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Allocation of Resources between the Tradable and Non-Tradable Sectors: Developing a new Identification Strategy for the Tradable Sector[1]

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Abstract

Portugal implemented a large number of structural reforms in the recent years, which are expected to enhance the allocation of resources in the economy, namely from the non-tradable to the tradable sector. We argue that the methodology to identify the tradable sector used by some international institutions is outdated and may hamper an accurate assessment of the structural progress achieved so far. Based on an enhanced methodology to identify the tradable sector of the economy, we provide more solid ground for future assessments of structural economic developments. By looking at some standard economic indicators, we show that our new criterion pro-vides a different picture of the resource allocation in the Portuguese economy and of the adjustment of the recent years as compared to the one provided by commonly used criteria.

JEL Classification: D61, F14 e D04

Keywords: Allocative Efficiency, Trade, Microeconomic Policy

1 The views expressed are those of the authors and not necessarily the ones of the Ministry for the Economy, the Finance Ministry or Nova SBE. The authors would like to thank Susana Peralta for the useful discussions and the comprehensive comments to an earlier draft and to Ana Martins, João Amador, José Carlos Pereira, Guida Nogueira, Ricardo Pinheiro Alves, Samuel Sanches, Sílvia Santos e Vanda Dores for comments and suggestions.
2 GEE – Portuguese Ministry for the Economy and Nova SBE.
3 GPEARI – Portuguese Finance Ministry and Nova SBE.

1 - Introduction

The inefficient allocation of resources between tradable and non-tradable sectors was identified as one of the root causes for the macroeconomic imbalances experienced in Portugal over the last decades, and therefore one of the central targets of the comprehensive and broad-based structural reforms package implemented within the 2011-2014 Adjustment Program. Rebalancing the Portuguese economy towards the tradable sector is expected to increase the economy's flexibility and competitiveness, enhancing potential growth. By tackling a fundamental underlying assumption of structural transformation measurement – the tradable/non-tradable division criterion applied – we provide a more solid ground upon which structural transformation can be accurately measured and, accordingly, better inform future policy actions targeted at an efficient allocation of resources between the tradable (TRD) and non-tradable (NTRD) sectors.

To date, economic assessment reports produced by international institutions usually use one of two criteria: the static rule-of-thumb of considering the manufacturing sector as the only tradable sector – a criterion that is becoming more obsolete as technological progress decisively unleashes the tradable potential of service sectors; or a dynamic (yet partial) evidence-based criterion that uses export data (namely, the export-to-output ratio) to determine a sector's tradability – defining tradable sectors as (solely) exporting ones.

We build on this second approach and classify a sector as tradable if part of its final output is either exported or imported. Indeed, one looks at tradability with the goal of identifying sectors that are exposed to international competition – this may be the case for an exporting company when competing in external markets but also for a company operating in the domestic market but facing the competition of external firms. Therefore, this extension, which entails significant computational challenges, allows fora given sector that is not an exporter to be classified as tradable as long as other countries are exporting the same kind of products to the country. By numerically capturing the tradability of each sector, our criterion closes a gap in the methodology that has been repeatedly identified by both previous authors and international institutions, while guaranteeing the criterion's parsimony in application and hence its policy suitability.

In this article, we compare the results obtained with our dynamic criterion (henceforth, the FiPEI – Final Product Exports and Imports – criterion) to the ones obtained by employing two other widely used criteria: the static IMF criterion; and the dynamic[4], yet only based on exported content, criterion of Amador and Soares (2012)[5]. The results show the relevance of considering the FiPEI criteria as a more accurate measure of tradability.

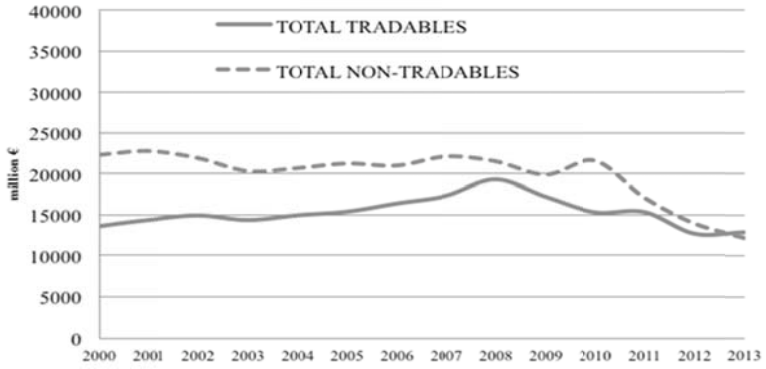
The use of the FiPEI criterion in elementary measurements of the distribution of resources between tradable and non-tradable sector indicates that a misspecification of the tradable sector compromises the accurate assessment of resource allocation and flow patterns, which could ultimately hinder structural change measurements. The FiPEI criterion identifies a larger tradable sector, thus portraying a more efficient resource allocation than international institutions' country-monitoring reports. Figure 1 offers an initial depiction of the differences in allocation of resources across TRD and NTRD sectors for the case of investment using different tradable/non-tradable criteria.

