, the estimations were carried out using 4-year averages to minimize non-stationary problems.

The following equations for sectoral imports and exports demand functions (including a category for trade in goods) were estimated using panel fixed effects (FE):

$$\ln M_{jit} = \pi_j \ln gdp_{it} + \varphi_j \cdot \ln rer_{it} + c_{ji} + \sum_{k=1}^{T} \lambda_{jt} + u_{jit} \text{ for j = 1,2,…,5} \quad [4]$$

$$\ln X_{jit} = \varepsilon_j \ln gdpw_{it} + \eta_j \ln rer_{it} + c_{ji} + u_{jit} \text{ for j = 1,2,…,5} \quad [5]$$

Where *i* is an index representing countries, *t* is a time index and *j* represents service categories classification. Unobservable individual specific time-invariant effects were denoted by c_{ji}, and λ_{jt} denote the unobservable time effects that account for common shocks to all countries. Note that exports demand functions observable time effects that account for common shocks, because we assume that common shocks are already captured by the variable GDPW —as in Gouvêa and Lima (2013). The parameters π_j, φ_j, ε_j and η_j are, respectively, the income and price elasticities of demand for imports of sector *j* and the income and price elasticities of demand for exports of sector *j*. To account for possible heteroskedasticity, robust standard errors are clustered at the country level.

The estimations were made individually for each one of the service categories. However, as sectoral price indices are not available for our sample, it is not possible to compute sectoral RER or sectoral terms of trade (which, in theory, might be more suitable for the estimation of sectoral export and import demand functions). Therefore, the overall RER was used as a proxy for the sectoral RER, and an increase in this indicator means a real depreciation. So, it is expected to have a positive sign in export equations and a negative sign in import equations.

The statistical choice between fixed effects and random effects (RE) models lies in Hausman test which compares alternative estimating methods according to the following null hypothesis: $\text{Cov}(x_{it}, u_{it}) = 0$. Under H0, the RE model is the best (the Generalized Least Squares —GLS— estimator is Best Linear Unbiased Estimator —BLUE), while, under H1, the statistical properties of the GLS-RE estimator are lost. Least Square Dummy Variable-FE (LSDV-FE) estimator is consistent under both H0 and H1, but it is not efficient under H0. Hence, under H0, estimates will be similar from a statistical point of view and GLS-RE is preferable because it is efficient (and allows for estimating time-constant effects). Under H1 only FE is consistent (Wooldridge, 2020).

So, for each of the estimations by category, we proceeded to a FE estimation. Table 1 presents the results.

Table 1. Estimation results of the service category export and import functions estimated by FE, 1996-2019

Exports						
Service categories	RER	GDPW	Constant	Number of observations	R2	Hausman test
Modern services	0.08	2.496***	–37.833***	507	0.51	25.48***
Transportation	0.021	1.936***	–27.785***	508	0.489	20.46***
Travel	0.053	2.049***	–29.311***	512	0.609	26.31***
Other services	0.082	1.790***	–26.184***	494	0.227	18.61***
Imports						
Service categories	RER	GDP	Constant	Number of observations	R2	Hausman test
Modern services	0.063*	0.756***	–1.6	507	0.673	16.13**
Transportation	–0.017	1.046***	–4.322**	509	0.732	11.40*
Travel	–0.117	1.487***	–9.405***	511	0.617	20.12***
Other services	0.065	2.100 **	–18.268*	500	0.137	11.46 *

Note: Significant at *p < 0.1; **p < 0.05; ***p < 0.01.

