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THE HEALTH OF NATIONS: A TRANSATLANTIC TRADE AND INVESTMENT AGENDA FOR BETTER HEALTHCARE

By Fredrik Erixon, Martina Francesca Ferracane, and Erik van der Marel

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EXECUTIVE SUMMARY

Today, increases in the demand for healthcare are driving European governments to look for ways to control growth in healthcare expenditures and, at the same time, improve health outcomes. Healthcare demand will most likely grow even faster in future decades as the European population continues to age – with 20% of the population predicted to be over the age of 65 by 2025 – and other demographic shifts take hold. Consideration of ways to enhance trade in healthcare goods and services is important for governments as they struggle to find resources to finance this increasing demand for healthcare.

Trade has a natural role in healthcare – and countries already trade extensively in medical equipment and pharmaceuticals, for example. Now it is time to expand the role of trade in healthcare – and there is no better way to begin that process than through the Transatlantic Trade and Investment Partnership (TTIP).

TTIP is an opportunity for Europe and the United States to lower the cost of providing high-quality healthcare and support better health outcomes. Trade is an integral part of healthcare, and current obstacles to trade raise the cost for healthcare systems to deliver better healthcare to patients. In the healthcare sector, costs of trade (like tariffs and regulatory divergence) cannot be passed on to consumers as they can in other sectors. Trade costs rather depress the amount and quality of healthcare that can be offered to patients.

To improve the conditions for trade in healthcare goods and services is not a veiled effort to make public healthcare systems private. Nor will TTIP or any other trade agreement have that effect. The key role of TTIP is to reduce the cost of key inputs to healthcare delivery that are already traded. In Europe and the United States, two very advanced healthcare markets, TTIP can help to spur specialisation by helping companies to access markets for new and innovative products in a faster way.

Like other sectors, the healthcare sector needs big markets and a connected world to allow for fast and cost-effective innovation bringing new opportunities to treat illnesses and end suffering. While it is difficult to foster more cross-border healthcare cooperation between countries in large and multilateral trade deals, TTIP offers a chance to improve access to healthcare innovation by reducing artificial transatlantic barriers that only serve to raise the barriers to provide high-quality affordable healthcare.

A healthcare agenda for TTIP is important for both the European Union and the United States, as they are the leading players in the market for healthcare goods and services. They have strong export and import interests. As the healthcare market gets more specialised, the EU and the US need bigger markets to make especially new healthcare technology affordable.

HEALTHCARE AND TRADE – A NATURAL PARTNERSHIP

Trade costs for new technology can be significantly reduced. Tariffs are not the big problem. Trade costs are expanded by divergences in regulation and because the trend of increasing regulation disconnects market from each other. That disconnection needs to be reversed – and the EU and the US can do that in TTIP without lowering the ambition of regulation.

Healthcare is increasingly dependent on input services like logistics and data. These services are critical for the modernisation of healthcare as well as the ambition to make healthcare accessible for all. A healthcare agenda in TTIP needs to focus attention on such services and ensure that markets are not fractured by neglect.

Modern trade policy is about improving the quality of institutions. Trade policy should help to foster greater transparency and predictability in the way institutions operate. For instance, governments need to become more transparent about their policies and strategies for reimbursement of healthcare services and input, including in the procurement of goods and services. They need to give greater attention to providing core institutional support against threats to innovation. TTIP, like previous trade agreements that the EU and the US have entered with South Korea, should improve the institutional quality of healthcare policy.

Trade is important to make healthcare more innovative and affordable. European healthcare systems have obvious supply constraints. But the constraints can be different between countries and show significant variation also within factors of healthcare inputs. Some, but not all, of these constraints reflect factor endowments, the way that core factors of production – like labour, human capital or physical capital – operate. Trade is a combination of factor endowments crossing borders, and if they would be allowed to do so also in healthcare delivery, the depressing effects of healthcare supply constraints would naturally ease.

Determinants of trade are already having an impact on the composition of healthcare services, but not in a rational way. It is limited to strategies of 'outsourcing' within a given organisation and system – and those limitations prevent a faster rate of healthcare specialisation. If countries trade rather than just outsource, healthcare systems would use their resources in a smarter way. There is significant variability also in healthcare demand. Even if most countries in Europe are moving in the same demand direction *in the aggregate* (due to ageing, higher income, and other factors) there is variability between countries about the exact direction and its speed. Natural demand variability is yet another factor that determines trade and that should be better coordinated in healthcare systems. Trade is that natural coordinator.

Most studies show that labour productivity growth in healthcare is low or stagnant. There are proven ways to improve the productivity of healthcare by combining factor endowments in smarter ways. This is already done within national or regional healthcare systems, albeit at a small degree. But the absence of having a combination of factor endowments across borders limits the capacity to improve productivity for both low-skilled and high-skilled healthcare delivery.

Productivity reflects the input of technology – and the organisation around investments in technology. European healthcare systems generally have a comparatively low technology and capital intensity in healthcare – and this intensity is likely to climb faster than in other countries just because European healthcare systems need to catch up. Variations in technology intensity also reflect different factor-endowment strengths and weaknesses.

The organisation around technology investments can lower the output effect of investments in technology. It is a consequence of not utilising the investment and lack of complementary investment. Trade can help to cut trade costs of technology – and improve utilisation by matching supply and demand.

A TTIP AGENDA FOR THE HEALTHCARE SECTOR

The promise of TTIP is to usher EU and US trade policy into the twenty-first century. It should address trade barriers that prevent the European and American economies from moving up the value-added chain. The healthcare sector, which is far more constrained by trade barriers than many other sectors, should be a core area for TTIP. A healthcare agenda for TTIP could help to reduce the cost of healthcare innovation at the same time as it boosts transatlantic trade and delivers better healthcare outcomes

Remaining tariffs for healthcare technology and equipment should be eliminated. Divergences in regulations should be reduced in areas where both sides share the regulatory objective. Market access and rules for key services inputs for the healthcare sector should improve. Both sides should improve transparency and predictability in regulations and the way that healthcare institutions operate. Importantly, the EU and the US should broach a new strategy to improve market access and rules for healthcare trade globally. The healthcare sector is accelerating the speed of innovation, but regulations must enable new innovations to reach patients in a safe and affordable way.

1 INTRODUCTION

Healthcare is a global growth sector. It is global because the curiosity of mankind to understand diseases – and its ingenuity in finding cures for them – does not stop at the border. Even before the birth of modern medicine, and more so since, awareness of new discoveries has travelled quickly around the globe, making healthcare professionals mindful of the enhanced capacity and innovation to alleviate human suffering in remarkably similar ways. Such awareness, however, does not automatically confer access.

Healthcare is a growth sector because it is expanding at a faster rate than GDP (gross domestic product). Global healthcare spending per capita is expected to grow by 4.4% annually between 2014 and 2017, boosted especially by double-digit growth rates in Asian countries.[1] The growth rate will also stay high in the medium and long term because of broad changes in global income and the demographic structure of larger markets.

Equally important, the healthcare sector spurs growth through innovation. About a fifth of global spending on research and development (R&D) by companies is accounted for by the healthcare sector.[2] Pharmaceuticals and biotechnology represent the biggest private R&D sector in the world. The health sector ranks second in Europe, after automobiles, in corporate R&D spending.[3] In addition, governments spend substantial resources on medical research. In other words, the healthcare sector is an important source of value-added growth in the economy – and the general capacity to grow economies on the back of innovation.

That the health sector is a global sector is also shown in trade statistics. Health products – especially health goods like medical equipment, advanced medical technology and pharmaceuticals – have for decades been traded around the globe, with Europe and the United States as the two main trading hubs. Trade in healthcare-related services has also grown, especially in areas like logistics and R&D services. Trade and investment have been key channels to quickly diffuse new and innovative health products, bringing substantial contributions to the vast improvements in human health and welfare seen over time. This development is not slowing down – and as the world of healthcare technology is yet again on the threshold of another giant innovation leap, trade will continue to be key in delivering better and affordable healthcare.

While healthcare trade has been strong in past decades, healthcare trade policy has been struggling. Positive reforms to open up for healthcare trade were made in the past, such as reducing or eliminating tariffs on healthcare equipment and pharmaceuticals. Yet these achievements are neither recent nor complete. There are substantial barriers to trade that remain unaddressed – and some of them have grown more distorting in recent years. Like in other sectors, there are still some tariffs that depress trade; even a tariff of just one or two per cent has depressing effects as it deters small- and medium-sized companies from engaging in trade because of the bureaucracy it entails. However, the barriers that really slow down trade among key trading entities in the world are rather based on regulations, regulatory practices and the general environment for protection of innovation.

What makes the healthcare sector different from other sectors is that, despite its capacity to generate growth, it increasingly has to fight for its voice to be heard in trade policy. This is especially true in the debate over TTIP, where some have incorrectly claimed TTIP to be a threat to European healthcare systems. For some, improvements in trade policy for healthcare goods and services are seen as politically controversial. For others it is the technical difficulties of reducing existing barriers that have acted as a deterrent. Notwithstanding such opposition, trade

1 Economist Intelligence Unit (2013), *World Healthcare Outlook*.
2 Booz&Co. (2013), *The 2012 Global Innovation 1000*.
3 European Commission (2012), *EU R&D Scoreboard: The 2013 Industrial R&D Scoreboard*. Luxembourg: the European Union.

in healthcare goods and services is a twenty-first century issue – for the health of trade as well as the affordability of healthcare and the ingenuity of healthcare innovation.

The European Union has a strong interest in leading that development. Healthcare is already one of the biggest sectors in the world economy, estimated at USD 7 trillion by the World Bank, and its expansion will be far bigger outside than inside Europe. Europe also has import interests. It represents a significant share of the global healthcare market. Taking away unnecessary costs of trade would positively affect healthcare expenditures in a very direct way. Furthermore, Europe has competitive firms that could expand globally. It has strong import needs, especially as it struggles with the costs of healthcare and needs better ways to pool resources and access technology. Importantly, Europe now has a good platform to use for such leadership – for fashioning a trade agreement that addresses key obstacles to trade in healthcare. That initiative is TTIP.

This paper is concerned with the role of healthcare in TTIP. It makes the argument that trade in healthcare goods and services deserve central attention in TTIP negotiations, especially if political leaders are true to their promise of using TTIP as a foundational agreement for modern, next-generation, or twenty-first century trade policy. The paper has three core parts.

First, it sets out the unfinished business for trade in healthcare goods.

Second, it analyses the role that trade should play for better and affordable healthcare services.

Third, it sets out an agenda for negotiating a TTIP agreement with a distinct role for healthcare goods and services – an agreement that can serve ambitions on both sides of the Atlantic to improve healthcare efficiency and equity.

The paper is primarily concerned with trade and healthcare policies in Europe. It does not discuss the structure and financing of healthcare policy in Europe. Nor does it suggest reforms of that system. TTIP is a trade agreement, not a healthcare reform act. Therefore, this paper is primarily focused on generating a better understanding of how trade can play a bigger role for European countries that desire to maintain the current organisation and financing of healthcare. Healthcare systems that rely to a greater extent on private supply and financing of healthcare typically have a greater pool of resources to draw from to support healthcare expenditure. European healthcare systems are far more based on public organisation and financing of healthcare. Given the pressure European governments are under to cut healthcare expenditure or their growth, this paper makes the argument that Europe has an even stronger interest in making better use of the gains for trade in healthcare goods and services.

