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# A Look at the main channels of Potential Impact of Brexit on the Portuguese Economy

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# A Look at the main channels of Potential Impact of Brexit on the Portuguese Economy [1]

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**Abstract:**

On June, 2016 the UK decided to leave the EU. The departure date was originally scheduled for March 29, 2019 but the process reached an impasse as the withdrawal agreement, that was negotiated with the European Union, failed to get parliamentary approval. The EU agreed to offer the UK a flexible extension of the Brexit deadline until October 31, but the risk of a no-deal scenario still exists. Since there is no precedent of a Member State withdrawing from the European Union, the implications of Brexit for the EU countries are still highly uncertain. However, countries and industries that have deep economic ties, in terms of international integration, to the UK are the most vulnerable to this departure. In this work we will use trade in value added statistics from OECD-WTO TiVA database[4] and related indicators to depict how exposed and thus vulnerable is Portugal and its sectors to the UK market, delivering a useful contribute for assessing potential impacts of Brexit on the Portuguese Economy.

**JEL Classification:** F12, F60

**Keywords:** Portugal, Trade in Value Added, Brexit.

Note: This article is sole responsibility of the authors and do not necessarily reflect the positions of GEE or the Portuguese Ministry of Economy.

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[4] All export and output measures are in current prices (USD) with a basic price valuation. The big drawback is time coverage as most data is only available up until 2011.

## Contents

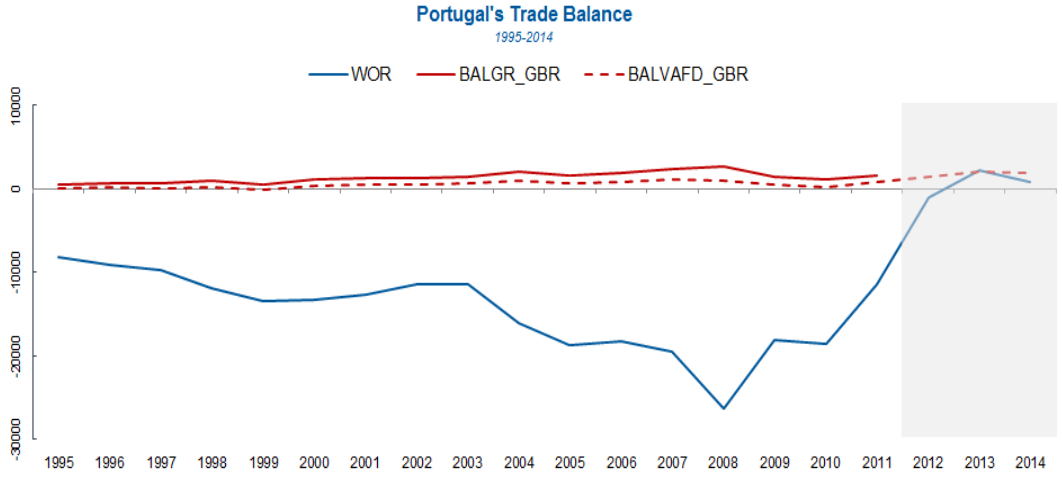
## 1. Introduction

On June, 2016 the UK decided to leave the EU. Since there is no precedent of a Member State withdrawing from the European Union, the consequences of Brexit are still highly uncertain. The impact of external shocks on a country's macroeconomic scenario depends upon its potential degree of exposure and one important mechanism of transmission is the extent of international integration of the country via trade an employment. However, traditional measures of trade based on gross flows alone are becoming less informative to reveal the origins of a country final demand and thus to assess the potential impacts when considering shocks to foreign final demand.

In this work we use OECD-WTO TiVA (and related) indicators to provide a more accurate picture of the full nature of interdependencies between Portugal and the United Kingdom in order to depict how exposed and thus vulnerable is Portugal and its sectors to the UK market, via domestic value added, employment and as a supplier of value added content embodied in investment goods and services, that make up for Portuguese GFCF, delivering a useful contribution for assessing potential impacts of Brexit on the Portuguese Economy.

## 2. Global Trends

Portugal is an old trading partner of the United Kingdom. Portugal's trade balance with the UK is traditionally positive, both with gross trade statistics and with value added trade statistics. In 2011 it accounted for the 3rd greatest superavit, following France and the USA[5].




**Source:** Own calculations, based on data from OECD - Trade in Value Added (TiVA), December 2016 and TiVA Nowcast Estimates.

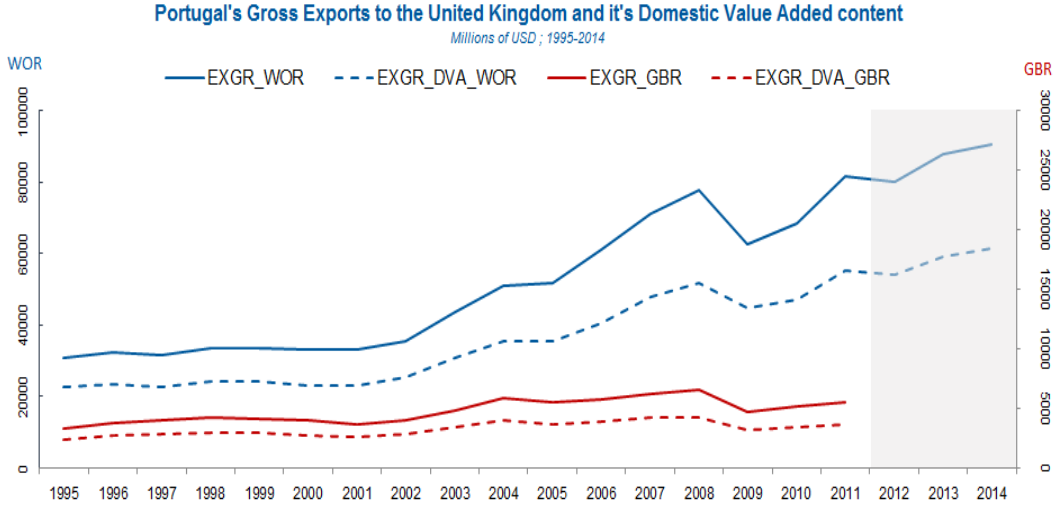
**Notes:**

Nowcast Estimates for the 2012-2014 period.

**BALGR_GBR:** Gross trade balance with the United Kingdom; **BALVAFD_GBR:** Value added balance with the United Kingdom.

[5] In this paper we will adopt the following 3-letter codes: "WOR" to refer to the World, "GBR" to refer to the United Kingdom and "PRT" to refer to Portugal.

The UK is the 4th most important destination for Portugal's exports, either using a gross exports approach or the domestic value added content of gross exports approach.



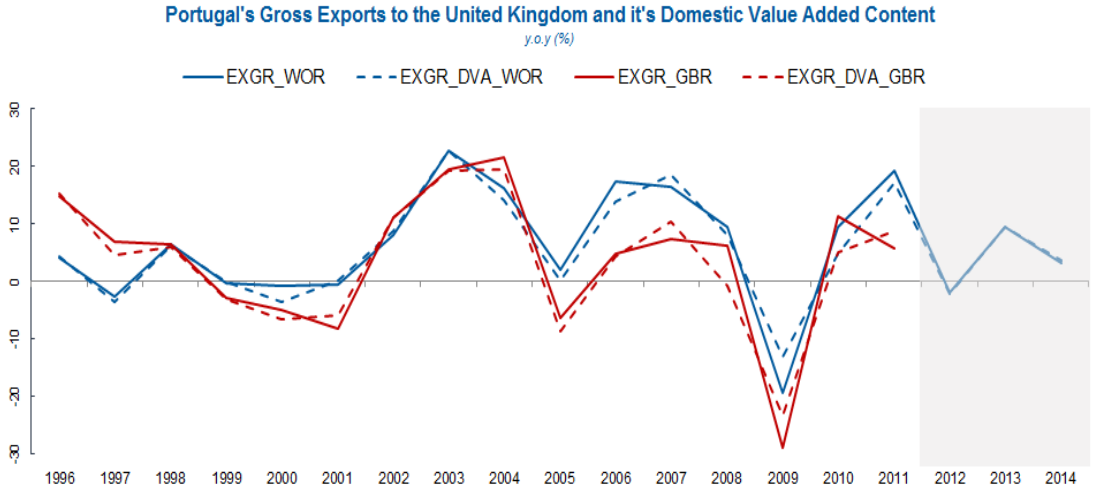

**Source:** Own calculations, based on data from OECD - Trade in Value Added (TiVA), December 2016 and TiVA Nowcast Estimates.

**Notes:**

Nowcast Estimates for the 2012-2014 period.

**EXGR:** Gross Exports; **EXGR_DVA:** Domestic Value Added Content of Gross Exports

In 2011, domestic value added content of gross exports to the UK grew faster than gross exports. However, exports to the UK grew below national average.



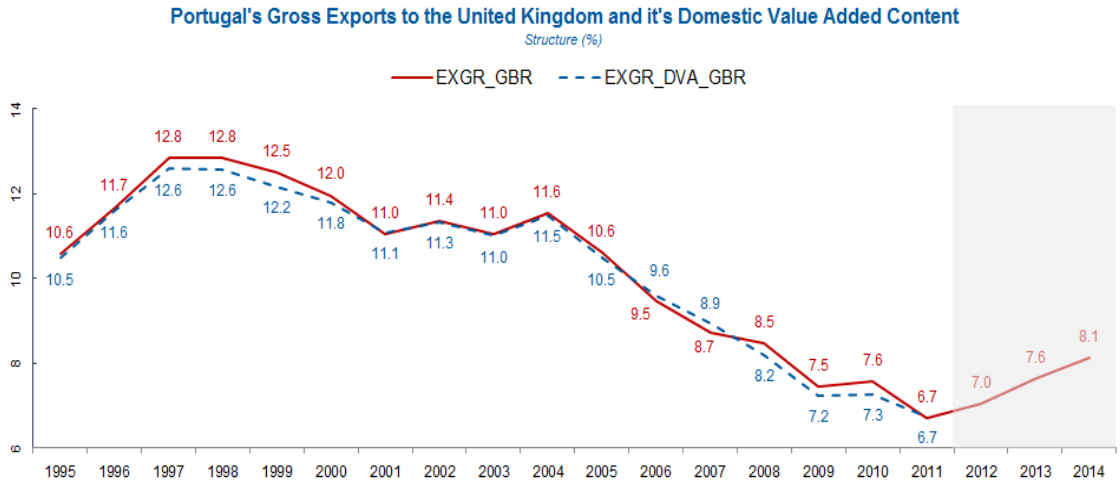

**Source:** Own calculations, based on data from OECD - Trade in Value Added (TiVA), December 2016 and TiVA Nowcast Estimates.

**Notes:**

Nowcast Estimates for the 2012-2014 period.

**EXGR:** Gross Exports; **EXGR_DVA:** Domestic Value Added Content of Gross Exports

The UK has been losing representativeness among Portugal's destination partners since 1997. In 2011 the UK market represented 6,7% in both total gross exports and in total domestic content of gross exports, which compares to almost 13% in 1997. Nowcast estimates data points to an upward trend up until 2014.




**Source:** Own calculations, based on data from OECD - Trade in Value Added (TiVA), December 2016 and TiVA Nowcast Estimates.

**Notes:**

Nowcast Estimates for the 2012-2014 period.

**EXGR:** Gross Exports; **EXGR_DVA:** Domestic Value Added Content of Gross Exports

A sector-focused approach tells us that in terms of gross flows (Table A.1 column "EXGR") the top 5 Portuguese exporting sectors to the UK are "C34T35 - Transport Equipment" (13.3% of total gross exports to the UK in 2011 which corresponds to 0.9% of total gross exports to the world), "C60T64 - Transport and storage, post and telecommunication" (10.4% ; 0.7%), "C50T52 - Wholesale and retail trade; repairs" (9.9% ; 0.7%), "C17T19 - Textiles, textile products, leather and footwear" (8.6% ; 0.5%) and finally "C65T74 - Finance, Real Estate and business services" (8.1% ; 0.5%).

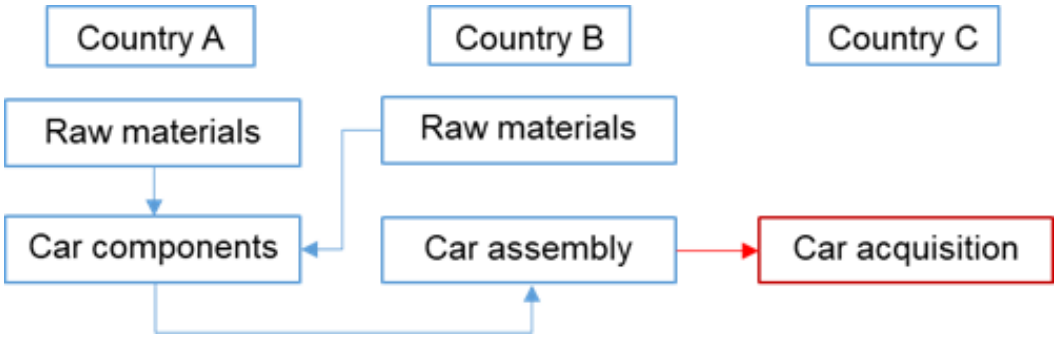
However gross exports are not domestic income (Timmer et al 2013). Value added statistics must be used to unveil the true strength of bilateral linkages.

With the rise of Global value chains (GVCs), production became increasingly fragmented into multiple stages across different countries. Supply chains can be described as a system of value-added sources and destinations where each producer purchases inputs and then adds value (Koopman et al 2014). Goods and services are thus a complex combination of value from multiple sources, and in this context, traditional trade measures face two important problems. The first problem is that domestic value added is combined with foreign value added to produce exports. The second problem is that value is being "double counted" whenever it crosses international borders more than once. Since value added is a net concept (Koopman et al 2014), a useful starting point to tackle these distortions is to break up a country's gross exports into its value-added components by country source, and focus only on the value that was added domestically. According to this approach, using domestic value added embodied in gross exports by industry from OECD TiVA database, the first conclusion is that "C34T35 - Transport Equipment" is no longer the top exporting sector to the UK. It actually ranks 6$^{th}$ using these statistics. This is because from all the value that is being embodied in this sector's gross exports, only 42.3% was added domestically. The remaining 67.7% refers to foreign value added content. The top 5 Portuguese exporting sectors that embody a larger share of domestic value added in economy-wide gross exports to the UK (Table A.1 column "DVA_EXGR") are "C50T52 - Wholesale and retail trade; repairs" (12.7% of total domestic value added content of total gross exports to the UK which corresponds to 0.9% of total domestic value added content of total gross exports to the World), "C60T64 - Transport and storage, post and telecommunication" (12.2% ; 0.8%), "C65T74 -

Finance, Real Estate and business services" (10.8% ; 0.7%), "C55 - Hotels and restaurants" (9.4% ; 0.6%) and finally "C17T19 - Textiles, textile products, leather and footwear" (8.6% ; 0.6%).

One limitation associated with exporting (downstream) industries analysis is that exporting industries accumulate value added from other domestic sectors (upstream industries), as an input to their own production. Therefore, using a downstream approach may not be enough to properly assess the bilateral role of each sector. For example, "C34T35 - Transport Equipment" enrolls many domestic industries in order to produce its exports. In fact, from all the domestic value added embodied in its total gross exports in 2011, only 41.4% was added directly by "C34T35 - Transport Equipment" sector. The remaining 59% accrue indirectly from other domestic upstream sectors such as "C50T52 - Wholesale and retail trade; repairs" (14.8%), "R&D and other business activities" (7.4%), etc.

The upstream industries approach, on the contrary, offers a task/activity-based view of production, thus being more suitable in the context of GVCs (see for example, De Backer and Miroudot, 2013; Timmer et al 2013). As a consequence, and given that it is crucial to acknowledge how value added accrues to better understand which industries will be impacted either directly and indirectly when considering shocks to foreign final demand, another enlightening way of using trade in value added statistics from OECD-WTO TiVA database is to focus on the domestic value added embodied in foreign final demand across each industry. The measure reflects how domestic industries (upstream in a value-chain) are connected to consumers in other countries, even where no direct trade relationship exists, thus illustrating the full upstream impact of final demand in foreign markets to domestic output. This approach can be interpreted as "exports of value added" or "value added exports" (Johnson and Noguera, 2012; Koopman et al, 2014). Exports of value added is a net concept (Koopman et al., 2014), thus being conceptually different from Domestic Value Added embodied in a country's gross exports measure[6]. The rationale is that exports of value added correspond to value-added produced in one country that is ultimately absorbed abroad, thus excluding the part of the domestic value added traded internationally that returns to the country to be ultimately absorbed at home. Moreover, this exports of value added / domestic value added embodied in foreign final demand approach can further enrich bilateral trade analysis because it includes not only the domestic value added sent directly from country 1 to country 2, but also the domestic value added sent by country 1 to other third countries that will ultimately be absorbed in country 2 ("triangular" production sharing). This allows for a fuller and more accurate picture of cross-country linkages.




As an example, we illustrate the case where two countries, namely A and B, and several industries, namely "raw materials" from country A and B, "car components" from country A and "car assembly" from country B. participate in a value chain to produce a car that will ultimately be absorbed by country C. The car absorbed

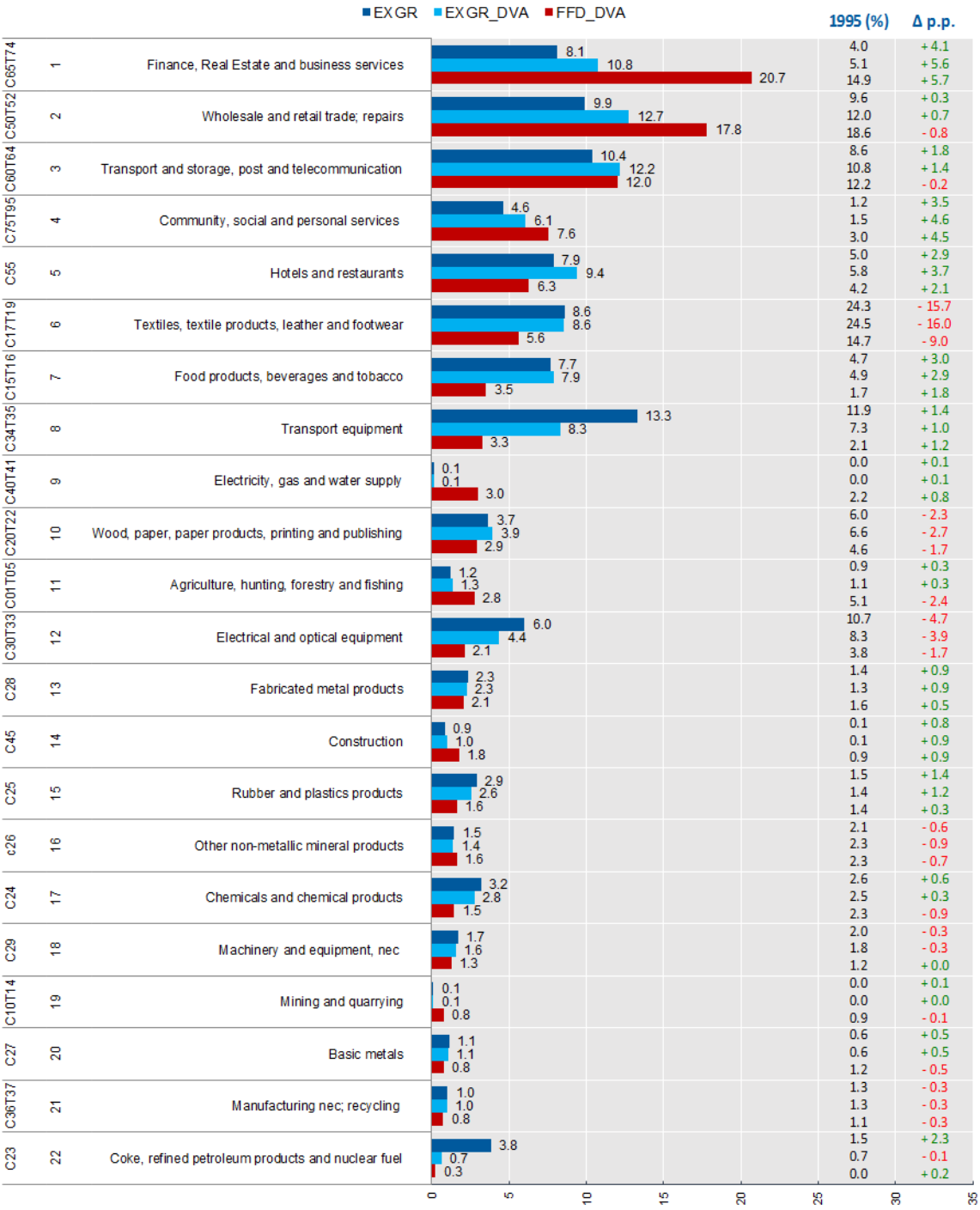
[6] Please note that Koopman et al 2014 also uses a "domestic value added in gross exports" measure but despite the same label, the correspondence between their measure and the homonym measure that we are using from TiVA indicators can only be established at the aggregate level. At the industry level they display some important differences, namely Koopman et al 2014, keeps this definition to present by industry what TiVA database closely offers with "Origin of domestic value added in gross exports". Both rely on upstream industries approach revealing per sector the total amount of domestic value added generated by each domestic sector that ends up being traded internationally, either sent by the sector itself or by other downstream sectors.

by country C corresponds to foreign final demand of country A and B. However, focusing only on the domestic value added embodied in exports measure does not provide the full picture. First, it does not account for the indirect relation between country A and C, and second, it also doesn't account for the contribution of upstream sectors such as "raw materials" in the value chain. In this case, we would further need a domestic value added embodied in foreign final demand measure to fully account for both cross-country linkages and upstream sector's contributions.

Shifting to this "exports of value added" or domestic value added embodied in foreign final demand across industry approach, we can understand how final demand that originates in the UK activates income generation within each Portuguese industry even when no direct trade relationship exists. This approach provides a completely different picture concerning the Portuguese sectors actually affected by changes in the final demand from the UK. In this context, the top 5 Portuguese sectors that are directly and indirectly activated to meet UK final demand (Table A.1 column "FFD_DVA") are "C65T74 - Finance, Real Estate and business services" (20.7% of total domestic value added embodied in foreign final demand originated in the UK which corresponds to 1.5% of total domestic value added embodied in foreign final demand originated in the World), "C50T52 - Wholesale and retail trade; repairs" (17.8% ; 1.3%), "C60T64 - Transport and storage, post and telecommunication" (12% ; 0.9%), "Community, social and personal services " (7.6% ; 0.5%) and finally "C55 - Hotels and restaurants" (6.3% ; 0.4%). "C17T19 - Textiles, textile products, leather and footwear" (5.6% ; 0.4%) ranks six.

## Portugal's Exports to the UK, 2011

*Structure comparisson with different Export measures*




**Source:** Own calculations, based on data from OECD - Trade in Value Added (TiVA), December 2016.

Note:

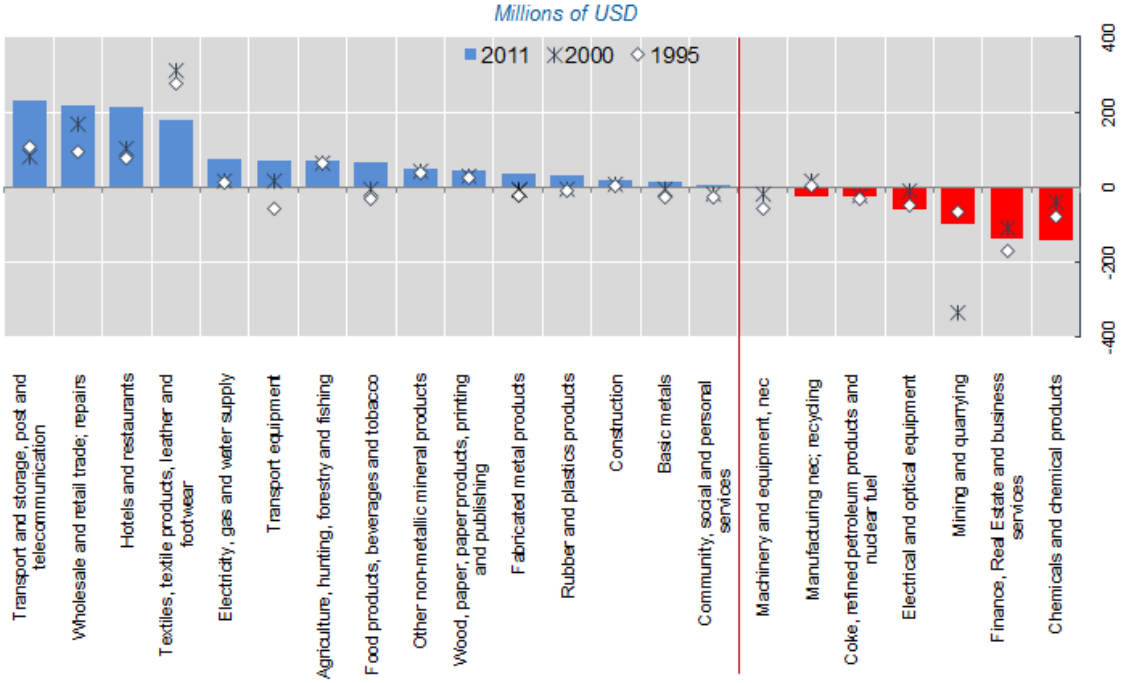
**EXGR:** Gross Exports to the UK; **EXGR_DVA:** Domestic Value Added content of Gross Exports to the UK; **FFD_DVA:** Domestic Value Added embodied in Foreign Final Demand sourced in the UK.

***Sectors ranked by FFD_DVA variable.***

From these mentioned sectors, and despite being the main Portuguese sector activated by UK final demand in terms of income, “C65T74 - Finance, Real Estate and business services” is the only sector recording a trade deficit. In 2011, it corresponds to the second largest trade deficit following “C24 - Chemicals and chemical Products”.