In all estimated equations (for exports and imports), the estimated price elasticities have a low value, being less than one in absolute value. It is worth mentioning that in the case of exports, no price elasticity is significant, and all of them have the expected (positive) sign. For import demand functions the price elasticities are, in general, not significant, and only the transportation and travel categories have the expected (negative) sign. Recent studies also find statistical insignificance associated with relative prices. Romero and McCombie (2018), using industry-level data for 13 sectors in seven European countries, found that the relative price variables have no significance once total factor

productivity is included in both export and import regressions. Bottega and Romero (2021) reached the same conclusions using data for patents instead of total factor productivity. Caglayan and Demir (2019) showed that a higher RER has a significant positive effect on low-medium export industries, but not in high-skill and primary products (Blecker, 2022, p. 445). Hence, the sectoral results reveal that price elasticities have a lower impact on the behavior of service exports and imports and, therefore, have a considerably lower effect on the long-run growth rate.

For all service sectors, the income-elasticities of exports are significant and have the expected (positive) sign. Modern services (2.496) present higher income-elasticities than traditional services. The "other services" sector is the one that presents the lowest levels of elasticity, being a sector that is less sensitive to external income variations (1.790). The same sector reveals high elasticities on the import side. However, the "other services" sector has almost a null impact on the MSTL growth rate because its share in exports or imports composition is negligible. It is also relevant to point out the low income-elasticity of modern service imports and the relatively high income-elasticity of travel, both in exports and imports.

Finally, it is important to mention that when applying the Hausman test (last column), the null hypothesis is always rejected with at least 10% statistical significance, which reveals that the FE model is consistent and efficient for all the estimations.

4. DISCUSSION OF THE RESULTS

After the income-elasticities for exports and imports of goods and services had been computed, we have measured the average share of each category of services, by country, over the period under analysis. This allows the computation of the weighted income-elasticities of exports and imports of each country. Table 2 shows the results, by country.

From Table 2 we can identify Malta, Switzerland, Israel, Netherlands, and Finland as the countries with the highest non-price external competitiveness ratio (ε/π —see column 3). The countries that grew the most (in terms of GDP per capita), between 1996 and 2019, relative to world growth (relative growth —column 5) were Myanmar, China, Armenia, Cambodia, and Lithuania.

Table 2. BoP equilibrium growth rates for 90 world economies, 1996-2019

Country name	MSTL (2)	ε/π (3)	GDP per capita (4)	Relative growth (Y/Z) (5)	Current account (% of real GDP) (6)	Balance of services (% of real GDP) (7)
Albania	1.56	1.51	4.86	2.58	–8.49	2.65
Argentina	1.89	1.83	1.16	0.62	–0.59	–1.03
Armenia	1.67	1.63	6.68	3.56	–9.67	–2.27
Australia	1.82	1.77	1.71	0.91	–4.11	–0.28
Bangladesh	1.86	1.80	4.33	2.31	0.21	–1.53
Belize	1.91	1.85	0.92	0.49	–9.09	12.67
Benin	2.02	1.96	1.60	0.85	–4.65	–1.93
Bolivia	1.74	1.69	2.31	1.23	0.31	–2.38
Botswana	1.85	1.80	2.52	1.34	5.61	–1.05
Brazil	2.15	2.09	1.16	0.62	–2.14	–1.32
Bulgaria	1.87	1.82	3.16	1.68	–4.19	4.04
Cabo Verde	1.74	1.69	4.50	2.39	–9.31	8.96
Cambodia	1.78	1.73	5.65	3.01	–6.76	6.35
Cameroon	2.04	1.98	1.48	0.79	–2.82	–2.34
Canada	2.12	2.06	1.71	0.91	–0.86	–0.84
Chile	2.11	2.06	2.73	1.45	–1.34	–0.88
China	1.83	1.78	8.25	4.39	3.25	0.21
Colombia	2.00	1.94	1.87	1.00	–2.85	–1.54
Costa Rica	2.09	2.03	2.60	1.38	–4.05	8.05
Croatia	1.91	1.86	2.85	1.51	–3.45	12.80
Cyprus	1.97	1.92	1.62	0.86	–4.50	20.15
Czech Republic	1.96	1.91	2.51	1.34	–2.36	3.00
Denmark	1.87	1.81	1.21	0.64	4.42	1.61
Dominican Republic	1.89	1.84	3.91	2.08	–2.69	10.25
Ecuador	1.79	1.74	1.22	0.65	–0.12	–1.88
Egypt, Arab Republic	1.88	1.83	2.53	1.34	–1.08	2.96