2 THE HEALTH OF NATIONS: IMPROVING TRADE IN HEALTHCARE GOODS AND SERVICES

Trade and healthcare are often viewed as two separate entities and the debate in Europe about the healthcare sector seldom recognises its relation to trade. All too often, discussions in Europe about healthcare end up in trenchant fiscal positions, especially in the past years as many countries have struggled with negative or stagnant economic growth. The healthcare sector is under pressure to cut expenditure, or at least reduce their growth, at the same time as the demand for healthcare is growing, partly because of a population that is growing older and is more informed about alternative choices of treatments. While the immediate responses have been to contain costs, few countries have built sustainable models of healthcare that are prepared for even greater shifts in demand and demography than witnessed so far.

What are the appropriate responses to the growing financial stress in the European healthcare sector? There is no panacea – and no single solution for countries so different as far as healthcare policies and spending priorities are concerned. But it should be obvious that the appropriate response is not to provoke a *faux* conflict between, on the one hand, the desire to economise with resources and, on the other hand, the recognition of the globalisation of healthcare and the benefits that accrue from it. There is no conflict between the global ethos of healthcare and the necessity to make better use of existing resources. There are growing conflicts about whether healthcare supply can meet the demand for healthcare, but international cooperation aiming to improve the use of existing resources is a strategy to address that problem.

Trade has a natural role in the quest for improved performance of healthcare systems. There is a strong – and growing – case to be made for the globalisation of healthcare as a *strategy to raise efficiency, equity and affordability of healthcare production*. Specialisation and division of labour are part and parcel of the way healthcare is performed: a heart surgeon, not a cancer specialist, performs a heart surgery. In fact, the degree of specialisation in healthcare is increasing – both in terms of human capital and in healthcare technology and delivery. Healthcare delivery today is vastly different from just a decade ago. All parts of healthcare have become far more sophisticated and rely on an ever-greater number of inputs from various sources within and outside a hospital. They are all tightly integrated and cover the delivery from the time when a patient comes into a hospital until he or she gets a prescription drug from a pharmacy.

Specialisation is a natural development. It follows the accumulation of medical knowledge. Importantly, it also follows standard dynamics of trade. The gains from specialisation and the division of labour, central to all trade, have been known ever since Adam Smith's ground-breaking work, *The Wealth of Nations*, published more than two centuries ago. The more that the *health of nations* is shaped by deeper specialisation in human capital and technology, the greater the case is for adapting healthcare systems to allow trade to connect healthcare systems across borders. The irony before us is that one of the world's most technologically advanced sectors is near last in applying a centuries-old, time-tested economic thrower to optimally deliver on its promise. Just like Adam Smith helped Europe to move away from the shackles of manufacturing mercantilism several hundred years ago, there is now a great need to do the same in services, especially healthcare. The problem that is facing healthcare systems is that in absence of better conditions for trade, specialisation often increases the cost and leads to inefficient patterns of specialisation: staff and management in hospitals move into less-efficient ways of organising healthcare.

Improving the conditions for trade in healthcare goods and services is not about using trade as a Trojan horse to undermine government-financed healthcare systems in Europe. That is a myth. It is rather about improving the chances that they can deliver high-quality healthcare for all now and in the future. Trade and investment initiatives like TTIP can advance the capacity of nations to draw on each other's respective strengths and make their own healthcare system more resource-efficient, innovative, accessible, safe and affordable. Europe and the United States are the two largest markets in the world for advanced healthcare goods and services, and it is simply not possible to find efficient ways for healthcare systems on both sides to make new innovations affordable unless they can expand market size and improve the return on investment in capital-intensive healthcare technology. Specialisation gets very expensive unless producers and consumers can use the benefit of trade. The core role of a TTIP agreement breaking new ground for trade in healthcare is to speed up the technological development in healthcare and ensure that there are good economic conditions to spread this development.

Healthcare and trade policy are far more connected than most people think. Trade policy reforms in the past have made significant contributions to diffusing medical knowledge and practices as well as helping healthcare authorities to economise resources. Tariffs on healthcare technologies and pharmaceuticals have been reduced, in some instances eliminated. Investment liberalisation and improvements in patent protection have fastened the speed of diffusion for innovative healthcare goods. Technical barriers to trade in healthcare equipment have been lowered through

cooperation on technical standards. Healthcare professionals can move much more seamlessly between markets. Step into a typical operating room in a hospital in Europe today and you will find a substantial fragmentation in the supply and origin of the equipment used.[4]

Yet many barriers remain in the healthcare sector – and new ones have been added to the list as the technological capacity of cross-border healthcare has improved. Like most other sectors, cross-border data portability has become a critical concern in trade policy for the healthcare sector. Furthermore, as governments have tried to squeeze healthcare expenditures, there has been ever more imaginative ways of introducing arcane non-tariff barriers (NTBs) and regulations that serve to regulate effective market access for trade in healthcare products like healthcare equipment and pharmaceuticals.

2.1 IMPROVING TRADE IN HEALTHCARE GOODS

TTIP is of interest to Europe's healthcare sector for several reasons, but two reasons are more important than the others: the size of the US healthcare sector and its relatively stronger innovation intensity. A greater portion of new technologies for healthcare production and delivery come from the United States than Europe. It means that Europe's own firms have a strong interest in accessing the US market – and that Europe's patients have a strong interest in importing technology from the US. Market size is critical for improving the commercial conditions for healthcare innovation and specialisation. Generally, innovation and specialisation are increasingly expensive and markets that are fractured by barriers to trade lower the return on both.

Even if innovation intensity in the EU is lower than in the US, Europe too is a heavyweight in the global healthcare sector. It generates a significant part of healthcare innovation, and increasingly so in the use of data in healthcare, for instance through patient reported outcomes in the development of treatments. Consequently, Europe has a strong interest in improving scale opportunities for its producers and innovators, especially in innovation-intense markets.

Europe has strong interests in both exports and imports in health technologies. Europe is one of the biggest importers in the world – the European market for health technology is roughly EUR 100 billion per annum. Reducing costs of trade have a direct impact on healthcare expenditures and the capacity of healthcare systems to keep up with technological progress.

Europe is also strong on exports. European producers are very competitive in fields such as *in vitro* diagnostics, cardiology and imaging diagnostics. Germany alone employs roughly 175,000 people in healthcare technology. It is a sector with strong reliance on innovation and patents; the sector represents more than 7% of all patents filed at the European Patent Office. It also generates a substantial trade surplus – estimated at around EUR 16 billion in 2012.

In general terms, the medical devices industries in the United States and Europe have somewhat different characteristics. Like in Europe, the vast part of the US industry consists of SMEs, but there are still larger US firms with strong global positions and that are competitive in the segment for highly innovative equipment, such as cardiovascular and orthopaedic devices. It requires a high amount of investment to be at the forefront of developing new advanced technologies. Therefore, US companies reinvest above 10% of their sales in R&D. In comparison, their European competitors spend around 6% of their sales on R&D. Importantly, the R&D market is increasingly global, and cross-border R&D collaboration between America and Europe is the core element.

4 The National Board of Trade (2011) examined the suppliers and supply chains of 40 items of healthcare equipment in an operating room at a Swedish hospital and found evidence of substantial trade fragmentation. See Annex 1 for their result.

Also, thanks to their size, the larger US companies often have better access to capital and funding. However, spending resources on R&D is not an end goal. The rate of return on the invested capital is essential in order to maintain a competitive edge. In this respect, another strength of the US medical devices industry is the high labour productivity; USD 297,938 per worker in year 2005. In comparison, Japan has moderate productivity in the medical device sector, USD 173,460 per worker, while the EU has relatively lower productivity, USD 98,149 per worker in 2005. In effect, this means that the capital invested in R&D generates a higher output value in the US compared to the average in Europe.

The medical technology industry in Europe, including Norway and Switzerland, is characterised by a large number of small- and medium-sized companies. In fact, 95% of the almost 25,000 European-based medical technology companies are SMEs with fewer than 250 employees. This influences their ability to attract and access capital. It also affects the way in which they operate. Many of the European-based SMEs do not have a significant market presence outside the European market. The multinationals like Siemens, Philips and B. Braun are international with a significant share of sales outside Europe. However, given the SME structure of the European med-tech industry it is important to reduce those barriers that are known to prevent smaller companies from engaging in trade.

For instance, SMEs have lower capacity to manage non-tariff barriers (NTBs) and adapt to different regulatory systems in potential export markets. For many SMEs, the administrative cost of trade is prohibitive. In other words, efforts in TTIP to reduce regulatory divergence and cut administrative costs of trade would likely have a disproportionally positive effect on trade. Moreover, SMEs may not be able to capitalise on global supply networks to the same extent as large multinational corporations. Even within Europe, SMEs are vulnerable as they are disproportionally affected by the restrictive reimbursement policies that are currently part of many governments' austerity programmes. In geographical terms, the medical device industry is concentrated in certain European countries, with Germany, France, United Kingdom and Italy dominating. The relative importance of medical devices per capita is also significant in Ireland and Sweden.

Moreover, many European-based companies compete in the low-technology segment for so-called 'established' products. These companies have to sell large quantities of their products as profit margins are often small and competition strong. In contrast, the competition and the price pressures are less intense in the technically advanced product segment. However, the barriers to entry are higher for sophisticated products due to high start-up costs. In general, any producer of medical devices must adapt to the fact that the life cycle of some products is not very long. Also, it is generally easier for competitors to 'build-around' a patented product in the medical equipment sector in comparison with the pharmaceutical sector, for instance.[5] Given this market structure, and the entry costs, it is critically important for European companies that non-market barriers, or policy barriers, to trade are reduced. When a policy barrier is added to a market with market-based entry barriers, the effect of the policy barrier multiplies: trade gets depressed faster than in a market with low market thresholds for entry.

The United States is Europe's obvious partner in an effort to free up trade in health technologies. More than 40% of Europe's exports of medical technologies go to the US and close to two thirds of Europe's imports are sourced in the US. Like Europe, the US has companies that are highly competitive on global markets – and consequently share the outward-oriented profile of European med-tech companies.

The profile of the pharmaceutical market is similar. European pharmaceutical companies represent a significant part of business R&D, estimated at 18% of total business R&D in 2012.[6] It employs about 700,000 people in Europe and represents the fifth largest sector in the EU.

5 USITC (2007).
6 European Commission (2012).

Europe is one of the largest pharmaceutical markets in the world, ranked second in the world after the US, and a substantial part of production in Europe is destined for other markets. The EU runs a substantial trade surplus, estimated to be in excess of EUR 55 billion. Like European med-tech companies, pharmaceutical companies operate sophisticated supply and value chains, and production in Europe draws heavily on input from abroad, and vice versa. European producers are by far most closely integrated with the US market.

