III. Imbalances and Adjustment

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This section reviews ideas and evidence on adjustment in the EMU, including shock absorption and external imbalances. First, it presents the main issues with macroeconomic adjustment in a monetary union and the debate that surrounded the EMU project. Second, the section reviews the empirical evidence and presents key facts about the EMU performance in adjusting to asymmetric shocks. The point is made that, overall, the adjustment mechanisms worked as predicted, with competitiveness reacting in such a way as to absorb asymmetric shocks. However, contrary to expectations, the EMU start-up shock had major and long-lasting country-specific effects on income and employment. Moreover, in light of accumulated macroeconomic imbalances, the financial crisis produced major country-specific effects. Third, the section discusses adjustment issues related to external imbalances. It is argued that the accumulation of external imbalances turned out more disruptive than thought in the early EMU years, as they were followed by current account reversals and deep recessions that interrupted the convergence process. ([107])

III.1. Introduction

The emphasis in the academic debate surrounding the creation of the economic and monetary union (EMU) was on internal adjustment - i.e. adjustment of the output gap - to asymmetric shocks, a relevant issue in light of the loss of nominal exchange rates as an adjustment tools and the loss of independent monetary policies at Member State level. Issues relating to external adjustment — i.e. adjustment of the external balance — and adjustment to macroeconomic imbalances at large were seldom discussed([108]).

After 20 years of experience with EMU, there is now sufficient evidence for a much better understanding of the adjustment mechanisms in place. With hindsight, experience has shown that some of the shocks hitting euro-area countries have been of a different nature and much larger and more persistent than the standard business cycle shocks considered in the early EMU debate. These shocks triggered serious 'internal adjustment' challenges. At the same time, the so called 'benign neglect' attitude prevailing in the early years of EMU, that is, the view that current account developments and other macroeconomic imbalances were not reasons for concern but rather the reflection of integration and convergence, turned out to be unjustified. Accumulated external imbalances, coupled with internal imbalances and capital misallocation in the pre-crisis period, prompted major reversals in external financing and perverse sovereign-bank loops; this resulted from an incomplete design of EMU, which left it without the financial sector governance and firewalls needed to deal with financial instability.

To develop these arguments, this section will review the mains facts and features related to adjustment and macroeconomic imbalances observed in the euro area over these past 20 years. The remaining sub-sections are structured as follows. Sub-section 2 reviews the early debate on adjustment channels in a currency union. Sub-section 3 analyses the adjustment that has taken place in the euro area over the past 20 years and its effectiveness. Sub-section 4 highlights the type of shocks that really mattered for the euro area, while Sub-section 5 discusses the importance of macroeconomic imbalances for the effectiveness of the adjustment. Sub-section 6 analyses adjustment issues still pending and sub-section 7 concludes.

III.2. Adjustment in the euro area: the debate

In the years leading up to the EMU, the academic debate was focused on how euro-area members would adjust to asymmetric shocks in the absence of nominal exchange rates. It was argued that only countries not highly exposed to asymmetric shocks or with characteristics that helped an efficient adjustment would form an optimal currency area, i.e., an area where the benefits from sharing a common currency outweigh the costs associated with reduced room to deal with asymmetric shocks (McKinnon, 1963, Mundell, 1961)([109]).

([107]) This section represents the authors' views and not necessarily those of the European Commission.

([108]) See, European Commission (2008), 'EMU@10: successes and challenges after 10 years of Economic and Monetary Union', European Economy, 2.

([109]) McKinnon, R. (1963), 'Optimum currency areas', *American Economic Review* 53, pp.509-517. Mundell, R. (1961) 'A theory of optimum currency areas', *American Economic Review* 51, pp.657-665.

For this reason, as a pre-requisite for a successful integration, the literature emphasised more synchronised business cycles and a low probability of asymmetric shocks — favouring notably a high degree of trade integration and economic structures supporting a quick and painless adjustment in case of asymmetric shocks. With respect to the latter, the focus was in particular on flexible product and labour markets, permitting the adjustment of relative prices, geographical mobility of production factors, notably financial risk sharing and labour mobility. Alternatively, the presence of a system of automatic fiscal transfers between Member States, helping to absorb the impact of shocks on incomes, could also facilitate the adjustment (Kenen, 1969)([110]).

Sceptical views were put forward in the pre-EMU debate on whether EU countries formed an optimal currency area. These views pointed among other things to the fact that unlike US states: (i) European countries were more likely to be hit by asymmetric shocks (Bayoumi and Eichengreen, 1993), (ii) they had a lower degree of labour mobility (Blanchard and Katz, 1992), and (iii) they had a much more limited system of automatic fiscal transfers between States (Bayoumi and Masson, 1995)([111]).

More optimistically, it was also argued that the intensification of trade flows after the formation of EMU would endogenously increase the business cycle synchronisation of euro area countries bringing them closer to an optimal currency area([112]). Similar hypotheses were also put forward regarding financial integration, but subsequent studies have only confirmed the positive impact of trade integration on business cycle synchronisation but not that of financial integration([113]). The point was also made that greater policy coordination in EMU through the Stability and Growth Pact would also lead to a higher degree of synchronisation of business cycles([114]). Finally, it was also debated that the loss of flexibility with nominal exchange rates would not necessarily imply adjustment issues, as floating exchange rates and independent monetary policies were found to be by themselves a source of asymmetric shocks([115]).

A key aspect of the discussion surrounding the EMU concerned the effectiveness of the price competitiveness channel for internal adjustment, also known as the 'automatic adjustment mechanism'. Asymmetric shocks would cause diverging output gaps, so that the growth rate of costs and prices would have differed across countries (because of their different positions along national Phillips curves) in such a way as to produce an automatic reaction on competitiveness, which would lead to dynamics in net exports that would help to absorb the shock. Net exports would decline in countries with stronger price growth, and in so doing cool aggregate demand and reduce the output gap. This adjustment channel, if working effectively, would have helped avoid resources remaining idle for long periods in countries hit by negative shocks, therefore limiting the social costs of adjustment and reducing the extent to which adjustment takes place via migration.

([110]) Kenen, P. (1969) 'The theory of optimum currency areas: an eclectic view', in Mundell,R., and Swoboda, A. (Eds.), *Monetary Problems in the International Economy*, University of Chicago Press, Chicago, pp.41-54.

([111]) Bayoumi, T., Eichengreen, B. (1993) 'Shocking aspects of European monetary unification', in Torres, F. and Giavazzi, F. (Eds.), *Adjustment and Growth in the European Monetary Union*, Cambridge University Press, Cambridge, pp. 193-229. Blanchard O, Katz L.F. (1992), 'Regional evolutions', *Brookings Papers on Economic Activity* 1, 1-75. Bayoumi, T., and Masson, P. R. (1995), 'Fiscal flows in the United States and Canada: Lessons for monetary union in Europe', *European Economic Review* 39(2), pp.253-274.

([112]) See von Hagen, J. and Neumann, M.J.M. (1994), 'Real exchange rates within and between currency areas: how far away is EMU?', *Review of Economics and Statistics* 76, pp.236–244; Frankel, J. Rose, A. (1998), 'The endogeneity of the optimum currency area criteria', *Economic Journal* 108, pp.1009–1025; and Haug, A., MacKinnon, J. G., and Michelis, L. (2000), 'European monetary union: a cointegration analysis', *Journal of International Money and Finance* 19, pp.419–432.

