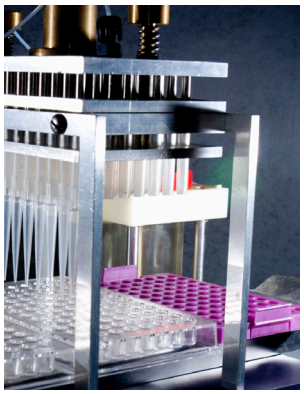
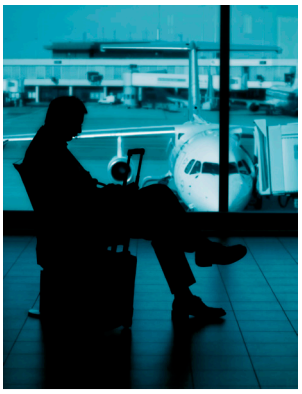
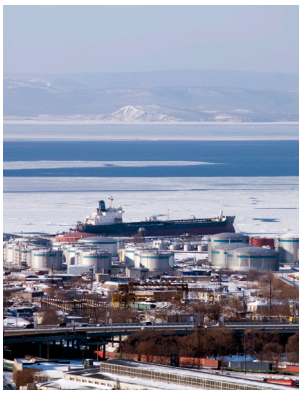
McKinsey Global Institute

May 2012

Trading myths: Addressing misconceptions about trade, jobs, and competitiveness

The McKinsey Global Institute

The McKinsey Global Institute (MGI), the business and economics research arm of McKinsey & Company, was established in 1990 to develop a deeper understanding of the evolving global economy. Our goal is to provide leaders in the commercial, public, and social sectors with the facts and insights on which to base management and policy decisions. MGI research combines the disciplines of economics and management, employing the analytical tools of economics with the insights of business leaders. Our micro-to-macro methodology examines microeconomic industry trends to better understand the broad macroeconomic forces affecting business strategy and public policy. MGI's in-depth reports have covered more than 20 countries and 30 industries. Current research focuses on six themes: productivity and growth, financial markets, technology and innovation, urbanization, labor markets, and natural resources. Recent research has assessed the reducing role of equities and progress on debt and deleveraging, resource productivity, cities of the future, and the economic impact of the Internet.

MGI is led by three McKinsey & Company directors: Richard Dobbs, James Manyika, and Charles Roxburgh. Susan Lund serves as director of research. Project teams are led by a group of senior fellows and include consultants from McKinsey's offices around the world. These teams draw on McKinsey's global network of partners and industry and management experts. In addition, leading economists, including Nobel laureates, act as research advisers.

The partners of McKinsey & Company fund MGI's research; it is not commissioned by any business, government, or other institution.
For further information about MGI and to download reports, please visit www.mckinsey.com/mgi.

McKinsey Global Institute

May 2012

Trading myths: Addressing misconceptions about trade, jobs, and competitiveness

Charles Roxburgh
James Manyika
Richard Dobbs
Jan Mischke

Preface

We have entered an era of widespread public concern that mature economies are in a period of irrevocable decline, particularly in comparison with emerging economies. Policy makers recognize that net exports will need to make a key contribution to growth to counteract the dampening impact of deleveraging on domestic demand, but worry whether this is feasible in light of perceived declining competitiveness. As part of its continuing work on growth and renewal since the global financial crisis, the McKinsey Global Institute (MGI), McKinsey & Company's business and economics research arm, focuses this report on trade and competitiveness in mature economies. It aims to provide a fact base about the current state of competitiveness in the tradable sectors of mature economies and about the impact of trade on jobs and the composition of the economy. Specifically, this report debunks a number of widespread misconceptions—with important implications for policy makers and corporations.

Charles Roxburgh, Richard Dobbs, and James Manyika, McKinsey and MGI directors based in London, Seoul, and San Francisco, respectively, guided this work. Jan Mischke, an MGI senior fellow based in Zurich, led the research project. The team comprised Hyungpyo Choi, Susanne Ebert, Stephan Fretz, Jinwook Kim, John Piotrowski, Outi Simula, and Vivien Singer. The team appreciates the contribution of Janet Bush, MGI senior editor, who provided editorial support; Rebeca Robboy, MGI external communications manager; John Cheetham, external affairs manager for MGI, McKinsey's London office; Julie Philpot, MGI editorial production manager; and Marisa Carder, graphics specialist.

We are grateful for the invaluable guidance we received from Martin N. Baily, a senior adviser to McKinsey and a senior fellow at the Brookings Institution; Richard N. Cooper, Maurits C. Boas Professor of International Economics at Harvard University; and A. Michael Spence, William R. Berkley Professor in Economics and Business at New York University Stern School of Business and a recipient of the Nobel Prize in Economic Sciences in 2001.

This report contributes to MGI's mission to help global leaders understand the forces transforming the global economy, improve company performance, and work for better national and international policies. As with all MGI research, we would like to emphasize that this work is independent and has not been commissioned or sponsored in any way by any business, government, or other institution.

Richard Dobbs
Director, McKinsey Global Institute
Seoul

James Manyika
Director, McKinsey Global Institute
San Francisco

Charles Roxburgh
Director, McKinsey Global Institute
London

Susan Lund
Director of Research, McKinsey Global Institute
Washington, DC

May 2012

The truth ...

0.1% of GDP improvement in mature economies' aggregate balance of trade, 2001–2011

1.3% of GDP trade surplus on knowledge-intensive manufacturing in 2009

0.5% trade surplus on manufactured goods in 2008

…but a **3.3%** of GDP deficit in primary resources trade

$1.9 trillion annual service exports of mature economies

$113 billion trade surplus for mature economies in business services, despite offshoring

... about trade

By closing its entire 2010 current account deficit via manufacturing exports, the United States could bring manufacturing employment back to the levels of **2007**

6 million
net jobs shifted from labor-intensive to knowledge-intensive sectors due to trade

15 million
new jobs in mature economies' knowledge-intensive services, 1996–2006

$173 billion
net service exports by the EU-15
vs. **$129 billion**
for the United States

Contents

Trading myths: Addressing misconceptions about trade, jobs, and competitiveness

Mature economies face multiple—and serious—challenges in the aftermath of the global financial crisis.[1] While each economy and region has its own particular issues, growth remains anemic across mature economies. Government debt has risen to potentially unsustainable levels, unemployment is high, and income inequality is rising. Many mature economies need to pay down high levels of public and private debt. This period of deleveraging is likely to be prolonged, if history is a guide, and will act as a drag on growth.[2]

Many policy makers are, therefore, turning to efforts to boost investment and net exports to sustain growth and employment at a time when domestic consumption is expected to remain weak. Particular hopes and focus rest on the manufacturing sector. Many perceive that ground in manufacturing is progressively being lost to emerging economies. But efforts to stimulate exports face a threat from a growing risk of direct protectionism and actions to weaken currencies to improve competitiveness. The unfortunate failure of the Doha Round is an additional concerning element. Were this risk of greater protectionism to materialize—and the world to engage in tit-for-tat trade restrictions—the global recovery would be imperiled.

It is therefore vital that the political and public debate around trade and its impact be rooted in facts. With this in mind, MGI has analyzed the performance of 17 mature economies in tradable sectors, which importantly include services as well as manufacturing. We find that the reality is often at odds with conventional wisdom, raising important implications for policy makers and corporations. We focus the main body of the analysis on mature economies in aggregate, to see whether there is any predetermined fate common to them, but also point out notable differences. Appendix A provides a brief review of the situation in each of the 17 mature economies we examined.

1 We analyze a group of mature countries that we call “mature economies,” comprising the European Union (EU)-15, the United States, and Japan. This group excludes high-growth Asian Tigers (Singapore, Hong Kong, Taiwan, and South Korea); new member states of the EU; economies that are major exporters of resources (Canada, Australia, and Norway), which face a different set of challenges than those shared by other developed economies; and Iceland, New Zealand, and Switzerland because of a lack of comparative data.

2 MGI research has found that historical deleveraging episodes have been painful, on average lasting six to seven years. See *Debt and deleveraging: Uneven progress on the path to growth*, McKinsey Global Institute, January 2012 (www.mckinsey.com/mgi).

MYTH 1: MATURE ECONOMIES ARE LOSING OUT TO EMERGING MARKETS IN TRADE AND THUS FACE INCREASING TRADE DEFICITS

Reality: The trade balance for mature economies in aggregate has remained largely stable and in fact has begun to improve. Wide variations exist between individual countries, and the gulf between deficit countries like the United States, United Kingdom, and Southern Europe and surplus economies in Northern and Continental Europe needs to narrow. But there is no evidence to support the view that there has been a wholesale deterioration in the trade balance between mature and emerging economies over the past decade. In fact, the balance of trade in goods and services of minus 1.5 percent of GDP in 2011 was slightly better than a decade earlier.

MYTH 2: MANUFACTURED GOODS DRIVE TRADE DEFICITS

Reality: Imports of primary resources, whose prices have been rising sharply, were the largest negative contributor to the trade balance of mature economies. In 2008, mature economies ran a deficit of 3.3 percent of GDP in their trade in primary resources. Even the United States and United Kingdom, two economies with significant domestic oil production, saw a deterioration in their primary resource trade balances over the past decade similar to mature economies in aggregate.

In contrast, mature economies ran a small surplus of 0.3 percent of GDP on all manufactured goods and a significant surplus of 1.3 percent of GDP in knowledge-intensive manufacturing in 2009. Exceptions are the United States, the United Kingdom, Spain, Portugal, and Greece, all of which ran trade deficits on knowledge-intensive manufacturing, and past MGI research has shown the declining US competitiveness in those sectors.[3]

MYTH 3: TRADE IS AT THE HEART OF THE LOSS OF MANUFACTURING JOBS

Reality: The decline in manufacturing jobs in mature economies—and the shift in jobs among sectors overall—is dominated by changes in the composition of demand and ongoing increases in productivity. The share of manufacturing employment in mature economies is bound to decline further, from 12 percent today to below 10 percent in 2030, according to our analysis.

In the case of the United States, the 5.8 million manufacturing job losses from 2000 to 2010 largely reflected ongoing productivity increases coupled with reduced output mostly explained by weak domestic demand after the recession, even when we adjust for widely discussed difficulties in measuring productivity. Historically, rising productivity is accompanied by strong increases in demand and ouput. However, this latest decade was one in which increased productivity coincided with stagnation in domestic demand in real terms as the recession reversed previous increases.[4] According to our analysis, around 20 percent of the decline in jobs can be attributed to trade or offshoring. Closing the entire 2010 US current account deficit of 3.2 percent of GDP by improving the

3 See *Growth and competitiveness in the United States: The role of its multinational companies*, McKinsey Global Institute, June 2010; and *Growth and renewal in the United States: Retooling America's economic engine*, McKinsey Global Institute, February 2011. Both are available at ww.mckinsey.com/mgi.

4 Adjusting for hedonic deflation in electronics.

manufacturing trade balance would be equivalent to approximately 2.2 million more manufacturing jobs—well short of the job losses of the past decade alone.[5]

MYTH 4: MATURE ECONOMIES CREATE JOBS ONLY IN LOW-PAID, LOW-VALUE DOMESTIC SERVICES

Reality: Mature economies continue to create high-value, knowledge-intensive jobs in tradable sectors—but more in services than in manufacturing. From 1996 to 2006, mature economies created 15 million jobs in knowledge-intensive services, a share of them related to increasing exports of knowledge services. Wages in service sectors are comparable when we look at factor intensity, and it is demonstrable that tradable service jobs offer some of the best wages in these economies.[6] In any case, the boundaries between manufacturing and services appear increasingly blurred, as manufacturers move into service-type activities such as sales and customer care that, for instance, accounted for 39 percent of Sweden's manufacturing employment in 2007. And manufacturers build global supply chains of service- and assembly-type activities with strong links to service suppliers. In Germany, service suppliers already contribute 34 percent of the total domestic value added in manufacturing exports. Manufacturing and services appear entirely synergistic.

MYTH 5: SERVICE TRADE IS SMALL, AND EMERGING ECONOMIES WITH LOW-COST TALENT WILL CAPTURE ANY INCREASE

Reality: Service exports already make up one-quarter of the overall exports of mature economies, and that share could rise to one-third by 2030. When we adjust for the high services and import content in manufacturing exports, services value added exported greatly exceeds the manufacturing value added embedded in exports in a number of economies. And, despite fears of offshoring, mature economies are running increasing surpluses in services, particularly in knowledge-intensive services that generated a strong and rapidly growing trade surplus of 0.7 percent of GDP for mature economies in 2008.

MYTH 6: "SERVICE ECONOMIES" SUCH AS THE UNITED STATES ARE THE WORLD LEADERS IN SERVICE TRADE

Reality: The European Union (EU) is ahead of the United States in service exports in both gross and net terms, even when we look at only extra-EU trade (gross exports of 4.6 vs. 3.5 percent of GDP, respectively, in 2009). Even Germany's service exports amounted to 7.1 percent of its GDP (of which 3.3 percentage points were extra-EU exports).

---

5 Please note that, because we look at the net impact over a prolonged period, this does not by any means preclude further negative transitional impact on individual companies, sectors, or regions. Also, in the current economic context, improving manufacturing net exports would have significant multiplier effects also on service jobs—but manufacturing jobs in themselves look unlikely to ever again return to even their 2000 levels, and similar multipliers and positive effects on aggregate demand could arise from reducing primary resource imports or improving the balance of trade in services.

6 J. B. Jensen, *Global trade in services: Fear, facts, and offshoring*, Peterson Institute for International Economics, August 2011.

CLARITY ON THE FACTS HAS IMPORTANT IMPLICATIONS FOR POLICY

With these facts in mind, it is important that mature economies fully realize the opportunities of growth in emerging markets rather than being fearful of the rise of these new economies. Above all, political leaders should resist protectionist pressures. In particular, they should push vigorously for fuller liberalization of trade in services, where restrictions remain high. Trade-related policy should be geared to supporting, and benefiting from, comparative advantage in attractive stages of global value chains and avoiding an emphasis on sustaining or creating direct employment through manufacturing exports. Any improvement in net trade will offset the headwinds caused by deleveraging and, therefore, domestic job creation. An important, but under-emphasized, lever for improving net exports is an intensified push for more resource productivity. Continued investment in education, infrastructure, and innovation will be necessary to sustain that comparative advantage and continue to create high-value jobs. Economic statistics and trade measurements must also improve so that they can provide a quantitative understanding of global value chains, as well as robust and sufficiently granular reporting in service trade.