Table 2. BoP equilibrium growth rates for 90 world economies, 1996-2019 (continuation…)

Country name	MSTL (2)	ε/π (3)	GDP per capita (4)	Relative growth (Y/Z) (5)	Current account (% of real GDP) (6)	Balance of services (% of real GDP) (7)
El Salvador	1.83	1.78	1.44	0.77	–3.65	2.41
Estonia	1.88	1.83	4.63	2.46	–4.69	9.48
Ethiopia	1.78	1.73	5.17	2.75	–5.65	–1.14
Finland	2.25	2.19	1.87	0.99	2.54	–1.86
France	2.07	2.01	1.13	0.60	0.20	0.95
Germany	2.05	1.99	1.34	0.71	4.36	–1.50
Ghana	2.08	2.02	3.27	1.74	–6.73	–3.07
Guatemala	1.94	1.88	1.52	0.81	–3.20	0.35
Honduras	1.77	1.72	1.51	0.80	–5.82	5.64
Hungary	2.05	1.99	2.88	1.53	–3.33	3.73
India	2.22	2.16	4.95	2.63	–1.33	1.58
Indonesia	2.08	2.02	3.02	1.61	0.35	–3.03
Israel	2.31	2.25	1.86	0.99	1.45	2.65
Italy	2.09	2.03	0.41	0.22	0.28	–0.13
Jamaica	2.07	2.01	–0.06	–0.03	–7.17	5.83
Japan	2.06	2.00	0.77	0.41	2.79	–0.73
Jordan	1.82	1.77	0.82	0.44	–5.34	2.43
Kenya	1.79	1.74	1.28	0.68	–6.13	3.62
Korea, Republic	1.87	1.82	3.69	1.96	2.85	–0.78
Lithuania	1.77	1.73	5.48	2.91	–4.79	4.64
Malaysia	1.93	1.87	2.97	1.58	8.04	–1.39
Maldives	1.83	1.78	2.81	1.50	–12.23	41.66
Mali	1.68	1.63	2.00	1.07	–6.60	–7.98
Malta	2.70	2.62	3.60	1.91	–1.75	17.29
Mexico	1.92	1.86	1.22	0.65	–1.50	–0.63
Morocco	1.68	1.63	2.91	1.55	–2.09	7.05

Table 2. BoP equilibrium growth rates for 90 world economies, 1996-2019 (continuation…)

Country name	MSTL (2)	ε/π (3)	GDP per capita (4)	Relative growth (*Y*/*Z*) (5)	Current account (% of real GDP) (6)	Balance of services (% of real GDP) (7)
Myanmar	1.99	1.93	8.39	4.46	–1.10	1.21
Namibia	1.80	1.75	1.89	1.01	–1.07	–0.35
Netherlands	2.30	2.24	1.54	0.82	6.49	–0.33
Nicaragua	1.88	1.82	2.04	1.09	–11.99	0.63
Niger	1.94	1.88	0.85	0.45	–9.30	–5.96
Nigeria	1.91	1.86	2.46	1.31	4.38	–3.97
North Macedonia	1.88	1.82	2.64	1.40	–4.21	2.99
Norway	1.93	1.88	1.14	0.60	10.22	–0.57
Oman	2.14	2.08	–0.19	–0.10	2.11	–7.80
Pakistan	1.86	1.81	1.68	0.89	–2.16	–1.59
Panama	2.00	1.95	3.91	2.08	–6.72	10.08
Paraguay	1.76	1.71	1.33	0.71	0.75	–1.10
Peru	2.01	1.95	3.16	1.68	–2.31	–1.63
Philippines	2.04	1.98	3.24	1.72	0.76	1.71
Poland	1.96	1.90	4.18	2.22	–3.52	1.83
Portugal	1.87	1.82	1.34	0.71	–5.56	4.35
Romania	2.04	1.98	3.92	2.09	–5.45	1.95
Saudi Arabia	1.42	1.38	0.44	0.24	9.98	–9.72
Seychelles	2.13	2.07	2.71	1.44	–16.78	20.55
Sierra Leone	2.22	2.16	2.16	1.15	–14.56	–6.71
Singapore	2.22	2.16	3.05	1.62	18.40	–2.15
Slovak Republic	1.91	1.86	3.78	2.01	–4.00	1.14
Slovenia	1.89	1.84	2.56	1.36	0.53	3.50
South Africa	1.98	1.93	1.16	0.62	–2.45	–0.29
Spain	2.05	2.00	1.45	0.77	–2.33	3.84