([113]) Subsequent studies continued to find trade integration to have been conducive to higher business cycle synchronisation in at least some of the euro area countries. See Gächter, M., & Riedl, A. (2014), 'One money, one cycle? The EMU experience', *Journal of Macroeconomics* 42, pp. 141-155 and Caporale, G. M., De Santis, R., and Girardi, A. (2015), 'Trade intensity and output synchronisation: On the endogeneity properties of EMU', *Journal of Financial Stability* 16, pp.154-163. However, Caporale et al. (2015) *op.cit.* and Kalemli-Ozcan et al. (2013), for instance, find that financial linkages are not always conducive of higher business cycle synchronization. Kalemli-Ozcan S. Papaioannou, E., and Peydró, J. (2013), 'Financial regulation, financial globalization, and the synchronization of the economic activity', *Journal of Finance* 68 (3), pp.1179-1220.

([114]) Darvas Z., Rose A.K., and Szapáry, G. (2007), 'Fiscal divergence and business cycle synchronization: irresponsibility is idiosyncratic', in Frankel, J.A., Pissarides CA (eds.) *NBER International Seminar on Macroeconomics 2005*, pp.261 - 298 MIT Press.

([115]) See Artis, M., and Ehrmann, M. (2006), 'The exchange rate–A shock-absorber or source of shocks? A study of four open economies', *Journal of International Money and Finance*, 25(6), pp.874-893; and Kontolemis, Z. and Samei, H. (2000), 'The U.K. Business Cycle, Monetary Policy, and EMU Entry', IMF Working Papers 00/210.

However, in addition to the stabilising competitiveness channel, it was argued that monetary unification would also imply a destabilising real interest rate channel — also known as the 'Walters' effect'([116]). As nominal interest rates in a monetary union tend to converge, countries experiencing larger positive output gaps and higher inflation would also experience lower real interest rates([117]). This would lead to higher consumption and investment, thus strengthening the boom. The dominance of the stabilising price competitiveness channel of adjustment over the destabilising real interest channel depended on a high degree of trade integration, on a relatively strong response of competitiveness to cyclical divergences, on a muted response of investment to the cost of capital, and, finally, on a low persistence of inflation differentials([118]).

While internal adjustment was at the centre of the attention, issues relating to external adjustment did not feature highly in the pre-EMU debate. In particular, there was no discussion on the possible conflict between internal and external adjustment implied by the automatic competitiveness adjustment mechanism. The conflict, however, became evident as, in the first decade of EMU, a number of countries in the euro-area periphery started recording strong cyclical positions, deteriorating competitiveness, and widening current account deficits. This widening of current account imbalances among euro-area countries was not generally seen as problematic, as it was interpreted as a necessary by-product of increased financial integration associated with EMU. Actually, the build-up of current account divergences between the richer euro-area 'core' and the 'periphery' was seen as the manifestation of one of the benefits of monetary integration, namely the improved room for international borrowing to finance investment where potential gains are stronger([119]). In this respect, the EMU was helping to address the puzzling evidence elsewhere that capital tended to flow from countries with lower per-capita income to countries with higher per-capita income, instead of what would be expected([120]).

Although the prevailing attitude to widening current account imbalances in the early years of EMU was one of benign neglect, concern started mounting as imbalances became larger and evidence pointed to declining productivity growth and the excessive expansion of non-tradables sectors in deficit countries([121]). The post-crisis experience showed not only that the accumulated external imbalances became increasingly hard to sustain, but that the incomplete nature of the monetary union made possible major current account reversals, triggered by the generalised risk reappraisal following the great financial crisis.

([116]) This argument was first pointed out by Alan Walters in 1992 to argue against UK membership of the euro area. See Walters, A. (1992), 'Walters Critique', in P. Newman, M. Milgate and J. Eatwell, eds., The New Palgrave Dictionary of Money and Finance, Palgrave Macmillan, Basingstoke.

([117]) According to the theory of uncovered interest parity, if there are no restrictions to international capital movements, arbitrage will drive nominal expected returns expressed in the same currency to be the same across countries. This implies that $i_t = i_t^* + (e_{t+1}^e - e_t)/e_t$, where e is the price of the foreign currency in terms of domestic and i^* is the foreign interest rate. When exchange rate risk is eliminated in a monetary union and there are no capital restrictions, nominal interest rates equalize across members states. This implies that when inflation rates are different across members of a monetary union, real interest rate differentials also emerge. See Krugman P, Obstfeld M, Melitz M (2017) International trade: theory and policy, 11th edn. Pearson, London, chapter 14.

([118]) See e.g., European Commission (2008), *op. cit.* Persistency in inflation differentials strengthen the destabilising real interest rate channel by making inflation expectations less forward looking and thus making differences in real interest rates also more persistent. Among the factors affecting the persistence of relative price changes structural conditions in product and labour markets have been mentioned. See on this Angeloni, I., and Ehrmann, M. (2007), 'Euro area inflation differentials', The BE Journal of Macroeconomics, 7(1), 1-34; and Biroli, P., Mourre, G., and Turrini, A. (2010), 'Adjustment in the euro area and regulation of product and labour markets: an empirical assessment, CEPR discussion paper 8010.

([119]) See e.g., Blanchard, O. and F. Giavazzi (2002), 'Current account deficits in the euro area: the end of the Feldstein-Horioka puzzle?', *Brookings Papers on Economic Activity* 2, pp.148-186; and Schmitz, B., von Hagen, J. (2011), 'Current account imbalances and financial integration in the euro area', *Journal of International Money and Finance* 30 (8), 1676-1695.

([120]) This puzzle is best known as 'Lucas paradox', Lucas, Robert (1990), 'Why doesn't Capital Flow from Rich to Poor Countries?', *American Economic Review* 80 (2), pp.92-96. A closely related puzzle is the 'Feldstein-Horioka puzzle', which points to the paradoxical evidence of the high correlation between domestic savings and domestic investment. See Feldstein M. and Horioka, C. (1980), 'Domestic Saving and International Capital Flows', *Economic Journal* 90 (358), pp.314-329.

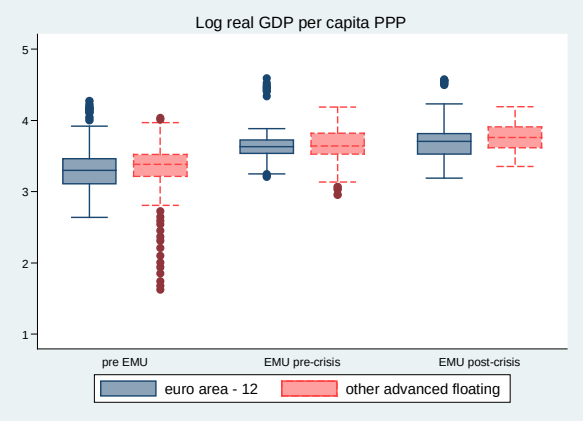
([121]) See European Commission (2006), 'Focus: Widening current account differences within the euro area', *Quarterly Report of the Euro Area* 4, pp.25-37; European Commission (2008), *op. cit.*; Arghyrou, M.G., Chortareas, G. (2008), 'Current account imbalances and real exchange rates in the euro area', *Review of International Economics* 9 (5), 747-764; Giavazzi, F. and Spaventa, L. (2010) 'Why the Current Account May Matter in a Monetary Union: Lessons from the Financial Crisis in the Euro Area', CEPR discussion paper 8008; Gros, D. (2012), 'Macroeconomic Imbalances in the euro area: symptoms or causes of the crisis?', CEPS policy brief 226, April; Belke, A. and Dreger, C. (2013), 'Current account imbalances in the euro area: does catching up explain the development?' *Review of International Economics* 21 (1), 6-17; Nieminen, M. (2015), 'Trade imbalances within the euro area and with respect to the rest of the world', *Economic Modelling*, 48, 306-314.

