Quarterly Report on the Euro Area

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The **Quarterly Report on the Euro Area** is written by staff of the Directorate-General for Economic and Financial Affairs. It is intended to contribute to a better understanding of economic developments in the euro area and to improve the quality of the public debate surrounding the area's economic policy.

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The expansion in the euro area turned out stronger than expected in the second half of 2017, with GDP growing by 0.7% and 0.6% respectively in the last two quarters of the year, as reported in the Commission's Winter 2018 Interim Economic Forecast. Behind this is the acceleration of global economic activity and trade recorded in 2017, as well as the strengthening of domestic demand within the area. The latter was fostered by greater business and consumer sentiment, continued policy support and improving labour markets. The euro area economy is forecast to continue expanding at a solid pace over the next couple of years (2.3% and 2% in 2018 and 2019 respectively) before slowing down towards its potential growth currently estimated at around 1½%. Downside risks remain, notably related to increased protectionist tendencies where the G20 Ministers and Governors in Buenos Aires recalled once again that international trade and investment are important engines of growth, productivity, innovation, job creation and development. Wages and core inflation are expected to rise only gradually, due to remaining slack in the labour market (HICP inflation is forecast to remain stable at 1.5% in 2018, rising slightly to 1.6% in 2019).

This cyclical upswing reinforces the call to use this favourable window to boost potential growth, strengthen convergence toward resilient economic structures and address fiscal and financial fragilities. Against this background, this issue of the QREA starts by revisiting an old story under a new perspective: how further deepening the Single Market could support the euro area economic performance not only by directly lifting growth potential but also by making the economy more resilient in the face of future economic shocks. There are many ways to achieve the latter. Strengthening economic integration in goods and services markets may lead to a decrease in Member States' vulnerability to shocks via the access to more diversified export markets and sources of intermediate inputs. Completing the Single Market for goods and services can also reasonably be expected to strengthen shock absorption capacity through greater product differentiation and price flexibility (which contains fluctuations in output and employment). At the same

time, the speed of economic recovery following shocks may be accelerated in a deeper Single Market by a swifter reallocation of resources, thanks to convergence to best practices in terms of market openness, insolvency frameworks and business regulations. The analysis presented in this section further emphasizes the importance of completing the Single Market in network industries, as a way to provide a boost to the competitiveness of the overall economy given the high multipliers and still insufficient degree of integration in the sector. Deepening the Single Market – particularly digital, energy, capital – remain key policy priorities. A renewed effort to push this agenda ahead is warranted.

Section 2 of the report focusses on a related more specific aspect, i.e. importance of quality as a component of non-cost competitiveness in euro area economies. Export quality, and its upgrading, is clearly important for growth and competitiveness. It is also key in sheltering an economy, at least in part, from price competition. Beyond confirming the widespread finding that the level of income of the exporting country is a prime determinant of export quality, the empirical analysis shows that input composition (a larger share of high-tech inputs), skills and better institutions are all positively related to export quality. Policies that foster skills formation in the workforce and the quality of institutions are therefore particularly important to support export quality improvements, with positive effects on economic resilience (including withstanding low-wage competition).

Section 3 of the report broadens the analysis to current account and financial imbalances in the global economy. Global imbalances, which reached a peak in the run up to the economic and financial crisis, have since then been reduced though with different patterns. From a savings-investment perspective, there remain a number of impediments to a reduction in global imbalances. Various policy scenarios are considered to identify possible risks of widening imbalances or disorderly adjustment. They include a recalibration of the US policy mix, the introduction of protectionist measures, and a disorderly adjustment in

the Chinese financial sector. The persistence of excess global imbalances shows that automatic adjustment mechanisms in the global economy are weak, while potential spill-overs from domestic policy action can be large. This calls for increased policy coordination at international level. Continued vigilance and comprehensive, well-sequenced and coordinated policy efforts are as important as ever to avoid that the rebalancing results in lower or less inclusive growth in the medium term.

Overall, the ongoing expansion should help take important steps to strengthen the resilience and the capacity of the euro area to sustainably grow at a faster pace. The further deepening of the Single Market, strengthening non-price competitiveness and continuous policy coordination to avoid persistent excessive global external imbalances, as discussed in this report, are complementary ways to help the euro area thrive in a challenging global context.

I. Economic resilience, the Single Market and EMU: a self-reinforcing interaction

Convergence towards resilient economic structures entails three elements, i.e. a reduction in the economy's vulnerability to shocks, an increased capacity to absorb shocks and greater ability to swiftly recover from them. These features are key for the smooth functioning of Europe's Economic and Monetary Union, because exchange rates cannot be used as a channel to smoothen macroeconomic shocks in a currency union. The capacity of each national economy to adjust swiftly and effectively to shocks is vital to prevent the building up of unsustainable divergences between currency union members. This section discusses how completing the Single Market (more particularly deepening goods and services markets) can strengthen economic resilience in the EMU. The section starts with a brief overview of the remaining malfunctionings in goods and services markets, looking at some specific sectors. Next, it examines factors related to the deepening of the Single Market that affect the economy's vulnerability to shocks (such as the structure of the economy). It then investigates how completing the Single Market can strengthen shock absorption capacity through increased product diversification and price flexibility. Subsequently, it explores how the recovery following a shock may be accelerated by convergence towards best practices in terms of market openness, insolvency frameworks and business regulations within the Single Market. Finally, the section suggests that completing the Banking Union and making significant progress towards the Capital Markets Union are fundamental to realising the full benefits of further integrating goods and services markets. It also argues that completing the Single Market should also be complemented by well-designed automatic fiscal stabilisers and private financial risk-sharing mechanisms. ([1])

I.1. Introduction

The economic recovery in the euro area has developed into a broad-based expansion. Economic output is now higher than before the recession of 2011-2013 and also above the levels recorded before the Great Recession of 2008-2009 ([2]) although notable differences across euro area (EA) Member States remain. Real GDP initially decreased more in core euro area Member States than in those that eventually were hit hardest by the crisis. Real GDP in the core euro area Member States, however, had fully recovered their 2008 levels by early 2011, whereas it continued to decrease until the beginning of 2013 in the EA Member States hardest hit and did not recover its 2008 levels until early 2017 (Graph I.1).

Against this background, and among other proposals to reinforce the monetary union, the Five Presidents' Report (2015) stressed the importance of increasing the resilience of euro area economies by strengthening the economic pillar of EMU. The report referred to the need of achieving

"similarly resilient economic structures throughout the euro area". ([3])

Graph I.1: **Real GDP level**
(2008=100)

Legend: EA19 — EA Member States hardest hit — Core EA19
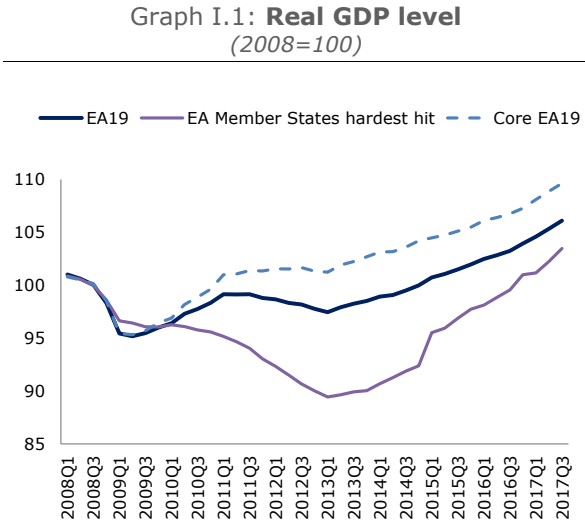
Source: Authors' calculation based on Eurostat, National Accounts.
Note: EA Member States hardest hit covers IE, ES, EL, CY and PT. Core EA19 covers DE, AT, NL and FR.

The concept of economic resilience refers to an economy's vulnerability to shocks, its capacity to

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([1]) This section was prepared by Maya Jolles and Eric Meyermans. The authors wish to thank Katia Berti, Gabriele Giudice and Dominique Simonis for useful comments.

([2]) For more details, see, for instance, European Commission (2017), 'European Economic Forecast – Autumn 2017'.

([3]) A comparison of how this notion of convergence towards resilient economic structures interacts with other dimensions of convergence essential for EMU is provided in Section I of the second issue of the 2017 Quarterly Report on the Euro Area.

absorb them and it ability to quickly recover from them. (⁴) Thanks to these features, a resilient economy faces lower costs in terms of both lost output and increased unemployment in the short run after a shock hits. This reduces the risk of hysteresis in labour and capital markets, avoids pushing Member States down divergent paths and thus supports sustainable growth in the long run.

Economic resilience rests on idiosyncratic country-specific characteristics. However, favourable framework conditions at the EU level, including a well-functioning Single Market and effective macroeconomic stabilisation policies play a significant role for resilience as well, not just at country level but also for the EU as a whole.

A deeper Single Market can bring gains in terms of higher growth potential. (⁵) Stronger competition, stronger cross-border trade and investment, easier access to a wider range of suppliers and consumers, more innovation and faster technological development are at the source of such positive effects. (⁶) This is important for all Member States, but particularly for the euro area.

But the incompleteness of the Single Market (see the Monti report and the 2011 Single Market Act and the 2012 Single Market Act II) holds back the full gains that could be achieved. The Reflection Paper on the Deepening of EMU (⁷) recalls that Member States' commitment is essential to reap the full benefits. The Council Recommendation on the economic policy of the euro area, adopted by the ECOFIN Council in January 2018 (⁸), stressed the importance of completing the Single Market, particularly in services, including financial, digital, energy and transport.

This section examines how completing the Single Market in goods and services could strengthen convergence towards resilient economies across the euro area. In theory, completing the Single Market has the potential to affect resilience through a number of channels. It fosters a more supportive and dynamic business environment, allows firms to build more diversified import and export markets, and through competition and price flexibility it allows a faster and more sustainable reaction to (permanent) shocks. It also provides access to more diversified sources of funding although financial markets are outside the scope of analysis in this section.

The next two sub-sections review briefly the gradual integration of product markets since the signing of the Treaty of Rome and the subsequent set-up of the EMU, and provide a selective overview of euro area product markets that still have barriers that hinder the well-functioning of the Single Market. The following three sub-sections investigate the impact of completing the Single Market on the three pillars of resilience: i) an economy's vulnerability to shocks, ii) its shock-absorption capacity, and iii) its ability to recover from shocks. (⁹) The last sub-section draws conclusions. Where relevant, the role of interactions of product markets with labour and financial markets is highlighted. (¹⁰)

I.2. The Single Market and the EMU

Since the Treaty of Rome (1957), the idea of achieving a common market has relied on the so called "four freedoms", i.e. free movement of goods, services, labour and capital. Initially, the free movement of goods was supported essentially by removing tariff barriers and quotas. Differences in product regulations and technical standards and difficulties in harmonizing them across Member States led nonetheless to the persistence of significant barriers to trade between EU countries.

Significant progress in abating technical barriers to trade was later achieved thanks to the principle of

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(⁴) See European Commission (2017), 'Economic Resilience in EMU, Thematic Discussions on Growth and Jobs, Note for the Eurogroup', as well as OECD (2016), 'G20 Policy Paper on Economic Resilience and Structural Policies'; IMF (2016), 'A Macroeconomic Perspective on Resilience'; ECB (2016), 'Increasing resilience and long-term growth: the importance of sound institutions and economic structures for euro area countries and EMU', *Economic Bulletin Issue 5*.

(⁵) The 2014 report initiated by the European Parliament 'The Cost of non-Europe in the Single Market' lists nine studies between 1998 and 2014 that estimated the gains in closing the gaps in the Single Market under different methodologies.

(⁶) For more details, see for instance https://ec.europa.eu/growth/single-market_en

(⁷) European Commission (2017), 'Reflection paper on the deepening of the Economic and Monetary Union'.

(⁸) See COM(2017) 770 final Recommendation for a Council Recommendation on the economic policy of the euro area and SWD(2017) 660 final Commission Staff Working Document, Analysis of the Euro Area economy.

(⁹) Thereby following the analytical framework on resilience outlined in European Commission (2017), *op cit.*

(¹⁰) For an analysis of cross-border risk sharing via financial markets, see, for instance, Nikolov, P. (2016), 'Cross-border risk sharing after asymmetric shocks: evidence from the euro area and the United States', *Quarterly Report on the Euro Area*, Vol. 15, No. 2, pp. 7-18, and via labour markets, see, for instance, Arpaia, A. et al. (2015), 'Labour mobility as an adjustment mechanism', *Quarterly Report on the Euro Area*, Vol. 14, No. 1, pp. 19-25.

"mutual recognition", introduced in 1979 by the European Court of Justice ruling on 'Cassis de Dijon'. It stated that 'any product lawfully produced and marketed in one Member State must, in principle, be admitted to the market of any other Member State.' This jurisprudence was essential in stopping technical barriers from having an effect equivalent to quantitative restrictions. From then onwards, advances in the completion of the Single Market for goods relied on the parallel processes of mutual recognition and harmonisation.

The Single European Act which took effect in 1987 initiated the first review of the Treaty of Rome with a view to identify and remove remaining obstacles to free movement, notably non-tariff barriers to trade. It aimed at establishing the Single Market by the end of 1992. By that date, more than 90% of the objectives set in the so-called Single Market Programme were fulfilled. Additionally, with the Schengen Agreement (signed in 1985) and its integration in the Amsterdam Treaty (1997), physical barriers across the internal market were abolished, notably through the elimination of border controls between participating Member States.

After years of significant progress on the Single Market, particularly concerning the mobility of goods and capital, the creation of a Monetary Union was seen as the next logical progression in European integration. It soon became apparent that free trade, free capital movements, and exchange rate stability would be impossible to reconcile with independent national monetary policies in the long term (the so-called "impossible quartet"). [11] This led to the proposal for the creation of a Monetary Union in the Delors report (1989). [12] Progress on the Single Market had already contributed to a significant reduction in transaction costs but remaining national currencies and independent monetary policies (with their intrinsic exchange rate risks) set limits to further integration within the common market. By overcoming them and favouring more trade and competition, the single currency was expected to foster a better allocation of resources, stimulating

productivity and growth. The Maastricht Treaty agreed in 1992 therefore launched the process leading to the creation of the single currency in 1999.

The further deepening of the Single Market was subsequently pursued in combination with the Monetary Union through milestones.

Progress has been achieved with the adoption of the Services Directive in 2006 [13], and the adoption of new provisions in the Treaty on the Functioning of the European Union (2007). Soon after, the 2010 Monti report was translated in proposals spelled out in the 2011 Single Market Act and the 2012 Single Market Act II.

Even so, some barriers to the cross-border trade of services in the EU still remain in place. [14] In October 2015, the European Commission therefore presented a new Single Market Strategy to deliver a deeper and fairer Single Market to the benefit of consumers and businesses. [15] Overall, however, it is fair to say that, to date, the internal market remains incomplete.

I.3. Remaining barriers in the Single Market

An indicator that is commonly used to measure the degree of integration achieved in the Single Market is convergence in price levels across countries. As illustrated in Graph I.2, from 1995 until the beginning of the crisis, price dispersion decreased as prices in the euro area Member States with lower real GDP per capita increased more than in the richer euro area economies reflecting catching-up of prices and wages. For example, at the same time net earnings increased at a much stronger pace in the new euro area Member States than in the old Member States. [16] Since 2008-2009, price

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[11] Padoa-Schioppa during a lecture in Milan in June 1982 brought forward the incompatibility between free trade in a Single Market, free capital movement, independent domestic monetary policies and fixed exchange rates.

[12] 'Report on economic and monetary union in the European Community', prepared by the Committee for the Study of Economic and Monetary Union.

[13] The potential progress was limited by the fact that the original proposal of Services Directive from the European Commission was amended and the scope was narrowed down. For an overview of the final scope see presentation of the Directive by the European Commission, see http://eujog.im.kormany.hu/download/b/dc/01000/Emy%20G ustavsson_The%20Notification%20Obligation%20under%20the %20Services%20Directive.pdf

[14] For more details on Member States' implementation of the Services Directive, see https://ec.europa.eu/growth/single-market/services/services-directive/implementation/evaluation_en

[15] For more details on the Single Market Strategy, see https://ec.europa.eu/growth/single-market/strategy_en

[16] For example, the available data indicate that net earnings of a single person without children earning the average wage increased between 2000 and 2007 by 137% in Estonia, 110% in Lithuania,

convergence in the euro area has stalled, reflecting in part a stagnation in real convergence within the euro area throughout the crisis.

While economic performance plays a role, the evolution of price convergence is affected by important barriers to cross-border trade and competition, that prevent a fully efficient allocation of resources across firms and sectors in the Single Market, as reported by, for example, European Commission (2015) and CPB (2015). [17]

Graph I.2: **Price dispersion**
GDP deflator
(Coefficient of variation of price level indices)
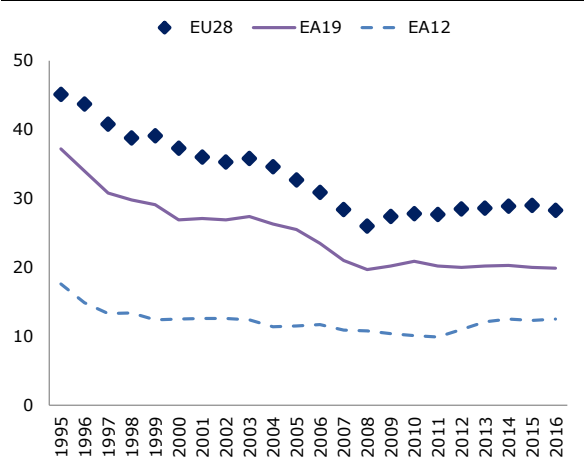
Source: Eurostat.

Most of these remaining barriers arise from heterogeneity in national regulations, [18] which in part also reflect differences in national preferences, and in part result from vested interests. Differences along national borders may also reflect the fact that EU national authorities in the EU sometimes regulate and/or supervise without coordinating with each other. Heterogeneity of national regulations and technical standards, especially in services, raise trade and investment costs of service providers that do business in other Member States. In addition, the implementation of the mutual

recognition principle in goods markets remains unsatisfactory. Indeed, as the adoption of the Commission's "Goods package" in December 2017 showed, mutual recognition and harmonisation has not worked sufficiently well in the EU and scope for further progress still remains also in goods markets. [19]

In addition, implementation of EU legislation in the Member States is sometimes uneven and full enforcement of Single Market legislation at national level would improve the integration of the Single Market. As of 30 November 2016, 1 019 directives (together with 3 619 regulations) were in force to ensure the functioning of the Single Market. However, 1.5% of all directives were not transposed, and 0.7% of all directives were transposed incorrectly. Only eight Member States managed to stay under the 1% threshold. The level of average compliance deficit level stood at 0.7% in November 2013. Only nine Member States (down from 11) now have a compliance deficit of 0.5% or less. [20] This is not without serious consequences since if one or more Member States fail to transpose directives on time, the Single Market remains disproportionally smaller and fragmented. Such outcome adversely affects the economic interests of all Member States and their citizens.

The following sub-sections briefly recall some of the most important remaining barriers still affecting product markets.

I.3.1. Barriers to competition in national product markets

Competition fosters economic resilience to the extent that it induces the exit of inefficient firms and eases the entry of new more productive ones, promoting the reallocation of resources to more

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105% in Latvia, compared to only 17% in Austira, 19% in Germany and 20% in Italy.

[17] See, for instance, European Commission (2015), 'Report on Single Market Integration and Competitiveness in the EU and its Member States', Commission Staff Working Document, SWD(2015) 203 final, and Netherlands Bureau for Economic Policy (CPB) (2005), 'A quantitative assessment of the EU proposals for the Internal Market for Services'.

[18] For instance, the EU has no common regulatory agencies for any of the network industries given the lack of an explicit legal basis providing for that in the Treaty. See Pelkmans and Luchett a (2013), Enjoying a single market for network industries, Notre Europe.