**Portugal's Value Added Trade Balance with the United Kingdom by Industry**

*Millions of USD*




**Source:** Own calculations, based on data from OECD - Trade in Value Added (TiVA), December 2016.

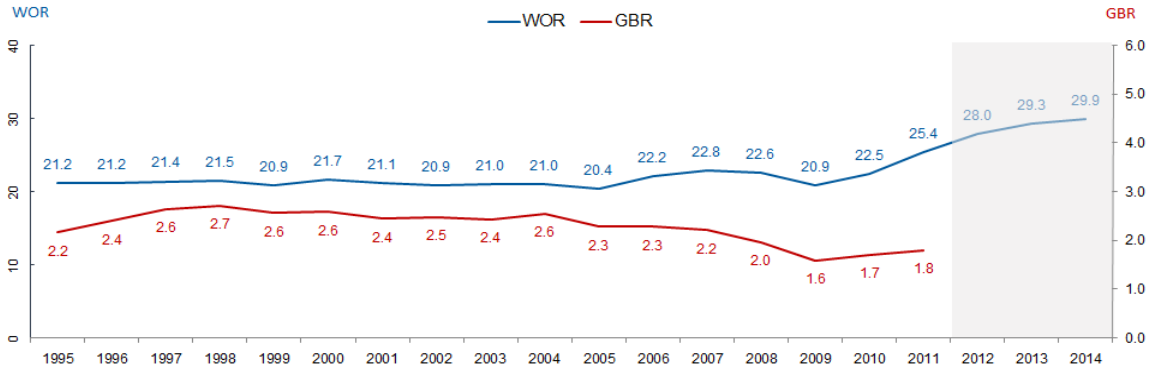
# 3. Portugal's reliance on the UK market

## 3.1. Output channel

The relative importance of Portugal's foreign demand has been growing since 2009. In 2011, foreign demand absorbed 25.4% of total value added generated in Portugal (29.9% in 2014).

**Share of Portugal's domestic value added embodied in foreign final demand by partner country**

*1995-2014*



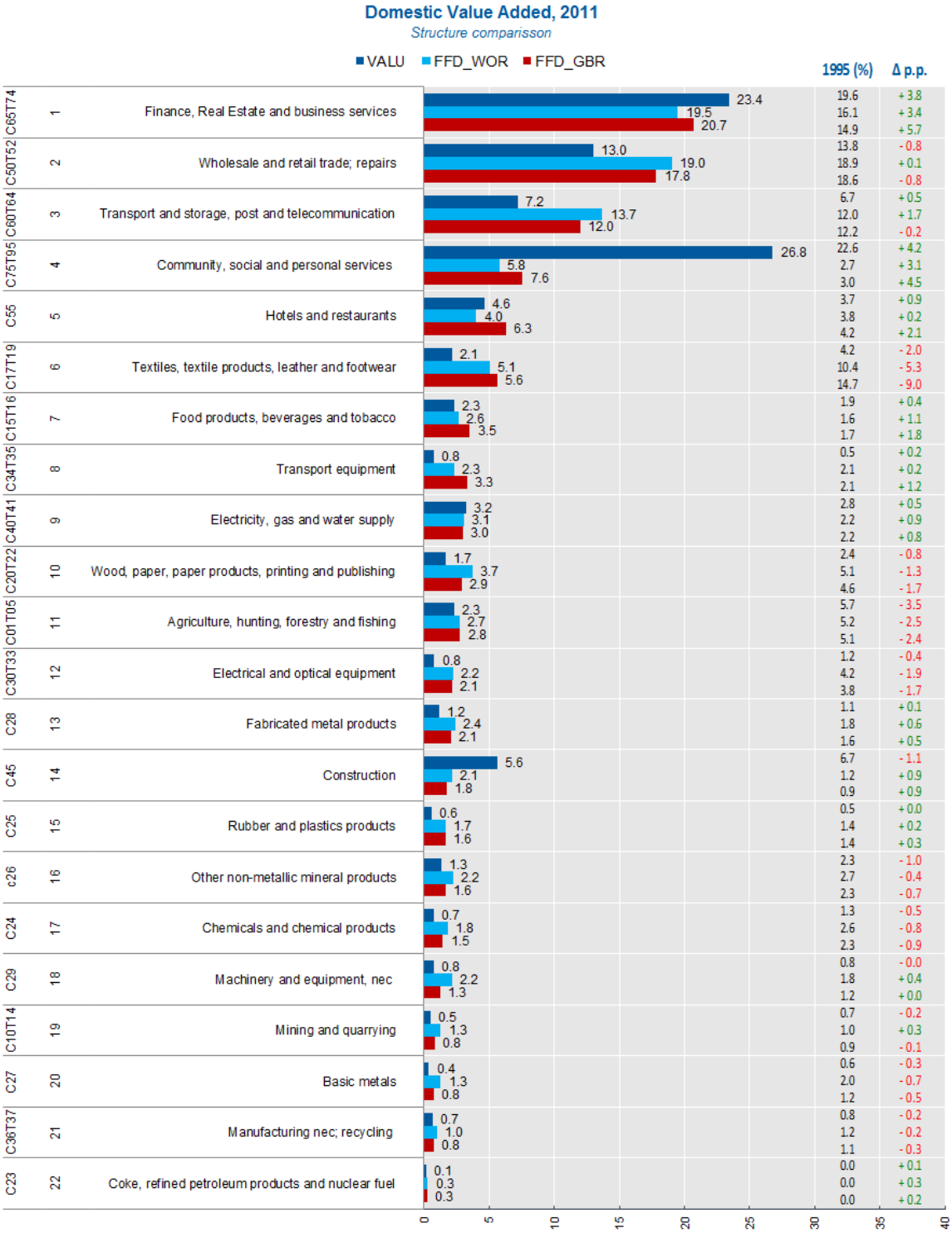

**Source:** Own calculations, based on data from OECD - Trade in Value Added (TiVA), December 2016 and TiVA Nowcast Estimates.
**Notes:** Nowcast Estimates for the 2012-2014 period.

The UK is the 4th most important destination for Portuguese exports. In 2011 the UK absorbed 7.1% of total domestic value added embodied in Portugal's foreign final demand, which corresponds to 1.8% of total value added created in the Portuguese economy, ranking after Spain (19.7% ; 5%), France (11.1%; 2.8%) and Germany (7.8% ; 2%).

As referred earlier, "C65T74 - Finance, Real Estate and business services", is the leading sector activated by UK final demand in terms of income. In 2011 it generated 20.7% of total domestic output activated by British final demand, scoring above its representativeness in total domestic output activated by total foreign final demand (19.5%) and below its representativeness in total domestic output (23.4%).

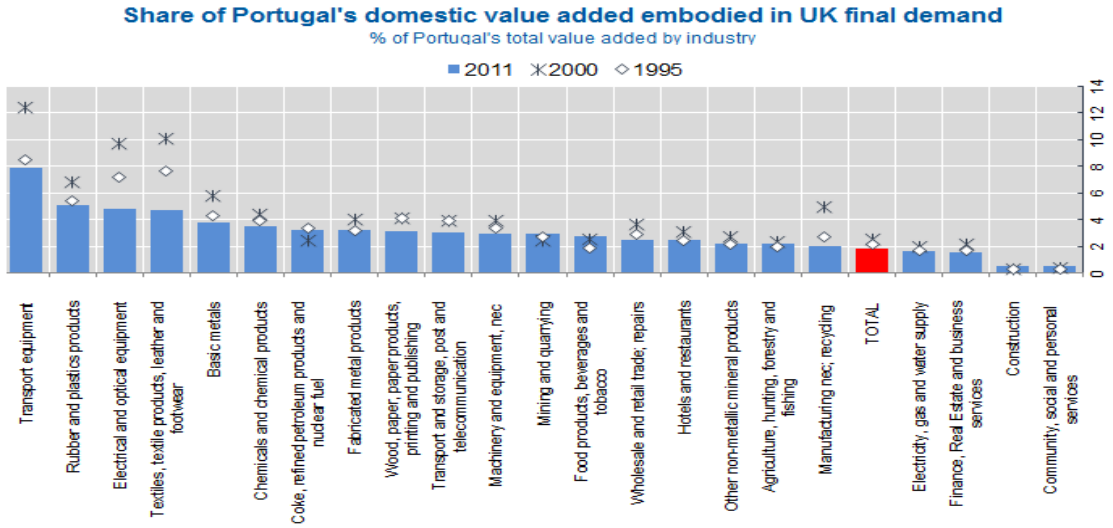
"C50T52 - Wholesale and retail trade; repairs" (17.8%) and "C60T64 - Transport and storage, post and telecommunication" (12%) ranks second and third respectively. Both of them score below its representativeness in total domestic output activated by total foreign final demand (19% and 13.7%) and display the highest (positive) gap relative to its representativeness in total domestic output (both with a +4.8 p.p. gap).

"C17T19 - Textiles, textile products, leather and footwear", "C34T35 - Transport Equipment" and "Hotels and restaurants", also display significant (positive) gaps both relative to its representativeness in total domestic output, and relative to its representativeness in total domestic output activated by total foreign final demand, suggesting a relatively higher concentration of UK final demand in these industries.




**Source:** Own calculations, based on data from OECD - Trade in Value Added (TiVA), December 2016.
Note:
**VALU:** Domestic Value Added; **FFD_WOR: Domestic** Value Added embodied in foreign final demand; **FFD_GBR:** Domestic Value Added embodied in Foreign Final Demand sourced in the UK.
***Sectors ranked by FFD_GBR variable.***

Obviously, there are some industries more exposed to this market than others, in fact the majority of industries display above average exposure to this market. “C34T35 - Transport Equipment” is the sector that, in relative terms, relies the most on final demand sourced in the UK, with 8% of its total value added being driven by it.




**Source:** Own calculations, based on data from OECD - Trade in Value Added (TiVA), December 2016.

“C25 - Rubber and plastic products” ranks second with an exposure of 5.1%, followed by “C30T33 - Electrical and optical equipment” (4.9%) and “C17T19 - Textiles, textile products, leather and footwear” (4.7%). These two last sectors, and also “C34T35 - Transport Equipment” sector experienced a huge drop in terms of domestic value added embodied in UK final demand compared to the year 2000.

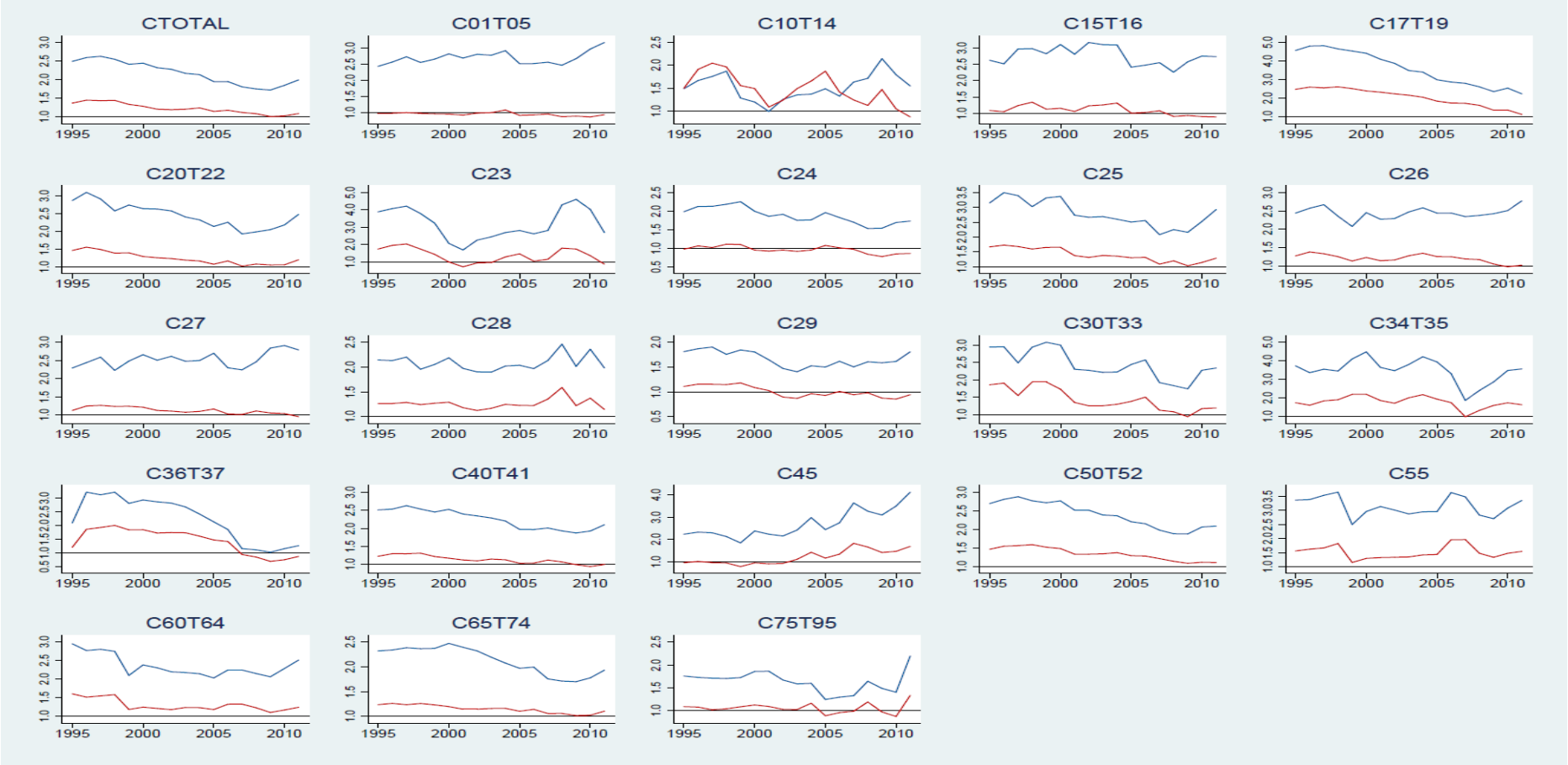
But how does Portugal compare vis-à-vis the rest of the World and its EU28 partners regarding this reliance across sectors? To answer this question, we will use a modified version of the trade intensity index developed by K. Kojima (Kojima, 1964)[7] and call it *Portugal’s Domestic Value Added Intensity Index with respect to UK partner (VAII)*.

Basically we will take Portugal’s domestic value added embodied in UK final demand across sectors as a share of each sector total domestic value added normalized by the same ratio for World and EU28 averages, to compare Portugal’s reliance on UK final demand internationally. Whenever the indicator takes values greater than 1 it signalizes a bilateral relationship more intense than that displayed by the World/EU28 average in what concerns domestic value added driven by this partner country.

Portugal’s reliance on UK final demand is much more intense than world average. This may not be surprising as it is a EU partner country but this is also true when comparing to EU28 average. Additionally, exception made for “C01T05 - Agriculture, hunting, forestry and fishing”, “C10T14 - Mining and quarrying”, “C15T16 - Food Products, beverages and tobacco”, “C23 - Coke, refined petroleum products and nuclear fuel”, “C24 - Chemicals and chemical Products”, “C27 - Basic metals”, “C29 - Machinery and equipment, nec” and “Manufacturing; recycling” all other sectors display above EU28 average reliance in 2011.

[7] Trade intensity index tells us whether or not a country exports more (as a percentage) to a given destination than the world does on average. Mathematically we have: $TII_{ij} = (x_{ijk} / X_{ij}) / (x_{iwk} / X_{iw})$, where x is the value of exports of sector i from origin country j to destination k, and X is total exports from j of sector i. The indicator takes a value between 0 and +∞ and values greater than 1 indicate a trade relationship more intense than the world average.

**Portugal's Domestic Value Added Intensity Index with respect to UK partner, 1995-2011**

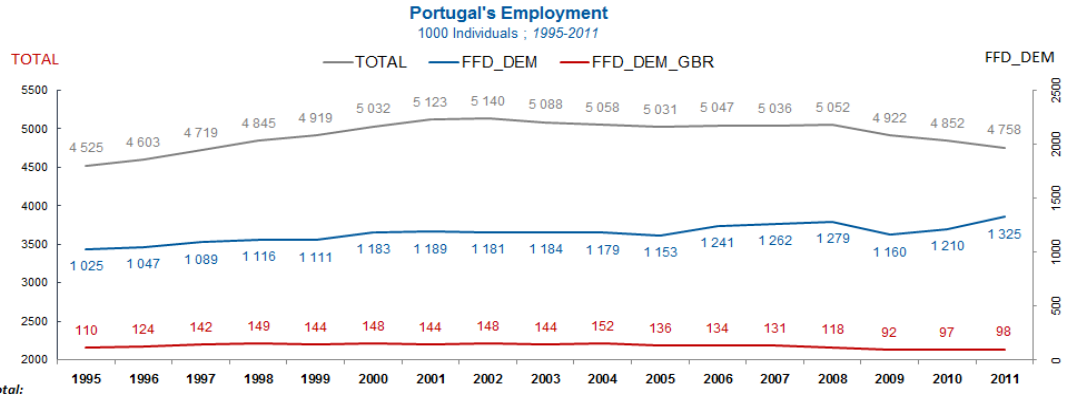



**Source:** Own calculations based on OECD - Trade in Value Added (TiVA), December 2016. **Note:** See tables in the appendix for Industry (ISIC Rev. 3 Codes) labels.

## 3.2. Employment Channel

Another useful way of looking at OECD data to understand how exposed is the country to the UK market, is to link trade and employment to understand how final demand that originates in the UK activates jobs across Portuguese industries. As with the case of exports of value added / domestic value added embodied in foreign final demand approach, these export-related jobs follow the same "upstreamness" approach, which means, that they are not linked to the specific exporting industry that activated them but are rather presented by the type of task/industry/sector that was activated to produce exports.

Total employment in Portugal has been shrinking since 2008, as a result of the "sovereign debt crisis". However domestic employment embodied in foreign final demand records an upward trend since 2009. This upward trend is also valid, but weaker, when considering domestic employment activated by British final demand.




*% of Total:*

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FFD_DEM | 22.6 | 22.7 | 23.1 | 23.0 | 22.6 | 23.5 | 23.2 | 23.0 | 23.3 | 23.3 | 22.9 | 24.6 | 25.1 | 25.3 | 23.6 | 24.9 | 27.9 |
| FFD_DEM_GBR | 2.4 | 2.7 | 3.0 | 3.1 | 2.9 | 2.9 | 2.8 | 2.9 | 2.8 | 3.0 | 2.7 | 2.7 | 2.6 | 2.3 | 1.9 | 2.0 | 2.1 |

**Source:** Own calculations based on OECD - Trade in Employment Data.

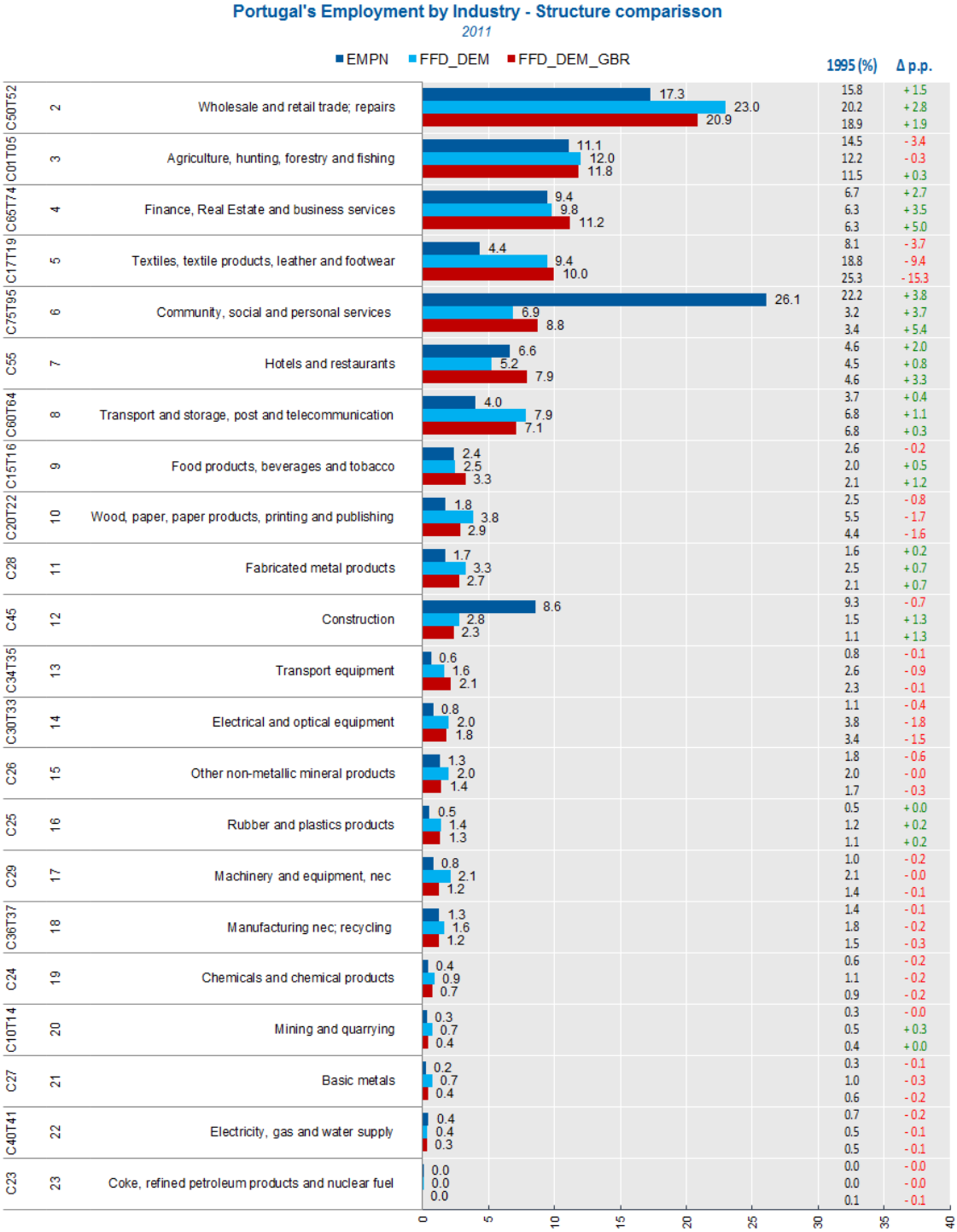
Exports create jobs opportunities. In 2011, 27.9% of total employment in the Portuguese economy was linked to exports (22.6% in 1995).

The UK is the 4th major foreign driver partner of jobs in Portugal. In 2011, exports to this market sustained 7.4% of total Employment driven by Portugal's foreign final demand, which corresponds to 2.1% of total Employment in the Portuguese economy, ranking after Spain (22% ; 6.1%), France (11.6% ; 3.2%) and Germany (7.8% ; 2.2%).

"C50T52 - Wholesale and retail trade; repairs" is the top one domestic employer activity activated specifically by British final demand. In 2011 it generated 20.9% of total domestic employment activated by British final demand, scoring slightly below its representativeness in total domestic employment activated by total foreign final demand (23%) and above its representativeness in total domestic employment (17.3%). "C01T05 - Agriculture, hunting, forestry and fishing" was the second largest employer (11.8%), probably associated to Port wine production.

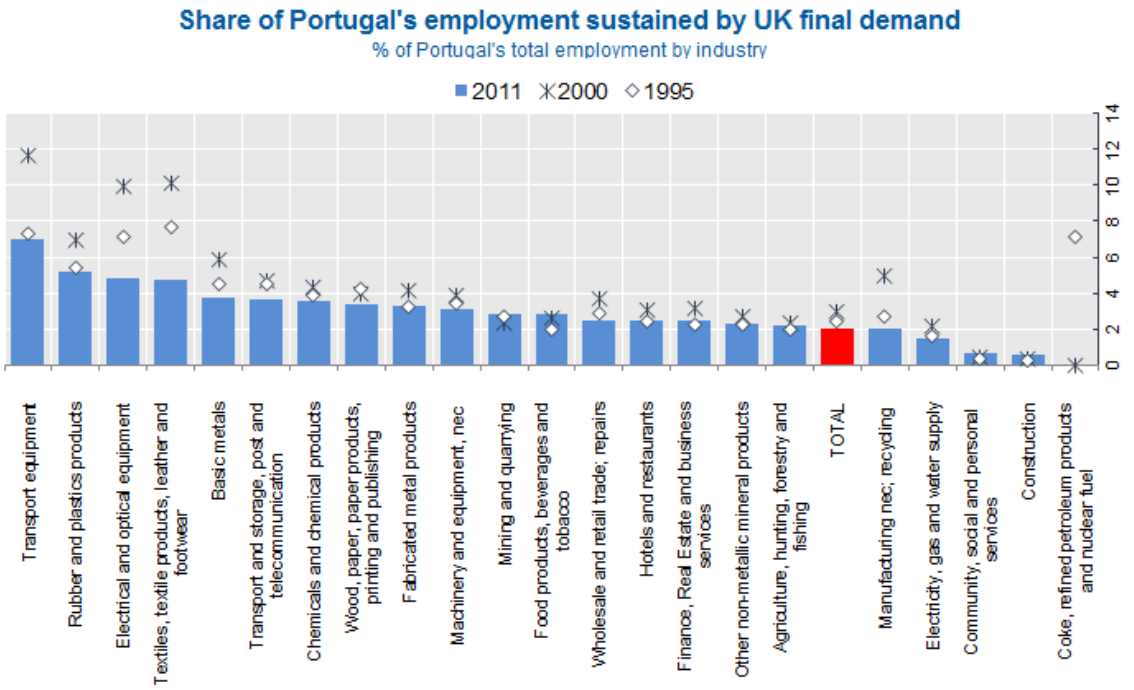
"C65T74 - Finance, Real Estate and business services", which is the main sector activated by UK final demand in terms of income, is the third largest employer activated by British final demand (11.2%), scoring above its representativeness both in total domestic employment activated by total foreign final demand (9.8%) and in total domestic employment (9.4%).