III.3. Adjustment to asymmetric shocks: was it effective?

In the years following the formation of the EMU, prima facie evidence suggests that the record of euro-area countries on cross-country cyclical divergences is roughly similar to that of a comparable group of countries with floating exchange rates. This is seen by taking the standard deviation of output gaps in other advanced economies with floating exchange rates and comparing it with the standard deviation of the 12 euro-area founding members, particularly after 1999, or with the euro area overall, particularly after 2008 (Graph IV.2)([122]). The evidence is consistent with findings showing an increase in the synchronisation of euro-area business cycles during the 1990s (see Mélitz, 2004; Kalemli-Ozcan et al., 2004). This increased synchronisation is likely to reflect closer economic integration and policy coordination in the run-up to — and early stages of — EMU([123]). However, other factors could have played a role, including reduced cyclical fluctuations linked to globalisation([124]).

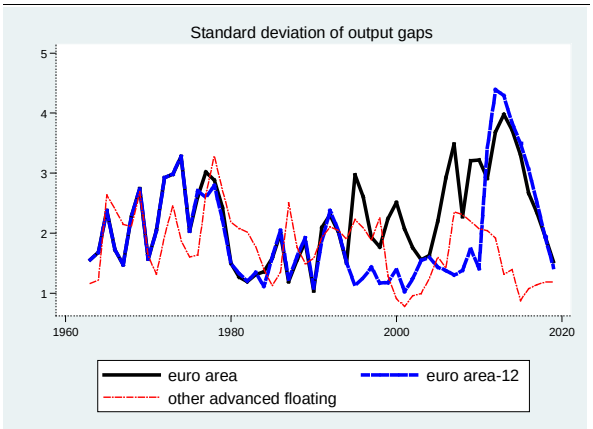
In the aftermath of the global financial crisis, output gaps diverged widely across the euro area. The dispersion peaked in 2012 and has been decreasing since. In 2018, it was back at pre-crisis levels. The dispersion in cyclical positions following the crisis contributed to an increase in the dispersion of output per capita, particularly for the 12 euro-area founding members (Graph IV.1). This dispersion was reduced in the pre-crisis post-EMU period but increased almost to pre-EMU levels following the crisis([125]).

Graph III.1: **Distribution of log per-capita GDP in the euro area vs other floating advanced economies**



Source: AMECO and IMF WEO

Graph III.2: **Convergence of output gaps in the euro area vs other floating advanced economies**



Source: AMECO and IMF WEO

Regarding adjustment, there is evidence that the competitiveness channel worked as expected in the euro area, with real exchange rates responding to differences in cyclical positions, before and after the global financial crisis. Empirical evidence indicates that price competitiveness responded to output gaps more forcefully after the EMU([126]).

([122]) The group of non-euro area advanced economies with floating exchange rates (according to the IMF definition) includes Australia, Canada, Switzerland, the UK, Iceland, Japan, Korea, Norway, New Zealand, Sweden and the United States. This sample of countries is similar to the one used in Stracca, L. (2017), 'Hanging from a cross of euros? Macroeconomic adjustment in and out of the Eurozone', paper presented at the 'Euro at 20' conference in Dublin, June 2018. Notice that even prior to EMU membership candidate countries maintained a close peg to the Deutschmark/euro, hence the comparisons may even be valid some years prior to 1999/2008.

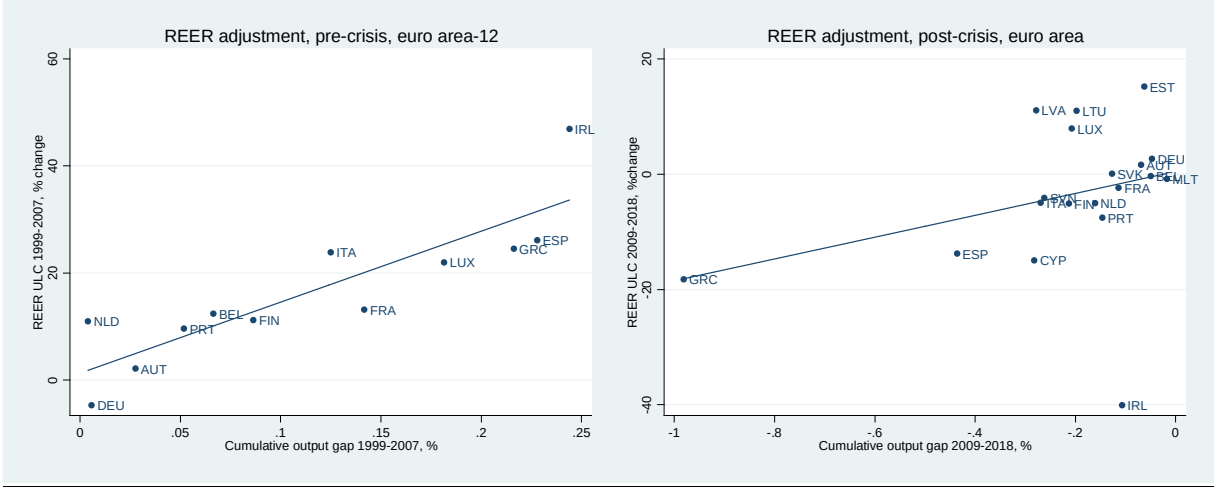
([123]) Mélitz, J. (2004), 'Risk sharing and EMU', CEPR Discussion Papers No 4460. Kalemli-Ozcan, S., B. Sørensen and O. Yosha (2004), 'Asymmetric shocks and risk sharing in a monetary union: Updated evidence and policy implications for Europe', CEPR Discussion Papers No. 4463.

([124]) See European Commission (2008), *op. cit.* and Artis, M. (2005), 'Business cycle affiliations and their determinants: Where do we stand?', in Jonung, L. (ed.) *Proceedings of the Annual Research Conference on Business Cycles and Growth in Europe*, European Economy Economic Papers No. 227.

