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REVISITING THE CONTRIBUTION OF EXPORTS TO MALTA'S RECENT ECONOMIC GROWTH

BOX 2: REVISITING THE CONTRIBUTION OF EXPORTS TO MALTA'S RECENT ECONOMIC GROWTH[1]

In the last decade, the Maltese economy has been characterised by the emergence of a number of export-oriented services sectors, such as online gaming, and a pronounced expansion of existing ones, such as aviation services, which have had a significant impact on the main macroeconomic indicators.[2] However, the methods traditionally used to estimate drivers of economic growth have been suggesting that the influence of these emerging industries on the pace of economic growth has been somewhat muted. For instance, in 2015, a year when exports of goods and services rose by over half a billion euro – the equivalent of nearly a third of all government current expenditure – the contribution of net exports to real economic growth as measured by traditional methods was deemed to be significantly negative.[3] This result was driven by the fact that during that year, there was an exceptional rise in imports of capital goods, which offset the positive impact of the large increase in exports of goods and services.

This attribution of growth determinants is the result of the traditional approach of treating demand in the economy as taking two forms: domestic demand being the sum of private consumption, government current expenditure and gross fixed capital formation; and external demand being exports. Imports which are a leakage and do not feature in a country's GDP are conventionally subtracted from the contribution to economic growth of exports. While this approach can usefully highlight the net contribution of external trade to GDP growth, it fails to capture the true relative contribution of domestic and external demand to economic growth. A considerable amount of imports, especially in a small open economy like Malta, is consumed by households or forms part of gross fixed capital formation and should therefore be subtracted from domestic demand, when assessing contributions to growth. Traditional methods fail to take into consideration that domestic demand and exports contain different degrees of import contents and are thus likely to overstate the impact of domestic demand on economic output.[4] This issue is more pronounced in years in which domestic demand has increased on the back of a rise in direct imports. In this light, relying on the traditional approach of estimating contributions to growth in years such as 2015, when there was an exceptional rise in investment driven by imports of capital equipment, can result in misconstruing the true sources of economic growth.

To address such issues, an alternative methodology has been proposed in the economic literature.[5] In the conventional approach, the contribution of a demand component is calculated as the growth in that component in real terms multiplied by the previous year's share of that component out of GDP in nominal terms.[6] The negative contribution of imports is deducted from the positive contribution of exports. By contrast, in the alternative approach, known as the "import-adjusted method", imports are apportioned to all GDP expenditure components on the basis of import intensities derived from input-output tables. The latter are derived from a Cumulated Production Structure (CPS) matrix, which decomposes each component of final demand into gross value-added components and imports.[7] This enables one

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[2] For further details refer to Grech, A.G., Micallef, B. and Zerafa, S. (2016), Diversification and structural changes in the Maltese economy. In *Understanding the Maltese Economy.* Edited by Grech, A. G., Central Bank of Malta, 2016.

[3] For example in European Commission (2016), Autumn 2016 Economic Forecast and Central Bank of Malta (2016), Annual Report 2015.

[4] See European Central Bank, "Assessing the recent impulse from the external sector to euro area activity", *Monthly Bulletin*, 2005.

[5] See for instance, Kranendonk H. and Verbruggen J. (2008), Decomposition of GDP-growth in some European countries and the United States, CPB Netherlands Bureau for Economic Policy Analysis; and Bank Negara Malaysia, Changing drivers of economic growth in Malaysia, Annual Report 2012. A similar approach is taken in Shik Kang, J. and Liao, W. (2016), Chinese imports: What's behind the slowdown? *IMF Working Paper WP/16/106.*

[6] This approach is based on the premise of annual chain linking (where the price structures used are those of the previous year, rather than those in a specific base year). For an explanation of this method, see Robjohns, J., *Contributions to growth rates under annual chain-linking, Methods Explained*, Office for National Statistics, 2007. There are other more mathematically complex approaches to compute contributions to growth, but these yield the same results. See for instance, Eurostat (1999), *Compiling annual and quarterly national accounts main aggregates for the European Union and the euro area.*

[7] The method used to derive this is explained in Klein, L.R. (1983),*The economics of supply and demand*, Basil Blackwell: Oxford.

Table 1
THE IMPORT CONTENT OF THE MAIN GDP EXPENDITURE COMPONENTS (2010)

	Per cent
Private consumption	44.5
Government consumption	18.8
Gross fixed capital formation	58.6
Changes in inventories	63.2
Exports of goods	67.0
Exports of services	76.2

Note: This table shows the estimated percentage of each expenditure component that comprises intermediary or final imports. This estimate is based on information available from the input-output tables for the Maltese economy for 2010 published in NSO (2016) which was used to construct a CPS matrix on the basis of the methods explained in Klein (1983).

