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# What drives Croatia's high import dependence?

Kristian Orsini

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By Kristian Orsini

## Summary

In the years before the global financial crisis, Croatia's imports grew rapidly in comparison to its exports. The bursting of the financial bubble initiated a sharp adjustment process: first imports compressed and subsequently exports expanded. Croatia now has a comfortable current account surplus but the economy needs to generate persistent surpluses to ensure the sustainability of the external liabilities it accrued in the previous decade.

This paper investigates the structural characteristics of Croatia's imports. In contrast to other catching-up economies in Central and Eastern Europe, Croatia's imports appear to be mainly driven by exports of services (mainly tourism), while exports of goods and investment play only a secondary role.

The results suggest that Croatia is likely to maintain its regained external balance in the medium term, so long as any competitiveness gains are preserved and investment is channelled to the tradable sector. The findings, however, also point to the limitations of a tourism strategy based on an ever-growing number of arrivals – without a fundamental diversification of the current offer. Tourism policy should aim to broaden the offer of tourism services and move away from the current, highly seasonal pattern in order to reduce the high "leakage effect" in tourism revenues.

## Introduction

**Croatia's high level of external debt is a source of risks for the economy.** By the end of 2016, Croatia's net international investment position (NIIP) was estimated at -77% of GDP, while gross external debt was at 97% of GDP (Figure 1). Such high level of external liabilities exposes the economy to shocks arising from variation in interest and exchange rates. The significant share of inter-company lending in total external liabilities mitigates the risk of rolling-over debt in adverse market conditions. However, government securities – which represent almost one third of external debt – are particularly sensitive to shifts in market sentiment. Furthermore, private and public domestic debt is largely denominated in foreign currency, which amplifies vulnerability to internal and external shocks. In order to bring the NIIP below -35% of GDP by 2026 (the prudential reference level in the European Commission's Macroeconomic Imbalances Procedure), Croatia must achieve an average yearly surplus in the order of 0.6% to 1.0% of GDP,[1] this will require maintaining its current export performance while tackling high import dependence.

Figure 1: Current account, gross external debt and net international investment position (2001-2016, % of GDP).
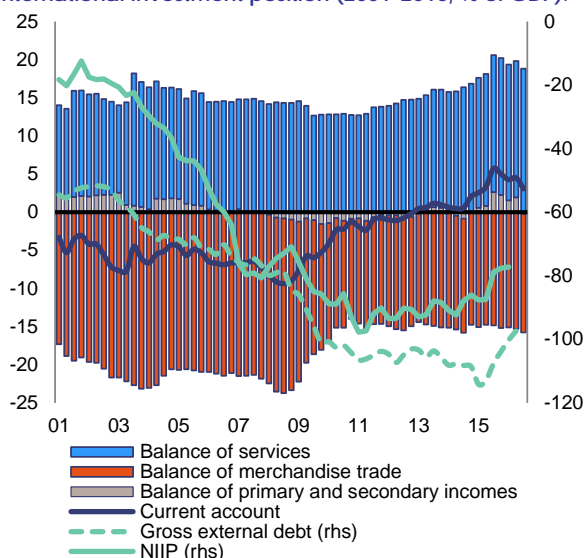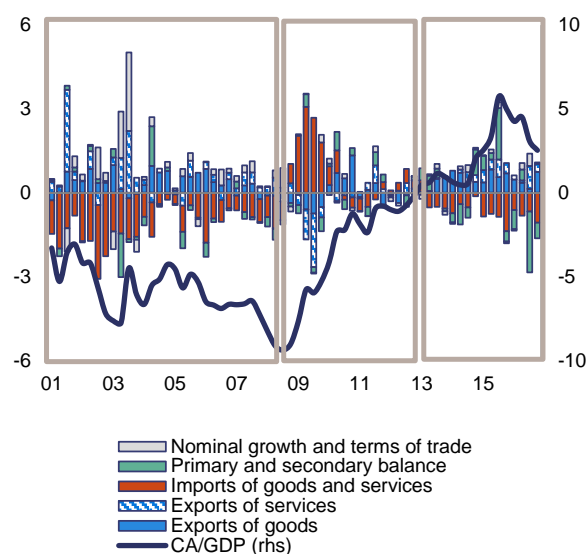


Source: EUROSTAT, four quarters moving averages

**Persistent current account deficits during the decade preceding the global financial crisis resulted in the build-up of sizeable external liabilities.** Household consumption and investment (especially in the construction sector) grew buoyantly up to 2008. Exports of goods also performed well, but less robustly than imports, which more than doubled in real terms between 2000 and 2008. The persistently negative merchandise trade balance was partly offset by the large surplus in the balance of services, driven by Croatia's all-important tourism sector (Figure 1). The

mirror deficit and surplus in the balance of goods and services is a recurrent feature of economies where tourism plays a crucial role, but in Croatia the sum of the two sub-balances progressively deteriorated. This compounded with a turnaround in the balance of primary and secondary incomes, as large remittances no longer compensated for the growing servicing costs of external debt. Consequently, in 2008, the current account registered a record deficit of over 9% of GDP (Figure 2, left panel), and gross external debt reached almost 80% of GDP.

Figure 2: Contributions to changes in the current account balance (2001-2016, %of GDP).