Myth 1: Mature economies are losing out to emerging markets in trade and thus face increasing trade deficits

In fact, the aggregate trade balance of mature economies has been largely stable over the past decade.

Throughout this report, we have analyzed trade patterns at the sector level, dividing sectors into three categories—labor-intensive, capital-intensive, and knowledge-intensive (see Box 1, "A factor-intensity–driven view of the economy").[7]

The aggregate trade balance in mature economies did deteriorate by 1.8 percentage points between 1997 and 2000. This largely reflected a declining surplus in knowledge-intensive manufacturing in the United States and the EU-15, notably in the automotive and machinery and equipment sectors, including computing. In contrast, Japan's balance slightly improved during this period. Since 2000, however, the aggregate trade balance of mature economies has been relatively steady, except for a temporary deterioration in 2005 and 2006 (Exhibit 2). In fact, over the past decade from 2001 to 2011, the aggregate trade deficit improved slightly from 1.6 to 1.5 percent of mature economies' GDP.

However, large divergences exist among mature economies. EU-15 trade is largely in balance overall, but there are imbalances between member states. The Nordics have historically been strong net exporters, and the United Kingdom a significant net importer. Since the introduction of the euro in 1999, a gap has opened up between surpluses in Continental Europe and deficits in Southern Europe. Japan ran a trade surplus for many decades, but the trade balance turned negative in 2011. The United States has run persistent deficits since 1976. The trade balance deteriorated further from 2000 to 2005 but has improved since then.

7 Ideally, we would like to perform these analyses on a value chain basis in order to see which steps in the chain are carried out where. However, in the absence of data on value chains, we have chosen a sector-based approach. While this approach seems a reasonably robust approximation for mature economies, it cannot be applied easily to emerging economies. The profile of Chinese value added in electronics exports, for instance, is materially different from that of mature economies. Koopman et al. have shown that the import content in Chinese electronics exports can exceed 80 percent, and a large share of value added is basic processing and assembly. In a sector-based view, electronics would still classify as a knowledge-intensive export for China. See R. Koopman, Z. Wang, and S. Wie, *How much of Chinese exports is really made in China?* Office of Economics Working Paper No. 2008-03-B, US International Trade Commission, March 2008.

Box 1. A factor-intensity–driven view of the economy

National accounts traditionally break down economies by sectors such as primary resources, manufacturing, and services, and then add a considerable amount of detail about manufacturing subsectors. In the absence of a full value chain view of economies, we have reclassified sectors by their factor intensity (labor, capital, and knowledge), which is critical to competitiveness (Exhibit 1).

In manufacturing, we classify as capital-intensive any sector that has a capital compensation share of value added of above 30 percent, as knowledge-intensive any sector with an R&D expenditure share of value added above 5 percent, and all other sectors as labor-intensive.

In services, we use a share of more than 50 percent capital compensation in value added to define "capital-intensive sectors." We define service sectors with more than 30 percent high-skilled and less than 10 percent low-skilled employment as "knowledge-intensive service" sectors. We classify other service sectors as "labor-intensive services."

Mature economies have the fastest value-added growth in knowledge-intensive sectors. We reviewed data for each of the individual mature economies to understand differences and commonalities among them. We undertook a particularly detailed review of Sweden's economy because of its high levels of competitiveness and perceived stability.

Exhibit 1

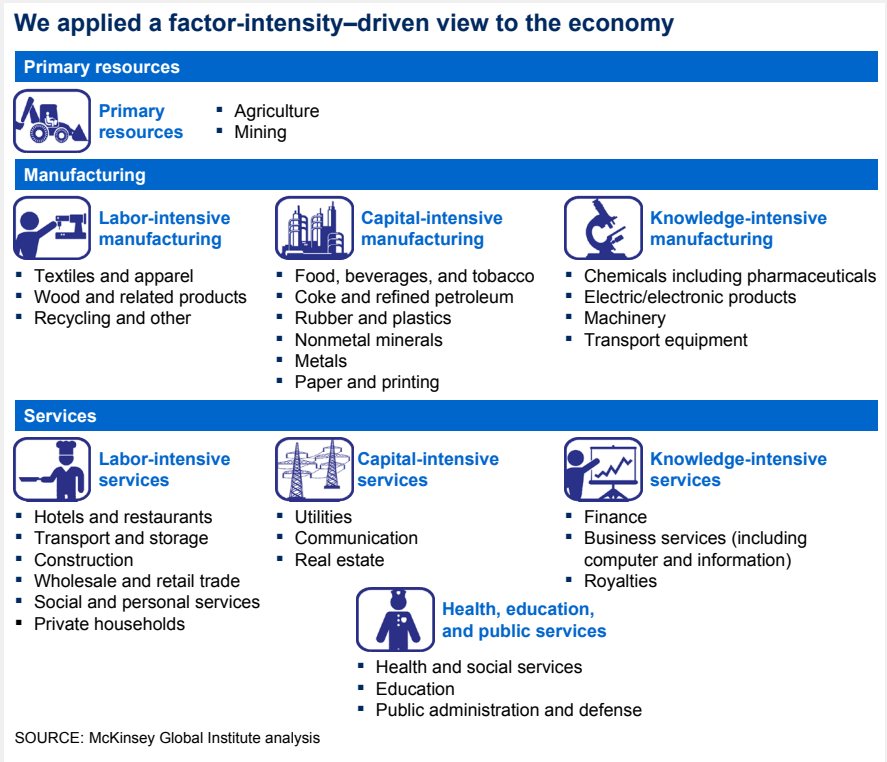
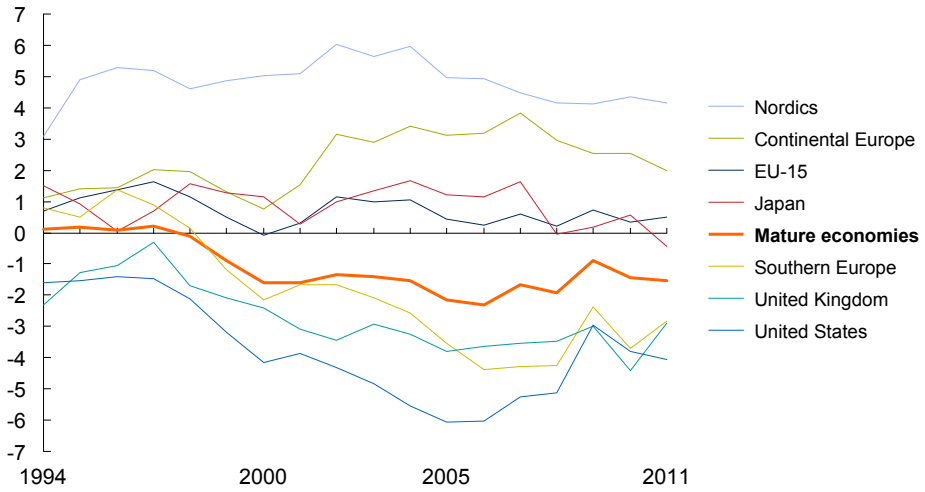


Exhibit 2

Mature economy net exports were quite stable over the past decade—but with significant imbalances between economies

Net exports of mature economies
% of GDP



SOURCE: Organisation for Economic Co-operation and Development (OECD); McKinsey Global Institute analysis

Myth 2: Manufactured goods drive trade deficits

Imports of primary resources, which are experiencing sharp rises in prices, were the largest negative contributor to the trade balance of mature economies. But in 2009, 12 of the 17 mature economies we examined were running trade surpluses in knowledge-intensive manufacturing and services.

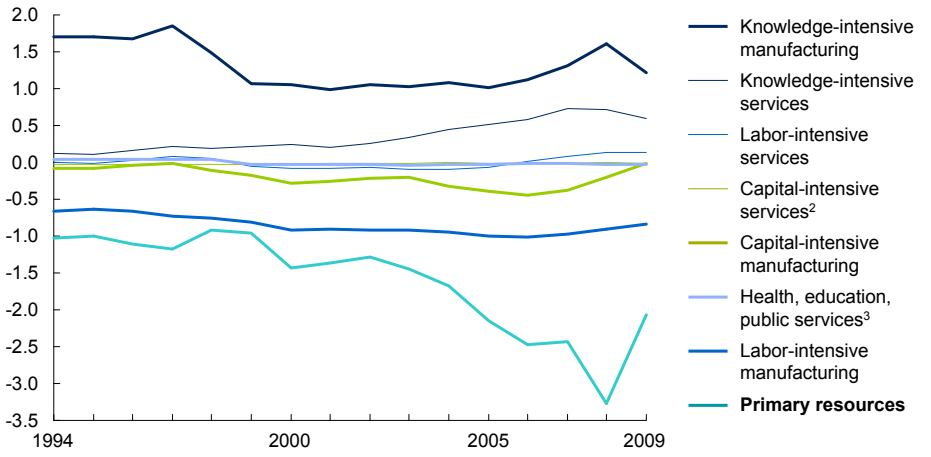
PRIMARY RESOURCES DOMINATE THE TRADE DEFICITS OF MATURE ECONOMIES

Imports of increasingly expensive primary resources, which totaled $954 billion in 2009, dominate the trade deficits of mature economies. Although primary resources made up only 12 percent of total imports in that year, mature economies still ran a deficit on resources of $707 billion, equivalent to 2.1 percent of GDP (Exhibit 3). In aggregate this deficit in primary resources is greater than the total trade deficit that mature economies are running.

Exhibit 3

Deficits on primary resources and surpluses in knowledge-intensive sectors are the main drivers of mature economy trade balances

Net exports of mature economies[1]
% of GDP



1 Excluding Luxembourg; services exports do not include Belgium and Denmark due to a lack of historical data.
2 Capital-intensive services exclude trade in utilities for Japan.
3 Majority of health and education services trade is accounted for as "travel" and therefore shown within labor-intensive services.
SOURCE: OECD; McKinsey Global Institute analysis

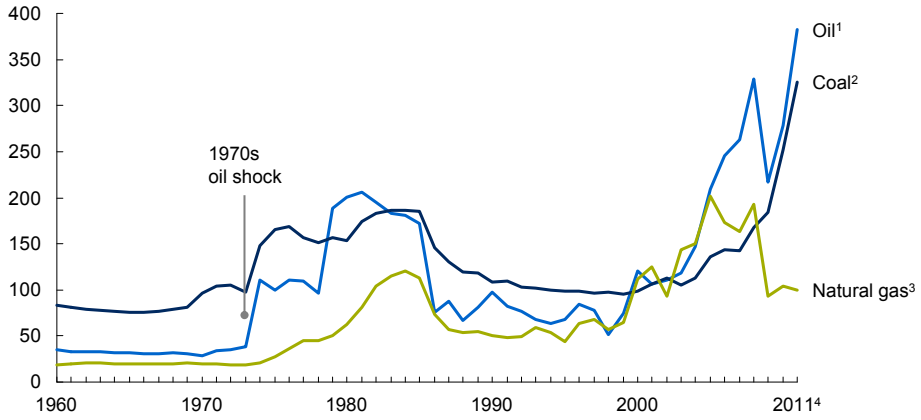
Since 2000, the real prices of energy and other resources have risen sharply (Exhibit 4).[8] This reflected both surging demand from emerging markets and rising recovery and production costs. Despite its agricultural surplus and domestic oil supplies, the United States ran a $348 billion trade deficit, equivalent to 2.4 percent of GDP, in 2008. The United Kingdom's surplus in energy materials turned negative in 2004. Japan's primary resources deficit reached 5.8 percent of GDP in 2008. The EU-15, excluding the United Kingdom, ran a deficit of 2.5 percent.

Exhibit 4

Commodity prices have increased sharply since 2000

Historic energy prices

Real; indexed to average 1999–2001



1 Oil prices shown are Brent crude in US dollars.
2 Coal prices shown are based on bituminous coal at F.O.B. prices including freight and insurance costs at average US prices.
3 Natural gas prices shown are US wellhead averages as reported by individual producing states and the U.S. Bureau of Ocean Energy Management, Regulation and Enforcement.
4 2011 prices based on average of first four months.

SOURCE: Grilli and Yang, 1988; Pfaffenzeller et al., 2007; World Bank Commodity Price Data; International Monetary Fund (IMF) primary commodity prices; OECD statistics; FAOStat; UN Comtrade; McKinsey Global Institute analysis

We find that if resource prices had remained at their 2002 levels, the aggregate trade accounts of mature economies would have been in balance in 2008, the year resource imports peaked at $1.2 trillion.

12 OUT OF 17 MATURE ECONOMIES RUN TRADE SURPLUSES IN KNOWLEDGE-INTENSIVE MANUFACTURING

We find that mature economies in aggregate ran a 1 percent of GDP surplus on manufactured goods and services with the rest of the world in 2009. In manufactured goods, these economies achieved an overall surplus of 0.3 percent of GDP. They posted a deficit of 0.8 percent of GDP in labor-intensive manufacturing, were in balance on capital-intensive manufacturing, and had a surplus in knowledge-intensive manufacturing of 1.2 percent. In fact, 12 of the 17 mature economies that we discuss in this report run trade surpluses in knowledge-intensive manufacturing.

In 2006, knowledge-intensive sectors made up 21 percent of employment in mature economies and 26 percent of total value added. These sectors have accounted for 43 percent of value- added growth since 1994 and also drive

8 *Resource Revolution: Meeting the world's energy, materials, food, and water needs*, McKinsey Global Institute and McKinsey & Company's Sustainability & Resource Productivity Practice, November 2011 (www.mckinsey.com/mgi).

exports and trade surpluses. In 2008, knowledge-intensive manufacturing constituted 47 percent of the exports of mature economies, while knowledge-intensive services accounted for 12 percent. Overall, knowledge-intensive sectors contribute the equivalent of 2.3 percent of GDP to the trade balance of mature economies—a surplus that largely counterbalances deficits in primary resources and labor-intensive goods.