4 We classify both the Amador and Soares (2012) and the FiPEI criteria as dynamic given their ability to classify a sector as tradable according to their current exported, or exported and imported, respectively, content.
5 For comparison purposes, we use a less conservative threshold of 10%, instead of the 15% originally proposed by the authors. The change in the threshold allows a direct comparison between the newly developed and the Amador and Soares criterion.

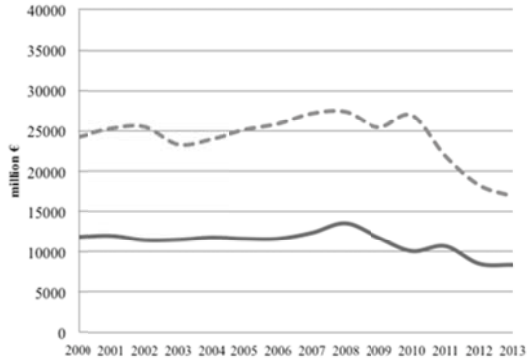
Figure 1 – Investment (Gross Fixed Capital Formation) in the TRD and non-TRD sectors

(2000-2013), INE

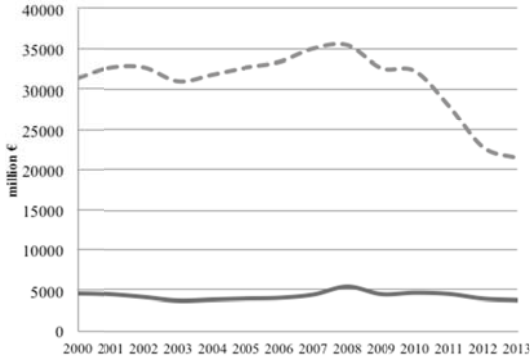
Panel (a) – FiPEI criterion



Panel (b) – IMF criterion



Panel (a) – Amador & Soares* (2012)



2 - Background – the need to measure structural adjustment

In the last two decades, the Portuguese economy averaged an annual economic growth of 1.1%: an average of 4.1% between 1996 and 2000 and zero growth for the remainder period. This sluggish economic behavior is largely due to structural problems that potentiated an array of macroeconomic imbalances:[6]

- The existence of traditionally sheltered sectors, in particular in a context of low credit restrictions, offering excessive rents and therefore distorting the allocation of resources in the economy, away from the TRD sector. Important improvements were achieved in the recent years: the Portuguese economy climbed 14 positions in the OECD's Product Market Regulation Index[7] between 2008 and 2013, having become less strict in almost all barriers to trade, investment and entrepreneurship indicators in 2013.[8]
- The Chronic current account deficits that fed large negative net international investment positions and high private indebtedness. Again, recent performance showed marked improvements, with positive current account surplus of 1.4% and 0.6% in 2013 and 2014, respectively. The increase of almost 13 percentage

6 Unless otherwise stated, all the features of the Portuguese economy presented below are extensively discussed in the periodic reports about the Portuguese economy issued by the IMF and the EC (See, for e.g., European Commission, Alert Mechanism Report (2016).
7 PMR (index scale 0 to 6 from least to most restrictive) is a comprehensive and internationally comparable set of indicators that measure the degree to which policies promote or inhibit competition in areas of the product market where competition is viable. They measure the economy-wide regulatory and market environments as proxied by state control variables, barriers to entrepreneurship and barriers to trade and investment (OECD (2013), Product Market Regulation Database).
8 Latest available year.

points was one of the largest in the EU, only surpassed by four other EU countries. However, the cumulated high external indebtedness still weighs on growth.

- An accumulation of public deficits since the 1970s, often aggravated by substantial off-budget spending and large tax evasion.[9] Simultaneously, the private sector – both households and non-financial corporations – has remained over indebted, as illustrated in Figure 2, reflecting the extent of over-borrowing due to easy and at low cost credit prior to the crisis. Deleveraging is proceeding but, again, the legacy effects hinder a full recovery.
- Also, Portugal had the strictest labour market legislation in 2008 in Southern Europe, as measured by the OECD's Employment Protection Legislation (EPL) indicators. As a result of the comprehensive set of labour market reforms pursued, it now exhibits the largest loosening of labour market legislation.[10,11]

The unfolding of the 2007-08 financial crisis, which culminated in a sudden stop of credit inflows to Europe's highest indebted countries, led the Portuguese government to negotiate a three-year Adjustment Program with the ECB, the EC and the IMF which aimed, inter alia, at solving structural problems of the Portuguese economy.

International institutions, albeit recognizing the progress achieved in the recent years, continue to perceive the need to maintain reform momentum beyond the horizon of the program and towards the export sector. However, implementation of further effective reforms requires taking stock of the impact yielded by the ones undertaken so far. Having in mind that the utmost goal of the reform agenda is to ensure a more efficient allocation of resources, this paper aims at providing an accurate measure of the tradable sector, thereby allowing policy makers to assess the degree of structural transformation of the Portuguese economy in the recent years via the reallocation of resources from the NTRD to the TRD sector and to identify possible priority areas.