Source: HNB, BOP, four quarters moving averages

**The process of external adjustment initially relied on import compression.** As the capital flows that had fuelled internal demand came to a sudden stop, consumption started to contract and investment collapsed. In 2009 alone, GDP contracted by over 7%. Exports were also hit hard – due to the large reliance of Croatian trade on Slovenian and Italian markets, as well as the restructuring of the shipbuilding industry. Moreover, with a relatively small export base (exports of goods accounted for only around 18% of GDP in 2010), Croatia could not fully benefit from the rebound in global trade, while sluggish income growth in the EU prevented a swifter recovery of tourism revenues. Initially, therefore, the external adjustment relied almost exclusively on import compression (Figure 2, central panel). Imports fell by roughly 20% in real terms in 2009 and broadly stagnated thereafter. At the end of this first adjustment phase, the current account deficit had shrunk to just above 1% of GDP.

**EU accession in July 2013 boosted exports, paving the way to a turnaround in the current account balance.** Access to the EU single market significantly improved the export capacity of

Croatian firms. Exports of goods expanded by more than 10% in the following two years and in 2015 exports of services also soared, as Croatia confirmed its reputation as a safe and attractive tourism destination (Figure 2, right panel). Imports were on the rise again, but their rate of expansion was initially below that of exports of goods and services. The current account surplus reached 4.8% of GDP in 2015. More recently, however, the surplus in trade of goods and services has started to shrink again.

**Tackling structural weaknesses can contribute to a lower import dependency, thus improving external sustainability.** Policy recommendations have frequently stressed the importance of improving competitiveness and boosting exports, though import performance is also important.[2] High import dependence is not *per se* negative. On the contrary, it may signal that an economy is leveraging the benefits of economic specialisation through trade integration. As such, the EU promotes a high level of trade between Member States. However, high import dependence may also signal structural weaknesses in the economy. Tackling these weaknesses could improve the external balance and facilitate the reduction of the liabilities accumulated in the pre-crisis years. As Croatia enters a new expansionary phase, this paper estimates its import function in order to identify the main drivers of recent swings and assess the medium term prospects. Based on the analytical findings and against the backdrop of Croatia's economic specificities, it discusses policy measures to improve the current account and hence external sustainability.

## Import composition and economic structure: a comparative perspective

**Croatia has experienced progressive de-industrialisation.** At the beginning of the 2000s, the secondary sectors (i.e. extractive industry, manufacturing, energy and utilities) represented a slightly smaller share of the economy than the average of peer economies in Central Eastern Europe which accessed the EU in 2004 and 2007 (henceforth referred to as the CEE10).[3] In Croatia, the gross value added (GVA) of these sectors has progressively decreased as a percentage of total GVA and even in absolute terms between 2009 and 2013. In contrast, the share of the secondary sector remained broadly stable in the CEE10. The process of de-industrialisation is also observable in the sub-sector of manufacturing. Services, on the other hand, have witnessed an opposite development, increasing from about 46% to 54% of GVA, while they remained broadly stable on average in peer economies (Table 1).

**The collapse of construction and public investment had a lasting impact on fixed capital formation and imports of investment goods.** The weight of construction activities was increasing sharply in the years before the financial crisis, pushed by a real estate boom and sizable public infrastructure investment. In 2008, construction activity peaked to roughly 9% of GVA in almost all considered countries (bar Hungary and the Czech Republic) and has been falling thereafter. The collapse of the construction sector in Croatia was more contained than in the Baltic republics and Romania,[4] yet it had a more lasting impact given the relatively high level of household debt. Low investment activity was also driven by subdued investment in equipment, against the background of a weak industrial sector. Imports of investment goods followed similar developments. In the pre-crisis years the weight of imports of capital goods – traditionally high in catching-up economies – was comparable in magnitude to that of CEE10 economies (both as a share of total imports and as a share of GDP). It collapsed in 2008 and remained relatively low during Croatia's six-year long recession. In 2015, it accounted for only 13% of total imports of goods, or 4.5% of GDP.

**Croatian firms are less integrated than Central Eastern Europe in global value chains and are less involved in inter-industry trade.** The weight of exports of goods has increased in Croatia over the past 15 years. In 2000 merchandise exports accounted for just about 15% of GDP, while in 2015 they amounted to roughly 24% of GDP. This is nevertheless well below the share in all CEE10 economies, where exports of goods represented on average 29% of GDP in 2000 and over 52% of GDP in 2015.[5] In most CEE10 economies, EU membership ushered in sizeable foreign direct investments which underpinned their progressive integration in Global Value Chains (GVC) – especially automotive industry. Inputs from old EU Member States were increasingly being assembled and processed in the less expensive CEE10 countries, before being re-exported. Accordingly, intermediate goods (particularly for machinery and transport equipment) represent almost two thirds of total imports in the CEE10. Croatia joined the EU only in July 2013 and missed out on this wave of expansion of western manufacturing (Cieślik, 2014). In 2000 the share of intermediate goods in total imports was more than 10 pps. lower than in the CEE10 economies.[6] The gap has since significantly decreased, and in 2010 intermediate goods represented 59% of total imports in the CEE10 and around 54% in Croatia, though the composition of imports of intermediary goods is slightly different, with a higher share of mineral fuels.