Table 2. BoP equilibrium growth rates for 90 world economies, 1996-2019 (concluded)

Country name	MSTL (2)	ε/π (3)	GDP per capita (4)	Relative growth (*Y*/*Z*) (5)	Current account (% of real GDP) (6)	Balance of services (% of real GDP) (7)
Sri Lanka	1.96	1.91	4.30	2.29	–3.37	–0.58
Sweden	2.21	2.15	1.85	0.98	4.94	0.12
Switzerland	2.47	2.40	1.15	0.61	8.50	2.38
Tanzania	1.69	1.64	3.05	1.62	–6.07	0.74
Thailand	2.12	2.06	2.63	1.40	3.68	–0.04
Togo	2.05	1.99	1.25	0.67	–7.71	–1.70
Trinidad and Tobago	2.18	2.12	3.42	1.82	10.46	–0.35
Tunisia	1.66	1.61	2.51	1.34	–4.91	4.47
Turkiye	1.75	1.70	3.16	1.68	–3.14	3.33
Uganda	2.01	1.95	2.96	1.57	–4.61	–2.87
United Kingdom	2.14	2.08	1.48	0.79	–2.84	3.60
United States	2.07	2.01	1.57	0.84	–3.22	0.99
Uruguay	1.99	1.94	2.50	1.33	–1.34	1.95

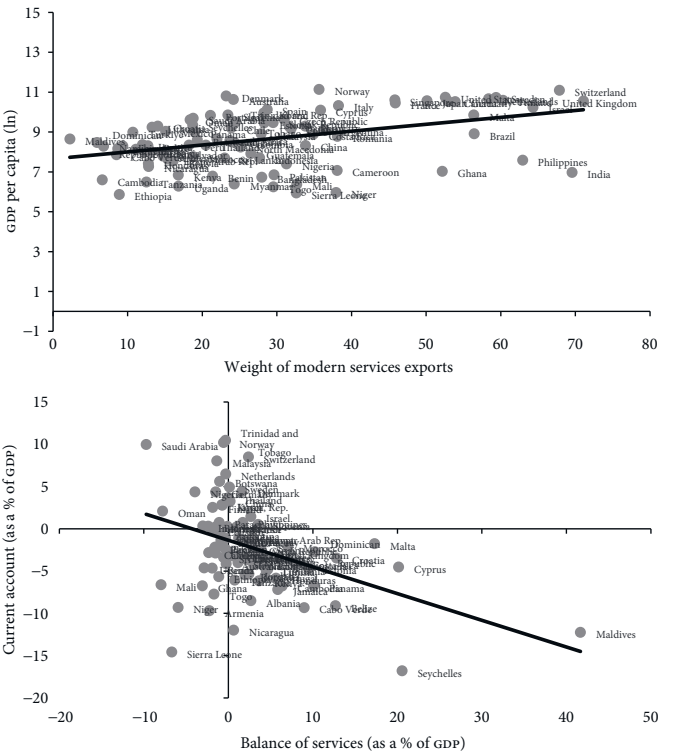
Source: Own elaboration.

