How Mediterranean economies transited to export-led growth? An analysis of the determinants of international competitiveness

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Abstract

The 2008 financial turmoil and the ensuing economic recession have prompted Mediterranean economies (Greece, Italy, Portugal and Spain) to shift from a debt-led to an export-led growth model. Those countries introduced a set of reforms, mainly consisting of labour market flexibilization and fiscal austerity, aimed at fostering international competitiveness and reducing the gap with Germany, the leading country in terms of export success and the guidepost for economic performances. In this chapter, we focus on the main determinants of export competitiveness in Mediterranean countries (namely, price and non-price competitiveness) and compare these economies with Germany. Methodologically, we make use of three refinements, namely: i) we split the analysis into three subperiods covering the 1995–2018 timespan (the pre-crisis, the crisis and the post-crisis period); ii) we study the manufacturing sector by differentiating based on technological intensity; and iii) we adopt a subsystem approach to the input-output analysis. We find that, although the gap with Germany has been reduced, a significant differential in both price and non-price competitiveness remains, and it is not limited to high-tech sectors. Rather than a further season of structural reforms, that requires balanced and coordinated macroeconomic policies to assure a sustainable growth path in Mediterranean countries.

1. Introduction and background

After the onset of the 2008 crisis (the Great Recession), the four Mediterranean economies – namely, Greece, Italy, Portugal and Spain – implemented a set of structural reforms intending to correct their external imbalances, and they transitioned from a debt-led growth model towards an export-led one. These reforms somehow imitated the ones applied by Germany from the mid-1990s to the mid-2000s, which led the country to a mercantilist export-led growth pattern. They essentially consisted in a profound wage devaluation that drove down nominal unit labour costs (ULCs) and the consolidation of its traditional fiscal conservatism, exemplified in the well-known 'black zero' rule (*schwarze null*).

Throughout the pre-crisis expansionary period, Greece, Portugal and Spain displayed high growth rates and rapidly reduced unemployment. On the contrary, Italy exhibited low economic growth rates and limited employment creation. However, the trade balance in the four Mediterranean economies deteriorated over that period, exhibiting a negative relationship between the former variable and economic growth.

The mainstream explanation offered by Comparative Political Economy (CPE) to this trend is centred on the evolution of price competitiveness and relative ULCs. The Mediterranean variety of capitalism (sometimes also referred to as 'mixed market economy') lacks coordination in wage bargaining

(Molina and Rhodes, 2007; Hein et al., 2021). This feature provokes uncontrolled wage growth both in the sheltered and exposed sectors to international trade and leads to a deterioration in price competitiveness. In contrast, Germany is known for being a 'coordinated market economy', with the institutional ability to control wage growth thanks to its *pattern bargaining* wage setting system (the exporting sector set the pace for wage hikes for the rest of the economy), which allows German producers to preserve price competitiveness (Traxler et al., 2013). In addition, after the reunification process, Germany experienced serious economic problems that caused low growth rates, high unemployment, and a decrease in international competitiveness of the manufacturing sector. The principal political reaction to these problems was wage devaluation based on the progressive deregulation of the industrial relations systems and the liberalization of the labour market (Baccaro and Benassi, 2017). The consequences of these institutional features were straightforward: a divergence in price competitiveness that implied a slowdown in export growth and an increase in imports for Mediterranean countries, while for Germany exports became the main driver of growth and increased much more than imports. These trends were exacerbated after the onset of the euro, when nominal exchange rates between the eurozone members equalized (Johnston and Regan, 2016; Höpner and Lutter, 2018).

A complementary explanation given by the CPE literature – and, particularly, post-Keynesian scholars – to the appearance of external imbalances in the eurozone focuses on capital flows. Essentially, the adoption of a single currency facilitated lower real interest rates for highly inflationary economies (i.e., the Mediterranean ones). Thus, in the context of high domestic demand growth and large rates of return in the construction sector, foreign capital inflows skyrocketed and fuelled both public and private indebtedness (Stockhammer, 2011; Pérez, 2019).

The outbreak of the economic crisis implied the halt of capital inflows to debt-led economies, and the elimination of a central foundation of their growth model (Köhler and Stockhammer, 2022). Then, output growth rates became negative, unemployment rates rose steeply, and trade deficits rapidly turned into surpluses. The response of European institutions to the crisis was to require the liberalization of Mediterranean labour markets along with the implementation of fiscal austerity, with the goal of rebalancing their growth models by regaining cost and price competitiveness. In this sense, the European institutional architecture contributed to amplifying the recession, rather than containing it (Stockhammer, 2016).

Ten years after the implementation of such policies, it can be said that they were inefficient for both income per capita and employment growth, and that they provoked the so-called 'lost decade' for Southern European countries.[1] However, it is also true that these countries have succeeded in transitioning towards an export-led growth model, as the post-crisis expansionary period is characterized by a positive relationship between economic growth and the evolution of the trade balance.

It seems clear that wage restraint and austerity policies contributed to improving the trade balance through the collapse in domestic demand and imports (Hein et al., 2021; Köhler and Stockhammer, 2022). However, it is quite disputed the effect of these same institutional reforms on the evolution of

[1] Spain and Portugal recovered the 2008 production levels (constant prices) in 2017. Italy and Greece have not exceeded the pre-crisis production levels yet (source: Ameco, authors' calculations).

exports. While some authors point out that price competitiveness is a key driver for export growth, others hold that non-price factors, such as quality, technological sophistication, or firms' distribution channels and marketing strategies, among others, are much more relevant for commercial success. According to these same scholars, imitating the German growth model through the implementation of internal devaluation is futile since Germany's international competitiveness is grounded on non-price factors, i.e., its superior industrial specialization and technological dominance (Simonazzi et al., 2013; Storm and Naastepad, 2015a; Celi et al., 2018; Gräbner et al., 2020; Herrero and Rial, 2023a). Therefore, according to this view, the Mediterranean export-led growth is predominantly based on constraining domestic demand, and it is rather unsustainable in the long run.

This chapter's goal is to investigate the key drivers of exports in Mediterranean economies before and after the Great Recession, and compare them with Germany, the benchmark for economic performance and policy reforms. To do so, we distinguish between price and non-price competitiveness factors and study their evolution throughout the 1995–2018 period in the manufacturing sector (tradable commodities are predominantly manufactured goods), which is in turn disaggregated into four groups by technological intensity. Furthermore, a subsystem approach to the input-output analysis is employed (Pasinetti, 1973; Montresor and Vittucci Marzetti, 2011). Thus, all domestic activities that contribute, directly or indirectly, to the production of final manufactured commodities are considered. In this way, it is possible to study the entire domestic value chain and consider those channels through which both manufacturing and service activities could have contributed to export growth. This means that the indicators built in this chapter are vertically integrated.

The chapter is organized as follows. Section 2 reviews the literature and offers the evolution of the trade balance as well as the main indicators of price and cost competitiveness. Section 3 presents the structure of the manufacturing sector of the five countries. Then, Section 4 focuses on the study of cost competitiveness and illustrates the evolution of vertically integrated ULCs. The evolution of non-price factors (the contribution of knowledge-intensive business services and the economic complexity of exports) is examined in Section 5. Lastly, Section 6 concludes.

2. The state of the art

As reported in the introduction of this chapter, a relevant strand of literature in CPE conveys the message that Mediterranean countries followed the 'German model' and transitioned towards an export-led growth regime after the turn of the global financial crisis and the Eurozone crisis. According to the CPE field of inquiry, the Mediterranean model is characterized by uncoordinated wage bargaining, which is likely to produce inflationary pressures that may undermine export competitiveness. This contrasts with the wage-setting system of coordinated economies like Germany, where export-oriented manufacturing industries set the pace of wages in the rest of the economy, with the scope of preserving cost competitiveness.[2]

The transition towards an export-led model mainly happened through fiscal austerity and structural reforms in the labour market, aimed at reducing the institutional differences with Germany. Measures to promote internal devaluation were rapidly applied in Greece, Portugal and Spain, while this took

[2] For an in-depth discussion, see Herrero and Rial (2023b).

longer in Italy.[3] According to this view, these measures effectively corrected trade imbalances. Indeed, looking at macroeconomic data, there are reasons to argue that the external channel played an important role in the recovery: in this regard, Hein et al. (2021) indicate that the growth contribution of the balance of goods and services increased drastically in the post-crisis period.[4] Two points, however, deserve particular attention when investigating this topic.

First, while recognizing that the trade balance experienced a generalized increase across Mediterranean countries, it is important to scrutinize what happened to import and export separately. This will be of help in capturing what has been the genuine role of export in the recovery, and by contrast to what extent trade balances increased simply because of lower import (the latter, depending on lower levels of activity).

Second, it is still unclear what has been the role of price and cost competitiveness driving export. Despite the process of internal devaluation (and the ensuing real depreciation) experienced by Mediterranean countries, some studies have indeed emphasized the role of non-price factors (such as product quality/sophistication and the composition of export) in intercepting foreign demand and thus promoting export.

To deal with these arguments, the rest of this section proceeds in two steps. We first present some trends in export, import, and price/cost competitiveness for Germany and Mediterranean countries (Section 2.1). Having those trends in mind, we then discuss the extant literature on the relevance of price and non-price competitiveness in shaping export (Section 2.2).

2.1 Trade balance and price competitiveness

We now present some descriptive evidence for Germany and Mediterranean countries. In this section, our figures represent the evolution of trade shares (Figure 1) and price competitiveness (Figure 2). The data refer to the period 1995-2018. Methodologically, we identify three subperiods, namely 1995-2008 (the pre-crisis subperiod), 2009-2013 (the crisis period), and 2014-2018 (the recovery period). In depicting the evolution of price competitiveness, we refer to two alternative indicators, namely the real effective exchange rate (REER) based on nominal unit labour cost (ULC-REER) and export prices (XPI-REER). There are reasons to argue that they are two appropriate indicators of international competitiveness from the point of view of prices since they respectively refer to an important component of cost (ULC) and to goods that are effectively sold abroad (export prices).[5]

[3] The CPE literature mainly refers to a generalized decentralization of wage bargaining and deregulation of employment protection legislation for open-ended contracts with other specific measures such as the regulation of temporary employment or the reform of unemployment protection (see Bulfone and Tassinari, 2020).

[4] By comparing the 2000–2008 with the 2009–2016 period, they find that it increased from –0.80 to 1.58 in Greece, from 0.01 to 0.35 in Italy, from 0.00 to 0.93 in Portugal, and from –0.55 to 1.10 in Spain (yearly averages in percentage points).

[5] By contrast, the consumer price index and the GDP deflator include a larger basket of goods, most of them consumed only in the domestic economy. For a discussion, see Paternesi Meloni (2018) and Keil (2023).