([125]) This is consistent with the fact that income per capita across euro area-12 countries have been diverging between 2007 and 2014, also taking into account standard determinants in growth regressions to assess 'beta convergence'. See Coutinho, L. and Turrini, A. (2019), 'Convergence and Macroeconomic Adjustment', *Forthcoming in Quarterly Report on the Euro Area.*

([126]) European Commission (2008), *op. cit.*; Biroli, P., Mourre, G., and Turrini, A. (2010), 'Adjustment in the euro area and regulation of product and labour markets: an empirical assessment, CEPR

Graph III.3: **REER adjustment in the euro area before and after crisis**



Source: AMECO

The responsiveness of real exchange rates to output gaps observed before the crisis for euro-area members (left panel Graph IV.3) is confirmed also after the crisis and also considering the enlarged euro area (right panel Graph IV.3).

Regarding the persistency of competitiveness developments, in other words how quickly real exchange rates react to output gap shocks, the evidence suggests that real exchange rates appear to be more persistent since the EMU, due to the loss of nominal exchange rate adjustment. However, the persistence of changes in relative prices — i.e. changes in competitiveness abstracting from nominal exchange rates and the importance of different trade partners — appears to have been reduced after the single currency's adoption([127]). This result, helped by structural reforms in labour and product markets, implies that the internal automatic adjustment mechanism will be more effective([128]).

Despite these reassuring findings, the evidence also indicates that inflation differentials, and therefore real interest rates, reacted significantly to output gaps, and in so doing underpinned the simultaneous presence of a destabilising Walters' effect([129]). As will be clearer in the forthcoming sub-sections, this effect proved relevant not so much in magnifying initial shocks, but rather in making the impact of these shocks structural and with persistent implications.

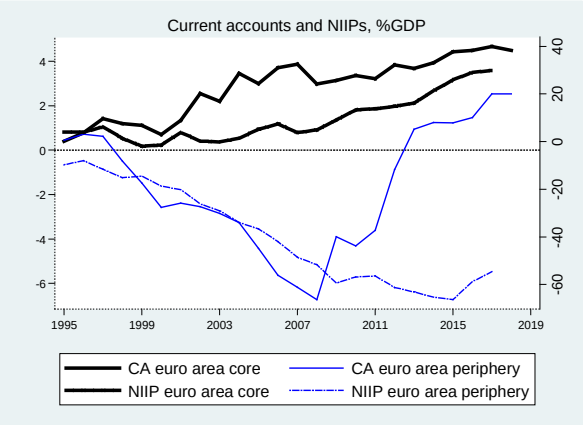
Discussion Papers No. 8010; and Ruscher, E. (2016), 'An overview of market-based adjustment in the euro area in the light of the crisis', Quarterly Report on the Euro Area, 14(4), 7-17.

([127]) As opposed to competitiveness measured by real effective exchange rates, inflation differentials do not take into account the extent to which relative prices change with respect to the most relevant trade partners. Biroli, P., Mourre, G., and Turrini, A. (2010), op. cit.

([128]) In a monetary union, persistence in relative prices translates into persistence in real exchange rates between the members of the currency union, and vice-versa, as the nominal exchange rate cannot adjust by definition. Lower persistence therefore leads to faster adjustment and higher resilience to shocks. The latter has been associated with structural reforms in product and labour markets. See Duval, R., and Vogel, L. (2008), 'Economic resilience to shocks', OECD Journal, Economic Studies, 2008(1), 1-38; Canova, F., Coutinho, L. and Z. Kontolemis (2012), 'Measuring the macroeconomic resilience of industrial sectors in the EU and assessing the role of product market regulations', European Economy Occasional Papers 112; and Jolles, M., Meyermans, E. and Vasicek, B. (2018), 'Determinants of economic resilience in the euro area: An empirical assessment of policy levers', Quarterly Report on the Euro Area, 17(3), 27-46.

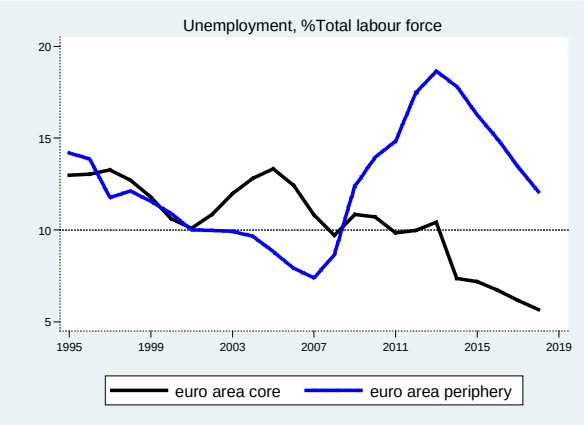
([129]) Many studies document inflation differentials across EMU countries to be wider and more persistent than those observed among the regions of a country. See e.g., Honohan, P. and Lane, P. R. (2003), 'Divergent inflation rates in emu', Economic Policy, 18(37):357-394; and Ehrmann, M. (2007), 'Euro area inflation differentials', The BE Journal of Macroeconomics, 7(1), 1-34.

Graph III.4: **External adjustment: core vs periphery**



Source: AMECO

Graph III.5: **Internal adjustment: core vs periphery**

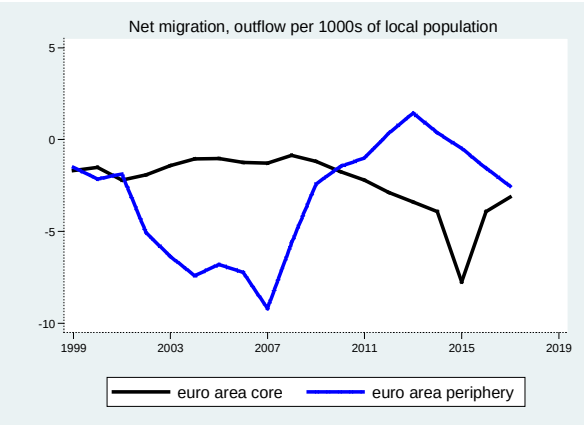


Source: AMECO

Changing relative costs and prices were not the only margin along which adjustment took place. As expected, adjustment concerned also the mobility of production factors. Capital mobility was at the same time a source of adjustment and the driver of major shocks. Capital flew to the periphery in the first decade of EMU, fuelling to some extent output booms. After the burst of the financial crisis, capital left the euro-area periphery. The extent of the capital flight was so massive as to become the source of major persistent output divergences([130]). Recession in the periphery was accompanied by a reversal in the current account dynamics and a large surge in unemployment (Graphs IV.4 and IV.5)([131]).

Labour migration also played an important role. Net migration inflows in the first phase of EMU were positive in periphery countries. These inflows contributed, among other things, to booming housing markets in countries such as Spain and Ireland, but also helped to contain labour costs in some sectors. After the financial crisis, periphery countries started recording reduced inflows in an initial phase and then outflows. Correspondingly, net migration inflows in core countries started becoming more sizable in the second half of the 2010s (Graph IV.6).