Table 1: Structural characteristics of the economy and import composition (Croatia and CEE10, 2000-2015).

| | HR | | | | EU 10 | | | |
|---|---|---|---|---|---|---|---|---|
| | 2000(*) | 2005 | 2010 | 2015 | 2000 | 2005 | 2010 | 2015 |
| **Gross Value Added (Supply)** | | | | | | | | |
| Agriculture | 6% | 5% | 5% | 4% | 5% | 4% | 3% | 3% |
| | | | | | (3%-13%) | (2%-9%) | (2%-6%) | (2%-5%) |
| Industry | 24% | 21% | 20% | 21% | 26% | 27% | 26% | 27% |
| | | | | | (20%-31%) | (16%-31%) | (19%-31%) | (16%-32%) |
| of which manufacturing | 18% | 16% | 14% | 15% | 21% | 21% | 20% | 22% |
| | | | | | (15%-26%) | (13%-25%) | (13%-24%) | (12%-27%) |
| Construction | 5% | 8% | 7% | 5% | 7% | 7% | 8% | 7% |
| | | | | | (5%-8%) | (6%-9%) | (4%-10%) | (4%-9%) |
| Services | 46% | 51% | 53% | 54% | 47% | 47% | 48% | 48% |
| | | | | | (44%-53%) | (42%-58%) | (41%-56%) | (45%-58%) |
| **Gross Domestic Product (demand structure)** | | | | | | | | |
| Consumption | 62% | 60% | 59% | 59% | 60% | 59% | 58% | 56% |
| | | | | | (51%-68%) | (48%-69%) | (49%-64%) | (47%-64%) |
| Investment | 20% | 25% | 21% | 19% | 25% | 23% | 22% | 22% |
| | | | | | (17%-31%) | (19%-33%) | (17%-27%) | (19%-26%) |
| Export of services | 22% | 23% | 20% | 25% | 10% | 9% | 10% | 12% |
| | | | | | (5%-28%) | (5%-25%) | (6%-24%) | (9%-26%) |
| Export of goods | 15% | 17% | 18% | 24% | 29% | 39% | 44% | 52% |
| | | | | | (14%-51%) | (22%-63%) | (26%-69%) | (31%-85%) |
| Imports of services | 9% | 8% | 7% | 7% | 7% | 7% | 8% | 9% |
| | | | | | (5%-16%) | (5%-16%) | (6%-15%) | (6%-18%) |
| Imports of goods | 31% | 38% | 31% | 39% | 37% | 44% | 46% | 52% |
| | | | | | (28%-60%) | (30%-69%) | (33%-70%) | (35%-82%) |
| **Imports of goods - Broad Economic Category (BEC)** | | | | | | | | |
| Consumption goods | 23% | 23% | 25% | 30% | 15% | 16% | 18% | 19% |
| | | | | | (13%-27%) | (13%-24%) | (14%-30%) | (15%-29%) |
| Motor spirit and passenger motor cars | 7% | 6% | 4% | 4% | 4% | 4% | 3% | 3% |
| | | | | | (1%-7%) | (3%-8%) | (2%-8%) | (2%-8%) |
| Intermediate goods | 50% | 52% | 57% | 54% | 63% | 62% | 62% | 59% |
| | | | | | (44%-69%) | (49%-65%) | (50%-66%) | (46%-64%) |
| Capital goods | 20% | 19% | 14% | 13% | 17% | 17% | 15% | 18% |
| | | | | | (13%-19%) | (14%-19%) | (10%-17%) | (13%-21%) |
| **Imports of goods - Standard International Classification (SITC)** | | | | | | | | |
| Food, drinks and tobacco | 8% | 8% | 10% | 13% | 5% | 6% | 7% | 7% |
| | | | | | (3%-12%) | (4%-11%) | (5%-15%) | (5%-15%) |
| Mineral fuels, lubricants | 12% | 15% | 19% | 15% | 10% | 11% | 12% | 8% |
| | | | | | (5%-23%) | (6%-24%) | (10%-32%) | (6%-20%) |
| Raw materials | 3% | 2% | 2% | 2% | 4% | 3% | 4% | 3% |
| | | | | | (2%-6%) | (2%-8%) | (2%-9%) | (2%-9%) |
| Chemicals and related products, n.e.s. | 11% | 11% | 14% | 14% | 11% | 11% | 12% | 13% |
| | | | | | (9%-14%) | (9%-14%) | (8%-14%) | (9%-16%) |
| Machinery and transport equipment | 34% | 33% | 26% | 24% | 38% | 39% | 38% | 40% |
| | | | | | (24%-51%) | (30%-51%) | (20%-51%) | (25%-49%) |
| Other manufactured goods | 31% | 31% | 29% | 32% | 29% | 29% | 26% | 27% |
| | | | | | (25%-37%) | (22%-34%) | (18%-31%) | (22%-31%) |

(*) Statistics on the structure of imports by BEC and SITC refer to 2002

Figures in brackets refer to the maximum and the minimum value within the CEE10 group

Source: Eurostat

**The all-important tourism sector generates large revenue inflows, while driving up the imports of consumption goods.** Contrary to merchandise trade, exports of services amounted to between 20% and 25% of GDP between 2000 and 2015 in Croatia. This is more than twice the average for the CEE10. In terms of composition, more than 70% of exports of services relate to tourism activities, whereas in peer economies exports of services are mostly related to businesses. The share of consumption goods in total imports increased from an already high 23% in 2000 to a staggering 30% in 2015 (as opposed to less than 20% in the CEE10). Imports of food, drinks and tobacco represented as much as 13% of total imports in 2015 as opposed to around 7% in the CEE10. Considering the sharp contraction of domestic consumption (almost 12% in real terms between 2008 and 2014) and the relative strength of the domestic food processing industry, it is likely that high import dependence is a consequence of the large weight of the tourism industry. Incidentally, this would also explain the rather pronounced seasonal profile of imports. The following econometric analysis builds on the above descriptive analysis and attempts to shed light on the main drivers of imports in Croatia.