As Eichengreen and Gupta (2011) conclude, there are two waves of service sector growth, and applying multisectoral Thirlwall's law will help us understand this. Countries at a higher stage of development (as measured by GDP per capita levels) have a higher share of modern services exports (see Figure 2 —upper side). In contrast, less developed countries have a higher share of traditional services. This kind of relationships would be understood with simple Ordinary Least Squares regressions (OLS).

Also interesting is to realize that there is a negative relationship between the current account and the balance of services (as a percentage of GDP), as Figure 2 — bottom side - also shows. This means that many surplus countries in the balance of services are net importers of goods

in the current account —as, for instance, Seychelles, Maldives, Belize, Cyprus, Cabo Verde, Croatia, Dominican Republic, Panama, Estonia, Malta, or Portugal. In fact, for this group of countries, service exports represent only 30% of the exports recorded in the current account (which also includes the primary and secondary income account).

Figure 2. Relationship between GDP per capita level (in logs) and the weight of modern service in total exports (1996-2019) —upper side[1]. Relationship between current account and balance of services (as a percentage of GDP, 1996-2019) —bottom side[2]



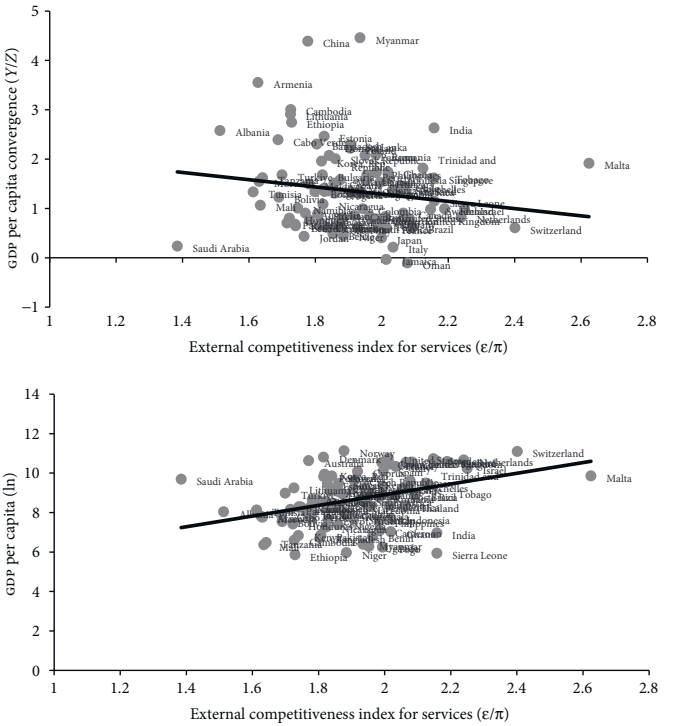
Source: Own elaboration.

[1] Regression line: GDP per capita (log) = 7.653 + 3.468*(weight of modern services). The slope coefficient is statistically significant (p-value: 4.56928E-05).

[2] Regression line: Current account (as a percentage of GDP) = –1.3506 – 0.316*(balance of services as a % of GDP). The slope coefficient is statistically significant (p-value: 0.000).

As the previous section shows, higher non-price competitiveness (increasing ε/π) means investing more in modern services. However, this is done by the countries that are growing the least in relative terms, that is, the countries that are at a higher level of development or in a second wave of growth (see Figure 3 —upper side). That is, countries with a higher level of non-price external competitiveness in services are the ones that converge the least (the inverse of Thirlwall's law) —as,

Figure 3. Relationship between external non-price competitiveness index (ε/π) and relative growth (*Y/Z*) —upper side[3]. GDP per capita level —bottom side[4]



Source: Own elaboration.

[3] Regression line: $Y/Z = 2.633 - 0.673*(\varepsilon/\pi)$. The slope coefficient is statistically significant (p-value: 0.044).