"C17T19 - Textiles, textile products, leather and footwear", which is the sixth main sector activated by UK final demand in terms of income, is the fourth largest employer activated by British final demand (10%), scoring above its representativeness in total domestic employment activated by total foreign final demand (9.4%) and significantly above its representativeness in total domestic employment (4.4%). In fact, this sector displays the highest (positive) gap relative to its representativeness in total domestic employment (+5.6 p.p.).




**Source:** Own calculations based on OECD - Trade in Employment Data.
**Note:**
**EMPN:** Portugal's Total Employment; **FFD_DEM:** Portugal's Employment embodied in foreign final demand; **FFD_DEM_GBR:** Portugal's employment embodied in UK final demand.
***Sectors ranked by FFD_DEM_GBR variable.***

Once again, there are some activities more exposed to this market than others, in fact the majority of industries display above average exposure to this market. “C34T35 - Transport Equipment” is the sector that, in relative terms, relies the most on final demand sourced in the UK, with 7% of its total employment being sustained by it.




**Source:** Own calculations, based on data from OECD - Trade in Employment (TiM), December 2016.

Also, “C34T35 - Transport Equipment”, “C30T33 - Electrical and optical equipment” and “C17T19 - Textiles, textile products, leather and footwear” sectors experienced a huge drop in terms of employment sustained by UK final demand compared to the year 2000.

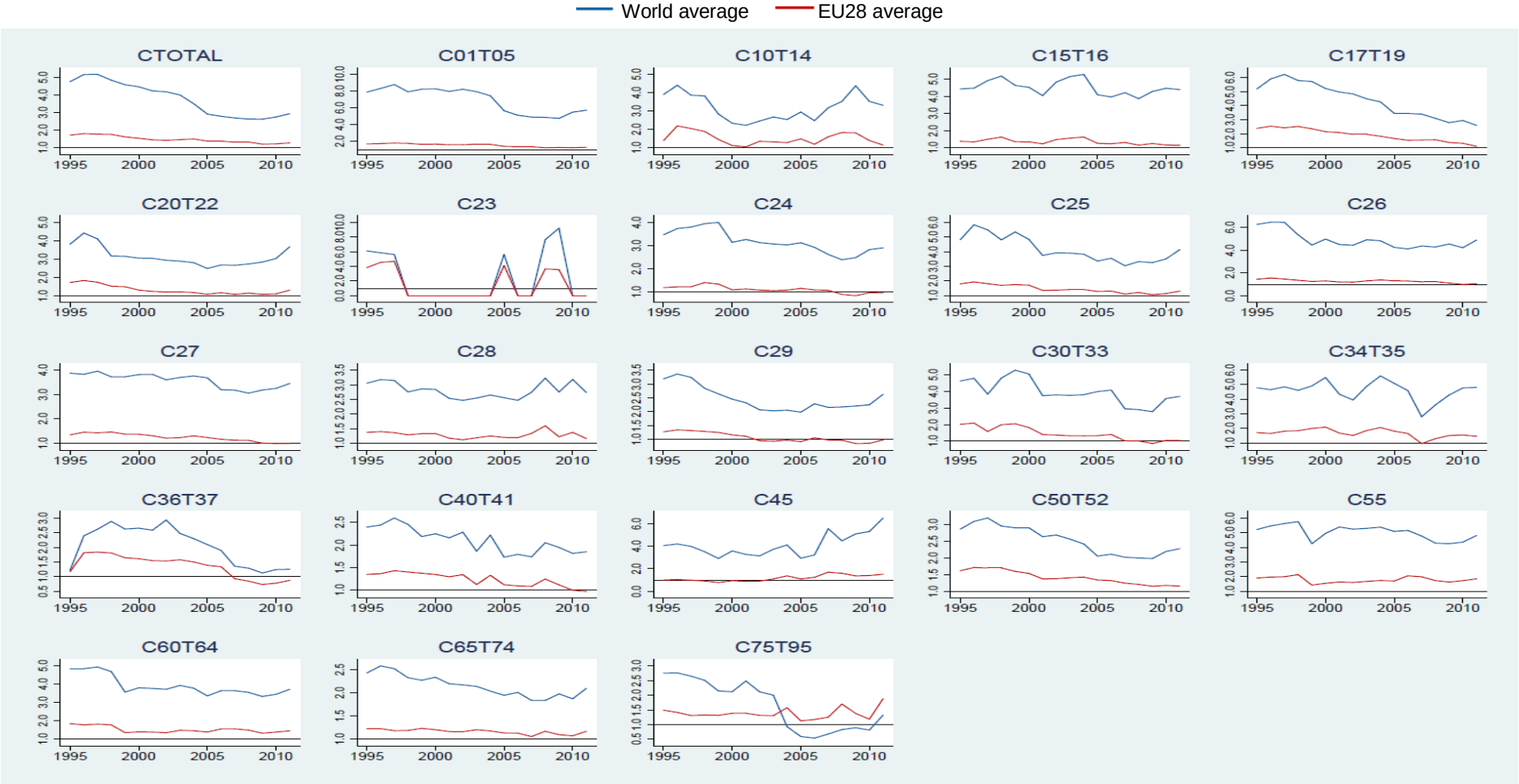
Once again we are interested in understanding how does Portugal compare vis-à-vis the rest of the World and its EU28 partners regarding this reliance across sectors? To answer this question, we will use again a modified version of the trade intensity index developed by K. Kojima (Kojima, 1964)[8] and call it *Portugal’s Employment Intensity Index with respect to UK partner (EII)*.

Basically we will take Portugal’s Employment sustained by UK final demand across sectors as a share of sector’s total Employment normalized by the same ratio for World and EU28 averages, to compare Portugal’s reliance on UK final demand internationally. Values greater than 1 signalizes a bilateral relationship more intense than that displayed by the World/EU28 average in what concerns domestic jobs sustained by this partner country.

Portugal’s reliance on UK final demand is much more intense than world average but it is also more intense than EU28 average. Moreover, the majority of sectors display above EU28 average reliance in 2011.

[8] For more information on Trade Intensity Index recall note number 7 on this document.

**Portugal's Domestic Value Added Intensity Index with respect to UK partner, 1995-2011**




**Source:** Own calculations based on OECD - Trade in Value Added (TiVA), December 2016. **Note:** See tables in the appendix for Industry (ISIC Rev. 3 Codes) labels

## 3.3. Gross Fixed Capital Formation (GFCF) Channel

The key to expand income and employment is to step up the rate of capital formation. This is because capital goods and advanced technology can expand the capacity for utilization of domestic resources and production leading to higher exports. Therefore, exporters should be able to access capital goods at competitive prices as it is crucial for export expansion. However, in general, tariffs and other protective measures, that raise the price of capital goods, often act as a disincentive to export, fueling the so-called "anti-export bias". OECD-WTO TiVA database can also be useful to shed new light on this nexus.

Up until now we have looked at how (foreign) final demand activates the generation of value added across domestic industries. But nothing has been said regarding the purpose of this expenditure. To present the rationale behind this approach a useful starting point is that the value added generated by a given country can either be used as expenditure in consumption or investment and this can be done either domestically or abroad. When value added is used for investment it's called GFCF. So, broadly speaking, a country's foreign final demand can activate value added in a certain domestic industry with the purpose of performing GFCF in its own economy, or, from the other country perspective, a country can activate the generation of value added in a certain industry of another country with the purpose of performing GFCF in domestic economy.

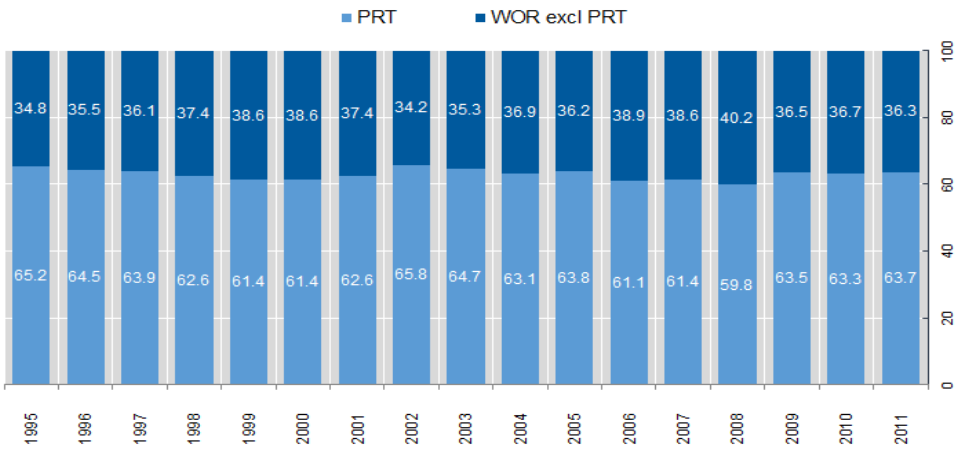
OECD-WTO TiVA database allows to track the origins of value added (either by source country and source industry) that will ultimately meet demand for investment goods and services, by businesses and government in the domestic economies.

Therefore, a look at gross fixed capital formation (GFCF), disentangling individual contributions along a geographical dimension, can have a three-fold purpose: (i) it can measure the import content of GFCF in a given country; (ii) it can yield some insights into how changes in one country's investment patterns can activate/affect industries in other countries; (iii) it can also draw some light on the composition of the basket of investment goods and services that a country is purchasing to perform GFCF expenditure in domestic economy.

In 2011, from all the value added accruing to the Portuguese economy that will ultimately meet demand for GFCF, 63.7% was domestically sourced. The remaining share (36.3%) corresponds to import content. This proportion has been reasonably stable during the period under analysis.

**Value added content of Portuguese GFCF by country source**

*% of Total Value Added content of GFCF*



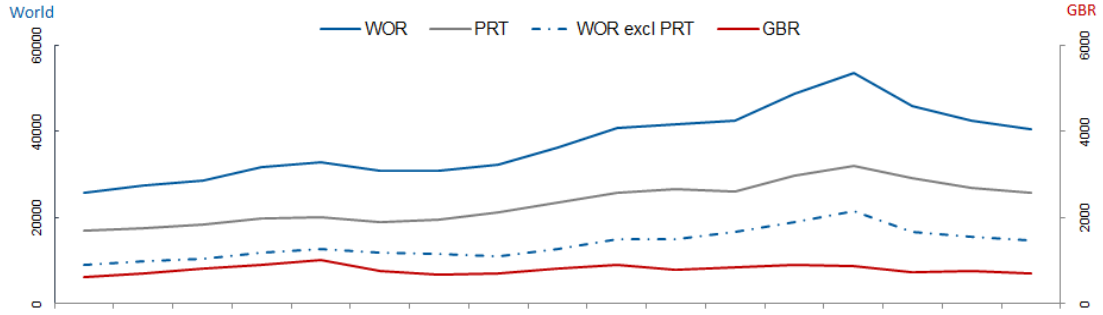

**Source:** Own calculations, based on data from OECD - Trade in Value Added (TiVA), December 2016.

Portuguese GFCF displays a downward trend since 2008, smoother in the case of domestic sourced GFCF.

The UK is the 5th major source partner of import content of Portuguese GFCF. In 2011, it supplied 4.7% of total import content of GFCF, which corresponds to 1.7% of total value added content embodied in investment goods and services that make up for Portuguese GFCF, ranking after Spain (24.4% ; 8.9%), Germany (12% ; 4.4%), France (7.8% ; 2.8%) and Italy (6.8% ; 2.5%).

**Value added content of Portuguese GFCF by country source**

*Millions of USD | 1995-2011*




| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GBR (% GFCF) | 2.4 | 2.6 | 2.9 | 2.9 | 3.1 | 2.5 | 2.2 | 2.2 | 2.3 | 2.2 | 1.9 | 2.0 | 1.8 | 1.6 | 1.6 | 1.8 | 1.7 |
| GBR (% IMP CONTENT GFCF) | 7.0 | 7.2 | 7.9 | 7.7 | 8.1 | 6.4 | 5.8 | 6.3 | 6.5 | 5.9 | 5.3 | 5.1 | 4.7 | 4.0 | 4.4 | 4.9 | 4.7 |

**Source:** Own calculations, based on data from OECD - Trade in Value Added (TiVA), December 2016.

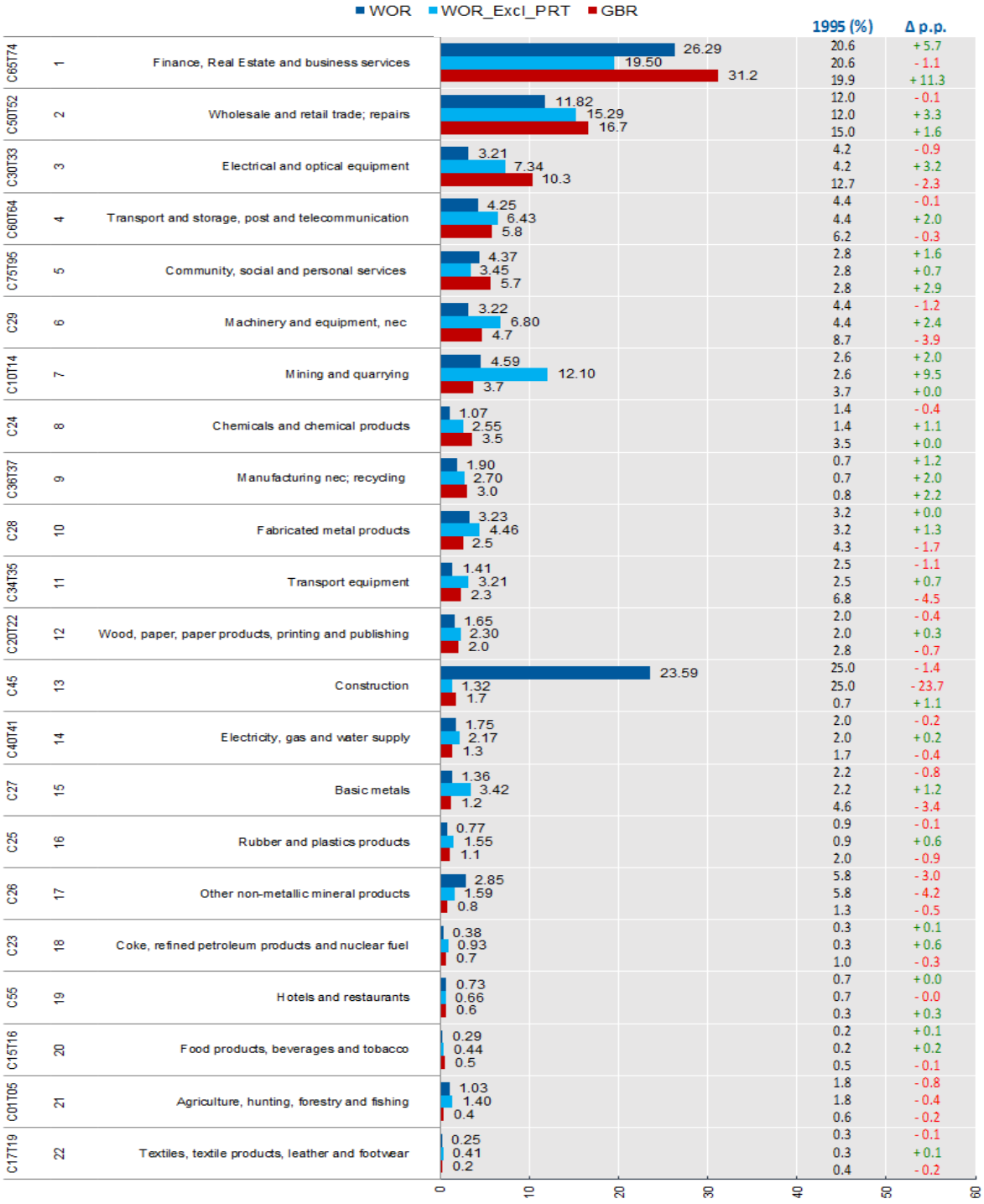
"C65T74 - Finance, Real Estate and business services" is the larger supplier industry of total value added content (domestic and imported) embodied in investment goods and services that make up for Portuguese GFCF, accounting for 26.3% of total GFCF content in 2011. A possible example is that whenever resident producers of goods and services incur in expenditure to purchase fixed assets that provide capital services such as transport equipment or machinery, for example, they are activating value added from several industries in this process (either domestically or abroad), one of them is logically "C34T35 - Transport Equipment" or "C29 - Machinery and equipment, nec" industry, but often this purchase requires leases or conventional forms of loans, so this means that the "C65T74 - Finance, Real Estate and business services" sector is also activated in the process given its function of financial intermediation, mobilizing and channeling the resources required (both domestic and external).

"C65T74 - Finance, Real Estate and business services" is also the larger supplier industry of Portuguese GFCF import content (19.5%), as well as the larger supplier industry of Portuguese GFCF import content specifically sourced in the UK (31.2%). This means that when performing GFCF, the composition of the basket of investment goods and services that resident producers are purchasing from the UK is much more concentrated on "C65T74 - Finance, Real Estate and business services" content compared to what they are purchasing from the World.

This gap is even more wide in the case of "C30T33 - Electrical and optical equipment" (+7.1 p.p.), suggesting that this might also be an important source market for these kind of investment goods and services.

**Value added content of Portuguese GFCF by supplier Industry and country source , 2011**

*Structure comparisson (%)*




**Source:** Own calculations, based on data from OECD - Trade in Value Added (TiVA), December 2016.

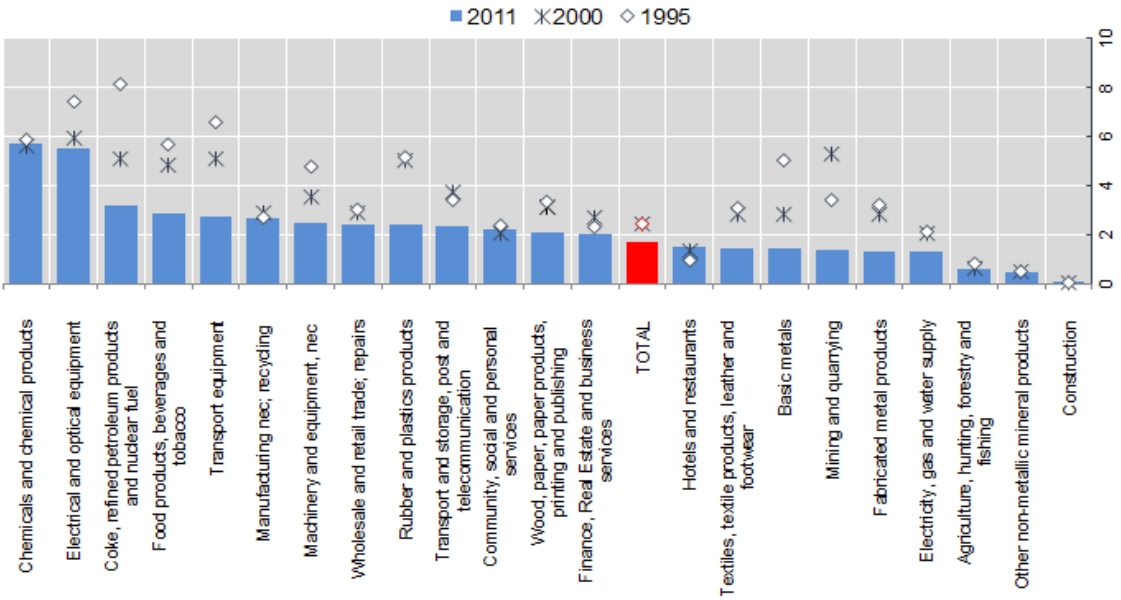
Note:

**WOR:** Value added cGross Fixed Capital Formation across sectors of the Portuguese Economy; **FDI_WOR:** Non-domestic GFCF inflows, across sectors of the Portuguese Economy ; **FDI_GBR:** GFCF inflows sourced in the UK, across sectors of the Portuguese Economy.

Weighting British content of Portuguese GFCF on total GFCF content by supplier industry, British content penetration is relatively higher specially in the case of “Chemical and chemical products” sector (5.7% of total GFCF) and “C30T33 - Electrical and optical equipment” sector (5.5%), suggesting a significant reliance on the British market to access investment goods and services from these industries.

**Value added content of Portuguese GFCF sourced in UK by supplier Industry**

*% of Total Value Added content of GFCF*




**Source:** Own calculations, based on data from OECD - Trade in Value Added (TiVA), December 2016.

### 3.4. Efficiency (Domestic Value Added per unit of labour input) Channel

International trade is an important driver of long-run economic growth largely because it has the potential to yield efficiency gains and boost productivity growth.

A well-established economic argument is that overall efficiency tends to be higher in those market segments more exposed to the forces of international competition, commonly classified as tradable. This is because they are more likely to follow the law of one price. But at the core of this approach is the distinction between tradables and non-tradables. As explained by Amador et Soares (2012), a rough proxy used in the empirical literature is to consider manufacturing as tradable and non-manufacturing as non-tradable. But, as the authors also explain, the problem with this proxy is that technological progress and trade liberalization brought international competition to many services activities, moving the borderline between tradable and non-tradable markets. The servicification of manufacturing itself has also highly contributed to blur this borderline. For example, the components that make up for manufactures are continuously changing as they increasingly attach sophisticated services inputs such as software, design, marketing, etc. In the end these services inputs, that bring vibrancy to manufacturing sector, are also being traded internationally and thus facing international competition, just like the rest of the components from manufacture. In fact, since manufacturing is increasingly relying on services inputs to excel in global markets, service industry performance is increasingly shaping the international competitiveness of a country and its firms.

In this context, this new paradigm represents new tradable opportunities, and broadly speaking blurs the distinction between tradables and non-tradables as potentially all goods and services produce tradable output. However, traditional trade statistics fail to properly account for this “tradability”.

Theoretically, tradable sectors can be defined as those that produce goods and services that can be traded across regions and international borders. However, this is irrespective of whether this trade actually takes place or not. Firms can operate in sectors that are tradable without engaging in trade themselves, but even in these cases, as long as they operate in tradable sectors, they are exposed to international competition (OECD 2018). Economic evidence consistently shows that firms engaging in international trade outperform non internationalized firms because export participation yields increased efficiency through productivity improvements that accrue from gaining access to technical expertise from export markets. This is the so-called learning-by-exporting effects. However, export destination itself matters as it affects firm learning from export activities (Fabling and Sanderson, 2010; Wagner, 2011). The rationale is that firms that export to more sophisticated markets have greater scope for learning effects, given higher productivity and technology standards in these export destinations (Blalock and Gertler, 2004).

So, summing up the main ideas, we have that: First, tradable sectors are more efficient than non-tradable sectors but the traditional distinction between the two is becoming inappropriate; Second, potentially all goods and services sectors produce tradable output, but traditional trade statistics fail to properly account for the degree to which this output is actually traded internationally; Finally, export participation yields positive productivity premiums comparing to non-exporters, but exporting specifically to more sophisticated countries, such as the UK, offers a greater scope for productivity improvements in the economy and in their industries.

Against this background, OECD Trade in Value Added and related databases can be useful in two key objectives: to unveil industries’ traded output shares and to shed new light on the trade-productivity nexus.

Recalling that domestic value added embodied in foreign final demand measure from OECD TiVA database, the so-called “exports of value added”, offers a task/activity view of production capturing the value added originating from upstream industries of a certain country that will ultimately be absorbed by another country,

and because this can be used to proxy traded shares[9] of a given industry, and overall economy, we will, from now on refer to this measure as the traded segment of an economy and their industries. The key purpose is to further link this domestic value added to the correspondent domestic labour inputs required to sustain foreign final demand, using the OECD Trade in Employment database, to reveal the full nature of interdependencies and explore the existence of productivity premiums between: (i) traded (sustained by foreign final demand alone) and non-traded (sustained by domestic final demand alone) segment; (ii) traded (sustained by foreign final demand alone) and traded specifically with the UK (sustained by UK final demand alone) segment.

At this point, three important facts for the analysis have to be clarified: First, despite the fact that literature points out that exporting firms generally have higher productivity, one important limitation accrues from the underlying assumption in OECD Trade in Employment database that exporting firms have the same labour productivity as firms producing goods and services for domestic markets. In this context, eventual differences between traded and non-traded segments within the sectors that we are presenting are presumed to be associated to our choice of industry groups resulting from the aggregation of two or more sectors (2-digit industries in ISIC Rev. 3.1.). Second, firms are assumed to be homogenous within industries, but heterogeneous across industries because the employment multiplier is different for each single industry. In this context, productivity premiums cannot be assessed across segments within industries, but can be assessed across industries for the same segment. Finally, it is fair to say that at the aggregate level, productivity between traded, non-traded, and traded specifically activated by UK final demand segments can be compared assuming that the underlying productivity premiums across segments are the result of the type and inherent productivity of tasks/activities more prevalent in each segment.

In aggregate terms, the traded segment of the Portuguese economy (sustained by foreign final demand alone) displays lower labour productivity than non-traded segment (sustained by domestic final demand alone) and this gap has widened over the years mostly since the early 2000s. This suggests that traded segment in the Portuguese economy is relatively more concentrated in tasks/activities that display lower labour productivity than non-traded segment.

Additionally, at the aggregate level, the traded segment activated specifically by UK final demand displays a negative productivity premium regarding total traded segment, suggesting that exports of value added to this market are relatively more intense in lower labour productivity tasks/activities than total exports of value added.