## Theoretical framework and literature review

**Trade flows take place in a context of imperfect competition, with economies of scale and product differentiation on both domestic and international markets.** Import dynamics are correlated with changes in relative prices (i.e. the difference between domestic and import prices) and income. The sensitivity of imports to these two fundamental variables is generally expressed in terms of elasticities – i.e. the percentage change in imports, following a one percentage increase in income or relative prices. According to the *New Trade Theory* (Krugman, 1979)*,* imports are not perfect substitutes for domestic goods and services. Changes in preferences and relative prices generate substitution between domestically produced and imported goods and services. Ultimately, the extent of imports' price elasticity reflects both quality preferences and availability of domestic substitutes. Domestic output proxies both the purchasing power of residents and the overall level of activity. Both dimensions are important since imports are either directly consumed or enter domestic production processes through inter-industry trade.

**Empirical specifications of import demand functions typically relate imports to final demand and price competeveness.** Econometric estimations of import behaviour mostly take the form of log-linear specifications, whereby (the logarithm of) volume of imports is modelled as a function of (the logarithm of) the volume of output and (the logarithm of) the ratio of the price of foreign and domestically produced goods and services –net of exchange rate effects. The former is often proxied by GDP or final demand (or other combinations of demand components). In estimations based on higher frequency (monthly) data, industrial production is also often used as a proxy for activity. The latter is often proxied by the ratio of import prices to domestic prices (e.g. the GDP deflator). Domestic and trading partners' unit labour costs and real effective exchange rates have also been frequently used. The log transformation has the advantage that the estimated coefficients can be interpreted as elasticities. The elasticity of imports with respect to relative prices (i.e. the price or substitution elasticity) is typically negative, whereas income elasticity (also referred to as demand or output elasticity) is positive.[7]

**Previous studies for Croatia have resulted in a rather broad range of estimated price and income elasticities.** A comprehensive review of OECD countries (Meacci and Turner, 2001) reports above unity income elasticities (1.5 on average) and negative, but below unity, price elasticities (-0.6 on average). When it comes to Croatian studies, Mervar (2003) estimates income and price elasticities at 0.72 and -0.45 respectively. A more recent study by the Croatian National Bank, covering the period 2000 to 2007, finds substantially higher elasticities: 2.0 for income and -0.9 for prices (Bobić, 2010). Available studies therefore provide a rather broad range of estimates, both below and above typical elasticities – especially with respect to income.[8]

**Demand composition is key to explain import dynamics.** Since different demand components – investment, consumption and exports – tend to have different import contents, import demand is affected not only by changes in the aggregate output level, but also by changes in its composition (Bussière et al., 2011). Orsini (2015) estimates an import function for Spain, and finds evidence of greater stability in import elasticities when decomposing final demand in domestic and external demand. This suggests that not only composition effects matter when estimating import functions, but also that import elasticities tend to be more stable over time when controlling for changes in other structural characteristics of the economy.

**The high import dependence of the CEE10 economies is driven by the strong integration of their manufacturing sector in international global value chains.** Reininger (2008) estimates the elasticity of imports with respect to (w.r.t.) consumption, investment and exports for the CEE10,

Croatia, Serbia and Turkey. Elasticities are estimated both separately by country and jointly – using panel techniques – for different groupings of countries and different periods. Import-export elasticities range from 0.6 to 0.9 depending on the sub-groups of countries and periods considered. This is consistent with the strong integration in GVC of these countries. Elasticities w.r.t. investment are also high, varying between 0.2 and 0.4. Private consumption tends to have a smaller (and often non-significant) role in driving imports.[9] Results w.r.t. relative price elasticities are less conclusive: in several single country estimates, including Croatia, relative prices do not have a significant impact on long-term import behaviour. In panel estimates, relative prices turn out significant, but the magnitude of the elasticity is overall very small.

## Econometric specification and data used in the analysis

**Our analysis is based on an econometric framework that incorporates short- and long-term dynamics.** The elasticities discussed above are often referred to as long-term elasticities. In the short-term, imports may behave differently to shocks, but eventually they tend to converge towards levels consistent with their long-term relation with the fundamentals. In modelling import dynamics, we opt for an Error Correction Model (ECM) specification, which allows estimating both long- and short-term price and income elasticities. The change in imports between two subsequent periods is modelled as following:

$$(1) \qquad \Delta M_t = a\Delta y_t + b\Delta p_t + EC(M_{t-1} - \alpha y_{t-1} - \beta p_{t-1}) + \varepsilon_t$$

The symbol $\Delta$ indicates the increase (decrease) of the variable with respect to the previous period (t-1), y is a measure of income and p is the ratio of foreign and domestic prices. In each period, import dynamics are driven by short-term change in income (or its components) and prices and a fraction of the deviation of imports from its long-term determinants – provided that such long-term relation with fundamentals exists and is stable over time. The long-term relation is represented by $(M_{t-1} - \alpha y_{t-1} - \beta p_{t-1})$ and is referred to as the co-integration vector. The estimated coefficients a, b, $\alpha$ and $\beta$ can be interpreted, respectively, as the short- and long-term income- and price elasticity. The coefficient EC – also known as the speed of adjustment – represents the rate at which imports converge again to their equilibrium, or the rate at which disequilibrium between fundamentals is corrected – hence the name error correction models. The model is consistent when the EC term is significant, negative and smaller than unity – since

this ensures convergence to the long-term equilibrium. Finally, the term $\varepsilon_t$ represents the error term.

