



BANK ĊENTRALI TA' MALTA
EUROSISTEMA
CENTRAL BANK OF MALTA

MEASURING INTERNATIONAL COMPETITIVENESS

BOX 5: MEASURING INTERNATIONAL COMPETITIVENESS¹

Introduction

The economic and financial crisis of 2008 has highlighted the divergence in external imbalances within the global economy leading to a renewed interest in the study of the determinants of international competitiveness. More recently, the euro area crisis has highlighted the need of structural reforms aimed at improving the international competitiveness of deficit countries. Indeed, persistent losses in international competitiveness have been identified as a major cause of the low growth rates experienced by the periphery countries since their membership in the EMU.² In light of these arguments, policymakers within the euro area are striving to implement structural reforms aimed at boosting the competitiveness of deficit countries thereby helping them correct their external imbalances and return to sustainable levels of economic growth. Against this backdrop, a correct assessment and measurement of international competitiveness is crucial to help policymakers in devising policies aimed at correcting external imbalances of an economy.

While international competitiveness is consensually regarded as a key driver of sustainable economic growth, properly defining this concept has proven to be a key analytical and policy challenge. This elusive concept can be defined either from a long run or short run perspective.³ In the long run, the competitiveness of an economy is often evaluated in terms of the performance of its key macroeconomic indicators, such as, its long term growth potential, the productivity of its factors of production, long run unemployment dynamics and balance of payment position. When analysed from this perspective, one can conclude that the competitiveness of a nation is not determined by any single measure, but is instead affected by a vast range of determinants, some of which are often regarded as being of a qualitative nature and are therefore difficult to measure in a quantifiable way. Indeed, decisions made by economic agents to spend and save, the efficiency of financial markets to transform savings into investment, the availability of skilled labour force, the uptake of technological innovation as well as the quality of the institutions and policymaking processes can affect the country's long term competitiveness.⁴ Due to the difficulty usually encountered when measuring the qualitative aspect of competitiveness, most economists have focused on the short-term aspect of competitiveness, namely that defined in terms of misalignments in relative prices and costs of economies. The prices of an economy's exports are in part determined by the costs and strategic decisions of the economy's firms. This, together with broader macroeconomic factors that are outside the control of firms, such as exchange rate fluctuations, affect an economy's competitiveness and therefore its external trade flows. While the concept of price competitiveness is often regarded as rather narrow and incomplete, it is con-

¹ Prepared by Noel Rapa, Senior Research Economist at the Research Office of the Central Bank of Malta. Any errors, as well as the views expressed here, are the author's sole responsibility.

² European Central Bank, "Competitiveness and external imbalances within the EA", Occasional Paper Series, No. 139, 2012.

³ See for instance De Broeck, M., Guscina, A. and Mehrez, A. "Assessing competitiveness using industry Unit Labor Costs: an application to Slovakia". IMF Working Paper No. 12/107, 2012, and Mann, C.L., "Is the U.S. trade deficit sustainable?", Peterson Institute for International Economics, 1999.

⁴ See for instance World Economic Forum, "The Global Competitiveness Report 2010-2011", 2010 and European Commission, "Surveillance of intra-euro-area competitiveness and imbalances", European Economy, 2010.

sidered as a very important determinant of the external performance of an economy. Indeed, recent research in the area has indicated that the trade deficits experienced by southern European countries prior to the euro area crisis have been largely due to divergence in relative prices.⁵

Further to the conceptual ambiguity surrounding this concept, the study of price competitiveness has been affected by the inherent difficulties encountered in constructing indicators meant to measure changes in the competitiveness of an economy. Despite the amount of work that has been done on this topic, there is no clear consensus on how best to measure international competitiveness. In addition, a large number of indicators commonly used for this purpose, often appear to convey conflicting messages to the user. Moreover, empirical research has traditionally struggled to find an unambiguous relationship between competitiveness indicators and economic activity.⁶

In this light, this article attempts to shed some light on developments in the price competitiveness of the Maltese economy in the last decades. The next section describes aggregate cost indicators that are traditionally used to assess a country's cost competitiveness. These developments are then contrasted with macroeconomic evidence highlighting the weaknesses of aggregate cost-based indicators. The following section proposes an alternative measure of cost competitiveness based on sectoral cost indices while the last section draws some conclusions and policy recommendations.