What divides the EU and US markets for healthcare goods are not tariffs. The key barrier to trade is differences in regulations and regulatory procedures – and they are also the chief barriers in Europe's relation to other key healthcare markets in the world. The great potential of TTIP is that it will begin a process of reducing those regulatory barriers, chiefly by identifying those areas where regulations are identical in ambition and purpose, and take away burdensome procedures for regulatory approval when regulations are 'identical but different.' There are other important non-tariff barriers that should be addressed. The government procurement market for health technologies should be opened up farther and there should be greater transparency in the way governments procure and reimburse suppliers of healthcare goods. Such improvements would benefit transatlantic trade and bring the markets closer to each other. Importantly, it would also be a platform for improving the conditions for trade in healthcare with other countries.

Given the strong dominance of the EU and the US in global output of medical devices – the US, the EU and Japan represent approximately 90% of global output – and pharmaceuticals, there is a natural transatlantic alignment to address non-tariff barriers – and begin a process of establishing global standards that facilitate trade. Reducing such barriers is more difficult than cutting tariffs; it is difficult to do it multilaterally because of large divergences in existing regulations and regulatory procedures. A transatlantic initiative, however, can easily be externalised by getting other countries on board at a later stage.

2.2 TRADE IN HEALTHCARE SERVICES

Healthcare services are different from healthcare goods as far as trade is concerned.[7] Healthcare delivery remains organised along regional lines with little cooperation inside and between countries. An estimate produced a few years ago showed that existing cross-border trade in healthcare services is practically negligent.[8] The total cross-border supply of healthcare services – including both export and import – remains considerably below one per cent of the gross output of healthcare services.[9] There is greater intensity in other modes of trade in healthcare services – especially in the movement of healthcare professionals. Yet even if all modes of trade in healthcare services are accounted for, cross-border services trade in healthcare is a marginal phenomenon.

European countries have also been reluctant to foster real changes in healthcare services trade through trade and investment policy. Commitments to trade in healthcare services in the General Agreement on Trade in Services (GATS) are weak or non-existent.[10] The only EU country

7 In the WTO, health services are covered in two main sub-sectors. Under business services there is a chapter for professional services (e.g. medical and dental services; veterinary services) that cover the professions. Then there is a chapter directly related to the delivery of healthcare – Health-related and social services (e.g. hospital services and ambulance services). In this paper we are following the structure of GATS. Therefore, references to healthcare services concern direct healthcare services. This paper, however, will also concern several services of importance to healthcare but that are generic and not just related to the healthcare sector.
8 Herman (2009).
9 Ibid, Table 3.
10 Davis & Erixon (2008).

with significant commitments in GATS healthcare services is Hungary.[11] The Doha Round talks about GATS showed few indications of change. Nor do recently concluded free trade agreements (FTAs) signal a change for healthcare services, even if other trade policy concerns of the healthcare sector get more attention. As Europe may conclude FTAs in the near future with countries in ASEAN and countries with more developed healthcare systems, this may begin to change as these countries bring greater complementarities for the EU in healthcare services.

Trade in healthcare services, unlike trade in many services used for the healthcare supply chain, may be controversial, but – as will later be discussed – it is important for the affordability of high-quality healthcare in Europe that it begins using the potential gains from trade. There is a far less controversial dimension of services in healthcare that relates to input services, such as logistics, ICT services, R&D services and general management services. All these services are crucial to the efficient operation of a hospital, and a good part of the improvements happening in the general management of hospitals in Europe and elsewhere concern the use of new services, deployed by healthcare operators to manage the healthcare supply chain. In Europe, some of these services are channelled by ownership and management of healthcare units, which puts them in a difficult position as there are not many binding commitments in the GATS related to healthcare services.

Similarly, the transport of healthcare goods and services is a big and growing market, and the more sophisticated that healthcare services become, the greater is the demand for advanced logistics solutions. To enable more digital communication between healthcare professionals, or for using cross-border services to produce imaging applications, healthcare systems are demanding advanced software services. Generally, to grasp the potential of using medical devices or software technology to measure patient outcomes and treatments, healthcare systems are increasingly reliant on cross-border flow of data. To transport rare and highly sophisticated medicines, or highly specialised inputs for surgeries, advanced logistics services are key. The logistics sector is already playing an important role in the work to reduce trade in counterfeit medical goods, especially medicines, and as the US is moving to a new and national system of third-party licences for the transport of medicines, the logistic sector is about to take a bigger role in secure healthcare supply chains.

Importantly, a higher degree of specialisation in healthcare generally requires better ways to connect different countries with each other. A higher degree of specialisation also generally entails a higher cost per unit of production, and healthcare systems simply cannot afford to maintain all specialised healthcare services within one hospital, one region, or even one country. Already today, there are highly specialised medical treatments that cannot be done within a country because they are too expensive. As the world gradually moves towards a pattern of specialisation that is global, or at least international, it is vital to ensure that the actual modes of cross-border cooperation are improved. Technology and services will be central to achieving that development.

Consequently, the logistics of healthcare and the way it can perform under current regulations will be a central area for delivering better and affordable healthcare in the future. Yet healthcare logistics is an area subject to substantial regulatory divergences, starting at the level of customs clearance procedures up to regulations to assure high patient safety in the operation theatre. In some instances, barriers at, and behind, the border become safety issues because the supply chain requires very fast delivery. Europe and the US essentially share the goal of customs modernisation, but divergences must remain a focus, including customs regulations and documentation requirements that often needlessly differ from country to country.This is also true for other services that are used as part of healthcare delivery. The healthcare sector is increasingly dependent on data and cross-border transfers of data. These data sometimes include sensitive patient information, but often data are non-personal or only tangentially relates to a particular patient.

11 Blouin *et al* (2002).

Nevertheless, it is critical that the integrity of all patient information is supported by regulations and regulatory practices – and for sensitive data to cross borders more freely requires much better coordination between relevant authorities. This is a modern non-tariff barrier – but one that will be central for healthcare systems to operate efficiently in the future.

2.3 TRADE, TECHNOLOGY AND PRODUCTIVITY

Trade in healthcare goods and services has the same effect as trade in other sectors: it generates a better use of existing resources. Healthcare professionals can work smarter – and become more productive. Naturally, productivity is key for any producer that needs to economise with resources. In essence, it is about how many units of output can be produced with one unit of input. Inputs, however, differ widely between healthcare systems in the world – and, indeed, between national healthcare systems in Europe.

Such variety is likely to be reflected in the intensity of each input used in a country's healthcare services, such as labour, skills and capital, but also technology, knowledge, research and innovation. This is why trade in healthcare goods and services is important – and why new technology can help to make the different parts of the healthcare supply chain more integrated, internally and externally.

It is no secret that productivity development in the European healthcare sector is a source of concern for governments. Many studies of productivity in the healthcare service performance have recommended that policies need to target improvements in productivity. The recommendations have aimed at different aspects of healthcare services.

Several studies have suggested sharing publicly funded data by national institutes, encouraging more transnational research and cooperation in healthcare or assisting countries in, among other things, funding expensive R&D costs of new healthcare technology.[12] Other studies put the emphasis on transparency measures to be used in order to verify where value in the healthcare chain is created or to shift financial risk more to consumers so that resources are utilised more economically within each healthcare system.[13]

Yet, a good part of such proposals run into controversy or political obstacles.[14] One problem is that there is no universally accepted standard for how to measure productivity in healthcare. There are different indicators that can be used, but many of them are hard to obtain when healthcare services are highly differentiated and differ in terms of quality. Generally, output refers to the number of patients treated, hospital discharges or physician consultations, whereas outcome measures include indicators such as the increase in quality and length of life, morbidity rates, or equity in access or the health status of patients or an entire population.

Productivity is thus hard to measure and only a few attempts have been made. However, most, if not all, of these studies have one thing in common: they show that labour productivity per hour worked in European healthcare services has been lagging substantially behind other business or producer services, or the manufacturing sector.

12 See for example Kauffman (2012).
13 See for example BCG (2009).
14 The flipside of productivity is prices. It is well known that prices for hospital and physician services are generally increasing faster than the normal price level of a country (CPI), i.e. there is a specific element of healthcare inflation (see Erixon and van der Marel (2011)). This is especially true in the US as Folland (2013) shows with simple price level data from the US Department of Commerce. A pilot study from the OECD on hospital prices shows that there is also huge variation between countries. See Koechlin (2010)

According to one study, the average labour productivity growth across European countries was 0.7% (1995-2000) and 0.4% (2000-2005).[15] Some countries showed negative rates of productivity growth. Country-specific studies also tend to draw the same conclusion, even when using broader measures of productivity. For example, a study by the Office for National Statistics in the United Kingdom revealed that productivity in the healthcare sector has remained fairly constant over the last 15 years, leading to pressures on the long-term fiscal sustainability of the country's healthcare system.[16] Similarly, using econometric techniques, a study on Portuguese hospitals revealed that productivity during the period of 1997-2004 was flat – and in the parts of the healthcare system where there was an incidence of positive growth, it was fairly low.[17]

To a great extent, the organisational choice of providing healthcare can explain productivity levels. It is, for instance, more expensive to deliver healthcare in regions with low population density. The ownership of healthcare units may also have an effect. In this respect, studies show that one form of healthcare organisation or institution is more efficient than others in the same country or region. For example, evaluations of hospital reforms in Stockholm have shown that the cost per DRG point[18] produced is lower in hospitals that are run by private companies than in public hospitals even if they are financed equally.[19] The improvement in productivity had been achieved at the same time as capital and technology intensity increased.

More generally, the mix of market instruments and regulatory approaches differs widely among and within European countries. Although these differences cannot fully explain the effective outcomes of each healthcare system, this pattern emerges clearly by analysing how the different organisations of European healthcare systems differ across European countries, which is summarised in Table 1. Factors dealing with the organisation of healthcare are related to supply, such as hospital management, the mix of institutions (i.e., hospitals) and patient choice.

In terms of organisational efficiency, if the focus is on healthcare outcome – rather than output – measures such as health status and equity reveal that differences appear to be *within* each country group rather than *between* groups. This suggests that no healthcare system performs remarkably better than other systems in all aspects of healthcare outcome. Yet, and importantly, the cost determinants of treatments vary across these country groupings. It indicates that *each country or organisation has its own strong points in terms of treatments or health services* where the relative productivity level is higher. This would indicate that each organisation based on its characteristics has its own comparative advantages. In fact, it is highly likely that hospitals and healthcare systems today operate on the basis of comparative advantage, or that they develop patterns of specialisation that correspond with economic expectations. It is the natural development from an endogenous medical perspective: medical specialisation is a driving force behind the increasing quality of healthcare. It is part of the natural ethos of the medical science to constantly improve the quality of treatments by generating more knowledge – or, as an economist would call it, capital. And as in all other sectors, increasing knowledge or human capital have a strong push effect on output specialisation within the healthcare sector.

15 Erixon & van der Marel (2011).
16 Messay (2012).
17 Barros *et al.* (2007).
18 DRG stands for Diagnosis Related Groups and is a method used by public authorities to reimburse healthcare output.
19 Folster *et al* (2003).