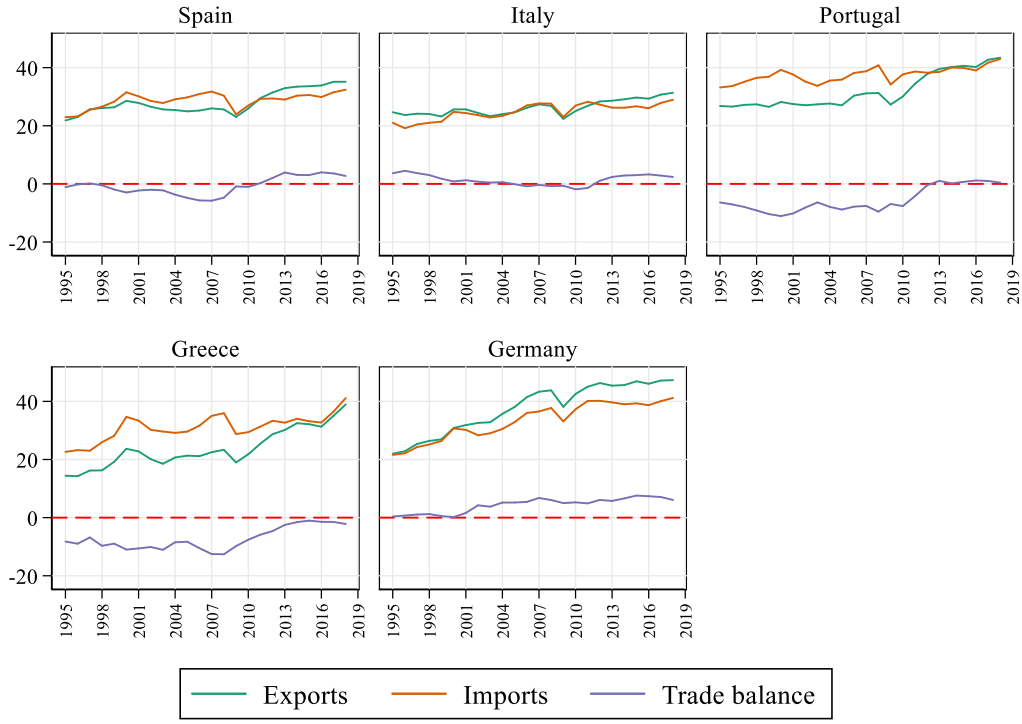

Figure 1. Export, import, and trade balance in Germany and Mediterranean countries.
Caption: For each country, the figure depicts the export share, the import share, and the trade balance.
Source: AMECO, authors' calculations.

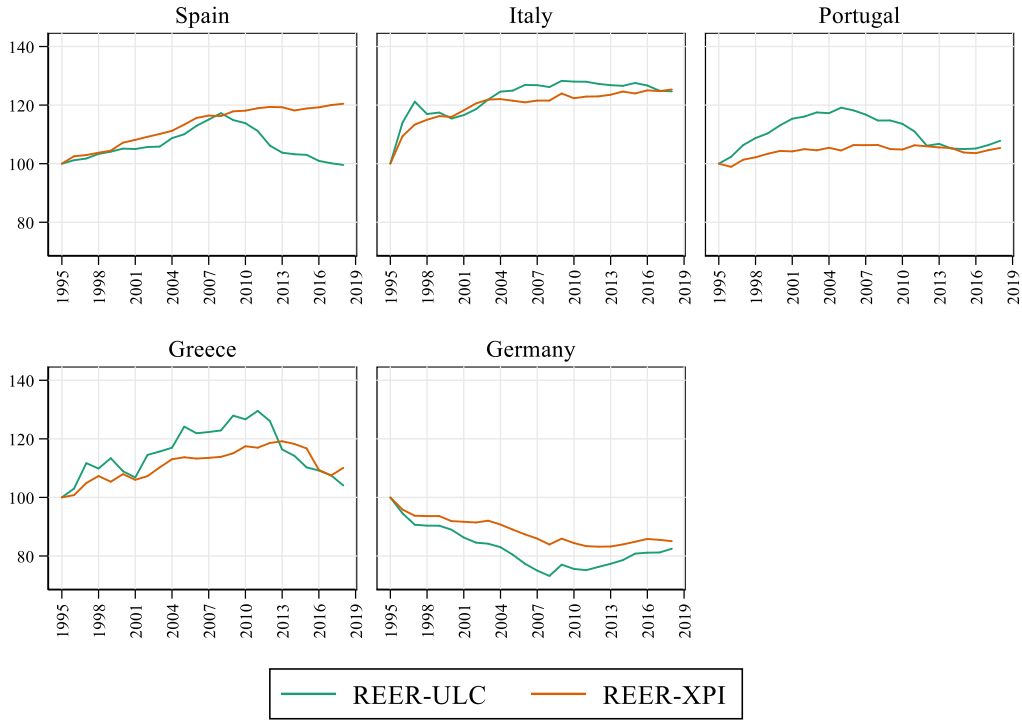

Figure 2. Trends in price competitiveness in Germany and Mediterranean countries.
Caption: For each country, the figure depicts the evolution of price competitiveness, alternatively measured employing ULC-REER and XPI-REER (a higher value of the REER indicates lower price competitiveness).
Source: AMECO, authors' calculations.

Given the fact that it represents a benchmark for export-led growth, we start by presenting some data for Germany. The export share hugely increased in the pre-crisis period (from 22% to 43%) and contributed to the rise of the trade balance up to 7%. The trend of the import share is increasing too: while being approximately at the level of export in the mid-1990s, it reached a lower peak (37%) just before the outbreak of the crisis. Those trends occurred in combination with a period of noteworthy depreciation: the ULC-REER decreased by about 25 percentage points (p.p.) from 1995 to 2007, while a lower (but significant) drop occurred in the XPI-REER (about 15 p.p.). After the crisis, the trend of the latter was quite flat, with export and import shares stabilized at about 46% and 40%, respectively, with the ensuing average trade surplus of 6.5% in the post-2012 period. In the same years, however, we see also a moderate appreciation in real terms if we consider the ULC-based REER (increased by about 10 p.p.).

We now move to Mediterranean countries. Let us start with Greece, the country most damaged by the crisis in terms of income loss. Here, we do not notice a worsening trend in the export share in the pre-crisis period: by contrast, the share of export raised from 14% (in 1995) to 23% (in 2008), with the most significant increase experienced before the launch of the monetary union. Nonetheless, the share of imports was systematically above that of export, thus generating a trade deficit of about 10% in the period before 2008. Prior to the outbreak of the Greek crisis (2011-12), we see a real appreciation that ranges from 18 p.p. (for the XPI-REER) to 30 p.p. (for the ULC-REER). Then, the crisis impacted dramatically price competitiveness, with a drop of about 12 p.p. in the XPI-REER, and about 25 p.p. in the ULC-REER. The balance of trade approached breakeven in 2015 (–1%), due to an important increase in export (from 27% to 39% in the post-crisis period) and a drop in imports (which, however, is situated in the years immediately after the crisis, while it started rising again recently).

The case of Spain is different since the trade balance was virtually zero in the late 1990s, while it started deteriorating in 1999 due to an increase in imports. The pre-crisis period was characterized by a sizeable appreciation in real terms: notably, the REERs based on ULC and XPI increased by about 17 p.p. from 1995 to 2008. Also in this case, the crisis period coincided with the beginning of a real depreciation that, however, did not lower export prices: indeed, the XPI-REER continued its inflationary journey (+20 p.p. in 2018 compared to 1995, and +5 p.p. compared to 2008). By contrast, the REER based on the ULC experienced a decline (–16 p.p.): this evidence indicates that higher cost competitiveness did not translate into higher price competitiveness of exported goods. Notwithstanding that, the export share increased by 10% in the post-crisis period: combined with a stable import share (around 30% after 2008), this turned into a consolidated trade surplus of about 3% of GDP.

Portugal too experienced a significant appreciation before the outbreak of the economic and financial turmoil: particularly, the ULC-REER increased by 15% in the pre-crisis period. Nonetheless, the appreciation was halved when considering the XPI-REER. In the post-crisis period, price competitiveness experienced an improvement only if assessed based in terms of ULC, while remaining relatively stable based on the XPI. In parallel, the export share increased drastically from 2009 (27%) to the last years of the sample (43%). The share of imports, by contrast, was quite stable over time (about 35-40%). The rise of export experienced in the post-crisis period triggered the balance of trade: the latter was about –10% in the pre-crisis age, while reached a modest surplus in recent times (1% in 2017).

Finally, Italy merits specific attention, being the only Mediterranean country that exhibited an external surplus before 2009: in detail, the balance of trade was 4% in the mid-90s, and substantially in breakeven when the crisis outbroke. Intriguingly, that happened in combination with a period of appreciation of the real exchange rate: even if we leave aside the huge appreciation experienced in the biennium 1995-96 (about 15%), we see a significant increase in the REER up to 2008 (additional 13 p.p. using ULC as a deflator, and about 8 p.p. using export prices). The post-crisis period, however, was not characterized by higher price competitiveness: even though the ULC-REER signals a moderate real depreciation (3 p.p. approximately), export prices continued to increase. At the same time, the balance of trade improved after 2009 due to an increase in export: indeed, the last subperiod under scrutiny stands out for a sustained surplus (up to 3%).