3 – Literature Review

As discussed before, an assessment of the re-allocation of resources towards the TRD sector hinges on an accurate criterion to distinguish between TRD and NTRD. However, and despite its relevance for policy design, a consensual criterion remains to be worked out in the academic literature. The most commonly used criteria, the exports-to-output ratio, provides only a partial picture as it fails to incorporate those products that, while not (yet) exported, are already being imported and are thus tradable. The criteria used by international institutions are usually static and have become outdated.[12] In this section we review both strands of literature.

9 Despite the relatively high general government sector debt, the country's fiscal adjustment is set to slow down in the coming years, according to EC's projections. Macro Imbalances Procedure (MIP) Scoreboard, European Commission, Alert Mechanism Report (2016).
10 We compare Portugal with other Southern European countries undergoing similar economic adjustment processes at the time, and with Germany, as one of Europe's example of a stable labour market environment (as documented by its EPL legislation, in Figure 3, that has remained unchanged between 2008 and 2013.
11 Reforms targeted not only a decline in unit labour costs, but also the recoupment of competitiveness through enhanced training and employment policies, as well as educational reforms.
12 Spence and Hlatshwayo (2011) note that internet connectivity, innovative software and cross-border specialization allows services which were not traded internationally some decades ago, to now be performed remotely at lower cost, often in another country.

a. Academic Literature

The TRD/NTRD dichotomy is modeled[13] as having special relevance for, inter alia, the effects of devaluation, the purchasing power parity theory of exchange rates, the determination of inflation in open economies and the specification and estimation of international trade flows (Goldstein and Officer, 1979). Empirical work has always lagged behind theoretical developments, due in large part to data limitations.

Goldstein and Officer (1979) developed one of first comprehensive TRD/NTRD criterion. The authors use both trade flows and market behavior when identifying TRD and NTRD commodities or industries, defining as TRD, not only commodities that are actually traded, but also those which could be internationally traded at some plausible range of variation in relative prices. The authors find that the degree of internationally commodity arbitrage, as measured by cross-country price correlation, is higher for TRD than for NTRD; and that TRD are closer substitutes for imports than NTRD.

Dwyer (1992) also strands away from the standard practice of subjectively assigning broad industry categories to the TRD and NTRD sectors, and rather classifying the sectors based on disaggregated input-output table data. Each industry's output is classified to a sector according to the export or import substituting propensity of its output. The decision rule for the sectoral allocation is based upon the orientation of production, as measured by import penetration and export orientation ratios. This method was later applied to Australia by Knight and Johnson (1997).

Jensen and Kletzer (2005) developed an approach to identify activities that were potentially exposed to international trade at a more detailed level (2-digit industry codes). with particular focus on service sectors. The geographic concentration of service activities within the United States, as measured by the locational Gini, is used as a proxy for the domestic tradability of service activities.[14]

The US Treasury was one of the first institutions to add the volume of service exports to value-added production GDP of industries most likely to produce tradable output, namely, the primary sector and manufacturing. Authors such as Amador (2012) and Dixon et al (2004) identify as TRD sectors all manufacturing markets plus those exhibiting an export-to-sales ratio above 15 percent, upon recognition that “several non-manufacturing sectors exhibited relatively high export-to-sales ratios”. These methodologies, however, still fail at fully capturing the tradability of each sector, as they fail to incorporate imports, quite often on the grounds of computational difficulties (as discussed in section V).

b. International Institutions’ Methodology

International institutions such as the IMF or the ECB have traditionally proxied the TRD sector with the manufacturing one, for parsimony. [15] Such classification is still adopted nowadays in country-assessment reports. Some institutional bodies nuance this ad-hoc classification. The macro-economic database of the European Commission's Directorate General for Economic and Financial Affairs (AMECO) includes in the TRD sector manufacturing and mining, agriculture and fisheries, but also trade, hotels, transports and utilities; the most recent classification of the TRD sector by the European Commission encompasses agriculture, forestry and fishing, industry, wholesale and retail trade, transportation and storage, accommodation and food service activities, and, in some cases, also the energy, water supply and sewerage sectors.[16] The ECB (2012) added to the traditional manufacturing and primary sector accommodation and food service activities, information and communication activities and financial services.[17]

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13 Relevant literature includes the work of Salter (1959), Swan (1963), Mundell (1971), Dornbusch (1973) and Kravis and Lipsey (1978) on the effects on exchange rate changes; of Balassa (1964), McKinnon (1971), and Officer (1976) on productivity bias in the purchasing power parity theory of exchange rates; of Aukrust (1970), Edgren and others (1969), and Cross and Laidler (1976) on the determination of inflation in open economies; and of Murray and Ginman (1976), Clements (1977), and Goldstein and others (1980) on the estimation of trade flows.
14 This methodology should be applied cautiously as e.g. legal services, although highly tradable at a national level, are not so internationally.
15 See, for example, Tressel and Wang (IMF, 2014); Portugal – Selected Issues (IMF, 2015); Occasional Paper Series No. 139 (ECB, 2012).
16 See, for example, EC’s Quarterly Report on the Euro Area, Volume 12 No 4,
17 ECB (2012), Occasional Paper Series No. 139

The methodologies of international institutions –the focus of comparison for this study's results –, have important limitations: crude proxies are static; the manufacturing sector represented only around 14% of total gross value added by the economy between 2009 and 2013, and around 25% of the TRD output produced in that period. Basing structural assessments on proxies, as the TRD/manufacturing one, which disregard roughly three quarters of TRD output, has substantial impact on subsequent policy assessments.