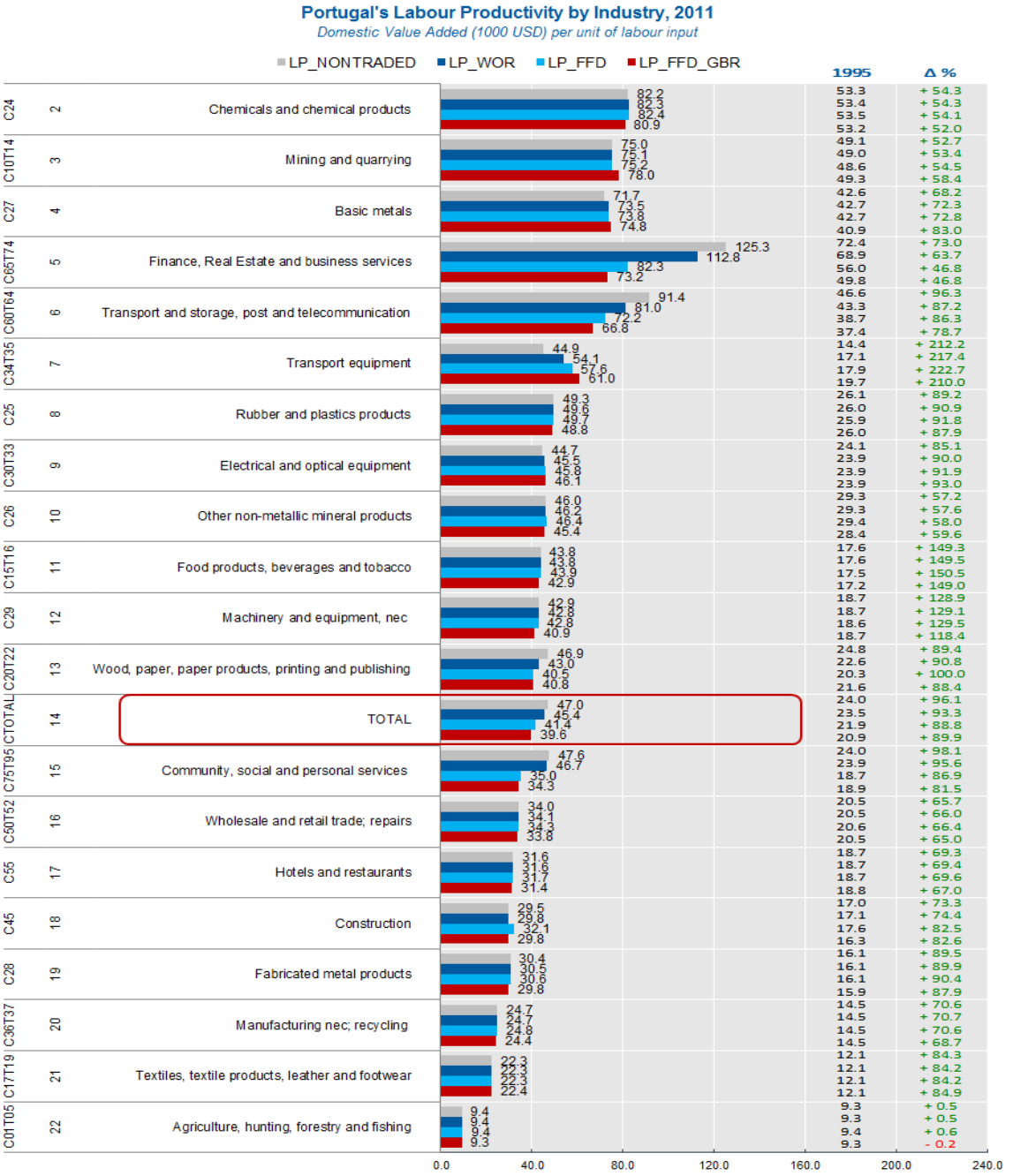
“C65T74 - Finance, Real Estate and business services” is the most efficient sector in the Portuguese Economy[10] as it records the highest Domestic Value Added per unit of labour input. This sector corresponds to the second most important source of domestic value added in the Portuguese economy, to the leading domestic sector activated by foreign final demand and to the main domestic sector activated specifically by UK final demand in terms of domestic value added addition. However, this is only the second most efficient sector activated by total foreign final demand and the fourth most efficient sector activated specifically by UK final demand.

“C24 - Chemicals and chemical Products” is the most efficient sector activated by both foreign final demand and by UK final demand, but exports of value added in both cases are incipient.

[9] Traded shares' is a slightly different concept than 'tradability', but used to the same end. The perfect measure in this case would be the domestic value added content of gross exports broken down by industry of origin (upstream industries approach), as this measure includes all the domestic value added created by one industry that is traded internationally irrespective of whether it is ultimately absorbed abroad (domestic value added embodied in foreign final demand measure) or it returns to be absorbed at home. However, for Portugal, 99% of this total domestic value added content of its gross exports broken down by industry of origin is ultimately absorbed abroad, by foreign final demand, thus constituting a good proxy, that allows for further linkages to other important variables in the dataset like employment.

[10] Ignoring “Electricity, gas and water supply” sector.

Between 1995 and 2011, at the aggregate level, labour productivity within the traded segment activated specifically by UK final demand grew faster than labour productivity within total traded segment, but below both non-traded segment (sustained by domestic final demand alone) and traded and non-traded combined total (sustained by both domestic and foreign final demand). “C34T35 - Transport Equipment” is the sector displaying higher labour productivity growth within this period, followed by “C15T16 - Food Products, beverages and tobacco” and “C29 - Machinery and equipment, nec” sectors.




**Source:** Own calculations based on OECD - Trade in Value Added (TiVA), December 2016 and OECD - Trade in Employment Data.

**Note:**

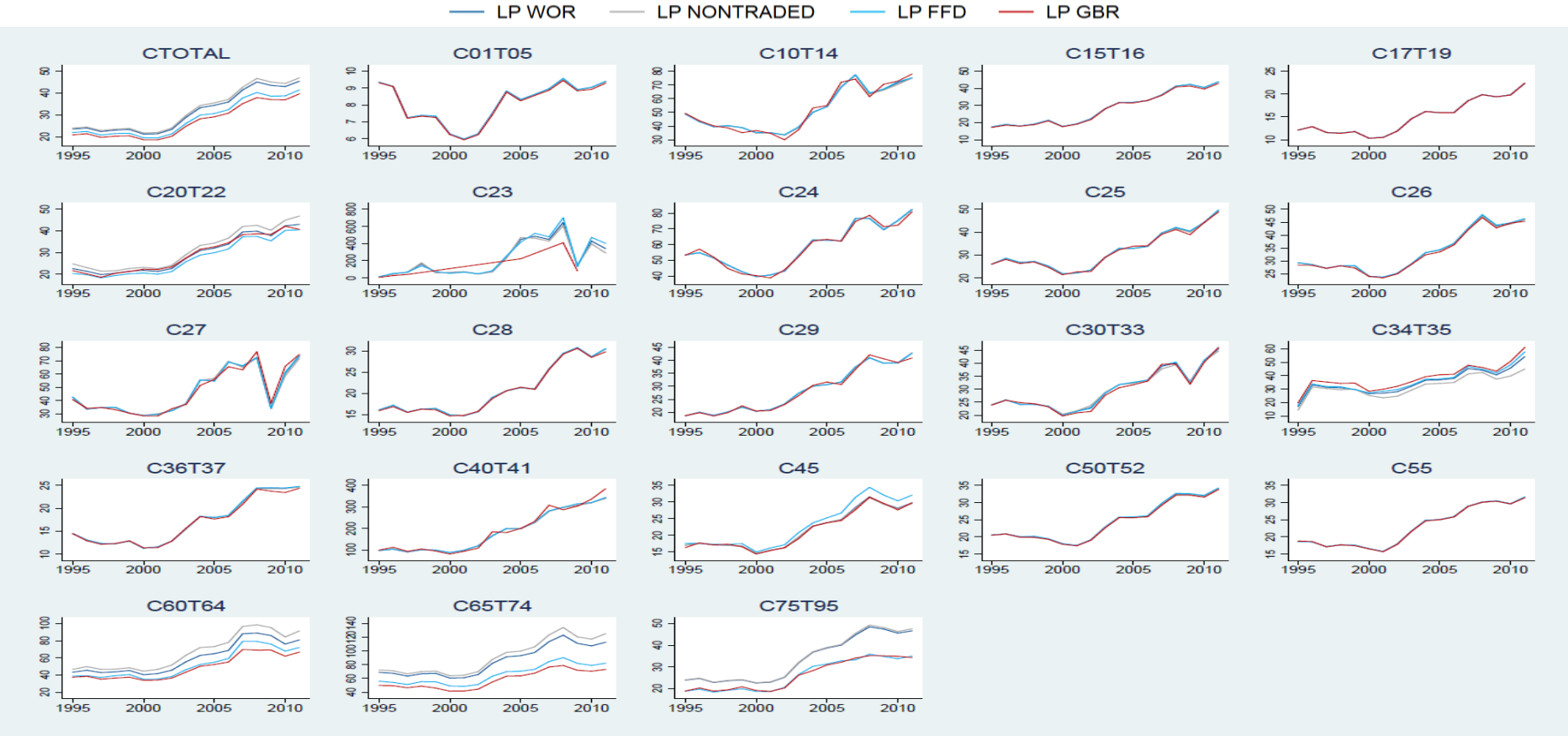
**LP_WOR:** Portugal's Labour Productivity (units of domestic value added per unit of labour input); **LP_NONTRADED:** Portugal's Labour Productivity to sustain domestic final demand (units of domestic value added activated by domestic final demand per unit of labour input embodied in domestic final demand); **LP_FFD:** Portugal's labour Productivity to sustain foreign final demand (units of domestic value added activated by foreign final demand per unit of labour input embodied in foreign final demand); **LP_FFD_GBR:** Portugal's labour Productivity to sustain foreign final demand sourced in the UK (units of domestic value added activated by UK final demand per unit of labour input embodied in UK final demand).

***Sectors ranked by LP_FFD_GBR variable***

***“C40T41 - Electricity, gas and water supply” and “C23 - Coke, refined petroleum products and nuclear fuel” not represented.***

**Portugal's Labour Productivity by industy, 1995-2011**

*Domestic Value Added (1000 USD) per unit of Labour Input*




**Source:** Own calculations based on OECD - Trade in Value Added (TiVA), December 2016 and OECD - Trade in Employment Data. **Note:** See tables in the appendix for Industry (ISIC Rev. 3 Codes) labels.
**LP_WOR:** Portugal's Labour Productivity (units of domestic value added per unit of labour input); **LP_NONTRADED:** Portugal's labour Productivity to sustain domestic final demand (units of domestic value added activated by domestic final demand per unit of labour input embodied in domestic final demand);**LP_FFD:** Portugal's labour Productivity to sustain foreign final demand (units of domestic value added activated by foreign final demand per unit of labour input embodied in foreign final demand); **LP_FFD_GBR:** Portugal's labour Productivity to sustain foreign final demand sourced in the UK (units of domestic value added activated by UK final demand per unit of labour input embodied in UK final demand).

In aggregate terms, the traded segment of the Portuguese economy (sustained by foreign final demand alone) displays lower Labour Costs *per worker* than non-traded segment (sustained by domestic final demand alone) and this gap has widened over the years mostly since the early 2000s.

At the aggregate level, the traded segment activated specifically by UK final demand displays lower Labour Costs *per worker* than total traded segment and total non-traded segment.

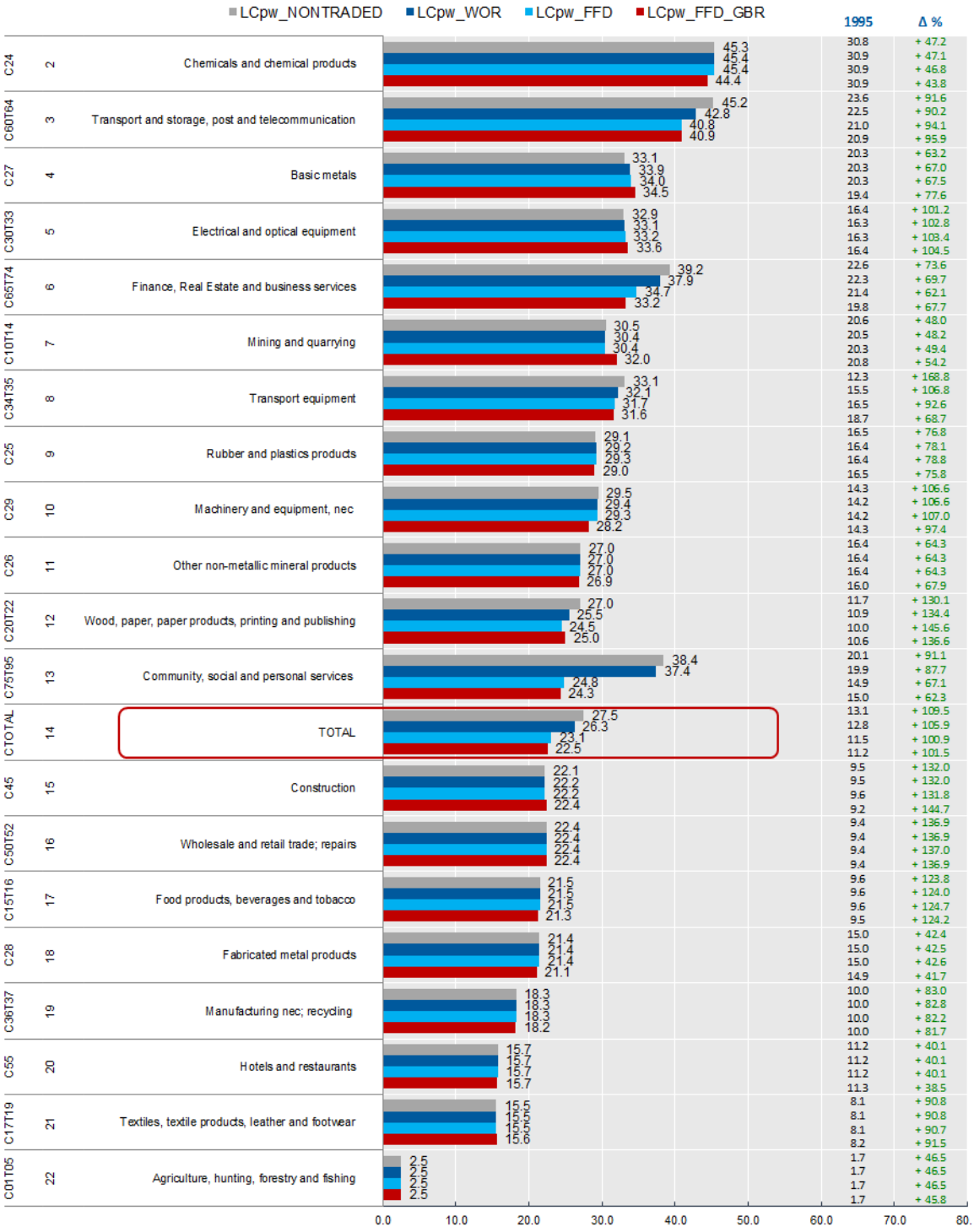
"C24 - Chemicals and chemical Products" is the sector displaying the highest Labour Costs *per worker* in the Portuguese Economy[11].

Between 1995 and 2011, at the aggregate level, Labour Costs *per worker* within the traded segment activated specifically by UK final demand grew faster than Labour Costs *per worker* within total traded segment, but below both non-traded segment (sustained by domestic final demand alone) and traded and non-traded combined total (sustained by both domestic and foreign final demand). "C45 - Construction" is the sector displaying higher Labour Costs *per worker* growth within this period, followed by "C50T52 - Wholesale and retail trade; repairs" and "C20T22 - Wood, paper, paper products, printing and Publishing" sectors.

[11] Ignoring "C23 - Coke, refined petroleum products and nuclear fuel" sector.

## Portugal's Labour Costs *per worker* by Industry, 2011

*Labour Costs (1000 USD) per person employed*




**Source:** Own calculations based on OECD - Trade in Value Added (TiVA), December 2016 and OECD - Trade in Employment Data.

**Note:**

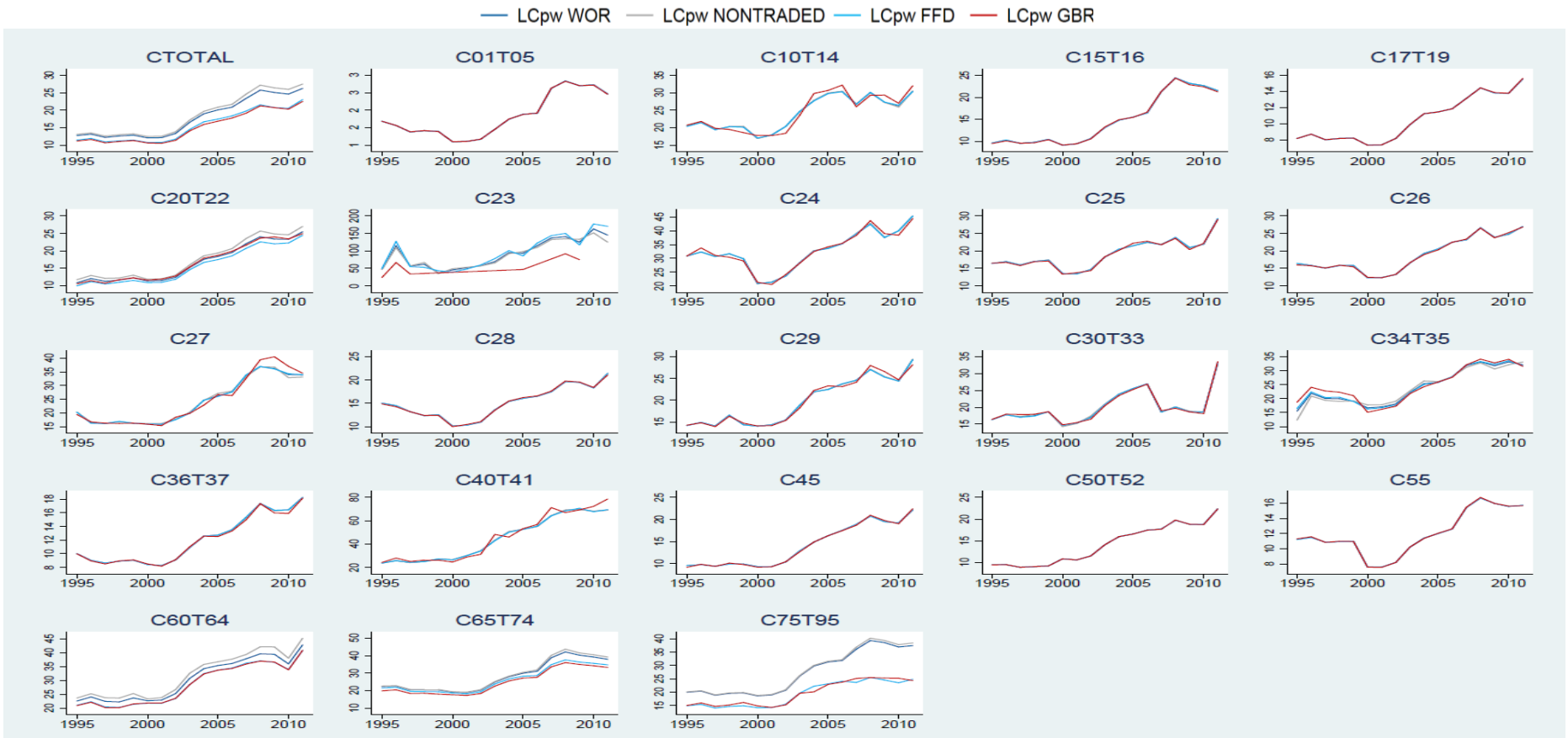
**LCpw_WOR:** Portugal's Labour Costs per worker (units of labour costs per unit of labour input); **LCpw_NONTRADED:** Portugal's Labour Costs per worker to sustain domestic final demand (units of labour costs activated by domestic final demand per unit of labour input embodied in domestic final demand); **LCpw_FFD:** Portugal's Labour Costs per worker to sustain foreign final demand (units of labour costs activated by foreign final demand per unit of labour input embodied in foreign final demand); **LCpw_FFD_GBR:** Portugal's Labour Costs per worker to sustain foreign final demand sourced in the UK (units of labour costs activated by UK final demand per unit of labour input embodied in UK final demand).

***Sectors ranked by LCpw_FFD_GBR variable.***

***"C40T41 - Electricity, gas and water supply" and "C23 - Coke, refined petroleum products and nuclear fuel" not represented.***

**Portugal's Labour Costs *per worker* by industy, 1995-2011**

*Labour Costs (1000 USD) per person employed*




**Source:** Own calculations based on OECD - Trade in Value Added (TiVA), December 2016 and OECD - Trade in Employment Data. **Note:** See tables in the appendix for Industry (ISIC Rev. 3 Codes) labels.
**LCpw_WOR:** Portugal's Labour Costs per worker (units of labour costs per unit of labour input); **LCpw_NONTRADED:** Portugal's Labour Costs per worker to sustain domestic final demand (units of labour costs activated by domestic final demand per unit of labour input embodied in domestic final demand); **LCpw_FFD:** Portugal's Labour Costs per worker to sustain foreign final demand (units of labour costs activated by foreign final demand per unit of labour input embodied in foreign final demand); **LCpw_FFD_GBR:** Portugal's Labour Costs per worker to sustain foreign final demand sourced in the UK (units of labour costs activated by UK final demand per unit of labour input embodied in UK final demand).

Recapitulating, Labour productivity has been rising in all sectors, in the Portuguese economy, which means that less labour has been needed to produce a unit of output, but so has Labour costs *per worker*. Rising wages do not necessarily lead to higher unit labour costs, but when labour productivity rises less than enough to be able to compensate the rise in wage costs the consequence is a rise in unit labour costs thus weakening external competitiveness and lowering exports.

Economy-wide Unit Labour costs (Labour costs per unit of Domestic value added) has been basically rising throughout the period under analysis in the Portuguese economy, with two slumps - the first in 2006/2007 and the second in 2009/2010 - and a stagnation in 2008/2009. This is true for all the segments under consideration: traded and non-traded combined total domestic output, non-traded total alone, traded total alone and traded activated specifically by UK final demand.

But this does not hold for all individual sectors. “C10T14 - Mining and quarrying”, “C28 - Fabricated metal products”, “C29 - Machinery and equipment, nec” and “C40T41 - Electricity, gas and water supply” exhibit a downward trend over the period under analysis.

More recently “C15T16 - Food Products, beverages and tobacco” and “C17T19 - Textiles, textile products, leather and footwear” also display decreasing unit labour costs.

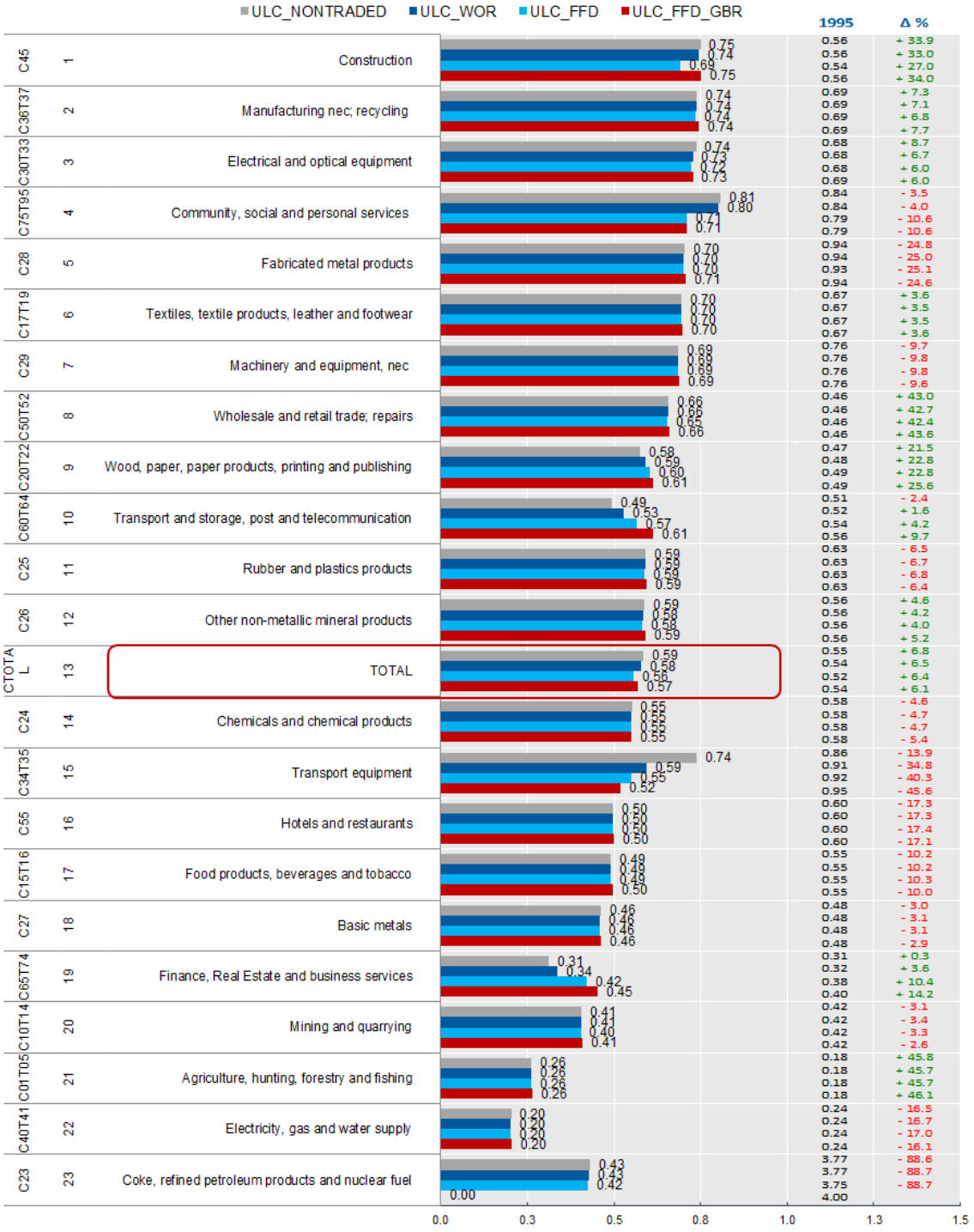
At the aggregate level, and comparing all segments, unit labour costs are lower within the traded segment activated by total foreign final demand. The traded segment activated specifically by UK final demand display lower unit labour costs than the non-traded segment, but slightly higher regarding traded segment activated by total foreign final demand.