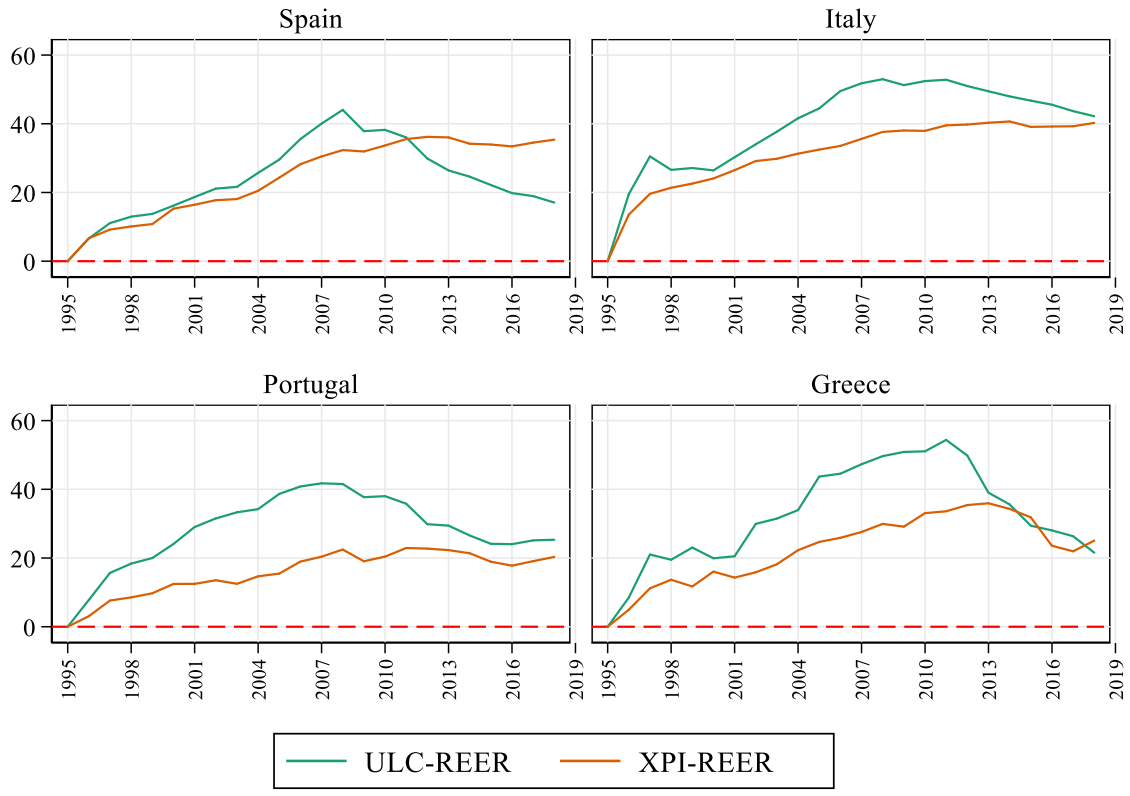

Figure 3. Price competitiveness gap with Germany.
Caption: The figure depicts the gap in price competitiveness of each Mediterranean country (a positive gap indicates lower price competitiveness compared to Germany).
Source: AMECO, authors' calculations.

The combined effect of a real appreciation in Mediterranean countries and a real depreciation in Germany opened a sizeable gap in cost and price competitiveness. Using 1995 as a base year, and assuming that in this year the economies shared the same level of prices, we calculate the price competitiveness gap as the difference between the REER of each Mediterranean country and that of Germany (see Figure 3). As for ULC, the highest differentials are found for Greece and Italy. For both countries, the gap in cost competitiveness peaked at about 50 p.p. in the years of the crisis and declined later (up to 20 p.p. for Greece and up to 40 p.p. for Italy). The ULC gap was slightly lower for Spain and Portugal, as it reached approximately 40 p.p. in 2008 and decreased in recent years (up

to 20 p.p. for Spain, and 25 p.p. for Portugal). When we confront XPI-REERs, the gap in price competitiveness with Germany is generally lower, but (contrary to what happened for ULC-REER) does not exhibit a correction in the post-crisis period: indeed, in 2018 it reached 20 p.p. in Portugal, 35 p.p. in Spain and 40 p.p. in Italy, with no sign of a reversion after 2008. The only partial exception is Greece, where the gap in export prices reached a maximum in 2013 at 36 p.p., and then decreased to 25 p.p. in 2016.

With a certain degree of generality, and although to a different extent, it can be argued that a significant increase in the export share featured all Mediterranean countries in the post-crisis period. This contributed to increasing the balance of trade, whose evolution has been however supported also by a slower pace of import. Notably, evidence indicates that three out of four Mediterranean countries (Greece, Portugal and Spain) experienced an important decrease in (relative) ULC. This kind of internal deflation, however, did not lead to a corresponding drop in export prices, as a (partial) pass-through from labour costs to prices occurred only in Greece.

Against this backdrop, what remains still debated is the possible effect of the testified process of (relative) real depreciation, when occurred, in promoting Mediterranean countries' export. To this specific point, that is the relevance of price and cost factors (compared to non-price elements) in driving export, is devoted the following sub-section.

2.2 The debate on the relevance of price and non-price factors

Regarding the importance of price competitiveness in boosting export, we witness a lively debate concerning European countries, to the point that Tober (2023) has recently stated that 'it is still unclear how decisive prices and costs are for export performance compared with non-price factors' (p. 1675). Two main positions have emerged. On the one hand, some authors emphasize the role of price competitiveness and wage inflation in having altered the export performance of a country (namely, in containing export in the pre-crisis period). On the other hand, other scholars underlined the role of non-price elements compared to cost competitiveness in promoting export during the phase of recovery.

The debate on the relative importance of price and non-price competitiveness rotates around the estimation of the price (and cost) elasticity of export. Notably, the sensitivity of export to changes in price is relevant for the discussion on the growth model adopted by a country: indeed, significant cost and price elasticities indicate that policies of internal devaluation (in turn, grounded on the suffocation of internal demand) would effectively promote export growth, even at the cost of (further) altering the distribution of income from wages to profits and to increase the polarization of income.

In the CPE family of works, Baccaro and Pontusson (2016) argued that German exports, consisting mainly of high-quality (but standardized) manufactured goods, have been highly price-sensitive and hence benefited from the slower pace of (wage) inflation experienced in Germany compared to Mediterranean economies (see Paternesi Meloni, 2017). On the other side of the spectrum, Storm and Naastepad (2015b, 2016) argued that the price elasticities of major Eurozone countries are virtually zero, while (net) exports are mostly driven by domestic and foreign demand. According to this view, the leading cause of trade imbalances must be located in the fact that, before the 2008 crisis, peripheral countries specialized in low-productivity and low value-added branches, while core countries were more oriented to innovative sectors and thereby occupied the highest value-added segments of the

international markets (Danninger and Joutz, 2007; Simonazzi et al., 2013; Storm and Naastepad, 2015a; 2016; Celi et al., 2018).[6]

Within the debate on the relative weight of price and non-price factors, Germany represents the bone of contention (Baccaro and Höpner, 2022). One component of the discussion is the process of wage devaluation experienced by the German economy after the launch of the euro. This was possible due to the coordinated wage bargaining system and the ongoing and prolonged weakening of unions' bargaining power (Nölke, 2016), which exchanged internal flexibility measures and wage restraint for employment protection, investment compromises and training for workers. Actually, wage devaluation measures were implemented since the mid-1990s through a long process of decentralization of the wage setting, erosion of industrial relations institutions and expansion of atypical employment (see Herrero, 2022). The last and most paradigmatic step of this liberalizing trajectory was the set of structural reforms belonging to the Schroeder Agenda, which mainly consisted of labour market flexibilization (Hartz reforms) initiated in 2003 with "several tripartite negotiations in an attempt to lower wage growth and to restore price competitiveness" (ILO, 2012, p. 46). These measures, however, "essentially led to wage deflation," while "little was done to restore competitiveness through increases in productivity" (ibidem). In opposition, other contributors argue that the institutional configuration of continental Europe fostered competitiveness by fueling innovation and promoting product quality (and not by allowing wage moderation). According to this position, the export-led economies of the core may have benefited not only from the currency peg, but also from higher non-price competitiveness.[7]

The empirical counterpart of this debate is the literature on German export's price sensitivity. The literature, however, comes to contrasting results. The European Commission (2010, Chapter 4) documented the high sensitivity of export to prices (−0.83) for the period 1980–2008. Baccaro and Pontusson (2016) estimate a REER elasticity of −0.48: according to the authors, this is not consistent with the view of Germany's export success as being based on high value-added and superior quality. In a similar vein, Baccaro and Tober (2022) argue that wage moderation is at the root of German gains in competitiveness (with price elasticities going from −0.8 to −1.2, depending on the deflator used), even though such moderation happened mostly in the non-exposed sectors (but to some extent also in the manufacturing sector). Yet, Baccaro and Benassi (2017) find negative short-term price elasticities for the export of manufactured items (−0.4 for ULC-based REER and −0.8 for export prices). Among other observers, Thorbecke and Kato (2012) and Keil (2023) estimate a long-run elasticity to ULC-based REER of about −1. Similarly, Baccaro and Höpner (2022) find significant price sensitivity (−1 for goods and −0.8 for services) and a central role for demand coming from the eurozone in shaping Germany's export. However, Storm and Naastepad (2015a, 2015b) detect insignificant cost sensitivity: this finding is interpreted as the consequence of Germany's major strength in terms of its corporate industrial framework and technological level, which promote product innovation and quality and therefore make its export insensitive to changes in prices. In a

[6] Concerning the relevance of non-price factors, the CPE literature indicates that CMEs belonging to the 'core' of Europe are better equipped to foster innovation in high-quality manufacturing, due to their institutional features, higher skills and competencies, and inter-firm relations. These elements can promote the competition in high-end products (Hall and Soskice, 2001; Iversen and Soskice, 2018). By contrast, Mediterranean economies are featured by a more uneven system of skill formation and are therefore more prone to producing and exporting low-to-medium-quality goods.

[7] In this regard, the thesis by Storm and Naastepad (2015a, 2015b) is even more strong: they claim that the German institutional setting does matter and that this is because it strengthens non-price competitiveness, not because it produces wage moderation.

similar vein, Herrero and Rial (2023b) recognize a significant wage moderation in services but conclude that the main driver of German export was the extent and integration of knowledge-intensive business services (non-price elements).

A similar discussion has also taken place regarding Mediterranean countries. Concerning Italy, Baccaro and Tober (2017) find an important role for price competitiveness in export, whose elasticity is estimated at −1.5, while Baccaro and Pontusson (2016) estimated it to be -0.65. Negative price elasticities, ranging from −1.1 and −1.5, are also found in Paternesi Meloni (2018) and Baccaro and Bulfone (2022). By contrast, Breuer and Klose (2015) do not find a significant price effect for Italy's export. For Spain, Xifré (2021) argues that the recent increase in export shares relates to increased non-price competitiveness, even though price competitiveness has worsened. The irrelevance of price factors for Spain is also supported by Villanueva et al. (2020), according to whom the strategy of internal devaluation contributed to the external readjustment mainly through the decrease in domestic demand and imports, rather than through enhanced price competitiveness. Nevertheless, Baccaro and Bulfone (2022) report a price elasticity of −1.3 for exported Spanish goods, while a lower one holds for services (−0.4), which, however, account for one-third of the country's export. For Greece, Athanasoglou and Bardaka (2010) provide contrasting evidence: they state that non-price competitiveness plays a vital role for Greek export, but at the same time estimate a price elasticity of −1. Mixed results also arise for Portugal: using firm-level data, Adamczyk and Westmore (2020) find significant price effects; at the same time, they argue that most of the increase in export can be explained by product quality and poor domestic demand (the latter of which prompted firms to increase their focus on foreign markets).