4 – Methodology

We aim at bringing the most recent advances in the TRD/NTRD classification provided by the academic literature to the policy debate, which has so far mostly relied on ad-hoc static distinctions. The tradable/non-tradable classification criterion developed in this article captures the effects of technological progress on a sector's tradability over time[18]: by adding imports to exports, we are able to compute a trade-to-output ratio that captures the tradable nature of each sector. The goal is to capture sectors that are subject to international competition, either because they export or because they operate in the internal market but face competition from foreign companies. We use imports and exports by type of final product in the computation of a trade-to-output ratio (TOR)[19]. An industry shall be classified as tradable if its trade-to-output ratio exceeds 10%. Our novelty lies in measurement of international transactions (the numerator in our modified TOR): imports and exports of a given sector are measured as all final goods and services, exported or imported, as classified in the second revision of the industry classification Numenclature Générale des Activités Economiques [NACE] codes. A list of the detailed steps taken in construction of this methodology can be found on the complete version of this article.

Since, for most sectors, data relative to the exports/imports of goods by type of good are compiled by the National Statistics Institute (INE), while international transactions of services are accounted for in the Balance of Payments compiled by the Bank of Portugal (BdP), an allocation key had to be developed and applied so as to reconcile the classification of services as presented in the Balance of Payments (following Balance of Payments Methodology 6) with the classification of goods as presented by INE (CAE Rev. 3). This process is decribed in detail in the complete version of this article.

5 – Tradable/Non-Tradable Sector Classification yielded by the FiPEI criterion

The classification results yielded by our TRD/NTRD methodology (the FiPEI criterion) are presented and discussed in section V of the full article. In Table 1, the composition of the TRD and NTRD sectors, from 2010 to 2013, is shown, with the majority of sectors exhibiting an enhancement in their tradable character (i.e., relative amounts of final goods and services exported and imported) in the period during analysis.

Table 1 – TORs for all business sectors (as coded in CAE Rev.3 and NACE Rev. 2, 1-digit industry classification) in the Portuguese Economy, between 2010-2013, following the GVA criterion, TRD sectors are green; NTRD ones red.

The decision rule is that if the degree of potential import substitution or export orientation (when rounded) for an industry is greater than or equal to the threshold value of 10% then the relevant industry is eligible for inclusion in the tradable sector. When an industry is eligible for inclusion in both the importable and the exportable sectors, it is highlighted in green in the table. No data on imports/exports by goods is compiled either by the BdP or INE for the following sectors: L, O, P and Q. Although

18 Spence and Hit (2011) state that both the decrease in transport costs and the reduction in the degree of international trade protectionism over the last decades have eroded the two most imposing barriers to tradability for business sectors.
19 We account for final products because data on the imports of each sector does not yield any information about the tradable potential of that sector's final products (for e.g., a service sector may import machinery, but that does not qualify as imports of that sector's kind of final product, and we would not therefore know whether that sector's final produce can be traded internationally).

data for the S sector was available, the TORs equaled zero in every single yearly period of the analysis. For that reason, the sector is thenceforth left aside.

Industry (as classified in CAE Rev. 3)		2010	2011	2012	2013
A	Agriculture, Forestry and Fishing	110,8%	132,6%	132,0%	124,8%
B	Mining and quarrying	980,5%	1294,8%	1557,1%	1678,5%
C	Manufacturing	401,0%	441,4%	448,3%	452,2%
D	Electricity, gas, steam and air conditioning supply	7,3%	9,7%	12,3%	11,3%
E	Water supply; Sewerage; Waste management	9,0%	9,7%	8,4%	7,4%
F	Construction	6,6%	8,3%	9,2%	11,4%
G	Wholesale and retail trade	4,6%	4,6%	3,6%	3,4%
H	Transportation and Storage	97,6%	114,1%	118,1%	120,3%
I	Accommodation and food service activities	137,3%	146,3%	153,3%	163,6%
J	Information and Communication activities	28,3%	31,5%	33,3%	37,2%
K	Financial services	13,8%	12,6%	15,4%	13,4%
M	Professional, scientific and technical activities	88,4%	112,4%	110,3%	130,4%
N	Administrative and Support Services	18,6%	27,4%	26,3%	32,2%
R	Arts, Entertainment & Recreation	1,2%	1,3%	1,9%	1,7%
S	Other service activities	0,0%	0,0%	0,0%	0,0%

6 – A comparison of the three criteria

In this final chapter, we compare the results obtained with the dynamic FiPEI criterion to the ones obtained by employing two other widely used criteria: the static IMF criterion and the dynamic, yet solely export-based, criterion of Amador and Soares (2012) – showing that a misspecification of the tradable sector may compromise an accurate assessment of the economic developments in a country. We illustrate the value added of our criterion by assessing three main economic indicators: investment; employment; and unit labor costs.