[4] Regression line: GDP per capita (log) = $3.485 + 2.710*(\varepsilon/\pi)$. The slope coefficient is statistically significant (p-value: 0.0004).

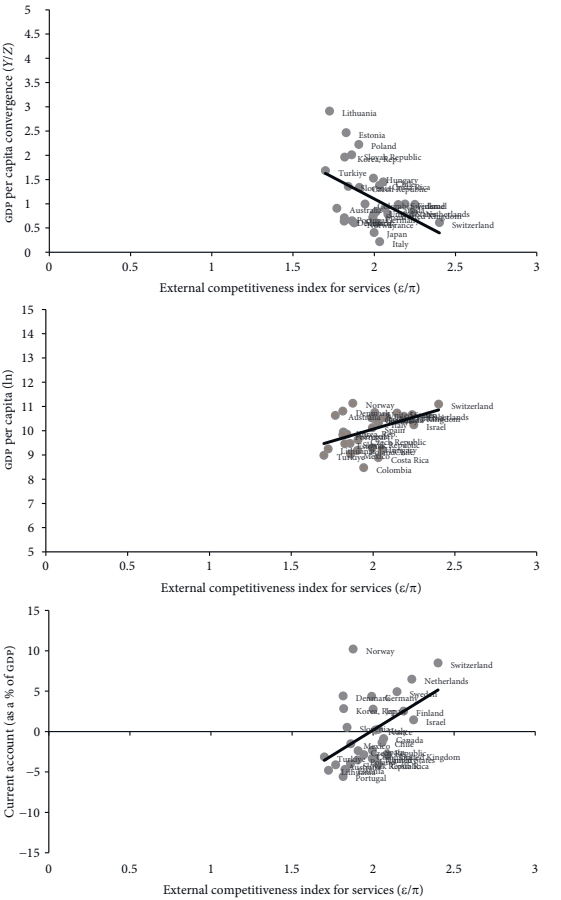
for instance, Switzerland, the Netherlands, Finland, Sweden, or United Kingdom. Countries in a catching-up process (where $y/z > 1$) are at a lower level of external non-price competitiveness —Albania, Armenia, Mali, Tanzania, or Cabo Verde. Also, more developed countries are the ones that have a higher non-price competitiveness index in services, as expected (see Figure 3 —bottom side). The fact that they do not grow faster is due to less increasing returns in services, as Kaldor argued.

If we focus on a small sample of only Organisation for Economic Cooperation and Development (OECD) countries (30 countries), seen as developed countries, the same pattern is observed (see Figure 4 —both sides). This is because the countries that converge the most (inside the OECD) are the ones that have the largest share of exports of traditional services, such as tourism, and are, therefore, less competitive. Additionally, the last plot in Figure 4 shows that OECD countries with a higher level of non-price competitiveness in services have higher current account balances (as a percentage of GDP), which indicates that competitiveness in services is interdependent on competitiveness in manufacturing. The average value for the services non-price competitiveness index for OECD countries is 1.972, which compares with 1.904 for the total sample.

The relationships in non-OECD countries are less linear than in OECD countries. We decided to separate these countries into two groups: The first group consisting of 30 non-OECD countries with the largest share of tourism exports. The second group includes the 30 non-OECD countries with the largest share of modern service exports.

In the first group (non-OECD touristic), there is a clear negative relationship between the balance of services and the current account balance. The shortfalls in competitiveness in the manufacturing sector are not offset by surpluses in the balance of services (dominated by tourism exports) —see Figure 5, upper side. The touristic countries outside the OECD that are most non-price competitive in services are those with the most significant current account deficits (because they are less competitive in the tradable sector) —see Figure 5, middle side— and are also those that are least converging with global economic growth —see Figure 5, bottom one. Still, these two last regressions are not statistically significant, but cast doubts on the tourism-led growth models.