In parallel to elaborating on the role of price and cost competitiveness, other contributors accentuated the importance of non-price elements in fostering export. For instance, they are central in the 'structuralist' literature, where an economic system is viewed as more competitive if capable of developing the production structure by fostering innovative activities with higher technological contents and promoting exports through diversification, inter-sectoral linkages, and productive complementarities. In this regard, McCombie and Thirlwall (1994) originally argued that technological factors are more central than prices in determining the trade of manufacturing goods.[8]

Notwithstanding the recognized importance, the number of works that directly assess the role of non-price elements at the empirical level is quite limited. This may depend on the fact that conceptualizing non-price factors (and traducing them into a single metric) is not straightforward. According to some authors, an indirect way to underline the relevance of non-price factors consists of providing evidence of (a combination of) low price-sensitiveness and sizable elasticity to foreign demand.[9] Alternative approaches consist of rearranging a traditional export equation (Xifre, 2021), or interpreting its residual as conveying information about non-price elements (Monteagudo, 2010). Yet, several proxies have been used so far to estimate the effects of non-price factors on export: among them, we can list indices of product complexity and sophistication, the technological content of export, the weight on the economy of some 'advanced' sectors, the evolution of multifactor productivity, and so forth. Within the empirical literature on the matter, Pariboni and Paternesi Meloni (2022) have recently documented the relevance of complexity in shaping export in a panel of OECD countries. Focusing

[8] The technological dimension has been also evoked by Fagerberg (1996).
[9] See on this Neumann (2020) and Bottega and Romero (2021).

on Europe, Wierts et al. (2014) documented that a larger share of high-technology exports is positively related to the total amount of exports. Using (relative) total factor productivity as a proxy for non-price factors, Giordano and Zollino (2016) documented a positive effect on export for Germany, Italy, and Spain (even more accentuated in the latter). For Germany, Herrero and Rial (2023a, 2023b) underlined the positive effect of high-qualified services in driving manufacturing exports. A different message, however, arises from Frenkel and Zimmermann (2020), who find a null effect of R&D spending (used as a proxy for non-price competitiveness) in influencing exports.

As can be seen from this survey on the role of price and non-price elements in stimulating export, this debate has still not reached a conclusive result. Probably, that should be addressed through the estimation of country-specific export equations which incorporates the two facets of competitiveness. While this goes well beyond the scope of this chapter, in the following sections we will provide some data on both the aspects of competitiveness at the sectoral level, intending to shed even more light on this unsolved debate.

3. The structure of the manufacturing sector

Before addressing the debate on export competitiveness, it is important to explore and compare the economic structures we are referring to. That is motivated by the so-called structuralist literature, according to which differences in export performance can be caused by uneven productive structures (Simonazzi et al., 2013; Gräbner et al., 2020). According to this approach, the more technologically advanced the structure of the economy, the less price-elastic its exports (we will elaborate more on this in Section 4).[10]

Therefore, this section focuses on the structure of the manufacturing sector of the five countries under scrutiny, with the purpose of understanding if they are different from each other in size, features and qualities. Methodologically, we use a subsystem approach, also known as 'vertically integrated sector' (VIS), to the input-output analysis. A subsystem (or VIS) represents all the domestic activities that directly or indirectly satisfy the final demand for a particular good (see Herrero and Rial, 2023b; 2023). Consequently, the method considers a final commodity to be a composite good whose production requires inputs from other industries (Pasinetti, 1973; Montresor and Vittucci Marzetti, 2011). This method contrasts with the traditional horizontal approach to economic analysis, which classifies commodities according to the industry that produces them, and each industry is presumed an autonomous unit requiring no inputs from other industries to produce goods or services (Di Berardino and Onesti, 2020). This change in the criteria for classifying sectors produces substantially different results, since it captures the shifting boundaries of markets, the changes in demand for inputs and the outsourcing strategies of firms (see Section 5.2 for further details).[11]

[10] Along these lines go the contributions by De Ville and Vermeiren (2014, p. 8 and p. 102) and Vermeiren (2017), according to whom high-quality goods (that is, the ones that are mainly exported by Northern European economies) tend to be almost completely price inelastic.

[11] To vertically integrate a variable, it is required to multiply the diagonalized vector of production by the Leontief inverse matrix, and by the diagonalized vector of final demand. This operator, usually known as operator B, is in turn multiplied by the diagonalized vector of the variable that one wants to vertically integrate, like the value added or employment (in such way, the matrix commonly known as C is derived). Further information about this methodology can be found in Montresor and Vittucci Marzetti (2011) and Herrero and Rial (2023a, 2023b).

The structure of the manufacturing subsystem of each economy is presented in Table 1. The OECD taxonomy by technological intensity has been applied (Galindo-Rueda and Verger, 2016).[12] As can be appreciated, Germany is the most industrialized country of our sample, and its manufacturing industry is heavily specialized in sophisticated sectors. Furthermore, it is a very special case within advanced economies since it has not undergone deindustrialization when looking at value-added, and only slightly when looking at employment. In fact, the most technologically advanced sectors have gained shares in both value-added and employment over the 1995-2018 period, while low-tech sectors have decreased in size.

On the contrary, the participation of the manufacturing sector in the Mediterranean economies is much lower and has decreased over time. The most industrialized and advanced country of this group is Italy, followed by Spain, and then Portugal. Greece is the least industrialized economy, and its productive structure is profoundly biased towards low-tech subsystems.

An alternative variable for capturing the strength and specialization of manufacturing is the world export share. As Table 2 illustrates, the differences between countries are sharper when using this indicator. Germany is one of the largest exporters in the world in the four groups of sectors, but especially in the high-tech ones. However, when comparing the pre-crisis and post-crisis periods it can be appreciated a decrease in the market share of 0.8 p.p.

The combined market share of the four Mediterranean economies is lower than the German one. However, Italy appears as the largest exporter in all sectors within this group. Although the four countries are more specialized in low-tech sectors, it is clear that Italy and Spain exhibit the largest market share in high-tech sectors, while Portugal and Greece perform better in low-tech ones. Additionally, it is worth stressing that the four economies have decreased their export market share, but Italy is by far the most affected country.

Overall, these data are pointing to the fact that there are important differences between the productive structures of the countries under study. Therefore, it is probable that more factors apart from relative prices are behind the huge Germany's export share, and that the simple imitation of labour deregulation policies may not lead to the same results in export performance.

	Spain		Italy		Greece		Germany		Portugal	
	Avg (%)	Δ change (p.p.)	Avg (%)	Δ change (p.p.)	Avg (%)	Δ change (p.p.)	Avg (%)	Δ change (p.p.)	Avg (%)	Δ change (p.p.)
Value added										
Manufacturing	19.4	-4.4	25.9	-3.5	12.8	-3.6	30.4	1.4	20.2	-4.8
HT	0.5	-0.7	0.9	-0.3	0.2	0	1.9	0.2	0.8	-0.4
MHT	7.2	-0.3	9.6	0.1	2.2	-0.2	16.8	3.2	4.4	-0.3
MLT	3	-0.5	4.4	-0.7	1.9	0.1	4.2	-0.2	3	0.3
LT	8.7	-2.9	11	-2.7	8.5	-3.6	7.5	-1.7	12	-4.4
Employment										
Manufacturing	18.8	-5.9	25.9	-4.3	14.4	-6.7	26.9	-1.4	24.6	-8.1
HT	0.5	-0.6	0.8	-0.3	0.2	0	1.4	0	0.6	0.1
MHT	6.2	-0.3	8.6	0.1	1.7	0	13.1	0.9	3.8	0

[12] The manufacturing of pharmaceutical products (C21) is grouped into the medium-high technology cluster due to reasons explained in Section 5.1.

MLT	2.9	-0.6	4.6	-0.7	1.7	-0.1	4.1	-0.3	3.1	0.4
LT	9.2	-4.5	12	-3.3	10.8	-6.6	8.3	-1.9	17.1	-8.5

Table 1. Share of the manufacturing subsystem in the economy (average value and change for the 1995-2018 period).
Caption: High tech (HT), Medium-high tech (MHT), Medium-low tech (MLT), Low tech (LT).
Source: OECD STAN, authors' calculations.

	HT	MHT	MLT	LT
1995-2008				
Spain	0.8	2.0	2.3	2.3
Italy	2.9	3.9	5.5	6.6
Portugal	0.2	0.3	0.4	1.0
Greece	0.1	0.1	0.3	0.4
Germany	11.7	12.6	9.3	8.1
2009-2013				
Spain	0.6	1.8	2.0	2.5
Italy	2.4	3.2	3.9	5.2
Portugal	0.2	0.3	0.4	0.8
Greece	0.1	0.1	0.2	0.3
Germany	10.9	12.0	7.9	8.1
2014-2018				
Spain	0.7	1.8	1.8	2.6
Italy	2.3	3.1	3.5	4.9
Portugal	0.2	0.3	0.4	0.8
Greece	0.1	0.1	0.2	0.3
Germany	10.9	11.5	6.8	7.3

Table 2. World exports market share of each country (%).
Caption: High tech (HT), Medium-high tech (MHT), Medium-low tech (MLT), Low tech (LT).
Source: OECD STAN, authors' calculations.

4. Cost competitiveness in Mediterranean economies and Germany

When thinking about price competitiveness, usually the debate is focused on nominal unit labour costs (ULC). This variable is the ratio between the nominal mean wage and real labour productivity, and it is a macroeconomic proxy for the average labour cost per unit of output, i.e., per good or service produced in an economy.

On the one hand, the use of ULC for capturing price competitiveness has received criticism from some scholars. For instance, Felipe and Kumar (2014) indicate that it is a confusing macroeconomic measure since it does not correctly approximate the cost pressures experienced by firms, and it is difficult to interpret since it is a measure of income distribution deflated by a price index. Additionally, Storm and Naastepad (2015b) estimate that ULC are a small proportion of total unit costs (around 25%) and many times their evolution is not fully passed onto export prices. On the other hand, ULC is an easy index to build that captures well the evolution of average unit costs in an economy, since labour costs frequently evolve at a similar pace to other prices. Moreover, Keil (2023) argues that it is preferable to use relative ULC rather than relative export prices since the latter only accounts for the prices of the commodities successfully sold in the market, and not for the price of those competitors' goods not being sold. For this reason, the cost approach would be more accurate.

A conventional interpretation of the importance of relative prices/costs in the evolution of exports is as follows: an economy specialized in the production of sophisticated goods, with no close substitutes, is less affected by the evolution of relative costs and experiences a lower price elasticity for export demand (Vermeiren, 2017). The opposite occurs when an economy predominantly exports low-quality goods. In this case, it would be much more affected by the evolution of relative prices and experience a high price elasticity because its exports are highly substitutable. From this view, one may conclude that export by advanced countries should be (almost completely) inelastic to changes in prices and costs, since mature economies tend to specialize in the production of high-quality items. But this is in contrast with some recent findings on the relevance of both price and non-price factors in OECD countries (see Section 2.2). That is the reason why in this section (as well as in the following one) we delve into the topic of international competitiveness by differentiating based on the technological content of export.