Graph III.6: **Net migration outflows**

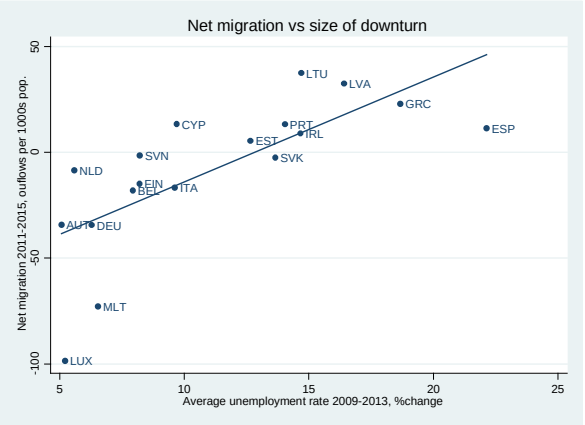


Source: Eurostat

([130]) It is important to note that, despite the limited EU budget, private outflows in the euro area have been cushioned to some extent by public support in the form of EU/IMF financial assistance programmes, provision of liquidity by the Eurosystem (captured by the development of TARGET balances), and ECB purchases of sovereign bonds. For evidence, see Merler, S., and Pisani-Ferry, J. (2012), "Sudden stops in the euro area", Bruegel policy contribution, 6.

([131]) The core is defined as countries with a current account surplus on average between 1999 and 2007, and includes Austria, Belgium, Germany, Finland, France, Luxembourg and the Netherlands. The periphery is defined as countries with a current account deficit on average between 1999-2007 (net recipients) and includes Spain, Greece, Ireland, Italy, Portugal and new Member States, including Cyprus, Estonia, Lithuania, Latvia, Malta, Slovakia, and Slovenia.

Graph III.7: **Unemployment and population flows**



Source: AMECO and Eurostat

The pattern of net migration flows across euro-area countries in the post-crisis period was clearly linked to slack in the labour market, with countries in the periphery recording higher unemployment rates and more sizable migration outflows and those in the core being net recipients of migrants (Graph IV.7). The evidence indicates that the responsiveness of migration flows to changes in unemployment became stronger after EMU and therefore contributed to adjustment ([132]).

III.4. What type of shocks mattered?

Traditional optimal currency area (OCA) theory focuses on shocks that originate as asymmetric. Initially the focus was on asymmetric demand shocks — i.e. demand shocks that take place only in some countries in the monetary union but not in others. However, subsequent debate also considered asymmetric supply shocks affecting particular industries or sectors (see Baoyoumi and Eichengreen, 1993)([133]). These type of business-cycle shocks played a role during the first 20 years of EMU. However, as argued already in the pre-EMU debate, the evidence also shows that common shocks can produce asymmetric effects on output when affecting euro-area Member States to different extents and with different intensity([134]).

With hindsight, it could be argued that the biggest source of cyclical divergences in the first decade of EMU was not the occurrence of asymmetric shocks but the very substantial reduction in nominal interest rate differentials across euro-area countries, notably between the euro-area 'core' and its 'periphery'([135]). Already before monetary unification, as a result of a credible convergence process towards the Maastricht criteria for EMU, a rapid convergence of nominal interest rates and inflation rates took place([136]). Nominal interest rate convergence was largely the result of vanishing exchange rate risk premiums, but reduced credit premiums associated with strong public finance eligibility requirements for EMU also played a role. In parallel, inter-bank and bond markets became more integrated across the euro area and more liquid. This implied that real interest rates declined sharply in some countries as spreads across countries narrowed significantly. By the mid-1990s periphery countries started recording real interest rates below those observed in the euro-area core (Graph 8). The steeper fall in interest rates in the periphery was associated with capital inflows and current account deterioration and implied a stronger cyclical position as compared with countries in the euro-area core.

([132]) See Arpaia, A., Kiss, A., Palvolgyi, B., and Turrini, A. (2016), 'Labour mobility and labour market adjustment in the EU. IZA Journal of Migration', 5(1), 21. Despite evidence of increased mobility across euro-area countries, recent evidence indicates that labour mobility remains below the labour mobility recorded across US states (see Beyer, R. C., and Smets, F., 2015, 'Labour market adjustments and migration in Europe and the United States: how different?', Economic policy 30(84), 643-682).

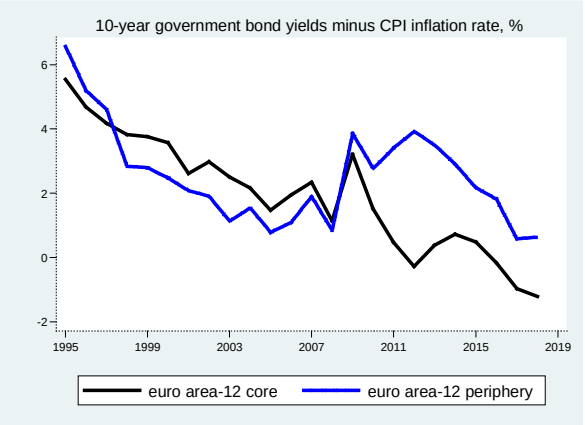
([133]) Bayoumi, T., Eichengreen, B. (1993), *op. cit.*

([134]) Several papers has pointed out that common shocks could have a heterogeneous impact across euro-area countries. On this evidence see, for instance, Honohan, P. and Lane, P. R. (2003), op. cit.; Chen, R., Milesi-Ferretti, G.M., Tressel, T. (2012), 'External imbalances in the euro area', IMF Working Paper, 236; and Giovannini, M., Hohberger, S., Kollmann, R., Ratto, M., Roeger, W., & Vogel, L. (2018), 'US and Euro Area External Adjustment: The Role of Commodity Prices and Emerging Market Shocks', paper prepared for the conference 'International Financial Integration in a Changing Policy Context' at the European Commission (1-2 March 2018).

([135]) Periphery countries had on aggregate larger stocks of public debt than the core (see Graph IV.11) and built up important stocks of private debt in the run-up to the crisis (see Graph IV.9).

([136]) See European Commission (2008), *op. cit.*

Graph III.8: **Long-term real interest rates in 12 euro area founding members**



Source: AMECO

A new common shock with largely asymmetric effects hit the euro area, following the burst of the financial crisis. This time the effects were the opposite of those observed with the EMU start-up shock, and more abrupt. With the crisis, interest rates spiked in all countries. But while in the euro-area core interest rates gradually fell as a result of monetary policy action, they remained high in the periphery. This reflected higher interest rate spreads in the periphery associated with a reappraisal of the credit risk, partly driven and compounded by the large stocks of private, government and external debt (Graph IV.8). Due to the strong asymmetric impact of risk reappraisal following the financial crisis, demand and output growth largely diverged across the euro area (Graph IV.2).

Overall, the experience with the first 20 years of EMU shows that the shocks that mattered for cyclical divergence across euro-area countries were not those considered in the traditional literature on an optimal currency area (i.e., shocks of asymmetric nature). Instead they were major common shocks affecting financial markets and producing asymmetric effects on countries' output in light of differences in framework conditions([137]).