“C75T95 - Community, social and personal services” is the most expensive sector in terms of unit labour costs in the Portuguese economy. It requires 0.8 USD of labour costs to produce 1 USD of domestic value added, way above national average of 0.58 USD per unit of domestic value added. On the other hand, “C45 - Construction” is the most expensive sector in terms of unit labour costs to sustain UK final demand (0.75 USD per unit of domestic value added), followed by “Manufacturing non specified elsewhere; recycling” (0.74 USD), “C30T33 - Electrical and optical equipment” (0.73 USD), “C75T95 - Community, social and personal services” (0.71 USD), “C28 - Fabricated metal products” (0.71 euros) and “C17T19 - Textiles, textile products, leather and footwear” (0.70 USD).

“C65T74 - Finance, Real Estate and business services”, which is the main Portuguese sector activated by UK final demand in terms of income is the fifth sector with the lowest unit labour costs to sustain UK final demand.

## Portugal's Unit Labour Costs by Industry, 2011

*Labour Costs (USD) per unit of Domestic Value Added*




**Source:** Own calculations based on OECD - Trade in Value Added (TiVA), December 2016 and OECD - Trade in Employment Data.

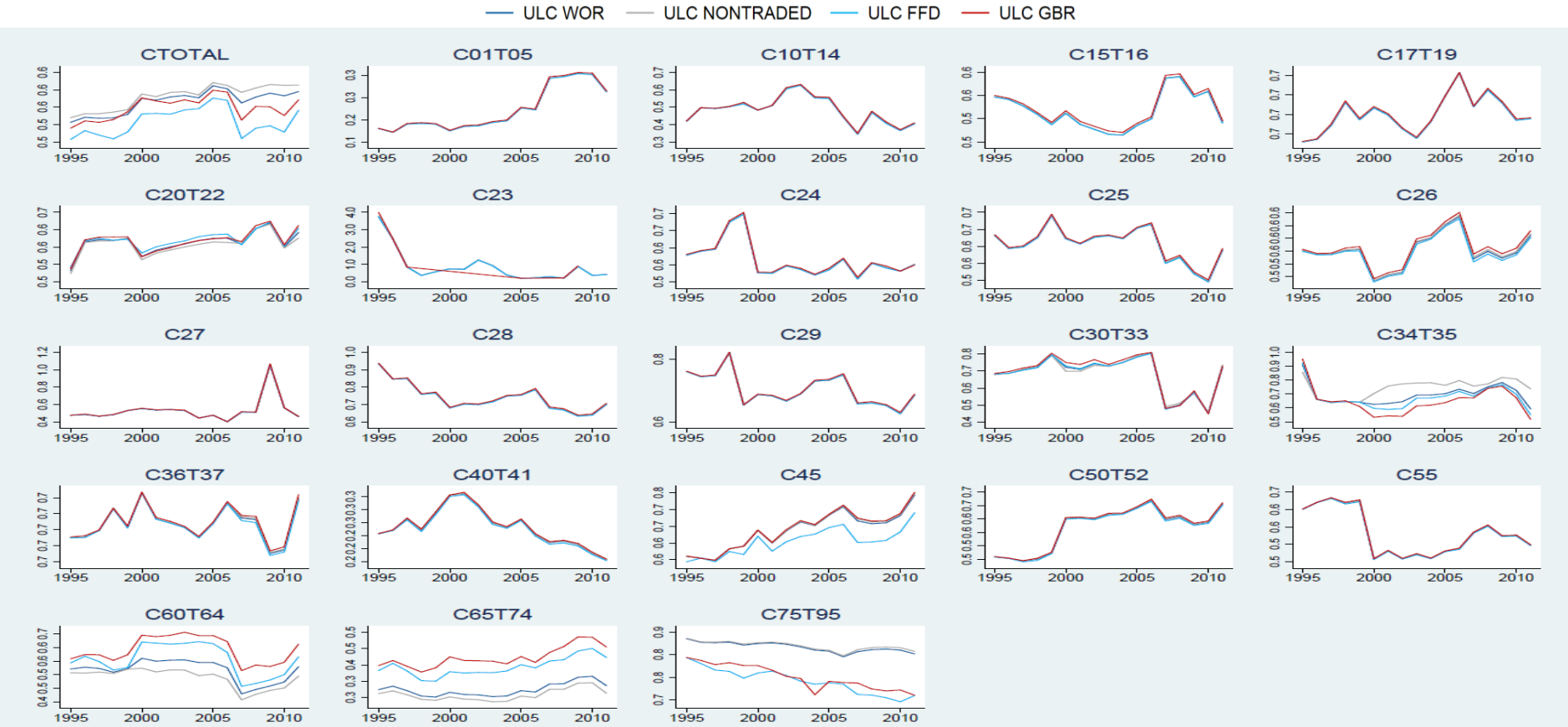
**Note:**

**ULC_WOR:** Portugal's Unit Labour Costs (labour costs per unit of domestic value added); **ULC_NONTRADED:** Portugal's Unit Labour Costs to sustain domestic final demand (labour costs per unit of domestic value added activated by domestic final demand); **ULC_FFD:** Portugal's Unit Labour Costs to sustain foreign final demand (labour costs per unit of domestic value added activated by foreign final demand); **ULC_FFD_GBR:** Portugal's Unit Labour Costs to sustain foreign final demand sourced in the UK (labour costs per unit of domestic value added activated by UK final demand).

***Sectors ranked by ULC_FFD_GBR variable.***

**Portugal's Unit Labour Costs by industy, 1995-2011**

*Labour Costs (USD) per unit of Domestic Value Added*

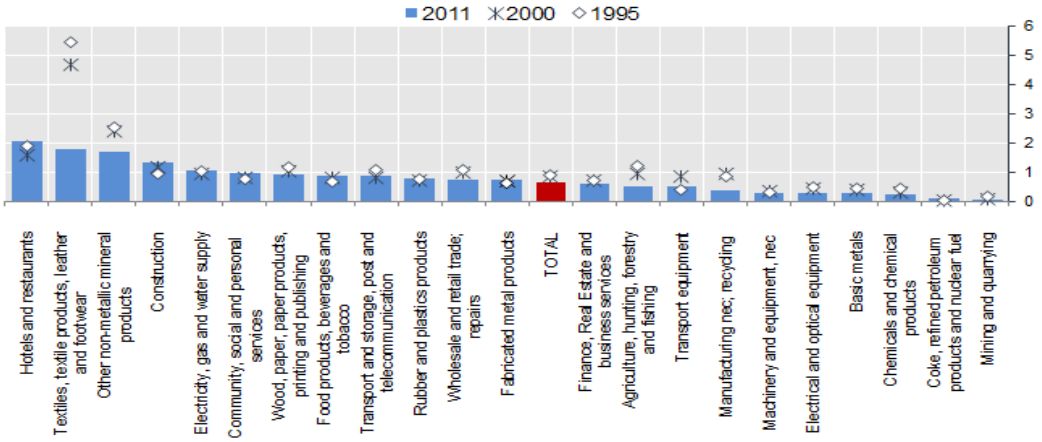



**Source:** Own calculations based on OECD - Trade in Value Added (TiVA), December 2016 and OECD - Trade in Employment Data. **Note:** See tables in the appendix for Industry (ISIC Rev. 3 Codes) labels.
**ULC_WOR:** Portugal's Unit Labour Costs (labour costs per unit of domestic value added); **ULC_NONTRADED:** Portugal's Unit Labour Costs to sustain domestic final demand (labour costs per unit of domestic value added activated by domestic final demand); **ULC_FFD:** Portugal's Unit Labour Costs to sustain foreign final demand (labour costs per unit of domestic value added activated by foreign final demand); **ULC_FFD_GBR:** Portugal's Unit Labour Costs to sustain foreign final demand sourced in the UK (labour costs per unit of domestic value added activated by UK final demand).

## 4. UK's demand *versus* Portugal's supply – the match challenge

Portugal has a small export market share in the UK. According to trade in value added statistics, from all the value added imported by UK in 2011, 0.65% stemmed from Portugal. "C55 - Hotels and restaurants" record the highest export market share in this destination country (2.08%), followed by "C17T19 - Textiles, textile products, leather and footwear" (1.79%) and "C26 - Other non-metallic mineral products" (1.72%).

**Portugal's Export Market Share in the UK**




| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2011 | 2.08 | 1.79 | 1.72 | 1.34 | 1.05 | 0.96 | 0.93 | 0.90 | 0.89 | 0.80 | 0.77 | 0.73 | 0.65 | 0.61 | 0.54 | 0.52 | 0.39 | 0.29 | 0.29 | 0.27 | 0.24 | 0.10 | 0.05 |
| 2000 | 1.61 | 4.67 | 2.41 | 1.17 | 0.94 | 0.81 | 1.04 | 0.82 | 0.83 | 0.74 | 1.01 | 0.72 | 0.84 | 0.71 | 0.95 | 0.86 | 0.96 | 0.36 | 0.44 | 0.41 | 0.32 | 0.04 | 0.09 |
| 1995 | 1.90 | 5.47 | 2.56 | 0.95 | 1.06 | 0.76 | 1.17 | 0.68 | 1.09 | 0.76 | 1.08 | 0.64 | 0.93 | 0.74 | 1.24 | 0.41 | 0.88 | 0.31 | 0.49 | 0.46 | 0.46 | 0.03 | 0.18 |

**Source:** Own calculations, based on data from OECD - Trade in Value Added (TiVA), December 2016.

Portugal has, indeed, a very limited presence within this market and still, it has been losing export market share to other countries since 1995.

One important question is whether Portugal has been able to offer products increasingly demanded by the UK. OECD Trade in Value Added Database provides a useful tool to examine if Portugal has indeed been able to match and keep up with UK's domestic demand for World exports of value added.

According to trade in value added statistics, Portugal's aggregate supply to sustain UK's final demand follows approximately the same trend[12] as UK's aggregate final demand. But the same is not true for all individual sectors.

Some sectors display brief, apparently transitory, episodes of mismatch. It's the case of "C10T14 - Mining and quarrying", "C23 - Coke, refined petroleum products and nuclear fuel", "C28 - Fabricated metal products", "C30T33 - Electrical and optical equipment" and "C34T35 - Transport Equipment". However, in the case of "C17T19 - Textiles, textile products, leather and footwear" and "C36T37 - Manufacturing nec; recycling", there is a clear opposite trend between the two flows since 2005. British imports of these specific industries have been rising and Portugal's exports of these same industries to the UK have been declining, which means that Portugal has not been able to reap the full benefits from this market. Moreover, mostly in the case of "C17T19 - Textiles, textile products, leather and footwear", unit labour costs have been declining throughout this same period, thus providing a good argument for increased competitiveness that should translate into exports growth. Instead, "C17T19 - Textiles, textile products, leather and footwear" sector

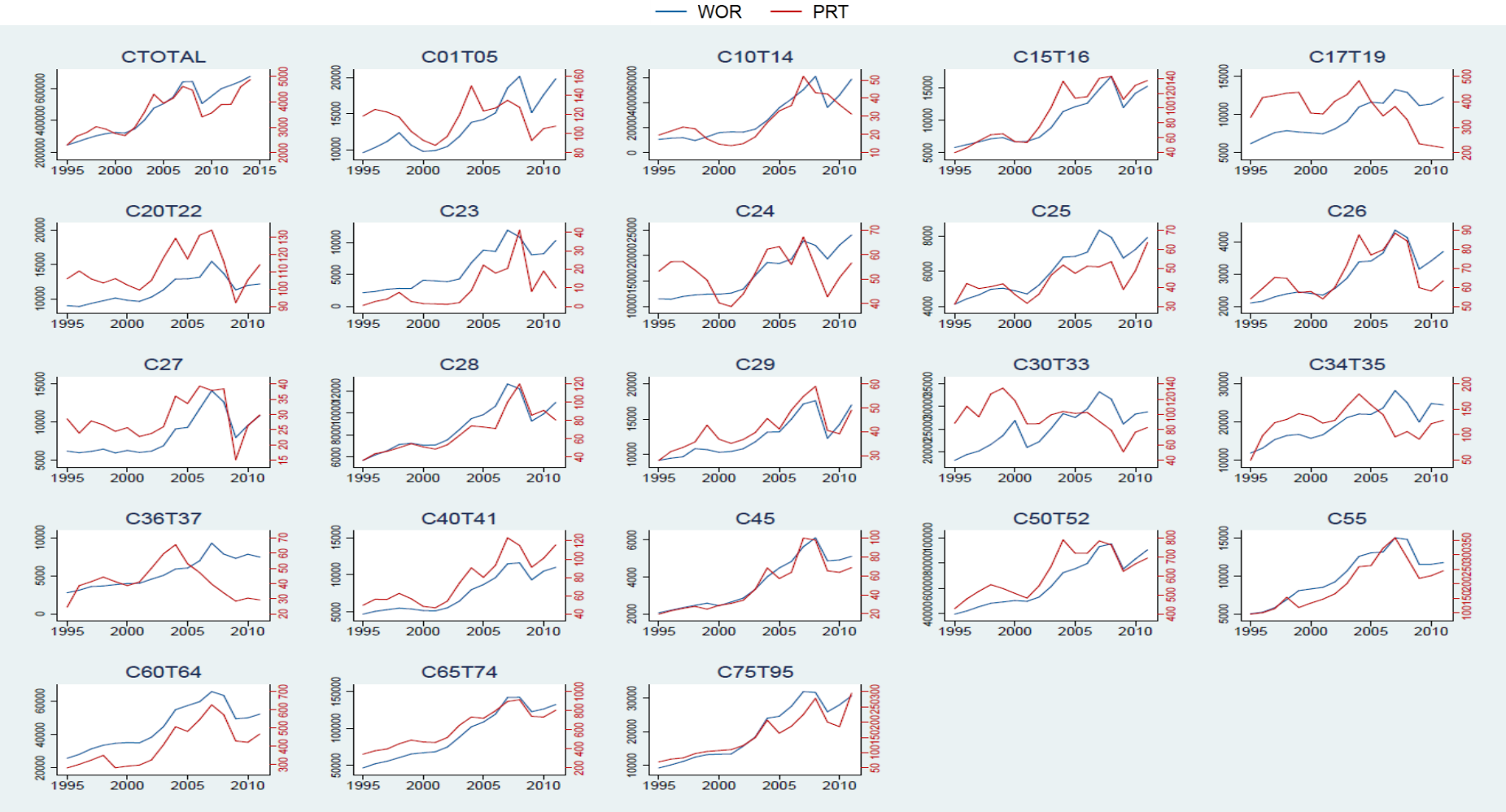
[12] Caution should be used when reading the graph as the magnitudes are plotted in different scales.

experienced a massive drop in its export market share in the UK, falling from 5.47% in 1995 to 1.79% in 2011. China, on the other hand, records a massive escalation in the same period, climbing from 4.25% in 1995 to 27.9% in 2011 in this same sector. China is now the main value added supplier to this market concerning this sector. Italy ranks second recording a 9.66% export market share in 2011.

However, Portugal has been losing export market share in the UK, even when Portuguese exports to the UK grew along with UK's imports from the World, meaning that Portuguese response is weaker than World average. This is also observed in some individual sectors like "C50T52 - Wholesale and retail trade; repairs" and "C65T74 - Finance, Real Estate and business services". "C15T16 - Food Products, beverages and tobacco" should also be referred here but as a special case. Between 1995 and 2004, its export market share almost doubled from 0.68% to 1.20%. Afterwards it started to fall even though its exports to this market record an upward trend. Nevertheless, it has not fallen below its score in 1995.

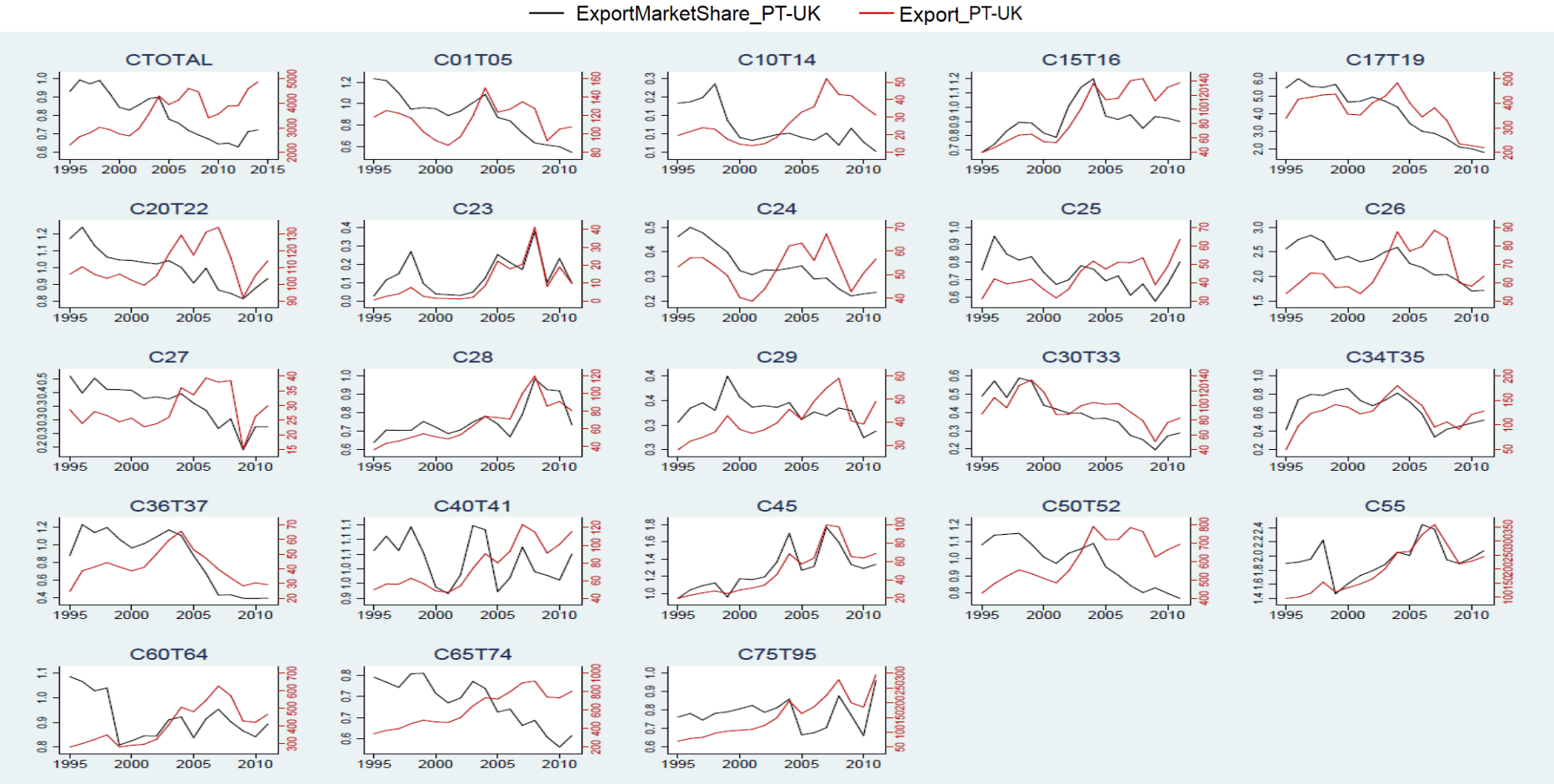
After the financial crisis (more or less around 2010) Portugal has managed to increase its export market share in some sectors, such as "C20T22 - Wood, paper, paper products, printing and Publishing", "C24 - Chemicals and chemical Products", "Rubber and plastics products", "C29 - Machinery and equipment, nec", "C30T33 - Electrical and optical equipment", "C34T35 - Transport Equipment", "Hotels and restaurants", "C60T64 - Transport and storage, post and telecommunication" and "C65T74 - Finance, Real Estate and business services". However, it didn't produce immediate positive consequences at economy-wide level. Meanwhile, nowcast data for aggregated economy in the 2012-2014 period, shows a solid upward trend in Portuguese export market share in the UK, suggesting an inherent good performance of its industries.

## UK domestic demand for world exports of value added by partner country, 1995-2011




**Source:** Own calculations based on OECD - Trade in Value Added (TiVA), December 2016. **Note:** See tables in the appendix for Industry (ISIC Rev. 3 Codes) labels.

## Portugal's Export Market Share in the UK, 1995-2011




**Source:** Own calculations based on OECD - Trade in Value Added (TiVA), December 2016 and OECD - Trade in Employment Data. **Note:** See tables in the appendix for Industry (ISIC Rev. 3 Codes) labels.
**ExportMarketShare_PT-UK:** UK final demand for value added from Portugal (which is equal to Portugal's domestic value added embodied in UK final demand) as a share of UK final demand for World exports of value added.
**Exports_PT-UK:** Portugal's domestic value added embodied in UK final demand.

## 5. Conclusion

On June, 2016 the UK decided to leave the EU. Since there is no precedent of a Member State withdrawing from the European Union, the consequences of Brexit are still highly uncertain. The impact of external shocks on a country's macroeconomic scenario depends upon its potential degree of exposure and one important mechanism of transmission is the extent of international integration of the country via trade and employment. However, traditional measures of trade based on gross flows alone are becoming less informative to reveal the origins of a country final demand and thus to assess the potential impacts when considering shocks to foreign final demand.

In this work we use OECD-WTO TiVA (and related) indicators to provide a more accurate picture of the full nature of interdependencies between Portugal and the United Kingdom in order to depict how exposed and thus vulnerable is Portugal and its sectors to the UK market, via domestic value added, employment and as a supplier of value added content embodied in investment goods and services, that make up for Portuguese GFCF, delivering a useful contribution for assessing potential impacts of Brexit on the Portuguese Economy.

Even though the implications of UK's departure will always depend on how Brexit unfolds, this overview suggests that there is in fact some exposure of the Portuguese economy to macroeconomic developments in the UK. Summing up the main ideas (Table A.7):

The UK is the 4$^{th}$ most important destination for Portuguese exports. In 2011, the UK absorbed 7.1% of total domestic value added embodied in Portugal's foreign final demand, which corresponds to 1.8% of total value added created in the Portuguese economy.

"C65T74 - Finance, Real Estate and business services", is the leading domestic sector activated by UK final demand in terms of value added, concentrating 20.7% of total domestic value added embodied in UK final demand in 2011. This corresponds to 1.5% of total domestic value added embodied in total foreign final demand, 0.4% of total value added in the Portuguese economy, 7.5% of domestic value added embodied in foreign final demand within the sector and 1.6% of total domestic value added created by the sector. However, "Transport and Equipment" is the sector that, in relative terms, relies the most on final demand sourced in the UK, with 8% of its total value added being driven by this market in 2011.

Exports create jobs opportunities. The UK is the 4th major foreign driver partner of jobs in Portugal. In 2011, exports to this market sustained 7.4% of total Employment driven by Portugal's foreign final demand, which corresponds to 2.1% of total Employment in the Portuguese economy.

"C50T52 - Wholesale and retail trade; repairs" sector is the top one domestic employer activity activated specifically by British final demand, concentrating 20.9% of total domestic employment sustained by this market in 2011. This corresponds to 1.5% of total employment activated by total foreign final demand, 0.4% of total employment in the economy, 6.7% of total employment sustained by foreign final demand within the sector and 2.5% of total employment created by the sector. However, "Transport and Equipment" is once again the sector that, in relative terms, relies the most on final demand sourced in the UK, with 7% of its total employment being sustained by this market in 2011.

The UK is the 5th major source partner of import content of Portuguese GFCF. In 2011, it supplied 4.7% of total import content of GFCF, which corresponds to 1.7% of total value added content embodied in investment goods and services that make up for Portuguese GFCF, ranking after Spain (24.4% ; 8.9%), Germany (12% ; 4.4%), France (7.8% ; 2.8%) and Italy (6.8% ; 2.5%).

"C65T74 - Finance, Real Estate and business services" is the larger supplier industry of value added content embodied in investment goods and services, sourced in the UK, that make up for Portuguese GFCF. This

industry concentrates 31.2% of total GFCF content sourced in the British economy in 2011. This corresponds to 1.5% of total GFCF import content and 0.5% of total GFCF content (domestic and imported) embodied in investment goods and services that make up for total Portuguese GFCF. However, in relative terms, Portuguese GFCF content display higher reliance on the British market to access investment goods and services from "C24 - Chemicals and chemical Products" sector. In 2011, 5.7% of total GFCF content delivered by this industry was sourced in this market.

At the aggregate level, the efficiency in the Portuguese economy to supply UK final demand is lower than the efficiency to supply total foreign final demand (taken as the "traded" segment) or even domestic final demand (taken as the "non-traded" segment). This suggests that traded segment specifically activated by UK final demand is relatively more intense in tasks/activities that display lower labour productivity than both total traded segment and total non-traded segment.

"C24 - Chemicals and chemical Products" is the most efficient sector activated by UK final demand as it records the highest Domestic Value Added per unit of labour input, but it is also the sector displaying the highest Labour Costs *per worker*.

"C45 - Construction" is the most expensive sector in terms of unit labour costs to sustain UK final demand (0.75 USD per unit of domestic value added), followed by "Manufacturing non specified elsewhere; recycling" (0.74 USD), "C30T33 - Electrical and optical equipment" (0.73 USD), "C75T95 - Community, social and personal services" (0.71 USD), "C28 - Fabricated metal products" (0.71 euros) and "C17T19 - Textiles, textile products, leather and footwear" (0.70 USD).

Portugal has a small export market share in the UK. According to trade in value added statistics, from all the value added imported by UK in 2011, 0.65% stemmed from Portugal. "C55 - Hotels and restaurants" record the highest export market share in this destination country (2.08%), followed by "C17T19 - Textiles, textile products, leather and footwear" (1.79%) and "C26 - Other non-metallic mineral products" (1.72%).

In aggregated terms, Portugal has been losing export market share in the UK, even when its exports to the UK grew along with UK's imports from the World, meaning that the response is weaker than World average. After the financial crisis, Portugal has managed to increase its export market share in some sectors and Nowcast data for total economy in the 2012-2014 period, points to a solid upward trend in Portugal's export market share in the UK, suggesting an inherent good performance of Portuguese industries.