Only the United States, the United Kingdom, Greece, Spain, and Portugal ran a trade deficit in knowledge-intensive manufacturing in 2009 (Exhibit 5). The United States and the United Kingdom produce significant amounts of oil, and their 2009 primary resource deficits were only 1.3 and 1.1 percent of GDP, respectively. But they ran trade deficits in knowledge-intensive manufacturing of 0.9 and 1.5 percent of GDP, respectively. First and foremost, these deficits reflect large aggregate trade deficits, of 2.9 percent of 2009 GDP in the United States and 3.0 in the United Kingdom. Both economies have a large weight of services in GDP and have been running manufacturing trade deficits for 30 years or more. Both economies specialize in knowledge-intensive manufacturing in global trade—but slightly less so than other mature economies, as evidenced by a revealed comparative advantage among mature economies of less than one (Exhibit 6).[9]

The Southern European countries of Greece, Spain, and Portugal also run large aggregate trade deficits. These relate to macro-economic imbalances (see Box 2, "Drivers of trade deficits"). Since the introduction of the euro, unit labor costs have risen by 30 percent in these economies compared with Germany. In contrast to the United Kingdom and the United States, these economies still have comparative advantage in manufacturing sectors such as textiles and furniture, and service sectors such as tourism, all of which we can characterize as labor-intensive.[10] However, with a few exceptions, including automotive in Spain, these economies are relatively weak in exports across knowledge-intensive sectors.

In contrast, Japan's surplus in knowledge-intensive manufacturing was 7 percent of its GDP in 2008, topped only by Germany's 10 percent, which came mostly from chemicals, machinery, and motor vehicles, and Ireland's 22 percent. Ireland managed to attract multinational pharmaceutical and chemical companies but attributed 17 percent of its GDP to foreign owners. Nordic countries have also managed to remain net exporters of capital-intensive manufacturing products, driven by pulp and paper in Sweden and Finland.

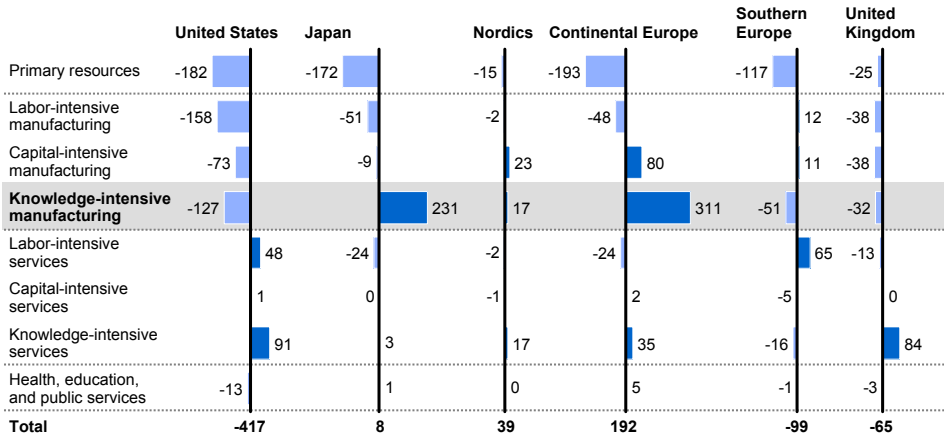
9 The revealed comparative advantage (RCA) metric compares the share of a sector's exports in total exports in a country to the share of exports that sector has in total exports for the comparison group of countries—in this case, mature economies. A revealed comparative of more than 1 characterizes relative specialization, while an RCA of less than 1 indicates a lower specialization in the sector than what is observed in the comparison group.

10 When applying "net exports" as a metric instead of RCA, only Portugal has a surplus in labor-intensive manufacturing, but all three countries—Portugal, Spain, and Greece—maintain a large surplus in labor-intensive services in line with their strength in tourism.

Exhibit 5

Apart from the United States, Southern Europe, and the United Kingdom, mature economies have surpluses in knowledge-intensive manufacturing

Net exports[1]
Nominal $ billion, 2009

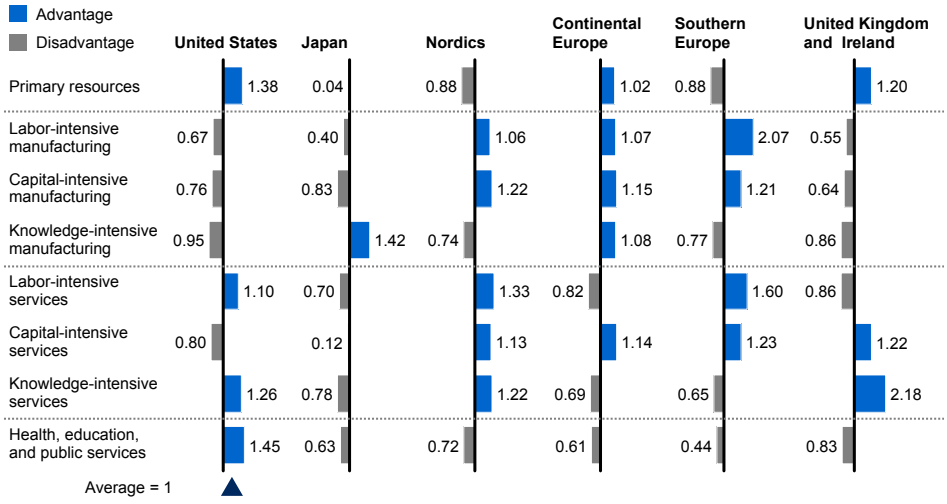


1 Excluding Luxembourg; services exports exclude Belgium and Denmark.
2 Germany accounts for $258 billion (83 percent), the Netherlands $29 billion, Belgium $20 billion, Austria $4 billion, and France $0.5 billion.
NOTE: Numbers do not sum due to rounding as well as due to noncategorized and confidential trade.
SOURCE: EU KLEMS; IHS Global Insight; OECD; McKinsey Global Institute analysis

Exhibit 6

Southern Europe is quite specialized in labor-intensive sectors, the United Kingdom and the United States in knowledge-intensive services

Revealed comparative advantage vs. mature economies, 2009[1]



1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample; excludes Luxembourg.
SOURCE: EU KLEMS; IHS Global Insight; OECD; McKinsey Global Institute analysis

Box 2. Drivers of trade deficits

When an economy runs an undesirable large trade deficit, one of the first typical reactions is to work on the competitiveness of exporting sectors, either by increasing productivity (via such approaches as education, infrastructure, deregulation, and investment in innovation) or by reducing cost (e.g., reducing energy prices, moderating wages, or even providing subsidies and tax incentives in various forms).

It is important to note, however, that this reflects only one part of the equation. On one hand, international competitiveness is strongly determined by currency exchange rates.[1] For instance, Sweden's manufacturing trade balance improved from 2.6 percent of GDP in 1992 to 7.2 percent five years later after the krona was floated and then depreciated by around 26 percent in November 1992. On the other hand, the trade balance is a key element in the current account balance—next to net factor income (e.g., from dividends or interest) and net transfer payments. And the current account balance is the mirror image of the capital account balance. A current account deficit reflects an equivalent flow of money into the economy, typically in the form of foreign direct investment or financial transactions (such as bond or stock purchases and foreign lending).

In other words, a current account deficit may well be a reflection of investor attractiveness for various reasons. In Southern Europe, for instance, we can interpret large current account deficits as the mirror image of large amounts of capital flowing from the eurozone core to higher interest rates and investment returns in the periphery without perceived currency risks. The United States and the United Kingdom have been considered as among the most attractive stock and bond markets as well as providing large opportunities for foreign direct investment. Finally, the current account balance reflects the difference between savings and domestic investment. For rapidly aging societies as in Germany, for instance, it seems natural to run a certain current account surplus to build sufficient savings for retirement, while a declining population weighs on domestic investment opportunities.[2] Conversely, the perceived creation of wealth from the real-estate boom in the United States led to declining domestic savings rates and amplified the current account deficit. The period of deleveraging ahead may change that pattern. From 2006 to 2010, annual private savings increased by $336 billion and business savings by $221 billion, while private investments declined by $371 billion and business investment by $161 billion. The public sector largely compensated for that change in pattern by increasing its deficit by $1.1 trillion. Nevertheless, the current account deficit also improved by $341 billion.

Any discussion on the sustainability of trade deficits needs to be seen in this context, and there are no easy answers. On one hand, trade deficits may be balanced by a surplus on factor income or transfer payments. On the other hand, even substantial current account deficits may be sustainable over prolonged periods if, for instance, they reflect large inflows of foreign direct investment into a quickly growing economy. A current account deficit that mirrors increasing levels of private or public sector debt is far more alarming.

---

1 Some sectors in some economies have seemingly unique selling propositions that make them less dependent on exchange rate swings at least in the near and medium term—for instance, Swiss luxury watches, whose exports increased at almost constant local currency prices despite the recent rapid appreciation of the Swiss franc.

2 D. Wilson, S. Ahmed, *Current accounts and demographics: The road ahead*, Goldman Sachs, Global Economics Paper No. 202, August 2010.

Myth 3: Trade is at the heart of the loss of manufacturing jobs

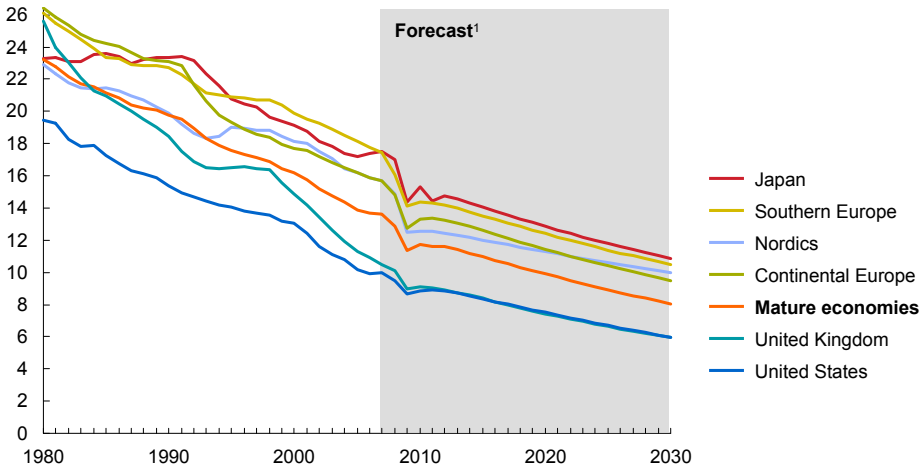
The reality is that the decline in manufacturing jobs reflects a shift in jobs between sectors predominantly because of changes in the composition of demand and ongoing productivity increases. In short, there is a long-term trend underway that is bound to reduce the share of manufacturing employment in mature economies further to below 10 percent by 2030—without a negative impact on manufacturing output.

DECLINING MANUFACTURING EMPLOYMENT IS A LONG-TERM TREND

The decline in the share of manufacturing employment affecting all mature economies reflects decades of productivity growth and rising demand for workers in service sectors such as tourism, IT services, and health care.[11] Productivity growth arises from a combination of capital deepening, technological advances, process innovations and efficiencies, and specialization in higher-value-added activities. From 1990 to 2006, Japan lost 26 percent of manufacturing jobs, the EU-15 nations 20 percent, and the United States 22 percent (Exhibit 7).

Exhibit 7

Manufacturing employment share has been declining for decades, a trend that looks set to continue unless productivity growth ceases



1 Assuming that sector productivities will grow in all countries/clusters at the same rate as they did in the mature economies sample between 1996 and 2006; real value added forecast from IHS Global Insight.

SOURCE: IHS Global Insight; EU KLEMS; McKinsey Global Institute analysis

11 There is also some effect from the reclassification of manufacturing value added and jobs as services. Continued outsourcing of business services shifts employment from manufacturing to services. Also, most national accounts classify on an establishment, rather than a firm, level. This means that pure R&D establishments of manufacturers, for instance, are classified as R&D services. Both of these effects are captured implicitly as part of demand shifts.

Even in Sweden, which appeared to buck the trend and increased manufacturing net exports from 1.4 percent of GDP in 1990 to 8.1 percent in 2003, manufacturing employment declined by 19 percent over the same period. Overall, manufacturing has declined from 20 percent of employment in mature economies in 1990 to 14 percent in 2006. Some 40 percent of manufacturing jobs in labor-intensive sectors were lost during that period, nearly twice the rate of job losses in knowledge-intensive manufacturing (22 percent).

Productivity growth needs to be sustained—and is likely to be—if mature economies are to retain their competitiveness in manufacturing. We will see continuing changes in demand for manufactured goods as a share of GDP. Such demand follows an inverted "U" shape as incomes grow—i.e., an increase in the earlier stages of development when economies move away from agriculture, followed by a decrease as the consumption of services increases. We estimate that the share of manufacturing employment in mature economies will decline further, from 12 percent today to below 10 percent in 2030, assuming that productivity continues to grow at the same rate as in the past decade.[12]

Seeking to prevent this trend from unfolding—or even reversing it—would mean the stagnation of manufacturing productivity or an increase of almost 50 percent in manufacturing's share of final demand. The first would not be economically desirable, and the second seems unrealistic. MGI research has shown that service sectors accounted for all net job growth in high-income economies from 1995 to 2005. Even in middle-income countries, where the industrial sector contributes almost half of overall GDP growth, 85 percent of net new jobs came from service sectors.[13]

Meanwhile, manufacturing output kept rising steadily (Exhibit 8). As a matter of fact, real value added was at an all-time high in mature economies in 2007 before the recession hit.[14] Only in Southern Europe and in the United Kingdom did real manufacturing value added remain almost flat up to 2007, but even in these economies, 2007 marked an all-time high.

12 Per-sector growth forecasts come from IHS Global Insight.

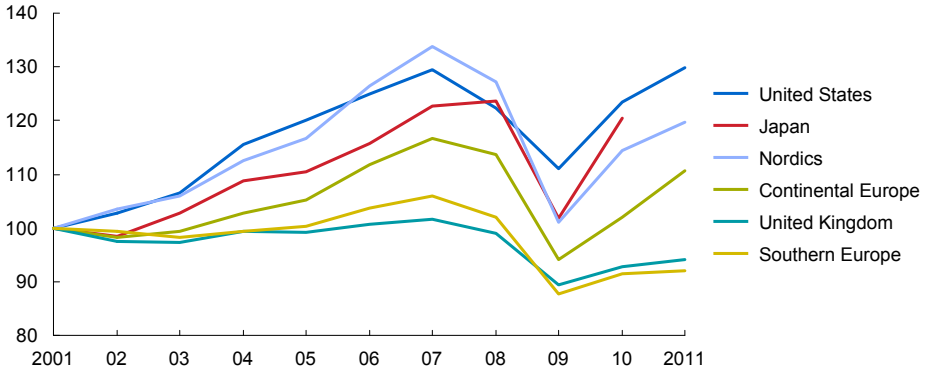
13 *How to compete and grow: A sector guide to policy*, McKinsey Global Institute, March 2010 (www.mckinsey.com/mgi).