TABLE 1: GROUPING OF EUROPEAN HEALTH SYSTEMS BASED ON COMMON ORGANISATIONAL INSTITUTIONS

Groups	Characteristics	Countries
Group 1	Relies extensively on market mechanisms in regulating both insurance coverage and service provision. Gate-keeping arrangements are in place.	Germany, Netherlands, Slovak Republic
Group 2	Public basic insurance coverage and extensive market mechanism in regulating provision. Differs per country in terms of degree of reliance on private health insurance to cover expenses beyond basic package. Gate-keeping arrangements are in place	Belgium, France
Group 3	Idem as Group 2, but without gate-keeping arrangements in place	Austria, Czech Republic, Greece, Luxembourg
Group 4	Regulatory rules provide patients with choice among providers; extremely limited private supply. No gate-keeping in place. Prices tend to be highly regulated.	Sweden
Group 5	Heavily regulated public systems. Patients' choice is limited. Role of gate-keeping important.	Denmark, Finland, Portugal and Spain.
Group 6	Heavily regulated public systems. Patients' choice tends to be large.	Hungary, Ireland, Italy, Poland, United Kingdom

Source: Based on Joumard et al. (2010)

With increasing specialisation, an important aspect of the organisation of healthcare is the coordination of specialised skills and specialised healthcare services. Healthcare services are increasingly split into different tasks reflecting greater specialisation of each care episode in the medical supply chain. In this respect, there have been evaluations of where and how the linkages between the different segments can be improved so as to increase cost-efficiency and guarantee quality.[20] For example, in an attempt to alleviate the pressure on employees for long-term care, productivity-enhancing reforms by reorganisation of medical job tasks have been evaluated across OECD countries. One evaluation observed that the Netherlands, for instance, introduced a new professional category called care-work assistant which took over simpler tasks in less complex cases, enabling better productivity growth.[21] In such a way, the more skilled medical workers could focus on the more specialised tasks, which is one of the essential dynamics of productivity in the healthcare sector.[22]

In addition, across OECD countries there are problems with weak coordination in healthcare, and these problems are often associated with poor information exchange between providers. At the same time, the use of ICT inputs in healthcare systems varies between countries, explaining to a significant extent the cross-country differences in efficiency.[23] The use of ICT inputs is related to the degree of fragmentation in healthcare provision.[24] Therefore, an obvious conclusion is

2020 Hormarcher *et al. (*2007).
21 Fujisawa and Colombo (2009).
22 Korczyk (2004).
23 Feachem *et al.,* (2002).
24 Audet *et al.* (2004).

that countries exhibiting better ICT use as an input for healthcare services seem to increase more efficient coordination allowing for ever-increasing specialisation in more productive healthcare activities.

In this respect, the use of data or data sharing across actors in the medical system is critical.[25] More generally, greater use of ICT is a very frequent policy recommendation across the world in the quest to deal with fiscal sustainability of healthcare, especially to improve how healthcare organisations operate. For example, several evaluations note that greater investments in, and smarter use of, ICT in long-term care services can improve productivity in organising and planning the combination of services within a healthcare unit to give the necessary medical care.[26]

There are several examples of how this can be done – including the use of mobile devices during consultations, use of software solutions for appointment scheduling and work schedule management, keeping electronic health records and also the use of telemedicine solutions to optimisation of how and when healthcare professionals meet patients.[27] These solutions are associated not only with direct savings of time (and therefore cost) on the administrative side, but also with drastic reduction of errors that result from incomplete patient records.

Among others, the use of electronic health records (EHR) in the US has brought a reduction in visits to a doctor's office by more than 25%, a drop in medical errors by 57%, with one study also showing an 88% fall in cardiac-related deaths.[28] EHRs are about recording in digital format the patient's health information, including medical history, medication and allergies, immunisation status, laboratory test results, radiology images, billing information, et cetera. They are built to share information with other healthcare providers, such as laboratories and specialists, so they contain information from all the clinicians involved in the patient's care.

Several studies demonstrate substantial gains from implementing EHR systems, which go from savings in administrative time and prevention of errors to the avoidance of duplication of analysis.[29] However, most of the gains are related to the exchange of information between different providers and therefore the current patchy diffusion of EHR hampers reaping their full gains.

A comprehensive study finds that integrated information systems within hospitals lead to a decline in medical errors by up to 81%, in addition to a reduction in unnecessary lab tests, shorter average stay in hospital and lower mortality rates.[30] Another important e-solution is the ePrescription, which several countries around Europe have started implementing, cutting time and costs.[31]

Some of these investments in technology are contingent upon other investments made elsewhere in the supply chain of healthcare. In order to reap the full efficiency of new technologies, complementary investment in entire solutions should also be made so that stronger synergy effects can occur. For example, European healthcare authorities have invested in modern ICT

25 Konczal *et al.* (2012).
26 See for example Fujisawa and Colombo (2009).
27 The use of ICT in healthcare, however, is claimed to benefit the system mostly in the long run as there are many fixed start-up costs in terms of implementation but also educating appropriate workers dealing with the ICT process.
28 Murray (2014).
29 Neupert, P. and Mundie, C. (2009).
30 Danzon and Furukawa (2000).
31 Positive examples include the Diraya EHR system in Andalucia: an integrated EHR system for the whole region, including pharmacies, primary healthcare providers, specialised outpatient providers and hospital emergency care, which has allowed a 15% reduction in primary care visits. Another example of digital prescriptions is available in Estonia, where the system has reached over 750 000 ePrescriptions in two months from the adoption.

technology for internal communication purposes and for medical records. At the same time, however, several OECD evaluations show that they have made far less ICT-related investment to manage workflows, patients and sharing medical information with the purpose of affecting the way healthcare inputs are combined. Investing in both measures will have greater effects on expenditure as the two are found to be in large part complementary.[32]

Technological investment is critical for healthcare systems to reinforce patterns of specialisation in healthcare. Such investments also allow for more cross-border trade in healthcare goods and services, and other goods and services used in healthcare, in order to add further strength to the forces of specialisation and the capacity to afford specialisation. Trade will be critical for healthcare systems as they evolve towards higher degrees of specialisation with the view to improving healthcare quality and productivity at the same time. Market scale is one important component in this development: every healthcare system needs to be able to pool resources between countries in order to make future healthcare affordable. The smaller the market gets, the more expensive it will be to foster specialisation.

2.4 TTIP AND HEALTHCARE: A FORWARD-LOOKING AGENDA

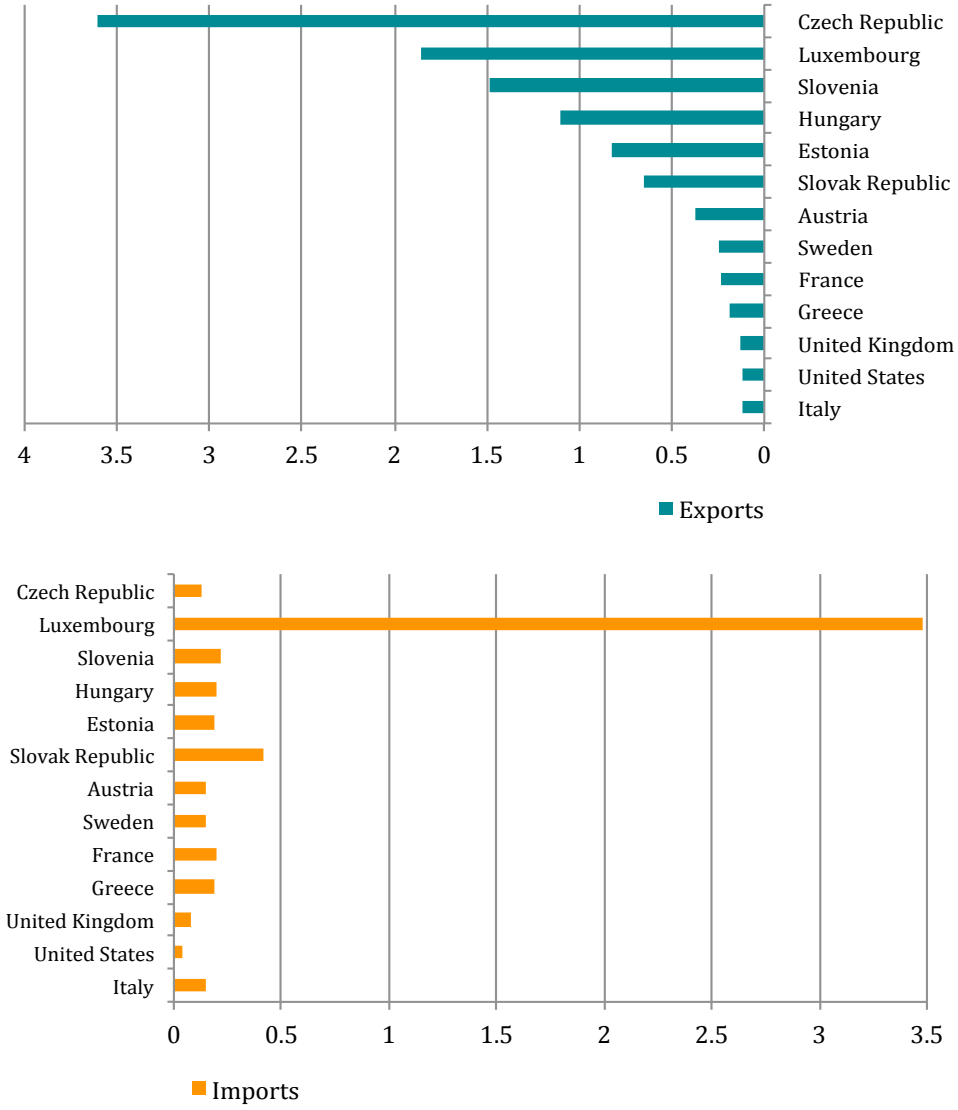
Trade is about using different factors of endowment and encouraging different patterns of specialisation to integrate with each other. The way most sectors in the economy, if not all, capitalise on the use of foreign endowments is by moving towards greater fragmentation of production processes and tasks, which was discussed above. Although this process is visible in some segments of the healthcare sector, it is far from being as clear as in other highly specialised services sectors. Better use of physical resources and medical technologies, on the one hand, and a greater division of labour in the healthcare sector, on the other hand, is critical to achieving this goal. Yet only by lowering barriers to trade and a greater use of technology, can it be reached.

However, there is a long way to go in this direction. Trade in healthcare services is increasing, but still represents a marginal part of health expenditure. Imports are above 1% of healthcare spending in only a few OECD countries (Iceland, Portugal and Luxembourg), as shown in Figure 1. Similarly, exports are above 1% of health spending only in a handful of countries: Czech Republic, Luxembourg, Slovenia and Poland.[33]

The low trade figures in healthcare services can partly be explained by the fact that the health sector still represents a so-called non-tradable. Many other services sectors shared that experience in the paper, yet most other services are today different due to the extended use of ICT and other technology innovations (which have extended the scope of services generally) and changing policy. The latter factor plays a considerably larger role in explaining why health services today are still traded relatively infrequently. Policy regulations that prevent healthcare from being traded vary from tariffs on medical devices through more regulatory issues such as bottlenecks in the logistics management of the healthcare supply chain.

32 The state of the implementation of this kind of solution in EU countries in 2011 is summarised in Annex 2, presented in the eHealth Strategies Report 2011 published by Directorate General Information Society and Media.
33 OECD (2013b).