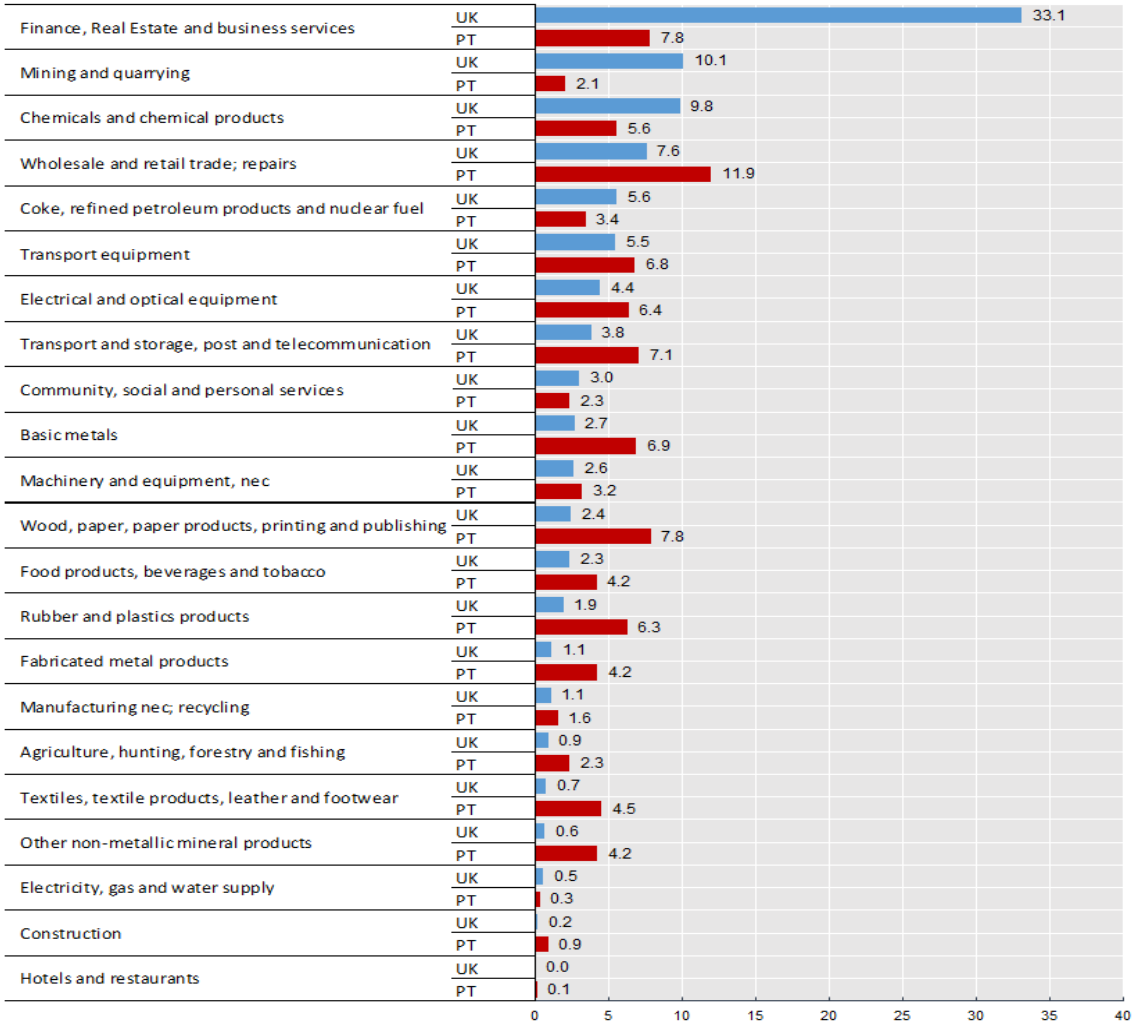
Given the degree of economic integration between Portugal and the UK, Brexit represents, indeed, a major challenge for the Portuguese economy and its industries. There is a lot at stake: supply chains may suffer disruptions within the "European factory"; exports of perishable items from agriculture and food industries may be jeopardize at least in a transitory way if border procedures don't operate smoothly immediately after Brexit; Intellectual property protection, such as patents, trademarks, registered designs and copyright may not apply in the UK after it leaves EU; etc. As a consequence, companies may have to rethink their business models, redraw contracts, and set contingency plans to minimize disruption.

However, in a sense, it may also come as an opportunity. For example, there's a strong chance that some companies, presently established in the UK, relocate their activities to other EU countries. According to a November 2017 survey[13] from the Chartered Institute of Procurement & Supply (CIPS), nearly two-thirds (63%) of EU businesses who work with UK suppliers expect to move some of their supply chain out of the UK as a result of Brexit. This offers an opportunity for Portugal to replace the UK as a supplier. In this scenario, Portuguese companies must proactively scan for business opportunities and try their best to absorb competences that were previously carried out in the UK, mainly in those cases where Portugal has already a solid and trusty presence within the supply chain.

[13] https://www.cips.org/en-gb/who-we-are/news/eu-businesses-say-goodbye-to-uk-suppliers-as-brexit-bites-into-key-relationships

As GVCs involve fragmentation of production in multiple stages across different countries, a good place to start, as it can provide a good piece of information on how a country participates in GVC's within the "European Factory", for example, is to use gross exports of intermediate inputs measure from TiVA database, broken down by exporting industry, to the European Union (28). As an example, whenever the relative importance of an industry gross exports of intermediate inputs to the EU28 is greater in Portugal than in the UK, it can suggest that Portugal has already some "installed capacity" to absorb UK's competences in those sectors. This seems to be, among other examples, the case of "C34T35 - Transport Equipment", "C30T33 - Electrical and optical equipment", "C27 - Basic metals" and "C29 - Machinery and equipment, nec". Furthermore, this may also represent business opportunity for domestic (upstream) industries that supply these exporting (downstream) sectors.

**Gross exports of intermediate inputs to the European Union (28), 2011**
*Structure (%)*




**Source:** GEE, based on data from OECD - Trade in Value Added (TiVA), December 2016.

At this point, the one thing to focus on is that Brexit seems inevitable, disruption and change will come, and Portuguese companies must plan a way to make it as less disruptive as possible. Success may well depend on exploring the full range of business opportunities, finding and prioritizing the right synergies to achieve scale, to create greater efficiency, to build new capabilities or just to assure resiliency to face the upcoming challenges.

## 6. References


Amador, J. and Soares, A. (2012), “Competition in the portuguese economy: Competition in the Portuguese economy”: A view on tradables and non-tradables, Economic Bulletin-Spring, Banco de Portugal, 41-57.

Blalock, G., Gertler, P. J. (2004), “Learning from exporting revisited in a less developed setting, Journal of Development Economics”, 75(2), 397-416.

De Backer, K. and S. Miroudot (2013), "Mapping Global Value Chains", OECD Trade Policy Papers, N° 159, OECD Publishing, Paris. DOI: http://dx.doi.org/10.1787/5k3v1trgnbr4-en.

Fabling, R. and L. Sanderson (2010), “Exporting and Performance: Market Entry, Expansion and Destination Characteristics”, Reserve Bank of New Zealand Discussion Paper Series, 2010/7

Johnson, R. C. and G. Noguera (2012), “Accounting for Intermediates: Production Sharing and Trade in Value Added”, Journal of International Economics, 86(2), 224-236.

Kojima, K. (1964), "The Pattern of International Trade among Advanced Countries", Hitotsuboshi Journal of Economics, Vol.5(1) June.

Koopman, R; Z Wang and S-J Wei (2014), “Tracing Value-added and Double Counting in Gross Exports”, American Economic Review, 114( 2), 459–494. Also available as NBER Working Paper N° 18579, 2012.

OCDE (2016), “OECD Trade in Employment (TiM)” http://stats.oecd.org/Index.aspx?DataSetCode=TIM2015_C1.

OCDE-OMC (2016a), “OECD-WTO Trade in Value Added (TiVA)” https://stats.oecd.org/Index.aspx?DataSetCode=TIVA_2016_C1.

OCDE-OMC (2016b), “OECD-WTO Trade in Value Added (TiVA): Origin of Value Added in Gross Exports” https://stats.oecd.org/Index.aspx?DataSetCode=TIVA_2016_C2

OCDE-OMC (2017), “OECD-WTO Trade in Value Added (TiVA) Nowcast Estimates” https://stats.oecd.org/Index.aspx?DataSetCode=TIVA_NOWCAST

OECD (2018), Productivity and Jobs in a Globalised World: (How) Can All Regions Benefit?, OECD Publishing, Paris, https://doi.org/10.1787/9789264293137-en.

Timmer, M. P. (2012), “The World Input-Output Database (WIOD): Contents, Sources and Methods”, WIOD Background document available at http://www.wiod.org.

Timmer, M. P.; Los, B.; Stehrer, R. e De Vries, G. J. (2013), “Fragmentation, incomes and jobs: an analysis of European competitiveness”, Economic policy, 28(76), 613-661.

# A. Appendix

## Table A.1 - Portugal's exports to the United Kingdom

*Sectoral structure (%)*

| ISIC Rev. 3 | | 1995 | | | 2000 | | | 2005 | | | 2006 | | | 2007 | | | 2008 | | | 2009 | | | 2010 | | | 2011 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA |
| CTOTAL | TOTAL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| C01T05 | Agriculture, hunting, forestry and fishing | 0.9 | 1.1 | 5.1 | 0.7 | 0.8 | 3.4 | 1.0 | 1.2 | 3.1 | 0.9 | 1.2 | 3.1 | 1.2 | 1.3 | 2.9 | 1.0 | 1.2 | 2.9 | 1.1 | 1.3 | 2.7 | 1.2 | 1.5 | 3.0 | 1.2 | 1.3 | 2.8 |
| C10T14 | Mining and quarrying | 0.0 | 0.0 | 0.9 | 0.1 | 0.1 | 0.5 | 0.1 | 0.1 | 0.8 | 0.1 | 0.1 | 0.9 | 0.2 | 0.2 | 1.1 | 0.1 | 0.1 | 1.0 | 0.1 | 0.1 | 1.2 | 0.1 | 0.1 | 1.0 | 0.1 | 0.1 | 0.8 |
| C15T16 | Food products, beverages and tobacco | 4.7 | 4.9 | 1.7 | 4.4 | 4.7 | 2.0 | 6.2 | 6.8 | 2.9 | 5.9 | 6.4 | 2.8 | 6.9 | 7.1 | 3.0 | 6.8 | 7.3 | 3.2 | 6.8 | 7.2 | 3.3 | 7.5 | 8.2 | 3.7 | 7.7 | 7.9 | 3.5 |
| C17T19 | Textiles, textile products, leather and footwear | 24.3 | 24.5 | 14.7 | 21.7 | 21.8 | 12.9 | 16.7 | 17.5 | 10.2 | 14.2 | 14.6 | 8.3 | 14.3 | 14.0 | 8.3 | 11.5 | 12.0 | 7.4 | 11.0 | 11.2 | 6.9 | 10.0 | 10.3 | 6.4 | 8.6 | 8.6 | 5.6 |
| C20T22 | Wood, paper, paper products, printing and publishing | 6.0 | 6.6 | 4.6 | 3.3 | 3.7 | 3.7 | 2.5 | 2.8 | 3.0 | 2.9 | 3.3 | 3.2 | 2.9 | 3.1 | 2.9 | 2.7 | 3.0 | 2.6 | 3.0 | 3.3 | 2.7 | 3.1 | 3.5 | 3.0 | 3.7 | 3.9 | 2.9 |
| C23 | Coke, refined petroleum products and nuclear fuel | 1.5 | 0.7 | 0.0 | 0.5 | 0.1 | 0.1 | 4.1 | 1.1 | 0.6 | 2.7 | 0.6 | 0.4 | 4.0 | 1.1 | 0.4 | 8.9 | 2.0 | 0.9 | 6.9 | 1.8 | 0.2 | 6.9 | 1.5 | 0.5 | 3.8 | 0.7 | 0.3 |
| C24 | Chemicals and chemical products | 2.6 | 2.5 | 2.3 | 1.8 | 1.8 | 1.5 | 2.9 | 2.6 | 1.6 | 2.5 | 2.2 | 1.4 | 2.9 | 2.6 | 1.5 | 2.1 | 1.9 | 1.2 | 2.4 | 2.3 | 1.3 | 2.9 | 2.6 | 1.4 | 3.2 | 2.8 | 1.5 |
| C25 | Rubber and plastics products | 1.5 | 1.4 | 1.4 | 1.5 | 1.4 | 1.3 | 1.5 | 1.3 | 1.2 | 1.7 | 1.5 | 1.2 | 1.6 | 1.4 | 1.1 | 1.8 | 1.7 | 1.2 | 1.6 | 1.4 | 1.1 | 1.9 | 1.7 | 1.4 | 2.9 | 2.6 | 1.6 |
| C26 | Other non-metallic mineral products | 2.1 | 2.3 | 2.3 | 2.1 | 1.8 | 2.1 | 2.0 | 1.9 | 2.0 | 1.9 | 1.8 | 1.9 | 2.0 | 1.8 | 1.9 | 1.8 | 1.7 | 1.9 | 1.8 | 1.7 | 1.8 | 1.4 | 1.4 | 1.6 | 1.5 | 1.4 | 1.6 |
| C27 | Basic metals | 0.6 | 0.6 | 1.2 | 0.5 | 0.4 | 0.9 | 0.5 | 0.4 | 0.9 | 0.7 | 0.5 | 0.9 | 1.0 | 0.9 | 0.8 | 1.5 | 1.4 | 0.9 | 1.0 | 0.9 | 0.4 | 1.1 | 1.0 | 0.7 | 1.1 | 1.1 | 0.8 |
| C28 | Fabricated metal products | 1.4 | 1.3 | 1.6 | 1.5 | 1.4 | 1.9 | 2.1 | 1.8 | 1.8 | 2.0 | 1.7 | 1.7 | 3.5 | 2.9 | 2.2 | 4.4 | 4.1 | 2.7 | 3.2 | 3.2 | 2.5 | 3.7 | 3.6 | 2.6 | 2.3 | 2.3 | 2.1 |
| C29 | Machinery and equipment, nec | 2.0 | 1.8 | 1.2 | 2.1 | 1.9 | 1.3 | 1.5 | 1.3 | 1.0 | 1.8 | 1.6 | 1.2 | 2.0 | 1.6 | 1.2 | 2.0 | 1.8 | 1.3 | 1.7 | 1.5 | 1.2 | 1.3 | 1.3 | 1.1 | 1.7 | 1.6 | 1.3 |
| C30T33 | Electrical and optical equipment | 10.7 | 8.3 | 3.8 | 11.6 | 9.4 | 4.3 | 7.2 | 5.3 | 2.6 | 8.4 | 5.4 | 2.5 | 6.2 | 3.7 | 2.0 | 5.4 | 3.6 | 1.8 | 5.0 | 3.4 | 1.5 | 5.9 | 4.4 | 2.2 | 6.0 | 4.4 | 2.1 |
| C34T35 | Transport equipment | 11.9 | 7.3 | 2.1 | 15.6 | 10.4 | 5.0 | 14.6 | 9.1 | 4.0 | 13.2 | 7.7 | 3.4 | 6.7 | 3.9 | 2.1 | 9.0 | 5.6 | 2.4 | 10.0 | 6.2 | 2.7 | 13.2 | 8.0 | 3.4 | 13.3 | 8.3 | 3.3 |
| C36T37 | Manufacturing nec; recycling | 1.3 | 1.3 | 1.1 | 2.4 | 2.2 | 1.4 | 2.0 | 2.0 | 1.3 | 1.7 | 1.7 | 1.1 | 1.4 | 1.3 | 0.9 | 1.0 | 1.0 | 0.8 | 1.3 | 1.2 | 0.8 | 1.2 | 1.3 | 0.9 | 1.0 | 1.0 | 0.8 |
| C40T41 | Electricity, gas and water supply | 0.0 | 0.0 | 2.2 | 0.0 | 0.0 | 1.8 | 0.0 | 0.0 | 2.0 | 0.1 | 0.0 | 2.3 | 0.2 | 0.2 | 2.7 | 0.2 | 0.2 | 2.6 | 0.1 | 0.1 | 2.7 | 0.1 | 0.1 | 2.8 | 0.1 | 0.1 | 3.0 |
| C45 | Construction | 0.1 | 0.1 | 0.9 | 0.1 | 0.1 | 1.0 | 0.4 | 0.5 | 1.4 | 0.4 | 0.5 | 1.5 | 0.9 | 0.9 | 2.2 | 0.8 | 0.9 | 2.2 | 0.9 | 1.0 | 1.9 | 0.8 | 1.0 | 1.8 | 0.9 | 1.0 | 1.8 |
| C50T52 | Wholesale and retail trade; repairs | 9.6 | 12.0 | 18.6 | 10.6 | 13.5 | 18.5 | 10.3 | 13.3 | 18.2 | 9.7 | 12.6 | 17.4 | 9.7 | 12.1 | 17.0 | 9.2 | 12.2 | 17.1 | 10.9 | 13.7 | 18.3 | 10.6 | 14.0 | 18.6 | 9.9 | 12.7 | 17.8 |
| C55 | Hotels and restaurants | 5.0 | 5.8 | 4.2 | 5.4 | 6.4 | 4.9 | 7.7 | 9.4 | 6.7 | 9.3 | 11.4 | 7.8 | 10.9 | 12.9 | 7.8 | 8.1 | 10.1 | 6.5 | 8.4 | 10.0 | 6.4 | 7.9 | 9.8 | 6.4 | 7.9 | 9.4 | 6.3 |
| C60T64 | Transport and storage, post and telecommunication | 8.6 | 10.8 | 12.2 | 6.8 | 8.4 | 10.6 | 9.1 | 11.1 | 12.2 | 10.9 | 13.4 | 13.2 | 12.2 | 14.4 | 13.6 | 10.9 | 13.2 | 12.8 | 10.3 | 12.3 | 12.6 | 9.6 | 11.8 | 11.8 | 10.4 | 12.2 | 12.0 |
| C65T74 | Finance, Real Estate and business services | 4.0 | 5.1 | 14.9 | 6.0 | 7.9 | 17.2 | 6.1 | 8.2 | 18.3 | 7.0 | 9.4 | 19.3 | 7.7 | 10.0 | 19.5 | 7.8 | 10.8 | 20.5 | 9.8 | 12.7 | 21.8 | 7.7 | 10.5 | 20.6 | 8.1 | 10.8 | 20.7 |
| C75T95 | Community, social and personal services | 1.2 | 1.5 | 3.0 | 1.3 | 1.7 | 3.9 | 1.6 | 2.1 | 4.2 | 1.8 | 2.5 | 4.5 | 1.9 | 2.4 | 4.9 | 3.1 | 4.2 | 6.2 | 2.8 | 3.6 | 5.9 | 1.8 | 2.5 | 5.2 | 4.6 | 6.1 | 7.6 |

**Source:** Own calculations, based on data from OECD - *Trade in Value Added (TiVA), December 2016.*

**Note:**

**EXGR:** Gross Exports; **EXGR_DVA:** Domestic Value Added content of Gross Exports; **FFD_DVA:** Domestic Value Added embodied in Foreign Final Demand

## Table A.2 - Portugal's exports to the United Kingdom

% of total exports to the World, *Sectoral Structure*

| ISIC Rev. 3 | | 1995 | | | 2000 | | | 2005 | | | 2006 | | | 2007 | | | 2008 | | | 2009 | | | 2010 | | | 2011 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA |
| **CTOTAL** | **TOTAL** | **10.6** | **10.5** | **10.2** | **12.0** | **11.8** | **11.9** | **10.6** | **10.5** | **11.2** | **9.5** | **9.6** | **10.3** | **8.7** | **8.9** | **9.7** | **8.5** | **8.2** | **8.7** | **7.5** | **7.2** | **7.6** | **7.6** | **7.3** | **7.6** | **6.7** | **6.7** | **7.1** |
| C01T05 | Agriculture, hunting, forestry and fishing | 0.1 | 0.1 | 0.5 | 0.1 | 0.1 | 0.4 | 0.1 | 0.1 | 0.4 | 0.1 | 0.1 | 0.3 | 0.1 | 0.1 | 0.3 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 |
| C10T14 | Mining and quarrying | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 |
| C15T16 | Food products, beverages and tobacco | 0.5 | 0.5 | 0.2 | 0.5 | 0.6 | 0.2 | 0.7 | 0.7 | 0.3 | 0.6 | 0.6 | 0.3 | 0.6 | 0.6 | 0.3 | 0.6 | 0.6 | 0.3 | 0.5 | 0.5 | 0.2 | 0.6 | 0.6 | 0.3 | 0.5 | 0.5 | 0.2 |
| C17T19 | Textiles, textile products, leather and footwear | 2.6 | 2.6 | 1.5 | 2.6 | 2.6 | 1.5 | 1.8 | 1.8 | 1.1 | 1.3 | 1.4 | 0.9 | 1.2 | 1.3 | 0.8 | 1.0 | 1.0 | 0.6 | 0.8 | 0.8 | 0.5 | 0.8 | 0.7 | 0.5 | 0.6 | 0.6 | 0.4 |
| C20T22 | Wood, paper, paper products, printing and publishing | 0.6 | 0.7 | 0.5 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 |
| C23 | Coke, refined petroleum products and nuclear fuel | 0.2 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.4 | 0.1 | 0.1 | 0.3 | 0.1 | 0.0 | 0.4 | 0.1 | 0.0 | 0.8 | 0.2 | 0.1 | 0.5 | 0.1 | 0.0 | 0.5 | 0.1 | 0.0 | 0.3 | 0.0 | 0.0 |
| C24 | Chemicals and chemical products | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.3 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 |
| C25 | Rubber and plastics products | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 |
| C26 | Other non-metallic mineral products | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| C27 | Basic metals | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| C28 | Fabricated metal products | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 |
| C29 | Machinery and equipment, nec | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| C30T33 | Electrical and optical equipment | 1.1 | 0.9 | 0.4 | 1.4 | 1.1 | 0.5 | 0.8 | 0.6 | 0.3 | 0.8 | 0.5 | 0.3 | 0.5 | 0.3 | 0.2 | 0.5 | 0.3 | 0.2 | 0.4 | 0.2 | 0.1 | 0.4 | 0.3 | 0.2 | 0.4 | 0.3 | 0.2 |
| C34T35 | Transport equipment | 1.3 | 0.8 | 0.2 | 1.9 | 1.2 | 0.6 | 1.6 | 1.0 | 0.4 | 1.3 | 0.7 | 0.3 | 0.6 | 0.3 | 0.2 | 0.8 | 0.5 | 0.2 | 0.7 | 0.4 | 0.2 | 1.0 | 0.6 | 0.3 | 0.9 | 0.6 | 0.2 |
| C36T37 | Manufacturing nec; recycling | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| C40T41 | Electricity, gas and water supply | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 |
| C45 | Construction | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| C50T52 | Wholesale and retail trade; repairs | 1.0 | 1.3 | 1.9 | 1.3 | 1.6 | 2.2 | 1.1 | 1.4 | 2.0 | 0.9 | 1.2 | 1.8 | 0.8 | 1.1 | 1.6 | 0.8 | 1.0 | 1.5 | 0.8 | 1.0 | 1.4 | 0.8 | 1.0 | 1.4 | 0.7 | 0.9 | 1.3 |
| C55 | Hotels and restaurants | 0.5 | 0.6 | 0.4 | 0.6 | 0.8 | 0.6 | 0.8 | 1.0 | 0.7 | 0.9 | 1.1 | 0.8 | 1.0 | 1.2 | 0.8 | 0.7 | 0.8 | 0.6 | 0.6 | 0.7 | 0.5 | 0.6 | 0.7 | 0.5 | 0.5 | 0.6 | 0.4 |
| C60T64 | Transport and storage, post and telecommunication | 0.9 | 1.1 | 1.2 | 0.8 | 1.0 | 1.3 | 1.0 | 1.2 | 1.4 | 1.0 | 1.3 | 1.4 | 1.1 | 1.3 | 1.3 | 0.9 | 1.1 | 1.1 | 0.8 | 0.9 | 1.0 | 0.7 | 0.9 | 0.9 | 0.7 | 0.8 | 0.9 |
| C65T74 | Finance, Real Estate and business services | 0.4 | 0.5 | 1.5 | 0.7 | 0.9 | 2.0 | 0.6 | 0.9 | 2.0 | 0.7 | 0.9 | 2.0 | 0.7 | 0.9 | 1.9 | 0.7 | 0.9 | 1.8 | 0.7 | 0.9 | 1.7 | 0.6 | 0.8 | 1.6 | 0.5 | 0.7 | 1.5 |
| C75T95 | Community, social and personal services | 0.1 | 0.2 | 0.3 | 0.2 | 0.2 | 0.5 | 0.2 | 0.2 | 0.5 | 0.2 | 0.2 | 0.5 | 0.2 | 0.2 | 0.5 | 0.3 | 0.3 | 0.5 | 0.2 | 0.3 | 0.4 | 0.1 | 0.2 | 0.4 | 0.3 | 0.4 | 0.5 |

**Source:** Own calculations, based on data from OECD - *Trade in Value Added (TiVA), December 2016.*

**Note:**

**EXGR:** Gross Exports; **EXGR_DVA:** Domestic Value Added content of Gross Exports; **FFD_DVA:** Domestic Value Added embodied in Foreign Final Demand