Figure 4. OECD countries: The relationship between external non-price competitiveness index for services (ε/π) and relative growth (*Y*/*Z*) —upper side[5]. GDP per capita level —middle side[6]. Current account balance (as a percentage of GDP) —bottom one[7]



Source: Own elaboration.

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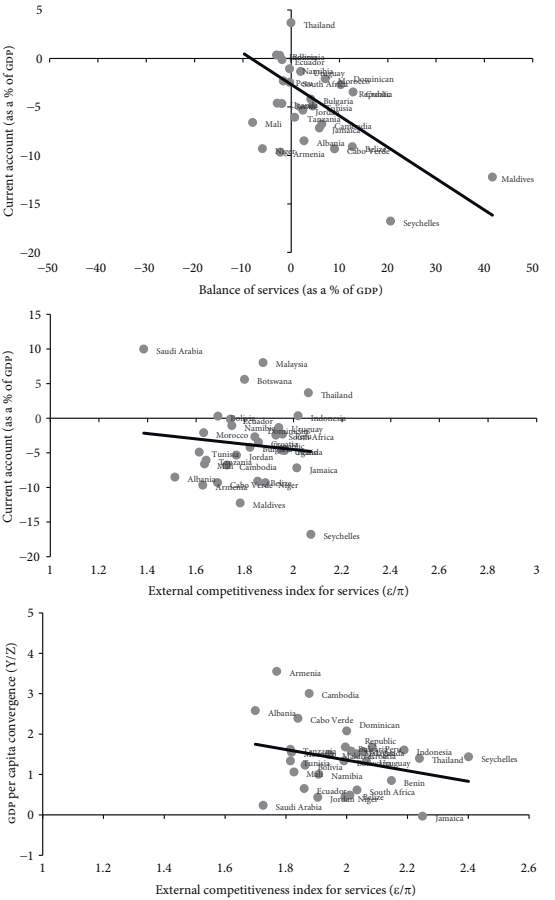
[5] Regression line: $Y/Z = 4.6026 - 1.7512*(\varepsilon/\pi)$. The slope coefficient is statistically significant (p-value: 0.013).

[6] Regression line: GDP per capita (log) = $6.104 + 1.980*(\varepsilon/\pi)$. The slope coefficient is statistically significant (p-value: 0.014).

[7] Regression line: Current account (as a percentage of GDP) = $-24.642 + 12.412*(\varepsilon/\pi)$. The slope coefficient is statistically significant (p-value: 0.006).

Figure 5. Non-OECD touristic countries: The relationship between current account and balance of services (as a percentage of GDP) —upper side[8]. External non-price competitiveness index for services (ε/π) and current account (as a percentage of GDP) —middle side[9]. Relative growth (Y/Z) —bottom one[10]



Source: Own elaboration.

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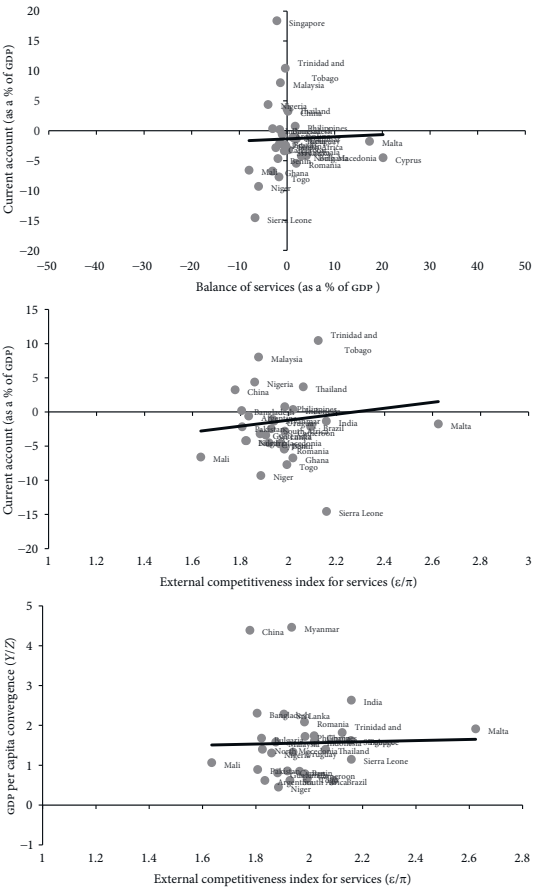
[8] Regression line: Current account (as a percentage of GDP) = –2.683 – 0.324*(balance of services as a % of GDP). The slope coefficient is statistically significant (p-value: 0.002).