In this chapter, vertically integrated ULC is employed to capture cost competitiveness. It is the ratio between the vertically integrated mean wage and the vertically integrated real productivity (the ratio is therefore expressed in nominal terms). As can be seen from Figure 4, which brings together the five countries under scrutiny, there is a negative relationship between the growth of ULC and the evolution of exports in all sectors, although it is slightly weaker in the low-tech ones. This is an interesting result because, considering the arguments from the structuralist view, one would expect a stronger association between both variables in the less sophisticated sectors. A possible explanation for this result could be that what really matters for being price competitive is the level rather than the evolution of prices (for an extended discussion, see Boggio and Barbieri, 2017, and Keil, 2023). In any case, the fact that the evolution of ULC seems to be an important driver of export performance in most industries may indicate that prices and costs can be a dimension of competitiveness for more sophisticated goods too, particularly in a context with a high degree of internationally fragmented production in which the manufacturing or assembling phases can be relocated to countries with cheaper labor costs while keeping the final stages at home.

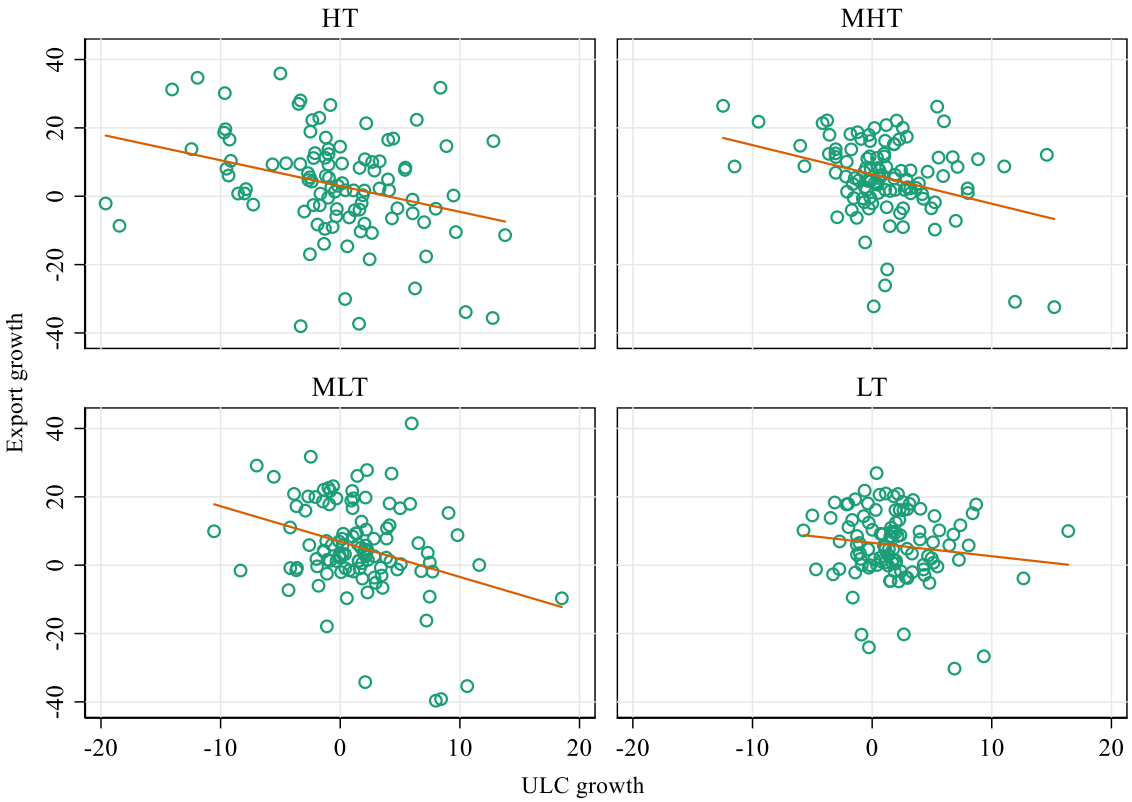

Figure 4. Evolution of vertically integrated nominal ULC and export growth in the five countries under study.
Caption: High tech (HT), Medium-high tech (MHT), Medium-low tech (MLT), Low tech (LT).
Source: OECD STAN, authors' calculations.

The evolution of vertically integrated nominal ULC and its components is presented in Figure 5. The internal devaluation implemented in Germany during the pre-crisis expansionary period is well observed. Interestingly, the growth of the mean wage is quite similar between sectors in this economy, being productivity the variable that predominantly drove the evolution of ULC. In this sense, the largest drop in ULC can be observed in HT sectors. It is worth highlighting that Germany presents rather moderate yearly growth rates in most sectors (quite similar to that exhibited by the rest of the economies in the sample).

On the contrary, during this period ULC growth was higher in Mediterranean economies. Nominal wages grew more than in Germany (yearly growth between 2.9% and 7.4%), being Greece the country in which wage inflation was higher. Portugal achieved a relatively robust productivity performance that made it possible to contain ULC growth. However, it should be noted that corporate profits grew more than wages in Portugal and Spain, and at a similar pace in Italy and Greece (Pérez and Matsaganis, 2018). Furthermore, in Spain, real wages stagnated during this period. Therefore, despite these numbers, no redistribution of income took place in favor of workers.

The eruption of the Great Recession implied corporate bankruptcies and a sharp increase in the unemployment rate. The management of the crisis involved the adoption of structural reforms in Portugal, Spain and Greece, with the aim of both making the labour market more flexible and decentralizing the wage bargaining to firms. All these events reduced the bargaining power of workers

and provoked a sudden drop in wages, which was particularly severe in Greece, followed by Portugal and Spain.

Furthermore, during that period, a fall in productivity is observed in general (with a few exceptions, such as some Spanish sectors), since the amount of job losses was larger than the slump in production.[13] In Greece, the fall in wages was lower, whereas in Italy wages kept growing until 2015, when the first deregulating measures in the labour market were implemented.

From 2014 onwards, when Mediterranean economies started exhibiting export-led growth, the effects of structural reforms effects persist, and internal devaluation continues. The slowdown in ULC is observed in all Mediterranean countries, while in Germany moderate growth in all sectors is registered. In the latter economy, nominal wages increased again at relatively high rates after many years of sluggishness. In fact, contrary to the pre-crisis expansionary period, wage growth in Germany exceeded that of Mediterranean countries in all sectors. Furthermore, it is important to note that productivity growth contributed decisively to moderate ULC growth in Spain, and it was positive in Italy, although they were below the values exhibited by Germany.

All in all, we find that wage restraint has been the main driver of the evolution of the ULC in the three periods. However, trends in productivity also help explain why Germany's ULC values are the result not only of wage devaluation policies but probably also of product sophistication and process efficiency, while Mediterranean economies had difficulties in emulating this performance in productivity.

[13] For more details on the countercyclical productivity behaviour of Spain see Maroto-Sánchez and Cuadrado-Roura (2013).

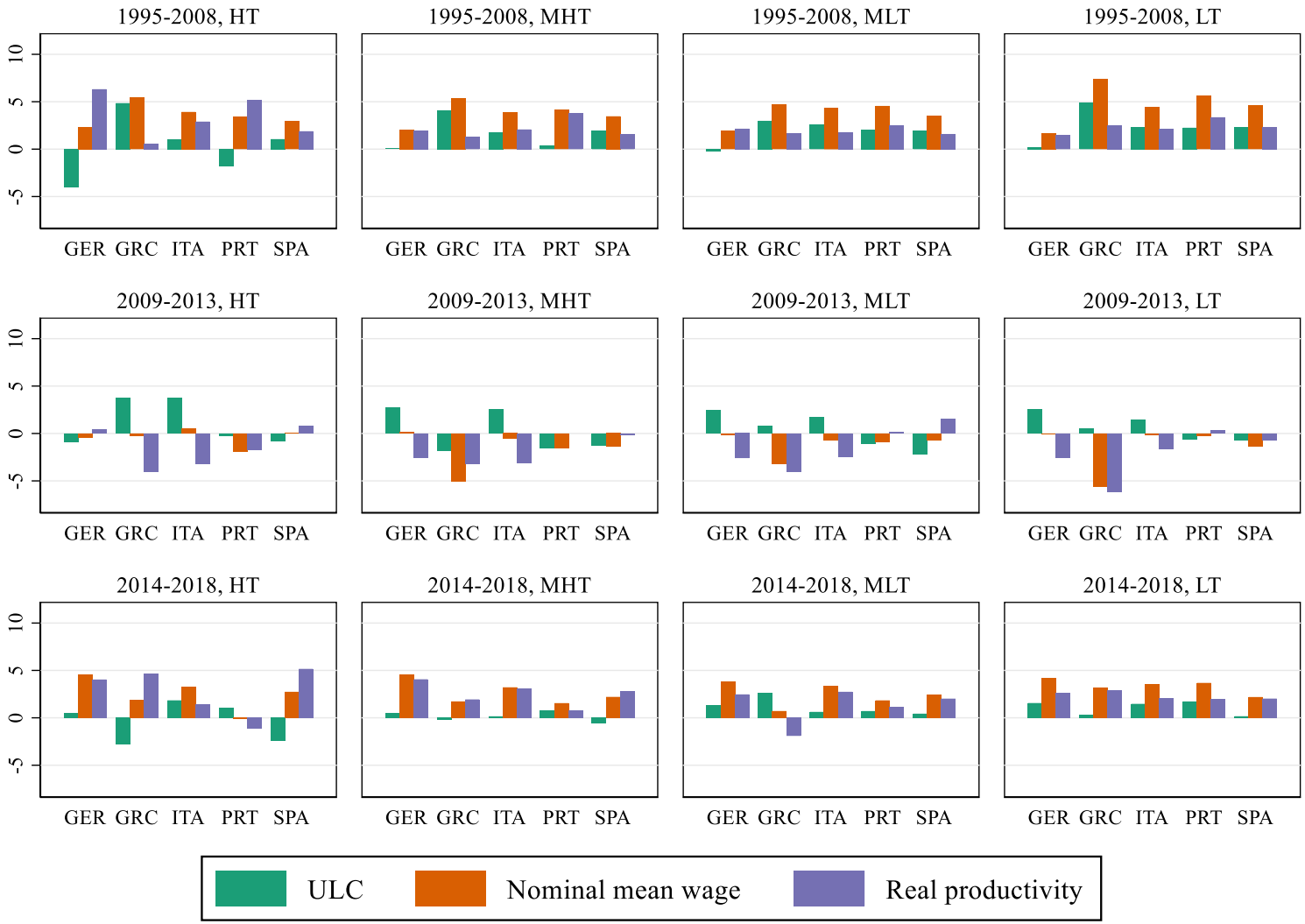

Figure 5. Evolution of vertically integrated nominal ULC, vertically integrated mean wage, and vertically integrated real productivity growth.
Caption: High tech (HT), Medium-high tech (MHT), Medium-low tech (MLT), Low tech (LT).