## Table A.3 - Portugal's exports to the United Kingdom

*% of total exports to the World within each sector*

| ISIC Rev. 3 | | 1995 | | | 2000 | | | 2005 | | | 2006 | | | 2007 | | | 2008 | | | 2009 | | | 2010 | | | 2011 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA | EXGR | EXGR DVA | FFD DVA |
| **CTOTAL** | **TOTAL** | **10.6** | **10.5** | **10.2** | **12.0** | **11.8** | **11.9** | **10.6** | **10.5** | **11.2** | **9.5** | **9.6** | **10.3** | **8.7** | **8.9** | **9.7** | **8.5** | **8.2** | **8.7** | **7.5** | **7.2** | **7.6** | **7.6** | **7.3** | **7.6** | **6.7** | **6.7** | **7.1** |
| C01T05 | Agriculture, hunting, forestry and fishing | 8.2 | 8.2 | 10.1 | 8.1 | 8.1 | 10.6 | 7.8 | 7.8 | 11.0 | 7.5 | 7.5 | 10.3 | 7.7 | 7.7 | 10.5 | 5.6 | 5.6 | 8.8 | 5.2 | 5.2 | 7.3 | 5.6 | 5.6 | 7.9 | 4.7 | 4.7 | 7.2 |
| C10T14 | Mining and quarrying | 1.3 | 1.3 | 8.6 | 2.3 | 2.3 | 7.2 | 1.4 | 1.4 | 7.6 | 0.8 | 0.7 | 5.8 | 1.4 | 1.4 | 6.8 | 1.0 | 1.0 | 6.3 | 0.9 | 0.9 | 6.7 | 0.7 | 0.7 | 5.6 | 0.6 | 0.6 | 4.4 |
| C15T16 | Food products, beverages and tobacco | 11.3 | 11.3 | 11.2 | 11.8 | 11.8 | 12.2 | 13.8 | 13.8 | 14.2 | 11.7 | 11.7 | 12.6 | 11.9 | 11.9 | 12.7 | 10.3 | 10.3 | 10.9 | 8.4 | 8.4 | 8.9 | 9.8 | 9.8 | 10.1 | 9.3 | 9.3 | 9.5 |
| C17T19 | Textiles, textile products, leather and footwear | 14.9 | 14.9 | 14.5 | 15.8 | 15.8 | 16.0 | 15.9 | 15.9 | 16.3 | 13.8 | 13.8 | 14.2 | 13.4 | 13.4 | 13.7 | 11.2 | 11.2 | 11.6 | 9.4 | 9.4 | 9.9 | 9.0 | 9.0 | 9.6 | 7.2 | 7.2 | 7.9 |
| C20T22 | Wood, paper, paper products, printing and publishing | 9.0 | 9.0 | 9.3 | 5.8 | 5.8 | 8.4 | 4.5 | 4.5 | 7.2 | 5.0 | 5.0 | 7.3 | 4.6 | 4.6 | 6.8 | 4.4 | 4.4 | 6.1 | 4.3 | 4.3 | 5.7 | 4.2 | 4.2 | 5.6 | 4.5 | 4.5 | 5.6 |
| C23 | Coke, refined petroleum products and nuclear fuel | 13.9 | 13.9 | 11.3 | 3.8 | 3.8 | 7.5 | 15.7 | 15.7 | 13.4 | 7.6 | 7.6 | 8.7 | 12.1 | 12.1 | 10.7 | 21.5 | 21.5 | 14.6 | 16.4 | 16.4 | 12.2 | 13.0 | 13.0 | 10.1 | 5.8 | 5.8 | 6.2 |
| C24 | Chemicals and chemical products | 7.6 | 7.6 | 9.0 | 6.8 | 6.8 | 9.2 | 8.0 | 8.0 | 9.3 | 6.5 | 6.5 | 8.0 | 6.5 | 6.5 | 7.8 | 4.8 | 4.8 | 6.4 | 5.4 | 5.4 | 6.1 | 5.3 | 5.3 | 6.1 | 4.8 | 4.8 | 5.7 |
| C25 | Rubber and plastics products | 8.8 | 8.8 | 9.6 | 9.1 | 9.1 | 11.6 | 5.9 | 5.9 | 8.9 | 6.1 | 6.1 | 8.6 | 5.3 | 5.3 | 7.7 | 5.7 | 5.7 | 7.5 | 3.9 | 3.9 | 6.0 | 4.5 | 4.5 | 6.5 | 5.9 | 5.9 | 7.0 |
| C26 | Other non-metallic mineral products | 8.9 | 8.9 | 9.0 | 9.7 | 9.7 | 10.6 | 7.5 | 7.5 | 9.0 | 6.5 | 6.6 | 8.0 | 5.9 | 5.9 | 7.2 | 5.2 | 5.2 | 6.4 | 4.6 | 4.6 | 5.5 | 4.0 | 4.0 | 5.3 | 4.0 | 4.0 | 5.2 |
| C27 | Basic metals | 3.2 | 3.2 | 6.3 | 3.2 | 3.2 | 8.3 | 2.0 | 2.0 | 6.8 | 2.0 | 2.0 | 5.9 | 3.0 | 3.0 | 6.2 | 4.5 | 4.5 | 5.7 | 3.3 | 3.3 | 5.0 | 3.1 | 3.1 | 5.0 | 2.1 | 2.1 | 4.3 |
| C28 | Fabricated metal products | 8.2 | 8.2 | 8.8 | 8.6 | 8.6 | 10.6 | 8.0 | 8.0 | 9.4 | 6.8 | 6.8 | 8.2 | 8.5 | 8.5 | 8.5 | 9.6 | 9.6 | 8.5 | 6.3 | 6.3 | 6.3 | 8.2 | 8.2 | 7.4 | 5.8 | 5.8 | 6.1 |
| C29 | Machinery and equipment, nec | 6.5 | 6.5 | 7.0 | 7.2 | 7.2 | 8.2 | 4.4 | 4.4 | 5.8 | 4.8 | 4.8 | 5.9 | 5.3 | 5.4 | 6.4 | 4.8 | 4.8 | 5.8 | 4.1 | 4.1 | 4.9 | 3.7 | 3.7 | 4.8 | 3.3 | 3.3 | 4.1 |
| C30T33 | Electrical and optical equipment | 10.9 | 11.0 | 9.5 | 14.8 | 15.1 | 13.2 | 8.7 | 8.9 | 9.4 | 8.9 | 9.0 | 9.3 | 6.7 | 6.8 | 7.6 | 6.1 | 6.1 | 6.6 | 6.3 | 6.2 | 6.7 | 7.4 | 7.4 | 7.7 | 6.6 | 6.6 | 6.8 |
| C34T35 | Transport equipment | 11.1 | 10.8 | 10.5 | 17.5 | 17.0 | 17.0 | 15.8 | 14.9 | 15.0 | 12.9 | 12.1 | 12.3 | 6.9 | 6.6 | 8.0 | 9.7 | 9.3 | 9.3 | 10.6 | 10.2 | 10.3 | 12.6 | 12.2 | 11.6 | 10.7 | 10.5 | 10.2 |
| C36T37 | Manufacturing nec; recycling | 8.0 | 8.0 | 9.3 | 15.0 | 14.9 | 15.1 | 9.4 | 9.4 | 10.6 | 8.1 | 8.1 | 9.4 | 7.5 | 7.5 | 8.8 | 5.2 | 5.2 | 6.6 | 4.7 | 4.7 | 5.7 | 5.1 | 5.1 | 6.0 | 4.3 | 4.3 | 5.5 |
| C40T41 | Electricity, gas and water supply | 2.5 | 2.5 | 10.0 | 2.5 | 2.6 | 11.5 | 1.8 | 1.7 | 10.3 | 1.2 | 1.2 | 9.2 | 4.4 | 4.4 | 9.3 | 7.3 | 7.3 | 8.5 | 4.0 | 4.0 | 7.4 | 2.2 | 2.2 | 7.3 | 4.5 | 4.5 | 6.8 |
| C45 | Construction | 1.0 | 1.0 | 7.2 | 3.2 | 3.2 | 9.4 | 6.0 | 6.0 | 9.3 | 4.3 | 4.3 | 8.0 | 5.5 | 5.5 | 8.0 | 4.5 | 4.5 | 6.9 | 4.7 | 4.7 | 6.2 | 4.9 | 4.9 | 6.3 | 4.4 | 4.4 | 5.8 |
| C50T52 | Wholesale and retail trade; repairs | 9.3 | 9.3 | 10.1 | 11.2 | 11.2 | 12.0 | 9.5 | 9.5 | 10.9 | 8.3 | 8.3 | 9.8 | 7.4 | 7.4 | 9.1 | 6.8 | 6.8 | 8.2 | 6.5 | 6.5 | 7.4 | 6.7 | 6.7 | 7.6 | 5.6 | 5.6 | 6.6 |
| C55 | Hotels and restaurants | 11.5 | 11.5 | 11.2 | 12.9 | 12.9 | 12.7 | 17.6 | 17.6 | 15.7 | 20.4 | 20.4 | 17.4 | 20.8 | 20.8 | 19.1 | 15.3 | 15.3 | 14.3 | 12.4 | 12.4 | 11.7 | 12.7 | 12.7 | 12.0 | 11.9 | 11.9 | 11.1 |
| C60T64 | Transport and storage, post and telecommunication | 10.8 | 10.8 | 10.4 | 9.1 | 9.1 | 10.5 | 8.7 | 8.7 | 10.2 | 8.8 | 8.8 | 9.7 | 8.5 | 8.5 | 9.2 | 7.1 | 7.1 | 7.9 | 5.6 | 5.6 | 6.5 | 5.6 | 5.6 | 6.4 | 5.6 | 5.6 | 6.2 |
| C65T74 | Finance, Real Estate and business services | 9.4 | 9.2 | 9.5 | 14.3 | 14.0 | 11.8 | 13.5 | 13.3 | 11.4 | 13.0 | 12.8 | 10.8 | 12.2 | 12.1 | 10.0 | 11.8 | 11.6 | 9.1 | 11.6 | 11.4 | 8.3 | 10.4 | 10.3 | 8.1 | 10.2 | 10.1 | 7.5 |
| C75T95 | Community, social and personal services | 13.3 | 13.4 | 11.4 | 13.2 | 13.4 | 13.0 | 14.5 | 14.6 | 12.7 | 14.0 | 14.0 | 11.9 | 9.3 | 9.4 | 9.4 | 15.3 | 15.3 | 10.3 | 10.5 | 10.5 | 8.5 | 6.2 | 6.2 | 7.1 | 14.6 | 14.6 | 9.2 |

**Source:** Own calculations, based on data from OECD - *Trade in Value Added (TiVA), December 2016.*

**Note:**

**EXGR:** Gross Exports; **EXGR_DVA:** Domestic Value Added content of Gross Exports; **FFD_DVA:** Domestic Value Added embodied in Foreign Final Demand

## Table A.4 - Portugal's Employment by Industry

*Sectoral Structure (%)*

| ISIC Rev. 3 | | 1995 | | | 2000 | | | 2005 | | | 2006 | | | 2007 | | | 2008 | | | 2009 | | | 2010 | | | 2011 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR |
| **CTOTAL** | **TOTAL** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** |
| C01T05 | Agriculture, hunting, forestry and fishing | 14.5 | 12.2 | 11.5 | 12.6 | 11.8 | 10.1 | 11.9 | 11.7 | 11.1 | 11.9 | 11.5 | 11.0 | 11.7 | 11.4 | 11.6 | 11.5 | 11.9 | 11.5 | 11.6 | 12.2 | 11.4 | 11.3 | 12.2 | 12.2 | 11.1 | 12.0 | 11.8 |
| C10T14 | Mining and quarrying | 0.3 | 0.5 | 0.4 | 0.3 | 0.5 | 0.3 | 0.3 | 0.7 | 0.4 | 0.3 | 0.7 | 0.4 | 0.3 | 0.8 | 0.5 | 0.3 | 0.8 | 0.6 | 0.3 | 0.8 | 0.7 | 0.3 | 0.7 | 0.5 | 0.3 | 0.7 | 0.4 |
| C15T16 | Food products, beverages and tobacco | 2.6 | 2.0 | 2.1 | 2.4 | 2.1 | 2.1 | 2.3 | 2.2 | 2.7 | 2.3 | 2.2 | 2.6 | 2.3 | 2.4 | 3.0 | 2.3 | 2.5 | 3.0 | 2.3 | 2.6 | 2.9 | 2.4 | 2.6 | 3.4 | 2.4 | 2.5 | 3.3 |
| C17T19 | Textiles, textile products, leather and footwear | 8.1 | 18.8 | 25.3 | 6.8 | 18.1 | 23.3 | 5.5 | 13.4 | 18.6 | 5.2 | 12.2 | 16.1 | 5.0 | 11.9 | 15.7 | 4.8 | 11.2 | 14.1 | 4.4 | 10.6 | 13.2 | 4.3 | 9.9 | 11.9 | 4.4 | 9.4 | 10.0 |
| C20T22 | Wood, paper, paper products, printing and publishing | 2.5 | 5.5 | 4.4 | 2.3 | 5.0 | 3.1 | 2.1 | 4.7 | 2.7 | 2.1 | 4.6 | 2.8 | 2.0 | 4.2 | 2.7 | 1.9 | 4.0 | 2.5 | 1.8 | 3.9 | 2.6 | 1.7 | 3.9 | 2.6 | 1.8 | 3.8 | 2.9 |
| C23 | Coke, refined petroleum products and nuclear fuel | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| C24 | Chemicals and chemical products | 0.6 | 1.1 | 0.9 | 0.5 | 0.9 | 0.7 | 0.4 | 0.9 | 0.7 | 0.4 | 0.9 | 0.7 | 0.4 | 0.9 | 0.7 | 0.4 | 0.9 | 0.6 | 0.4 | 0.9 | 0.7 | 0.4 | 0.9 | 0.7 | 0.4 | 0.9 | 0.7 |
| C25 | Rubber and plastics products | 0.5 | 1.2 | 1.1 | 0.5 | 1.2 | 1.2 | 0.5 | 1.4 | 1.0 | 0.5 | 1.4 | 1.1 | 0.5 | 1.3 | 1.0 | 0.5 | 1.3 | 1.1 | 0.5 | 1.4 | 1.1 | 0.5 | 1.4 | 1.1 | 0.5 | 1.4 | 1.3 |
| C26 | Other non-metallic mineral products | 1.8 | 2.0 | 1.7 | 1.8 | 1.9 | 1.6 | 1.6 | 2.2 | 1.7 | 1.5 | 2.2 | 1.6 | 1.5 | 2.3 | 1.6 | 1.4 | 2.1 | 1.5 | 1.3 | 2.1 | 1.5 | 1.3 | 2.0 | 1.3 | 1.3 | 2.0 | 1.4 |
| C27 | Basic metals | 0.3 | 1.0 | 0.6 | 0.3 | 0.9 | 0.6 | 0.2 | 0.8 | 0.4 | 0.2 | 0.8 | 0.4 | 0.2 | 0.7 | 0.5 | 0.2 | 0.7 | 0.4 | 0.2 | 0.8 | 0.4 | 0.2 | 0.7 | 0.4 | 0.2 | 0.7 | 0.4 |
| C28 | Fabricated metal products | 1.6 | 2.5 | 2.1 | 1.7 | 2.7 | 2.4 | 1.7 | 3.1 | 2.5 | 1.7 | 3.3 | 2.5 | 1.7 | 3.6 | 3.0 | 1.8 | 3.7 | 3.5 | 1.7 | 3.8 | 3.0 | 1.7 | 3.5 | 3.3 | 1.7 | 3.3 | 2.7 |
| C29 | Machinery and equipment, nec | 1.0 | 2.1 | 1.4 | 0.9 | 1.9 | 1.2 | 0.9 | 2.0 | 1.0 | 0.9 | 2.1 | 1.2 | 0.9 | 1.8 | 1.1 | 0.9 | 2.0 | 1.2 | 0.8 | 1.8 | 1.1 | 0.8 | 1.7 | 1.0 | 0.8 | 2.1 | 1.2 |
| C30T33 | Electrical and optical equipment | 1.1 | 3.8 | 3.4 | 1.2 | 3.8 | 4.1 | 0.9 | 2.9 | 2.4 | 0.8 | 2.7 | 2.3 | 0.8 | 2.4 | 1.8 | 0.8 | 2.3 | 1.7 | 0.8 | 2.0 | 1.7 | 0.8 | 2.0 | 2.0 | 0.8 | 2.0 | 1.8 |
| C34T35 | Transport equipment | 0.8 | 2.6 | 2.3 | 0.8 | 2.5 | 3.3 | 0.7 | 2.4 | 2.9 | 0.7 | 2.4 | 2.5 | 0.7 | 2.0 | 1.5 | 0.7 | 2.0 | 2.0 | 0.6 | 1.8 | 2.3 | 0.6 | 1.8 | 2.5 | 0.6 | 1.6 | 2.1 |
| C36T37 | Manufacturing nec; recycling | 1.4 | 1.8 | 1.5 | 1.4 | 1.9 | 2.3 | 1.4 | 2.4 | 2.2 | 1.3 | 2.2 | 1.9 | 1.3 | 1.7 | 1.5 | 1.3 | 1.6 | 1.2 | 1.3 | 1.8 | 1.3 | 1.2 | 1.7 | 1.3 | 1.3 | 1.6 | 1.2 |
| C40T41 | Electricity, gas and water supply | 0.7 | 0.5 | 0.5 | 0.6 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.3 |
| C45 | Construction | 9.3 | 1.5 | 1.1 | 11.6 | 1.7 | 1.4 | 10.5 | 2.1 | 1.8 | 10.2 | 2.4 | 1.9 | 10.3 | 3.2 | 2.8 | 10.0 | 3.2 | 2.6 | 9.4 | 2.8 | 2.4 | 9.2 | 2.7 | 2.4 | 8.6 | 2.8 | 2.3 |
| C50T52 | Wholesale and retail trade; repairs | 15.8 | 20.2 | 18.9 | 15.5 | 19.8 | 19.3 | 17.1 | 22.1 | 20.7 | 17.4 | 22.5 | 20.7 | 17.5 | 22.9 | 20.5 | 17.3 | 22.3 | 20.1 | 17.3 | 22.4 | 21.1 | 17.1 | 22.5 | 21.7 | 17.3 | 23.0 | 20.9 |
| C55 | Hotels and restaurants | 4.6 | 4.5 | 4.6 | 5.2 | 5.4 | 5.5 | 5.9 | 5.8 | 7.7 | 6.1 | 5.8 | 9.3 | 6.2 | 5.1 | 9.5 | 6.4 | 5.2 | 8.2 | 6.4 | 5.3 | 7.8 | 6.5 | 5.3 | 8.0 | 6.6 | 5.2 | 7.9 |
| C60T64 | Transport and storage, post and telecommunication | 3.7 | 6.8 | 6.8 | 3.6 | 6.7 | 5.8 | 3.8 | 7.5 | 6.8 | 3.8 | 7.7 | 7.4 | 3.5 | 6.8 | 6.9 | 3.7 | 7.2 | 7.1 | 3.7 | 7.4 | 6.7 | 4.0 | 8.0 | 7.0 | 4.0 | 7.9 | 7.1 |
| C65T74 | Finance, Real Estate and business services | 6.7 | 6.3 | 6.3 | 7.2 | 6.9 | 7.7 | 7.8 | 7.8 | 8.3 | 8.0 | 8.2 | 8.8 | 8.3 | 8.4 | 8.9 | 8.6 | 8.7 | 9.9 | 9.0 | 9.4 | 11.2 | 9.3 | 9.5 | 10.8 | 9.4 | 9.8 | 11.2 |
| C75T95 | Community, social and personal services | 22.2 | 3.2 | 3.4 | 23.0 | 3.7 | 3.8 | 24.1 | 3.6 | 3.9 | 24.1 | 3.8 | 4.3 | 24.3 | 5.7 | 5.0 | 24.6 | 5.9 | 6.7 | 25.6 | 5.8 | 6.2 | 26.0 | 6.4 | 5.5 | 26.1 | 6.9 | 8.8 |

**Source:** Own calculations based on OECD - Trade in Employment Data.

**Note:**

**EMPN:** Portugal's Total Employment; **FFD_DEM:** Portugal's Employment embodied in foreign final demand; **FFD_DEM_GBR:** Portugal's employment embodied in UK final demand.

## Table A.5 - Portugal's Employment share sustained by Foreign Final demand within each industry

*1995-2011*

| ISIC Rev. 3 | | 1995 | | | 2000 | | | 2005 | | | 2006 | | | 2007 | | | 2008 | | | 2009 | | | 2010 | | | 2011 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR |
| **CTOTAL** | **TOTAL** | **100.0** | **22.6** | **2.4** | **100.0** | **23.5** | **2.9** | **100.0** | **22.9** | **2.7** | **100.0** | **24.6** | **2.7** | **100.0** | **25.1** | **2.6** | **100.0** | **25.3** | **2.3** | **100.0** | **23.6** | **1.9** | **100.0** | **24.9** | **2.0** | **100.0** | **27.9** | **2.1** |
| C01T05 | Agriculture, hunting, forestry and fishing | 100.0 | 19.2 | 1.9 | 100.0 | 21.9 | 2.3 | 100.0 | 22.5 | 2.5 | 100.0 | 24.0 | 2.5 | 100.0 | 24.5 | 2.6 | 100.0 | 26.1 | 2.3 | 100.0 | 24.7 | 1.8 | 100.0 | 26.9 | 2.2 | 100.0 | 30.1 | 2.2 |
| C10T14 | Mining and quarrying | 100.0 | 31.3 | 2.7 | 100.0 | 33.7 | 2.3 | 100.0 | 47.9 | 3.6 | 100.0 | 55.8 | 3.1 | 100.0 | 62.3 | 4.4 | 100.0 | 65.6 | 4.3 | 100.0 | 63.1 | 4.0 | 100.0 | 61.6 | 3.4 | 100.0 | 67.1 | 2.9 |
| C15T16 | Food products, beverages and tobacco | 100.0 | 17.2 | 2.0 | 100.0 | 20.9 | 2.6 | 100.0 | 21.9 | 3.1 | 100.0 | 24.1 | 3.0 | 100.0 | 26.1 | 3.3 | 100.0 | 27.1 | 3.0 | 100.0 | 25.9 | 2.4 | 100.0 | 27.8 | 2.9 | 100.0 | 29.1 | 2.8 |
| C17T19 | Textiles, textile products, leather and footwear | 100.0 | 52.8 | 7.6 | 100.0 | 62.9 | 10.1 | 100.0 | 56.4 | 9.2 | 100.0 | 57.4 | 8.2 | 100.0 | 59.1 | 8.1 | 100.0 | 58.9 | 6.9 | 100.0 | 56.2 | 5.5 | 100.0 | 58.1 | 5.6 | 100.0 | 60.1 | 4.7 |
| C20T22 | Wood, paper, paper products, printing and publishing | 100.0 | 48.9 | 4.3 | 100.0 | 51.4 | 4.0 | 100.0 | 51.9 | 3.4 | 100.0 | 54.9 | 3.7 | 100.0 | 52.9 | 3.5 | 100.0 | 52.7 | 3.1 | 100.0 | 51.9 | 2.7 | 100.0 | 55.1 | 3.0 | 100.0 | 60.4 | 3.3 |
| C23 | Coke, refined petroleum products and nuclear fuel | 100.0 | 28.6 | 7.1 | 100.0 | 36.4 | 0.0 | 100.0 | 40.0 | 10.0 | 100.0 | 40.0 | 0.0 | 100.0 | 40.0 | 0.0 | 100.0 | 40.0 | 10.0 | 100.0 | 50.0 | 10.0 | 100.0 | 44.4 | 0.0 | 100.0 | 44.4 | 0.0 |
| C24 | Chemicals and chemical products | 100.0 | 43.4 | 3.9 | 100.0 | 47.4 | 4.3 | 100.0 | 50.9 | 4.7 | 100.0 | 53.8 | 4.3 | 100.0 | 54.6 | 4.3 | 100.0 | 54.4 | 3.4 | 100.0 | 50.8 | 3.0 | 100.0 | 55.8 | 3.6 | 100.0 | 61.7 | 3.6 |
| C25 | Rubber and plastics products | 100.0 | 56.8 | 5.5 | 100.0 | 58.4 | 6.9 | 100.0 | 62.6 | 5.4 | 100.0 | 66.7 | 5.7 | 100.0 | 63.6 | 5.0 | 100.0 | 64.4 | 4.9 | 100.0 | 66.3 | 4.1 | 100.0 | 68.3 | 4.4 | 100.0 | 72.6 | 5.2 |
| C26 | Other non-metallic mineral products | 100.0 | 24.5 | 2.3 | 100.0 | 25.3 | 2.7 | 100.0 | 31.3 | 2.9 | 100.0 | 34.6 | 2.8 | 100.0 | 38.0 | 2.8 | 100.0 | 38.0 | 2.5 | 100.0 | 37.1 | 2.1 | 100.0 | 38.8 | 2.1 | 100.0 | 43.1 | 2.3 |
| C27 | Basic metals | 100.0 | 68.4 | 4.5 | 100.0 | 69.9 | 5.9 | 100.0 | 81.3 | 5.4 | 100.0 | 83.5 | 5.2 | 100.0 | 78.0 | 5.1 | 100.0 | 77.5 | 4.2 | 100.0 | 82.4 | 3.7 | 100.0 | 78.7 | 3.7 | 100.0 | 88.0 | 3.7 |
| C28 | Fabricated metal products | 100.0 | 36.3 | 3.2 | 100.0 | 38.5 | 4.1 | 100.0 | 43.2 | 4.0 | 100.0 | 47.9 | 3.9 | 100.0 | 52.2 | 4.4 | 100.0 | 53.6 | 4.6 | 100.0 | 52.0 | 3.3 | 100.0 | 51.9 | 3.9 | 100.0 | 52.6 | 3.3 |
| C29 | Machinery and equipment, nec | 100.0 | 48.8 | 3.4 | 100.0 | 47.9 | 3.9 | 100.0 | 53.8 | 3.0 | 100.0 | 58.7 | 3.6 | 100.0 | 50.0 | 3.3 | 100.0 | 54.3 | 3.0 | 100.0 | 51.2 | 2.4 | 100.0 | 53.0 | 2.5 | 100.0 | 72.0 | 3.1 |
| C30T33 | Electrical and optical equipment | 100.0 | 75.8 | 7.2 | 100.0 | 74.1 | 9.9 | 100.0 | 73.9 | 7.1 | 100.0 | 78.0 | 7.3 | 100.0 | 72.6 | 5.4 | 100.0 | 71.0 | 4.8 | 100.0 | 61.6 | 4.2 | 100.0 | 64.5 | 5.0 | 100.0 | 70.7 | 4.8 |
| C34T35 | Transport equipment | 100.0 | 77.1 | 7.3 | 100.0 | 71.8 | 11.7 | 100.0 | 75.9 | 10.5 | 100.0 | 78.7 | 9.2 | 100.0 | 71.4 | 5.6 | 100.0 | 71.4 | 6.4 | 100.0 | 68.5 | 6.8 | 100.0 | 71.5 | 7.9 | 100.0 | 72.7 | 7.0 |
| C36T37 | Manufacturing nec; recycling | 100.0 | 29.4 | 2.7 | 100.0 | 33.1 | 4.9 | 100.0 | 40.8 | 4.4 | 100.0 | 42.3 | 4.0 | 100.0 | 32.9 | 3.0 | 100.0 | 32.8 | 2.2 | 100.0 | 32.6 | 1.9 | 100.0 | 34.2 | 2.2 | 100.0 | 36.1 | 2.0 |
| C40T41 | Electricity, gas and water supply | 100.0 | 16.9 | 1.7 | 100.0 | 17.0 | 2.1 | 100.0 | 18.2 | 1.9 | 100.0 | 20.5 | 1.9 | 100.0 | 22.1 | 1.9 | 100.0 | 22.0 | 2.0 | 100.0 | 18.9 | 1.5 | 100.0 | 20.9 | 1.5 | 100.0 | 23.8 | 1.5 |
| C45 | Construction | 100.0 | 3.7 | 0.3 | 100.0 | 3.5 | 0.3 | 100.0 | 4.6 | 0.5 | 100.0 | 5.8 | 0.5 | 100.0 | 7.7 | 0.7 | 100.0 | 8.1 | 0.6 | 100.0 | 7.0 | 0.5 | 100.0 | 7.5 | 0.5 | 100.0 | 9.0 | 0.6 |
| C50T52 | Wholesale and retail trade; repairs | 100.0 | 28.9 | 2.9 | 100.0 | 30.1 | 3.7 | 100.0 | 29.6 | 3.3 | 100.0 | 31.8 | 3.2 | 100.0 | 32.9 | 3.0 | 100.0 | 32.7 | 2.7 | 100.0 | 30.5 | 2.3 | 100.0 | 32.9 | 2.5 | 100.0 | 37.0 | 2.5 |
| C55 | Hotels and restaurants | 100.0 | 21.9 | 2.4 | 100.0 | 24.3 | 3.1 | 100.0 | 22.3 | 3.5 | 100.0 | 23.2 | 4.1 | 100.0 | 20.7 | 4.0 | 100.0 | 20.8 | 3.0 | 100.0 | 19.4 | 2.3 | 100.0 | 20.2 | 2.4 | 100.0 | 22.0 | 2.5 |
| C60T64 | Transport and storage, post and telecommunication | 100.0 | 42.1 | 4.5 | 100.0 | 43.6 | 4.7 | 100.0 | 45.2 | 4.8 | 100.0 | 49.7 | 5.2 | 100.0 | 49.2 | 5.1 | 100.0 | 49.6 | 4.5 | 100.0 | 47.9 | 3.4 | 100.0 | 50.4 | 3.5 | 100.0 | 54.2 | 3.6 |
| C65T74 | Finance, Real Estate and business services | 100.0 | 21.3 | 2.3 | 100.0 | 22.6 | 3.2 | 100.0 | 22.8 | 2.9 | 100.0 | 25.0 | 2.9 | 100.0 | 25.2 | 2.8 | 100.0 | 25.5 | 2.7 | 100.0 | 24.5 | 2.3 | 100.0 | 25.7 | 2.3 | 100.0 | 29.0 | 2.5 |
| C75T95 | Community, social and personal services | 100.0 | 3.2 | 0.4 | 100.0 | 3.8 | 0.5 | 100.0 | 3.4 | 0.4 | 100.0 | 3.9 | 0.5 | 100.0 | 5.9 | 0.5 | 100.0 | 6.0 | 0.6 | 100.0 | 5.4 | 0.5 | 100.0 | 6.1 | 0.4 | 100.0 | 7.4 | 0.7 |