[9] Regression line: Current account (as a percentage of GDP) = 3.166 – 3.845*(ε/π). The slope coefficient is not statistically significant (p-value: 0.559).

[10] Regression line: Y/Z = 3.159 – 0.9811*(ε/π). The slope coefficient is not statistically significant (p-value: 0.2747).

Figure 6. Non-OECD modern countries: The relationship between current account and balance of services (as a percentage of GDP) —upper side[11]. External non-price competitiveness index for services (ε/π) and current account (as a percentage of GDP) —middle side[12]. Relative growth (*Y*/*Z*) —bottom one[13]



Source: Own elaboration.

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[11] Regression line: Current account (as a percentage of GDP) = –1.362 + 0.036*(balance of services as a % of GDP). The slope coefficient is not statistically significant (p-value: 0.862).

[12] Regression line: Current account (as a percentage of GDP) = –9.906 + 4.352*(ε/π). The slope coefficient is not statistically significant (p-value: 0.514).

[13] Regression line: $Y/Z = 1.273 + 0.144*(\varepsilon/\pi)$. The slope coefficient is statistically significant (p-value: 0.891).

In the second group (non-OECD modern), there is a positive, but not statistically significant, relationship between the balance of services and the current account balance. The non-price competitiveness gains in the services sector are reflected positively in the external accounts of these countries —see Figure 6, upper side. The modern countries outside the OECD that are most non-price competitive in services are those with the most significant current account surpluses (because they are competitive in the tradable sector) —see Figure 6, middle side— and that seems to be a guarantee to grow more in the face of world economic growth —see Figure 6, bottom one. This last regression is not statistically significant. Still, within this group of countries, there is much heterogeneity. Among those that are more competitive, countries with a higher propensity to export financial services (Malta), telecommunications (India), or business services (Singapore) stand out. Of those less competitive in the service sector, there are also countries with high levels of relative growth driven by the manufacturing sector (China, Myanmar).

5. CONCLUSIONS

The increasing education levels in societies, along with technological advances, has made economies more dependent on the modern service sector. The literature shows that services are increasingly tradable, overcoming the geographical disadvantage of goods, and can benefit from schooling investment, an adequate regulatory environment, and technological infrastructure.

This paper shows that price competitiveness is insignificant in explaining the behavior of service exports and imports and that the increase in the weight of the modern service sector gives economies greater external competitiveness. Does this translate into higher economic growth? Not necessarily. In many developing countries, relative growth is based on traditional sectors, such as tourism, with risks. International tourism has the disadvantage that, as it gets deeper, it contributes to the degradation of resources, which are the main reasons for international travelers to visit. Economists from IMF show that international tourist arrivals have a statistically and economically significant effect on CO2 emissions (Cevik, 2023). Also, having a positive balance of services through tourism exports does not guarantee external surpluses. The strong dependence

of these countries on imported goods creates current account deficits and growth constraints —challenging the tourism-led growth model.

The hypothesis that there are two levels of services growth is validated: The higher the level of development, the higher the level of non-price competitiveness, and the greater the weight of the modern service sector. It is up to countries to strengthen national innovation systems and expand R&D investments so that the knowledge gained can be used to adjust to and benefit from the changes occurring in the international environment. ◄

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