Source: OECD STAN, authors' calculations.

5. The evolution of non-price competitiveness

As shown in the previous sections, the productive structure of the five countries under study is quite heterogeneous. Although there has been certain convergence among them during the 1995–2018 period, the differences between them remain sizeable. This picture is coherent with the one obtained by an important strand of the literature (e.g., Celi et al., 2018; Gräbner et al., 2020a, 2020b; Herrero and Rial, 2023a), and it is well observed again when looking at two indicators of non-price competitiveness: the complexity of exports and the participation of knowledge-intensive business services into manufacturing sectors. In this section, we focus on the evolution of these two measures of non-price competitiveness (also in this case, we differentiate based on technological levels) and their relationship with export performances.

5.1. Economic complexity of exports in Mediterranean economies and Germany

The complexity index measures the sophistication of countries' export basket, which in turn reflects the technological level and the features of the national economic structure. This index is frequently used within the structuralist and post-Keynesian literature to capture non-price competitiveness (e.g., Gräbner et al., 2020a; Kohler and Stockhammer, 2022; Pariboni and Paternesi Meloni, 2022).

The computation of the complexity index is based on the method of reflections, originally developed by Hidalgo and Hausmann (2009). This index is, in turn, built on the basis of two indicators: the diversification index (number of products that a country exports with revealed comparative advantage, RCA) and the ubiquity index (number of countries that export a given product with RCA). In this respect, the diversification index is a simple measure of the complexity of a country, while the ubiquity index captures the complexity of a given product. Essentially, the method of reflections consists of iterating the diversification and ubiquity indexes (for further technicalities, see Felipe et al., 2012).

By applying the method of reflections and using data from the *Harvard Growth Lab*, we calculate the economic complexity of exports of the five countries of the sample at 4-digit product level (SITC, rev. 2). This dataset contains information on approximately 700 goods and 243 regions. After eliminating all small nations and those regions that are not countries, the sample includes 158 countries. Then, all manufacturing products have been assigned to manufacturing economic sectors (ISIC, rev. 4) following Muendler's (2009) procedure. Then, these sectors have been grouped by technological intensity according to the OECD taxonomy (Galindo-Rueda and Verger, 2016).[14]

Our aggregate results indicate that, overall, Germany is a much more complex country than the Mediterranean ones (Figure 6). Until 2008, it was the second most complex economy in the world. Since then, it has dropped a few positions in the ranking (in 2018 it was the 5th most complex country, according to our estimations).

Within Mediterranean economies significant heterogeneity is observed. In this sense, Italy is closer to Germany than to the rest of the countries and does not present divergence concerning the former. Although Portugal is the fourth economy in most years of the sample, its position has remained relatively stable. The contrary occurs with Spain and Greece, which have worsened their

[14] It should be noted that it is not possible to distinguish products belonging to industries C20 and C21 (manufacture of chemicals and chemical products and manufacture of basic pharmaceutical products and pharmaceutical preparations) so both are included in the MHT cluster.

classification. Spain is the most striking case: it downgrades during the pre-crisis expansionary period; then this trend slows down during the crisis and appears again in the subsequent recovery period. Lastly, Greece is the least sophisticated country, but it has been improving its complexity index since the early-2000s.

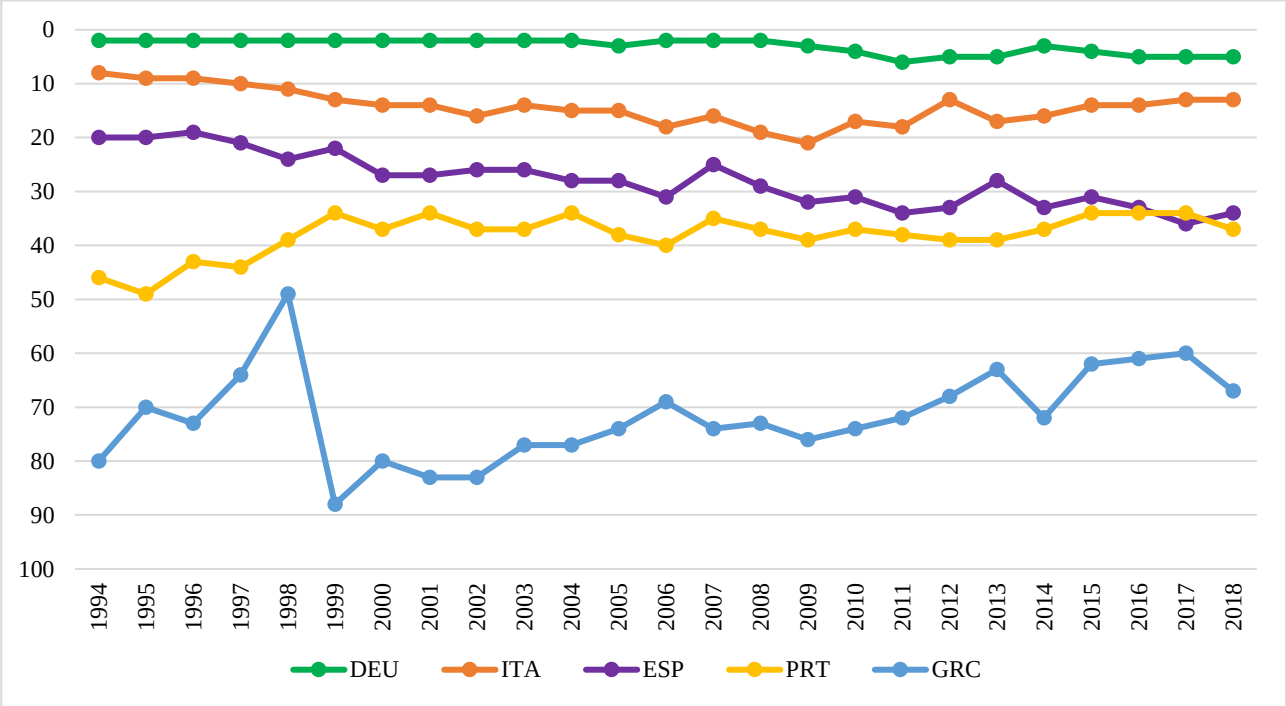

Figure 6. Country complexity ranking.
Source: Harvard Growth Lab, authors' calculations.

The relationship between export growth and complexity is investigated by employing a fixed effect model with no control variables for each group of sectors. As can be seen from Figure 7, there is a positive (but weak) correlation between the level of complexity and the evolution of export in all the clusters. Therefore, it seems that the capability to produce highly sophisticated good helps to drive export up, although other variables can be more relevant. However, this relationship is only observed before the Great Recession and disappears in the subsequent expansionary period. This result is coherent with the one obtained by Pariboni and Paternesi Meloni (2022) and suggests that non-price competitiveness differentials had played a role in shaping export flows particularly before the 2008 crisis.

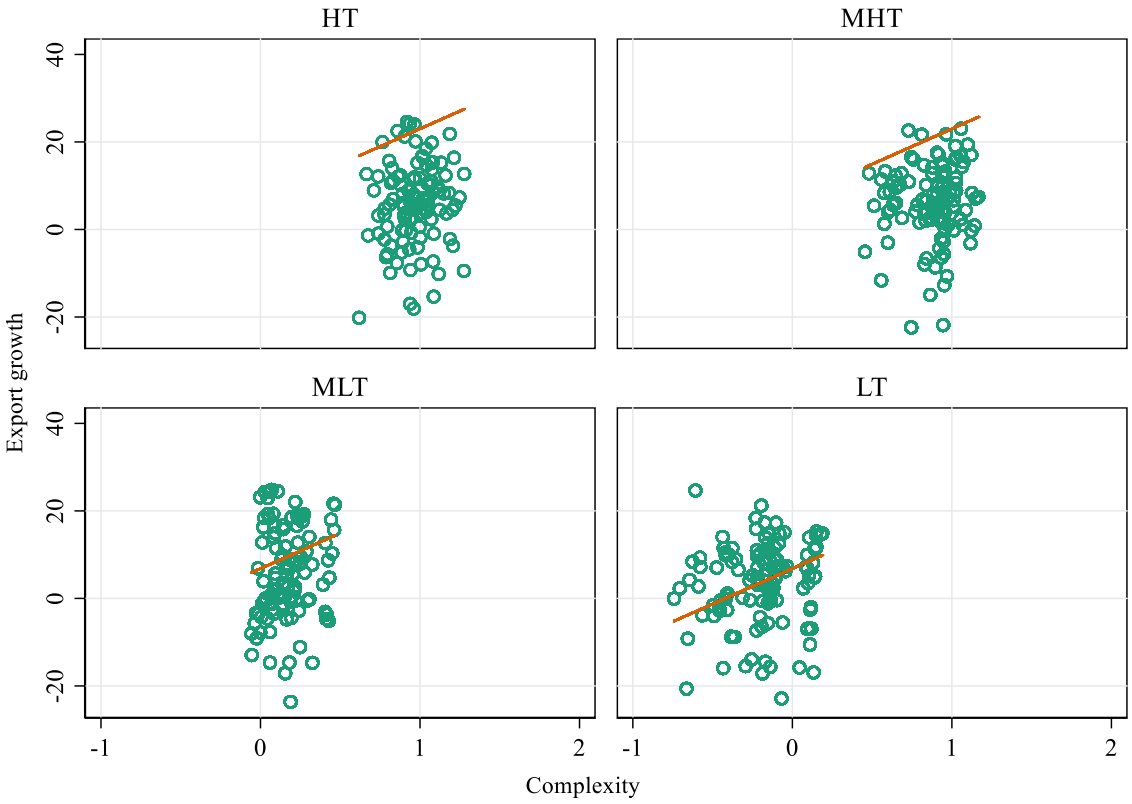

Figure 7. Correlation between complexity and export growth by technology clusters.
Note: High tech (HT), Medium-high tech (MHT), Medium-low tech (MLT), Low tech (LT).
Source: Harvard Growth Lab, authors' calculations.

To dig deeper into the sophistication of the productive structure, countries' exports are distributed across complexity deciles (Figure 8). This way, the more sophisticated the export basket, the more biased towards the 10th decile will be the distribution of exports. Furthermore, since some significant changes have been observed when looking at the ranking of countries, the pre-crisis and the post-crisis periods are compared. We find that the capabilities for exporting complex goods are asymmetrically distributed across the five economies. First, the German export basket is the most sophisticated one. During the precrisis expansionary period, 57.3% of its exports were in the top three deciles (22.6% in the most complex decile). Second, Mediterranean economies display a less complex export basket, and important differences exist between them. On the one hand, 42.2% and 47.1% of total manufacturing exports fall into the three most sophisticated deciles in Italy and Spain, respectively. On the other hand, Portugal's and, particularly, Greece's export baskets are highly skewed towards the left-hand side of the distribution, and only 30.5% and 18.9% of their exports are part of the top three deciles.