14 Note that there is an ongoing debate among economists about the measurement of value added, which uses hedonic deflation (i.e., adjusting for processing power and so on) in computers and electronics products and also includes profits from sourcing low-cost components. We stay clear of this debate in this section as we believe metrics reflect the value delivered to consumers and businesses in mature economies reasonably well. We come back to this debate and adjust for those effects in the next section, where we discuss jobs for which these adjustments seem inappropriate. We take the position that this kind of hedonic deflation and accounting is not appropriate when looking at the number of jobs required to achieve a certain level of output.

Exhibit 8

Real manufacturing value added grew in mature economies until the financial crisis in 2008–09

Real manufacturing gross value added, 2001–2011[1]
Index: 2001 = 100



1 For European countries, the real value-added index is based on Euro-term, chain-linked volumes, reference year 2005 (at 2005 exchange rates) from Eurostat, NACE 2 classification; for Japan, Yen-term volumes with reference year 2005 from Statistics Japan based on Japan Standard Industrial Classification; for US, USD-term chain-linked volumes with reference year 2005 from Moody's analytics based on NAICS classification.
2 Nordics include Sweden, Finland, and Denmark.
3 Continental Europe includes Germany, Austria, France, Belgium, and the Netherlands. Note: Year 2011 excludes France.
4 Southern Europe includes Greece, Italy, Portugal, and Spain.

SOURCE: Eurostat; World Bank; McKinsey Global Institute

SHIFTING DEMAND AND CONTINUED PRODUCTIVITY GAINS DRIVE EMPLOYMENT CHANGES MORE THAN TRADE

The impact of trade and offshoring on US employment is a topic of ongoing discussion, particularly with respect to the recent fast decline of manufacturing employment and arguments about the reasons for this. We aim to add some facts to the debate by decomposing the growth and loss of jobs as well as shifts among sectors into three key drivers: productivity growth, which enables the same output with fewer resources; growth in domestic final demand, which counteracts the employment losses from higher productivity; and changes in the net trade position, which either add to or reduce the domestic demand.

In aggregate, net trade has had a remarkably limited impact on the shift of jobs between 2000 and 2010—although the average hides wide differences across different manufacturing segments. The US manufacturing trade deficit deteriorated from 2000 to 2005, but improved again to almost 2000 levels in real terms by 2010. The service trade balance improved over the decade. In aggregate, during the 2000s, shifts in the net trade position translated to around 700,000 jobs lost in manufacturing and around 400,000 jobs added to service sectors (Exhibit 9).

What dominates the evolving jobs picture is the interplay between demand shifts and productivity growth. In market-based service sectors, fast-paced demand growth over the decade accompanied similar rates of productivity growth, leading to stable employment. In the case of public services such as education and health care, increasing demand—especially for health services—triggered rapid sector growth equivalent to seven million jobs at a time of minimal measured productivity growth.[15] In contrast, manufacturing demand growth in the United States was exceptionally low. This, combined with rapid productivity increases

15 Measurement of public sector productivity is typically only rudimentary or assumption-based.

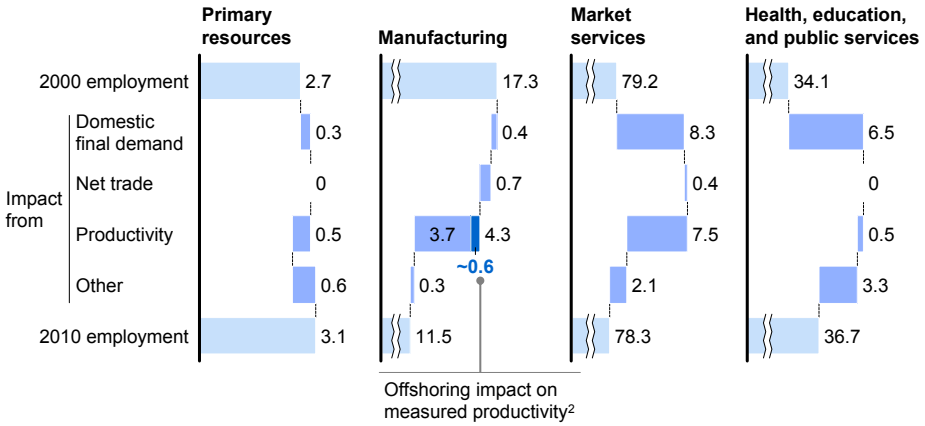
among US manufacturers, explains the majority of the employment drop by 5.8 million full-time– equivalent jobs (Exhibit 10).

Exhibit 9

A shift in demand to services, unusually weak domestic manufacturing demand, and increasing productivity—not trade—drove US job shifts

Million FTEs

ESTIMATES



1 Includes the multiplicative effect of productivity and demand combined; changes in value chain compositions, e.g., increased outsourcing (-), more demand from outsourcers (+), or substitution of inputs; and residual differences.
2 Cost savings on offshoring and low-cost imports lead to overstating of productivity metrics rather than being reflected in net trade.
NOTE: Not to scale. Numbers may not sum due to rounding.
SOURCE: US Bureau of Economic Analysis; Houseman et al., "Offshoring bias in US manufacturing," *Journal of Economic Perspectives*, Spring 2011; McKinsey Global Institute analysis

Exhibit 10

Manufacturing productivity growth slightly accelerated while demand growth collapsed

Manufacturing value added and productivity growth
5-year moving average of annual growth, 1980–2010[1]

1 Adjusted by using a deflator of "1" for computer and electronics products to avoid effects of hedonic deflation; shorter averages used before 1982 as time series available only back to 1977.
SOURCE: Moody's Analytics; McKinsey Global Institute

There is a very active public debate around this loss of almost six million manufacturing jobs in just one decade and how it relates to issues of competitiveness, trade, and offshoring. Some argue that the decline is attributable to normal long-term trends of productivity growth; others maintain that it relates to trade and offshoring.[16]

Our approach takes into account the various analytical difficulties that have been the subject of discussion in the public debate.[17] The results of our analysis show that the decline is, in fact, attributable to a mix of some trade effects (minus 0.7 million), offshoring-related cost savings that national accounts arguably wrongly show as productivity gains (minus 0.6 million), productivity growth adjusted for this offshoring bias (minus 3.7 million), and domestic final demand that has been much weaker than in previous periods due to the Great Recession and has led to a further loss of jobs (minus 0.4 million) rather than to the usual compensation of productivity gains.[18] So the overall impact from trade including offshoring explains around 20 percent of the decline, while around 80 percent relates to the interplay of weak demand and ongoing productivity gains (see Appendix B for a detailed discussion of our methodology).

Assuming that the US economy could close the entire 2010 current account deficit of 3.2 percent of GDP by increasing manufacturing exports, this would add roughly 2.2 million jobs to the sector. While this is a sizable figure, it would bring US manufacturing employment back to 2007 levels, but no higher.

These numbers may seem at odds with the many observations and examples of assembly tasks being offshored—the iPhone is an often-cited example. But it is important to note that manufacturing is not a homogenous sector where such trends apply uniformly. The recent wave of manufacturing offshoring has been concentrated in global technologies such as electronics. These segments have characteristics that make it economically viable to move labor-intensive manufacturing and assembly activities to low-wage countries, while the high value

16 For a detailed discussion, see R. Atkinson, L. Stewart, S. Andes, and S. Ezell, *Worse than the Great Depression: What experts are missing about American manufacturing decline*, The Information Technology and Innovation Foundation, March 2012.

17 We account for four effects that those who don't believe in the strong impact of productivity often highlight. First, we use a detailed, subsector-based calculation to avoid fast productivity increases in low-employment sectors affecting the impact in slower-productivity, high-employment sectors. Second, we adjust for the hedonic deflation used in electronics. In this sector, national accounts measure real value added in line with the performance of products that reflect fast innovation in integrated circuits but that are largely unrelated to the employment needed in production. We use non-deflated data instead, which leads to a conservative downward revision to the impact of productivity in this sector. Third, we estimate the impact that lower-cost imports of components have on measured productivity and show the effects as offshoring gains explicitly rather than mixing them with other productivity effects. Finally, we separately calculate compositional effects from manufacturers in the United States moving from production into both ends of the value chain, R&D as well as sales and customer care, and show the effect to be moderate in aggregate. Of course, there are further uncertainties inherent to the national accounts source data. For instance, service imports might be understated as the sampling frame used to generate the data is subject to discussion; or they might be overstated, as corporate tax-optimization schemes work to shift profits to low cost locations. While we are not able to fully resolve issues inherent to source data, we believe our approach strongly suggests that the key findings are robust even within the constraints of the data.

18 For a detailed analysis of offshoring biases, see Susan Houseman, Christopher Kurz, Paul Lengermann, and Benjamin Mandel, "Offshoring bias in US manufacturing," *Journal of Economic Perspectives*, Vol. 25, No. 2, Spring 2011.

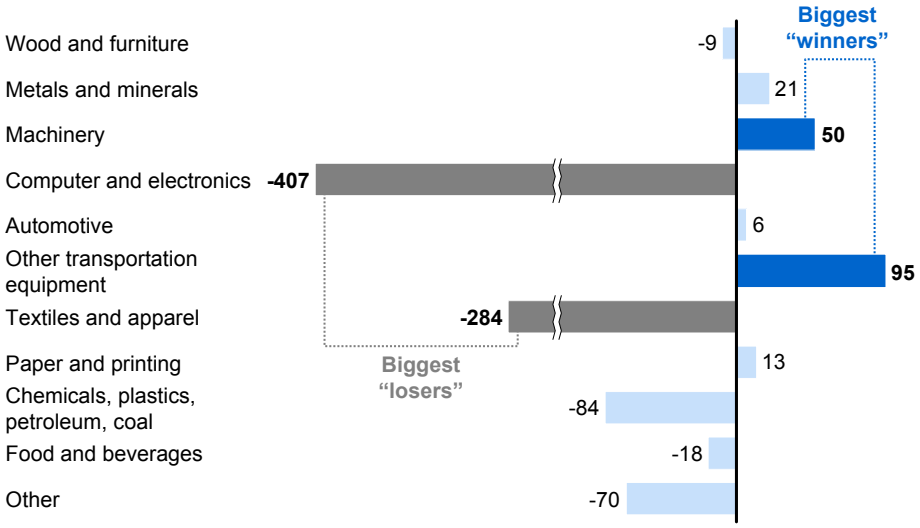
relative to weight of final computers or smartphones still makes transportation costs back to US consumers cost-effective. Large deviations from this segment's past employment trend occurred between 2000 and 2004, with a rapid decline in US employment of 0.9 million. Our analysis confirms that over the decade 2000 to 2010, roughly 400,000 jobs in electronics were lost to trade (half of the total decline in employment in the sector), plus probably a large share of the roughly 600,000 lost that national accounts show as productivity-related, but that are, in fact, related to cost savings from offshoring. Textiles and apparel production that is concentrated in China and other low-cost locations show similar patterns of job losses—almost 300,000 jobs were lost to trade over the decade (again, half of the total decline in apparel). But the bulk of employment—53 percent in 2007—is in industries where high transport costs and relatively low labor intensity reduce the economic attractiveness and feasibility to move production offshore. And a number of sectors such as other transport equipment, most notably aerospace, as well as machinery, actually added employment related to trade (Exhibit 11).[19]

Exhibit 11

Trade losses have been concentrated in apparel and electronics, while machinery and other transport equipment gained

Change in FTEs related to changes in the trade balance, United States, 2000–10

Thousand



SOURCE: Bureau of Economic Analysis; McKinsey Global Institute analysis

Please note that this analysis does not imply that there is no need to strive to improve the competitiveness of US manufacturing. Competitiveness, particularly through innovation, should be a top priority for policy makers in high-wage economies that need to compete on factors other than cost. But it should be clear that employment trends and shares are not a suitable metric to assess the status of competitiveness. The focus, rather, should shift to value added in traded goods, the terms of trade, and the uniqueness of the value proposition. In the case of employment, it is crucial not to underestimate the impact of deleveraging weighing on both consumption and investment, rather than point the finger immediately at trade as the key issue.

19 Note that by using a multiplier approach, the net trade-related job losses or gains we show reflect change in trade in that individual sector as well as where the sector acts as a supplier. For instance, the 407,000 trade-related job losses in electronics refer to an increase in imports of such products as phones and computers and also reflect an increase in exports of aircraft that use electronics supplies or an export decrease in cars with built-in electronics.

Myth 4: Mature economies create jobs only in low-paid, low-value domestic services

Mature economies are shifting employment to services, but these are often knowledge-intensive, tradable services. The United States, for instance, is increasing the number of jobs related to export. These knowledge-intensive tradable service jobs pay wages as high as in manufacturing. And, in any case, the boundaries between manufacturing and services are increasingly blurring. Trade does, however, reflect a shift of employment to knowledge-intensive sectors, reinforcing pressure on wages for the low-skilled.

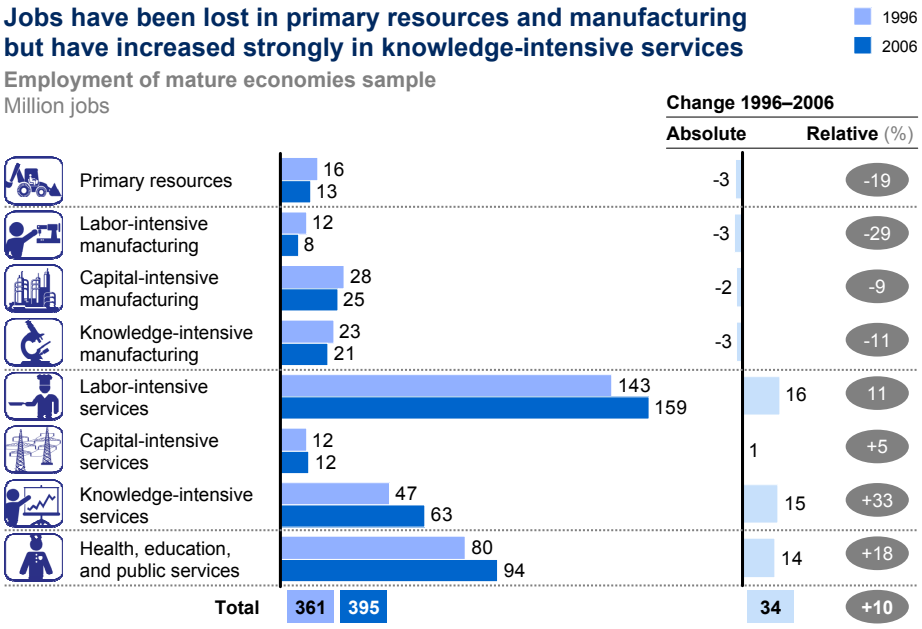
EMPLOYMENT IN MATURE ECONOMIES IS MOVING TO SERVICES

From 1996 to 2006, mature economies lost eight million manufacturing jobs, of which three million were in knowledge-intensive manufacturing, and three million jobs in primary resources. [20] At the same time, employment in services has risen by 46 million for a net gain of more than 30 million new jobs (Exhibit 12).