FIGURE 1: EXPORTS AND IMPORTS OF HEALTH-RELATED TRAVEL AND OTHER HEALTH SERVICES AS SHARE OF TOTAL HEALTH EXPENDITURE, 2011 (%)



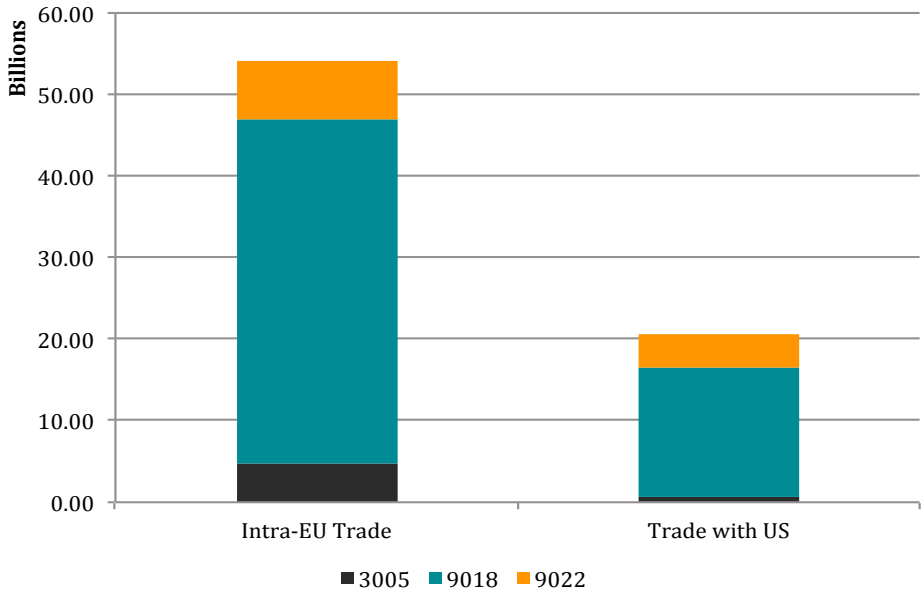
Note: Health-related exports occur when domestic providers supply medical services to non-residents.
Source: OECD (2013b)

Trade in healthcare services in Europe may see some growth as a result of an EU Directive adopted in 2011 which supports cross-border patient mobility within the European Union. The adoption of the eHealth Action Plan 2012-2020 also goes in the direction of greater mobility, representing a roadmap for increasing use of technological solutions in the EU. Further steps should be taken to allow for innovation in healthcare delivery, e.g. by using telehealth solutions that allow for home healthcare and other more cost-efficient ways of delivering the healthcare service. TTIP negotiations represent a significant opportunity to increase the scope of the Directive and step up collaboration between the EU and the US, especially in light of the EU-US

Memorandum of Understanding on eHealth/Health IT signed in 2010. This seeks to facilitate more effective use of health-related ICT by promoting interoperable eHealth systems and skills between the two regions.

Related to trade in medical goods, the EU and the US have a shared interest in promoting exports of medical devices to each other's markets given that they are the world's two largest developers and producers of medical equipment. The EU and the US are already trading significantly between them (see Figure 2), but still there is significant scope for lowering the costs of trading.

FIGURE 2: EU TRADE ON MEDICAL GOODS, 2012



Note: The product codes refer to the HS 2012 classification. 3005: Wadding, gauze, bandages and similar articles (for example, dressings, adhesive plasters, poultices), impregnated or coated with pharmaceutical substances or put up in forms or packings for retail sale for medical, surgical, dental or veterinary purposes. 9018: Instruments and appliances used in medical, surgical, dental or veterinary sciences, including scintigraphic apparatus, other electro-medical apparatus and sight-testing instruments. 9022: Apparatus based on the use of X-rays or of alpha, beta or gamma radiations, whether or not for medical, surgical, dental or veterinary uses, including radiography or radiotherapy apparatus, X-ray tubes and other X-ray generators, high tension generators.
Source: WITS Database, ECIPE calculations

While tariff barriers are zero in a wide range of medical and surgical appliances, barriers still do exist in certain product chapters. Even if these are low, they nevertheless depress trade by requiring tariff administration for both exporters and importers. Moreover, non-tariff barriers are significant in the healthcare sector. A recent study published by the European Commission based on a survey to business representatives shows that the exports of 'Medical, Measuring and Testing Appliances' face significant NTBs, both from the US and the EU and vice versa.[34]

34 European Commission (2013).

The US and EU regulatory frameworks for medical devices – even though similar – differ in several aspects: classification of devices, pre-market controls, product supervision, traceability and further requirements outside primary law – which include restrictions on the use of certain hazardous materials and substances and different rules on producer responsibility for waste from medical devices or electrical safety requirements.

What are the implications of trade barriers such as these for TTIP? Trade and investment policy is essentially about deregulating the flows of cross-border commerce, leading to a better utilisation of factor endowments, especially through specialisation. Trade policy today is also about other issues that go beyond the flow of goods and services. It also concerns general behind-the-border policy conditions for a natural progression of exchange based on the same dynamics that guide trade flows. Trade policy, especially bilateral trade agreements, is also about building institutions and improving the quality of institutions that affect trade. These three factors – *deregulating the flows of trade*, *improving the domestic policy conditions for combining factor endowments across borders*, and *improving the quality of institutions affecting trade* – should be part and parcel of the TTIP negotiations.

These are important aspects of the European TTIP agenda for two reasons – both of which connect trade with Europe's broader healthcare challenges. *First*, given the role of the US healthcare sector in European healthcare (especially through technology and innovation), Europe has much to gain from improving the flows of trade between Europe and the US. There are several economic challenges for European healthcare that cannot be addressed by trade and investment policy. Given Europe's policy restrictions in issues related to the political organisation of healthcare (these issues are not subject to trade negotiations), it is even more important that Europe improves the way that input factors (especially human capital and technology) cooperate and are combined. Cross-border integration is a central element of such improvement.

Second, Europe has a strong interest that the world of trade policy begins to build up ways for better global healthcare integration. It is unlikely that Europe will find a better starting point for such a process than together with the United States, which, like Europe, represents a very big part of global production of tradable healthcare inputs. The next section will map the key trade and investment issues that TTIP should address.

Deregulating flows of trade and investment

1. Tariffs

Tariffs on medical devices, healthcare technology or pharmaceuticals are not high in Europe or the United States. But there still are some and they depress trade disproportionally for the simple reason that they still require tariff administration for both the exporter and the importer. TTIP should establish full tariff elimination on all medical input goods.

2. Limitations in service market access

There are several limitations to market access for healthcare services – and they span different modes of delivery of healthcare services as well as services such as pharmacy and health insurance. Foreign suppliers of healthcare services should have access on the basis of non-discrimination and national treatment. Consequently, if countries have opened up healthcare services for competition there should be no restriction on participation by foreign providers. Nor should there be restrictions prejudicing the mode of delivery – e.g. restrictions on establishment or use of subsidiary. Equally important, home or local content restrictions should explicitly be prohibited.

3. Limitations in investment market access

There are plenty of restrictions on establishment in various fields of healthcare services. They range from economic needs tests to pure discrimination because of the nationality of an investor or firm. The basic principle of national treatment should apply and bureaucratic procedures to deter investment competition should be eliminated. If countries have closed elements of the healthcare sector for private enterprise then those rules should apply. But for parts of the healthcare market that are not public or closed for competition, the same rules should apply for everyone.

4. Limitations due to the nationality of professionals

Several countries, including European countries, restrict market access for professionals if they do not have EU nationality or come from an EEA country. Several other countries also apply tests to determine access for a foreign professional on the basis of national occupation shortages. Market access restrictions for healthcare professionals should be eliminated.

Improving behind-the-border policy conditions for trade

1. Regulatory harmonisation and mutual recognition agreements (MRAs)

Even if tariffs on health goods are low, there are big differences in regulations between Europe and the United States that raise the cost of trade. Regulations are necessary to ensure high quality and safety for patients and providers, but it is important to avoid regulatory duplication costs and unnecessary hurdles when regulations aim to achieve similar outcomes. As medical technologies are often the channel of cooperation between healthcare providers, it is critically important for the economic sustainability of healthcare that various behind-the-border restrictions on technology and the use of technology for cross-border healthcare are taken away, i.e. by agreeing on common regulations or regulatory standards.

The exact design of the mechanism to reduce non-tariff barriers is different between (and sometimes within) sub-sectors of healthcare. But they include regulatory harmonisation, MRAs, and greater cooperation between government agencies in charge of inspections, control and conformity assessments. Efforts to reduce such regulatory barriers to trade should also improve policy in the EU and US. In some areas of health goods, there are different regimes as far as product certification is concerned, despite the existence of a Europe-wide system of certification. Furthermore, it is important that government agencies are instructed to cooperate much more closely on future changes in regulations.

Regulatory convergence for medical devices is under way within the International Medical Device Regulators Forum 59, set up in 2011 to replace the Global Harmonisation Task Force. Its participating regions (US, EU, Canada, Japan, Australia, Brazil, China and Russia) recently endorsed key definitions for software that are medical devices. However, TTIP negotiations offer a unique opportunity to set the basis to put forward the harmonisation agenda on medical devices.

2. Transparency and disciplines in government procurement

Many healthcare goods and services are purchased by public authorities. Government procurement remains in many ways a poorly organised area that is prone to discrimination and manipulations to favour a local producer. It is often non-transparent and significant parts of government healthcare procurement remain uncovered by procurement codes that ensure competition. Such behaviour has direct consequences for reaping the gains of trade and should be disciplined.

3. **Disciplines on state-owned enterprises**

Given the high degree of public-sector involvement in healthcare there are several incidents of state-owned enterprises (SOEs) or state-supported enterprises (SSEs) competing in open markets in a way that is distorted. When enterprises with public-sector ownership and support compete with private players, it is important that they are not able to use state advantages in order to squeeze out competition.

4. **Cross-border data portability**

Increasing healthcare cooperation requires much greater transfer of data across borders. There has to be a stable framework for data portability that does not fragment the EU and US healthcare sectors, because that will immediately hit the opportunities for building scale in healthcare delivery.

TTIP negotiations offer a unique opportunity to set the basis for healthcare systems interoperability between the two regions and put forward the harmonisation agenda on medical devices. The establishment of clear guidelines could set the basis for an interoperable system and increase confidence among physicians and patients, and promote tradability of health services through telemedicine both at primary care level and at more specialised levels.

Moreover, collaborations between European and US companies could be fostered for the implementation of EHR systems, as well as other health information systems that would make hospital administrations more efficient. Action in this regard should be prioritised, as these isolated cases of development and implementation of EHR solutions might create real challenges in the interoperability among different countries.

Improving the Quality of Institutions

1. **Fair and equitable treatment in government procurement**

Reimbursement policies are central elements of the healthcare sector. While it is the right of governments to negotiate their contracts with suppliers, there have been profound changes in the way that governments operate, leading to non-transparent ways for changing reimbursement policies and applying such policies arbitrarily. Like other new trade agreements, e.g. the FTAs that both the EU and the US have with South Korea, there should be disciplines on the transparency and arbitrariness of reimbursement policies.

2. **Intellectual property rights (IPRs)**

The quality and integrity of IPRs are challenged more in emerging economies than in Europe and the United States. There are differences, however, in regulations associated with IPRs, such as data exclusivity or protection regulations. Greater coordination between the EU and the US in the application of IPRs and the design of complementary regulations would help to facilitate cross-border innovation and greater utilisation of different factor endowments, e.g. for clinical trials.