[19] Mutual recognition on goods lawfully marketed in another Member State does not function as it should, due to the lack of awareness, the legal uncertainty and the lack of efficient communication and cooperation among stakeholders. See, for instance, European Commission (2017), 'Proposal for a Regulation of the European Parliament and of the Council on the mutual recognition on goods lawfully marketed in another Member State', SWD(2017) 472 final. Pataki, Z. (2014), in the report 'The Costs of Non Europe in the Single Market' prepared for the Directorate–General for Parliamentary Research Services of the European Parliament, estimates that a reduction of trade barriers could lead to an increase of intra-EU trade of more than 100 billion EUR per year. The concept of trade barriers in this study is broader than mutual recognition, but it provides an estimation of the expected benefits.

[20] More details at http://ec.europa.eu/internal_market/scoreboard/performance_by_governance_tool/transposition/index_en.htm

efficient use. Still, in product markets regulatory barriers remain that affect the cost of starting, operating and expanding a business, thus hampering competition (European Commission, 2017). [21] Important limitations to market access include barriers to entrepreneurship (triggered by, among others, complex regulations, administrative burden for start-ups, regulatory protection of incumbents), state control (including price controls, as well as command and control regulation), barriers to trade and investment (including barriers to foreign direct investment) and differential treatment of foreign suppliers. [22]

There has been an overall reduction in stringency of product market regulation in the euro area, as shown in Graph I.3, presenting changes in product market regulation between 1998 and 2013 (last year available) for all euro area Member States for which data are available.

Despite the recorded improvement, euro area countries still do not appear to be at the frontier of product market efficiency, as indicated in a recent ECB study. [23] In the study, product market efficiency is measured by aggregating different indicators such as the OECD Product Market Regulation indicators related to economy-wide regulation (e.g. state control) and industry-level regulation (e.g. barriers to trade in manufacturing) and the World Bank Doing Business indicators quantifying the regulations applying to small and medium-size companies throughout their life cycle (e.g. number of days to start a business). Using this metric, the study shows much lower product market efficiency for the euro area compared to the aggregate of the top-3 OECD countries (New Zealand, the United Kingdom and Denmark) and the US.

While aggregate product market composite indicators point to improvements over time, very divergent developments can be observed at sectoral level, with barriers to competition still prevailing in those sectors that are least exposed to trade. The

analysis by Bourles et al. (2015) [24] suggests that sectors more exposed to trade recorded stronger efficiency improvements, in contrast with non-manufacturing sectors often shielded from trade pressure. Their analysis also highlights that, at the same time, non-manufacturing sectors account for increasing shares of the total economy and of the intermediate inputs used in the economy. In this perspective, a closer scrutiny of how the areas of services and network industries work is necessary. Subsections 1.3.2 and 1.3.3 look at them more in detail.

Graph I.3: **Product market reform**
all sectors
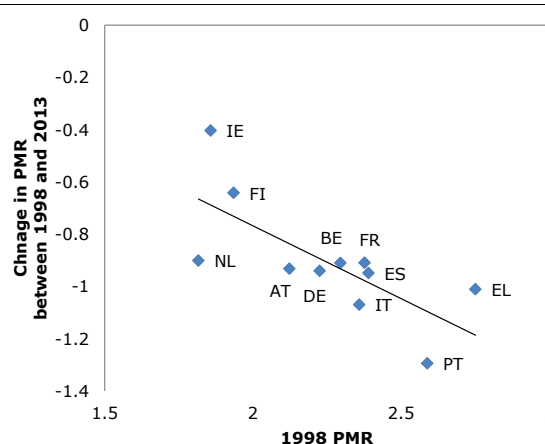
(1) 1998 observation only available for EA12 Member States.
Source: Authors' estimates based on OECD data.

I.3.2. Barriers in services sector remain strong

While services account for two-thirds of the EU economy both in terms of employment and value added, the cross-border provision of services, though improving, is still limited. Services trade integration in the EU stands at 6.6% in 2015 compared to 20.6% for goods; trade integration in services nevertheless improved by 2.8% in 2014-15 compared to a 0.3% increase for goods[25]. Despite their large share in economic activity, services account only for around one-fifth of intra-EU exports and imports. While certain services are by nature less tradable than goods, the smaller trade

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[21] See, for instance, European Commission (2017), 'Ease of Doing Business. Thematic Discussions on Growth and Jobs', Note for the Eurogroup.

[22] See, for instance, Koske, I., I.Wanner, R. Bitetti and O. Barbiero (2015), 'The 2013 update of the OECD product market regulation indicators: policy insights for OECD and non-OECD countries', *OECD Economics Department Working Papers*, No. 1200.

[23] ECB Economic bulletin, Issue 5 2016 – Article 3, Increasing resilience and long-term growth: the importance of sound institutions and economic structures for euro area countries and EMU.

[24] Bourlès R., Cette G., Lopez J., Mairesse J. & Nicoletti G. (2015), "Do product market regulations in upstream sectors curb productivity growth? panel data evidence for OECD countries"

[25] Trade integration is measured as the average intra-EU imports plus exports divided by GDP, see 2015 data on http://ec.europa.eu/internal_market/scoreboard/integration_market_openness/trade_goods_services/index_en.htm

flows could also be the result of differences in national regulations governing the sector.

The most recent initiatives on deepening the Single Market have indeed essentially targeted the services sector, notably the 2006 Services Directive [26] and the Services Package of January 2017 [27]. As such, about two thirds of intra-EU trade [28] is covered by the Services Directive, while the other sectors (including financial - outside the scope of the analysis here) are covered by specific regulatory regimes. Network industries (treated specifically in the next sub-section) follow a specific regulatory regime.

Graph I.4: **Regulation of professional services**
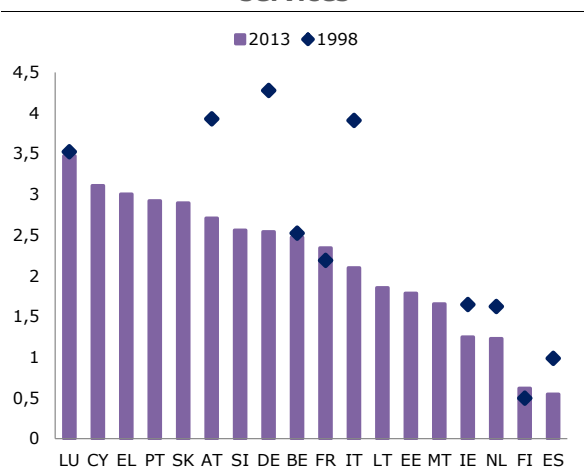
(1) Indicator ranges from 0 to 6, with 0 least regulated.
(2) Professional services include accounting, legal, architect and engineering.
Source: OECD data.

The business services sector, accounting for 10% of EU GDP, is the largest covered by the Services Directive. The EU business services markets, and in particular professional services, still exhibit a limited degree of integration and regulatory restrictions persist (see Graph I.4) [29]. In total, access and exercise in more than 5000 professions across Europe is subject to the possession of a specific professional qualification. [30]

Barriers, notably for doing business across borders, are present also for the new sectors that emerged from the "digital revolution". Online services are still mainly domestic, [31] which is also why the Commission has launched a cross-cutting EU Digital Single Market strategy. [32]

Overall, only 7% of small and medium-sized businesses in the EU sell cross-border. [33] Just like in the internal market for goods, such limited exposure to competition from foreign producers and the protection of incumbents lead to higher prices, limited innovation and lower productivity growth. These effects are more marked for services than for goods partly because services are often shielded from international competition as they are less tradable.

Considering that services are also intermediate inputs in other production processes, barriers in this sector can significantly affect other sectors in a sort of "cascade effect". [34] Productivity improvements in transportation, for instance, can lead to big benefits for sectors such as manufacturing, which uses transportation services as an input. In the end, positive feedback loops may improve the productivity in the transportation sector even further. [35] This is particularly relevant

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[26] Services in the Internal Market Directive 2006/123/EC
[27] See the 10 January 2017 package of four initiatives that will make it easier for companies and professionals to provide services in the EU, at http://europa.eu/rapid/press-release_IP-17-23_en.htm
[28] Mustilli F. and J. Pelkmans (2013), 'Access Barriers to Services Markets', *CEPS Special Report* No. 77.
[29] Mustilli F. and J. Pelkmans (2013), *op cit.*
[30] For example, business services providers such as architectural, engineering or accounting firms who wish to provide services

outside their own country, are often confronted with restrictive requirements such as legal form or shareholding requirements that are often country-specific. See, also, EC Fact Sheet (2015): A deeper and fairer Single Market.
[31] European Commission (2017), 'Mid-Term Review on the implementation of the Digital Single Market Strategy', *Staff Working Document,* SWD (2017) 155 final.
[32] The Digital Single Market strategy was adopted on the 6 May 2015 with a view to strengthen opportunities for new start-ups and existing companies, to offer better opportunities for citizens, including better access to information and culture and improve their job opportunities, as well as to promote modern open government. It is built on three pillars: i) better access for consumers and businesses to digital goods and services across Europe; ii) creating the right conditions and a level playing field for digital networks and innovative services to flourish; and iii) maximising the growth potential of the digital economy. Following the 2017 mid-term review of the Digital Single Market Strategy, the Commission has identified three main emerging challenges: i) to ensure that online platforms can continue to bring benefit to our economy and society, ii) to develop the European Data Economy to its full potential, and iii) to protect the Europe's assets by tackling cybersecurity challenges. More details at https://ec.europa.eu/digital-single-market/en/policies/shaping-digital-single-market
[33] See, , https://ec.europa.eu/commission/priorities/digital-single-market_en and 2016 cross-border e-commerce barometer (May 2016) by E-commerce Europe
[34] Ariu, A., H. Breinlich, G. Corcos and G. Mion (2016), 'The Interconnections Between Services and Goods Trade at the Firm-Level', *CESIFO Area Conferences 2016.*
[35] See Corugedo, E. and E. Ruiz (2014), 'The EU Services Directive: Gains from Further Liberalization', *IMF Working Paper* WP/14/113.

in light of the share of services in the total value of intermediate inputs in the EU. [36] In 2014, the latter was estimated to amount to 5.5% for business services, 3% for wholesale trade, and 2.3% for retail trade [37]

As barriers of many types remain for many services that are used as inputs, it is difficult to fully exploit both the positive spillover effects from services to others sectors (see European Commission, 2013), [38] and the potential of the services sector to attract investments.

I.3.3. A specific focus on remaining barriers in network industries

In this sub-section a closer look is taken at the degree of market integration and competition in network industries, which are particularly important for the Single Market in two respects. Network industries supply general purpose goods and services that underpin economic activity. As such, a well-functioning single market of network industries [39] not only fosters potential productivity growth [40], but by integrating networks across the EU, should foster more flexible prices and production in key areas such as energy that are more exposed to exogenous shocks. This would also significantly increase Member States' capacity to withstand and recover from shocks.

The quality and the cost of the services provided by the network industries have an important impact on the production costs of other sectors of the economy and overall investment levels. The incompleteness of the internal energy market in the EU, for instance, negatively affects energy-intensive sectors, as well as both energy-intensive and foreign-energy-dependent countries. Progress on the Energy Union has therefore been identified as an important priority for deepening the Single Market. [41] A well-functioning telecommunication sector is also particularly important to generally support the thriving of economic activities in EU countries in the era of the digital economy. [42]

Despite being service-providers, EU network industries do not fall under the 2006 Services Directive because of their specificities (which are briefly reviewed below), and are instead covered by dedicated regulatory regimes [43]. Some network industries (previously often publicly owned) provide services of general interest such as access to postal services [44]. In addition, some network industries are characterized by large sunk costs linked to investments in physical infrastructure (e.g. railway, telecommunications) and have special features of natural monopolies. [45]. Because of this, the incumbents may make better use of resources than small firms in a perfectly competitive environment. Thirdly, network industries are characterized by economies of scale and network externalities that derive from incentives for interconnection or compatibility among users (e.g. in telecommunications). All these characteristics make network industries "special" in terms of how to ensure competitive and well-functioning markets for the services provided.

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[36] European Commission (2017), 'European Semester: Thematic factsheet – Services markets – 2017'

[37] Servitisation, i.e. the addition or replacement of services to products (e.g. maintenance contracts for capital goods), blurs the distinction between services and manufacturing, with the former are likely to play a higher role than currently measured.

[38] See for instance European Commission (2013), 'Section 2.4. Interlinkages between manufacturing and services' in *EU Industrial Structure Report 2013, Competing in global value chains.*

[39] Market mal-functioning of network industries is often associated with public ownership with high market shares, low cross border interconnection and price regulation. See, for instance, European Commission (2013a), 'Market Functioning in Network Industries: Electronic Communications, Energy and Transport', *European Economy Occasional Papers* 129.

[40] Estimating the impact of network industries on potential growth and job creation is not straightforward. While building and maintaining the necessary infrastructure to operate network industries have a direct impact on growth and jobs, more important are the indirect effects. For example, the deployment of wireless high-speed broadband will affect economic growth via several channels including changes in business processes (such as inventory optimization), introduction of new applications and services (e.g., new forms of financial intermediation) as well as new business models (such as outsourcing in value chains). See, for instance, European Commission (2014), 'Market Functioning in Network Industries - Electronic Communications, Energy and Transport', *European Economy Occasional Papers* 204 and Katz, R. (2012), 'The Impact of Broadband on the Economy: Research to Date and Policy Issues', *ITU report.*

[41] Along with improving energy efficiency, decarbonising the economy, diversifying Europe's sources of energy and prioritising research and innovation to drive the transition of the energy system. More details at https://ec.europa.eu/commission/priorities/energy-union-and-climate_en#documents

[42] More details at https://ec.europa.eu/digital-single-market/en/news/fibre-investment-europes-recovery

[43] It should be noted that the existence of specific regulatory regimes does not mean that there is already a well-functioning Single Market for the regulated network services, see Pelkmans and Luchetta (2013), Enjoying a Single Market for network industries, Notre Europe.

[44] These services are subject to European internal market and competition rules. However, there may be derogations to these rules if necessary to protect citizens' access to basic services, see: https://ec.europa.eu/info/topics/single-market/services-general-interest_en

[45] Historically, even network industries not characterized by natural monopolies used to be state-owned. The natural monopoly argument is not valid for sectors like postal services or airlines.

Addressing the question as to which additional forms of network industry regulation should be implemented to strengthen economic resilience in euro area Member States, several specificities should be taken into account. First, network industries provide goods and services of general purpose use: a secure supply of their output is key to absorb and recover from a shock. In addition, heterogeneity in cross-border regulation resulting in fragmented markets may weaken the effectiveness of common macro-economic policies and hence the resilience of economies. Moreover, each network industry has its own characteristics and specificities. Some sectors are characterized by much larger physical infrastructure investment needs, such as railways in comparison with airlines. Finally, without increasing regulatory uncertainty that may discourage long-term investment, the necessary regulatory flexibility should be available to accommodate new challenges and opportunities posed by the ongoing technological developments. [46]

The situation in most euro area Member States for which data are available, shows that product market regulation in network industries decreased between 2000 and 2013 (Graph I.5 and I.6), in line with the overall trend in product markets (Graph I.3). Barriers nonetheless remain and they are typically identified as referring to entry, ownership, degree of vertical integration, market structure as well as political economy dynamics. [47] In each network industry, barriers nonetheless differ, as do advancements in tackling them.

Both the Monti report in 2010 and the "Single Market Act II" in 2012 highlighted the persistent lack of integration in network industries. These are also regularly the subject of country-specific recommendations addressed to Member States in the context of multilateral surveillance in the European Semester. [48]

All in all, in order to strengthen the stability and resilience of the network industries, which are crucial for the resilience of the economy as a whole, adequate regulation at EU level should be taken into account. Poor market functioning in network industries is often associated with public ownership with high market shares, low cross border interconnection and price regulation. [49]

I.4. Vulnerability to shocks

This sub-section examines the possible impact of completing the Single Market for goods and services on the vulnerability to shocks of euro area economies, as one of the components of economic resilience (the impact on the capacity to absorb and recover from shocks is analysed in following sub-sections). [50]

Graph I.5: **Product market regulation**
All network industries
Change between 2000 and 2013
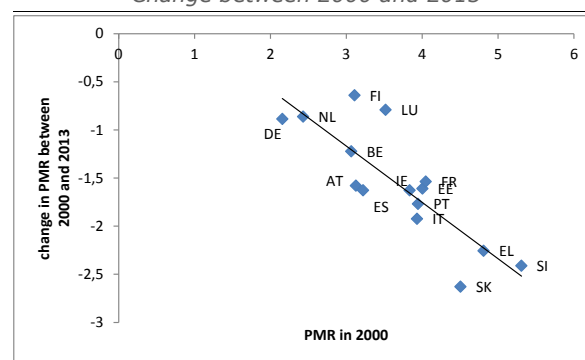
(1) Product market regulation indicator ranges from 0 to 6, with 0 least regulated.
Source: Authors' estimates based on OECD data.

[46] Such developments are discussed in more detail in sub-section I.4.1.
[47] A detailed account of the differentiated advancement of the various network industries is for instance provided in European Commission (2013), Market Functioning in Network industries – Electronic communications, Energy and Transport and in Pelkmans and Luchetta (2013) op cit.
[48] In particular, the 2013 Annual Growth Survey develops more in details the issue of network industries, noting that the performance of network industries across Europe also has a critical knock-on effect on the rest of the economy and can be significantly improved.

[49] See European Commission (2013), 'Market Functioning in Network Industries: Electronic Communications, Energy and Transport', European Economy Occasional Papers 129.
[50] While discussing the impact of deepening the Single Market on the three dimensions of resilience separately, it should be kept in mind that a change in a specific Single Market regulation may affect all dimensions of resilience, and that changes in regulation in one market may be offset by changes in regulation in other markets if not coordinated. See, for instance, Duval, R. and L. Vogel (2008), 'Economic Resilience to Shocks: The Role of Structural Policies', OECD Economic Studies No. 44, 2008 showing, for instance, that stringent product market regulation dampens the initial impact of shocks while strict employment protection legislation increases persistence.

Graph I.6: **Product market regulation**
Electricity
Change between 2000 and 2013
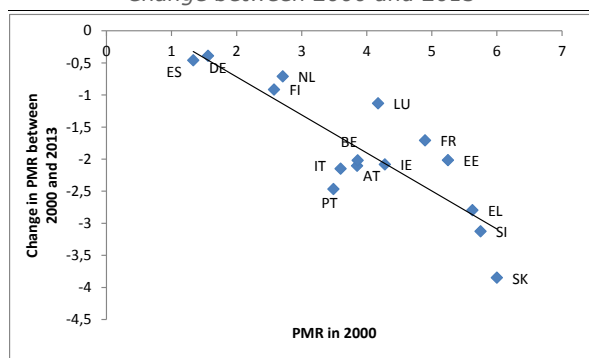
(1) Product market regulation indicator ranges from 0 to 6, with 0 least regulated.
Source: Authors' estimates based on OECD data.

I.4.1. Factors affecting vulnerability

Vulnerability to shocks refers to the frequency and intensity with which an economy is hit by a shock. [51] Shocks can take several forms, including symmetric or asymmetric, temporary or permanent. [52] However, the underlying structure of the economy and the efficiency of markets and institutions have a very significant impact on whether and how strongly a shock will hit and how long it will take for the economy to adjust.