Exhibit 12

Jobs have been lost in primary resources and manufacturing but have increased strongly in knowledge-intensive services

Employment of mature economies sample
Million jobs



NOTE: Numbers may not sum due to rounding.
SOURCE: EU KLEMS; McKinsey Global Institute analysis

20 We take 2006 as an end date here both to reflect the period before the recession and for reasons of availability of consistent data sets.

Public and political discourse has often reacted by worrying that these developments have led to a decline in the quality of jobs and incomes. But 15 million of the 46 million new service jobs have been in knowledge-intensive services alone—an increase of more than 50 percent—and these new jobs have typically been high-skilled and well paid. And because knowledge-intensive services, as well as the fast-expanding health and education sectors, require relatively high skill levels, this shift was consistent with a rapid boost to the skills of the populations of mature economies overall. Within manufacturing, jobs increasingly move to "service-type" activities in finance and management, R&D, customer care, and the like. In the United States, roughly one-third of manufacturing was already in such service-like occupations in 2010.

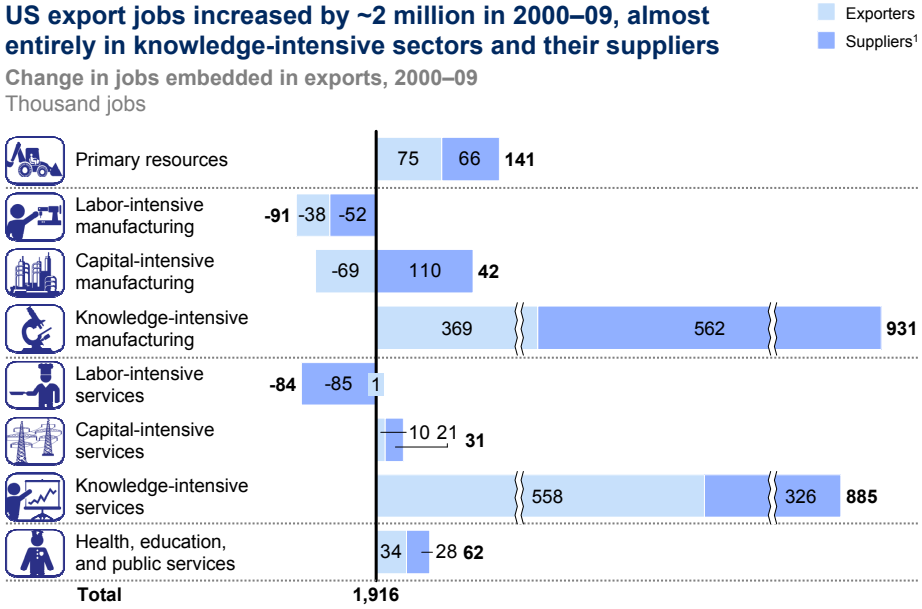
IN THE UNITED STATES, THE NUMBER OF EXPORT-RELATED JOBS HAS GROWN

Trade has supported the creation of jobs. In the United States, for instance, an increase in exports from 2000 to 2009 was equivalent to two million additional jobs in knowledge-intensive sectors and their suppliers (Exhibit 13).[21]

Exhibit 13

US export jobs increased by ~2 million in 2000–09, almost entirely in knowledge-intensive sectors and their suppliers

Change in jobs embedded in exports, 2000–09
Thousand jobs



1 Represent domestic suppliers across all industries.
SOURCE: IHS Global Insight; EU KLEMS; OECD; McKinsey Global Institute analysis

21 We use employment multipliers to estimate the number of (additional) jobs related to exports, taking the average of calculations based on 2000 dollars and 2000 input/output tables and based on 2009 dollars and 2005 I/O tables updated to 2009.

COMPENSATION IN SERVICES AND MANUFACTURING DEVELOPS SIMILARLY IF WE COMPARE EQUIVALENT FACTOR INPUTS

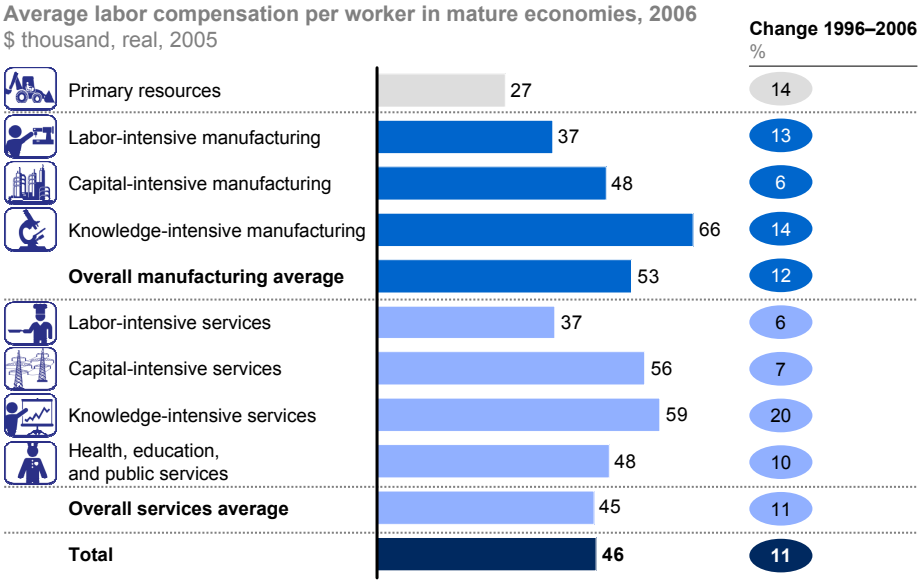
There is a common perception that service jobs are of low quality and are relatively poorly paid. It is indeed the case that, on average, labor compensation in manufacturing is higher than in services (17 percent in 2006 across mature economies measured as total labor compensation including social security payments).

However, if we cluster jobs by factor intensity, we find that employment in manufacturing and services exhibit very similar levels of compensation (Exhibit 14). We find that the fastest growth in compensation has been in knowledge-intensive sectors, which increased around 14 percent in manufacturing from 1996 to 2006 and 20 percent in services. There is also evidence that tradable service sectors and occupations specifically have offered significantly higher wages and experienced higher wages growth than manufacturing jobs in the United States.[22]

Exhibit 14

Compensation in manufacturing and services is largely comparable in sectors with similar factor intensity

Average labor compensation per worker in mature economies, 2006
$ thousand, real, 2005



SOURCE: EU KLEMS; IHS Global Insight; McKinsey Global Institute analysis

Comparing the detailed distributions of weekly earnings in manufacturing with services in the United States, manufacturing offers around 700,000 fewer jobs in low-wage bands and 700,000 more jobs in high-wage bands compared with the wage distribution in services. Some of this difference may relate to trade, as low-wage manufacturing jobs have moved offshore. In services, low-wage bands are dominated by travel and retail services.

22 J. B. Jensen, *Global trade in services: Fear, facts, and offshoring*, Peterson Institute for International Economics, August 2011.

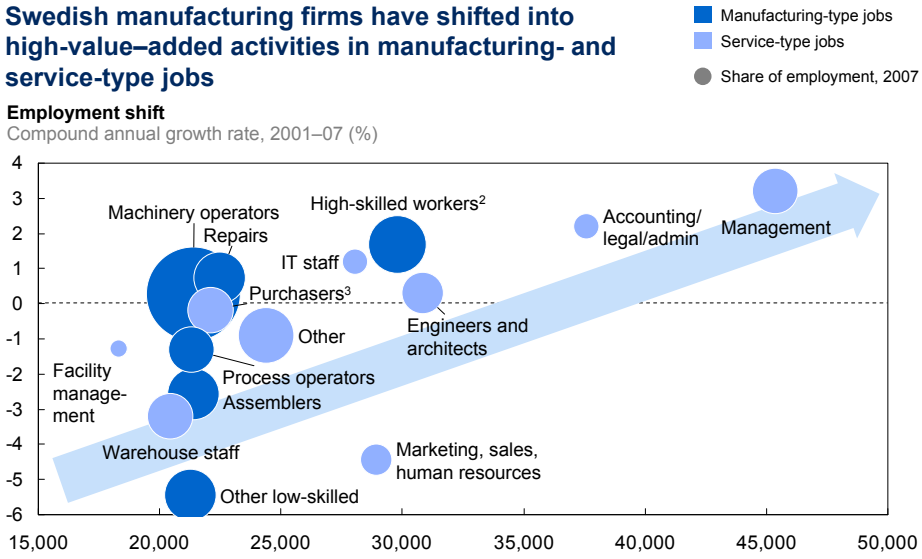
MANUFACTURERS SHIFT UPSTREAM AND DOWNSTREAM IN THE VALUE CHAIN, AND BOUNDARIES WITH SERVICES BLUR

The boundaries between manufacturing and services appear increasingly artificial and blurred as manufacturing jobs move from assembly into upstream R&D and downstream service-type activities such as sales and customer care.

Sweden is an economy whose manufacturers have successfully repositioned themselves in the value chain. Service-type jobs already made up 39 percent of manufacturing employment in 2007 (Exhibit 15). In mature economies as a whole, the manufacturing share of total gross value added declined from 25 percent in 1980 to 16 percent in 2007. However, Sweden had only a minimal decline from 21 to 20 percent. Sweden achieved rapidly increasing net manufacturing exports from 0.5 to 4.8 percent of GDP over this period (and a peak of 8.1 percent in 2003).

Exhibit 15

Swedish manufacturing firms have shifted into high-value–added activities in manufacturing- and service-type jobs



1 Arithmetic average of subcategories.
2 Such as plant management, engineers, technicians.
3 Such as foundry workers, welders, tin men.
NOTE: Excluded persons classified as "employment unknown."
SOURCE: Statistics Sweden (SCB); McKinsey Global Institute analysis

Sweden's export success dates from its recovery from its financial crisis in the early 1990s and rests on three factors. First, on the cost side, there was a 26 percent devaluation of the krona and an unwritten agreement that exporting sectors should set the norm for wage negotiations in the country. Second, Sweden nurtured and attracted top multinational companies. After Sweden joined the EU in 1995 and abolished capital controls, foreign ownership of listed shares increased from 7 percent in 1989 to 40 percent in 1999.[23] The top ten multinationals, accounting for 20 percent of gross value added, contributed a disproportionate 35 percent share to manufacturing growth and were at the heart of five sectors that contributed 80 percent of manufacturing growth. Large exporters boosted their productivity much faster than domestic-oriented

23 S. Davis, M. Henrekson, *Economic performance and work activity in Sweden after the crisis of the early 1990s*, National Bureau of Economic Research (NBER) Working Paper No. 12768, 2006.

companies.[24] Finally, Sweden moved to the higher end of the value chain. The number of high-skilled workers increased by 1.7 percent a year from 2001 to 2007, while employment in assembly occupations declined by 2.6 percent a year during that period. Swedish companies invested, and continue to invest, double the average EU-15 time in continued vocational training. And the imported content of manufacturing exports increased from 33 percent in the mid-1990s to 39 percent in the mid-2000s. The important telecom sector had an import content of more than 45 percent by the early 2000s.

Overall, Swedish manufacturing employment still declined by 85,000 from 1993 to 2007, but there was a compensating 120,000 increase in employment in manufacturing-related business services.

TRADE AFFECTS THE COMPOSITION OF THE LABOR FORCE—WITH UNCLEAR IMPLICATIONS FOR WAGES

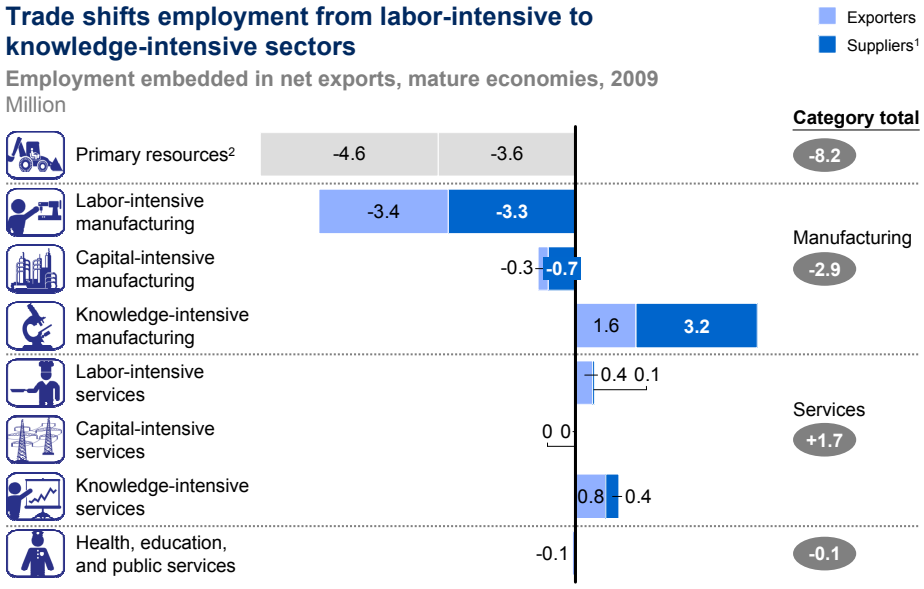
The net pattern of trade does indeed affect the composition of the labor force. Across mature economies in 2009, net trade by sector was responsible for a net shift of about six million jobs from labor-intensive manufacturing companies and their suppliers to knowledge-intensive manufacturing and services (Exhibit 16).[25] This is consistent with a continued trend of up-skilling in mature economies. During the decade to 2005, for instance, the United States created 15 million high-skilled jobs while reducing the number of low-skilled jobs on offer by one million.