3. **Customs administration**

Basic elements of trade facilitation like customs administration should be improved, especially cooperation between customs administrations, and between customs administrations and health, transport and other authorities that play a role in ensuring that goods can be cleared swiftly in customs. Patients and healthcare providers cannot afford to have life-saving medicines and devices delayed by outmoded, non-transparent customs procedures.

3 APPROACHING TRADE IN HEALTHCARE SERVICES

Trade in healthcare services extends beyond the world of trade in input services. Ideally, it should also involve the performance of the healthcare service. For Europe, the quest for more efficient use of existing resources through trade relates directly to the broader political ambition to deliver affordable and high-quality healthcare for all. During the crisis, many European governments have cut healthcare expenditures or introduced new measures to limit their growth. Many of these new measures have built on past efforts of *cost containment*.

There are several methods of cost containment that help to improve the performance of healthcare systems. Mechanisms to ensure comparative economic effectiveness, or health-technology assessments, help to improve the use of resources when such methods of cost containment are transparent and premised on the ambition of increasing efficiency rather than just lowering healthcare spending. However, far too few cost-containment measures in the past qualify on that score. Nor are they fit for that purpose. Importantly, they cannot help governments to control future pressures on expenditures without severe impacts on access to healthcare or the quality of healthcare. Cost containment measures are insufficient tools for controlling spending, partly because they only address a limited part of healthcare spending. The typical programme to contain cost targets spending on pharmaceuticals and medical devices – and as they represent only a small fraction of total healthcare expenditures it becomes impossible to achieve meaningful reductions.[35] Countries like Germany and the United Kingdom spend about 15-17% of total healthcare expenditure on pharmaceuticals: a reduction in that part of a healthcare budget will have little effect if the rest of the budget continues to grow at trend.

This is where many European governments find themselves right now – they cannot push cost containment farther without imparting damage to the quality of healthcare and to health outcomes. Reductions in healthcare spending on pharmaceuticals and medical devices have already caused undesired and unintended consequences, as new products are not being introduced in certain countries. Importantly, for cost-containment strategies to stand a chance in denting aggregate healthcare spending, or its growth, they need to target staff costs and not just inputs. Obviously, such a strategy would reinforce the negative impact of cost containment on the quality of healthcare and health outcomes.

Cost containment has also proven to increase healthcare inequality. Cost containment disproportionally affects low-income and non-urban patients with little real or effective access to alternative supply of the healthcare denied by public authorities. Governments that have reduced investments as a strategy to reduce healthcare expenditure are also treading a dangerous path. An ageing capital base in healthcare has consequences for healthcare quality. It prevents healthcare operators from naturally substituting labour-intensive production with more efficient capital-intensive production, leading over the medium term to bigger rather than smaller healthcare expenditures to produce the same amount of healthcare. Not only would these measures hamper access to and the quality of healthcare, but they would also increase medium- and long-term costs to the society due to untreated people requiring more healthcare and being less productive. For Europe's healthcare system to become financially sustainable there will have to be a significant increase in the efficiency of healthcare production if it is to avoid spending far more resources on healthcare. Healthcare expenditures as a share of GDP will go up anyway, and it is natural for it to do so as societies become richer and change their demand for healthcare. Yet leveraging the power of international trade to improve resource efficiency is one way to make Europe's healthcare economically sustainable. For Europe to be able to have better control over future increases in expenditure, what are necessary are measures to improve the use of resources. And that is the essence of trade.

35 Graves (2011).

This chapter will map some of the key economic aspects of European healthcare systems that are susceptible to improvements by international trade and division of labour – or, to be more precise, the equalisation of factor endowments that trade supports. Consequently, this section does not offer an exhaustive review of all identified economic problems within the healthcare sector in Europe. Nor will it put emphasis on explaining differences between various healthcare systems in Europe. Its purpose is to describe generic economic characters of healthcare that connect with known qualitative economic effects of trade. Importantly, this chapter is not premised on a radical overhaul of European healthcare systems towards a private system. On the contrary, it takes as given that European governments will maintain its current structure of financing healthcare in a universal system. It makes the point that for such healthcare systems, which do not build private financing into healthcare, it is even more important to use the benefits of trade.

3.1 SUPPLY RESTRICTIONS AND VARIATIONS IN HEALTHCARE

Many European countries suffer from supply constraints. Some of them are reflected in the shortage of certain healthcare professionals or long waiting lists for a number of operational procedures. While the extent to which the supply of healthcare services is efficient depends on several factors, inputs into healthcare systems can tell us one aspect of supply capacities. Inputs necessary for the production of healthcare are observable across countries and are directly related to an economy's factor endowments. Each healthcare system utilises a set of capital and labour in order to supply one unit of healthcare. In general, one can expect these sets of factor endowments to be more or less similar across European economies and the US since they all have a reasonably developed healthcare system and share an equal level of healthcare services.

However, Table 2 below shows that this is not necessarily the case. Looking at column 1, it shows the capital-labour ratio in the healthcare sector for various European countries (US data was not obtainable) for the year 2011. A standard and convenient proxy for capital (K) is the number of 'beds' as capital dedicated to healthcare or hospitals is often a complex variable. The input labour is represented by the number of physicians in each country. The ratio shows that there is substantial variation between the countries listed. For instance, whereas Poland has a high ratio, which means that it *relatively* employs a lot of capital, Italy uses *relatively* much more labour in the production of healthcare. This variation of the input ratio remains even if we use different measures for healthcare professionals. For instance, column 2 shows the ratio when accounting only *specialised professionals* as a proxy for labour.

Another indication of supply variation is the relation between the number of physicians and professional nurses, which varies substantially across countries. This is shown in column 3 and 4 of the table below. Here the ratio of professionally active nurses (column 3) and all professional nurses currently active (column 4) is taken against the number of physicians. A country such as Ireland or the US has a great number of professionally active nurses for each physician, which means that the scope of substitution effects is greater.

TABLE 2: SUPPLY OF FACTORS AND CAPITAL INTENSITY IN THE HEALTHCARE SECTOR ACROSS EU COUNTRIES AND US

	K/L	K/L (spec)	Nurses (1)	Nurses (2)	Hospitals (mln.)	Capital Intensity
Austria	1.59	3.16	-	1.4	32.4	0.75
Czech Rep	1.88	2.38	-	-	24.3	0.46
France	2.08	3.66	2.8	-	41.4	0.65
Germany	2.15	3.71	2.4	2.3	40.3	0.64
Hungary	2.43	-		1.7	17.3	0.51
Ireland	1.10	2.14	4.6	-	25.1	0.75
Italy	0.84	1.09	1.5	-	19.5	0.66
Poland	3.00	3.70	2.4	2.4	25.1	0.63
Slovakia	1.85	2.42	-	-	25.9	-
Spain	0.78	1.32	1.4	1.3	17.0	0.70
UK	1.05	1.48	-	2.5	-	0.68
US	-	-	3.6	-	-	0.75

Source: OECD (2013) and own calculations based on EUKLEMS

The quantity of input supply in the healthcare sector is inevitably reflected in the way healthcare is produced. This is shown in the last column of Table 1 where the usage of capital in healthcare is provided. Yet two observations are detectable that show that there are also inefficiencies visible *within* a certain type of factor. First, although the capital intensity of healthcare production is more or less similar across some countries such as Austria, Ireland, Spain or France, the factor supply among these countries nonetheless varies substantially. Moreover, some countries such as the Czech Republic and Spain show a relatively low factor supply of capital, but a high capital usage in the supply of healthcare services. Generally, *it shows that factor endowments vary across countries* and that their employment is not always carried out in the most efficient way.

Supply inefficiencies are also observable within labour used in healthcare systems. Supply restrictions of labour within healthcare mean that countries often experience a shortage of professional healthcare workers for many healthcare procedures. As one would expect, supply shortages have effects on the price of healthcare services. Studies by the OECD, for instance, have found huge differences in remuneration for physicians and specialists across OECD countries.[36] In technical jargon, this means that the supply of these healthcare professionals is heterogeneous across countries. These supply conditions cannot explain the entire variation in income. Yet the huge wage variation between providers is also a powerful incentive for trade. It is obvious that OECD countries combine factor endowments differently and move their degree of healthcare specialisation in different directions, leading to significant price differentials between countries for various treatment classes.

Before moving our focus back to trade, it is important to understand what healthcare systems do to *compensate for the absence of trade*. One policy response to the costs associated with non-specialised treatments in a country has been to allow for what could be called 'internal outsourcing', most commonly by substituting the work of a physician with other healthcare labour, e.g. nurses, that is licensed to perform certain tasks that the physician can easily outsource. In reality, however, there are supply constraints that hold up such natural substitution within a healthcare system.

36 Fujisava and Lafortune (2008).

For instance, there is not an excess supply of nurses that are available to substitute physicians. An oft-referred study found that the US does not produce enough professional nurses to meet its own demand, which is why nurse immigration is growing. Several countries in Europe have a shortage of nurses. The source of the problem is partly the limited expansion of graduate nurse education, partly the limited interest among young people to choose the profession of a nurse.

Another supply inefficiency is the current supply of technology in many European healthcare systems. When substantial investments are made in technology without fully utilising it, there is often an upward pressure on total healthcare expenditures. Capital dedicated to technological equipment such as CT or MRI scanners obviously has the highest rate of return when it is employed to its maximum capacity. Regardless of whether this is true for each hospital within a country, Table 3 below shows that there is substantial variation in the investment of CT scanners among European countries, and between the European average and the US.

TABLE 3: MEDICAL TECHNOLOGY VARIABLES

Country	CT Scanners (per mln.)	MRI Units (per mln.)
Austria	29.77	19.1
Czech Republic	15.03	6.95
France	13.49	8.65
Greece	33.89	23.41
Hungary	7.66	2.82
Ireland	18.27	13.59
Italy	33.27	24.57
Poland	15.21	5.42
Slovak Republic	15.53	6.29
Spain	17.1	14.75
Switzerland	36.92	--
United Kingdom*	8.95	6.9
United States	43.44	35.46

**Estimate*

Source: OECD (2013)

Variation in technology penetration is important for understanding the role of trade in healthcare. One explanation behind the variation is that some countries are *relatively* 'over-investing' in these inputs while other countries with, for instance, low levels of CT scans are *relatively* 'under-investing'. Variation, however, is not surprising. All production of services show great degrees of variation in the use of technology and endowments. Often, these patterns tend to follow general advantages of a country or a region. But such patterns can be altered by policy choices made by governments and the way that other production factors perform.

However, 'over investment' or 'under investment' is generally not an economic problem, provided that there are factors to help countries to complement investment and access necessary technology by other means. This is why trade is important. The problem right now in a substantial part of the healthcare sector in Europe is that supply restrictions almost inevitably lead to structural shortages – that patients do not get their treatment, or do not get it in a timely manner – and that different regions, or hospitals, do not engage as much as they should do in productive cooperation with each other.