The IMF criterion stands as paradigm for the crudest TRD/NTRD classification. Other international institutions such as the EC and the ECB tend to follow a similar approach, either proxying the TRD sector using only the mining and quarrying and the manufacturing, or applying modest nuance to this ad-hoc method. Even in the latter case, institutions tend to apply different extensions upon the simpler manufacturing proxy, giving rise to little consensus and often yielding the same conclusions on assessment of countries' structural results.

Amador e Soares (2012) criterion, which we modify for the purposes of this analysis[20], constitutes somewhat of a middle ground between the IMF criterion and our own. It uses the export-to-sales ratio, which captures the tradability of any sector exporting at that point in time (therefore classifying as TRD sectors other than the mining and quarrying and the manufacturing industries, as detailed in the previous chapter), but not that of other sectors which, albeit not exporting, face external competition in the domestic markets.

Finally, the FiPEI criterion improves on the previous two, by capturing the effects of technological evolution on tradability over time and by encompassing exported and imported goods, thus providing a complete picture of tradability. Table 2 presents the TRD/NTRD sectoral classification yielded by these three criteria.

20 Under the original identification in Amador and Soares (2012), which places the indicative threshold for tradability above 15%, rather than 10%, the construction sector is classified as non-tradable. We use a modified, less conservative threshold of 10%.

Table 2 – TRD/NTRD sector classification results yielded by FiPEI, Amador e Soares* (2012) and the IMF criteria

	Sector designation in NACE Rev. 2/CAE Rev. 3	FiPEI	Amador & Soares* (2012)	IMF
A	Agriculture, forestry and fishing	X	X	
B	Mining and quarrying	X	X	X
C	Manufacturing	X	X	X
D	Electricity, gas, steam and air conditioning supply	X		
E	Water supply; sewerage; waste management and remediation activities			
F	Construction		X*	
G	Wholesale and retail trade; repair of motor vehicles and motorcycles			
H	Transporting and storage	X	X	
I	Accommodation and food service activities	X		
J	Information and communication	X		
K	Financial and insurance activities	X		
L	Real estate activities			
M	Professional, scientific and technical activities	X	X	
N	Administrative and Support Service activities	X	X	
O-S	Public Administration; Education; Health activities; Arts	***	***	***
	No. of *TRD* sectors	10	7	2

X*: Under the original identification in Amador and Soares (2012), which places the indicative threshold for tradability above 15%, rather than 10%, the construction sector is classified as non-tradable. We use a modified, less conservative threshold of 10%.

***: INE does not publish disaggregated unit labour costs or imports/exports [by type of final product] data for sectors S to O (Public Administration; Education; Health activities; and the Arts), often aggregating them as presented here.

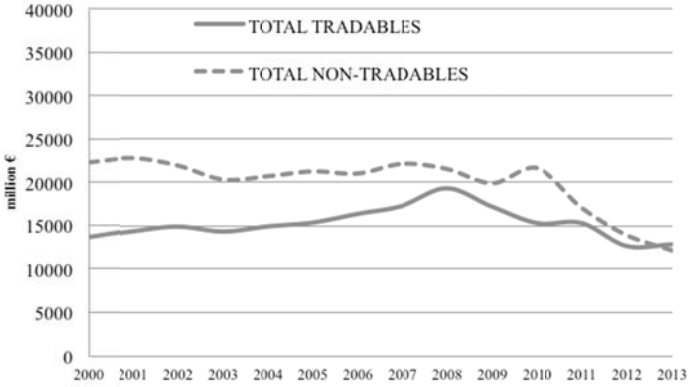
a. Investment

All three of the considered TRD/NTRD criteria seem to attest that i) investment was mostly directed towards non-tradable sectors between 2000 and 2008; and ii) investment towards non-tradable sectors registered the largest contraction in the same period, relative to tradable ones. Figure 5 further suggests that in 2013 TRD sectors investment was at roughly the same level as 2000, having fallen rather sharply following the 2008 crisis.