**We rely on quarterly data and proceed with stepwise disaggregation of demand components.** We proceed through a stepwise disaggregation of final demand to better identify the role of composition effects. In the *first* model we use final demand and relative prices; in the *second* model we disaggregate final demand into domestic and external demand; and in the *third* model we further disaggregate domestic demand into private consumption and investment, and external demand into exports of goods and exports of services. Following Amano and Wirjanto (1997), we exclude public consumption from the estimation, since this demand component does not generally rely on imported goods – a finding that is confirmed by Bussière et al. (2011).[10] Import and export series are filtered to eliminate the disturbances related to the high volatility of trade in ships and energy products, and seasonally adjusted using the X-12 routine. The other quarterly national accounts series are directly adjusted by the Croatian Bureau of Statistics – following the same approach.[11] The ratio of the implicit deflator of imports to GDP is used as a proxy for relative prices. Since these data are only consistently available since 2001, our estimation sample includes 64 observations (i.e. 4 quarters for 16 years).

## Results

**Variations in final demand and relative prices alone do not appear to explain well the behaviour of imports.** In the first model, income elasticity is close to one and the price elasticity is estimated at about -0.2 (Table 1, Panel A). Although plausible in magnitude and broadly in line with the literature, only the income elasticity is statistically significant. Panel B reports short-term elasticities: income elasticity appears to be slightly higher in the short-run (1.1), but price elasticity is again not significant. The error correction term is only weakly significant and quite small in magnitude: at about -0.15 it suggests that it would take around seven quarters to return to equilibrium.[12] Panel C and Panel D display the results of additional statistical tests, namely the Engle-Granger co-integration test and the Bai-Perron test for structural breaks. The former tests the presence of a long-run relation, whereas the latter tests the stability of the estimated long-term elasticities.[13] Both tests are rejected. The negative Engle-Granger test suggests the absence of a long-run relation (which also explains the weak error correction term). The Bai-Perron test provides evidence of two structural breaks occurring

Table 2: Econometric results.

| | | Model I | Model II | Model III |
|---|---|---|---|---|
| **Panel A** | **Long-run elasticities** | | | |
| Final demand | Coefficient | **0.98** | | |
| | Std. Error | **0.12** | | |
| | p-value | **0.00** | | |
| Domestic demand | Coefficient | | **0.39** | |
| | Std. Error | | **0.11** | |
| | p-value | | **0.00** | |
| Consumption | Coefficient | | | -0.07 |
| | Std. Error | | | 0.05 |
| | p-value | | | 0.16 |
| Investment | Coefficient | | | **0.32** |
| | Std. Error | | | **0.03** |
| | p-value | | | **0.00** |
| External demand | Coefficient | | **0.66** | |
| | Std. Error | | **0.08** | |
| | p-value | | **0.00** | |
| Exports of goods | Coefficient | | | **0.27** |
| | Std. Error | | | **0.02** |
| | p-value | | | **0.00** |
| Exports of services | Coefficient | | | **0.66** |
| | Std. Error | | | **0.06** |
| | p-value | | | **0.00** |
| Prices | Coefficient | -0.21 | -0.15 | <u>-0.14</u> |
| | Std. Error | 0.25 | 0.11 | <u>0.06</u> |
| | p-value | 0.39 | 0.18 | <u>0.02</u> |
| **Panel B** | **Short-run elasticities** | | | |
| EC Term | Coefficient | <u>-0.15</u> | **-0.29** | **-0.81** |
| | Std. Error | <u>0.07</u> | **0.08** | **0.08** |
| | p-value | <u>0.04</u> | **0.00** | **0.00** |
| Final demand | Coefficient | **1.12** | | |
| | Std. Error | **0.16** | | |
| | p-value | **0.00** | | |
| Domestic demand | Coefficient | | **0.79** | |
| | Std. Error | | **0.11** | |
| | p-value | | **0.00** | |
| Consumption | Coefficient | | | **0.94** |
| | Std. Error | | | **0.22** |
| | p-value | | | **0.00** |
| Investment | Coefficient | | | **0.18** |
| | Std. Error | | | **0.03** |
| | p-value | | | **0.00** |
| External demand | Coefficient | | **0.31** | |
| | Std. Error | | **0.09** | |
| | p-value | | **0.00** | |
| Exports of goods | Coefficient | | | **0.08** |
| | Std. Error | | | **0.03** |
| | p-value | | | **0.01** |
| Exports of services | Coefficient | | | **0.37** |
| | Std. Error | | | **0.06** |
| | p-value | | | **0.00** |
| Prices | Coefficient | -0.27 | *-0.28* | **-0.58** |
| | Std. Error | 0.18 | *0.16* | **0.11** |
| | p-value | 0.14 | *0.09* | **0.00** |
| Adj R2 | | 0.55 | 0.63 | 0.85 |
| **Panel C** | **Engle-Granger cointegration test** | | | |
| | Tau-statistic | -2.19 | -1.81 | **-9.25** |
| | | 0.41 | 0.81 | **0.00** |
| | z-statistic | -8.94 | -6.98 | **-64.89** |
| | | 0.45 | 0.81 | **0.00** |
| **Panel D** | **Bai Perron tests for structrual breaks** | | | |
| 0 vs. 1 | F statistics | **6.96** | **8.86** | 1.76 |
| | Scaled F statistics | **13.92** | **26.59** | 8.79 |
| | Critical value (0.1) | **9.81** | **12.08** | 16.14 |
| 1 vs. 2 | F statistics | **6.71** | 2.28 | n/a |
| | Scaled F statistics | **13.41** | 6.84 | n/a |
| | Critical value (0.1) | **11.40** | 13.91 | n/a |
| 2 vs. 3 | F statistics | 1.10 | n/a | n/a |
| | Scaled F statistics | 2.20 | n/a | n/a |
| | Critical value (0.1) | 12.29 | n/a | n/a |
| Break points | | 2009Q2 | 2009Q2 | n/a |
| | | 2013Q2 | n/a | n/a |