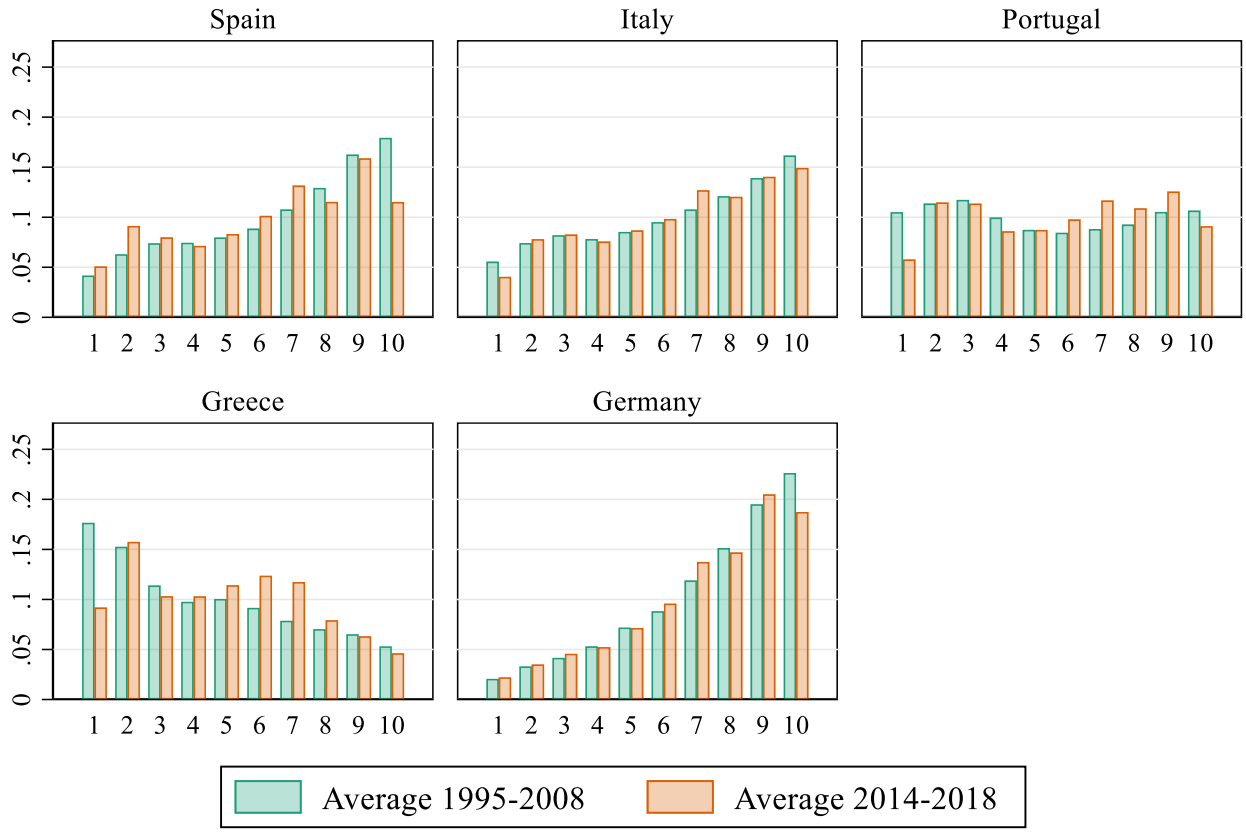

Figure 8. Distribution of exports by complexity decile.
Source: Harvard Growth Lab, authors' calculations.

Since we are interested in measuring the economic complexity of a country at the sectoral level, we compute this index for each group of sectors clustered by technological intensity. Following Magacho and McCombie (2017) the technological complexity of exports (TCX) for the sector *i* is calculated as follows:

$$TCX_{ji} = \sum_{ij} \frac{X_{jk}}{X_{ji}} * COMPLEXITY_k$$

Where *X* are exports, *j* is the country and *k* stands for all products classified within sector *i*. Therefore, the complexity of each technological intensity cluster is the average of the complexity value of each good *k* weighted by its share in the exports of the cluster of each country *j*. Then, we calculate the complexity gap with Germany, which in our setting represents the economy at the technological frontier. This measure is computed as the subtraction between the complexity value of each sector *i* of a country *j* and that of Germany. Thus, if the complexity gap is negative, the country would be less sophisticated than Germany. Furthermore, if the value approaches zero over time, it is indicating that the country is getting closer to the technological frontier.

The results of this operation are presented in Figure 9, which depicts the gap in TCX with Germany. The latter displays the highest level of complexity within the four groups of sectors, since Mediterranean countries are below zero in most years. However, we appreciate several trends at both the sectoral and country levels. Regarding sectors, it is worth noting that the complexity gap is larger in the low-tech clusters than in the high-tech ones. However, Mediterranean economies have

succeeded in closing this gap particularly in LT sectors, but not in the others. The fact that the complexity gap is larger in LT sectors is due to Germany having a more diversified export basket within sectors, i.e., it is able to export a wider variety of products with RCA than Mediterranean economies. Since low-tech clusters are composed of more sectors and products than high-tech clusters, the complexity gap is larger within them.

Greece and Portugal, the two lagging economies, have reduced the gap especially in MHT and LT groups during the two expansionary periods. The distance between Italy and Germany has remained relatively constant in HT clusters and has declined in the LT ones. Spain is the less successful country since its complexity gap has expanded in all clusters, particularly during the years before the Great Recession.

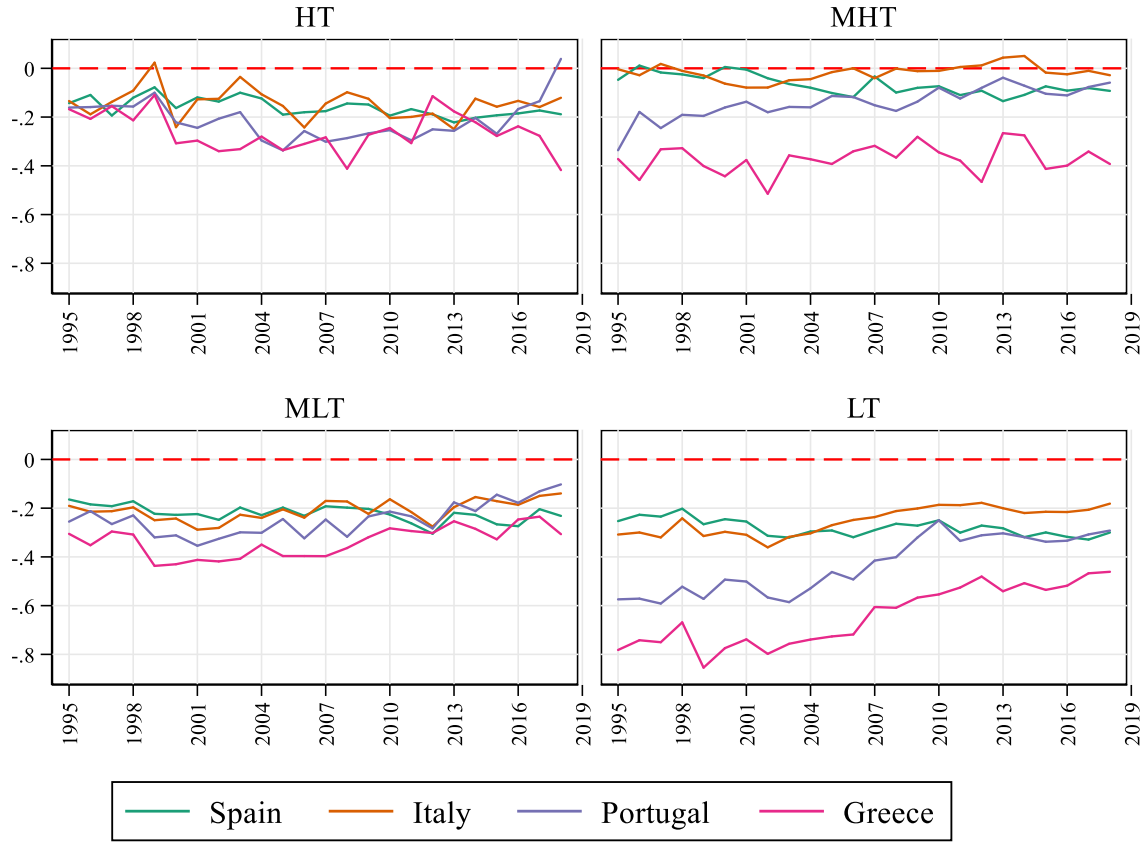

Figure 9. Gap in technological complexity of exports with Germany.
Caption: High tech (HT), Medium-high tech (MHT), Medium-low tech (MLT), Low tech (LT).
Source: Harvard Growth Lab, authors' calculations.

5.2. The role of knowledge-intensive business services as non-price competitiveness drivers

The structure of the manufacturing sector has experienced a profound restructuring during the last decades due to, at least, two processes. The first one is outsourcing, and it is associated with cost competitiveness issues. Managerial strategies of large manufacturing companies have focused on core competencies while subcontracting the remainder of operations to external firms. This way, many manufacturing firms have outsourced some activities that were previously performed in-house, with the aim of increasing their returns as well as gaining both cost competitiveness and flexibility against changes in demand. Essentially, outsourced jobs often pay worse than those directly contracted by

the leading firm. Moreover, by substituting labour relations for market relations, companies gain flexibility in making rapid strategic decisions.

The second process, the one we are going to focus on in this section, is the increasing reliance on knowledge-intensive business services (KIBS) to satisfy the final demand for manufacturing goods, and it has to do with non-price competitiveness. KIBS are high-level services, such as consultancy or engineering, that provide technical assessment to manufacturing firms, acting as knowledge suppliers and innovation drivers (Castellaci, 2008; Ciriaci et al., 2015). KIBS firms can comprise outsourced jobs as well as new ones requiring high levels of investment as well as high-skilled workers to be performed within core manufacturing firms (Ciriaci and Palma, 2016). They support manufacturers competing in international markets through improvements in both the goods they produce and the production processes.

The relationships between KIBS and the manufacturing sector are frequently studied using the subsystem approach to the input-output analysis. Empirical works based on the subsystem method employ the share of KIBS employment in manufacturing subsystems as the principal indicator of the integration between sectors. One caveat is necessary here: outsourcing of service activities from manufacturing firms – a managerial practice related to cost competitiveness strategies – is also captured by the evolution of the service employment share in manufacturing subsystems. However, the increase in service jobs can be induced not only by outsourcing, but also by the greater demand for KIBS (and other types of services) not previously performed within manufacturing firms. In practice, for the subsystem methodology it is not possible to differentiate which of the two factors is affecting the employment growth, although previous works hold that KIBS are less affected by subcontracting than service activities with low productivity and low-skilled workforces (Herrero and Rial, 2023b).