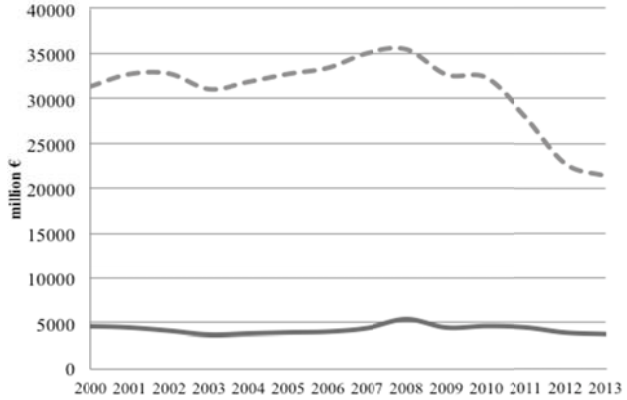
In comparison with the FiPEI criterion, both the IMF and the Amador & Soares criteria point to a much larger gap between the TRD and NTRD sectors and the persistence of the gap in 2013. Indeed, while the European Commission (2014) states that “there were no signs, as of 2013, of an improvement in investment activity in tradable industries”, the opposite becomes true using the FiPEI criterion: there has been a positive change in the TRD/NTRD ratio, and albeit a seeming stabilization of tradable-directed investment in 2013, 2014 investment data show an overall increase in the investment level of the economy, which, if accompanied by the persistence of the observed tendencies in Panel (a) of Figure 5, could hint at a definite turning point in the tradable/non-tradable investment profile of the economy. The IMF criterion yields a negative average annual growth rate for both the TRD and the NTRD sectors (-1.7% and -2.9%, respectively), whereas the FiPEI criterion points to a much less pronounced contraction in investment directed at TRD sectors (-0.4%, comparing to a decrease of -2.7% in the investment directed towards NTRD sectors).

Figure 5 – Investment (Gross fixed capital formation) in the TRD and NTRD sectors (2000-2013), INE

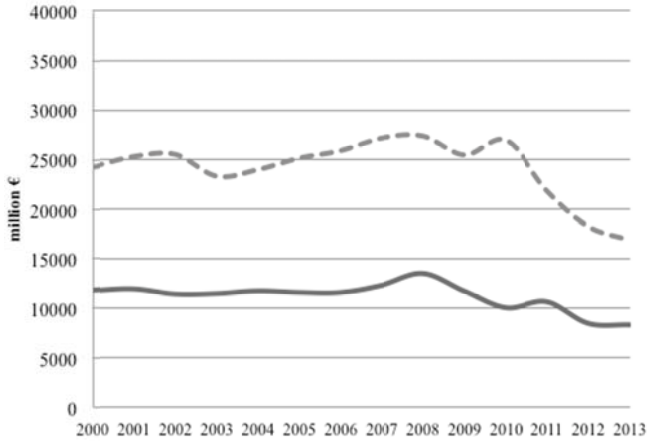
Panel (a): FiPEI criterion (exports + imports by type of final product/gross value added>10%)



Panel (b): IMF criterion (TRD sector = mining & quarrying; manufacturing)



Panel (c): Amador & Soares* (2012) (X-to-Sales >10%)



b. Employment

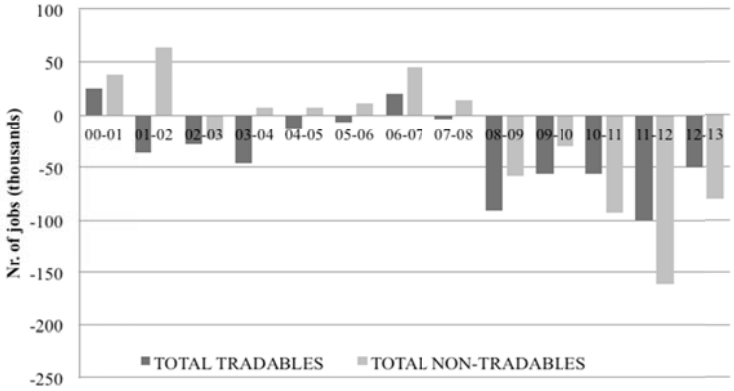
The use of the FiPEI criterion points to a convergence, in the last years, of the number of jobs in the TRD and NTRD sectors. Since 2011, we observe a larger contraction of employment in NTRD sectors – a tendency that remains in 2012 and 2013. Panel (a.1) of Figure 6 also evidences the significant labour shredding that occurred since 2009,

particularly between 2009 and 2011 in the tradable sectors – a reflection of the severeness of the shock hitting world trade following the 2008 financial crisis. While this picture is also supported by Amador and Soares* (2012), the IMF criterion contradicts these findings. Since 2011, when international trade activity picked up again to levels above those in the pre-crisis period, we observe a relatively larger destruction of jobs in non-tradable sectors, reflecting both the onset Portuguese internal economic recession stemming from the decline in domestic demand and the fact that the adjustment in tradable sectors was almost completed from the 2000s.