There are some promising trends of specialisation within national healthcare sectors that are combined with internal trade. However, they are currently only promising trends, not established practices or norms, channels of trade that can utilise supply variations. Countries tend to make permanent the effects of supply restrictions. It also lowers the potential gains from expanding the type of healthcare services that are already produced comparatively efficiently and where endowments suggest a greater use to drive down the unit cost of production. The consequence is that healthcare systems get trapped in combinations of healthcare production that lower the efficiency of resources. If the factor endowments could move more easily across borders, the depressing effects of the supply constraint would naturally ease.

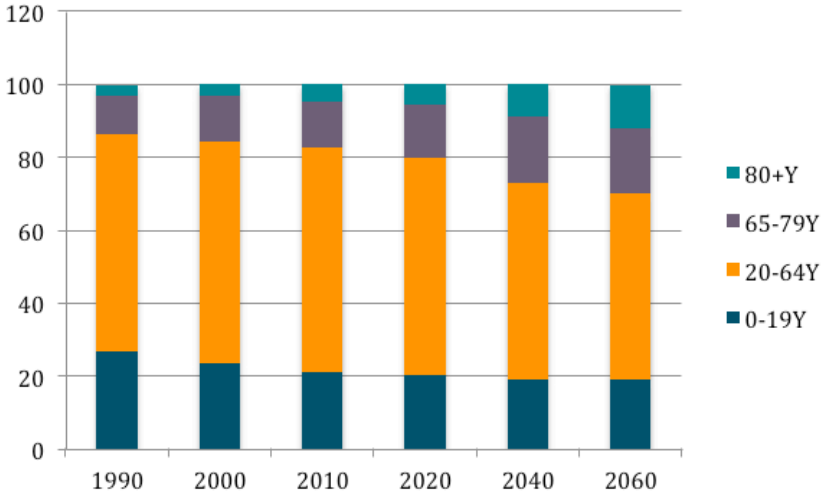
The variations in the supply of capital, labour and technology outlined in this section show that in addition to mere expenditure reduction on these inputs, *efficient employment of these inputs across borders would lead to a better use of resources*. Like other capital-intense services that are based on high-skilled labour, the ability to combine domestic resources with foreign ones is crucial to avoiding inefficiencies that drive up prices or aggregate expenditures. This point is important and should be emphasised because *European healthcare authorities have reduced the growth of technology in the healthcare sector in the past years*. This happens in a healthcare system that shows comparably low technology-intensity when compared to other countries.

3.2 DEMAND VARIATIONS IN HEALTHCARE

One of the factors behind rising healthcare expenditures in the future is ageing – or, more precisely, that a growing part of the population will get very old and demand more healthcare at the same time as the demographic tax base is predicted to shrink. High unemployment rates also negatively affect the dependency ratio, the ratio between the number of people who work and the number of retired people.

This demographic trend is likely to place an upward pressure on demand as illustrated in Figure 3. This figure shows the demographic development up to 2060 for EU27 members. Between 2010 and 2060, the share of the population above 80 – an age group with high healthcare demands – will double. The share of population in retirement (above 65) will expand at a similar rate, while the share of the population in working age will be reduced by ten percentage units.

FIGURE 3: POPULATION AGE STRUCTURE BY MAJOR AGE GROUPS, EU2



Source: Eurostat, own calculations

Other indicators also confirm the expansion of healthcare demand. Table 4 below presents alternative variables of demand (keeping in mind that data is extremely scarce and can only be presented over a short period). As the table shows, in most European countries the number of consultations, inpatient care discharges, or diagnosis executed using new technology such as CT scans has gone up when measured as the average yearly growth rate. This seems less the case, however, for the number of bed days, reflecting deliberate strategies to economise out-tient care.[37]

TABLE 4: AVERAGE ANNUAL GROWTH RATE OF ALTERNATIVE INDICATORS OF HEALTHCARE DEMAND

	Outpatient Consultations in hospital	Number of inpatient care discharges	Number curative care bed days	Number of Computed Tomography exams, total
Austria	-	3%	0%	-
Belgium	-	-	-	5%
Czech Rep	-	1%	-	-
Finland	-	-2%	-2%	-
Germany	-	3%	-1%	-
Ireland	-	1%	-	-
Poland	5%	3%	-	-
Portugal	6%	1%	-1%	-
Slovakia	-	2%	-3%	12%
Slovenia	-	1%	-	-
Spain	3%	3%	-	-
Sweden	-	-1%	-	-
UK	-	0%	-	-
United States	-	-	-	9%

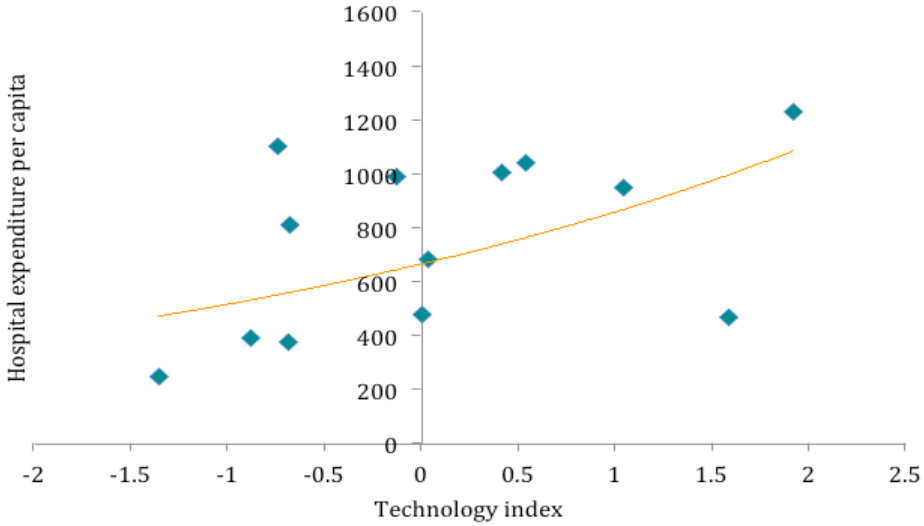
Source: Own calculations based on OECD (2013). Numbers refer to the development between 2000 and 2011, except for the number of curative discharges, which is for 1990-2011.

Factors other than demographic changes that increase healthcare demand include advancement in medical technology and rising demand for higher-quality healthcare due to higher incomes and other socio-economic factors. When technology advancements have the effect of offering opportunities for treatments that did not exist before, such investments tend to push up healthcare expenditure as mortality rates fall and morbidity rates, the prevalence of certain diseases, tend to rise. At the same time, demand tends to increase indefinitely because of expanding patients' expectations for more and better services that exploit the latest medical technologies and the best expertise. This explains why pressures continue to rise despite increases in the number of specialists and technology advancements available as shown in Figure 4.[38]

37 Most probably, the fall in the number of curative care bed days is associated with the increasing use of medical devices which allow for remote monitoring of patients' conditions as well as remote treatment compliance solutions.

38 Boston Consulting Group (2012) data for five European healthcare systems show that the number of specialists grew by almost 25% between 1995 and 2004 compared with an unchanged number of general practitioners. At the same time, the number of CT scanners available grew from 11.2 per million people to 14.4.

FIGURE 4: THE RELATIONSHIP BETWEEN HOSPITAL EXPENDITURES AND TECHNOLOGY (2011)



Note: the technology index is derived from a principle component analysis (PCA) using the technology variables from the OECD (2013). Hospital expenditures per capita are in current PPP (purchasing power parity) (2005) rates (HC.1-HC.9)
Source: Own calculations based on OECD data

However, the story around technology is not as simple. There are plenty of technological advances that ease pressures on healthcare expenditure, and the more adaptive that healthcare systems are to technology and a changed combination of endowments, the bigger the benefits of new technology tend to be. For instance, this is the case of new medical devices and mobile applications that focus on prevention, self-care and remote monitoring, which are generally referred to as mHealth solutions. Such technology helps to substitute for existing costs, and there is a strong case to be made for European healthcare systems to improve their technology and IT performance as a strategy to control the growth of aggregate expenditures. Equally important, it is necessary to build better strategies for the use of technology that does not substitute for existing costs but rather are deployed to improve the quality of healthcare. Trade within and between countries is such a strategy.

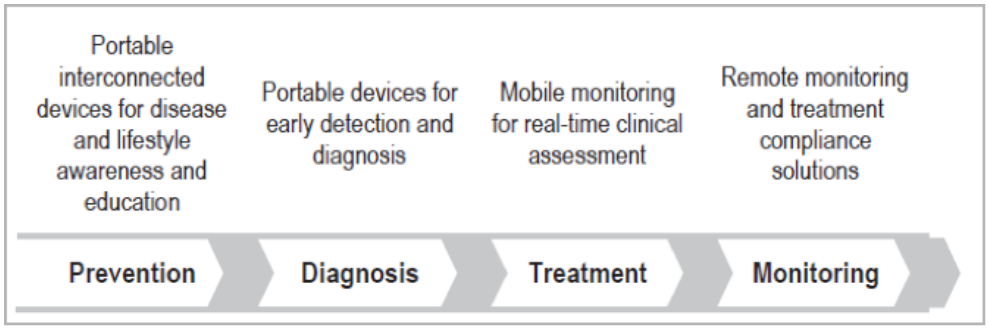
One conclusion that can be drawn from this discussion is that the demand structure in each country is not the same. In fact, although the demographic changes between the EU and the US will be more or less similar in the near future, demand for individual treatments is likely to differ. All countries are not going to experience their healthcare demand moving at a similar pace, or in exactly the same direction, even if the aggregate trends for income, age and other factors are shared between countries. This variability of demand is also found in a recent OECD study that examines on a cross-country basis the utilisation rate of a selection of surgical procedures. Natural variability in demand of healthcare services across countries is a powerful source of trade, especially when there are supply restrictions.[39]

Technology creates incentives for trade between countries with different technology levels but it also represents a critical enabler of trade – in the sense that it allows a better match of supply and

39 Variability of demand is also found in McPherson (2013). The study by the OECD examines on a cross-country basis the utilisation rate of a selection of surgical procedures.

demand.[40] The combination of factor endowments would in fact be eased by the expansion of new technology for communication in healthcare, e.g. eHealth solutions. These solutions allow patients and other actors to seek faster contact with a healthcare professional and, often, to get cheaper access to quality treatment from providers in third countries. Furthermore, they could enable professionals to assist more patients and increase access to healthcare. This is true not only in relation to services which involve physical movement of patients, but also to all those trade interactions involving remote delivery and diagnostic services provided by a practitioner in a third country. That is, for example, the case of telehealth solutions (such as tele-surgery and tele-radiology, tele-echography, but also video consultations in areas such as dermatology, pregnancy, gynaecology, fertility and psychology) and applications of remote monitoring through mobile devices. There is an all-new generation of medical devices and mobile applications that work in this direction. As Figure 5 illustrates, so-called mHealth approaches allow patients to access a wider supply of healthcare.

FIGURE 5: APPLICATIONS OF MHEALTH



Source: OECD (2013a) adapted from PricewaterhouseCoopers (2012),'Touching Lives through Mobile Health: Assessment of the Global Market Opportunity', GSMA, February, www.gsma.com/connectedliving/wpcontent/uploads/2012/03/gsmapwctouchinglivesthroughmobilehealthreport.pdf.