**Source:** Own calculations based on OECD - Trade in Employment Data.

**Note:**

**EMPN:** Portugal's Total Employment; **FFD_DEM:** Portugal's Employment embodied in foreign final demand; **FFD_DEM_GBR:** Portugal's employment embodied in UK final demand.

## Table A.6 - Portugal's Employment sustained by UK Final Demand as a share of total Employment embodied in Foreign Final Demand within each industry

*1995-2011*

| ISIC Rev. 3 | | 1995 | | | 2000 | | | 2005 | | | 2006 | | | 2007 | | | 2008 | | | 2009 | | | 2010 | | | 2011 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR | TOTAL | FFD DEM | FFD DEM GBR |
| **CTOTAL** | **TOTAL** | - | **100.0** | **10.8** | - | **100.0** | **12.5** | - | **100.0** | **11.8** | - | **100.0** | **10.8** | - | **100.0** | **10.4** | - | **100.0** | **9.2** | - | **100.0** | **7.9** | - | **100.0** | **8.0** | - | **100.0** | **7.4** |
| C01T05 | Agriculture, hunting, forestry and fishing | - | 100.0 | 10.1 | - | 100.0 | 10.7 | - | 100.0 | 11.1 | - | 100.0 | 10.3 | - | 100.0 | 10.6 | - | 100.0 | 8.9 | - | 100.0 | 7.4 | - | 100.0 | 8.0 | - | 100.0 | 7.3 |
| C10T14 | Mining and quarrying | - | 100.0 | 8.5 | - | 100.0 | 6.9 | - | 100.0 | 7.5 | - | 100.0 | 5.5 | - | 100.0 | 7.1 | - | 100.0 | 6.5 | - | 100.0 | 6.4 | - | 100.0 | 5.6 | - | 100.0 | 4.3 |
| C15T16 | Food products, beverages and tobacco | - | 100.0 | 11.4 | - | 100.0 | 12.4 | - | 100.0 | 14.3 | - | 100.0 | 12.5 | - | 100.0 | 12.8 | - | 100.0 | 11.0 | - | 100.0 | 9.1 | - | 100.0 | 10.3 | - | 100.0 | 9.7 |
| C17T19 | Textiles, textile products, leather and footwear | - | 100.0 | 14.5 | - | 100.0 | 16.0 | - | 100.0 | 16.3 | - | 100.0 | 14.2 | - | 100.0 | 13.8 | - | 100.0 | 11.6 | - | 100.0 | 9.8 | - | 100.0 | 9.6 | - | 100.0 | 7.9 |
| C20T22 | Wood, paper, paper products, printing and publishing | - | 100.0 | 8.7 | - | 100.0 | 7.7 | - | 100.0 | 6.6 | - | 100.0 | 6.7 | - | 100.0 | 6.6 | - | 100.0 | 5.9 | - | 100.0 | 5.2 | - | 100.0 | 5.4 | - | 100.0 | 5.5 |
| C23 | Coke, refined petroleum products and nuclear fuel | - | 100.0 | 25.0 | - | 100.0 | 0.0 | - | 100.0 | 25.0 | - | 100.0 | 0.0 | - | 100.0 | 0.0 | - | 100.0 | 25.0 | - | 100.0 | 20.0 | - | 100.0 | 0.0 | - | 100.0 | 0.0 |
| C24 | Chemicals and chemical products | - | 100.0 | 9.0 | - | 100.0 | 9.1 | - | 100.0 | 9.2 | - | 100.0 | 8.0 | - | 100.0 | 8.0 | - | 100.0 | 6.3 | - | 100.0 | 5.9 | - | 100.0 | 6.4 | - | 100.0 | 5.8 |
| C25 | Rubber and plastics products | - | 100.0 | 9.6 | - | 100.0 | 11.9 | - | 100.0 | 8.7 | - | 100.0 | 8.5 | - | 100.0 | 7.8 | - | 100.0 | 7.6 | - | 100.0 | 6.2 | - | 100.0 | 6.5 | - | 100.0 | 7.1 |
| C26 | Other non-metallic mineral products | - | 100.0 | 9.3 | - | 100.0 | 10.6 | - | 100.0 | 9.3 | - | 100.0 | 8.1 | - | 100.0 | 7.3 | - | 100.0 | 6.5 | - | 100.0 | 5.7 | - | 100.0 | 5.3 | - | 100.0 | 5.3 |
| C27 | Basic metals | - | 100.0 | 6.6 | - | 100.0 | 8.4 | - | 100.0 | 6.6 | - | 100.0 | 6.3 | - | 100.0 | 6.5 | - | 100.0 | 5.4 | - | 100.0 | 4.5 | - | 100.0 | 4.7 | - | 100.0 | 4.2 |
| C28 | Fabricated metal products | - | 100.0 | 8.9 | - | 100.0 | 10.8 | - | 100.0 | 9.4 | - | 100.0 | 8.2 | - | 100.0 | 8.5 | - | 100.0 | 8.6 | - | 100.0 | 6.4 | - | 100.0 | 7.5 | - | 100.0 | 6.3 |
| C29 | Machinery and equipment, nec | - | 100.0 | 6.9 | - | 100.0 | 8.1 | - | 100.0 | 5.6 | - | 100.0 | 6.2 | - | 100.0 | 6.6 | - | 100.0 | 5.6 | - | 100.0 | 4.7 | - | 100.0 | 4.8 | - | 100.0 | 4.3 |
| C30T33 | Electrical and optical equipment | - | 100.0 | 9.5 | - | 100.0 | 13.4 | - | 100.0 | 9.7 | - | 100.0 | 9.4 | - | 100.0 | 7.5 | - | 100.0 | 6.8 | - | 100.0 | 6.8 | - | 100.0 | 7.8 | - | 100.0 | 6.8 |
| C34T35 | Transport equipment | - | 100.0 | 9.5 | - | 100.0 | 16.3 | - | 100.0 | 13.9 | - | 100.0 | 11.6 | - | 100.0 | 7.8 | - | 100.0 | 9.0 | - | 100.0 | 10.0 | - | 100.0 | 11.0 | - | 100.0 | 9.6 |
| C36T37 | Manufacturing nec; recycling | - | 100.0 | 9.3 | - | 100.0 | 14.9 | - | 100.0 | 10.8 | - | 100.0 | 9.5 | - | 100.0 | 9.0 | - | 100.0 | 6.7 | - | 100.0 | 5.9 | - | 100.0 | 6.3 | - | 100.0 | 5.6 |
| C40T41 | Electricity, gas and water supply | - | 100.0 | 9.8 | - | 100.0 | 12.5 | - | 100.0 | 10.3 | - | 100.0 | 9.1 | - | 100.0 | 8.5 | - | 100.0 | 8.9 | - | 100.0 | 7.7 | - | 100.0 | 7.0 | - | 100.0 | 6.1 |
| C45 | Construction | - | 100.0 | 7.8 | - | 100.0 | 9.9 | - | 100.0 | 9.8 | - | 100.0 | 8.7 | - | 100.0 | 9.0 | - | 100.0 | 7.6 | - | 100.0 | 6.7 | - | 100.0 | 6.9 | - | 100.0 | 6.3 |
| C50T52 | Wholesale and retail trade; repairs | - | 100.0 | 10.1 | - | 100.0 | 12.2 | - | 100.0 | 11.0 | - | 100.0 | 9.9 | - | 100.0 | 9.3 | - | 100.0 | 8.3 | - | 100.0 | 7.5 | - | 100.0 | 7.7 | - | 100.0 | 6.7 |
| C55 | Hotels and restaurants | - | 100.0 | 11.1 | - | 100.0 | 12.7 | - | 100.0 | 15.8 | - | 100.0 | 17.5 | - | 100.0 | 19.1 | - | 100.0 | 14.3 | - | 100.0 | 11.7 | - | 100.0 | 12.0 | - | 100.0 | 11.2 |
| C60T64 | Transport and storage, post and telecommunication | - | 100.0 | 10.8 | - | 100.0 | 10.9 | - | 100.0 | 10.7 | - | 100.0 | 10.4 | - | 100.0 | 10.4 | - | 100.0 | 9.0 | - | 100.0 | 7.2 | - | 100.0 | 7.0 | - | 100.0 | 6.7 |
| C65T74 | Finance, Real Estate and business services | - | 100.0 | 10.7 | - | 100.0 | 14.0 | - | 100.0 | 12.6 | - | 100.0 | 11.7 | - | 100.0 | 11.1 | - | 100.0 | 10.4 | - | 100.0 | 9.5 | - | 100.0 | 9.0 | - | 100.0 | 8.5 |
| C75T95 | Community, social and personal services | - | 100.0 | 11.3 | - | 100.0 | 12.7 | - | 100.0 | 12.9 | - | 100.0 | 12.2 | - | 100.0 | 9.2 | - | 100.0 | 10.5 | - | 100.0 | 8.4 | - | 100.0 | 6.9 | - | 100.0 | 9.4 |

**Source:** Own calculations based on OECD - Trade in Employment Data.

**Note:**

**EMPN:** Portugal's Total Employment; **FFD_DEM:** Portugal's Employment embodied in foreign final demand; **FFD_DEM_GBR:** Portugal's employment embodied in UK final demand.

## Table A.7 - Portugal's reliance on the UK market

*1995 vs 2011*

| ISIC Rev. 3 | | Domestic Value Added *activated by UK final demand* | | | | | | | | | | Domestic Employment *sustained by UK final demand* | | | | | | | | | | Domestic GFCF *Value Added content imported from the UK* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Structure (%) | | | | | | Weight within each sector (%) | | | | Structure (%) | | | | | | Weight within each sector (%) | | | | Structure (%) | | | | | | Weight within each supplier sector (%) | | | |
| | | Rank 2011 | % of Total VA Exports to the UK | | % of Total VA Exports to the World | | % of Total Value Added | | % of Total VA Exports to the World | | % of Total Value Added | Rank 2011 | % of Total Employment Activated by the UK | | % of Total Employment Activated by total FFD | | % of Total Employment | | % of Total Employment activated by total FFD | | % of Total Employment | Rank 2011 | % of Total GFCF Import VA Content from the UK | | % of Total GFCF Import VA Content from the World | | % of Total GFCF | | % of Total GFCF Import VA Content from the World | | % of Total GFCF VA content | |
| | | | 1995 | 2011 | 1995 | 2011 | 1995 | 2011 | 1995 | 2011 | 1995 | 2011 | 1995 | 2011 | 1995 | 2011 | 1995 | 2011 | 1995 | 2011 | 1995 | 2011 | 1995 | 2011 | 1995 | 2011 | 1995 | 2011 | 1995 | 2011 | 1995 | 2011 |
| CTOTAL | TOTAL | - | 100.0 | **100.0** | 10.2 | **7.1** | 2.2 | **1.8** | 10.2 | **7.1** | 2.2 | **1.8** | - | 100.0 | **100.0** | 10.8 | **7.4** | 2.4 | **2.1** | 10.8 | **7.4** | 2.4 | **2.1** | - | 100.0 | **100.0** | 7.0 | **4.7** | 2.4 | **1.7** | 7.0 | **4.7** | 2.4 | **1.7** |
| C01T05 | Agriculture, hunting, forestry and fishing | *11* | 5.1 | 2.8 | 0.5 | 0.2 | 0.1 | 0.0 | 10.1 | 7.2 | 1.9 | 2.2 | *2* | 11.5 | 11.8 | 1.2 | 0.9 | 0.3 | 0.2 | 10.1 | 7.3 | 1.9 | 2.2 | *21* | 0.6 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 2.9 | 1.3 | 0.8 | 0.6 |
| C10T14 | Mining and quarrying | *19* | 0.9 | 0.8 | 0.1 | 0.1 | 0.0 | 0.0 | 8.6 | 4.4 | 2.7 | 3.0 | *19* | 0.4 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 8.5 | 4.3 | 2.7 | 2.9 | *7* | 3.7 | 3.7 | 0.3 | 0.2 | 0.1 | 0.1 | 4.4 | 1.4 | 3.4 | 1.4 |
| C15T16 | Food products, beverages and tobacco | *7* | 1.7 | 3.5 | 0.2 | 0.2 | 0.0 | 0.1 | 11.2 | 9.5 | 1.9 | 2.8 | *8* | 2.1 | 3.3 | 0.2 | 0.2 | 0.1 | 0.1 | 11.4 | 9.7 | 2.0 | 2.8 | *20* | 0.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 9.0 | 5.1 | 5.7 | 2.9 |
| C17T19 | Textiles, textile products, leather and footwear | *6* | 14.7 | 5.6 | 1.5 | 0.4 | 0.3 | 0.1 | 14.5 | 7.9 | 7.6 | 4.7 | *4* | 25.3 | 10.0 | 2.7 | 0.7 | 0.6 | 0.2 | 14.5 | 7.9 | 7.6 | 4.7 | *22* | 0.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 6.2 | 2.5 | 3.1 | 1.5 |
| C20T22 | Wood, paper, paper products, printing and publishing | *10* | 4.6 | 2.9 | 0.5 | 0.2 | 0.1 | 0.1 | 9.3 | 5.6 | 4.1 | 3.2 | *9* | 4.4 | 2.9 | 0.5 | 0.2 | 0.1 | 0.1 | 8.7 | 5.5 | 4.3 | 3.3 | *12* | 2.8 | 2.0 | 0.2 | 0.1 | 0.1 | 0.0 | 7.5 | 4.1 | 3.3 | 2.1 |
| C23 | Coke, refined petroleum products and nuclear fuel | *22* | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 11.3 | 6.2 | 3.4 | 3.2 | *22* | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 25.0 | 0.0 | 7.1 | 0.0 | *18* | 1.0 | 0.7 | 0.1 | 0.0 | 0.0 | 0.0 | 8.4 | 3.6 | 8.1 | 3.2 |
| C24 | Chemicals and chemical products | *17* | 2.3 | 1.5 | 0.2 | 0.1 | 0.1 | 0.0 | 9.0 | 5.7 | 3.9 | 3.5 | *18* | 0.9 | 0.7 | 0.1 | 0.1 | 0.0 | 0.0 | 9.0 | 5.8 | 3.9 | 3.6 | *8* | 3.5 | 3.5 | 0.2 | 0.2 | 0.1 | 0.1 | 7.8 | 6.5 | 5.9 | 5.7 |
| C25 | Rubber and plastics products | *15* | 1.4 | 1.6 | 0.1 | 0.1 | 0.0 | 0.0 | 9.6 | 7.0 | 5.5 | 5.1 | *15* | 1.1 | 1.3 | 0.1 | 0.1 | 0.0 | 0.0 | 9.6 | 7.1 | 5.5 | 5.2 | *16* | 2.0 | 1.1 | 0.1 | 0.1 | 0.0 | 0.0 | 7.0 | 3.3 | 5.2 | 2.4 |
| C26 | Other non-metallic mineral products | *15* | 2.3 | 1.6 | 0.2 | 0.1 | 0.1 | 0.0 | 9.0 | 5.2 | 2.2 | 2.2 | *14* | 1.7 | 1.4 | 0.2 | 0.1 | 0.0 | 0.0 | 9.3 | 5.3 | 2.3 | 2.3 | *17* | 1.3 | 0.8 | 0.1 | 0.0 | 0.0 | 0.0 | 4.5 | 2.4 | 0.5 | 0.5 |
| C27 | Basic metals | *20* | 1.2 | 0.8 | 0.1 | 0.1 | 0.0 | 0.0 | 6.3 | 4.3 | 4.3 | 3.8 | *19* | 0.6 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 | 6.6 | 4.2 | 4.5 | 3.7 | *15* | 4.6 | 1.2 | 0.3 | 0.1 | 0.1 | 0.0 | 6.2 | 1.6 | 5.0 | 1.5 |
| C28 | Fabricated metal products | *13* | 1.6 | 2.1 | 0.2 | 0.1 | 0.0 | 0.0 | 8.8 | 6.1 | 3.2 | 3.2 | *10* | 2.1 | 2.7 | 0.2 | 0.2 | 0.1 | 0.1 | 8.9 | 6.3 | 3.2 | 3.3 | *10* | 4.3 | 2.5 | 0.3 | 0.1 | 0.1 | 0.0 | 6.6 | 2.7 | 3.2 | 1.3 |
| C29 | Machinery and equipment, nec | *18* | 1.2 | 1.3 | 0.1 | 0.1 | 0.0 | 0.0 | 7.0 | 4.1 | 3.4 | 3.0 | *16* | 1.4 | 1.2 | 0.1 | 0.1 | 0.0 | 0.0 | 6.9 | 4.3 | 3.4 | 3.1 | *6* | 8.7 | 4.7 | 0.6 | 0.2 | 0.2 | 0.1 | 6.8 | 3.3 | 4.8 | 2.5 |
| C30T33 | Electrical and optical equipment | *12* | 3.8 | 2.1 | 0.4 | 0.2 | 0.1 | 0.0 | 9.5 | 6.8 | 7.2 | 4.9 | *13* | 3.4 | 1.8 | 0.4 | 0.1 | 0.1 | 0.0 | 9.5 | 6.8 | 7.2 | 4.8 | *3* | 12.7 | 10.3 | 0.9 | 0.5 | 0.3 | 0.2 | 8.9 | 6.6 | 7.4 | 5.5 |
| C34T35 | Transport equipment | *8* | 2.1 | 3.3 | 0.2 | 0.2 | 0.0 | 0.1 | 10.5 | 10.2 | 8.5 | 7.9 | *12* | 2.3 | 2.1 | 0.2 | 0.2 | 0.1 | 0.0 | 9.5 | 9.6 | 7.3 | 7.0 | *11* | 6.8 | 2.3 | 0.5 | 0.1 | 0.2 | 0.0 | 7.3 | 3.3 | 6.6 | 2.7 |
| C36T37 | Manufacturing nec; recycling | *21* | 1.1 | 0.8 | 0.1 | 0.1 | 0.0 | 0.0 | 9.3 | 5.5 | 2.7 | 2.0 | *16* | 1.5 | 1.2 | 0.2 | 0.1 | 0.0 | 0.0 | 9.3 | 5.6 | 2.7 | 2.0 | *9* | 0.8 | 3.0 | 0.1 | 0.1 | 0.0 | 0.1 | 7.4 | 5.2 | 2.7 | 2.7 |
| C40T41 | Electricity, gas and water supply | *9* | 2.2 | 3.0 | 0.2 | 0.2 | 0.0 | 0.1 | 10.0 | 6.8 | 1.7 | 1.6 | *21* | 0.5 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 9.8 | 6.1 | 1.7 | 1.5 | *14* | 1.7 | 1.3 | 0.1 | 0.1 | 0.0 | 0.0 | 5.8 | 2.8 | 2.1 | 1.3 |
| C45 | Construction | *14* | 0.9 | 1.8 | 0.1 | 0.1 | 0.0 | 0.0 | 7.2 | 5.8 | 0.3 | 0.6 | *11* | 1.1 | 2.3 | 0.1 | 0.2 | 0.0 | 0.0 | 7.8 | 6.3 | 0.3 | 0.6 | *13* | 0.7 | 1.7 | 0.0 | 0.1 | 0.0 | 0.0 | 2.7 | 6.1 | 0.1 | 0.1 |
| C50T52 | Wholesale and retail trade; repairs | *2* | 18.6 | 17.8 | 1.9 | 1.3 | 0.4 | 0.3 | 10.1 | 6.6 | 2.9 | 2.5 | *1* | 18.9 | 20.9 | 2.0 | 1.5 | 0.5 | 0.4 | 10.1 | 6.7 | 2.9 | 2.5 | *2* | 15.0 | 16.7 | 1.0 | 0.8 | 0.4 | 0.3 | 6.7 | 5.1 | 3.0 | 2.4 |
| C55 | Hotels and restaurants | *5* | 4.2 | 6.3 | 0.4 | 0.4 | 0.1 | 0.1 | 11.2 | 11.1 | 2.5 | 2.5 | *6* | 4.6 | 7.9 | 0.5 | 0.6 | 0.1 | 0.2 | 11.1 | 11.2 | 2.4 | 2.5 | *19* | 0.3 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 2.8 | 4.5 | 1.0 | 1.5 |
| C60T64 | Transport and storage, post and telecommunication | *3* | 12.2 | 12.0 | 1.2 | 0.9 | 0.3 | 0.2 | 10.4 | 6.2 | 3.9 | 3.0 | *7* | 6.8 | 7.1 | 0.7 | 0.5 | 0.2 | 0.1 | 10.8 | 6.7 | 4.5 | 3.6 | *4* | 6.2 | 5.8 | 0.4 | 0.3 | 0.1 | 0.1 | 6.7 | 4.3 | 3.4 | 2.3 |
| C65T74 | Finance, Real Estate and business services | *1* | 14.9 | 20.7 | 1.5 | 1.5 | 0.3 | 0.4 | 9.5 | 7.5 | 1.7 | 1.6 | *3* | 6.3 | 11.2 | 0.7 | 0.8 | 0.2 | 0.2 | 10.7 | 8.5 | 2.3 | 2.5 | *1* | 19.9 | 31.2 | 1.4 | 1.5 | 0.5 | 0.5 | 8.2 | 7.5 | 2.3 | 2.0 |
| C75T95 | Community, social and personal services | *4* | 3.0 | 7.6 | 0.3 | 0.5 | 0.1 | 0.1 | 11.4 | 9.2 | 0.3 | 0.5 | *5* | 3.4 | 8.8 | 0.4 | 0.6 | 0.1 | 0.2 | 11.3 | 9.4 | 0.4 | 0.7 | *5* | 2.8 | 5.7 | 0.2 | 0.3 | 0.1 | 0.1 | 8.6 | 7.7 | 2.4 | 2.2 |

**Source:** GEE, based on data from OECD - Trade in Value Added (TiVA) and Trade in Employment (TiM), December 2016.

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