Aggregate measures of cost competitiveness

ULCs

While international competitiveness can be measured in terms of either price or cost-based measures, empirical researchers as well as policymakers have predominantly chosen to use aggregate cost-based indicators for their analysis and policy recommendations.⁷ In view of data availability challenges concerning the productivity and costs of capital, often, only one factor of production, labour, is considered in the analysis. A very popular indicator in this respect is aggregate Unit Labour Costs (ULCs), defined as the ratio of workers' compensation per employee to labour productivity. An increase (decrease) in ULCs implies a rise (fall) in the labour costs of production relative to productivity, and hence a loss (gain) of competitiveness.

⁵ European Central Bank, "Competitiveness and external imbalances within the EA", Occasional Paper Series, No 139, 2012.

⁶ Kaldor, N. "The case for regional policies", *Scottish Journal of Political Economy*, 17(3), 1970, pp. 337-348 was one of the first to propose an inverse relationship between GDP and the ratio of money wages to productivity, used as a proxy for competitiveness. However, the same author in Kaldor, N. "The Effects of Devaluations on Trade in Manufactures", in *Further Essays on Applied Economics*. London: Duckworth, 1978, concludes that the empirical evidence available for the relation between these two variables is inconclusive, a result known as Kaldor's paradox.

⁷ See for instance Cerra, V., Soikkeli, V.J. and Saxena, S.C. "How competitive is Irish manufacturing?", *The Economic and Social Review*, Vol. 34, No. 2 Summer/Autumn, 2003, pp.173-193 and Lipschitz, L. and McDonald, D. "Real exchange rates and competitiveness: a clarification of concepts and some measurement for Europe". *Empirica – Austrian Economic Papers*, Vol. 19, 1992, pp. 37-69 for a survey of related literature and empirical evidence of the superiority of cost-based indicators over their price-based counterparts.

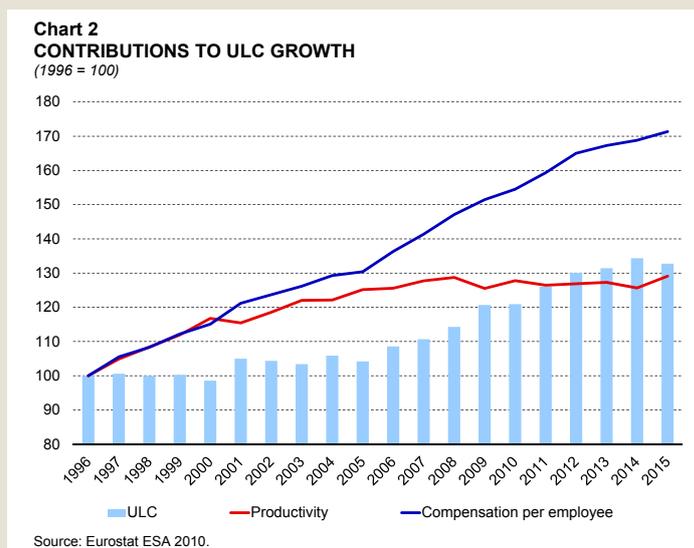
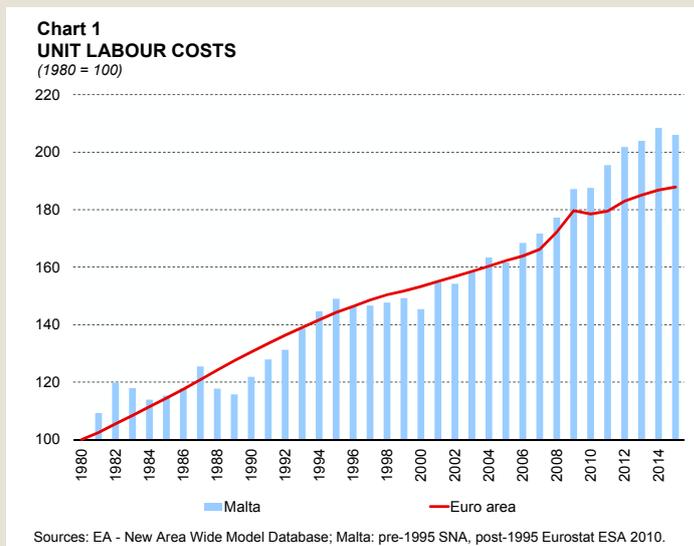
Chart 1 compares the evolution of Malta's ULCs with those of the EA average between 1980 and 2015. During the period spanning 1980 to 2006, Maltese ULCs were growing in line with those of the EA average. Indeed, the average growth rate in ULCs registered in Malta between 1996 and 2006 stood at 0.86%, the fourth lowest in the EA (after Germany, Austria and Finland) and lower than the EA average.