Source: Authors' calculations.

to modify the conventional approach by exchanging the official GDP expenditure components with import-adjusted expenditure variables.

In 2016, the National Statistics Office published the first official input-output tables for the Maltese economy since the adoption of the European System of Accounts (ESA) 1995 and 2010.[8] These tables, for the year 2010, were used to derive the import contents of the main GDP expenditure components as shown in Table 1. As expected, the import content of those components traditionally considered to form part of domestic demand is smaller than that of exports. However, with the exception of government consumption, the degree of import content is relatively high, particularly in the case of gross fixed capital formation. Quite interestingly, the import content of exports of services appears to be higher than that for exports of goods. This, to a significant extent, seems to reflect the output of the financial services sector. In fact, input-output tables constructed by the OECD for the Maltese economy, which exclude the activities of the export-oriented financial services sector, show much lower import content for Maltese exports.[9]

Comparing the results of the traditional and the import-adjusted approaches

Before comparing the results of the traditional and the import-adjusted approaches to studying economic activity, it is very important to pinpoint an important shortcoming of the non-traditional approach. Import intensities do not remain constant over time, particularly in a small economy that has recently gone through a number of structural changes. To give, but one example, the composition of Malta's gross fixed capital formation shows very dramatic changes in certain years. In particular, in 2013 the proportion of total investment comprised by new dwellings was half that in 2008. This implies that it would be optimal to have annual estimates of import intensities; something which is highly unlikely as input-output tables are not typically available at such a high frequency.[10]

Notwithstanding this caveat, the import-adjusted approach tends to yield more intuitive results than the traditional approach. The contribution to growth derived from domestic and foreign demand according to the two methods is shown in Table 2. These results highlight two important points. First, the import-adjusted approach yields much more stable trends than the traditional approach. For example, the latter method shows the contribution of domestic demand to GDP moving from a negative 2.16 percentage

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[8] See National Statistics Office (2016), Supply, Use and Input-Output Tables 2010.

[9] For estimates of these import intensities, see Grech, A.G. and Rapa, N. (2016), Trends in Malta's current account and their underlying causes, *Policy Note*, Central Bank of Malta.

[10] That said, one can readily test the reliability of using one set of import intensities by comparing over time the amount of total imports published in the national accounts with the sum of the estimated imports derived by multiplying the import intensities by the relevant expenditure component. In the case of the estimates made in Table 1, these yield total imports lower by on average 2.8% of the official import figures in the period between 2006 and 2013. The discrepancy for 2014 and 2015 was higher due to particularly large swings in certain components, but it was adjusted to come in line with that for previous years using expert judgement. Any discrepancy with the overall import figure was apportioned to each component in line with the expenditure component's share of total GDP.

Table 2
THE SOURCES OF ECONOMIC GROWTH ACCORDING TO TWO DIFFERENT APPROACHES

	Domestic demand		Foreign demand	
	Traditional	Import-adjusted	Traditional	Import-adjusted
2006	3.26	-0.13	-0.93	2.12
2007	1.82	0.97	2.85	3.93
2008	0.15	-1.20	-0.91	1.53
2009	-2.16	-1.29	-0.82	-1.71
2010	5.39	1.86	-1.45	2.10
2011	-0.23	0.64	3.15	2.07
2012	1.39	0.93	2.45	3.19
2013	1.04	1.12	2.08	1.71
2014	4.53	3.90	5.09	5.92
2015	12.46	3.54	-5.56	4.13

Note: This table shows the estimated contribution to real GDP growth of domestic demand (i.e. private consumption, government consumption and gross fixed capital formation) and foreign demand (exports of goods and exports of services). The traditional approach apportions the negative impact of changes in imports entirely to foreign demand, whereas the import-adjusted approach apportions the change in imports to specific expenditure components using estimated import intensities.

Source: Authors' calculations.