4 CONCLUDING COMMENTS

The European healthcare sector will change as populations continue to age and as people demand more and better healthcare services. In several countries, the healthcare system is not prepared for the future, and governments will have to struggle to address patients' needs and capacity limitations in order to avoid sharp increases in healthcare expenditures unless enhancements are made. Current approaches to control costs are not fit for that purpose – and they will lead to increasingly inequitable healthcare and health outcomes.

Encouraging healthcare providers to reap the benefits from trade and investment is essential to making future healthcare more efficient, equitable and affordable. The same factors that determine trade – combinations of different factor endowments – are already at play in national and regional healthcare systems. But they are limited and provoke outcomes that are far from optimal. The process of specialisation in the healthcare sector becomes more difficult and leads to less-efficient outcomes when factors of specialisation are limited by trade restrictions. It is critical for improving health outcomes that these restrictions are alleviated. Medical progress runs on the dynamic of specialisation and artificially fractured markets have a direct impact not only on the cost of trade but also how healthcare systems organise the process of specialisation.

40 The role of different technology levels in bilateral trade is studied by Lai and Zhu (2006).

For Europe, which places notable importance on the way healthcare is financed and organised, it will be even more important to connect healthcare to international trade as the efficiencies that usually come with market-based organisations do not represent a significant share of healthcare output. Getting the inputs of healthcare – especially human capital and technology – to work better and cooperate across borders will be an essential issue.

The Transatlantic Trade and Investment Partnership (TTIP) offers new opportunities to better integrate the healthcare sector across borders – and to allow for more efficient specialisation in the healthcare sector. TTIP is an opportunity in this regard, simply because much of the work to improve patterns of healthcare specialisation through trade remains to be done and because there has to be a similarity in the standards that are used in the healthcare sector for trade to reach critical volumes. The global quest for improving trade in healthcare goods and services is important, but it is likely to be slow and incomplete because of the big differences between healthcare systems in the world. Trade in healthcare goods and services are easier to address in a context of similarities in regulatory ambitions and structures. Despite the differences between the EU and the US in how they regulate, it is striking how often the regulatory ambitions are identical.

There are direct gains to be reaped by deregulating the flows of trade and investment, reducing domestic policy restrictions to cross-border exchange, and building better institutions for such integration. Equally important, Europe and the United States also have an opportunity to shape a direction of trade and investment policy that also involves other countries in future. This is the key promise of TTIP – and for governments to deliver on that promise they need to put greater focus on healthcare.

Stimulating trade in healthcare is vital to enhance the performance of healthcare services and drive innovation in the future. But it is also important for improving the authority and integrity of trade policy. Far too often, trade policy is focused on issues that do not connect with significant economic benefits. For new trade agreements to deliver benefits and be feasible, they need to connect with key economic challenges. The quest for efficient, equitable and affordable healthcare for all is such a challenge. This political desire is already challenged in Europe. According to current trends, healthcare will neither be universal nor of high quality for many European countries if solutions are not found now. Trade is no panacea, but it is a critical part of improving the use of healthcare resources and, ultimately, delivering on the promise of better healthcare for people everywhere.

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ANNEX

TABLE 1: SUPPLIERS AND SUPPLY CHAINS IN THE OPERATING ROOM

Anaesthesia and cardiopulmonary equipment	Name of contractor, headquarters' location	Origin	Cross-border activities
ECMO set	Maquet (A), Germany	Germany	Foreign subsidiary, imports of goods
ECMO supplies	Maquet (A), Germany	Turkey	Foreign subsidiary, imports of goods
Blood parameter monitoring system	Terumo (A), Michigan, United States	United States	Foreign subsidiary, imports of goods
Saturation monitoring system	Medtronic (A), United States	United States	Foreign subsidiary, imports of goods
Blood cardioplegia set	Medtronic (A), United States	United States	Foreign subsidiary, imports of goods
Heart-lung machine supplies	Medtronic (A), United States	United States	Foreign subsidiary, imports of goods
Pressure management set	Edwards Lifesciences (A), United States	United States	Foreign subsidiary, imports of goods
Heart-lung machine	Sorin (A), Italy	Germany	Foreign subsidiary, imports of goods
Blood heater and cooler system	Sorin (A), Italy	Germany	Foreign subsidiary, imports of goods
Retrograde cannulae	Edwards Lifesciences (A), United States	United States	Foreign subsidiary, imports of goods
Acetated ringer	Fresenius-Kabi (A), \ Germany	Norway	Foreign subsidiary, imports of goods
Anaesthesia, Isoflurane	Baxter Medical (A), United States	Puerto Rico, United States	Foreign subsidiary, imports of goods
Electrosurgical generator, diathermia	Covidien (A), United States	United States	Foreign subsidiary, imports of goods
Anaesthetetic work station	Dräger (A), Germany	Germany	Foreign subsidiary, imports of goods
ECG electrodes	3M (A), United States	Canada	Foreign subsidiary, imports of goods
Anaesthestetia, Sevo-flurane	Baxter Medical (A), Unit-ed States	Puerto Rico, United States	Foreign subsidiary, imports of goods
Anaesthestetia, Ultiva	GlaxoSmithKline (A), United States	Puerto Rico, United States	Foreign subsidiary, imports of goods
Artery catherisation set	Vingmed (C), Sweden	United States	Imports of goods
Thermodilution] catheter	Edwards lifesciences (A), United States	United States	Foreign subsidiary, imports of goods
Dressings	3M (A), United states	United States	Foreign subsidiary, imports of goods

Injection	Mediplast (B), Sweden	Taiwan	Imports of goods
Drainage catheter	Mediplast (B), Sweden	Italy	Imports of goods
Cardiology ultrasound	Philips (A), Netherlands	United States	Foreign subsidiary, imports of goods
Heart valve implant	Edwards Lifesciences (A), United States	United States and Switzerland	Foreign subsidiary, Imports of goods
Scalpel	Instrumenta (C), Sweden	Germany	Imports of goods
Forceps	Instrumenta (C), Sweden	Germany	Imports of goods
Scissors	Instrumenta (C), Sweden	Pakistan	Imports of goods
Needle holder	Instrumenta (C), Sweden	Germany	Imports of goods
Dissecting forceps	Instrumenta (C), Sweden	Germany	Imports of goods
Scissors	Stille (D), Sweden	Sweden	No evident cross-border activities
Sterile linen	Medline (B), Sweden	China	Imports of goods
Surgical gloves	Medline (B), Sweden	Thailand	Imports of goods
Sterile gowns	Berendsen (B), Sweden	Japan and Poland	Imports of goods
Monitor set	Multi-Q (B), Sweden	Taiwan	Imports of goods
Operating table	Stille (D), Sweden	Sweden	No evident cross-border activity
Surgical towel	Mölnlycke Healthcare (B), Sweden	Czech Republic	Imports of goods
Wound products	Mölnlycke Healthcare (B), Sweden	Finland and the UK	Imports of goods
Wound dressings	3M (A), United States	United States	Foreign subsidiary, imports of goods
Clips	Johnson & Johnson/ Ethicon (A), United States	Puerto Rico, United States	Foreign subsidiary, imports of goods
Sutures	Johnson & Johnson/ Ethicon (A), United States,	Puerto Rico, United States	Foreign subsidiary, imports of goods

Note: Contractors are divided into the following categories: A: the contractor is a foreign subsidiary, B: the contractor is a Swedish firm with offshore manufacturing, C: the contractor is a Swedish firm acting as a sales agent for foreign manufacturers and D: the contractor is a Swedish firm with substantial manufacturing in Sweden.

Source: National Board of Trade (2011) Cross-border Public Procurement – An EU Perspective. Accessed at: http://www.kommers.se/Documents/dokumentarkiv/publikationer/2011/rapporter/Report%20-%20Cross-border%20Public%20Procurement.pdf

EXHIBIT 1: INDICATOR SCOREBOARD: PATTERNS OF EHEALTH USE IN THE EU

	Electronic storage of patient data		Computer use in consultation	
Country	Electronic Storage of individual administrative patient data	Electronic storage of individial medical patient data	Use of computer during consultation with the patient	Use of a Decision Support System
EU27	4	3.7	3.3	2.3
EU27+2	4	3.7	3.3	2.3
Denmark	4.8	4.8	4.6	3.8
Netherlands	4.9	4.5	4.7	3.7
Finland	5	4.7	5	4.3
Sweden	4.8	4.1	2.4	4.1
United Kingdom	4.8	4.3	4.7	3.1
Belgium	4.2	4.3	3.8	2.5
Germany	4.6	3.2	3.6	3.2
Estonia	4.9	3	4.7	3.6
Hungary	5	4.6	3.2	3.8
Bulgaria	4.7	4.2	3.8	2.1
France	3.7	4.1	3.6	1.5
Austria	4	3.7	2.7	2.1
Spain	3.4	4.1	3.3	2.1
Italy	4.2	3.4	4.1	2.4
Ireland	3.2	3.6	2.8	1.9
Slovakia	4.5	2.6	3.6	3.2
Czech Republic	3.4	3.4	3	2.3
Portugal	3.7	3.2	3.2	2.3
Luxemburg	3.5	3.7	2.9	1.2
Cyprus	2.8	3.8	1.6	0.5
Malta	2.5	3.3	1.4	0.5
Slovenia	4.3	1.4	0.9	1.4
Greece	2.5	3.2	1	0.4
Poland	2.7	2.4	0.5	0.6
Romania	2.3	2.2	1.1	0.3
Lithuania	1.9	1	0.4	0.4
Latvia	1.3	2.3	0.1	0.1
Norway	4.9	4.5	4.7	4.1
Iceland	5	4.6	4.2	3.2

Electronic transfer of patient data				Overall eHealth use	
Trasfer of lab results from the laboratory	Transfer of administrative patient data to reimbursers or other care providers	Transfer of medical patient data to other care providers or professionals	ePrescribing (transfer of prescription to pharmacy)	Average index score	
2	0.6	0.5	0.3	2.1	
2	0.6	0.5	0.3	2.1	
4.8	3	3.7	4.9	4.3	eHealth frontrunners
4.2	1.8	1.3	3.5	3.6	
4.5	0.7	2.7	0	3.4	
4.1	0.6	0.7	4	3.1	
4.2	1.9	1.3	0.3	3.1	
3.7	0.4	0.6	0.1	2.4	eHealth average performers
3.2	0.2	0.2	0	2.3	
2	0.2	0.1	0	2.3	
0.6	0.1	0.1	0	2.2	
0.3	0.4	0.2	0.1	2	
1.6	0.7	0.2	0.1	2	
1.9	0.7	0.6	0.1	2	
1.5	0.2	0.6	0.2	1.9	
0.4	0.1	0.4	0	1.9	
2	0.5	0.1	0	1.8	
0.2	0.1	0.1	0	1.8	
1.2	0.5	0.3	0	1.7	
0.1	0.3	0.4	0.1	1.7	
1.4	0	0	0	1.6	
0.5	0.1	0.1	0	1.2	
0.5	0.2	0.3	0	1.1	
0.5	0.4	0	0.1	1.1	
0.2	0.2	0.2	0.1	1	eHealth laggards
0.5	0.7	0.1	0	1	
0.2	0.2	0.1	0	0.8	
0.4	0.8	0.1	0.1	0.6	
0.1	0	0	0	0.5	
4.4	1.1	1.7	0.1	3.2	
2.6	0.3	0.9	0.9	2.7	