In this respect, one of the main advantages of well-integrated product markets lies in the fact that producers can diversify their sales markets across countries, which in turn makes them less vulnerable to demand shocks arising in particular market segments. It also allows producers to source their inputs from different areas, thereby making them less vulnerable to possible shocks affecting specific supply markets. This is, for example, the consideration that lies behind the focus on the interconnection between energy networks in the context of the EU Energy Union. [53] Widening the range of energy providers

would reduce the vulnerability of the economy through diversification. [54]

At the same time, strong openness to international trade may increase the vulnerability of the economy to external shocks, especially when combined with strong concentration of production in specific sectors. In this respect, it is also important to assess the impact that economic integration has on product specialisation and export composition, especially whether more inter-industry or intra-industry trade increases as a result of it. [55]

Data show that in most euro area Member States the sectoral composition of the exported goods converged to the euro area average between 2002 and 2016 (Graph I.7). [56] This broad similarity in sectoral export composition can be expected to reduce the risk of external sectoral shocks becoming country-specific shocks.

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[51] Reducing the vulnerability of economies to severe shocks is a form of ex-ante resilience, while strengthening the capacity to absorb and overcome such shocks is a form of ex-post resilience.

[52] See, for instance, Cochrane, J. (1994), 'Shocks', *NBER Working Paper* No. 4698.

[53] A fully-integrated internal energy market is one of the five pillars of the EU's energy union strategy. The other pillars are energy supply and solidarity, energy efficiency, decarbonizing the economy, research and innovation. See https://ec.europa.eu/commission/priorities/energy-union-and-climate_en for more details.

[54] For more details on the EU Energy Union, see European Commission (2015), 'A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy', *COM/2015/080*.

[55] In case of inter-industry specialisation, the Member States would be more vulnerable to asymmetric shocks, while in the case of intra-industry specialisation they are more likely to experience common shocks. Economic theory does not provide a clear-cut answer how production patterns develop in a Single Market with a single currency. On the one hand, with further deepening of the Single Market, Member States will get stronger opportunities to specialize in those activities in which they have a comparative advantage, which may trigger less diversification on the supply side. See, for instance, Krugman and Venables (1996), 'Integration, specialization, and adjustment', European Economic Review, Vol. 40, pp. 959-967. On the other hand, if specialisation occurs within industries rather than along different industries (because of product differentiation of the same type of goods or imperfect competition), production structures across Member States become more similar and shocks therefore become symmetric. See, Frankel and Rose (1999), 'The Endogenity of the Optimum Currency Area Criteria', The Economic Journal, Vol. 108, pp. 1009-1025. However, the available evidence is not always clear-cut on this ambiguity. For example, ECB (2013), 'Intra-euro area trade linkages and external adjustment', January Monthly Bulletin reports on the basis of empirical analysis that "euro area countries export relatively similar but well-diversified baskets of goods. This arguably reduces the incidence and aggregate impacts of asymmetric shocks"; while evidence in Papadimitriou, T., Gogas, P. and G. Sarantitis (2016), 'Convergence of European Business Cycles: A Complex Networks Approach', Computational Economics, Vol. 47, No 2, pp. 97–119 supports the specialisation hypothesis especially if a distinction is made between the core and the peripheral Member States.

[56] Notable exceptions are Slovakia which recorded a strong increase (compared to the Euro area average share) in its export share of machinery and transport equipment, and Ireland which recorded a (relative) strong increase in its export share of chemicals and related products including medicinal and pharmaceutical products. Latvia and Malta recorded the strongest convergence: while the former recorded a sharp increase in its (relative) strong export share of machinery and transport equipment, the latter recorded a sharp decrease.

Finally, disruptions in particular segments of the economy such as domestic network industries' output, in sectors like energy and telecommunication, can have a strong adverse impact on a Member State's economic activity. Such disruptions can be tempered if economic agents have the possibility to draw their intermediary inputs from a diversified source free from any technical or regulatory barriers - as would be the case in the Single Market of network industries. A well-functioning Single Market may reduce a Member State's vulnerability to shocks arising in the domestic network industries. However, this vulnerability is also conditioned by a Member State's economic structure. For example, a Member State's vulnerability to shocks in the supply and price of energy increases with the energy-intensity of its economy. Policies at national level are crucial to improve resilience from this perspective.

Graph I.7: **Sectoral export composition goods**
(compared with EA average)
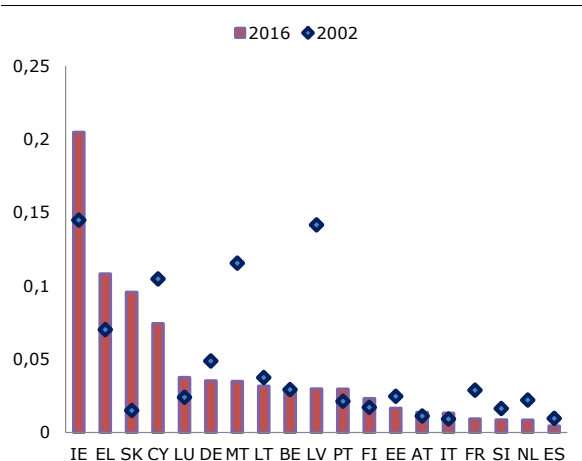
(1) Indicator based on difference between a Member State's and euro area's industry's share in total exports. The indicator shows the sum of squared differences of these product shares, the lower the value the closer the national export composition to the euro area's industrial export composition. Products are classified along the United Nation's Standard International Trade Classification (SITC).
Source: Authors' estimates based on Eurostat.

I.4.2. Ongoing structural trends shape vulnerability

Ongoing structural developments, such as greater integration of value chains in the euro area and increased use of digital platforms [57], can be

expected to increase potential output growth in euro area economies. [58] At the same time, they can also be expected to affect the resilience of the economy. They may increase vulnerability through cross-border spillover effects (e.g. due to greater integration in global value chains). Price setting may at the same time become more flexible (e.g. due to increased online competition), which may strengthen the capacity of economies to respond to shocks. As such, the net impact of these ongoing structural developments varies from case to case, as the following empirical evidence illustrates, and no clear-cut conclusions of some ongoing trends can be drawn on a more general level.

First, value chains based in the euro area tend to have strong internal euro area linkages. [59] The latter may reduce Member States' vulnerability to shocks arising within their domestic market or outside of the euro area, while making them more vulnerable to shocks in other euro area Member States, depending on the structure of the value chain and their position in it. [60] More particularly, Frohm and Gunnella (2017) report that the strength of the transmission of idiosyncratic shocks depends greatly on the presence of global hub sectors, which are either large suppliers or purchasers of other value chain partners' inputs. In such cases, shocks to the global hub may adversely affect the partners, who do not have the means to offset shocks hitting the hub. [61]

Participating in value chains may also make national labour markets relatively more sensitive to

based intermediaries. Examples are crowd-funding, occasional self-employed and Peer-to-Peer transactions. See, for instance, Tirole, J. (2017), *Economics for the Common Good*, Princeton University Press.
[58] See, for instance, OECD (2015), *The Future of Productivity*
[59] For instance, Amador, J., Cappariello, R. and R. Stehrer (2015), 'Global value chains: a view from the euro area', *ECB Working Paper Series* No 1761, estimate that the export share of foreign value added sourced within the euro area was more stable than that sourced from other blocks. They also estimate that Germany played the largest role in the internal euro area linkages, representing 28.8 per cent of value added supplied and 23.0 per cent of value added consumed in 2011.
[60] I.e. being the weakest link (such as assembling parts imported from other Member States) or being the strongest link (such as senior management and design) in the value chain may make a difference in terms of vulnerability.
[61] Here it should be noted that, while upstream hubs (dealing with design and overall management) tend to be located mostly in developed economies, the share of Chinese downstream hubs has increased notably in recent years, making euro area Member States more vulnerable to idiosyncratic shocks originating overseas. See, for instance, Frohm, E. and V. Gunnella (2017), 'Sectoral interlinkages in global value chains: Spillovers and network effects', *ECB Working Paper Series No 2064*.

[57] Digital economic platforms refer to transactions between suppliers and demanders of goods and services facilitated by web-

labour market conditions in value chain partners, leading to increased vulnerability and defensive responses. For example, local employers who are price takers may be more inclined to hire workers on a temporary contract, as this gives them more flexibility to adjust to a possible restructuring of the global value chain. [62]

Domestic inflation may also become more sensitive to conditions in value chain partners, if value chains extend beyond borders. As such, production costs can be transmitted more easily across borders. Nevertheless, highly integrated and competitive markets may also limit this type of transmission to the extent that downstream firms have the opportunity to substitute upstream production. [63] The net effect is therefore unclear, and a matter of empirical investigation. [64]

The rise of online trade (such as e-commerce) is another relevant ongoing structural development that is expected to further raise intra-euro area trade, as greater market transparency and competition lead to greater price flexibility – which in turn may reduce business cycle fluctuations. [65]

All in all, given the observed pace of ICT development, most of the aforementioned effects triggered by technological innovation can be expected to further strengthen in the coming years, though the effect on resilience is not clear cut at this stage.

I.5. Shock-Absorption Capacity

Several channels can be distinguished via which the further deepening of the Single Market can affect the shock absorption capacity of euro area Member States. These include diversification (on the supply and demand side) and price flexibility – although their impact may point in different directions so that determining the net effect becomes an empirical matter.

I.5.1. Diversification

While diversification reduces Member States' vulnerability to shocks, as discussed in the previous sub-section, it can also increase their capacity to absorb shocks: in a relatively more diversified economy, a sectoral shock has a smaller impact on the economy as a whole. As such, the shock puts a smaller burden on national automatic fiscal stabilisers and access to financial markets tends to be less strained. Absorption capacity of the economy is stronger as a result.

Further integration of product markets across euro area Member States can also be expected to provide greater opportunities for an export-led recovery in case a euro area Member State is hit by an asymmetric shock. This may be especially relevant for smaller EA Member States. If all euro area Member States are hit by a common shock, but adjust at different rates, there may still be room for the hardest hit to export to the least hit.

Through diversification, deepening the Single Market can therefore be expected to increase shock-absorption capacity, thereby fostering economic resilience.

I.5.2. Price flexibility

The further deepening of the Single Market can be expected to affect price flexibility through stronger competition among firms [66] and increased

[62] See, for instance, Lehndorff, S., and Voss-Dahm, D. (2005) 'The delegation of uncertainty: flexibility and the role of the market in service work', in Bosch, G., Lehndorff, St. (eds): Working in the service sector – a tale from different worlds. London and New York: Routledge: 289 – 315

[63] The empirical research on the significance of such transmission mechanisms is not unambiguous. For example, Auer, A., Borio, C. and A Filardo (2017), 'The Globalisation of Inflation: The Growing Importance of Global Value Chains', *CESIFO Working Paper No. 6387* report evidence that as GVC expand domestic inflation becomes more sensitive to output gaps of value chain partners, while domestic inflation does not seem to be sensitive in most of the 19 advanced economies investigated by, for example, Mikolajun, I. and D. Lodge (2016), 'Advanced economy inflation: the role of global factors', *ECB Working Paper Series No 1948*.

[64] The empirical research on the significance of such transmission mechanisms is not unambiguous. For example, Auer, A., Borio, C. and A Filardo (2017), 'The Globalisation of Inflation: The Growing Importance of Global Value Chains', *CESIFO Working Paper No. 6387* report evidence that as GVC expand domestic inflation becomes more sensitive to output gaps of value chain partners, while domestic inflation does not seem to be sensitive in most of 19 advanced economies investigated as reported by, for example, Mikolajun, I. and D. Lodge (2016), 'Advanced economy inflation: the role of global factors', *ECB Working Paper Series No 1948*.

[65] In New-Keynesian models "menu costs" (i.e. the cost to change prices) are important drivers of price rigidity and thus also of the business cycle. See, for instance, Mankiw, N. (1985), 'Small Menu Costs and Large Business Cycles: a Macroeconomic Model of Monopoly', *Quarterly Journal of Economics*, Vol. 100, pp. 529-539. Hence, to the extent that e-commerce would lower the cost to adjust prices, business fluctuations would be tempered. However, available research suggests that while online prices are more flexible than prices in conventional stores, they are still showing considerable friction. See, for instance, Gorodnichenko, Y., O. Talavera and S. Sheremirov (2005), 'Will e-commerce make prices more flexible?', *VoxEU*.

[66] While the deepening of the Single Market promotes competition between firms, it also allows Member States to exploit their

customer search for lower prices and better quality. [67] The ensuing greater price flexibility reinforces the economy's ability to absorb shocks.

However, when assessing the impact on price flexibility a distinction has to be made between aggregate and relative price flexibility, as they affect macro-economic outcomes via different transmission channels.

The net impact of further economic integration on resilience through aggregate price flexibility is not unambiguous and should be assessed taking into consideration, among others factors, the nature of the shock and the endogenous monetary policy response, but also whether it is a phase of transition to a more integrated Single Market, or if it is the new steady state.

In the transition to a more integrated Single Market, for example, a lower aggregate inflation rate induced by more competition through more integration would increase household disposable income and international price competitiveness, leading to greater domestic and external aggregate demand. At the same time, an anticipated decrease in inflation may also trigger the opposite effect through a rise in real interest rates lowering interest-sensitive expenditures and aggregate demand. [68] The latter effect may of course be tempered by cuts in nominal policy rates, highlighting the fact that the final impact also depends on the endogenous response by monetary policy authorities and on agents' perceptions about future inflation rates. This "endogenous policy reaction channel" may nonetheless be unavailable for an individual country in a currency union (where common monetary policy cannot target country-specific needs) [69], or for the currency union as a whole in a liquidity trap situation. [70]

In a new steady state of a deeper Single Market, macroeconomic stabilisation would likely be improved in the monetary union thanks to increased aggregate price flexibility, to the extent that prices will adjust more rapidly to changed economic conditions and impulses, allowing for a more effective transmission of the common monetary policy.

Relative price flexibility is even more important than aggregate price flexibility as it induces a reallocation of resources. Relative prices of goods and services are mainly affected by relative (marginal) production costs and mark-ups [71], and completing the Single Market can have an impact on both. [72] Production costs and mark-ups can reasonably be expected to decrease when bringing down barriers to trade and strengthening the mobility of production factors. The latter are expected to promote gains on allocative efficiency (whereby marginal costs and marginal benefits get closer), productive efficiency (whereby a lower amount of inputs is used to produce the same amount of output or higher quality output) and dynamic efficiency gains (whereby innovation is stimulated). Nevertheless, price flexibility at the level of firms can be restricted by financial frictions, for instance, as firms may be less likely to cut prices in order to avoid costly external financing, if an adverse shock induces a sufficiently severe deterioration in internal liquidity. [73]

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comparative advantages to the fullest - which requires a reallocation of resources across firms and sectors.

[67] Generally speaking, fully flexible prices are prices that continuously adjust to equilibrate demand and supply. In the absence of fully flexible prices a distinction can be made between "price stickiness' if prices adjust infrequently, and "price rigidity" if prices do not fully adjust to their equilibrium value. See, for instance, Dhyne, E., J. Konieczny, F. Rumler and P. Sevestr (2009), 'Price rigidity in the euro area — An assessment', *European Economy Economic Papers* No. 380.

[68] In addition, deflationary pressures may also affect the supply side adversely due to, inter alia, higher real debt burden, liquidity failures, rising real wage bill, etc.

[69] See, for instance, Galí, J. and T. Monacelli (2016), 'Understanding the Gains from Wage Flexibility: The Exchange Rate Connection', *NBER Working Paper* No. 22489.

[70] See Eggertsson, G. and P. Krugman (2011), 'Debt, Deleveraging, and the Liquidity Trap: A Fisher-Minsky-Koo Approach', *The Quarterly Journal of Economics*, Vol. 127, No. 3, pp 1469–1513.

[71] Other factors affecting prices include price regulations and VAT rates.

[72] See, for instance, Sauner-Leroy, J-B (2003), 'The impact of the implementation of the Single Market Programme on productive efficiency and on mark-ups in the European Union manufacturing industry', *European Economy Economic Papers* No. 193.

[73] See, Gilchrist, S., Schoenle, R., Sim, J. and E. Zakrajsek (2015), 'Inflation Dynamics During the Financial Crisis', *Federal Reserve Board Finance and Economics Discussion Series* No 2015-012.

Box I.1: Sectoral price flexibility across EA Member States
Some empirical results

In the following empirical analysis, sectoral price flexibility is measured as the responsiveness of prices to changes in underlying production costs. Using quarterly, sectoral national account data the responsiveness is estimated making the following assumptions. [1]

For each sector i the price of its composite good (P_i) is adjusted for only x_i percent of the composite good in period t, i.e. $\log(P_{it}) = (1-x_i)\log(P_{it-1}) + x_i \log(PR_{it})$, with PR_{it} the new price of the part that undergoes a price change in period t. However, only y_i percent of the price change reflects the marginal production cost (i.e. the unit labour cost), while $(1-y_i)$ percent is reset in an ad-hoc way by increasing the price of the previous period by the change in the general price level which is available at no cost, so that $\log(PR_{it}) = y_i \log(ULC_{it}) + (1-y_i) [\log(P_{it-1})+ \log(PGDP_t/PGDP_{t-1})]$. Inserting the latter equation into the former, yields then

$$\log(P_{it}/P_{it-1})) = y_i \log(ULC_{it}/P_{it-1})+ x_i (1-y_i) \log(PGDP_t / PGDP_{t-1})$$

For estimation purposes the equation has been augmented with a measure of the business cycle and a stochastic term, and a distinction has been made between responses before and after the third quarter of 2008 using slope dummies. [2]

The estimation results (for the 1995Q1-2017Q2 period) summarised in Graph 1 suggest that market sectors that are more affected by international competition such as manufacturing, show the weakest dispersion in flexibility [3] - before as well as after the crisis.

Graph 1: Dispersion of price responsiveness per sector across EA Member States
(Before and after the crisis)
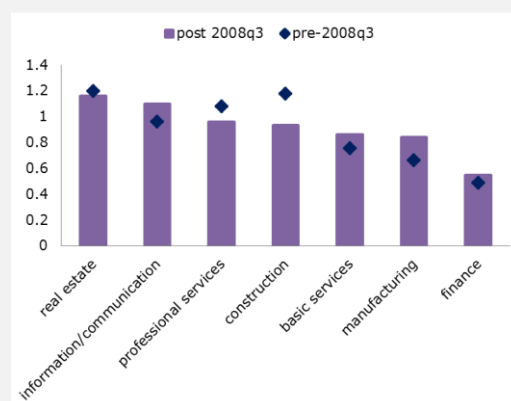
(1) Basic services covers wholesale and retail trade, transport, accomodation and food service activities. Unbalanced

[1] Along the lines introduced by Calvo, G. (1983), 'Staggered Prices in a Utility Maximizing Framework', Journal of Monetary Economics, Vol. 12.
[2] The slope dummy (=0 before 2008q4 and =1 as of 2008q4).
[3] Measured as the coefficient of variation of point estimates across the EA MS (excluding MT) for each sector.

Relative price flexibility plays a dual role in supporting shock absorption capacity, as well as the speed of the recovery. First, more flexible relative prices may help to absorb output (and employment) losses in the sectors hardest hit by letting their prices decrease in relative terms, thus stimulating demand for the products concerned. [74]

Second, relative price flexibility is an essential condition to support resource reallocation across sectors. Competition and relative price flexibility provide the right signals and incentives to foster resource reallocation from sectors which have experienced excessive (unsustainable) growth in a boom phase (as was the case for construction and non-tradables after the 2008 crisis) to sectors with sustainable growth potential. [75] However, in some cases price flexibility may exacerbate cyclical swings, in which case other policies may be needed to prevent excessive imbalances.

Available evidence suggests that prices are still not sufficiently flexible in all sectors in euro area Member States. For instance, Dhyne et al. (2009) [76] report that prices of services are adjusted less frequently compared to prices of manufactured goods. This can be explained by insufficient competition in the services sector and by the role played by wages in the sector's cost structure. Vermeulen et al. (2012) [77] report that euro area producer price changes are noticeably smaller than U.S. producer price changes. The econometric results presented in Box I.1 indeed suggest that sectors that are more exposed to international competition, such as manufacturing, show the weakest dispersion in price responsiveness to changes in nominal unit labour cost.