So far, empirical contributions have captured a positive relationship between the technological content of manufacturing subsystems and the share of KIBS employment (Antonioli et al., 2020; Ciriaci and Palma, 2016). Moreover, Ciriaci et al. (2015) find that manufacturing sectors that incorporate R&D from KIBS present greater inventive efforts and higher quality patents. Herrero and Rial (2023a) estimate a positive impact of KIBS on export dynamics. Additionally, Antonioli et al. (2023) employ data from Italian regions and capture a positive relationship between the integration of market services in manufacturing and the productivity growth of manufacturing subsystems.

In the remainder of the section, we present data on the integration of KIBS into manufacturing subsystems for the five economies under study (the classification of KIBS is presented in Table A.1 in the Appendix).[15] Concretely, Table 3 illustrates the participation of KIBS employment in manufacturing subsystems, which have been aggregated by technological intensity.

Overall, technologically advanced subsystems rely more on KIBS inputs than low-tech subsystems. Furthermore, during the pre-crisis period, Germany, and then Italy, present stronger linkages between manufacturing and KIBS than the rest of the Mediterranean economies. Besides, during this period the participation of KIBS has advanced in the five countries. These results are quite in line with the

[15] To build the KIBS indicator, all KIBS activities are added up within a generic manufacturing subsystem. This operation is usually performed for either value added or employment (this work uses the latter variable). In Ciriaci and Palma (2016) the procedure is explained in detail.

ones registered by Antonioli et al. (2020), Ciriaci and Palma (2016), and Herrero and Rial (2023a), among others.

However, the picture somewhat changes from 2009 onwards. During the crisis, there is an accelerated restructuring of HT manufacturing in Portugal and of all clusters in Greece. In these clusters, the share of KIBS employment increases considerably. This is probably explained by the fact that in these two economies employment losses were concentrated in the manufacturing portion of the subsystem, rather than in the service portion, thus producing this statistical effect.

These trends consolidate in the post-crisis expansionary period. On the one hand, Portugal exhibits the largest share of KIBS employment in the HT cluster, while Italy shows the lowest value. On the other hand, Greece presents a similar average level to Germany in both HT and MHT clusters. While Germany is still the leading country in MHT, MLT and LT sectors, we observe a certain degree of convergence between countries.

	HT		MHT		MLT		LT	
	Avg (%)	Δ change (p.p.)	Avg (%)	Δ change (p.p.)	Avg (%)	Δ change (p.p.)	Avg (%)	Δ change (p.p.)
1995-2008								
Spain	9.3	(6.4)	8.9	(4.2)	6.3	(3.3)	6.5	(4.7)
Italy	11.3	(6.5)	11.5	(6.5)	8.9	(4.5)	7.6	(5.9)
Greece	9.5	(7.7)	10.8	(0.5)	5.0	(-0.6)	4.4	(2.5)
Portugal	10.8	(8.6)	7.7	(3.0)	5.8	(1.3)	3.8	(1.5)
Germany	14.8	(5.8)	12.8	(7.4)	10.2	(4.7)	10.1	(5.0)
2009-2013								
Spain	15.5	(-3.5)	12.6	(1.6)	8.8	(0.6)	8.9	(-0.4)
Italy	12.4	(-2.4)	13.2	(0.0)	10.3	(0.7)	10.3	(-0.2)
Greece	9.6	(1.9)	13.2	(4.8)	8.1	(6.0)	6.07	(1.5)
Portugal	28.4	(8.0)	11.4	(1.4)	7.7	(1.0)	4.74	(0.5)
Germany	15.0	(1.1)	16.1	(2.1)	12.7	(0.8)	12.4	(-0.3)
2014-2018								
Spain	13.7	(-3.4)	14.0	(0.3)	9.7	(-0.1)	9.3	(-0.1)
Italy	12.5	(0.4)	15.1	(1.1)	11.6	(1.3)	11.1	(0.9)
Greece	14.1	(5.9)	16.3	(1.4)	11.6	(1.3)	7.1	(0.7)
Portugal	27.0	(3.8)	10.3	(0.4)	6.8	(0.1)	4.4	(0.6)
Germany	14.7	(0.1)	16.4	(-0.3)	12.4	(-0.2)	12.2	(-0.2)

Table 3. Vertical integration of KIBS into manufacturing subsystems (average share for each period and cumulative change).
Caption: High tech (HT), Medium-high tech (MHT), Medium-low tech (MLT), Low tech (LT).
Source: OECD STAN, authors' calculations.

It is worth highlighting that our findings for the crisis period do not correspond exactly with the ones obtained by previous research. For instance, Herrero and Rial (2023a) find certain convergence in KIBS integration between Mediterranean countries and Germany, but Portugal's results do not stand out as much as in our estimates. There are two possible explanations for that: on the one side, they use an alternative dataset (the World Input-Output Database, WIOD); on the other side, the aggregation level is slightly different. Moreover, the post-crisis period has remained relatively unexplored so far by the literature (the last release of the WIOD covers the 2000–2014 timespan), so

further research is needed to test whether these trends in the relationship between KIBS and the manufacturing sector continues or not.

All in all, the descriptive evidence presented in this section on non-price competitiveness suggests that, despite some convergence is observed among countries (particularly when focusing on the KIBS indicator), the structural differences (and the non-price competitiveness gap) between them are far from being closed. In this sense, the shift towards export-led growth witnessed in Mediterranean economies does not seem to correspond with a significant improvement in non-price competitiveness. Considering that Germany's (and Northern Europe's) growth model is well grounded in structural factors, this should cast doubts on the viability of the Mediterranean export-led growth in the long run.

6. Conclusions

After the breakdown of the 2008 crisis, Mediterranean economies implemented a set of structural reforms – comprising wage devaluation and fiscal austerity – that somehow imitated the ones applied by Germany during the previous decade. In doing that, all of them moved away from a debt-led growth model towards an export-led one. Although it is clear that these reforms helped to improve the trade balance thanks to the downfall in domestic demand and imports, their effects on the evolution of exports are subject to discussion. To fill this gap in the literature, this chapter explored the main drivers of export growth in Mediterranean economies before and after the Great Recession, and compared these economies with Germany, which is taken as the guidepost for good economic performance.

To do so, we distinguished between price and non-price competitiveness factors and studied their evolution throughout the 1995–2018 period. We focused on the manufacturing sector and disaggregated it into four clusters by technological intensity, in order to capture the different productive structures of the countries under study. Additionally, we adopted a subsystem approach to the input-output analysis to consider all those channels through which manufacturing and services have contributed to export growth.

In the first place, our results show that the five countries display very different productive structures, and their world market share is also heterogeneous. German manufacturing appears as one of the most advanced and competitive in the world, followed at some distance by Italy and Spain, and then Portugal and Greece.

Secondly, the process of internal devaluation has likely contributed to export-led growth in all sectors. Mediterranean countries have improved their cost competitiveness, although they have not closed the gap against Germany completely. In these four countries, the limitation of ULC growth has been principally achieved by means of nominal wage restraint, rather than productivity improvements. This somehow contrasts with Germany's performance, where labour productivity growth also contributed to the slowdown in ULC. Furthermore, the rebalancing of the economy thanks to nominal wage growth after the crisis has not affected the export performance of the country.

Thirdly, German competitiveness seems to be well grounded on non-price competitiveness factors as well. This is particularly true if we consider that the increase in ULC during the post-crisis period has not substantially affected export growth. When comparing Germany with Mediterranean economies, here again, certain convergence is observed in terms of KIBS vertical integration into manufacturing productive strategies, as well as in economic complexity (especially in low-tech sectors). However, the gap against Germany is still far from being closed.

These results are pointing to the fact that export-led growth in Mediterranean economies has been driven by improvements in both price and non-price competitiveness factors. Nevertheless, these economies still lag behind Germany and other core European countries, especially in terms of non-price competitiveness. This means that their export performance after the crisis has been heavily dependent on the evolution of relative costs, and that their positive trade balance relies on wage restraint (which contributed also to curbing domestic demand, income and import).

While wage moderation represents the easiest and most immediate way to enhance international competitiveness (especially if adjustments in the nominal exchange rate are ruled out, as it is in the euro area), this strategy is likely to be unsustainable since it will compromise other sources of aggregate demand. At the same time, it is far from being politically fair in terms of income redistribution from capital to labour, after many years of wage moderation. On the contrary, a coordinated fiscal expansion and/or internal revaluation (even more accentuated in Germany, due to its huge trade surplus and a higher pace of productivity which opens more spaces to wage growth) would be capable of stimulating output in all countries, without generating excessive external imbalances or an undesirable polarization of income.

Moreover, the acknowledged importance of non-price factors suggests a different strategy (diametrically opposite to structural reforms, job precariousness and wage moderation, with the ensuing increase in income inequality) to achieve a sustainable path of growth in Mediterranean economies. Here, selective industrial policies to foster non-price competitiveness and the development of strategic sectors seem to be a more efficient alternative to cost compression for an export-led growth model. That would also contribute to solving the macroeconomic dichotomy observed in Europe between Northern and Southern countries.

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Appendix

1. Manufacturing	2. Knowledge intensive business services (KIBS)
1.1. High technology	J62-J63 Computer programming, consultancy and related activities; information service activities
C26 Manufacture of computer, electronic and optical products	M69-M70 Legal and accounting activities; activities of head offices; management consultancy activities
1.2. Medium-high technology	M71 Architectural and engineering activities; technical testing and analysis
C20-C21 Manufacture of chemicals and chemical products; manufacture of basic pharmaceutical products and pharmaceutical preparations	M72 Scientific research and development
C27 Manufacture of electrical equipment	M73 Advertising and market research
C28 Manufacture of machinery and equipment n.e.c.	M74 - M75 Other professional, scientific and technical activities; veterinary activities
C29 Manufacture of motor vehicles, trailers and semi-trailers	N Administrative and support service activities
C30 Manufacture of other transport equipment	
1.3. Medium-low technology	
C22 Manufacture of rubber and plastic products	
C23 Manufacture of other non-metallic mineral products	
C24 Manufacture of basic metals	
C31-C32 Manufacture of furniture; other manufacturing	
1.4. Low technology	
C10-C12 Manufacture of food products, beverages and tobacco products	
C13-C15 Manufacture of textiles, wearing apparel and leather products	
C16 Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	
C17 Manufacture of paper and paper products	
C18 Printing and reproduction of recorded media	
C19 Manufacture of coke and refined petroleum products	
C25 Manufacture of fabricated metal products, except machinery and equipment	

Table A.1. Classification of economic sectors (ISIC revision 4).