However, from 2006 onwards, Maltese ULCs started diverging from the EA average. Indeed, between 2010 and 2014, ULCs in Malta grew at an average rate of 2.2%, the highest rate registered in the EA and the second highest in the European Union, implying a deterioration in Malta's international competitiveness.

Looking at the underlying developments in compensation per employee and labour productivity, it becomes evident that the main driver behind the recent deterioration in Malta's relative ULCs has been a slowdown in productivity growth (see Chart 2). Indeed, between 2010 and 2015, average productivity growth was less than 0.5%, down from an average of 2.4% registered between 1996 and 2006, and one of the lowest in the EA. During the same period, average compensation per employee growth slowed down from 3.1% (registered between 1996 and 2006) to around 2.1%, in line with the growth rates registered in Austria, France and Germany and significantly less than the Baltic States.

Relative ULCs and EERs

Aggregate measures of ULCs are unit-less values that can only be interpreted relative to a suitable

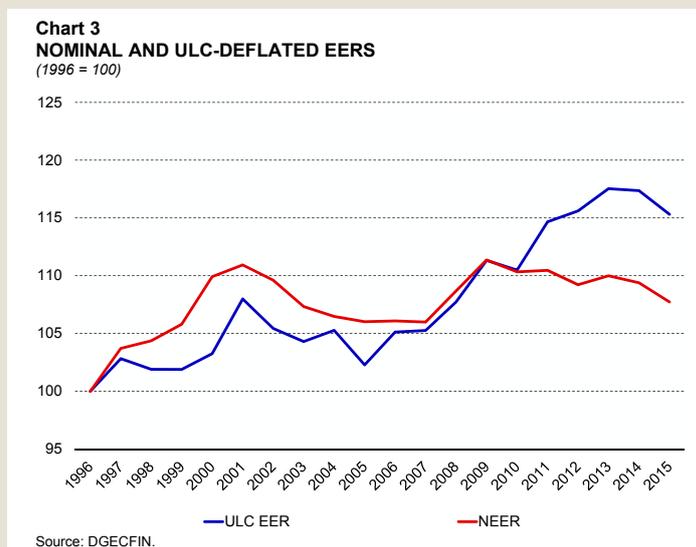


base. Comparing ULC developments vis-à-vis the EA average is therefore somewhat simplistic, as it does not take into consideration how important each of Malta's trading partners is as both an importer and a competitor of Maltese exports. Moreover, as previously explained, the price competitiveness of an economy is given by both firm-specific factors (such as costs and mark-ups) and exchange rate movements, which cannot be controlled by individual firms. To account for these deficiencies, policymakers and researchers often resort to ULC deflated Effective Exchange Rate (EER) indices.

A nominal EER is a weighted average of bilateral exchange rate indices with weights derived either from model-based estimates or from bilateral trade flows. The real EER is derived by deflating its nominal counterpart with an index tracking the evolution of the home country's costs or prices relative to those of its competitors. To better account for the complex nature of a country's trade competitiveness, EERs are usually computed using a trade-based double weighting scheme, which takes into account each of the competitor countries' contribution to the total supply in the home country's target markets, and the relative importance of each market in the home country's international trade.⁸

Chart 3 shows the evolution of Malta's ULC-deflated real EER between 1996 and 2015. These results show that after correcting for bilateral exchange rate movements, Maltese cost competitiveness remained quite stable between 1996 and 2005. During this period, Malta's real EER first appreciated by roughly 8% until 2000, driven entirely by adverse exchange rate movements. However, this appreciation was almost entirely reversed between 2000 and 2005, helped by favourable developments in both relative ULCs and nominal EER. After 2006, the real EER shows a consistent worsening of Malta's international price competitiveness.