III.5. The relevance of macroeconomic imbalances for adjustment in EMU

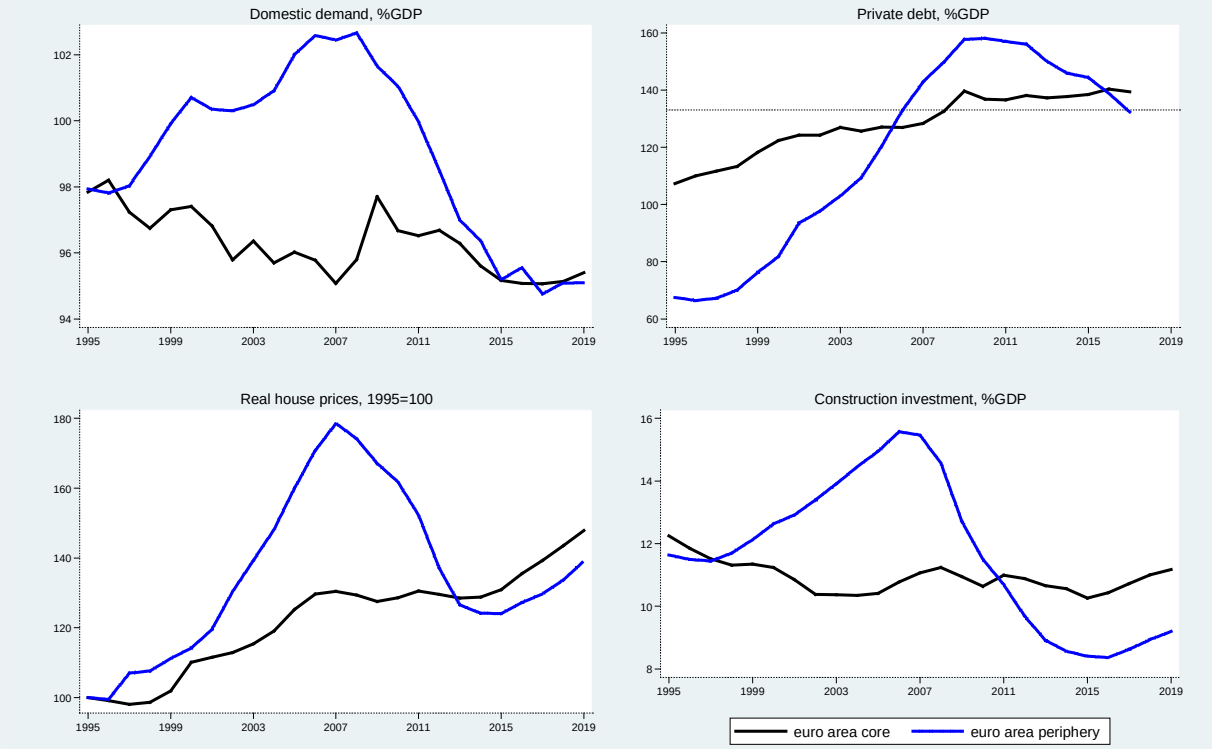
Why were the effects of the financial crisis so different across the euro area? Experience has revealed that the macroeconomic imbalances that were accumulated during the first decade of EMU played a key role([138]).

The absorption boom in the euro-area periphery was accompanied by a rise in private debt (top panel Graph IV.9). In addition, house price bubbles and a strong growth in construction activity took place in a number of euro-area periphery countries (bottom panel Graph IV.9). This build-up of imbalances in combination with current account deficits, indebtedness and an oversized and inflated housing sector created in turn the conditions for a largely asymmetric response to the global financial crisis.

([137]) See also Belke, A., Domnick, C., and Gros, D. (2017). 'Business cycle synchronization in the EMU: Core v periphery'., Open Economies Review, 28(5), 863-892. These authors argue that what is most relevant is not the synchronisation of cycles but their diverging amplitude, determined by differential responses to shocks.

([138]) Recent studies have found that the synchronisation of business cycles was negatively affected by the presence of imbalances, particularly imbalances in public and private debt, as well as in unit labour cost dynamics. See, e.g., Inklaar, R., Jong-A-Pin, R., de Haan, J. (2008), 'Will business cycles in the euro area converge? A critical survey of empirical research', *Journal of Economic Surveys*, 22 (2), 234-273; and Lukmanova, E., and Tondl, G. (2017), 'Macroeconomic imbalances and business Cycle synchronization. Why common governance is imperative in the Eurozone', *Economic Modelling*, 62, 130-144.

Graph III.9: **Domestic imbalances**



Source: Eurostat

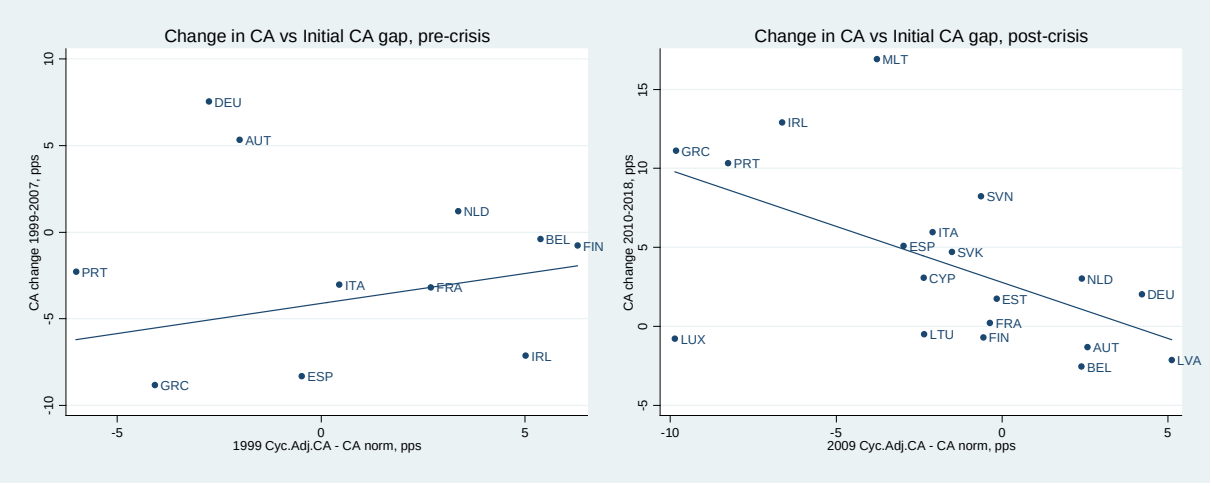
In light of these very different dynamics between the core of the euro area and its periphery, macro-financial risks were not equally spread. Not surprisingly, when the global financial crisis triggered an important reassessment of risks in financial markets, risk premia spiked, especially in the euro-area periphery. The reassessment of risk was accompanied by a sudden stop of funds into the latter, forcing current account adjustments to take place abruptly ([139]). While in the first EMU decade current account imbalances (as measured by differences between actual cyclically-adjusted current accounts and current account 'norms', i.e., current accounts explained by fundamentals) remained very persistent, the crisis triggered a rapid adjustment, with the biggest contraction in current account deficits taking place especially in countries with larger external imbalances (Graph IV.11)([140]).

The current account reversals observed after the burst of the global financial crisis implied a major contraction in demand in most countries in the periphery, corresponding in some cases to long-lasting recessions. The drop in external funding and demand was accompanied by a downward correction in house prices notably where housing market bubbles were present in the pre-crisis period. The reappraisal of risk was followed by a deleveraging process in the banking sector and a reduction in private sector indebtedness. The loss of revenues for the government implied instead growing government debt during the first post-crisis period, with the public sector also trying to provide a buffer to counter massive deleveraging, stabilise output, and stabilise the financial sector (Graph IV.10). In some euro-area periphery countries, the growth in government debt was followed by fiscal crises and the need for official funding.