I.6. Ability to recover

Economic recovery after a shock also requires a smooth reallocation of production factors towards activities that have higher growth potential, as highlighted by the recent economic and financial crisis. The Single Market can affect reallocation in different ways. While so called 'framework conditions' improve reallocation efficiency in product markets across the board, specific characteristics of individual product markets (in terms of factor inputs, demand and market structure) also have a direct impact on short-term reallocation, as better explained below.

I.6.1. Framework conditions

The 'framework conditions' that influence the reallocation of production factors can be broken down into the framework conditions that have a direct impact on a firm's entry, growth, decline and exit as well as the framework conditions that affect the business environment in which firms operate such as the quality of public infrastructure, procurement rules and corruption.

The first areas to consider relate to the conditions of market entry for new firms. Available data suggest that the number of days and procedures required to start up a business decreased notably in several Member States between 2008 and 2016 – with Spain (down by 33 days), Lithuania (22.5 days) and Slovenia (by 13 days) recording the strongest decreases in the number of required days. Nevertheless, the number of days still vary considerably across the euro area. It takes 28 days to start a business in Malta, 22 days in Austria and 18.5 days in Luxembourg compared to just 2.5 days in Portugal and 3.5 days in Estonia and Lithuania. [78]

The entry of firms is to a large extent influenced by the ease of doing business (European Commission, 2017). [79] In this respect, improving the business environment via Single Market reforms would include, among others, removing barriers to investment, raising the quality of the public administration, ensuring greater regulatory predictability, as well as fostering deeper and more integrated capital markets. [80]

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[74] In the absence of price flexibility the decrease in demand would be fully absorbed by adjustments in quantity (provided this is not hindered by regulations).

[75] In case the economy is hit by a permanent shock, transition to the new equilibrium is required – which requires changes in relative prices and reallocation of production factors.

[76] See, for instance, Dhyne et al. (2009), op cit. and ECB (2006), 'Competition, productivity and prices in the euro area services sector', *ECB Occasional Paper Series* No 44.

[77] See Vermeulen,P. et al. (2012), 'Price Setting in the Euro Area: Some Stylized Facts from Individual Producer Price Data', *Journal of Money, Credit and Banking*, Vol. 44, No. 8, pp 1631-1650.

[78] World Economic Forum competitiveness database (2017).

[79] See, for instance, European Commission (2017), 'Ease of Doing Business. Thematic Discussions on Growth and Jobs', Note for the Eurogroup.

[80] Substantial differences remain across the area especially in terms of business regulation and quality of public administration. See, for instance, Canton, E. and M. Petrucci (2017), 'Ease of doing business in the euro area', *Quarterly Report on the Euro Area*, Vol. 16, No. 2, pp. 21-29.

The second areas to consider are the effective and efficient insolvency frameworks (81) and second chances for entrepreneurs which are key to facilitate the redeployment of resources. Effective insolvency frameworks in particular may also strengthen the recovery after a shock. Start-ups may get a boost, for instance, when capital goods (such as real estate) of bankrupt businesses can be acquired at a low price (especially during a downturn), while new businesses may trigger an increase in demand (for intermediary goods and services), which may in turn support new start-ups.

In this respect, it is important to notice that the time needed to resolve insolvency still varies greatly across euro area from half a year in Ireland to four years in Slovakia. Furthermore, while failed entrepreneurs show a strong preference for entrepreneurial activity, activities are often constrained by the complexity of the regulatory framework in case of honest failure. (82) Against this background, the Commission proposed a new approach to business insolvency in Europe, which should promote early restructuring as a means to support growth and protect jobs. (83)

Finally, other conditions that determine broad regulatory quality favouring an efficient reallocation of productive factors include a well-functioning justice system, an efficient public administration, a low level of corruption (including in public procurement), the availability of high-quality public infrastructures, and an effective intellectual property rights framework. (84)

Reforms in the aforementioned areas should not be seen in isolation. They need to be accompanied by further integration in financial markets, particularly with respect to financing new firms and SMEs with strong innovation potential. While beyond the scope of the current analysis, well-functioning financial markets are particularly important to support the reallocation and redeployment of resources as financial frictions may hamper reallocation, especially for small firms. This calls for completing Banking and Capital Market Union and further reduction of non-performing loans. (85)

A well-functioning Single Market also requires well-functioning labour markets and social and education systems capable of providing a well-trained labour force with active labour market policies to favour smooth and painless transitions. It also requires a level playing field in terms of employees' social rights (as stipulated in the European Pillar of Social Rights) (86) to prevent competition on the basis of labour conditions that may undermine social cohesion and the political acceptability of the Single Market project in the future. (87)

I.6.2.   Sector-specific conditions

Sector-specific conditions can also contribute to facilitating or hindering the reallocation of resources by affecting firms' entry decisions in the specific sector. The impact on the overall economy of obstacles to reallocation in specific sectors depends of course on the size of the sector and its multiplier effect. The deepening of the Single Market for network industries in particular may have a strong potential to facilitate economic recovery after a shock given the relatively high size of the estimated multiplier effects. (88)

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(81) See http://ec.europa.eu/newsroom/fisma/item-detail.cfm?item_id=54294&utm_source=fisma_newsroom&utm_medium=Website&utm_campaign=fisma&utm_content=Insolvency&lang=en

(82) This includes an integrated approach in improving the regulatory framework, improvement in entrepreneurial skills through lifelong learning, systematic recognition of honest vs. dishonest entrepreneurs. Access to finance is paramount for a second chance. See, for instance, Expert Group (2015), 'A second chance for entrepreneurs'.

(83) European Commission (2016) 'Proposal for a directive of the European Parliament and of the Council on preventive restructuring frameworks, second chance and measures to increase the efficiency of restructuring, insolvency and discharge procedures and amending Directive 2012/30/EU', COM(2016) 723 final.

(84) See Sondermann, D. (2016), 'Towards more resilient economies: the role of well-functioning economic structures', *ECB Working Paper 1984*. The paper analyses the impact of framework conditions (e.g. efficiency of the judicial system, strength of the regulatory environment, amount of administrative burdens) on resilience.

(85) For Commission measures to address the risks related to NPLs see for instance https://ec.europa.eu/info/publications/180314-proposal-non-performing-loans_en

(86) For more details, see https://ec.europa.eu/commission/priorities/deeper-and-fairer-economic-and-monetary-union/european-pillar-social-rights_en

(87) Such interaction should be seen as an opportunity to reinforce the working of the Single Market as it prevents social dumping undermining fair competition and an efficient allocation of resources. See, for instance, European Commission (2017), 'Report of the public consultation', accompanying the document 'Establishing a European Pillar of Social Rights', *Commission Staff Working Document*, SWD(2017) 206 final.

(88) More particularly, based on World Input-Output Database, autonomous investments in these sectors are estimated to increase aggregate output by an amount close to or above 2 times the initial investment.

Monitoring sector-specific regulations [89] helps to identify factors that influence the market structure and the conduct of firms in specific sectors. Such monitoring reveals that some sectors have been largely opened to competition, such as telecommunications and airlines, in large part thanks to the far-reaching liberalisation achieved in the EU. Openness and competition in other sectors, such as professional services, remains in need of improvement (see, for instance, Pelkmans, 2016). [90]

I.7. Conclusions and policy implications

The analysis in this section suggests that the further deepening of the Single Market in goods and services may lead to a decrease in Member States' vulnerability to shocks via the access to more diversified export markets and sources of intermediate inputs. At the same time, the absorption capacity of Member States can reasonably be expected to increase, as further progress in economic integration would foster flexibility in (relative) prices, thereby containing business cycle fluctuations in output and employment.

Further deepening the Single Market can also be expected to raise the economy's capacity to swiftly recover following a shock, thanks to a swifter reallocation of resources. This is all the more the case if the shock requires a structural reallocation of resources from activities that experienced unsustainable increases during a previous boom towards activities with more sustainable growth potential.

The analysis in this section suggests also that further strengthening of Member States' overall economic resilience calls for a further fine-tuning of the existing regulatory framework of network industries to better deal with ongoing technological changes – which have a direct impact on economic resilience.

While this section focused exclusively on the deepening of the Single Market for goods and

services, such process should necessarily be accompanied by progress on other dimensions of the Single Market (capital and labour markets). In particular, completing the Banking Union and advancing significantly on the Capital Markets Union are essential to fully exploiting the benefits of further integration in goods and services markets. Further strengthening labour market and social policies along 'flexicurity' principles is also essential to ensure that stronger economic resilience results from a deeper Single Market, while ensuring the political acceptability of the project going forward.

Moreover, further integration across borders and competition-enhancing reforms that foster even stronger interlinkages between markets should be complemented by well-designed automatic fiscal stabilisers and potentially a common stabilisation mechanism as well as by private financial risk-sharing mechanisms with a view to strengthening economic resilience and limit adverse spill-over effects.

Overall, bringing down remaining barriers in the Single Market to foster resilience in the EMU would require decisive action on different fronts. Identifying priority areas to increase the resilience of the EMU is part of the Eurogroup's thematic discussions. The question arises of how progress can be made in relevant areas of the Single Market which belong to the competence of different Council of Ministers formations and ministers at national level. There would be benefits in having them focus on actions of highest priority for the functioning of the EMU. In addition, more decisive action at national level to achieve full enforcement of the Single Market legislation would be important, alongside the powers exerted by the European Commission to launch infringement proceedings concerning EU Member States that do not comply. Finally, the multilateral surveillance in the context of the European Semester has a role to play, as areas of relevance to the Single Market where further progress is needed are regularly highlighted in the recommendations to Member States and to the euro area as a whole.

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[89] The OECD offers indicators of sectoral regulation related to professional services, retail trade and network sectors.
[90] Pelkmans, J. (2016), *op cit.*

II. The determinants of export quality in the euro area

Export quality is an important component of external competitiveness on the non-cost side. First of all, quality significantly affects the global patterns of trade. Moreover, increasing the quality of existing products can strengthen existing comparative advantages while boosting export revenues. Furthermore, products with more potential for quality improvement are less exposed to low-wage competition. In this section, we analyse the determinants of export quality in the euro area. Using sectoral data on manufacturing exports for euro area countries over the period 2005-2015, we confirm the finding of a growing literature suggesting that a prime determinant of export quality is the level of income of the exporting country. Higher incomes mean domestic demand for high-quality product and go together with higher skills of the labour force and higher supply of capital. In addition, however, our results looking more in-depth at supply side channels show that the use of a higher share of high-tech inputs (both services and manufacturing products), as well as better institutions are positively related to export quality. These results are especially true for sectors with higher technological intensity, and where the potential for quality improvements is also higher. Policies to increase efficiency in product markets and to strengthen institutions therefore matter for fostering export quality and improving resilience of the economies. ([91])

II.1. Introduction

The economic literature has shown that the type of export specialisation, and in particular increasing the quality of exports, is important for economic growth and competitiveness. For example, exporting products similar to the ones produced by high-income countries is associated with higher growth. ([92]) Moreover, product quality is a key determinant of the direction of trade between countries: exporting higher-quality varieties of existing products can thus contribute to boost export revenues and productivity. ([93]) At the same time, however, the potential for quality improvement is different across products, and it is higher for manufacturing goods than in agriculture and natural resources. ([94])

Quality upgrading is not the same as increasing the technological content of exports. While low-income countries seem to have increased the level of the latter for their products, in many cases, as argued by Hwang (2007), they tend to remain in the low end of the quality distribution within those industries; nevertheless, for quality to contribute to growth, countries should export not only more complex products but also products with higher

potential for quality improvements, i.e. with "longer quality ladders". ([95])

In addition to being important for growth and competitiveness, quality upgrading matters because it can shelter, at least in part, from price competition. In this respect, the literature has shown that countries that export products for which the potential for quality improvement and diversification is higher tend to be better off in those sectors, while countries specialising in products with shorter "quality ladders" have been shown to be more exposed to employment and output declines resulting from low-wage competition. ([96])

Given the just outlined relevance of product quality and quality improvements, this section aims at shedding light on the determinants of export quality in euro area countries, using the indicator for quality developed by di Comite et al. (2014) and Vandenbussche (2014). ([97]) The analysis is performed using sectoral data. The value added of using sectoral data instead of aggregate data is that they allow us to shed light on sectoral differences on the factors affecting export quality.

([91]) The section was prepared by Gaetano D'Adamo. The author wishes to thank Elizaveta Archanskaia, Erik Canton and Jorge Durán Laguna for useful comments.
([92]) Hausmann, R., Hwang, J., and D. Rodrik (2007,) 'What you export matters', *Journal of Economic Growth* Vol.12, pp.1-25.
([93]) Hallack, J.C. (2006), 'Product quality and the direction of trade', *Journal of International Economics* Vol. 68, pp. 238-265.
([94]) Khandelwal, A. (2010), 'The long and short (of) quality ladders', *Review of Economic Studies* Vol. 77, pp.1450-1476.

([95]) Hwang, J. (2007), "Introduction of new goods, convergence and growth", *Harvard University, mimeo* and Rodrick, D. (2007) "Unconditional convergence exists after all!", http://rodrik.typepad.com/dani_rodriks_weblog/2007/04/unconditional_c.html.
([96]) Khandelwal, A. (2010), *op. cit.*
([97]) Di Comite, F.; Thisse, J.F., and H. Vandernbussche (2014), 'Vertizontal differentiation in export markets', *Journal of International Economics 93(1), pp. 50-66*; Vandenbussche, H. (2014) op. cit.. and H. Vandenbussche (2014), 'Quality in exports', *European Economy – Economic Papers 528, European Commission*.

Our focus is on manufacturing exports, thus leaving aside services. While it cannot be denied that services also represent an important share of international trade, the measurement of quality in services is even more problematic than in manufacturing and, to our knowledge, available indicators of export quality do not cover services. Nevertheless, as we will point out, services matter also for the quality of manufacturing exports.

This Section is structured as follows. Sub-section II.2 reviews the related literature on the measurement of export quality. Sub-section II.3 focuses on the determinants of export quality and shows descriptively the relationship between our indicator and the key determinants identified by the literature. Sub-section II.4 discusses the empirical approach and the data and Sub-section II.5 reports the regression results. Sub-section II.6 concludes.

II.2. Measuring export quality: a challenging task

The quality of exports is one of the factors affecting export performance on the non-price side, together with institutions, integration in Global Value Chains, infrastructures, etc.

Quality is crucial to determine whether consumers will purchase a product, and perhaps it is the key non-price characteristic. Measuring quality is a very complex task: each product has its specific features concerning e.g. reliability, brand, design, performance and safety of a product. Moreover, the level of quality of one product should be defined by reference to the quality levels of other comparable products, i.e. in relative terms.

Since the quality of exports cannot be directly observed, it needs to be estimated. The simplest way to define quality could be unit values, which are directly observable. From this point of view, a product with higher unit value would have higher quality. However, the "pure" product unit value is, at best, a noisy proxy for quality, since it may reflect differences in export composition, production costs, pricing strategies, or even in quality-adjusted prices resulting from shocks to supply or demand. [98]

Different approaches to the estimation of exports quality have been developed in the literature. These approaches generally model demand, or, in some cases, supply, using microeconomic foundations. Some measures are based on unit values, under the assumption that higher-quality products (once controlling for other factors) should sell at higher prices. [99] Alternative measures focus on demand shifters, and thus are based on the assumption that a product is of higher quality if, conditional on price, it has a higher market share. [100] In this sense, quality represents a parallel and outward shift in the demand curve, which results in a higher willingness-to-pay for the higher-quality goods than for the lower-quality goods. Feenstra and Romalis (2014) add to this demand-side intuition the fact that goods of higher quality are shipped longer distances (the "Washington apples effect"). [101] [102]

The perception of quality by the consumer also involves some subjective elements, and therefore, some features might be very valuable for one customer and not as much for another. The taste of a consumer should thus be taken into account as well and, as a result, the ranking of a product might differ according to the different destination markets. In other words, one should take into account also the factors that affect the slope of the demand curve, where these "slope shifters" would account for taste differences. That is the approach to measure quality developed by di Comite et al. (2014) and applied by Vandenbussche (2014) and on which the "quality indicator" used in this section to express export quality is based. [103]

[99] Hallack, J.C. (2006), op. cit.; Baldwing, R. and J. Harrigan, (2011) 'Zeros, quality and space: trade theory and trade evidence', *American Economic Journal: Microeconomics* Vol 3(2), pp. 60-88.

[100] Khandelwal, A. (2010), *op. cit.*; Hummels, D. and P.J. Klenow (2005), 'The variety and quality of a nation's exports', *American Economic Review* Vol. 95(3), pp. 704-723.

[101] The "Washington apples effect" or Alchian–Allen effect implies that when the price of two goods of different quality is increased by the same, fixed, amount (e.g. a transportation cost or a lump-sum tax), demand will shift towards the higher-quality good. In this framework, therefore, since it is more expensive to ship at longer distance, goods that travel further away are considered of higher quality.

[102] Feenstra, R. C. and J. Romalis (2014), 'International prices and endogenous quality', *The Quarterly Journal of Economics* Vol. 129 (2), pp. 477-527.

[103] Di Comite, F.; Thisse, J.F. and H. Vandernbussche (2014), *op.cit.*

[98] Henn, C., Papageorgiou, C. and N. Spatafora (2013), 'Export quality in developing countries', IMF Working Paper No. 13/108.

Box II.1: **A measure of export quality**

The calculation of the indicators of export quality used in this section is based on the theoretical background and empirical approach described in di Comite et al. (2014) and Vandenbussche (2014). In short, this approach moves beyond only considering (unit) prices for computing quality, and instead focuses on prices, variable costs and competition effects.

The model assumes that the demand for variety s belonging to the product market S in destination i is linear, stemming from a quadratic utility function, and takes the form:

$$p_{s,i} = \alpha_s - \beta_{s,i} \cdot q_{s,i} - \gamma \cdot Q_{s,i}$$

where p is the unit value, q is quantity consumed of variety s in destination i, α is the willingness to pay for the first unit of s in that destination, β is the slope of the demand, which varies by product and destination market, γ is a parameter indicating the substitutability between varieties in S and Q is the total quantity consumed of all other varieties. In the model, α_s is therefore what identifies the product's quality.

Vandenbussche (2014) shows that, after solving the firm's maximization problem, the "relative quality of an exported product s" (with respect to another variety r), can be calculated as:

$$(\alpha_s - \alpha_r) = (2p^*_{s,i} - c_s) - (2p^*_{r,i} - c_r),$$

where the p^* are equilibrium prices and c_s, c_r are marginal costs. Therefore, to calculate the indicator, the data series that are needed are: (i) export prices at product level of the exporting country to a destination market by year; (ii) export quantities at the firm-product level to the same destination market by year and (iii) cost of production of the product in the market from where it is shipped.

Against this background, quality indicators used in this Section are constructed using data coming from two sources. First, we used Comext (EUROSTAT) trade flows at product (CN8) level to obtain unit values as a proxy for prices. Second, we use information of the firm-level dataset ORBIS to obtain a proxy for country-product costs. The destination market considered is the EU-28.

In the empirical analysis, all the CN8 products exported by each European member state as well as China, US and Japan to the EU28, for which we have sufficient information on the cost side, are considered. This results in 31 countries of origin whose export products we can compare within the same product market, on average about 6000 exported products for each of the EU Member States and its main world competitors i.e. US, Japan, China.

To obtain a country-product cost measure, we first match the 4-digit Nace Rev. 2 primary Industry classification of ORBIS for firms in the country of origin with the CN8 product classification (via CPA codes) to which a particular product belongs, in order to have an idea of the cost of each exported product. Cost data are variable costs, consisting of both wage costs and material costs. Due to different accounting practices and data availability, for some countries, instead of wage costs and material costs, we used cost of goods sold. This was the case for China, Cyprus, Denmark, United Kingdom, Greece, Ireland, Japan, Lithuania, Malta, United States, Latvia and Netherlands.