Exhibit 16

Trade shifts employment from labor-intensive to knowledge-intensive sectors

Employment embedded in net exports, mature economies, 2009

Million



1 Represent domestic suppliers across all industries.
2 To a large extent, primary resource net imports reflect oil, where creating similar employment in mature economies domestically is difficult.

SOURCE: IHS Global Insight; EU KLEMS; OECD; McKinsey Global Institute analysis

24 P. Hansson, N. Lundin, "Exports as an indicator on or promoter of successful Swedish manufacturing firms in the 1990s," *Review of World Economics*, Vol. 140, No. 3, 2004.

25 Please note that the indicated shift in jobs relates to a shift between sectors, not to potential further shifts along the value chain within each sector.

An ongoing, as yet unresolved, debate is taking place about the impact on wages and inequality. It might appear that a 16 percent decline in the real wages of low-skilled employees in the United States from 1990 to 2005, for instance, was due to a trade profile that favors the high-skilled. But the extent to which this applies depends on the pace of change in trade profiles on the one hand and education and up-skilling on the other hand. The shift of six million jobs in mature economies that related to trade compares with 390 million jobs overall in mature economies in 2005, a 20 million increase in knowledge-intensive services jobs, and a decrease of 15 million manufacturing jobs between 1990 and 2006. The majority of job shifts, as we have discussed, appears to relate to shifting demand and productivity increases including technological advances, rather than trade. But further shifts in the skill mix may arise from vertical specialization within sectors.[26] And the very theory of trade's impact on wages, let alone the empirical evidence behind it, is currently subject to intense discussion and review.[27]

26 The labor-intensive final assembly of the iPhone in China is a well-known example. Note, however, that the iPhone nonetheless remains a skill-intensive import to the United States, even though many of the skill-intensive components may originate from mature economies outside China.

27 For a further discussion of trade and its impact on wage inequality, see A. Michael Spence and Sandile Hlatshwayo, *The evolving structure of the American economy and the employment challenge*, Council on Foreign Relations, March 2011. The authors see a major impact of trade on distributional effects in the United States. Also see
L. Edwards and R. Lawrence, *US trade and wages: The misleading implications of conventional trade theory*, NBER Working Paper No. 16106, June 2010. The authors argue that the impact of trade on US inequality in the 2000s has been, at best, minor. Finally, see P. Krugman, *Trade and wages, reconsidered*, Brookings Papers on Economic Activity 1, 2008. The author argues that the impact of increasing imports of manufactured goods from emerging economies is a force for growing inequality but that it is not measurable in the absence of reliable factor-content data along international value chains.

Myth 5: Service trade is small, and emerging economies with low-cost talent will capture any increase

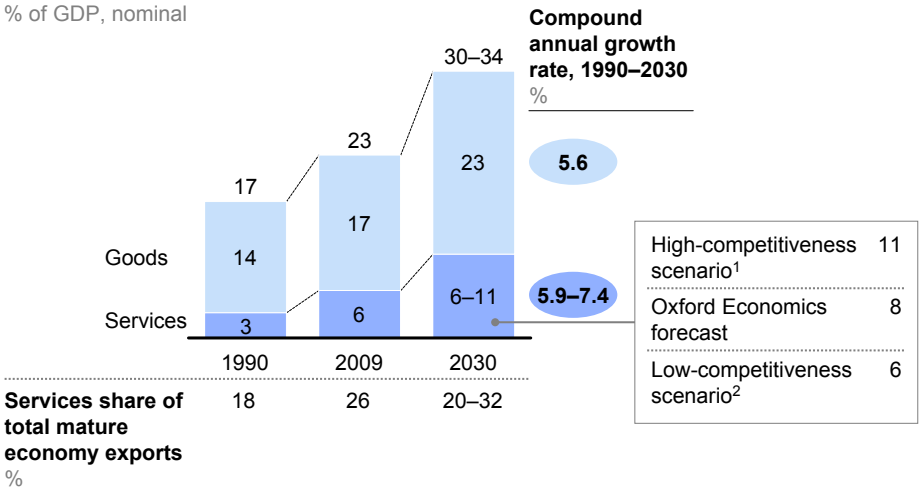
In fact, services are gaining in importance in the overall trade of mature economies and, for all the concern expressed about the offshoring of service-related jobs (e.g., in call centers), these economies are running increasing surpluses in services overall and in business services in particular. While it would be a mistake to regard trade in services as a replacement for trade in manufactured goods or the sole solution to the growth challenge facing mature economies, when we look at value added and employment, the service content embedded in exports is already of similar size to the manufacturing content.

SERVICE EXPORTS ARE SET FOR FURTHER STRONG GROWTH

Service exports already made up one-quarter—or $1.9 trillion annually—of the exports of mature economies in 2009. This is equivalent to around 16 million jobs embedded in those exports. And that share could rise to one-third by 2030 if services remain competitive (Exhibit 17). To ascertain future trends, we defined two scenarios: a "high-competitiveness" scenario in which service exports grow in line with global demand for services, and a "low-competitiveness" case in which service exports grow only in line with demand for the respective services from mature economies. These two scenarios give us a wide range for service exports by 2030 of 6 to 11 percent of GDP. This result is achieved without assuming that trade grows more rapidly than global demand as it has done in the past, for instance in most business and financial services.

Exhibit 17

If service exports remain competitive, they could account for one-third of the exports of mature economies in 2030



1 In high-competitiveness scenario, exports grow with global sector value added.
2 In low-competitiveness scenario, exports grow with mature economy sector value added.
NOTE: Numbers may not sum due to rounding.
SOURCE: Eurostat; IHS Global Insight; Oxford Economics; McKinsey Global Institute analysis

Service trade comes in four distinct forms: cross-border supply such as licenses, financial, and business services; consumption abroad, notably in travel, and maintenance and repair; temporary overseas employment of citizens in service sectors; and "commercial presence" in another country (i.e., subsidiaries).[28] For most mature economies, commercial presence by their companies accounts for around two-thirds of overall service trade. US service companies employ around ten million people overseas, and German companies employ more than two million.[29] We restrict our further analyses to the first three modes of service trade as they are accounted for in trade and current account balances and do not analyze commercial presence.

MATURE ECONOMIES POST SUBSTANTIAL AND RISING TRADE SURPLUSES IN KNOWLEDGE SERVICES DESPITE OFFSHORING

Labor-intensive service exports—notably in travel and transportation—grew at 5 and 6 percent annually, respectively, from 2000 to 2009. However, knowledge-intensive service exports grew about twice as fast at 11 percent, including royalties and licenses, financial services, and business services.

Although concerns about the impact of offshoring are prevalent among citizens in mature economies, knowledge-intensive services generated a substantial trade surplus of 0.7 percent of GDP for mature economies in 2008. That surplus appears to be growing, particularly in business services. The surplus in business services is already larger than that in financial services (Exhibit 18).[30]

McKinsey experts consulted during the course of this research expect that business services exports will continue to grow and may even capture substantial growth in emerging economies in some subsectors. Interviewees see architectural, engineering, and technical consultancy services as well as legal, accounting, and management services as the most promising export categories for mature economies. They regard the outlook for commodity trading as more uncertain because of increases in both the level of regulation in mature economies and the volume of trade where emerging economies are either the source or destination markets of the traded commodity, or both. While computer and information services offer potential for high growth, our experts were divided on whether mature economies could compete on cost and skills, particularly with India.

28 A. Mattoo, R. Stern, and G. Zanini, A *handbook of international trade in services*, Oxford University Press, 2008.

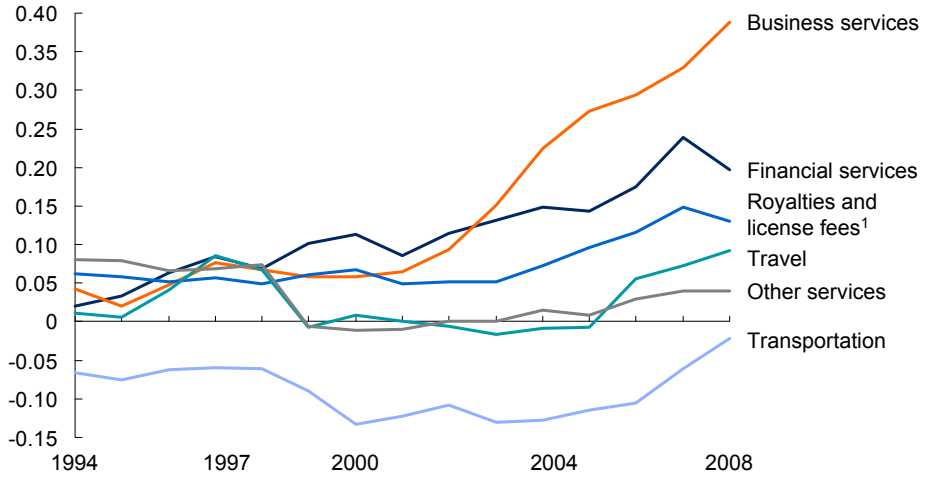
29 We also exclude earnings on foreign investments, which some sources include in service trade data.

30 See Alan Blinder, *Fear of offshoring*, Center for Economic Policy Studies (CEPS) Working Paper No. 119, December 2005. The author projected a fast increase in the offshoring of impersonal services with important implications for mature economy labor markets and policies. Our analysis does not necessarily contradict this view but stresses the point that service trade will not be one-way and will offer sufficient, and maybe even superior, opportunities for mature economies. That said, service offshoring can have a substantial negative effect on mid-skilled employment in transactional services.

Exhibit 18

The mature economy surplus in business services is already larger than that in financial services

Service net exports of mature economies
% of GDP, nominal



1 Significantly influenced by tax-optimization strategies.
SOURCE: OECD; McKinsey Global Institute analysis

EXPORTS OF BUSINESS SERVICES HAVE GROWN STRONGLY

Business services generate $642 billion in exports for mature economies and $113 billion in net exports (Exhibit 19). Two subsectors—computer and information services, and nonfinancial trading and other trade-related services—each generate a net surplus of around $45 billion. This is an impressive figure, given the growth of offshoring that takes place across industries but is recorded under business services.

Exhibit 19

Mature economies have been strong net exporters of business services since the early 2000s despite offshoring

Mature economies
$ billion, nominal

	Exports, 2009	Compound annual growth rate, 2002–09[1] %	Net exports, 2009
Computer and information services	112.0	16	44.3
Nonfinancial trading and other trade-related services	95.1	14	45.0
Legal, accounting, and management	93.2	11	15.7
R&D	59.6	13	-0.1
Architecture, engineering, and technical consultancy	57.6	11	23.4
Advertising, market research, and opinion polling	25.6	12	-12.0
Other[2]	198.8	6	-3.0
Total	**641.9**	**12**	**113.3**

1 Compound annual growth rate based on the subset of mature economies with data availability for both 2002 and 2009.
2 Includes other miscellaneous business, professional, and technical services not further specified, operational leasing, service trade between affiliated companies not identified elsewhere, as well as nonclassified business services.
SOURCE: Eurostat; US Bureau of Economic Analysis; McKinsey Global Institute analysis

Business services trade has developed more strongly among mature economies than with emerging markets. The United States, for instance, exported around $75 billion in business services to mature economies in 2009 and about $30 billion to emerging economies. Excluding intra-EU trade, the EU-15 exported around $110 billion to mature economies and $60 billion to developing ones. The amount of business services that mature economies import from emerging markets accounts for 35 percent of overall imports of computer and information services, and 19 percent of other business services, equivalent to 1.6 percent of business services value added in 2009.

We note that there is likely to be a certain element of understating of both exports and imports because of limited data gathering as well as tax-optimization strategies.[31]

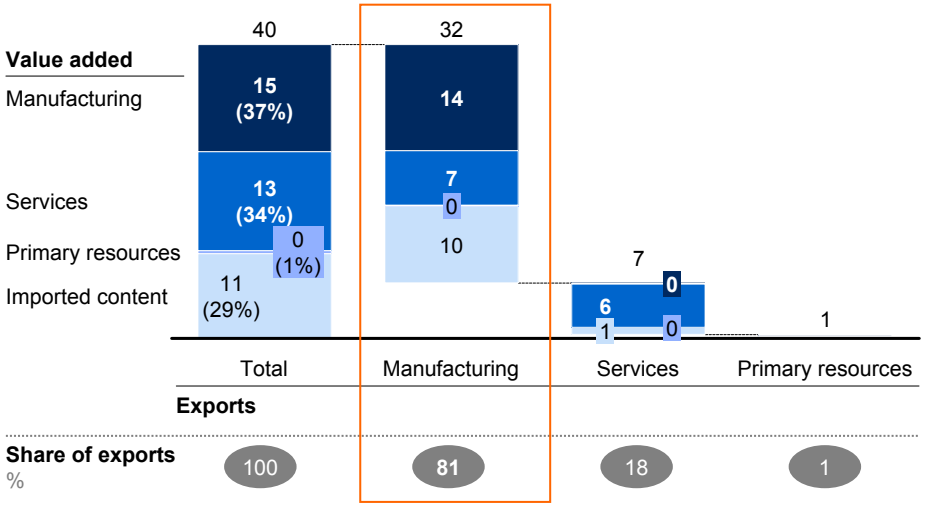
SEVERAL MATURE ECONOMIES ALREADY EXPORT MORE VALUE ADDED RELATED TO SERVICES THAN TO MANUFACTURING

While one-quarter of exports in services already seems to be a higher share than many people might expect, the ratio actually turns in favor of services when we look at the value added embedded in exports. We have conducted an analysis for Germany, a well-known manufacturing exporter with 81 percent of exports coming from manufactured goods (Exhibit 20). We find that those manufactured goods contain around 23 percent service inputs in addition to almost one-third of imported content. Service exports, in contrast, almost entirely come from domestic value added. Overall, exports of services value added account for 13 percent of German GDP—almost equal to the 15 percent of GDP exports of manufacturing value added. In the case of both the United States and the United Kingdom, the value added from service exports, both direct and embedded in goods exports, already exceeds the value that manufacturers add to total exports.

Exhibit 20

Even where manufactured goods dominate export statistics, the value-added content can be as high from services as from manufacturing

Breakdown of exports, Germany
% of GDP



NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; McKinsey Global Institute analysis

31 J. B. Jensen, *Global trade in services: Fear, facts, and offshoring*, Peterson Institute for International Economics, 2011.