Notes: Coefficients in **bold** figures are significant at 1% level, <u>underlined</u> coefficients are significant at 5% level and coefficients *in italic* are significant at 10% level.

Source: Own calculations based on Eurostat

in the second quarter of 2009 (broadly coinciding with the eruption of the economic crisis in Croatia) and in the second quarter of 2013 (i.e. just before the accession to the EU). These results suggest that the model is not adequately specified. Before concluding that two structural breaks effectively occurred, we test whether a richer model specification yields greater parameter stability.

**The long-run import dynamics appear dominated by a strong import-export link.** In the second model, final demand is disaggregated into domestic demand and exports. The elasticity of imports w.r.t. domestic demand is roughly 0.4, whereas elasticity w.r.t. exports is estimated at a high 0.7 (and strongly significant). The sum of the elasticities w.r.t. demand components broadly corresponds to the elasticity of final demand in the previous model. Price elasticity is still not significant in the long run. In the short run, however, imports react to prices changes (-0.3), but significance remains weak. Moreover, imports appear more responsive to changes in domestic demand (0.8) than external demand (0.3) – the opposite of what occurs in the long run. The correction term is now strongly significant and slightly higher in value. Persistent deviations from equilibrium, however, do not allow rejecting the hypothesis of no long-run relation between fundamentals (as measured by the Engle-Granger test). The test for parameter stability, moreover, still suggests the presence of a structural break, in the second quarter of 2013 (as measured by the Bai-Perron test). We therefore proceed with a further disaggregation.

**Differently from CEE10 economies, the high import dependence of the exporting sector is driven by the tourism sector, rather than manufacturing.** In the third model, we further disaggregate external demand by exports of goods and exports of services. The results show that the main driver of imports in Croatia is exports of services. The elasticity of the latter w.r.t. imports is in the order of 0.65, whereas the elasticity w.r.t. export of goods is only about 0.3. This is very different from other CEE10 economies, where the strong export-import link is related to the importance of global value chains in manufacturing – mainly, but not exclusively, in the automotive industry. The elasticity w.r.t. investment is in the order of 0.3 – in line with findings for other economies. Similarly to both CEE10 and more mature economies, moreover, domestic consumption appears to have no significant impact on imports in the long run. The sensitivity to relative prices has the expected sign, but at -0.1 it is relatively low. This is a recurrent feature in catching-up economies, which are not always able to

produce domestically the whole range of imported goods. In the short term, imports adjust relatively swiftly to their long-run relation, as the error correction coefficient is estimated at 0.9. The analysis of the other coefficients reveal that – just as in the previous model – consumption is the main driver of imports in the short run (with an elasticity of 0.9), and relative prices play a stronger role in the short run. The high elasticity of imports w.r.t. consumption in the short run and the absence of a long-run relation is not surprising. It suggests that shocks to consumption are absorbed by higher imports, but that permanent increases in consumption are satisfied by the domestic production base. This specification, moreover, passes both the test for co-integration and for the absence of structural breaks.[14]

**The high import dependence of the export of services weakens its positive impact on the economy.** The relatively high share of consumption goods in imports and a high elasticity of imports w.r.t. exports of services is largely explained by the high import content of tourism – which makes up for the bulk of Croatian exports of services. Notwithstanding the likely preference of some tourists for foreign-produced goods, such high import dependence is likely to be driven by the limited capacity of domestic production to satisfy the surge in consumption of non-domestic residents during the peak tourist season.[15] In recent years, in the months of July and August, Croatia's population is estimated to have increased by 15 to 20%. The associated surge in consumption needs, moreover, is concentrated in the coastal areas. What is more, the average daily per-capita spending in Croatia is lower than in other EU tourist destinations. A larger share of expenditure is therefore likely to be spent on consumption goods – most of which need to be imported. This "leakage effect" of tourism is a well-known phenomenon, though it is more frequently associated with small-island tourism-economies (Singh, 2006). The high import elasticity with respect to export of services suggests that it applies also to Croatia, most likely on account of the higher than average share of tourism revenues spent on consumption goods and the high seasonal concentration of tourism.[16]

**Looking backwards, the sharp correction in 2008 and subsequent recovery of imports is largely explained by the dynamics of investment, tourism and exports of goods.** The above estimates allow us to assess the relative importance of fundamental variables in explaining import dynamics in Croatia. Figure 3 summarises these results and shows the estimated contribution to the change in imports of the disaggregated demand components and relative

prices over three periods. Up until mid-2008 (when the volume of imports peaked), the increase in imports was driven by external demand and investment. The fall in investment explains about two thirds of the collapse of imports between mid-2008 and mid-2013. The rest is explained by the reduction in tourism revenue, while developments in merchandise export partially offset the fall. Since 2013, imports have resumed growing buoyantly mainly on account of surging export of goods and services and, to a lesser extent, investment.[17]