One caveat is that ORBIS does not report all the very small firms and thus has a bias towards larger firms. However, since exporters tend to be larger firms, we expect variable costs estimates coming from this data to be a good proxy. To take this potential bias into account, we consider the variable cost of the median firm in the sector as a proxy for the costs of all the CN8 products that map into this industry classification. Arguably, the median is less influenced by outliers than the average.

Thus, for each country in the sample (all EU countries, US, China and Japan) and for each 4-digit NACE Rev. 2 manufacturing sector in which CN8 products map, we take the cost level of the median firm for that country-sector to be a proxy for the marginal cost of a country-product variety exported by that particular country.

Finally, to construct the quality indicator, for each product exported by a country to the destination market we compute the normalized quality rank as in Vandenbussche (2014): in each narrowly-defined product category (CN8), we compare exports of 31 countries of origin (EU MS, US, China, Japan) exporting to the EU. A quality rank of 1 reflects the highest quality in the EU market for a particular "country of origin-product", while a rank of 0 is the lowest quality rank. It is important to note that, in assigning a quality rank to a product, we take into account the number of other countries also exporting the same product to the EU market.

Graph II.1: **Average export quality rank in manufacturing, 2005-2016**
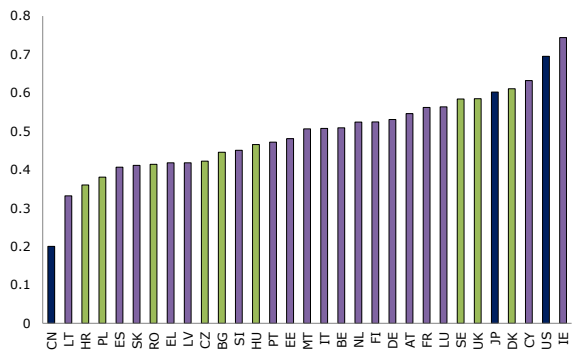
(1) See Box II.1 for details on the construction of the indicator. (2) Purple bars identify euro area countries.
Source: European Commission services calculations from Orbis and ComExt

Box II.1 explains the procedure and the data used to obtain this measure of quality. Previous work has shown that quality, measured using this indicator, is positively related to export performance, once taking demand effects due to product and geographical composition into account. ([104]) This section goes beyond, by showing the drivers of export quality and hence, indirectly, of export performance.

As explained in Box II.1, the quality indicator used here is an ordinal measure of export quality, and therefore, for each product, it ranks countries from the highest quality (the value of the indicator being 1) to the lowest (i.e. the indicator is equal to zero). In other words, quality is defined in relative terms.

Graph II.1 shows the weighted average ranking of euro area countries' exports in 2015 as well as the EU, China, US and Japan using this indicator.

Considering, as a caveat, that values for smaller economies (e.g. Luxembourg, Cyprus and Malta) might be affected by statistical issues (due to the limited size of manufacturing exports), using this indicator, it appears that the highest-quality exports in the euro area come from Ireland, France and Austria. We will come back to this point in sub-section II.5.

II.3. What determines export quality? A descriptive view

Since we have discussed how export quality matters, how can we explain differences across countries in the quality of their products?

The first theory of quality specialization in international trade was proposed by Linder (1961). He suggested that high-income countries tend to export higher-quality products because profitably selling such type of products requires robust demand in the home market. ([105]) In other words, the strength of the home-market demand is a key determinant of export specialization. The "Linder hypothesis" was then formalized by Fajgelbaum et al. (2011). ([106])

The positive relationship between income per capita and quality is also true on the imports side: higher-quality products tend to be sold more in high-income destinations, because the relative demand is higher there. ([107])

The factor-abundance theory suggests, instead, that countries should export goods which use intensively the factors that are relatively abundant in those countries. Since high-income countries have higher supply of skilled labour and capital, to the extent that quality is skill-intensive, high-income countries should have comparative advantage in exporting high-quality products. ([108])

According to both the Linder hypothesis and the factor-abundance theory of comparative advantage, we should thus observe a positive correlation between income per capita and export quality. This is indeed the case for euro area countries, as shown, in a purely descriptive fashion, in Graph II.2, where export quality is defined using the indicator introduced above and outlined in Box II.1. ([109])

([104]) 'Assessing the price and non-price competitiveness of the euro area' *Quarterly Report on the Euro Area (QREA)*, Directorate General Economic and Financial Affairs (DG ECFIN), European Commission, vol. 16(1), pages 37-47, March.

([105]) Linder, S. (1961), *An essay on trade and transformation*. Almqvist & Wiksell, Stockholm.
([106]) Fajgelbaum, P., Grossman, G. M., and E. Helpman (2011), 'Income Distribution, Product Quality, and International Trade', *Journal of Political Economy* Vol. 119(4), pp. 721-765.
([107]) Bastos,P., Silva, J. and E. Verhoogen (2017), 'Export destinations and input prices', *American Economic Review,* forthcoming.
([108]) Dingel, J. I. (2016), 'The determinants of quality specialization', *Review of Economic Studies* 2016-01, pp. 1-35.
([109]) Crinò, R. and P. Epifani (2012), 'Productivity, quality and export behavior', *The Economic Journal* Vol. 122, pp. 1206-1243.

Graph II.2: **GDP per capita and export quality in euro area countries, 2005-2015**
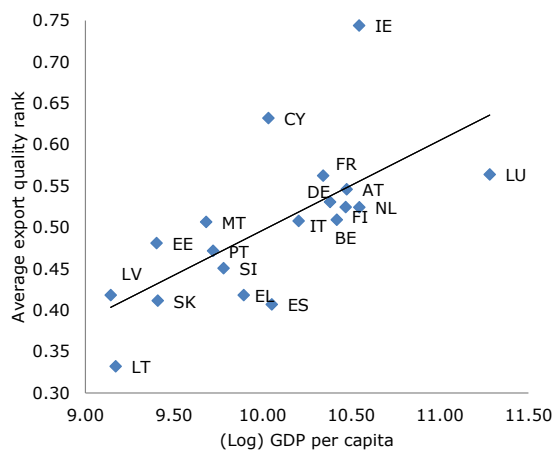
Source: Eurostat and author's calculations

Hausmann et al. (2007) discuss that if what countries produce and export (also in terms of the inner quality) was determined only by their endowments of production factors as well as natural resources, policies that aim at reshaping production beyond these fundamentals would be sub-optimal and asking what determined export quality would not be relevant from a policy perspective.[110] However, the authors show that this is not the case. In addition, since not all goods have the same implications for export performance and producing goods with higher implied productivity is associated to higher economic growth, there is indeed room for policy to have a positive impact on the production structure of the economy. [111] In other words, whilst the determinants of quality specialization are slow-moving, and in this sense akin to endowments, they are mainly man-made and policy may therefore have a role to play.

Institutions have been shown to be as important as human and physical capital endowments in this respect. In particular, Hausmann et al. (2007) show that, in a setting in which there are costs associated to discovery and innovation (while positive externalities are also present), the economy is more likely to get closer to its productivity frontier if the government is able to engage a sufficiently large number of entrepreneurs in cost discovery in the modern sectors of the economy. [112] In a similar way, the literature suggests that a country's ability

to enforce contracts (Nunn, 2007) and, more generally, the quality of its institutions and level of human capital (Costinot, 2009) are key determinants of comparative advantage. [113] To provide an intuition of this, Graph II.3 plots average export quality for euro area countries against the Wold Bank indicator of regulatory quality, showing indeed a positive relationship between the two, with a correlation of 0.64. A more formal econometric analysis is presented in the following sub-section.

Graph II.3: **Institutions and export quality in euro area countries, 2005-2015**
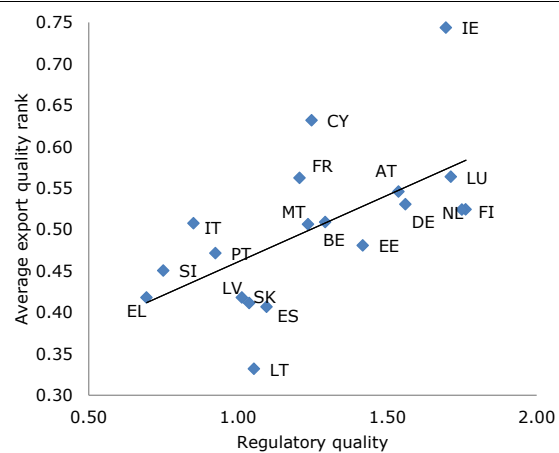
Source: World Bank and author's calculations

II.4. Taking the theory to the data

As mentioned in sub-section II.3, the "Linder hypothesis", as well as previous empirical analysis, suggests that richer countries spend a larger proportion of their income on high-quality goods. Moreover, since closeness to demand is a source of comparative advantage, richer countries would have a comparative advantage in the production of high-quality goods. In other terms, quality and GDP per capita should be significantly and positively related.

Moreover, the quality of institutions (including the regulatory environment), apart from affecting some of these factors, should also affect export quality

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[110] Hausmann et al. (2007), *op. cit.*
[111] Hausmann et al. (2007), *ibid.*
[112] Hausmann et al. (2007), *op. cit.*

[113] Nunn, N. (2007), 'Relationship-specificity, incomplete contracts, and the patterns of trade', *The Quarterly Journal of Economics* Vol. 122(2), pp. 569-600. Costinot, A. (2009), 'On the origins of comparative advantage', *Journal of International Economics* Vol. 77(2), pp.255-264.

directly, as discussed in the previous section.[114] It cannot be denied, however, that institutional quality tends to be correlated with GDP per capita. Therefore, by controlling for the latter we can pin down the role of institutions in determining export quality.

Other things equal, higher quality should be associated with the use of relatively more sophisticated or "high-quality" inputs as well as research and development (R&D) activity, and recent empirical literature has confirmed that indeed the complexity of inputs is related to firms' ability to upgrade their output. [115]

As mentioned above, export quality has also been shown to be related to the income in destination markets. [116] However, since the quality indicator used here is constructed using a common destination market (i.e. the EU28, see Box II.1), we do not investigate this channel.

In our empirical setting, export quality is therefore expressed as a function of country-specific and sector-specific factors: country-specific factors, following the discussion above, are GDP per capita, skills level and institutional variables. Sector-specific variables are related to the endowment of inputs that are relevant to the production in the sectors, i.e. technology, research etc.

More precisely, "inputs" in this context are (i) the share of high-tech knowledge-intensive services sectors in the value added of a sector's exports (*kibs*) and (ii) STEM-industries (where STEM stands for Science, Technology, Engineering and Mathematics) value added shares of gross exports of a given sector (*stem*). [117][118] These two variables are our proxies for "high-quality inputs".

patent is the sectoral patent intensity, measured as the number of patents divided by the number of employees. This is preferred to R&D intensity as a measure of research activity due to better coverage in our data. The skills are proxied by the share of working population with a tertiary degree (*sh_tertiary*).

Finally, at country level, exports quality should also be affected by the quality of institutions. We measure the quality of institutions using the World Bank's (i) regulatory quality indicator and (ii) government efficiency indicator.

Based on the above, the regression run is the following:

$$\widetilde{qual}_{ijt} = \alpha + \beta_1\, gdppc_{it} + \beta_2\, X_{ijt} + \beta_3\, Z_{it} + \varepsilon_{ijt}$$

where *Xijt* X_{ijt} is the vector of sector-specific determinants of quality, i.e. the variables previously defined *kibs*, *stem* and *patent* while *Zit* is the vector of country-specific determinants apart from GDP per capita. The *i* stands for the country while *j* indicates the sector. Since quality is not directly observable, but estimated with the approach outlined in Box II.1, it is indicated with a tilde.

Since institutional variables do not vary much during the period, they are close to being fixed effects. Including all of them would create multicollinearity problems. Therefore, in what follows, we report the results of the pooled OLS regressions and include some of the variables one at the time. Moreover, given the construction of the quality indicator, there is no need to include sector-specific fixed effects.

To test which factors explain export quality differences within the euro area, we use data for the 19 euro area countries over the period 2005-

[114] Thum-Thysen, A. Voigt, P., Bilbao-Osorio, B. , Maier, C., and D. Ognyanova (2017), 'Unlocking Investment in Intangible Assets', *European Economy Discussion Paper* 047.
[115] Kugler, M. and E. Verhoogen (2012), 'Prices, plant size, and product quality', *Review of Economic Studies* 79, 307-339.
[116] Bastos, P. et al. (2017), *op.cit.*
[117] *kibs* services are: Motion picture, video and television programme production, sound recording and music publishing activities; Programming and broadcasting activities; Telecommunications; Computer programming, consultancy and related activities; Information service activities; Scientific research and development.
[118] An industry is classified as STEM if more than 13.5% of its labour force has a STEM education. The classification of STEM industries follows Goos, M. et.al. (2016). These include Chemicals; Pharmaceuticals; Computer, Electronic and Optical products; Electrical equipment; Machinery and equipment n.e.c.; Motor Vehicles; Other Transport equipment; Electricity and Gas, Water Collection, Recycling; Postal and courier; Telecommunications; Computer consultancy; Legal and accounting; Architectural and engineering; Research and Development; Advertising and market research; Other scientific activities; Administrative and support services; Human health and social work. The variables stem and kibs are constructed using data from the world input-output database (WIOD).

2015 spanning 17 manufacturing sectors (NACE-Rev. 2 decomposition at two-digit level). [119]

II.5. Results

The results of the empirical analysis are reported in Table II.1. As expected, higher GDP per capita is always associated with higher export quality (in other words, the "Linder hypothesis" is confirmed). In particular, a 1% increase in GDP per capita is associated with an increase of 0.05-0.09 pps. in (relative) export quality.

More importantly, the quality or "complexity" of the inputs used in production always has a significant and economically relevant impact on quality. Increasing the share of STEM inputs by 1 pp. is associated with an increase in quality of almost 0.9 pps., while increasing the share of high-tech knowledge-intensive services by 1 pp. raises quality by 3-4 pps. in the full specification.

Table II.1: **Determinants of export quality**

	(1)	(2)	(3)	(4)	(5)	(6)
GDPpc	0.084***	0.047***	0.078***	0.048***	0.053***	0.065***
	(0.008)	(0.008)	(0.006)	(0.008)	(0.007)	(0.009)
Skills/R&D						
Patent intensity	0.136***					-0.053
	(0.047)					(0.075)
Share of Tertiary	0.195***	-0.06	0.081	-0.069	-0.061	0.02
	(0.061)	(0.065)	(0.058)	(0.066)	(0.064)	(0.066)
Inputs						
High-tech serv.	0.284***	0.528***	0.344***	0.433***	0.410***	0.280***
	(0.085)	(0.075)	(0.079)	(0.083)	(0.082)	(0.085)
STEM inputs			0.093***	0.089***	0.090***	0.092***
			(0.012)	(0.012)	(0.012)	(0.015)
Institutions						
Governm. Eff.		0.053***		0.051***		
		(0.007)		(0.007)		
Reg. Quality					0.065***	0.062***
					(0.009)	(0.010)
Constant	-0.412***	-0.096	-0.376***	-0.125*	-0.189***	-0.307***
	(0.072)	(0.067)	(0.053)	(0.070)	(0.062)	(0.081)
Observations	2,036	3,230	3,215	3,215	3,215	2,036
R-squared	0.143	0.151	0.158	0.169	0.171	0.181

Note: OLS regressions. Heteroskedasticity and autocorrelation-robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Source:

Institutional quality always has a positive and significant impact on export quality, and this is true using both the regulatory quality variable and government efficiency. [120] Patent intensity also is positively related to quality of exports, although this effect is no longer significant in the fully-specified model. The same holds for the share of population with tertiary education.

Since some data and also the export quality indicator might be volatile for smaller countries, including Ireland, due to statistical reasons, as a robustness check we have performed the regressions excluding Ireland, Malta, Cyprus and Luxembourg. All results were confirmed.

One limitation of the specification in Table II.1, which might explain why some coefficient are no longer significant in column (6), is that it imposes a common elasticity of quality to its determinants across sectors (and countries). This may also explain the fact that the R^2 of the full specification is not very high, being just above 0.18. In fact, input "sophistication" and skills may have different impact on export quality in different sectors, in particular depending on the sectors' technological intensity.

Following the OECD ISIC Rev.3 classification, we can identify four groups of sectors by technological intensity: low-tech, medium-low-tech, medium-high-tech and high tech. Table II.2 reports the classification of NACE Rev.2 manufacturing sectors based on the technological intensity.
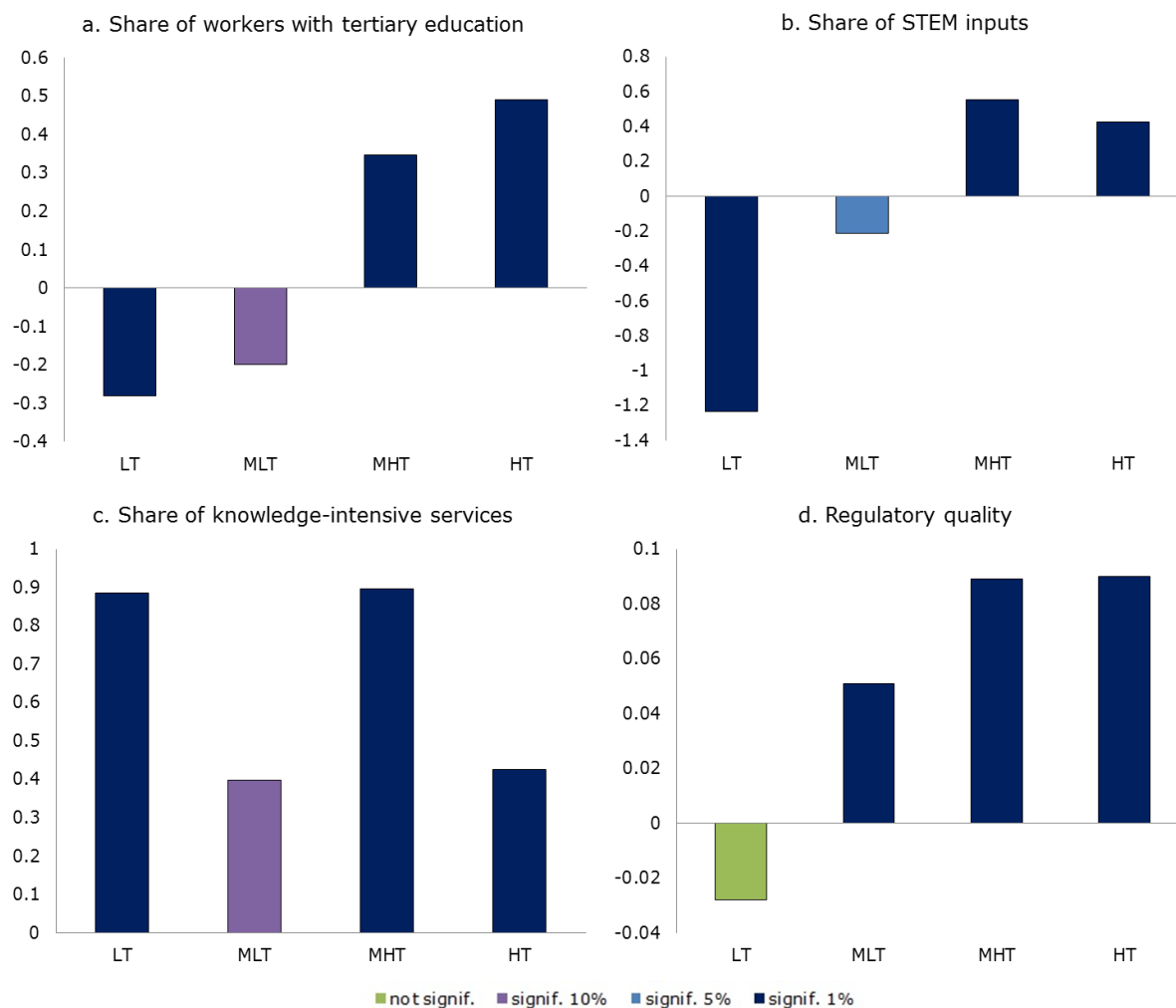
Table II.2: **Sectors' technological intensity**

Tech. Intens.	NACE	Description
Low-Tech	C10-C12	Food Products; Beverages; Tobacco
	C13-C15	Textiles, Wearing Apparel, Leather And Related Products
	C16	Wood and products of wood and cork, except furniture; Articles of straw and plaiting materials
	C17	Paper And Paper Products
	C31-C32	Furniture, Other Manufacturing
Medium-Low Tech	C22	Rubber And Plastic Products
	C23	Other Non-Metallic Mineral Products
	C24	Basic Metals
	C25	Fabricated Metal Products, Except Machinery And Equipment
	C19	Coke And Refined Petroleum Products
Medium-High Tech	C20	Chemicals And Chemical Products
	C27	Electrical Equipment
	C28	Machinery And Equipment N.E.C.
	C29	Motor Vehicles, Trailers And Semi-Trailers
	C30	Other Transport Equipment
High-Tech	C21	Basic Pharmaceutical Products and Pharmaceutical Preparations
	C26	Computer, Electronic And Optical Products

Note: Technological intensity is based on the OECD ISIC Rev.3 classification.
Source: Eurostat

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[119] We include all manufacturing sectors in the NACE Rev.2 decomposition at two-digit-level except printing and reproduction of recorded media due to lack of data.