([139]) On the reassessment of risks and the role of capital markets in the crisis see Baldwin, R.E. and Giavazzi, F., eds., (2015), 'The Eurozone crisis: A consensus view of the causes and a few possible remedies. London: CEPR Press.

([140]) The estimation of cyclically adjusted current accounts and current account norms follows Coutinho, L., Turrini, A. and Zeugner, S. (2018), 'Methodologies for the assessment of current account benchmarks', European Economy Discussion Paper 086/September 2018.

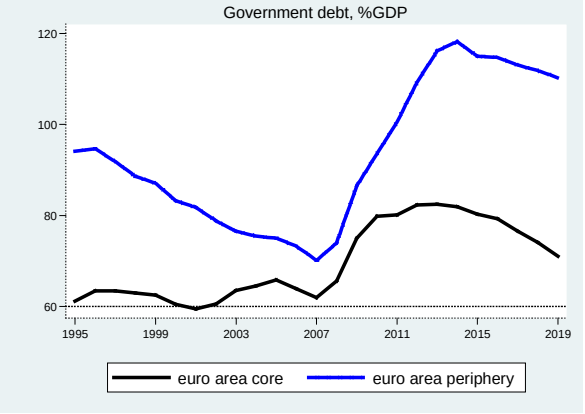
Graph III.10: **External adjustment: boom and bust**



(1) CA stands for current account. The horizontal axis shows the current account gap calculated as the difference between the cyclically adjusted current account - Cyc.Adj.CA - and the current account explained by fundamentals - CA norm. See Coutinho et al. (2018) op. cit.

Source: Eurostat and European Commission

Graph III.11: **Asymmetric fiscal adjustment**



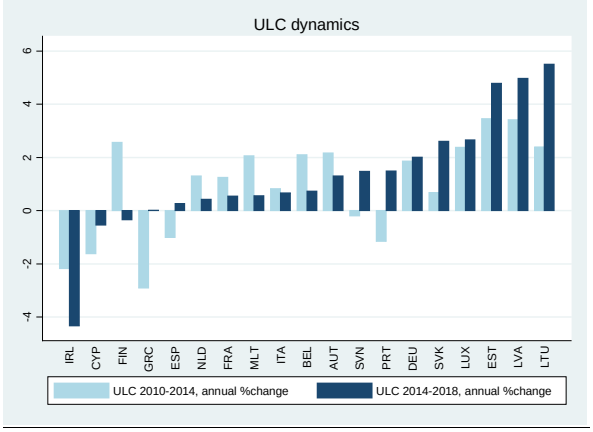
Source: AMECO

Overall, the imbalances accumulated in the pre-EMU period — with a combination of current account deficits and external debt, private debt possibly accompanied by inflated housing markets, leveraged banks and elevated government debts — contributed not only to a largely different response of financial markets to the global financial crisis, but implied very different adjustment trajectories([141]).

III.6. Ongoing adjustment: unfinished business?

After major cyclical divergence following the financial crisis, with some periphery countries experiencing substantial and persistent recessions and record-high rates of joblessness, a process of renewed convergence materialised. This occurred after the economic recovery of the euro area, which started in 2014, became more widespread and robust (Graph IV.2)([142]).

Graph III.12: **Adjustment in unit labour costs**



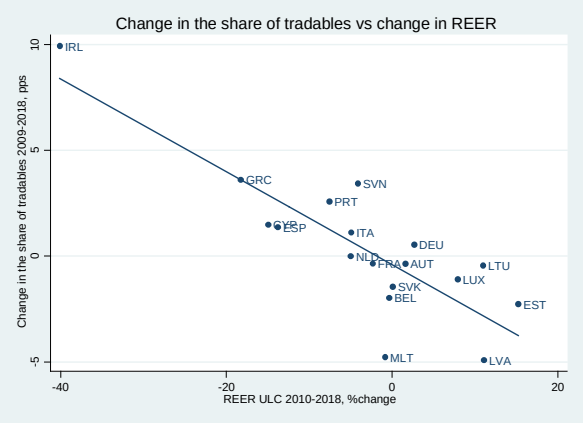
Source: Eurostat

([141]) See, e.g., Coutinho and Turrini (2019), *op. cit.*, on evidence that convergence dynamics in the euro area have been closely linked to macroeconomic imbalances, with excessive debt and excessive growth of the non-tradable sector playing a particularly important role in decelerating convergence.

([142]) See Coutinho and Turrini (2019), *op. cit.*, for evidence that the standard deviation of output in the euro area re-started to decline after the crisis.

The automatic adjustment process, occurring via the competitiveness channel, worked in the expected direction, as mentioned earlier. While the excessive expansion of domestic demand created a tension between internal and external equilibrium during the first decade of EMU, the response of competitiveness to cyclical divergences helped the external adjustment after the crisis. Countries with a legacy of largely negative current accounts and accumulated net external liabilities were those with the most negative output gaps and highest unemployment rates, which resulted from the major drop in demand that followed current account reversals. As a result, the wage and unit labour costs in these countries recorded comparatively low rates of growth. This enabled cost competitiveness to recover, which in turn helped to improve net exports and contributed to a durable adjustment in external positions([143]). This process was particularly effective in the post-crisis, pre-recovery period (2010-2014). A process of unit labour costs being significantly reduced was observed in the countries most affected by the crisis, notably Ireland, Cyprus, Greece, Spain and Portugal. This partly reflected increases in labour productivity due to labour shedding but also reflected in some countries a downward adjustment in wages. Unit labour cost growth differentials between core and periphery gradually moderated as output gaps were gradually reduced and unemployment rates started falling in periphery countries. Meanwhile, in the core, wage growth has remained subdued despite relatively tight labour market conditions since 2014 (Graph IV.12).

Graph III.13: **Adjustment in tradables and relative prices**



Source: AMECO

The recovery of price and cost competitiveness in the euro-area periphery was accompanied by a gradual shift in the composition of output. While before EMU, the increase in the real effective exchange rate in the euro-area periphery corresponded to a relative increase in the demand for and price of non-tradable goods, the opposite happened in the post-crisis period (Graph IV.13)([144]). Such a process of reallocation is key to re-establish a sustainable growth engine in the periphery, as tradable goods are those that permit an export-driven form of sustained growth that is compatible with external rebalancing and that generally exhibits higher rates of total factor productivity growth, the main source of growth potential over a medium-to-long-term time horizon. In this respect, it is worth emphasising that the oversized non-tradable sector in the periphery — sometimes compounded by housing bubbles — was to a large extent a by-product of the reduction in real interest rates in the periphery([145]). In this respect, the real interest rate channel played a destabilising role, not so much because it magnified the output gap implications of shocks, but because it made these shocks entrenched by entailing a shift in production

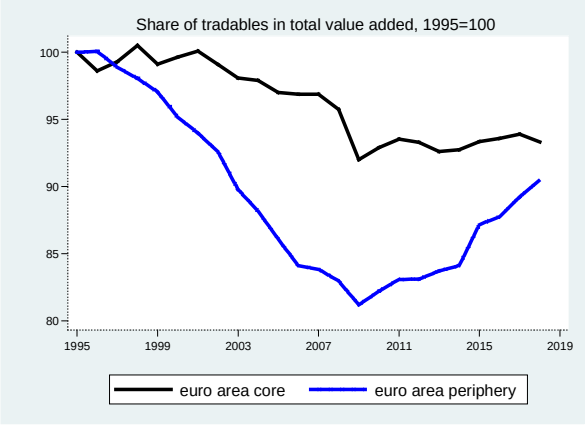
([143]) The fall in import demand, prompted by the decline in economic activity, also contributed to an improvement in net exports, but in a less sustainable manner, as imports recover with the recovery in domestic activity.