These developments were in part due to an appreciation of Malta's nominal EER between 2007 and 2009. On the other hand, the appreciation in Malta's real EER between 2010 and 2013 was entirely due to a consistent increase in Malta's ULCs relative to those of its main competitors. Driven by a consistent depreciation of the nominal EER and by a fall in relative ULCs in 2015, Malta's ULC



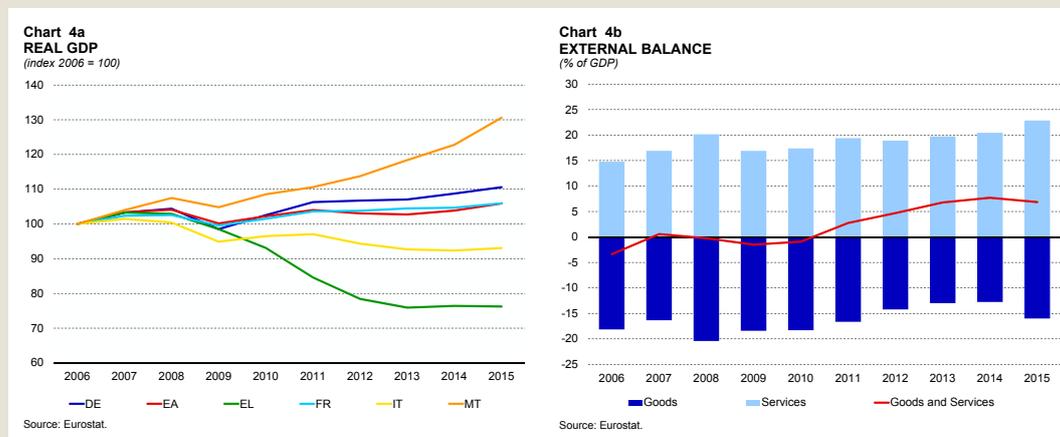
⁸ For a discussion on the merits of this weighting scheme and the methods used to compute EERS see Turner, P., and Van't dack, J. "Measuring International Price and Cost Competitiveness", BIS Economic Papers No. 39, 1993.

deflated EER shows some slight improvements in competitiveness in the last two years of the sample period.

Reconciling economic performance and ULC developments

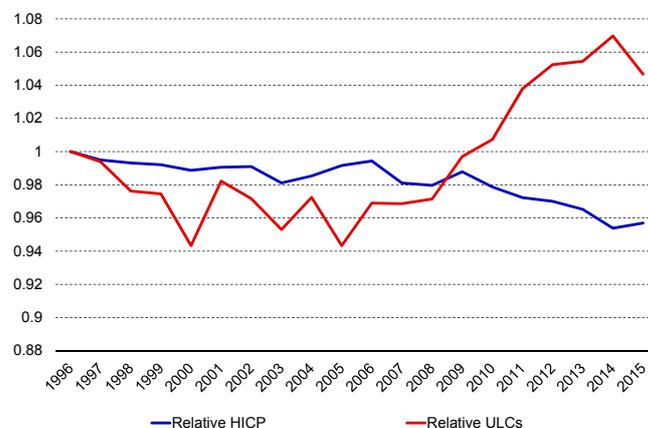
At face value, the developments described earlier suggest a significant deterioration in Malta's international cost competitiveness from 2006 onwards. However, these findings contrast sharply with Malta's recent economic performance. In fact, the Maltese economy has weathered the international financial crisis of 2009 relatively well, with real GDP surpassing pre-crisis levels by mid-2010 (see Chart 4a). Moreover, unlike many of the other EA countries, Malta's economy did not contract during the euro area sovereign debt crisis of 2012. In addition, together with Germany, Malta is one of the two European Union countries whose potential GDP had already exceeded pre-crisis growth rates by 2014. By 2015, Malta's GDP level was around 25% higher than the level registered in 2009, with net exports featuring as the main contributor behind this rise in economic activity. Malta's external trade balance has traditionally ended in deficits close to 15% of GDP since the early 1980s. However, as shown by Chart 4b, Malta's trade performance has improved considerably since then. From 2010 onwards, Malta has consistently registered positive trade balances driven by improvements in both goods and services net exports. Similar improvements were registered in the labour market, with employment growth returning to pre-crisis levels by 2010. Also, notwithstanding an increasing participation rate, unemployment rate in Malta has fallen substantially from just below 7% in 2009 to 5.4% in 2015.

In order to reconcile the unfavourable developments in ULCs with the concurrent strengthening of Malta's external position, one needs to consider the weaknesses of cost-based indicators, in particular those based on aggregate ULCs. As previously discussed, price competitiveness at the firm level is not simply defined by the costs incurred by firms but also by exchange rate movements and more importantly by the market structure they operate in. Therefore, when using ULCs to assess the price competitiveness of a nation, one is implicitly assuming that the link between ULCs and prices (therefore the market structure of firms) is stable across countries and time.