[120] These variables were inserted separately in the regression due to multicollinearity. As a robustness check, alternative variables proxying the quality of institutions were used, namely (i) control of corruption and (ii) rule of law. The result was confirmed and the impact of institutions was always positive and significant in all cases.

a. Share of workers with tertiary education

b. Share of STEM inputs

c. Share of knowledge-intensive services

d. Regulatory quality

Legend: not signif. | signif. 10% | signif. 5% | signif. 1%

(1) LT = low-tech; MLT = medium-low tech; MHT = medium-high tech; HT = high-tech. The bars represent the regression coefficients from equation (2) performed separately for sectors with different technological intensity. Different colours represent different significance levels as indicated in the legend.
Source:

We therefore performed the regression with the "full specification" (i.e. as in column (6) of Table II.1), which gave the best fit and is in line with our prior (theoretical) discussion, separately by sector according to technological intensity. The regressions performed by sector presented a better fit, being on average 0.27. [121] As shown in Graph II.4, the coefficients of the key variables tend to be higher for sectors which are more high-tech. In other words, the higher the technological intensity of the industry, the more relative quality

depends on "good" institutions and "good" or "sophisticated" inputs. [122]

For low-tech goods, instead, these factors appear less important or even negatively related to quality. In Graph II.4, the negative sign of the coefficient of some variables on the quality of low-tech exports may look puzzling at first sight. However, it may be explained by the fact that other factors, not included in our specification, actually affect relative quality, and the ones we included would

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[121] Detailed results are available upon requests.

[122] All coefficients are significant at 1%, except the coefficient of regulatory quality for medium-low-tech industries which is significant at 5%.

not be a good substitute for such factors. [123] [124] Moreover, higher-technology sectors are typically characterised by longer quality ladders, and thus the potential for quality improvement is higher there, which explains why elasticities should be higher.

Our results in Table II.1 and Graph II.4 also show the importance of services for competitiveness, as a higher share of high-tech knowledge-intensive business services is associated with higher export quality, regardless of the technological intensity of the sector considered. Thus, different aspects of non-cost competitiveness also affect and reinforce each other. [125]

Previous empirical work has shown that reforms liberalizing the services sectors have a large potential in terms of improvements in efficiency and reduction of mark-ups, and ultimately on trade balances. [126] To the extent that reforms liberalizing services boost the demand of those services, our results go in a similar direction, since they suggest that a higher use of "sophisticated" services may have important effects on non-cost competitiveness.

Finally, in our regressions "good" institutions and inputs "trump" the effect of patents. This does not imply, however, that they are substitutes for R&D. On the one hand, by definition, STEM industries and knowledge-intensive services have a higher technological content, and thus might already capture the effect of R&D (patent intensity). As far as institutions are concerned, the result might mean that the same underlying factors that lead to better institutions in a country also increase R&D. This interpretation is supported by recent studies that showed that institutions foster investment in intangible goods, including R&D (see Thum Thysen et al., 2017, *op.cit.*).

II.6. Conclusions

This section has discussed the determinants of sectoral quality of exports in euro area countries. Quality is an important component of competitiveness on the non-cost side, but it is not easy to measure and there are a number of competing approaches to the measurement of quality provided by the literature.

The empirical analysis has shown some of the determinants of quality in exports for euro area countries. The positive relationship between export quality and exporter income per capita is well-known based on the Linder hypothesis. The main added value of this work has been to investigate the supply-side determinants of quality, while controlling for the demand side (i.e. GDP per capita), with a specific focus on the sectoral dimension.

While it is difficult, or perhaps impossible, to have a complete picture of what fosters quality improvements, we could identify three categories of factors (in addition to the level of GDP per capita) which can have important implications for the non-cost competitiveness of the euro area. These factors are institutions, skills and input composition. Their relevance seems to increase with the technological intensity of the goods exported, supporting the view that the potential for quality improvement in high-tech sectors is higher (i.e. there are longer "quality ladders").

Further work might explore the impact of competitive pressure, including international competition, on export quality, although defining a good measure for competitive pressure at a product or sector level in this framework may be challenging.

Higher-quality exports, as discussed in this Section, have been previously shown in the economic literature to be less affected by price competition, and improvements in quality are associated with economic growth. The results reported in this Section also suggest that policy has a potential for fostering quality improvements, as the export composition does not seem to be solely affected by economic fundamentals.

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[123] For example, for what concerns the exports of food, beverages and tobacco products (NACE sectors C10-12, low-tech) other factors including a well-developed primary sector, natural resources and even climate might be relevant in defining relative export quality. This would apply also to the fact that regulatory quality (and also control of corruption) seems not to affect significantly the quality of low-tech products.

[124] The coefficient of patent intensity and GDP per capita did not change significantly across sectors.

[125] See also Nordås, H. and Y. Kim (2013), 'The Role of Services for Competitiveness in Manufacturing', OECD Trade Policy Papers, No. 148, OECD Publishing, Paris, the Section 'The euro area services sector', Quarterly Report of the Euro Area, Vol.14, n.2 (2015), and the Section 'A closer look at some drivers of trade performance at Member State level', Quarterly Report of the Euro Area, Vol.11, n.2 (2012).

[126] Canton, E. Ciriaci, D. and I. Solera (2014), 'The economic impact of Professional Services Liberalization', *European Economy Economic Papers* 533; Varga, J. and J. in't Veld (2014), 'The potential growth impact of structural reforms in the EU - A benchmarking exercise', *European Economy Economic Papers* 541.

III. Global imbalances: an old challenge on the rise?

Current account and financial imbalances in the global economy have returned to the spotlight of the policy debate. Imbalances that reached a peak in the run up to the global economic and financial crisis have been reduced since then and nowadays show different patterns. This section explores the main drivers of current account and financial imbalances in the US, China and the euro area. Our main findings point to some potentially problematic trends in saving - investment and stock accumulation. Valuation effects might also be important in this regard. We also consider various policy scenarios, including a recalibration of the US policy mix, the introduction of protectionist measures, or a disorderly adjustment in the Chinese financial sector, in order to identify possible short and medium term risks that could lead to the widening or disorderly adjustment of global imbalances. The section concludes with some implications for domestic policy and international cooperation to rebalance the global economy in a sustainable way. In particular, continued vigilance and comprehensive, well-sequenced and coordinated policy efforts are important to avoid the rebalancing resulting in lower or less inclusive growth in the medium term. ([127])

III.1. Introduction

Global imbalances - as measured by current account surpluses and deficits - are kept under close scrutiny because persistently high imbalances might have potentially harmful spill-overs if unwound in a disorderly fashion. ([128]) This is especially true for three of the biggest world economies (the US, China and the euro area) which are the main focus of this section. In Sub-section III.2 we set out some stylised facts related to the development of global current account imbalances in the last two decades. In Sub-section III.3 we investigate imbalances through three different angles looking at: trade and its determinants; saving-investment developments; and stock accumulation (including valuation effects). The resulting analysis argues in favour of continued monitoring of global imbalances. This becomes even more important given the potentially significant spillovers among the major world economies. In this context, we consider various policy scenarios (Sub-section III.4) which could lead to a renewed widening of global imbalances. In the short term, the main risks to further widening of global imbalances relate to a possible recalibration of the US macro policy mix and an unexpected change in the pace of normalisation of monetary policy in the euro area. In the medium term, risks to global imbalances stem from the possibility of trade protectionist pressures in the US and a hard landing of China's economic activity. In Sub-section III.5 we put forward policy suggestions for domestic policy and international

cooperation to rebalance the global economy in a sustainable way. Domestic policy suggestions are articulated around the need to use all policy levers to reduce imbalances in a sustainable way. Furthermore, in a globalised world, stronger international consensus and cooperation on the need to reduce imbalances in a more symmetric way could provide much-needed support to policy-makers at home. Sub-section III.6 concludes.

III.2. Stylised facts about global imbalances' evolution and projections

From the mid-1990s current account imbalances in major economies (China, US, Japan, Germany) grew steadily to reach a peak in the run up to the

Graph III.1: **Current account balance, 1997-2016**
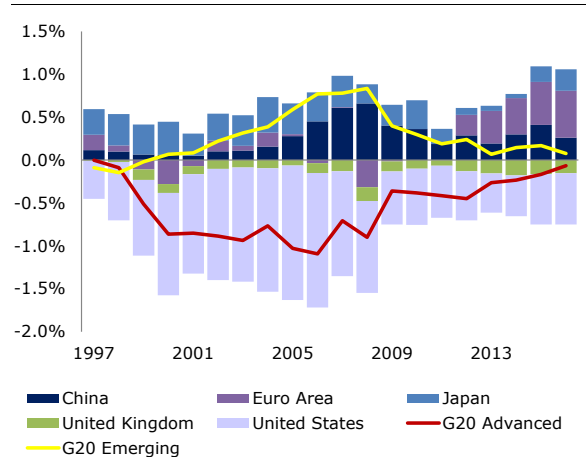
Source: Authors' calculations based on IMF data.

([127]) This section was prepared by Guergana Stanoeva and Bogdan Bogdanov, with contributions from Rupert Willis, Przemyslaw Wozniak, Alan Gilligan, Leonor Coutinho and Marco Lo Faso.
([128]) Please see Box III.1 at the end of the section for a definition of global imbalances.

global economic and financial crisis ([129]) (see Graph III.1).

The US and China became the epitome of imbalanced economies with deficits and surpluses whose absolute amounts reached record heights at more than US$805bn in 2006, and US$420bn in 2008 respectively. The US has run chronic current account deficits for almost two generations (recording external surpluses in only three of the 38 years since 1980 (Reinhart (2017)) ([130]), while China has run a current account surplus since the mid-1990s, contrary to standard textbook reasoning in which developing countries are expected to register current account deficits. As regards the euro area as a whole, up to 2009 the current account was relatively close to balance.

The years of the global economic and financial crisis brought a significant change in global current account imbalances both in terms of magnitudes and configuration: the US deficit and Chinese surplus both fell below 3% and surpluses of oil exporters dropped dramatically, while the German surplus increased to 8.3% of GDP in 2016 (to more than US$288bn). Japan's current account surplus fell temporarily, but rose again to 3.8% in 2016. Since the sovereign debt crisis, the euro area surplus entered an upward trend, and has just recently stabilised at above 3% of GDP, equivalent to more than US$410bn.

Going forward, the IMF does not project major changes in current account imbalances of the US and Japan, while they foresee a slight reduction in the euro area and German current account surplus by the end of their forecasting period (2022) and expect China's account to be broadly balanced (IMF October WEO 2017). ([131]) The European Commission forecast (made under a no-policy-change assumption) also points to a relatively stable level of imbalances in the US and Japan (slight widening until the end of the forecast period in 2019) and the euro area (slight reduction to below 3% of GDP). A more significant reduction in the current account surplus is expected for Germany (from 8.5% in 2016 to 7.2% in 2019) and China (from 1.7% to 0.8%).

To sum up, current account imbalances between advanced and emerging countries went through a significant correction at the time of the global financial crisis. ([132]) We are now faced with a new configuration where current account imbalances have become concentrated among major advanced economies, with the euro area registering a current account surplus that is larger relative to the past.

III.3. Current vulnerabilities: The many faces of global imbalances

The post-crisis reduction of current account imbalances *per se* and the relatively benign forecast for their evolution in the future is not a reason to take imbalances off the radar screen. Reductions in current account imbalances can mask undesirable underlying economic and financial evolutions. ([133]) We look into more detail into these and expose some important issues of concern. These justify the continued attention on global imbalances, although from different angles as we discuss below.

The current account balance for a given country can be seen through different angles: as the sum of the trade balance and net international income ([134]); as the difference between domestic savings and investment; and as the counterpart of changes in net international investment positions (where capital transfers and valuation effects are also considered).

These three viewpoints are interrelated – in national accounts the difference between savings and investment must, by definition, equal the current account deficit (the sum of the trade balance and net international income), while the annual current account deficit (or surplus) in turn must equal the change in the net borrowing/lending position of a country vis-à-vis the rest of the world for that period (leaving aside valuation effects and capital transfers). In causal terms, the relationship is extremely complex, with trade-related factors, structural factors and financial

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([129]) Major commodity exporters such as Saudi Arabia and Russia also ran important surpluses but they are not the focus of this section.
([130]) Reinhart, C. (2017), The Persistence of Global Imbalances, *Project Syndicate,* Aug. 30, 2017.
([131]) IMF (2017), Seeking Sustainable Growth: Short-Term Recovery, Long-Term Challenges, *World Economic Outlook*, October 2017.

([132]) In what follows we do not intend to estimate what part of the correction was due to cyclical and what to structural factors. Both had their role.
([133]) On the importance of global financial imbalances see for example Borio, C. and Disyatat, P. (2015), Capital Flows and the Current Account: Taking Financing (more) Seriously, *BIS Working Papers*, no. 525.
([134]) Net flows related to the international investment income are usually relatively low, so we do not focus on them further on.

factors each influencing the current account both directly and indirectly. [135]

III.3.1. Trade balance

Looking at imbalances through the prism of trade balances allows for a greater focus on structural trade changes, terms of trade and exchange rates' developments to explain the evolution of imbalances. These drivers do not necessarily evolve in the same direction so their net effects might differ from period to period and from case to case.

Part of the current account adjustment across the board during the global financial crisis coincided with the sharp disruption in trade flows. [136] There is broad consensus that the trade collapse observed in 2008 was mostly due to a demand shock affecting commodity prices (tumbling down) and the production and exports of manufacturing goods as private demand for durable and investment goods crashed (Baldwin 2009, ECB 2010). [137] The impact was amplified by financial market reactions, lack of confidence and trade finance as well as "compositional" and "synchronicity" effects in which international supply chains played a central role. At the same time, however, the more recent pick up in trade is not necessarily associated with an increase in imbalances globally.

Another important factor explaining the post-crisis reduction of the surpluses of commodity-exporting countries is the significant change in oil prices and the development of the shale industry in the US. Lower oil prices and higher domestic supply both tend to reduce US energy imports, lowering the US

deficit. [138] At the same time, the nominal effective exchange rate appreciation of the USD that started in mid-2011 has weighted on US competitiveness and put upward pressure on the current account deficit until end-2016. Trade volumes in China showed a large offset of the terms-of-trade income gains, although in this case reflecting policy stimulus. In the euro area the current account surplus started widening in the aftermath of the sovereign debt crisis during a time when the real effective exchange rate of the euro was higher than it is now. The oil price decline and exchange rate depreciation from 2015 to early 2016 have contributed further to keeping the euro area surplus at its high level; however, demand compression in previously deficit countries, not offset by an increase in domestic demand in the surplus countries (mainly Germany) arguably played a more important role.

To sum up, trade and exchange-rate-related factors play a role in determining current account imbalances. In particular, it might turn out that the shale gas revolution in the US becomes the real permanent game changer, but more time is needed to see whether this could outweigh all other factors that drive imbalances (of the US or of other oil importing countries) in a different direction. Similarly, the RMB is becoming more flexible with time, but it seems too early to conclude this will have a lasting and significant net effect on the Chinese trade balance. Thus, a holistic approach is warranted when monitoring trade-related changes of current account imbalances.

III.3.2. Domestic savings and investment balance

Countries that invest more than they save must, by definition, run a current account deficit and be net capital importers. It is therefore useful to look at the evolution of current account balances by comparing shifts in savings and investment, and the gap between them. International investment rates vary a lot over the business cycle, are driven by short and longer-term considerations and are prone to policy interventions. Savings rates (of the government, corporates and households) are driven in various proportions by the adequacy of the social safety nets and the pension system, the national fiscal framework, the degree of financial

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[135] The different viewpoints on the current account are ultimately complementary, though mapping the precise causal links is complex. For example, in theory, a weaker exchange rate could lead to higher net exports, boosting domestic income. This would in turn raise aggregate domestic savings, assuming a fixed proportion of savings from income of different sectors (households, corporate, government). This would narrow the gap between domestic saving and domestic investment, and lower the current account deficit. Conversely, shifts in spending out of disposable income at sector level could alter imports and exports, entirely independently of changes in exchange rates.

[136] World trade experienced a sudden, severe, and synchronised collapse in late 2008 – the sharpest in recorded history and deepest since the Second World War. The drop was sudden, severe, and synchronised prodding some economists to qualify it as the Great Trade Collapse (Baldwin (2009), The Great Trade Collapse: What Caused It and What Does It Mean, *VoxEU.org*, 27 November 2009). It was triggered and helped spread by the global financial crisis. Following this severe downturn, world trade recorded a rebound starting in the second half of 2009.

[137] Baldwin (2009), *ibid.*; ECB (2010), Recent Developments in Global and Euro Area Trade, *ECB Monthly Bulletin*, August 2010.

[138] The oil price decline may have also contributed to keeping the euro area surplus at its high level.

development, the income levels and the stock of financial wealth, as well as longer-term demographic and cultural factors. [139] For example, in an economy with a high level of financial development, ease of access to credit could affect both corporate investment and household savings behaviour, while the tax structure for corporate debt and equity as well as dividends and capital gains could also influence corporate saving.

In the lead up to the global financial crisis aggregate investment and saving rates moved in exactly opposite directions in the US and China. The deterioration of the US current account balance until 2006 largely reflected a steadily declining aggregate gross savings rate. [140] This was mainly due to a secular decline in household savings. The expanding availability of credit to households, and the steady increases in households' net worth reflecting rising house and equity prices are typically cited among the main reasons behind the trend decline in household savings. [141] Aggregate investment also declined, with private businesses leading the trend, accompanied by a mild decline in government investment. [142] However, the decline of aggregate savings was larger than the decline in aggregate investment, leading to an overall increase in the current account deficit of the US.

The global financial crisis brought important changes to some of these trends. In the US, there was a marked rebound in savings accompanied by a milder rebound in investment, producing a significant improvement in the saving-investment balance and the resulting narrowing of the current account deficit. Improvements in household and private business savings (linked to the balance sheet deleveraging following the bust of the real estate boom) outweighed the initial stimulus-driven deterioration in general government deficit.