([144]) This analysis uses the AMECO database definition of tradables and non-tradables (non-tradables include NACE REV.2 codes F and K-U; tradables include NACE REV.2 codes A-E and G-J). The alternative would be to use exported value added by sector as a measure of ex-post tradability. Preliminary analysis indicates that, for most countries, the analysis would not be fundamentally different and using this alternative data and definition also has its drawbacks.

([145]) Imperfect mobility of capital across sectors is also a key reasons underpinning the persistence of non-performing loans in euro-area countries See, e.g., Loublier, A. (2016), 'Deleveraging and adjustment', Quarterly Report on the Euro Area, 14(4), 49-58.

structures that had implications on growth potentials([146]).

Graph III.14: **Tradables vs non-tradables**



Source: AMECO

A key issue going forward, to ensure a recovery of convergence and growth prospects in the euro-area periphery, is to complete the sectoral shift away from non-tradables, which were associated with the build-up of pre-crisis imbalances. In this respect, prima facie evidence suggests that this process is not fully completed, as the share of tradeable activities out of the total generally remains below the share observed before the harmful dynamics of the first decade of EMU started to play a role (Graph IV.14). Although progress on the front of sectoral reallocation is challenged by the ongoing trade slowdown and uncertainty on the trade policy environment, such a process is key to make growth compatible with external balance, and would permit to reap larger benefits in terms of productivity growth. For periphery countries, it may be important to at least recover what they have lost in terms of tradable shares to ensure the sustainability of their external debt.

A further dimension along which adjustment in the euro area has remained incomplete relates to the largely asymmetric outcomes in domestic demand rebalancing. While in the wake of the financial crisis both private and public demand contracted sharply in the periphery as a result of the reappraisal of risks and the capital flight , demand dynamics in the core were not able to compensate this trend, despite reduced deleveraging needs, capital inflows, and a relatively early recovery in most euro-area core countries. In particular, fiscal policy in the core did not support demand recovery (Graph IV.10). As a result, while the periphery corrected its flow imbalances following the crisis, current account surpluses in the core remained persistent and increased to some extent (Graph IV.4)([147]). Because current account deficits were corrected without a parallel adjustment in surplus positions, the euro-area overall current account balance grew over time, reflecting a protracted demand shortfall that underpinned an environment of very low inflation. Subdued nominal growth implied in turn low progress in correcting stock imbalances, with private, foreign and government debt/GDP ratios remaining stubbornly high in a number of euro-area countries. Going forward, a more symmetric rebalancing of external positions across the euro area would help to make a sustained recovery of growth prospects compatible with the persistent deleveraging needs in the periphery([148]).

Finally, re-establishing a healthy financial sector throughout EMU, including through the resolution of non-performing loans, to help complete the banking and capital markets unions, would help reinstate healthy intra-EU capital flows, possibly in a more balanced way between debt and equity([149]).

III.7. Concluding remarks

With hindsight, a number of lessons have been learnt about adjustment within the euro area.

A first lesson is that the emphasis before the EMU on the effectiveness of the adjustment to asymmetric shocks was most probably misplaced. The most relevant shocks hitting the euro area were not of an asymmetric type. They rather had a

([146]) These effects have been dubbed 'supper Walters' effects' see Buti, M., and Turrini, A. (2015), 'Three waves of convergence. Can Eurozone countries start growing together again?' Vox, EU, 17. It has also been shown that after EMU demand shocks often had persistent effects via hysteresis, see Bayoumi, T. and Eichengreen, B. (2018), 'Aftershocks of monetary unification: Hysteresis with a financial twist', *Journal of Banking and Finance* 000(2018), pp.11-13.

([147]) This is also to some extent linked to high corporate savings, as corporates in several advanced economies have switched form net borrowers to net savers, though the drivers of this trend are still poorly understood. See Allen, C. (2019), 'Revisiting external imbalances: Insights from sectoral accounts', Journal of International Money and Finance, 96, 67-101.

([148]) Asymmetric rebalancing in EMU is largely a result of little incentives for surplus countries to adjust, a common feature of similar cases of asymmetric external rebalancing observed in different historical contexts, see, e.g., O'Rourke, K. and A. Taylor (2013), 'Cross of Euros', *Journal of Economic Perspectives* 27(3), pp. 167-192.

([149]) See also Baldwin, R.E. and Giavazzi, F., eds., (2016), 'How to fix Europe's monetary union: Views of leading economists', CEPR Press.

common origin, but reverberated very differently across euro-area countries via financial markets. The first major shock was the EMU start-up shock itself. This was a one-off shock but had major and long lasting effects associated with the compression of risk premia in the euro-area periphery. Capital flew from the euro-area core to catching-up periphery economies. The second major shock corresponded to the risk reappraisal following the financial crisis. In light of accumulated imbalances and capital misallocation in countries in the euro-area periphery, risk premia spiked especially in these countries. What ensued was a reversal of the process observed after the EMU start-up shock, with capital leaving the periphery and moving to the euro-area core. The process compounded the global recession following the outburst of the financial crisis and was abrupt, implying a largely destabilising role for capital movements.

Secondly, the competitiveness channel of adjustment worked generally as expected. This was also helped by structural reforms after the crisis that made competitiveness more responsive to cyclical divergences.

Another main lesson is that the benign neglect of external balances, and macroeconomic imbalances in general, prevailing during the first decade of EMU was not justified. In light of the incomplete nature of EMU, disruptive sudden stops in external financing took place and were underpinned by self-sustaining doom loops between banks and sovereign. This evidence underscored the urgency of completing EMU with an even stronger surveillance of macroeconomic imbalances([150]), appropriate firewalls to deal with major financial crises, a banking union to enhance and harmonise regulation and supervision and to break doom loops, and a capital market union to enhance cross-border capital allocation.

The last lesson learnt is that the adjustment to external imbalances can have relevant implications for the growth and inflation. The post-crisis unwinding of current account deficits was not matched by a correction of large surpluses. The widespread deleveraging process across the euro area underpinned an aggregated demand deficit and a very low inflation environment. Going forward, ensuring a more symmetric rebalancing remains a challenge.

([150]) The surveillance of imbalances in the EU is undertake in the context of the Macroeconomic Imbalances Procedure (MIP), laid out in two regulations: i) Regulation (EU) No 1176/2011 of 16 November 2011 on the prevention and correction of macroeconomic imbalances - sketching out the excessive imbalances procedure; and ii) Regulation (EU) No 1174/2011 of 16 November 2011 on enforcement measures to correct excessive macroeconomic imbalances in the euro area - focusing on the associated enforcement measures.