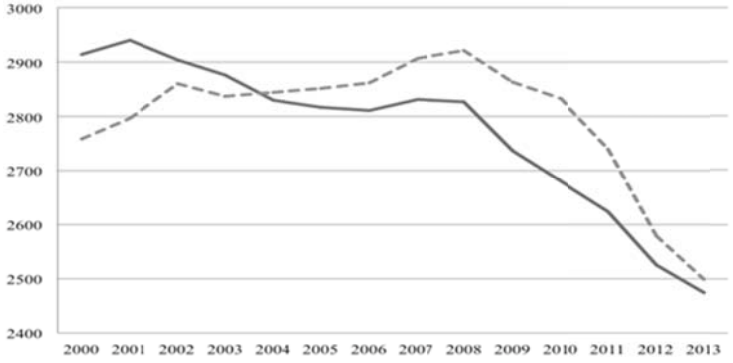
When analyzing the creation of jobs between 2000 and 2008, the differences yielded by the use of alternative TRD/NTRD criteria are, once again, substantial. Contrastingly to the convergence picture yielded by the FiPEI criterion, the IMF criterion suggests a persistently larger creation of jobs in NTRD sectors. Relative to the FiPEI criterion, the Amador & Soares criterion suggests a more pronounced destruction of jobs in the TRD sector on a yearly basis, since 2009 (-3.24% vs. -2.00%). Additionally, the Amador and Soares* (2012) criterion points to a relatively larger annual destruction of jobs in the tradable sector (-1.53%), a result that is contradicted by both the FiPEI and the IMF criteria, and one that fails to depict the relatively larger shock that hit employment in non-tradable sectors since 2011. Thus, the results yielded by the FiPEI criterion signal a potentially stronger reallocation of labour from the NTRD towards the TRD sectors between 2000 and 2013 than the presented alternative criteria.

Figure 6 – Employment (year-on-year absolute change in the number of jobs, 2000-2013), INE

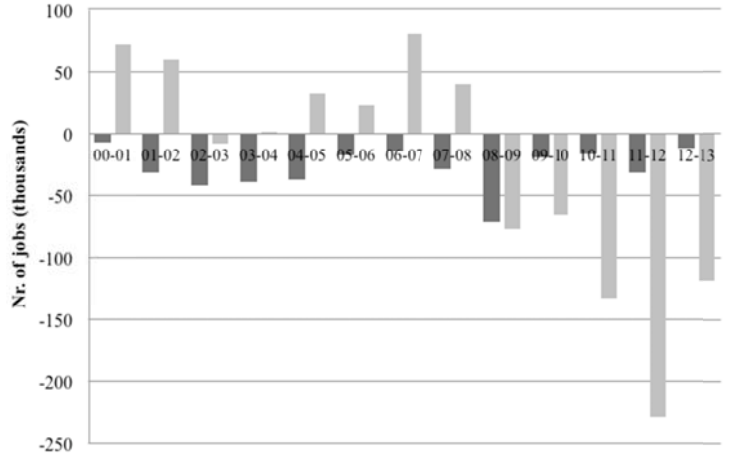
Panel (a.1): FiPEI criterion (exports + imports by type of final product/gross value added>10%)



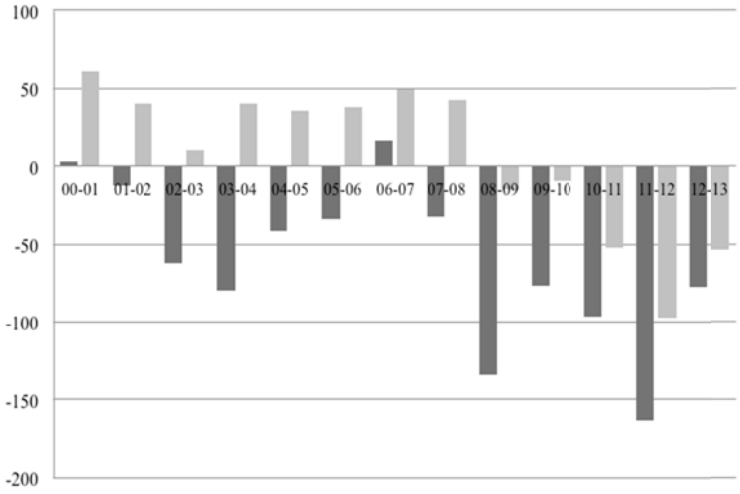
Panel (a.2): Number of jobs in the TRD and NTRD following the FiPEI criterion (2000-2013), INE



Panel (b,1): IMF criterion (TRD sector = mining & quarrying; manufacturing)



Panel (c,1): Amador & Soares* (2012) (X-to-Sales > 10%)



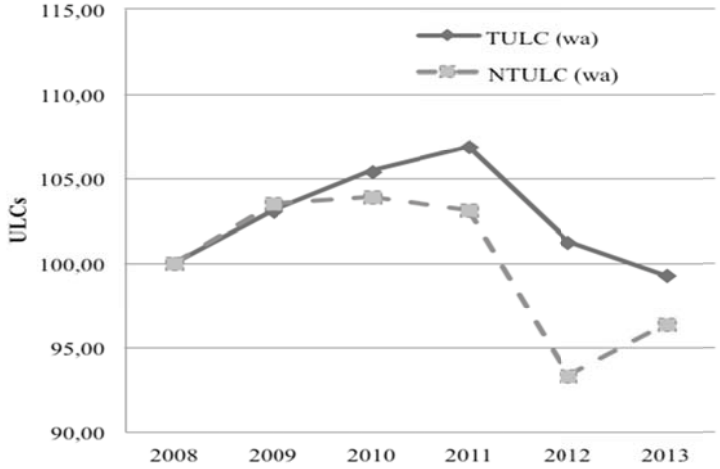
c. Unit Labour Costs

The FiPEI criterion points to a sharper adjustment (driven by cuts in employment and wage restraint) in NTRD sectors after 2009, although a marked decrease in unit labour costs in TRD sectors was also observed. Notwithstanding these developments, international institutions continue to emphasize that the reallocation of the labour force toward the traded sector remains limited[21], mainly hindered by the significant segmentation in the labour force. All three criteria confirm the existence of higher unit labour costs in NTRD sectors, possibly reflecting the absence of exposure to international competition and/or the excessive rents in some NTRD markets, part of which are passed on to employees[22].