Coupled with the subsequent consolidation of public finances (from 2011), this led to a significant 5 pps. increase in total economy savings (from 2009 to 2015). During the same period (2009-2015) investment has picked up accordingly, but less than savings. The pickup of investment reflected mostly a rebound in private (business) investment, while household investment remained depressed by the ongoing deleveraging and public investment continued its trend decline. The resulting lower saving-investment gap translated into a further contraction in the US current account deficit.

In terms of the savings-investment balance, over the period 2000-2008 China saw a steep rise in the share of investment in GDP, but this was more than matched by an increase in the share of gross saving in GDP. The increase in savings was particularly visible in a sharp increase in the household savings rate, which occurred despite a fall in household income share in GDP. The reasons behind this change in savings ratio are debated, but demographic factors (one child policy), financial repression and the erosion of China's social security safety net may have all played a role. The government's financial position also improved significantly, with net lending of the public sector registering a surplus in 2008 and the corporate sector's retained profits rose to a peak in 2008. In short, all three sectors contributed to a rise in savings through a shift in sectoral savings rates, but with the most marked shift being at household level.

The rapid expansion in investment from 2007-2011 was not accompanied by any significant change in China's national savings rate, which remained close to 50%. As a result, the current account surplus narrowed sharply to below 2% of GDP in 2011.

Since 2011 both investment and saving as a share of GDP have fallen by around 4pps. of GDP as China has managed some rebalancing of demand away from investment towards higher consumption. This appears to mainly reflect a shift in household behaviour. The household income share of GDP has remained quite steady at around 61% since 2011 but the savings rate (saving/disposable income) has fallen by several percentage points, while the gap between household saving and investment is even more pronounced as household investment also saw some decline over this period.

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[139] Rocher, S. and Stierle, M.H. (2015), Household Saving Rates in the EU: Why do they Differ So Much?, *EC European Economy Discussion Papers*, Discussion Paper 005 | September 2015, study the factors which may help explain the persistent differences in household saving rate across the EU. They find that income levels, age dependency and uncertainty can explain more than half of the cross section variance in saving rates. However, large unobserved country fixed effects (e.g. because of institutional differences and measurement error) also appear to be present.

[140] From around 22% and 20% in the 1970s and 80s to around 15% in the run up to the crisis.

[141] See Bergin, P. (2011), Asset Price Booms and Current Account Deficits, *FRBSF Economic Letter 2011-37*, December 2011.

[142] This decline, common to most advanced economies has often been linked to the issue of secular stagnation.

As regards the euro area, although its current account was broadly balanced in the years before the sovereign debt crisis, there was a marked difference in saving and investment patterns across countries, generating diverging current account positions within the euro area. These differences were then exacerbated as convergent nominal interest rates coupled with different inflation rates across Member States led to different real interest rates and thus different investment opportunities backed by similar risk assessments. The result was above average (and often misallocated) investment and below average savings in debtor countries, and under-investment and high rates of saving in creditor countries.

The pre-crisis savings-investment developments within the euro area signalled fundamental macroeconomic imbalances and insufficient real convergence. (143) The sovereign debt crisis which was associated with a reassessment of risks led to significant corrections in the saving-investment balances mainly of deficit economies and mainly through a contraction of previously unsustainable investment levels. Since 2009, euro area savings have increased from 20.7% of GDP in 2009 to 23.6% in 2016. At the same time investment declined from 23% in 2008 to 20.2% in 2016. As a result, the euro area current account surplus has started to grow. In 2017, the size of the German current account surplus was about half of the euro area one. Looking forward, the outlook for investment is now more favourable (EC 2017). (144) Investment is expected to be driven mostly by a robust growth in equipment investment and by a projected recovery of construction investment.

To sum up, significant shifts in saving-investment ratios have contributed to the changed landscape of global imbalances. However, in some cases we see that these shifts are insufficient, do not always go in the right direction or do not follow an appropriate pace. For example, in the US, tax policy has systematically favoured debt accumulation by households at the expense of saving, hence the persistent deficits. This has

changed little in the post-crisis period. In China, investment demand remains excessive as a share of GDP, and will have to fall on a secular basis if China is to rebalance its economy effectively. To avoid this leading to a re-emergence of sizeable current account surpluses, domestic saving ratios will need to fall even further. In the EU, countries with current account deficits or high external debt should raise productivity while containing unit labour costs. Member States with large current account surpluses should implement, as a priority, measures, including structural reforms and fostering investment, that help to strengthen their domestic demand and growth potential. From a euro-area wide perspective, making progress with completing the single market, the Banking Union and the Capital Markets Union are essential to unlock investment and channel savings in a more efficient way thus allowing for a more symmetric intra-euro-area adjustment and *in fine* a more balanced current account.

III.3.3. Stock imbalances (international investment positions)

Although global current account imbalances have narrowed since the crisis, the external stock imbalances, as measured by countries net international investment positions (NIIPs) of the major economies continued to build up. (145) In 2016, stock imbalances had grown by around 65% (or added 10 pps. of global GDP) compared to ten years earlier. Importantly, these imbalances remained mainly polarised among advanced economies (US, Japan) and China (Graph III.2).

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(143) On capital misallocation in the euro area prior to the crisis and the importance of real convergence for monetary policy see for example Coeuré, B. (2017), Convergence Matters for Monetary Policy, *Speech by Benoit Coeuré at the Competitiveness Research Network Conference on "Innovation, Firm Size, Productivity and Imbalances in the age of De-Globalization"*, Brussels, 30 Jun 2017.

(144) EC (2017), European Economic Forecast: Autumn 2017, *EC European Economy Institutional Papers*, Institutional Paper 063|November 2017.

(145) For a detailed investigation of the dynamics of international investment positions of some individual euro-area countries up to 2011 see EC (2012), The Dynamics of International Investment Positions, *Quarterly Report of the Euro Area*, March 2012.

Graph III.2: **Net international investment position, 2006 versus 2016 (percent of world GDP)**
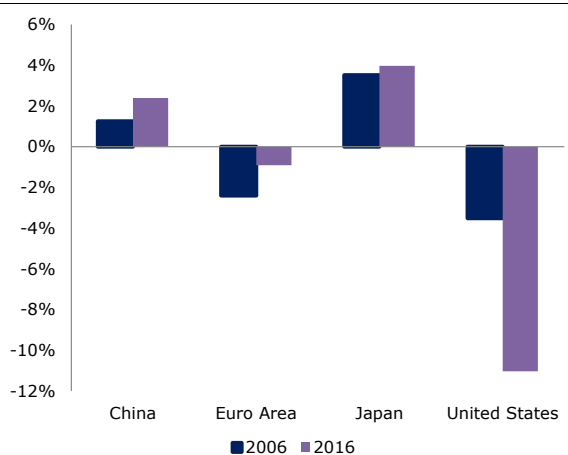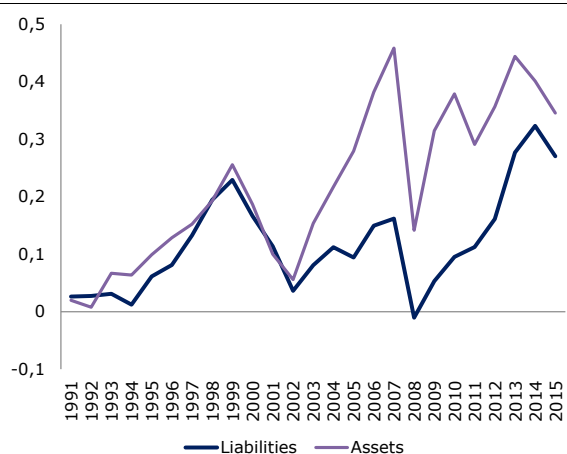
Source: Authors' calculations based on IMF data.

On the creditor side, the accumulation of net foreign assets between 2006 and 2016 mainly reflects persistent current account surpluses in Japan and China. The growth in creditor positions was mirrored almost entirely by a remarkable three-fold widening of the US net debtor position driven by continuous current account deficits and significant valuation effects. Although still a debtor economy, the NIIP of the euro area has improved significantly over the period driven by stronger current account balances of its individual country members.

The reasons for the evolution of the US NIIP and the risks it could bring are worth focusing on as the deterioration of the US external position alone appears to be the most important development since the crisis. Although the US has been the financial hegemon in recent economic history, having a significant economic weight in terms of GDP (around a third of G20 GDP) and financial flows (around a quarter of G20 capital flows throughout 2001-2016), today its NIIP represents around 45% of the total G20 stock imbalances compared to roughly half of that ten years ago. This is mainly driven by a higher valuation of US foreign liabilities and to a higher stock of borrowing from the rest of the world to finance domestic investment and consumption (Graph III.3). Furthermore, when US liabilities are decomposed into short- and long-term financial assets it becomes clear that short-term investment instruments are the main driver of the recent upward trend in US liabilities, and thus, contribute most significantly to the recent evolution of the US

valuation effects as a whole (Graph III.4). This finding implies greater likelihood of market volatility in the event(s) of valuation corrections.
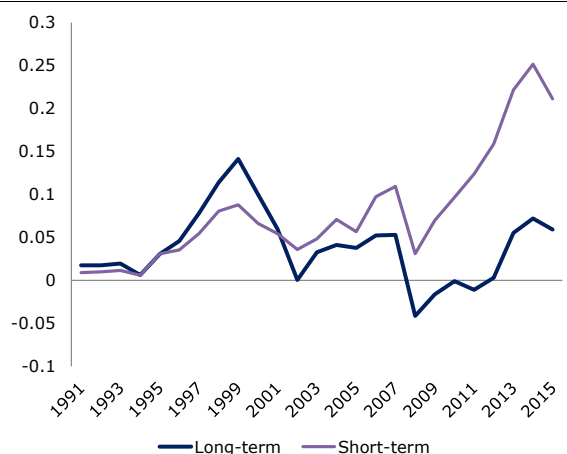

Graph III.3: **US valuation effects - breakdown assets and liabilities**

(1) Valuation effects are measured as the change in foreign assets/liabilities between two consecutive periods minus the conventional financial account.
Source: Authors' calculations based on IMF data.

Graph III.4: **US valuation effects - short term and long term**

(1) Long term investment is defined as foreign direct investment. Short term investment is defined as the sum of portfolio and other investment.
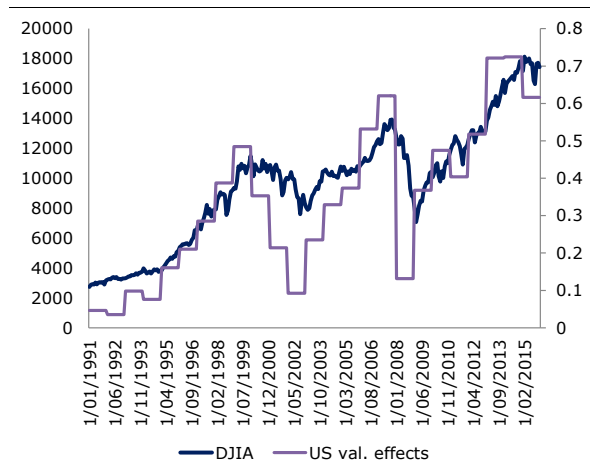*Source:* Authors' calculations based on IMF data.

In principle, valuation effects are comprised of two main components: changes in exchange rates and domestic asset prices. However, as the US liabilities are almost entirely denominated in USD, we only focus on the US asset prices on which multiple domestic factors can have a direct and/or indirect impact. Both fiscal and monetary policies can affect interest rates, which in turn affect asset prices. External factors could also have an effect

on exchange rates and domestic asset prices, most prominently through surges of capital flows due to various push and pull factors such as differences in the economic outlook and the expected policy response.

The performance of the Dow Jones Industrial Average (DJIA) is one of the indicators that can be used as a proxy for valuations in the US domestic asset prices. The DJIA has a strong positive correlation with the actual US valuation effects (with a correlation coefficient of 0.85) over the period 1990-2015. Furthermore, the strength of DJIA as a proxy variable is visually confirmed when plotting these two variables together (see Graph III.5). [146]

Graph III.5: **Dow Jones Industrial Average and Valuation Effects**

Source: Authors' calculations based on Dow Jones Stock Market data.

Our estimations show that both cyclical and structural factors, in particular employment and productivity, contribute to explaining the movements and size of US domestic valuations effects. Moreover, monetary and fiscal policies as well as business confidence expectations also seem to impact the stock market – and thus have valuation effects. In all estimations, the coefficient signs are in line with expectations with results being broadly robust and statistically significant. [147]

To sum up, the widening of global stock imbalances has mainly been driven by the deterioration of the US external position. Valuation effects on the US external liabilities seem to play a significant role in this picture further aggravating the US NIIP. Taking the stock market index of Dow Jones Industrial Average as a proxy to the evolution of the domestic US valuation effects, we find that both cyclical and structural factors drive the movements of US valuations. Last but not least, it is likely that a limited number of countries in which the bulk of US external liabilities is held are potentially exposed to the significant US valuation effects and therefore to the risks related to a correction in US asset prices and/or the USD exchange rate.

The above analyses on trade balances, saving-investment dynamics and stock imbalances confirms that close monitoring of global imbalances is warranted. Trade, exchange rate developments, shifts in savings and investment trends and international investment positions (together with valuation effects) all affect current account developments. The importance of a given factor changes over time and varies across countries. Thus, it makes sense to follow all of these to have a comprehensive view. This is the more relevant given that *a priori* spillovers among systemic economies like the ones considered here can be expected to be higher. The risks from changes in the policy mix to global imbalances are discussed below, differentiating between short- and medium-term risks, with the latter having lower probability (i.e. we qualify them as "tail" risks).

III.4. (Tail) risks to global imbalances: Possible scenarios

Potential shocks to global imbalances could be transmitted through the trade and financial channels. In this regard, decades-long economic integration has placed the transatlantic economies at the forefront of globalisation. The EU and the US are each other's most important economic partners, reflecting historical ties as well as a wide range of common fundamental values. At the same time, China has become a very important trade partner both to the EU and the US. China is the EU's largest trading partner, but only the second largest source of export demand, with China taking some 3.6% of total EU goods exports. While trade exposure to China remains limited, EU exports to China have grown twice as fast as the total EU exports over the past five years. Nevertheless,

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[146] Investigating in detail the role of nominal exchange rate variation on the valuation of net external liabilities is beyond the scope of the present paper.

[147] See Box III.2 at the end of the section for time-series analysis specifications and results.

direct European and American financial ties with China are relatively limited, partly due to the remaining restrictions on cross-border financial transactions, investments and banking activities in China.

III.4.1. Short-term risks

In the short term, the main risks to further widening of global imbalances relate to a possible recalibration of the US macro policy mix.

The recalibration of the US macro policy mix could materialise in the form of a stimulus through tax reform, including an opportunity to repatriate corporate profits from abroad (approx. US$2.6tn of which more than half in cash). This could result in stronger US aggregate demand than currently projected which could trigger faster than expected normalisation of US monetary policy. If this were to lead to investor risk aversion globally, there could be significant spillovers in terms of capital flows, financial market stability and financial conditions. This would impact negatively the US and many emerging markets, and also Europe. The risks associated with a rapid increase in the price of risk are more substantial where leverage ratios are high, as they are now.

With the possibility of a faster US monetary policy normalisation and a stronger USD, emerging market economies (EMEs) could be faced with a prospect of more financial market volatility, higher bond yields, depreciating currencies, intensified inflationary pressures and capital outflows. [148] The likely response could be tighter monetary and financing conditions and in this context the recent fast accumulation of debt, either public or private, in many EMEs becomes a source of risk. Funding pressures would increase where corporate balance sheet exposure to unhedged USD-denominated debt is high. The overall level of USD-denominated debt in EMEs is, however, not particularly worrying and does not appear to be a source of a major systemic risk as most EMEs have natural hedges, financial market hedges and/or sufficient foreign currency reserves. In emerging Asia, where non-residents have sizeable holdings in the regional securities markets, there is the risk that

US monetary policy tightening might lead to sizable sell-off of the region's equities and bonds.

Some of the vulnerable emerging markets in such a scenario are in the European neighbourhood. Should these economies slow markedly, this would directly affect euro area exports, though reduced demand for euro area exports to the European neighbourhood would likely be compensated by higher US demand, with little net effect on the euro area surplus. [149] The widening US deficit would therefore not be expected to be matched with a significantly higher euro area current account surplus, but is more likely to have its counterpart in narrowing deficits in the UK, Canada, Australia, stronger surpluses in some emerging market economies, and expanding surpluses in China and Asia. These adjustments would likely arise through standard mechanisms, with higher US domestic demand pushing up imports, while the higher USD would also support higher imports and reduce export competitiveness.

The passage of tax reform in the US (Tax Cuts and Jobs Act (TCJA)) in December 2017 represents a significant overhaul of the US tax code which can be expected to impact on the evolution of the current account. Box III.3 provides some insights into the potential impact of an indicative tax reform (simplified to reductions in corporate tax rates equivalent to 1% of GDP) using the European Commission's QUEST model. The net effect would widen the already sizeable US trade deficit by around 0.2-0.3% of GDP, with this largely occurring in the first 2-3 years of the reform. This would also contribute to aggravating imbalances elsewhere, including in the euro area, where higher US demand and USD appreciation generate a small increase (0.1% of GDP) in the euro area trade surplus. In addition, tax incentives to repatriate profits became part of the US tax reform. The impact of these incentives on the euro area is highly uncertain and it will crucially depend on how effective they will be in attracting what is estimated to be $1.5-2.5 trillion of untaxed overseas profits of US corporations (roughly 7.5-12.5% of GDP). However, it should be noted that previous US administration efforts at incentivising profit repatriation (largely tax holidays) have had

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[148] Overall, a potential misalignment of exchange rates from fundamentals caused by market over-reactions to tapering could exacerbate global imbalances. This could stem, for instance, from episodes of strong rises in risk aversion in response to a large reassessment of term premia by investors.

[149] In the short-term, exchange rates mostly affect the EA current account through the income balance. Lower income from some EMEs would likely be offset by higher USD income, and thus entail some upward movement in the EA investment income balance.

limited success. (150) Thus, it is uncertain whether there would be large-scale inflows that could have repercussions on financial markets or interest rates, or could materially boost investment or wage growth.

III.4.2. Medium-term (tail) risks

The medium term tail risks to global imbalances stem from the possibility of increased and materialising trade protectionism by the US and hard landing of China's economic activity.

The existence of persistent trade deficits among a few advanced economies has heightened the risk of protectionist responses. Thus, an inward-looking shift of US policies (especially if based on a sectoral approach with implications for China and the EU) remains a key risk, particularly as the Trump administration has directly associated declining employment across US manufacturing sectors with the US current account deficit.

In implementing protectionist policies (e.g. through tariffs on imports), US employment and investment growth would be expected to slow given the economy's exposure to international trade, with these adverse impacts expected to be especially pronounced in tradable sectors. Correspondingly, inflation can be expected to rise as domestically-sourced substitutes become more expensive, in turn contributing to tighter financing conditions as interest rates rise. Taken together, these dynamics would most likely lead to a deceleration in GDP growth in the near term, as well as some correction of asset prices. The US current account deficit would be expected to shrink, albeit only modestly as the competitiveness gains from import tariffs are to a large extent offset by USD appreciation. While protectionist policies would see imports contract, the impact of USD appreciation would also be seen on exports, even without a retaliatory response from key trading partners. More inward-looking policies could also trigger a correction in asset valuations and an increase in financial market volatility. These adverse outcomes, both for the US and the global economy more generally, would be amplified further in the case of trading partners pursuing protectionist measures of their own.