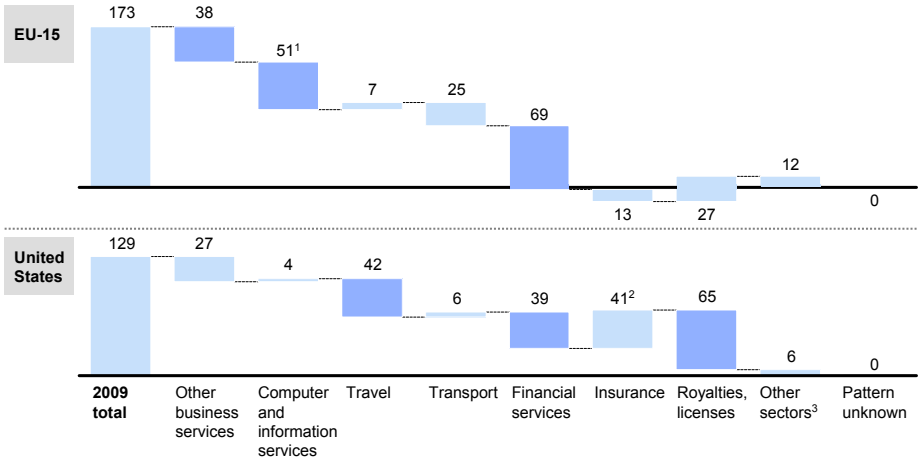
Myth 6: "Service economies" such as the United States are the world leaders in service trade

Strong manufacturers can be robust service exporters at the same time. The EU significantly outperforms the United States on trade in services. In 2009, EU-15 service exports amounted to 9.4 percent of GDP—or 4.1 percent when we exclude trade within the EU-27. This compares with 3.6 percent in the United States and 2.5 percent for Japan. This strength exists in trade to all European, Middle Eastern, and African regions as well as developed and emerging Asia. The United States posts higher service exports only to Canada and Latin America. In net terms, the EU-15 leads the United States with a 2009 surplus of $173 billion, compared with $129 billion for the United States (Exhibit 21). The facts are in stark contrast to the public perception in some countries such as the United Kingdom that a country needs to "choose between success in manufacturing and services."

Exhibit 21

EU-15 success in service exports is driven by business, computer, and financial services

Total service net exports, 2009
$ billion



1 Skewed upward by $34 billion Irish exports, which are partially attributable to US multinational corporations' tax optimization.
2 Bermuda and Switzerland reinsurance-driven.
3 Communication; construction; government services; personal, cultural, and recreational services.
SOURCE: Eurostat; McKinsey Global Institute analysis

Traditional manufacturing powerhouses such as Germany are strong in service exports, too. In fact, Germany's service exports amount to 7.1 percent of its GDP, compared with 3.5 percent for the United States. The majority of German service exports is composed of business services (39 percent of service exports in 2009), transportation (23 percent), and travel (15 percent). Notably, among business services, Germany boasts higher exports of IT and architecture, engineering, and technical services than the United States, even in absolute dollar terms. In the case of the United Kingdom, its reputation as a "service economy" extends to the

trade arena, too. UK service exports were equivalent to 10.7 percent of GDP and a surplus of 3.1 percent of GDP in 2009.

For the EU-15, business, computer, and financial services are the most important elements of the region's trade in services, while royalties, travel, and financial services dominate net exports of US services. Japan remains weak in net exports of services across sectors. The situation is quite similar when we look at gross exports—with a few exceptions. Gross travel exports from EU-15 countries are almost three times as high as those from the United States, but these are mostly driven by intra-EU travel. Japan is a sizable exporter of business services other than computer and information services ($42 billion in 2009) but is as large an importer of business services.

Domiciling businesses offshore for tax purposes plays a significant role in business services exports. The US deficit in insurance is largely attributable to the offshoring of re-insurance activities to Bermuda. US strength in royalties and weakness in computer and information services are influenced by the fact that many US multinationals have opted to apportion sizable export revenue to Ireland because of the tax breaks available there.

Implications for mature economies

The facts that we have discussed counter prevailing misconceptions on trade, and this offers important implications for policy approaches. Policy makers in mature economies should take the following actions.

RESIST PROTECTIONIST PRESSURES

The facts do not support the arguments advanced by some that trade—especially so-called unfair trade—has destroyed jobs. Mature economies that need to deleverage will be able to grow out of their debt overhangs and boost net exports only if the global trading system remains open—and becomes even more open, especially in services. Yet rising protectionism is a major threat that is likely to increase if unemployment stays high. It is essential to use the facts to counter siren calls of protectionism and also to renew trade negotiations, if only on a bilateral or regional basis following the failure of Doha, to further liberalize trade.

SEE EMERGING ECONOMIES AS AN OPPORTUNITY, NOT A THREAT

Mature economies still generate around 70 percent of global GDP, but this share is projected to fall to an estimated 43 percent by 2030 as emerging economies generate an increasingly large share of global GDP.[32] China is expected to surpass the United States in terms of nominal GDP in the mid-2020s. It is statistically evident that the world is becoming increasingly multipolar. Measured by the Herfindahl-Hirschman Index, the concentration of global GDP across countries has declined by half since 1960.[33] This presents a very significant opportunity for mature economies to grow their export markets, specialize further, and access additional talent. Mature economies remain highly competitive in knowledge-intensive manufacturing and services that will be in growing demand from emerging markets. Given their continuing comparative advantages in knowledge-intensive manufacturing and services, mature economies should stand to gain significantly from increased growth in emerging markets. That said, this requires changes to traditional export strategies for many countries, which have been too focused on mature rather than emerging economies and goods rather than services.

32 IHS Global Insight forecast.

33 The Herfindahl-Hirschman Index (HHI) is a commonly accepted measure of market concentration.

BOOST RESOURCE PRODUCTIVITY AS A KEY LEVER TO IMPROVE THE AGGREGATE TRADE BALANCE

Higher productivity in the extraction, conversion, and use of resources—resource productivity—may be an important driver of balanced trade that mature economies are largely overlooking today. Higher resource productivity would, at the same time, deliver increased energy security and reduced dependence on imported energy, in addition to environmental benefits. Recent MGI research finds that higher resource productivity could cut oil and gas demand in mature economies by 25 percent by 2030 compared with a base case based on current practices.[34] Applying this potential saving to 2009 primary resource imports could reduce those imports by 0.7 percent of GDP—more than two-thirds of the overall 0.9 percent trade deficit that mature economies ran that year, even assuming no price effects. Recent breakthroughs in nontraditional sources of gas and oil (e.g., from shale deposits) could lead to a material improvement in the trade balances of mature economies, as long as environmental issues are overcome. In times during which policy makers seem most concerned with employment, it should be clear that such productivity improvements have a strongly positive employment impact. Highly effective measures such as improving building insulation are labor-intensive. In addition, reducing spending on imported energy will support households in mature economies in their deleveraging efforts and free up funds for consumption and investment in domestically produced goods and services.

THINK IN TERMS OF VALUE CHAINS RATHER THAN OUTDATED SECTOR BOUNDARIES

The term "manufacturing" encompasses a range of activities, from high-value-added design and support services to low-value-added manual assembly, and is too broad a term to be useful for policy making. It is more effective to think of steps in an increasingly global value chain with design in one country and assembly in another. This is a better way of characterizing economic activity than traditional boundaries between manufacturing and services—activities that are increasingly blurred. And the high service–value-added share in goods exports shows that competitiveness is crucial across all relevant elements of the value chain, not just the manufacturing parts. So policy makers should think about how their economies attract more R&D and design jobs—whether they are in manufacturing or service sectors—rather than seeking to retain low-value, labor-intensive assembly jobs just because they are labeled as manufacturing. Indeed, such policies would be doomed to fail. A good place to start for government statisticians would be to develop ways to measure global value chains effectively.

SEEK COMPARATIVE ADVANTAGE RATHER THAN DIRECT EMPLOYMENT

Policy makers and commentators too often seem to emphasize exports of manufactured goods as a route to higher (and indeed, higher quality) employment in manufacturing. Such policies fail to acknowledge the underlying trends and structural differences between countries that make it unlikely that manufacturing jobs can be "won back" at scale or that the sector can be significantly expanded. Policy makers should rather aim to support exports that offer high comparative advantage and favorable terms of trade. Regardless of any immediate

34 *Resource Revolution: Meeting the world's energy, materials, food, and water needs*, McKinsey Global Institute and McKinsey & Company's Sustainability & Resource Productivity Practice, November 2011 (www.mckinsey.com/mgi).

employment effect in manufacturing, this would release income for consumption and investment and support domestic employment and well-being.

SUPPORT COMPETITIVENESS IN KNOWLEDGE-INTENSIVE ACTIVITIES THROUGH EDUCATION AND INNOVATION

Knowledge-intensity has been a comparative advantage for most mature economies. Continuing investment in education and innovation will be required to retain that advantage and sustain high-value job creation. Mature economies also need to innovate on the institutions and processes that will deliver this enhanced investment. For instance, as the pace of change ratchets up and populations age, innovation in lifelong learning will be critical. Many mature economies can still learn lessons from those that have achieved best practice in increasing public and private investment in R&D or linking universities and the private sector more effectively. But even those that have achieved best practice need to build stronger innovation networks with emerging economies that are increasingly the source of, and key market for, innovative products and business models.

IMPROVE MEASUREMENTS OF GLOBAL VALUE CHAINS AND SERVICE TRADE

Targeted policy requires effective measurement that today's national accounts do not deliver. National accounts still tend to measure trade in terms of the value of the good or service crossing borders, rather than in terms of the value added in the exporting country. Given that the import content of exports exceeds 80 percent in some sectors and economies, an upgrade in measurement appears to be crucial.[35]

For services, granularity and accuracy should be improved, too. Eurostat, for instance, uses around 80 categories to classify service trade and around 4,000 categories of traded goods. This is out of proportion given that services generated 82 percent of EU-15 economic activity and 23 percent of exports in 2008. In addition, some trade metrics need rethinking. An example is the United Kingdom's Financial Intermediation Services Indirectly Measured metric—a key component of trade in banking that does not adjust for risk.[36]

PUSH FOR OPEN TRADE IN SERVICES

Mature economies are highly successful at exporting services, but explicit and hidden trade restrictions remain high. Tariff equivalents of trade restrictions are below 10 percent for the EU and the United States but exceed 60 percent for China and India.[37] Governments of mature economies should push vigorously for fuller liberalization and attempt to improve the protection of intellectual property and access to government procurement and infrastructure investments.

---

35 See "Measuring trade in value added: An OECD-WTO joint initiative," note released in March 2012. Also refer to previous speeches given by Pascal Lamy, e.g. *Globalization of the Industrial Production Chains and Measuring International Trade in Value Added* in front of the French Senate in October 2010, and to the WTO "Made in the World" project.

36 A. Haldane, *The contribution of the financial sector—Mirage or miracle?* The Future of Finance conference, London, July 2010.

37 J. B. Jensen, *Global trade in services: Fear, facts, and offshoring*, Peterson Institute for International Economics, August 2011; and G. Hufbauer, J. Schott, and W. Wong, "Figuring out the Doha Round," *Policy Analyses in International Economics*, No. 91, Peterson Institute for International Economics, 2010.

□ □ □

The challenges facing mature economies are severe, and this reinforces the need to calibrate policy on the basis of facts rather than conventional wisdom or special interests. Policy makers have arguably navigated many of the contradictory messages around trade in the public debate better than has commonly been appreciated, and we hope that this report can provide an additional fact base that will help to sustain the quality of the decisions they make.

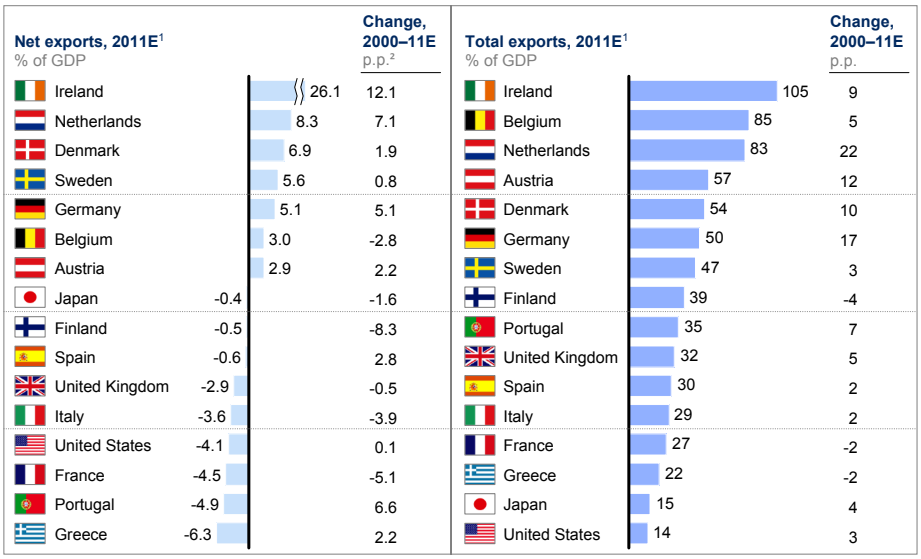
Appendix A: Countries

The main body of this report has discussed trends in trade across mature economies overall, but substantial differences exist among them. In this appendix, for each of these economies we summarize its trade balance, trade profile by segment, and employment. In each case, we take a closer look at knowledge-intensive manufacturing because it attracts a high level of attention in the current public debate.

We first provide a brief overview of exports and net exports by country, which vary widely among mature economies (Exhibit A1)[38]. The balance of trade in Southern European economies is strongly negative, reflecting an inflow of capital and a loss of competitiveness in the eurozone. The balance is also negative for the United Kingdom and the United States, but this is typically associated with capital inflows into reserve currencies (particularly in the case of the United States) as well as the perceived attractiveness of capital markets in these two economies. Continental and Northern European economies are at the opposite end of the spectrum with large trade surpluses. Gross exports as a share of GDP also vary widely, from as low as 14 percent for the United States in 2011 to 105 percent for Ireland. Beyond different structures of the economies and conduct of firms, this largely reflects differences in the size of countries and their proximity to key trade partners.

Exhibit A1

Net exports and total exports by country



1 2011 figures based on annualized quarterly data through Q3 2011.
2 p.p. = percentage points.
NOTE: Not to scale.
SOURCE: OECD; McKinsey Global Institute analysis

38 We do not include Luxembourg in this country appendix, as the comparability to other mature economies is small due to the country's small size, strong impact of commuters on the economy, and significant focus on financial services.