points in 2009 to a positive 5.39 percentage points in 2010, a total change of close to eight percentage points in just two years. The import-adjusted approach shows the contribution to shift from a negative 1.29 percentage points to a positive 1.89 percentage points, that is, half the change implied by the traditional approach. In fact, the standard deviation of the contribution of domestic demand over the decade under review of the import-adjusted approach is less than half that of the traditional one. This is also the case for the contribution of foreign demand. The traditional approach shows a positive contribution from foreign demand of 5.09 percentage points in 2014. This changed to a negative contribution of 5.56 percentage points in the following year. By contrast the import-adjusted approach shows a very marginal decline in the positive contribution of foreign demand to economic growth between the two years.
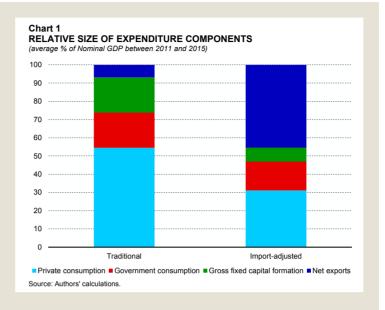
The second important result that emerges when comparing the two sets of estimates in Table 2 is that whereas the traditional approach implies that, on average, across the decade 2006 to 2015, domestic demand was the key source of growth, the import-adjusted method indicates that foreign demand has been the largest contributor. The traditional approach suggests that, on average, domestic demand accounted for over four-fifths of economic growth during that decade; whereas the import-adjusted approach allocates less than a third of overall growth as being derived by purely domestic factors. The latter method indicates that foreign demand had a negative impact on Malta's economic growth only in 2009, and has been the main source of growth in all years except for that year. By contrast, the traditional approach portrays external demand as being quite weak prior to 2011, and also to have reduced growth in 2015. This reading of the last decade of economic history is relatively counterintuitive and misconstrues the very significant contribution to Malta's economy made by its exporting firms, particularly in the services sector.
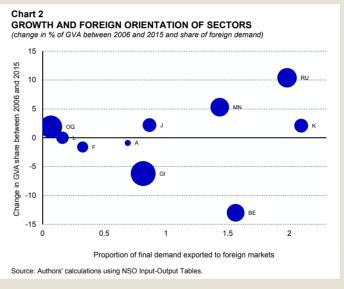
Chart 1 presents this graphically by illustrating the relative share of nominal GDP of private and government consumption, gross fixed capital formation and net exports over the five-year period to 2015 consistent with the two approaches. It is immediately noticeable that even under the import-adjusted method, domestic demand components retain the largest share at nearly 55% of overall GVA. However, this is smaller than the share attributed to the largest component of domestic demand (i.e. private consumption) under the conventional method. The relative importance of net exports under the import-adjusted approach is more in line with the share that export-oriented businesses command in terms of employment and value-added, and is similar to the importance that foreign demand exerts on other

macroeconomic variables like inflation.

To see this more clearly, Chart 2[11] plots the foreign orientation of sectors in the Maltese economy expressed as an index, against the change in each industry's share in overall GVA between 2006 and 2015. The former is estimated from the 2010 input-output tables and reflects the proportion of output of each sector that is driven either directly or indirectly by foreign demand.[12] The data show that there is a positive correlation between the degree of foreign orientation and the relative performance of each sector. Indeed, with the exception of the industrial sector (which includes manufacturing), sectors which are more export-oriented have performed relatively better than those that are more domestic-oriented, in line with the results of the contributions to growth pertaining to the import-adjusted method.

Finally, even though the traditional and import-adjusted approaches differ significantly in terms of the absolute level of importance given to net exports, it is quite interesting

Chart 1
RELATIVE SIZE OF EXPENDITURE COMPONENTS
(average % of Nominal GDP between 2011 and 2015)

■ Private consumption ■ Government consumption ■ Gross fixed capital formation ■ Net exports
Source: Authors' calculations.

Chart 2
GROWTH AND FOREIGN ORIENTATION OF SECTORS
(change in % of GVA between 2006 and 2015 and share of foreign demand)

Source: Authors' calculations using NSO Input-Output Tables.

to note that both methods show an increasing role for foreign trade. In fact, the relative share of net exports in the traditional approach has increased by 7 percentage points of nominal GDP between 2006-10 and 2011-15, whereas the import-adjusted approach implies a 5 percentage point rise. This suggests that no matter what statistical approach one adopts, it is clear that the Maltese economy is becoming ever more export-oriented, making the retention and improvement of external competitiveness ever more important as a policy aim.

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[11] The bubble size represents the relative size of value added of the sector in 2015. A=Agriculture, forestry and fishing, BE=Mining and quarrying; manufacturing; electricity, gas, steam and air conditioning supply; water supply; sewerage, waste management and remediation activities, F=Construction, GI=Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities, J=Information and communication, K=Financial and insurance activities, L=Real estate activities, MN=Professional, scientific and technical activities; administrative and support service activities, OQ=Public administration and defence; compulsory social security; education; human health and social work activities, RU=Arts, entertainment and recreation, repair of household goods and other services.

[12] Higher values of the foreign orientation index imply that the sector has a higher proportion of its output that is driven either directly or indirectly by foreign demand. The index is normalised around the economy average so that values larger than one imply a higher than average foreign orientation.