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(150) See e.g.
http://www.taxpolicycenter.org/publications/repatriation-tax-foreign-income-us-based-multinational-corporations/full

Sector-specific protectionism and consequent retaliation measures would likely have a measurable impact on euro area GDP, but are not expected to make a huge dent in aggregate exports or income from production in foreign subsidiaries. Recent experience with specific export markets (notably Russia, the UK), suggests that lower receipts from exports are broadly matched with reduced investment in the affected sectors, with little impact on the overall savings-investment balance. The trade balance impact should thus not be strong although it might be somewhat more substantial for measures on investment goods.

However, significantly stronger risks may emerge if the impact is more significant on EMEs, and they retaliate against such policies, which could hit also euro area exports, and thus GDP. Many EMEs are strongly exposed to the US either through direct trade links (e.g. Latin American countries) or, as in the case of several Asian economies, indirectly through China. While there may be some positive spillover effect of the planned US fiscal stimulus on some commodity-exporting EMEs, the overall impact on EMEs exports would likely be negative. Mexico stands out as the biggest potential loser from more protectionist US policies as the Mexican and US economies have become increasingly inter-dependent under NAFTA. In emerging Asia excluding China, direct trade exposure to the US is relatively significant (although less than in Latin America) in a number of countries including Malaysia, Thailand and Korea. Nonetheless, even a worldwide surge in goods protectionism is unlikely to affect current account balances much as demand for imports will decline along with exports.

Another tail risk relates to a combination of factors in China that has raised vulnerabilities in its financial sector. While an abrupt adjustment does not seem imminent, the current pattern of development appears unsustainable, and risks of a sharp slowdown in growth in the medium term continue to rise. In the event of a sharp slowdown, China may eventually allow the RMB to depreciate as a macroeconomic buffer. Under this scenario a sharp domestic slowdown in China would therefore hit import demand, while a lower currency value would also act to promote exports and compress imports. Slower growth in China could also affect commodity prices, which would tend to push down Chinese imports (in value terms). If China reacted with stimulus measures using traditional policy instruments – boosting infrastructure investment and investment by state

enterprises – this could work in the opposite direction, as investment demand tends to be relatively import intensive. The stimulus in the wake of the 2007 crisis was investment intensive and this was one of the factors that helped pull down the current account surplus in the period 2007-2010. In sum, the net effect of a slowdown in China would most likely be to increase China's current account surplus, though the scale of the effect would depend on the precise policy mix on the Chinese side.

Direct and indirect trade impacts from a sharper-than-expected slowdown in China would not be sufficient to derail a recovery in the euro area, though the impact would differ greatly among Member States, depending on the scale and structure of trade linkages. Direct financial linkages are limited by the relatively closed nature of Chinese financial markets. However, concerns over Chinese growth prospects and spill-overs to emerging markets could lead to increased financial market volatility and risk aversion with knock-on effects on the euro area economy. Lower commodity and oil prices are supportive of euro area recovery, but a weaker RMB and additional downward pressure on emerging market currencies more generally could push up the euro's exchange rate. A more pronounced slowdown in China and emerging markets could therefore represent downside risks to both growth and inflation in the euro area going forward, posing additional challenges for ongoing deleveraging.

To sum up, there are still important risks associated with global imbalances, their potential increase and disorderly adjustment. This calls for increased vigilance, more forceful domestic policy action and sustained international policy coordination efforts to rebalance the global economy in a sustainable way. These are discussed in the following sub-section.

III.5. Domestic and international policy efforts to rebalance the global economy

III.5.1. Domestic efforts to reduce imbalances

From the above analysis it is clear that there is much that economies with major imbalances can do on the domestic policy front to reduce imbalances when these reflect structural impediments to a more balanced growth. This is important in view of potentially large spillovers between economies. Policy efforts need to be comprehensive and well sequenced so that reductions in imbalances do not come at the expense of lower or less inclusive growth, notably in the medium term.

In general, global rebalancing should take place through increasing domestic demand in countries with current account surpluses, and increasing national savings in countries with current account deficits. This requires where necessary actions on fiscal, tax, monetary and exchange rate policy, and financial and structural reforms.

More specifically, policies for the US to address its current account imbalance could include (i) measures to address persistent domestic savings-investment gaps, including by reining in large public sector deficits; ii) improving US competiveness via a series of well-targeted structural reforms, including in education, skills, upgrading infrastructure, policies to address the issue of declining labour force participation; and (iii) an active push for world-wide liberalisation in services trade where the US has a clear comparative advantage.

As regards China, there is a general consensus that China's economy remains highly imbalanced, and there is a need to further reduce the share of investment in GDP, or engineer a sharp increase in investment efficiency. This is necessary, if China is to avoid a significant slowdown in growth in the medium term. To keep growth buoyant in both the short and medium term China therefore requires a sustained effective rotation of demand from consumption to investment. This could be achieved in two ways: adopt policies that raise the household share of overall income and introduce measures to further raise consumption out of given incomes (lower household savings rate). Reform of capital markets would also improve allocation of capital, particularly to smaller firms, thereby raising investment efficiency and reducing the need to rely on high profit retention (corporate saving) to finance investment. Moreover, imbalances could also be reduced by winding down remaining subsidies to favoured sectors or exporters, or removing non-tariff barriers that provide implicit subsidies that distort a "level playing field" and that channel resources away from consumers and toward producers. Finally, the exchange rate is the residual "buffer" that can act to balance export and import demand in the long run. China has shown a clear preference over a long period for a "managed" exchange rate. Whatever the future

exchange rate regime, exchange rates should be sufficiently flexible to avoid the emergence of large sustained current account imbalances.

As regards the euro area, recommendations on policies to reduce imbalances have consistently been addressed in the context of the European Semester over the past years. For the 2018-2019 period, as recently recommended by the European Commission, it is important that euro area economies pursue policies that support sustainable and inclusive growth and improve resilience to economic shocks, rebalancing and convergence. Member States with current account deficits or high external debt should additionally aim at containing growth in unit labour costs. Member States with large current account surpluses should also promote wage growth and implement as a priority measures that foster investment, support domestic demand and facilitate rebalancing in the euro area.

III.5.2. International efforts to reduce imbalances ([151])

Domestic action is, however, not enough, especially because it might be avoided/deferred for two major reasons: (i) a current account deficit economy is a reserve currency issuer; (ii) a current account surplus economy (region) is under no immediate pressure to reduce its surplus. In addition, in a globalised world, spillovers are quicker to spread (given financial development). All this calls for increased international economic cooperation and peer pressure. However, given the persistence of global imbalances over the years, it has become clear that the International Monetary System is inadequately equipped to ensure a symmetric adjustment of global imbalances. Attempts to do so date back at least to Keynes without much success. ([152])

The issue of global imbalances became prominent again in the 2000s. From early 2004, the International Monetary and Financial Committee (IMFC) had set out in each of its Communiques the policies needed to help facilitate an orderly adjustment of global imbalances. In June 2006, the managing Director of the IMF announced the launch of the first multilateral consultation with the aim of addressing global imbalances while maintaining global growth. China, the euro area, Japan, Saudi Arabia, and the United States agreed to participate in the consultation. Each participant put forward its own set of proposed policy adjustments, which were also discussed by their peers. The IMF's role was to provide the analytical background, to assess the consistency and effectiveness of the proposed policy plans and favour a coordinated policy action among the major global players. The first round of consultations ended in 2007. In its report the IMF concluded that while the plans presented by the participants to the consultation fell short of its recommendations, they went "in the right direction" and, if fully implemented, could lead to narrower imbalances and more balanced world growth. ([153]) However, a second round of consultations to monitor the progress made and adopt new measures never took place, and the world economy entered into the global financial crisis with very large imbalances, which added complication to an already difficult picture.

Since 2012, the IMF has again stepped up its work on imbalances with the External Sector Report (ESR) that has been published annually since then. The report covers 28 of the world's largest economies plus the euro area with staff assessments drawing on estimates from the External Balance Assessment (EBA) approach as well as country-specific evidence and judgment, while acknowledging the uncertainties inherent in such assessments. The ESR is an important

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([151]) The European Macroeconomic Imbalances Procedure is *de facto* an advanced international effort to tackle imbalances within the EU. For a thorough discussion on it see (EC (2016), *op. cit.*).

([152]) Williamson (2011) notes that Keynes's original blueprint for a post-war monetary order contained elaborate proposals to pressure surplus countries into contributing to adjustment. These were rejected by the US, which at the time regarded itself as a permanent surplus country. Several decades later, in the attempt to reform the international monetary system after the collapse of the Bretton Woods arrangements, the US itself made a similar proposal (although still in a current account surplus at the time, its current account surplus did not match its capital outflows) which was brought down by the great surplus country of the day Germany, together with its European partners (Williamson (2011), Getting Surplus Countries to Adjust, *PIIE Policy Brief*

Number PB11-01, January 2011). The G7 also tried to tackle the issue in the 2000s (see Obstfeld, M. and Rogoff, K. (2009), "Global Imbalances and the Financial Crisis: Products of Common Causes, *Federal Reserve Bank of San Francisco Asia Economic Policy Conference*, Santa Barbara, CA, October 18-20, 2009) without much success.

([153]) IMF (2007a), Staff Report on the Multilateral Consultation on Global Imbalances with China, the Euro area, Japan, Saudi Arabia, and the United States, June 2007; IMF (2007b) IMF Executive Board Discusses Multilateral Consultation on Global Imbalances", *Public Information Notice 07/97*, August 2007; Blanchard, O. and Milesi-Ferretti, G.M. (2009), "Global Imbalances: In Midstream?", *IMF Staff Position Note*, December 22, 2009.

analytical tool which facilitates a multilateral dialogue on the contentious issue of external imbalances.

The issue of global imbalances was also taken up by the G20. [154] In the run-up to the Seoul Summit in November 2010 the discussion focused on how to address effectively global imbalances. In Seoul an agreement was reached: the G20 would develop 'indicative guidelines' to help provide policy advice aimed at ensuring a more balanced growth among G20 economies. The 'indicative guidelines' were approved at the Cannes Summit (November 2011) and it was agreed that every two years the IMF would produce a report (the so-called "Sustainability Report") based on the agreed 'indicative guidelines' methodology to discuss progress and provide policy recommendations to G20 members. The latter were expected to take them up in their country-specific commitments which grew into fully-fledged growth strategies over time. In 2017, the IMF integrated its global imbalances analysis into a new pilot Report on Strong, Sustainable and Balanced Growth [155] which takes a holistic view of the achievements of G20 economies (discussing all aspects of growth), not focussing only on global imbalances. In this new Report, the IMF uses mostly the EBA methodology to make its point, supported by the outcomes of the 'indicative guideline' methodology which are presented in an annex. To this day, although weak, the G20 remains arguably the most useful forum for discussion of imbalances, where some form of peer pressure on major imbalanced economies is exercised.

III.6.   Conclusion

The recent reductions in global current account imbalances should not be a reason for policy makers to be complacent. Further analysis shows that, on the one hand, from a savings-investment perspective, impediments to a sustainable reduction in global imbalances are still very much present. The real challenges most often lie in structural bottlenecks that have been salient features of the major global economies for years. On the other hand, stock imbalances have increased, mainly on the back of a deteriorated US external position. Valuation effects on the US external liabilities seem to play a significant role with both cyclical and structural factors driving the movements of US valuations. Against this background, a possible recalibration of the US macro policy mix and the unexpected change in the pace of monetary policy normalisation in the euro area could increase the risk of widening of global imbalances in the short run. In the medium term, if the trade protectionist pressures materialise in the US and/or if China is subject to a hard landing of its economy, global imbalances could increase again. For the moment these are assessed as tail risks and some suggestions are put forward for policy actions that could prevent these from materialising, and to durably reduce global imbalances. These suggestions pertain to all policy levers (monetary, fiscal and structural policies) that should be used together to address imbalances. At the same time, the persistence of excess global imbalances shows that the automatic adjustment mechanisms in the global economy are weak while potential spillovers from domestic policy actions can be large. This calls for increased international policy cooperation. Continued vigilance and comprehensive, well-sequenced and coordinated policy efforts are as important as ever to address global imbalances. The credibility of major international fora as the G20 hinges largely on ensuring such a successful cooperation.

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[154] Interestingly currently there is no much appetite to discuss the issue of global imbalances in the G7 forum. This would, however, be highly appropriate given the current concentration of imbalances in the major advanced economies.

[155] IMF (2017), G-20 Report on Strong Sustainable and Balanced Growth, October 2017.

Box III.1: **Defining imbalances**

Not all current account imbalances are "bad" and there is no unique definition of what "persistent" and "high" or "excess" imbalances mean. In the IMF reading (see IMF (2017)) ([1]) an excess current account imbalance is the difference between the actual current account (stripped of cyclical and temporary factors) and the level assessed by staff to be consistent with fundamentals and desirable medium-term policies (or "norm"). This staff-assessed gap reflects policy distortions vis-à-vis other economies identified in the IMF External Balance Approach (EBA) models as well as other policy and structural distortions not captured by the model. A current account balance deemed to be "stronger" ("weaker") than implied by fundamentals and desired medium-term policies corresponds to a positive (negative) gap. Assessments also include a view on the real effective exchange rate (REER)—normally consistent with the assessed current account gap. A positive (negative) REER gap implies an overvalued (undervalued) exchange rate. REER gaps do not necessarily predict future exchange rates, and may occur in any economy, including those with floating exchange rates. In the EU legal framework excessive imbalances are "severe imbalances, including imbalances that jeopardise or risk jeopardising the proper functioning of the economic and monetary union" (Regulation No 1176/2011, Article 2). In the EU Macroeconomic Imbalances Procedure (MIP), a scoreboard of indicators with indicative thresholds serves as a filtering device for detecting *prima facie* cases of imbalances deserving further investigation. These thresholds as regards current account imbalances are 6% in the case of a current account surplus and 4% in the case of a current account deficit. The follow-up assessment of whether imbalances are to be considered excessive relies on analysis that makes use of updated and specific information at the country level and analytical tools developed by the Commission services and discussed in Council Committees ([2]). The G20 uses a similar "two-step" approach starting with an indicator based filter step, followed by an in-depth study step for selected economies ([3]).

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[1]   IMF (2017), External Sector Report 2017, *IMF Institutional Papers.*
[2]   For more on the MIP, see EC (2016), the Macroeconomic Imbalance Procedure Rationale, Process, Application: A Compendium, *European Economy Institutional Paper 039,* November 2016.
[3]   See for example IMF (2011), 2011 Staff Reports for the G-20 Mutual Assessment Process (MAP), November 2011.

Box III.2: **Time-series analysis**

A time-series analysis of monthly data in the period 1980-2015 attempts to explain the variability of the US valuation effects with a selection of explanatory variables, both of cyclical and structural nature. The generalised form of the model can be presented as:

$$Val.Eff_t = \alpha + \beta\, Struct_t + \gamma Cycl_t + \varepsilon_t$$

where $Val.Eff_t$ is a proxy for valuation effects (Dow Jones Industrial Average), α is the constant of the regression, $Struct_t$ are the structural explanatory variables (such as total factor productivity, labour productivity), and $Cycl_t$ are the cyclical explanatory variables (such as employment, unemployment, business confidence expectations, interest rates, monetary and fiscal policy stances) ([1]) ([2]) .

VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS
Total Factor Productivity	0.254***	0.149***	0.185***	
	(0.0478)	(0.0503)	(0.0538)	
Labour Productivity				0.124**
				(0.0498)
Employment ([3])	2.735***	3.922***	3.463***	4.752***
	(0.930)	(0.893)	(0.793)	(0.780)
Bus. Conf. Expectations		0.154***	0.162***	0.172***
		(0.0336)	(0.0311)	(0.0308)
QE1 (dummy)			0.00166	0.00214
			(0.00847)	(0.00893)
QE2 (dummy)			0.0258***	0.0258***
			(0.00366)	(0.00369)
QE3 (dummy)			0.00805***	0.00819***
			(0.00182)	(0.00185)
Gov. Budget Balance			1.122***	0.830*
			(0.419)	(0.436)
Constant	0.00288**	0.00180	0.00347***	0.000736
	(0.00125)	(0.00122)	(0.00134)	(0.00177)
Observations	443	443	443	443
R-squared	0.155	0.207	0.244	0.232

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

[1] In all estimations, we use the growth rate of the variables. To reduce data noise and short term fluctuations of the monthly data, we transformed the explanatory variables using an eight-period forward and backward looking moving average function. The dependent variable is smoothed through a 6 period backward moving average function. This smoothing process allows to take in account that the output does not depend solely on the current value, but rather on a combination of present and past (or future) values.

[2] For more information on the methodology see Bogdanov, B. and Filippeschi, G. (2017), "Financial Integration and Valuation Effects: Globalisation or Americanisation", EC European Economy Discussion Papers, Discussion Paper 045 | April 2017.

[3] The beta coefficients for employment are larger than 1, suggesting a non-linear relationship with the DJIA index on monthly basis.

## Box III.3: **The US Tax Reform and External Imbalances**

The passage of the tax reform in the US (Tax Cuts and Jobs Act (TCJA)) in December 2017 represents a significant overhaul of the US tax code and is set to provide stimulus to economic growth in the short term. Its provisions include temporary reductions and base-broadening measures across personal income taxes, as well as lowering the cost of capital through a permanent cut in the corporate tax rate and the immediate expensing of capital investment. However, from a qualitative viewpoint, the current late stage of the cycle and an economy that appears to be performing broadly at potential implies only a limited growth impulse from these measures; while also potentially aggravating longer-term challenges such as fiscal sustainability and reducing the US's persistently large current account deficit.

Using the European Commission's QUEST model to analyse the impacts of an indicative tax reform (simplified to reductions in corporate tax rates equivalent to 1% of GDP), the quantitative results broadly concur with this assessment. Indeed, US economic growth would increase by 1% after 10 years (or boosting annual GDP growth by around 0.1 pps.), while higher economic activity would place upward pressures on prices and thus provide further impetus to monetary policy normalisation and US dollar appreciation. (¹) The net effect of these dynamics would widen the already sizeable US trade deficit by around 0.2-0.3% of GDP, with this largely occurring in the first 2-3 years of the reform. This would also contribute to aggravating imbalances elsewhere, including in the euro area, where higher US demand and USD appreciation generate a small increase (0.1% of GDP) in the euro area trade surplus. (²)

On the one hand, the deviations in the US (and trading partners') current account balances as suggested by the QUEST model appear modest at the aggregate level. However, this corresponds with the similarly limited size of the tax reform simulated, and extending this analysis to incorporate the specific provisions of the TCJA may provide for wider deviations than accounted for here; as would the increases in federal government spending agreed in February 2018 (Bipartisan Budget Act).

At the current juncture, however, it is not necessarily the magnitudes of these shifts that matter; rather that they move in the opposite direction to resolving global imbalances. Graph 1 demonstrates these dynamics through the prism of the Swan diagram (Graph 1) in which the US and euro area were already some distance from their external equilibria in late 2017, albeit from different sides. (³) US tax reform and other expansionary shifts in fiscal policy are thus likely to result in both regions moving further away from their external equilibria.

Graph 1: Impact of tax cut (1% of GDP) on US and euro area equilibria

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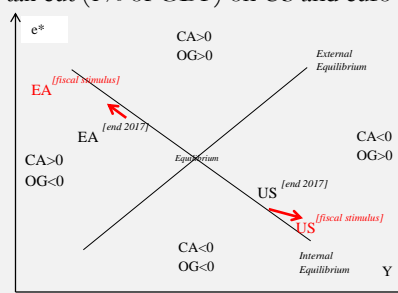
(¹) Over the longer term, the US fiscal position also deteriorates as the reform is not revenue neutral, with the fiscal deficit increasing the 0.9% of GDP in the first year, before recovering marginally thereafter.
(²) The simulation does not include potential effects from US tax incentives to repatriate profits.
(³) This contrasts with the US already broadly at its internal equilibrium (i.e. has a closed output gap) a stage the euro area is expected to reach in 2018.

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