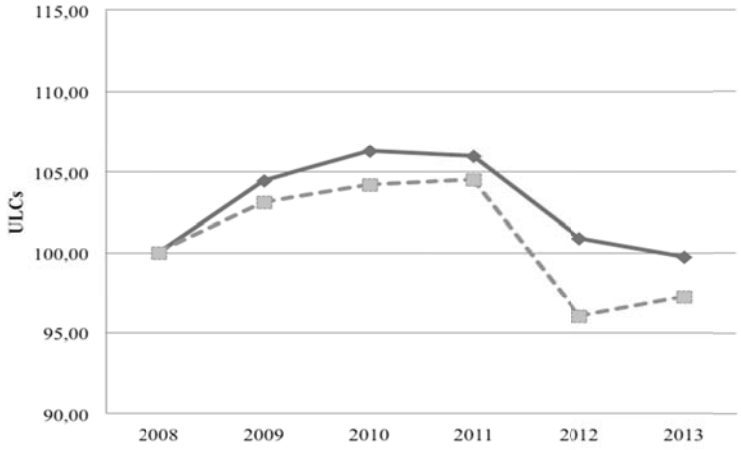
21 Portugal – Selected Issues (IMF, 2015)
22 In 2012, the human health and social activities sector remained as the most unionized of the non-tradable sectors. The administrative and support services sector was in 2012 the second most unionized. However, the transportation and storage sector (classified as tradable under the FiPEI criterion), is by far the most heavily unionized (Costa, Dias e Soeiro, 2012).

Figure 7 –Unit Labour Costs (annual average) for the TRD [TULC] and NTRD [NTULC] sectors, INE.

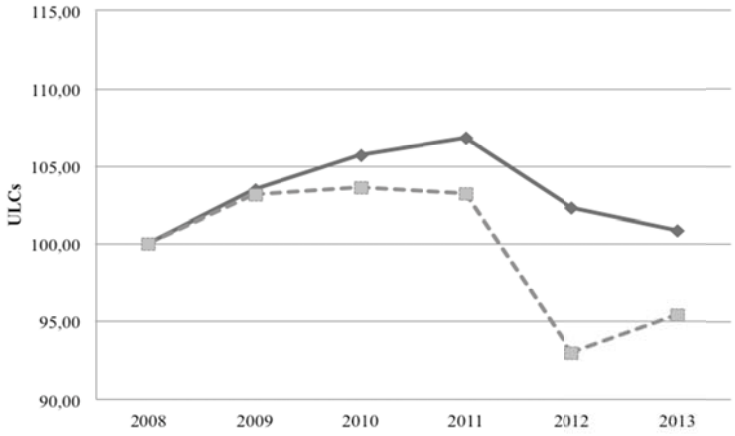
Panel (a): FiPEI criterion (exports + imports by type of final product/gross value added> 10%)



Panel (b): IMF criterion (TRD sector = mining & quarrying; manufacturing)



Panel (c): Amador & Soares* (2012) (X-to-Sales>10%)



7 – Conclusions

The allocation of resources in an economy is usually assessed by comparing the tradable and non-tradable sectors. The criteria commonly used to make such a distinction among sectors are outdated or incomplete, hampering an accurate characterization of the structure of the economy and its adjustment process.

This article provides a more encompassing criterion to define the tradable sector – the FiPEI criterion. The results yielded by taking the step forward to incorporate imports into the determination of sectors' tradability – which is theoretically desirable but computationally challenging – allows for a better depiction of economic reality and is thus a step forward at providing a more solid ground upon which to assess the allocation of resources in the Portuguese economy and the structural impact yielded by the recently undertaken reforms. The sector-by-sector analysis of trade-to-output ratios offers numerical backbone to reasonable definitions of tradability, and has the advantage of accounting for international transactions of both goods and services. The challenge is the process of matching international transactions of services and goods, as final services are classified under a different system (Balance of Payments methodology) than that of goods (Industry codes).

The FiPEI criterion points to the existence of significant gains to be collected from applying enhanced TRD/NTRD classification system, as the results yielded by applying it to a set of economic indicators are significantly different from the ones that are obtained from the application of the commonly used criteria. The application of FiPEI suggests a more efficient resource allocation and a stronger adjustment of the economy than that portrayed by international institutions. These findings shall, notwithstanding, be interpreted only as a first step in a more thorough analysis of structural developments in the Portuguese economy over recent years.

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