To assess a possible decoupling of relative cost and price measures in Malta, Chart 5 plots relative aggregate ULCs and relative overall consumer price deflators.⁹ These results show that between 1996 and 2006, developments in both relative costs and prices were roughly similar, with both indicators showing an improvement in Malta's competitiveness. From 2006 onwards, the two measures diverge

Chart 5
RELATIVE CONSUMER PRICES AND ULCs
(Ratio, normalised to unity in 1996)



Source: Author's calculations using BIS and Eurostat data.

considerably. The relative CPI measure shows further declines in Malta's CPI prices relative to those of its trading peers, possibly reflecting the higher degree of competition in the local market as a result of Malta's accession to the European Union. On the other hand, during the same period relative ULCs show a sudden and sustained increase in local labour costs. These developments show that the assumption of a stable link between price and cost competitiveness indicators is too simplistic especially for an economy such as Malta's, that has experienced a number of structural reforms that have altered the market structure of the firms operating in it.

Another weakness of aggregate ULC based indicators is that they are susceptible to shifts in the composition of output and sector-wide changes.¹⁰ As argued in the literature, average ULCs can be raised by shifts in the sectoral composition of output towards more labour-intensive sectors, even if no single sector has experienced a worsening in its competitiveness.¹¹ Moreover, aggregate ULCs are affected by the fact that ULC indices evolve differently across sectors depending on global technological improvements.¹² Thus a country specialising in a sector where ULCs are globally falling due to technological advances, will experience a fall in its ULC-based indicators without necessarily reflecting changes in sectoral competitiveness.

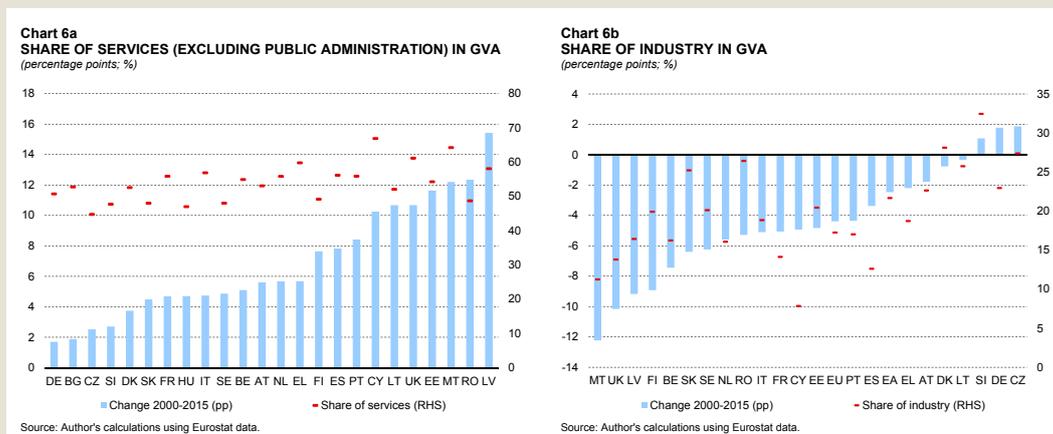
Even before the recession of 2009, the Maltese economy had undergone a number of structural changes, which led to a diversification of its economic base and a shift from traditional industries towards higher-value added activities in the services sector. Chart 6a shows that between 2000 and 2015 the share of private services (defined as total services

⁹ Both foreign ULC and consumer prices are computed using the weights used by the BIS to compute EERs. Therefore, in line with relevant literature, the weights used follow a double-weighting scheme.

¹⁰ De Broeck, M., Guscina, A. and Mehrez, A. "Assessing competitiveness using industry Unit Labor Costs: an application to Slovakia". IMF Working Paper No. 12/107, 2012.

¹¹ See for instance Honohan, P. & Walsh, B. "Catching up with the leaders: The Irish hare", Brookings Papers on Economic Activity, No.1, 2002, pp. 1-77.

¹² De Broeck, M., Guscina, A. and Mehrez, A. "Assessing competitiveness using industry Unit Labor Costs: an application to Slovakia". IMF Working Paper No. 12/107, 2012.



excluding public administration) in overall gross value added has increased by slightly more than 12 percentage points, the third highest increase registered in the same period across the European Union. By 2015, the share of services has reached roughly 65%, one of the highest levels in the European Union and in line with that of the United Kingdom. As can be seen in Chart 6b, these developments have coincided with a fall in the share of the manufacturing sector of around 12 percentage points, pointing at a sharp shift in the composition of Maltese output from the manufacturing to higher-value added services sectors. The service sector, by its very nature, tends to be characterised by lower labour productivity levels than those of manufacturing. This reflects the fact that while manufacturing has become less labour intensive and has increasingly moved towards automated processes that increase labour productivity, the services sector remains dependent on a higher level of labour input. Thus, Malta's shift from the more labour productive manufacturing sector towards the less productive services sector has led to a composition effect that has increased Malta's aggregate ULC index, irrespective of the developments in cost competitiveness at a sector level.