Figure 3: Total change in import volumes and (estimated) drivers
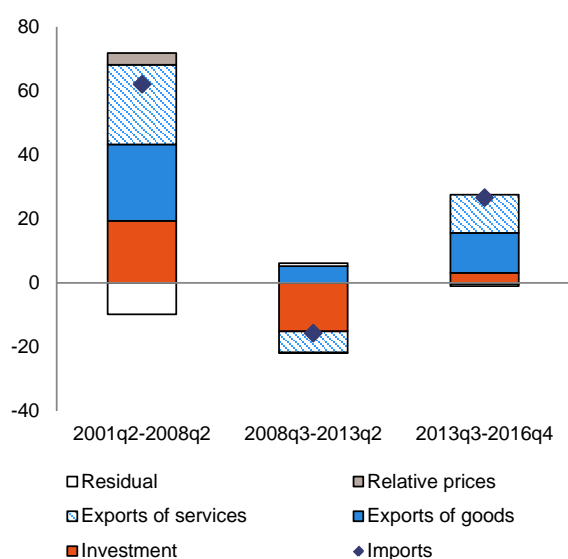


Source: Own estimation based on Eurostat.

**The evolution of relative prices appears to have had only a minor impact.** In principle, loss of competitiveness favours import penetration, whereas competitiveness gains would trigger an opposite substitution effect (of foreign goods with domestic goods). Competiveness losses explain a notable share of the import surge until 2008, but they had only a modest impact thereafter. This is a consequence of the low price elasticity, but also of the overall improvement in relative prices. Between 2009 and 2015, price dynamics have been subdued in most EU countries, thus partially offsetting the otherwise positive impact of deflation in Croatia in 2014 and 2015. The impact of changes in cost competitiveness is however likely to be underestimated in this framework, since exports of goods and services are assumed to be exogenous w.r.t relative prices. The deterioration in cost competitiveness in the first period is likely to have contributed to the faster increase of the less price-sensitive exports of services vis-à-vis exports of goods and hence – indirectly – favoured a faster import penetration. Similarly, the increase in exports

of goods in the last period is likely to have benefited from subdued domestic price dynamics.

## Policy conclusions

**There is limited scope for reducing the import dependence of domestic demand.** Our analysis shows that imports respond strongly to short-run shocks to (domestic) private consumption, but in the long run domestic production appears to adjust to consumption needs. The low elasticity of imports w.r.t. domestic consumption suggests that Croatia's external balance is not likely to be negatively affected by the recovery in consumption following the six-year long contraction. The somewhat higher elasticity of imports w.r.t. investment is typical for catching-up economies. To the extent that imported capital goods help boosting the domestic productive capacity, high import dependence linked to capital formation is generally indicative of a strong convergence process.

**Going forward, the import content of exports of goods is set to increase.** As Croatia further continues its penetration into the EU market and its integration in EU value chains, the import dependence of the domestic manufacturing base is likely to increase – as indeed has been the case for other economies following their accession to the EU. This process is likely to have a positive impact on net trade in goods and on external sustainability. Increasing the vertical integration of Croatian firms is set to boost imports, but exports of goods are set to increase by just as much, if not more. Policies attracting FDIs in export-related sectors could serve as catalysts for this process. Some steps in this direction were taken with the 2015 Act on Fostering Investment, though there is room for further improving targeting and enhancing the attractiveness to greenfield FDIs as well as acquisitions.

**The high import content of exports of services limits the spill-over effects on the economy**. Public policies should aim at increasing the value of exports of services – by moving the tourism sector away from a model based on large volumes of arrivals, but low per-capita spending. Expanding the range of services with lower import content (e.g. medical, cultural services) would contribute to a reduction of the "leakage effect". Addressing the seasonality of tourism is also likely to have a positive effect. The difference between the high elasticity of imports w.r.t. domestic consumption in the long- and in the short-run, suggests that the domestic productive structure is ready to absorb surges in consumption – as long as these are not temporary and are more evenly distributed throughout the year. A less seasonal pattern of tourism would create an incentive for domestic

producers to scale-up capacity. The 2013 Government Tourism Development Strategy rightly acknowledges the weaknesses of Croatian tourism and identifies interesting avenues to strengthen the offer of tourism services. Indeed, recent data suggest that tourists are increasingly coming to Croatia outside the main summer season, but it will take significant efforts to reduce one of the most seasonal tourism industries in the EU. Moreover, in recent years the number of tourists has increased faster than the volume of tourist revenue, signalling a further acceleration of the low-cost segment.

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[1] This is based on an update of the calculations in the 2015 Country Report for Croatia (EC, 2015a). Specifically, it assumes an inflation rate of 2%, a capital account balance of 1.1% of GDP, a gap of roughly 1 pp. between the rate of return of domestically held foreign assets and liabilities held by foreigners, and finally a real growth in the range of 1 to 2% per year.

[2] In the frame of the Macroeconomic Imbalances Procedure, the European Commission publishes its yearly Alert Mechanism Report, which includes the reading of a series of macroeconomic indicators. External imbalances are captured by the trade balance and the NIIP, but performance indicators focus mainly on export competitiveness, including gains/losses in export market shares. According to the 2016 AMR "In the majority of the economies with highly negative positions, higher current account surpluses than those currently observed would be needed in order to reduce their net external liabilities in a timely fashion. Consolidating improvements in export competitiveness remains therefore essential, as well as policies aimed at attracting foreign direct investments (EC, 2015b, p. 10)".