A competitiveness measure based on sector ULCs

In an attempt to address the weaknesses of aggregate ULC-based indicators, this section follows the approaches of Cerra et al (2003) and more recently of European Commission (2014) and proposes sectoral ULC indices for Malta for the industry and services sectors.^{13,14} These indices are then used to compute real EERs for each sector as the geometric mean of nominal bilateral exchange rates deflated by the relative ULCs in each sector (i.e. the ULCs of a sector in the home country relative to a weighted average of ULCs in the same sector in all other countries). Specifically:

$$REER_j^i = \prod_k \left(\frac{ulc_j^i}{ulc_j^k} e^{i,k} \right)^{\psi_j^{i,k}}$$

¹³ The industry sector is defined as all industrial production excluding construction while the services sector includes all services excluding public administration. Since no data for GVA deflators by industry are available for Malta, the industrial Purchase Price Index (PPI) and the overall GDP deflator were used for the computation of real GVA for the industry and services sectors respectively.

¹⁴ Cerra, V., Soikkeli, V.J. and Saxena, S.C. "How competitive is Irish manufacturing?", The Economic and Social Review, Vol. 34, No. 2 Summer/Autumn, 2003, pp.173-193 and European Commission, "A competitiveness measure based on sector unit labour costs", Quarterly Report on the Euro Area, Vol. 13, No. 2. 2014.

Where $REER_j^i$ is the ULC-deflated real EER of country i in sector j , ulc_j^k is the unit labour cost in sector j in country k , and $e^{i,k}$ is the bilateral exchange rate. $\psi_j^{i,k}$ is the weight given to country k and is calculated as the share of GVA of sector j in country k relative to the global GVA in the sector excluding the home country (i).^{15, 16}

$$\psi_j^{i,k} = \frac{GVA_j^k}{(\sum_k GVA_j^k) - GVA_j^i}$$

An overall EER suitable to analyse the overall competitiveness of the Maltese economy is then constructed as a weighted average of the two sectorial real EERs with weights reflecting the relative importance of each sector in total GVA.

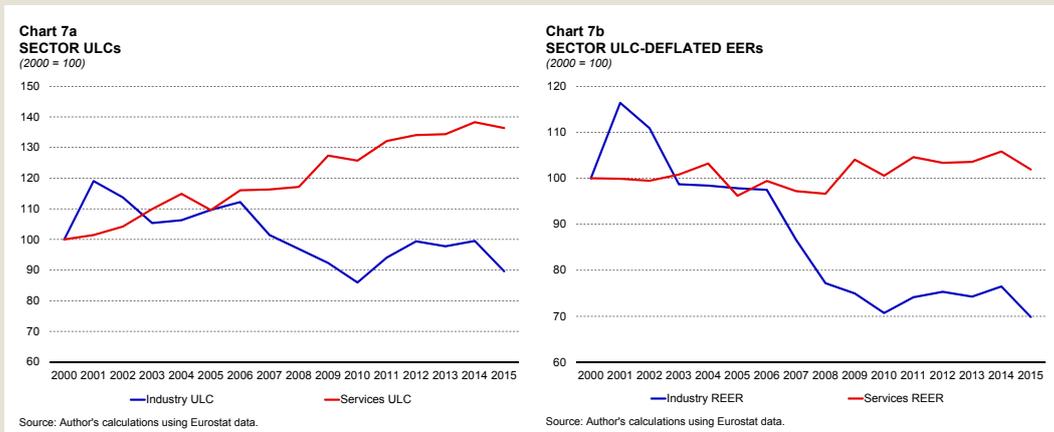
Chart 7a presents developments in the ULC indices in the industry and services sectors in Malta between 2000 and 2015. It is immediately apparent that the developments between the two sectors have diverged considerably from 2006 onwards. Indeed, after the accession to the European Union, the ULCs of the industrial sector have dropped significantly, mainly driven by gains in labour productivity as Malta shifted from traditional to higher-value added manufacturing. After 2010, growth in industrial productivity slowed down, failing to match the growth rates registered in compensation per employee, thereby pushing up the ULCs in this sector. The services sector, on the other hand, has experienced a steady increase in its ULCs, mainly driven by increases in wages. This result may be driven by recent shifts in the composition of overall services GVA. Indeed, throughout the period under consideration, the share of non-traditional services (such as financial and technical activities including amongst others the gaming industry) in overall services GVA has increased substantially. These structural shifts together with the higher average wages earned in non-traditional services activities are likely to have contributed to the increase registered in the overall services sector ULCs.¹⁷

Similar to their aggregate counterparts, ULCs at the sectoral level are unit-less indices that need to be compared to some industry norm. To take in consideration developments in the sectoral ULCs of Malta's main trading partners together with movements in the exchange rate, Chart 7b plots Malta's sectoral EERs deflated by relative sectoral ULCs. Results show that over the period under consideration, Maltese industry has gained competitiveness over its direct peers. Between 2000 and 2006, industry sector competitiveness has remained constant despite favourable movements in the nominal effective exchange rate. However, helped by a number of structural reforms and the switch to higher value added manufacturing, Malta's industrial competitiveness improved considerably immediately after Malta's accession to the European Union. Indeed, positive developments in relative ULCs in this sector have significantly outweighed adverse movements in the nominal EER

¹⁵ The above calculations are repeated for each point in time. The time subscript is therefore dropped for simplicity.

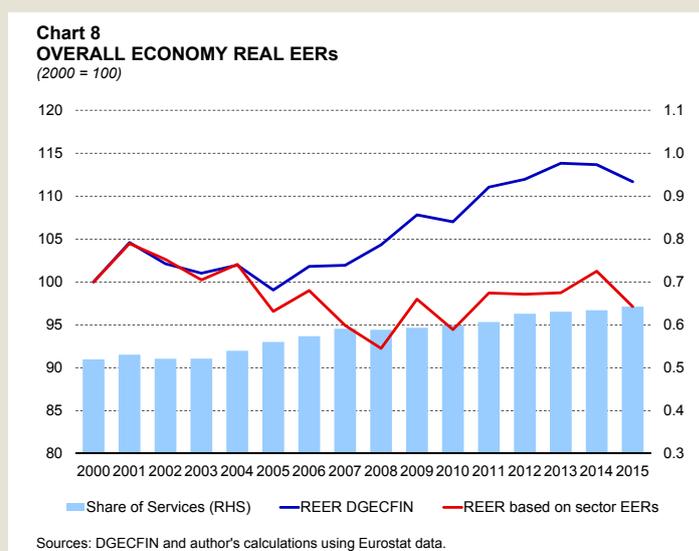
¹⁶ Notwithstanding its superiority, a double-weighting scheme could not be used due to the lack of bilateral services trade flows. Also, due to data availability issues, the analysis is limited to the sample period spanning 2000 to 2014 and covers only European Union countries. While the dataset encompasses more than 60% of Malta's exports, the omission of non-European Union countries such as the United States and China is a limitation that could lead to an underestimation of the gains or losses in competitiveness.

¹⁷ While being less pronounced than those affecting aggregate ULCs, composition effects due to sector wide changes are still likely to affect the sectoral ULCs computed in this article. Unfortunately, the unavailability of GVA deflators by NACE category impedes the computation of more disaggregated ULC indices.



brought about by the appreciation of the euro against sterling. This positive trend was partially reversed between 2010 and 2014. Driven by an increase in its relative ULCs, the industry sector real EERs appreciated marginally by 7% between 2010 and 2014, before depreciating again in 2015, due to both a depreciation of the nominal EER and a fall in relative sector ULCs. The services sector in Malta has maintained its cost competitiveness relatively unchanged throughout the period under consideration. This was achieved despite the contemporaneous significant expansion of the Maltese services sector that could have brought about some upward pressures on the wages in this sector, potentially undermining its competitive edge. Similar to the industry sector, Maltese services became relatively more expensive after 2010 driven entirely by increases in their relative prices. This appreciation was reversed in 2015 due to a fall in both nominal EER and relative services prices.