[3] CEE10 include Bulgaria, Estonia, Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

[4] The aggregate figures in the table partly masks the dynamics of individual countries. The construction sector amounted to above 10% of GVA in the Baltics and over 12% in the case of Romania, and collapsed by almost 5 pps. in the wake of the crisis.

[5] The share was as high as 80% of GDP in Slovakia, but even in Romania – the country with the lowest share of exports of goods – it amounted to 30% of GDP.

[6] The difference is also visible in the typology of goods: the share of machinery and transport equipment in the imports of CEE10 economies fluctuates at 40%, whereas it is smaller in Croatia. Between 2000 and 2015 it has fallen from roughly 34% to 24% of total imports – also due to the contraction of the shipbuilding industry. On the other hand, Croatia features a large energy industry, which relies on both domestic and foreign inputs. This explains the much higher share of mineral fuels, lubricants and related materials in intermediate goods.

[7] Whereas the terms price and income elasticity – typically derived in the context of neo-classical demand theory – are still used, ideally one should refer to substitution and output elasticity.

[8] The differences may be affected by the different periods chosen, but also by different methodologies and data. Mervar (2003) uses monthly data from customs, industrial production (as a proxy for income) and real effective exchange rates (as a proxy for relative prices). The analysis, based on standard Ordinary Least Squares on variables in levels, covers the period between 1990 and 1993, when Croatia was just opening its market to international trade. Bobić (2010) relies on a panel of series of different industries and a Generalised Method of Moments (GMM) estimator, applied on first order differences. The income and price variables are proxied by real world GDP and industry-specific unit value indexes. The considered period spans from 2000 to 2007 and was characterised by much faster import penetration. The coefficients, moreover, should be interpreted as unweighted average elasticities across industries, and not as aggregate elasticities as in Mervar (2003). Both approaches have become obsolete by the development of more sophisticated approaches that allow for a different behaviour of short and long-term elasticities, also in panel approaches (see following section).

[9] Reininger (2008) attributes to the low elasticity of imports w.r.t. consumption to the low propensity to import consumption goods in economies characterised by comparatively low levels of income. "The combination of a relatively large share in total demand and a relatively small import elasticity suggests that the marginal import content of private consumption, i.e. the import content of one additional unit of private consumption, is generally far below that of one additional unit of fixed investment or exports." (Reininger, 2008, p. 116.) The low elasticity of import with respect to consumption, however, is encountered also in more advanced economies. Stephan (2007), for example, finds that German imports are essentially driven by exports and investment, while private consumption can be excluded from the long-run relationship between imports and macroeconomic fundamentals. Bussière et al. (2011) confirm these results for a large group of economies, showing that the most pro-cyclical components of demand (investment and exports) have a particularly rich import content, whereas the other components (private consumption and, especially, government spending) have lower import content.

[10] All models are estimated using a single equation approach, along the lines set out in Stock (1987).

[11] Imports of fuels tend to be weakly elastic to price (and income), while the transactions related to ships induce disturbances in the series due to the low frequency and the high unit value of transactions. Whereas removing oil is relatively standard in the literature (Carone, 1996), removing trade in ships is related to structural specificities of trade in Croatia (Mervar, 2003).

[12] This is derived from taking the ratio of one (or 100% of the adjustment) to 0.15 (or 15% of the adjustment occurring in a single period).

[13] Precisely, the Engle-Granger test on the long-run relation between imports and its fundamentals should be performed in conjunction with a series of tests verifying that the series are integrated of the same order – i.e. have similar time trends. We do this by performing a battery of Augmented Dickey Fueller (ADF) tests on the time series in level and their first order difference. The tests confirm that the series are all integrated of order one.

[14] Note that this specification also includes dummies to correct for outliers, but not potential structural breakpoints. Specifically, three dummies were included to correct for the exceptional drop in investment in 2009Q2 and for anomalous surge in imports before EU (2013Q2) accession and sudden drop thereafter (2013Q3). These three dummies improved the fit of the model. However, they were not included in the testing of either the co-integration or the structural breaks. The model therefore remains largely valid even in the absence of dummy variables.

[15] It should be noted that the seasonal adjustment performed on the data allows filtering out fluctuations due to pure seasonal dynamics. The link between the high import dependence of tourism and the high seasonality of the phenomenon does not result from any  specific test on the series, but is deducted on the basis of the strong evidence of no correlation between domestic consumption and imports on the one hand and high correlation between export of services and imports on the other. The relatively strong seasonal profile of imports also suggests the strong link with tourism – since other demand components tend to be much smoother.

[16] According to Singh, leakage rates are in the order of 35% to 85% for small-island economies. An earlier study for Croatia had estimated the import content of export of tourism at about 33%, that is roughly half our estimate (Jurčić, 2000). This study however is based on input-output tables and excludes direct purchases by tourists in shops. Consumer services like the repair of cars, clothes, etc., provided directly for tourists, are also not registered as transactions between the tourism sector and the consumer services sector. Given the structure of tourism in Croatia, these transactions are likely to account for a significant share of tourist expenditure.

[17] As an additional test, a standard regression was also performed on import volumes and GVA components. The regression identified a strong positive relation between imports and the service sector (NACE codes GHI), whereas a much weaker relation was identified for the manufacturing sector.

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