Chart 8 plots the overall real EER based on sectoral ULCs compared with a traditional aggregate based ULC-deflated EER. Results from the new indicator show that before and slightly after its accession to the European Union, Malta experienced an improvement in its cost competitiveness, mainly driven by gains in the industrial sector. This trend was reversed in 2009, due to deteriorating competitiveness in both the industry and services sectors. Despite the recent appreciation of its overall EER, the overall cost competitiveness of the Maltese economy has remained relatively unchanged throughout the period under consideration, contrasting with the results derived from



the aggregate ULC deflated EER. Indeed, while the latter shows an 11% deterioration in Malta's cost competitiveness between 2000 and 2014, real EERs deflated by sectoral ULCs show practically a slight improvement in the overall cost competitiveness of the economy. Moreover, these two indicators have started to diverge considerably between 2004 and 2010, a period characterised by a marked increase in the share of services in overall GVA. This confirms that sectoral ULC based EERs are less prone to sectoral shifts in output, and are thus a better gauge to cost competitiveness in economies undergoing a large number of structural changes.¹⁸

Conclusion

Aggregate ULC measures show a considerable worsening of Malta's international price competitiveness in the last decade. Between 1980 and the mid-2000s, Malta's aggregate ULCs grew in line with those of the euro area showing no changes in Malta's relative cost competitiveness. However, from 2006 onwards, Malta's annual ULC growth picked up from 0.9% registered between 1996 and 2006 to 2.5% after 2006, one of the highest growth rates registered in the European Union. These conclusions are confirmed by ULC-deflated EERs that allow for movements in bilateral exchange rates and are able to take in consideration the importance of each of Malta's trading partners both as a competitor and as an importer of Maltese exports. These findings contrast sharply with Malta's economic performance in the last 9 years. After weathering the international recession of 2009, Malta's economy has grown at a faster pace than that of its main trading partners. Furthermore, during this period, Malta has succeeded in considerably improving its international trade performance, pushing its net external position in positive territory from 2010 onwards.

The lack of an apparent link between aggregate ULC developments and international trade performance is very clear in Maltese data and may in part be explained by some of the weaknesses of aggregate based ULCs. Indeed, these indicators are unable to account for improvements in the market structures of economies that may lead to lower price mark-ups and thus lower prices. More importantly, these indicators are very sensitive to changes in the sectoral composition of output and may show deteriorations in the international trade competitiveness of economies that shift resources towards sectors with high labour intensities. This factor seems to have significantly affected Malta's ULC developments. Indeed, the divergence in Maltese and euro area ULCs occurs simultaneously with a considerable expansion of Malta's services sector and the consequent decline in the importance of industrial production in overall GVA.

In an attempt to account for weaknesses of aggregate cost indicators, this article computes sector based ULC indices, which are then used to compute, sector-specific real EERs. When compared to aggregate ULC-based indicators, sectoral EERs are less prone to sectoral shifts in output and are thus better suited to measure international competitiveness of economies undergoing structural changes. Results show that contrary to what suggested

¹⁸ Note that contrary to publicly available aggregate EERs, the sector-based real EER excludes public administration and construction in its computation, assuming that evolutions in the public and construction sectors are not relevant to an economy's competitiveness. It is important to note that the results discussed in this article are not affected by the inclusion or otherwise of public administration and construction, implying that the divergence between aggregate and sector-based EERs is not driven by the exclusion of these two sectors.

by traditional aggregate indicators, Malta's cost competitiveness has not deteriorated in the last 15 years, with improvements in the industry real EER offsetting an appreciation of the services sector real EER.

As stressed at the beginning of this article, relative prices and costs are only some of the many aspects that define the international competitiveness of an economy. While relative prices are surely a determinant of net exports in the short run, the definitive measure of a country's competitiveness ultimately rests on the dynamics of its key macroeconomic indicators, mainly, potential GDP growth, long run unemployment rate and balance of payment position. In this light, the long run international performance of an economy should not be exclusively assessed by any specific cost or price based indicator which fails to take into account other qualitative aspects of international competitiveness. Instead, a long-run perspective to international competitiveness should rest on an analysis of the quality of the factors of production of a nation. Therefore, a holistic approach towards improving Malta's international competitiveness should not be limited at measuring and gauging Malta's relative price developments, but should encompass structural reforms aimed at improving the productivity of both labour and capital inputs. Against this backdrop, it is essential to increase investment in education in an effort to improve the quality of labour input as well as to guarantee higher labour market flexibility. Moreover, policies aimed at ensuring a faster uptake of new technologies as well as improving the local business environment and the quality of policymaking processes should help the Maltese economy improve its long-term productivity levels, allowing it to compete favourably in the international market.