Sector trade balances also vary widely across our set of mature economies (Exhibit A2). For example, only Denmark has a net surplus in primary resources trade (1.8 percent of GDP in 2008) driven not only by oil and gas exports from North Sea reserves but also the fact that Denmark has little reliance on natural resource imports for energy production, instead utilizing wind and other renewable sources. By contrast, Belgium ran the largest primary resources trade deficit in our sample of mature economies in 2008, at minus 7.5 percent of GDP—1.6 percentage points more than the second-largest primary resources trade deficit in Finland.

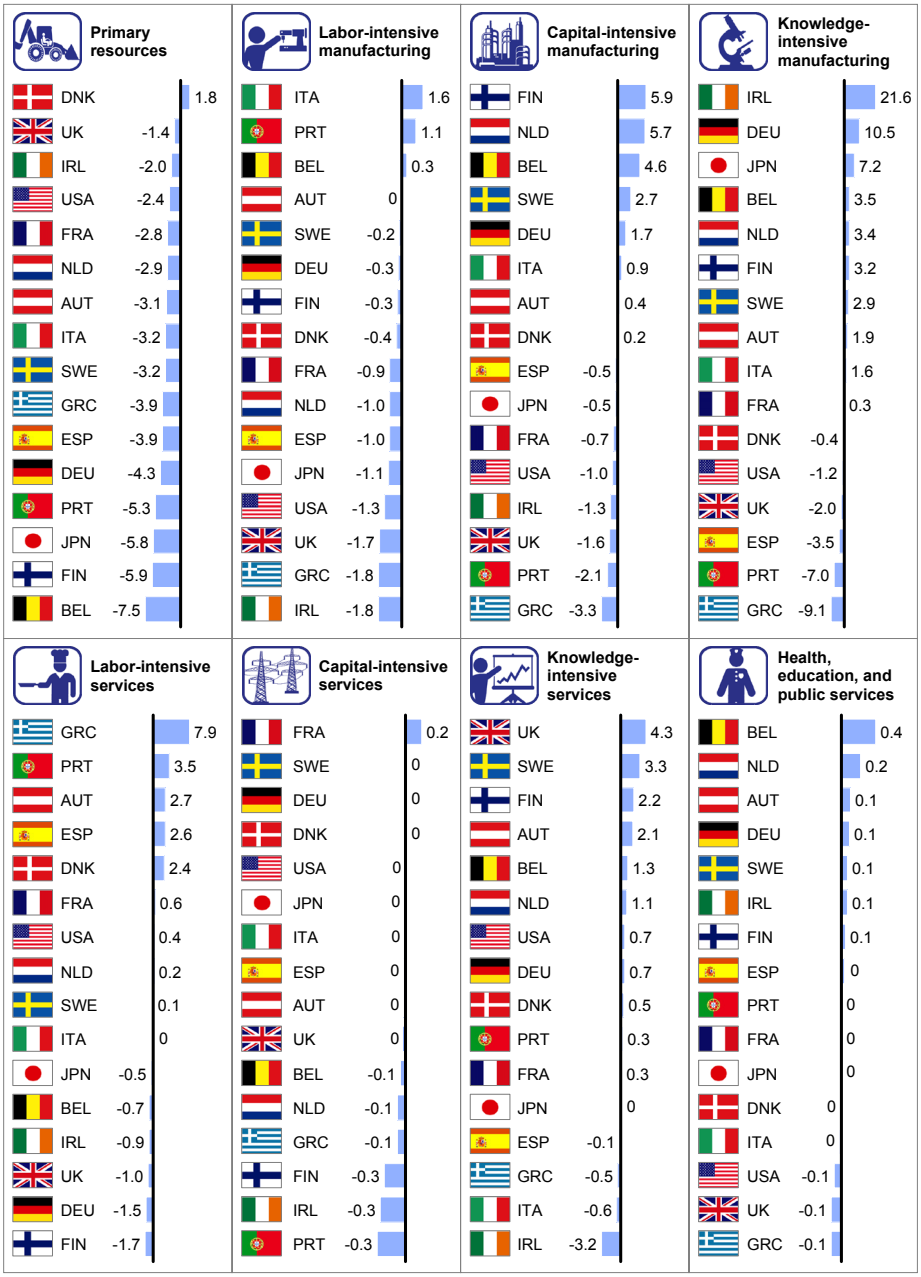
Among manufacturing sectors, Italy stands out for its surplus in labor-intensive manufacturing. Italy exported $88 billion worth of garments and other labor-intensive manufactured goods in 2008, leading to a net surplus of 1.6 percent of GDP. Capital-intensive manufacturing trade balances range from 5.9 percent of GDP in Finland (due to pulp and paper products as well as minerals trade) to minus 3.3 percent of GDP in Greece. Over the past 20 years, Ireland has become a manufacturing center for a number of European multinationals specializing in pharmaceuticals and electronics. As a result, Ireland had the largest trade surplus relative to GDP in knowledge-intensive manufacturing (21.6 percent of GDP) in our sample of mature economies in 2008. Again, Greece had the largest trade deficit in this sector, at minus 9.1 percent of GDP.

While Greece had the largest manufacturing trade deficit in our sample, Greece also had the largest labor-intensive services trade surplus in 2008. Strong tourism and transport service exports accounted for a trade surplus of 7.9 percent of GDP—more than double the second-largest surplus in labor-intensive services (Portugal). France was the only country with a measurable surplus in capital-intensive services, at 0.2 percent of GDP. The United Kingdom's large knowledge-related services surplus (4.3 percent of GDP in 2008) reflects its role as a financial and business services hub. Finally, Belgium's trade surplus in health, education, and public services stems in part from the role Brussels plays as the seat of European Union governance. Transactions with EU institutions are accounted for as exports and imports.

Exhibit A2

Net exports by sector

% of GDP, 2008[1]



1 As 2009 is an exceptional year, we use 2008 data for cross-country comparisons.
NOTE: Not to scale.
SOURCE: OECD; McKinsey Global Institute analysis

The following countries are covered.

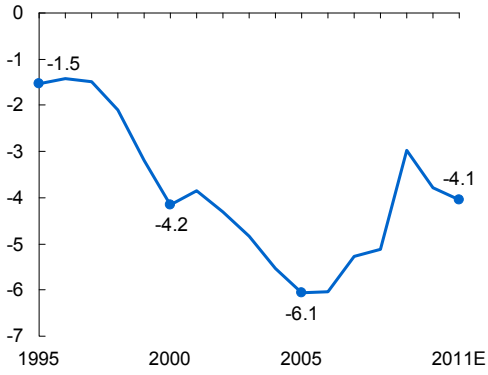
UNITED STATES

The United Sates last ran a trade surplus in 1975. A steady increase in US consumer spending and goods imports has resulted in a declining trade balance. Since 1997, growing natural resource imports combined with imports of manufactured goods caused the US trade balance to decline rapidly, reaching a low of minus 6.1 percent of GDP in 2005. Since then, US export growth, combined with less consumer spending and imports due to the crisis, has helped shrink the US trade deficit to minus 4.1 percent of GDP in 2011, its 2000 level (Exhibit A3).

Exhibit A3

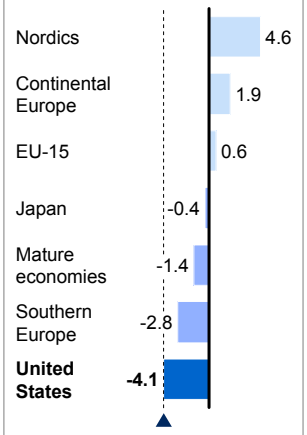
Overall trade balance: United States

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	-112	-412	-761	-615
Exports % of GDP	11	11	10	14

Net exports, 2011E[1]
% of GDP



1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; International Monetary Fund (IMF); McKinsey Global Institute analysis

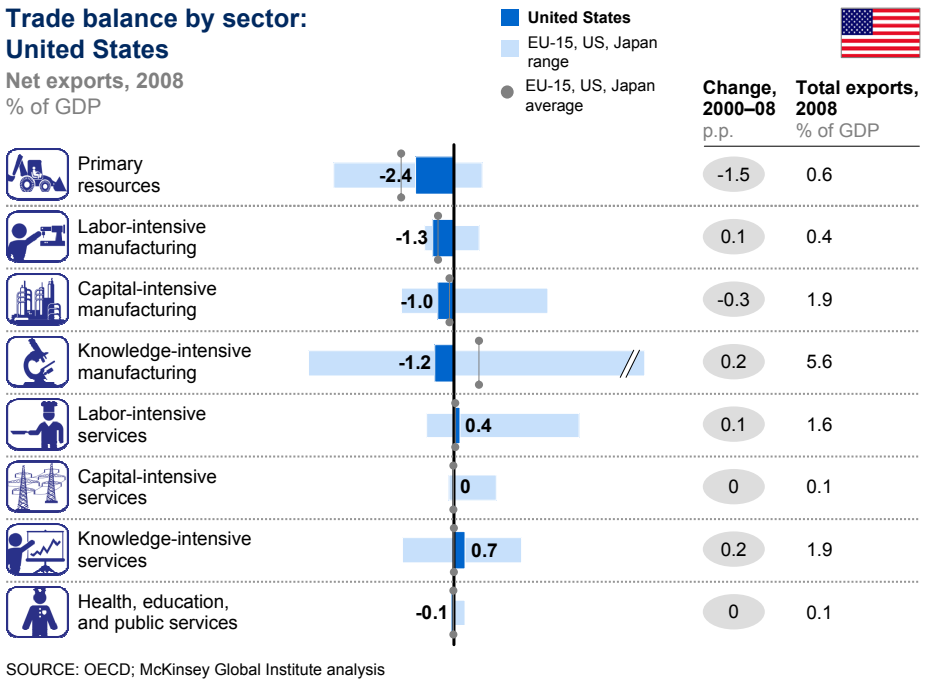
While the majority of US manufactured goods imports comes from China and other emerging markets, analysis of the value added in these goods shows a much more global dispersion. For example, an analysis of iPod and laptop assembly suggests that China may capture as little as 3 percent of the value added of its exports, since China imports many high-tech components from Japan, South Korea, Taiwan, and the United States.[39] Another analysis shows that the import content of China's exports was around 50 percent in 2006 and more than 80 percent in most electronic products.[40]

39 J. Dedrick, K. L. Kraemer, and G. Linden, "Who profits from innovation in global value chains? A study of the iPod and notebooks PCs," *Industrial and Corporate Change*, Vol. 19, No. 1: 81-116, 2010.

40 R. Koopman. Z. Wang, and S. Wie, *How much of Chinese exports is really made in China?,* Office of Economics Working Paper No. 2008-03-B, US International Trade Commission, March 2008.

Only in knowledge-intensive and labor-intensive services did the United States have a trade surplus in 2008 (Exhibit A4). In knowledge-intensive services, the United States ran a $43 billion deficit in insurance services, and IT services trade was roughly in balance. Trade in royalties and licenses (largely from software), financial services, and other business services resulted in surpluses of $69 billion, $41 billion, and $31 billion, respectively. Strong travel exports account for the surplus in labor-intensive services.

Exhibit A4



SOURCE: OECD; McKinsey Global Institute analysis

In all other sectors—primary resources and all categories of manufacturing—the United States ran a trade deficit. In 1990, US trade in primary resources was in balance. Since then, increasing oil imports and prices drove the US primary resources trade deficit to total minus 2.4 percent of GDP in 2008—not far from the 3.6 percent total deficit in manufacturing. From 2000 to 2008, primary resources accounted for all of the increase in the US trade deficit, while manufacturing net trade remained steady.

Knowledge-intensive manufacturing accounted for 45 percent of total US exports in 2008, totaling 5.6 percent of GDP (Exhibit A5). While the United States runs a trade deficit in knowledge-intensive manufacturing, and exports relative to GDP are only half those in other mature economies, a revealed comparative advantage close to 1 (0.97) reveals that the United States is as specialized in those sectors as other mature economies. This means that the trade deficit and low relative exports in knowledge-intensive manufacturing reflect low total US exports rather than a lack of specialization. Revealed comparative advantage analysis also shows that the United States is more specialized in exports of computing, communications, and other electrical equipment than the average of our sample of mature economies. These exports totaled $262 billion in 2008, or 1.8 percent of GDP.

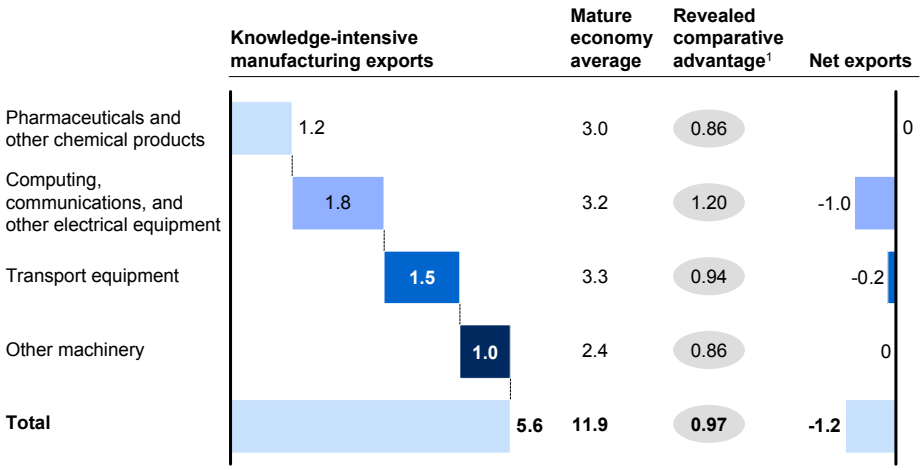
From 2000 to 2007, employment in US manufacturing sectors declined by a total of 4.5 million jobs. A rough estimate shows that approximately one-third of

that decline—1.6 million jobs— could be related to rapidly rising trade deficits in manufacturing, before the trade balance improved again from 2007 to 2010 (a much more thorough analysis in the main body of this document shows that around 20 percent of manufacturing job losses between 2000 and 2010 may be associated with trade). In the United States, 10 percent of the workforce was employed in the manufacturing sector in 2007, three percentage points lower than the mature economy average (Exhibit A6). Over the same period, service employment increased by 11 million jobs.

Exhibit A5

Knowledge-intensive manufacturing exports: United States

% of GDP, 2008



1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.

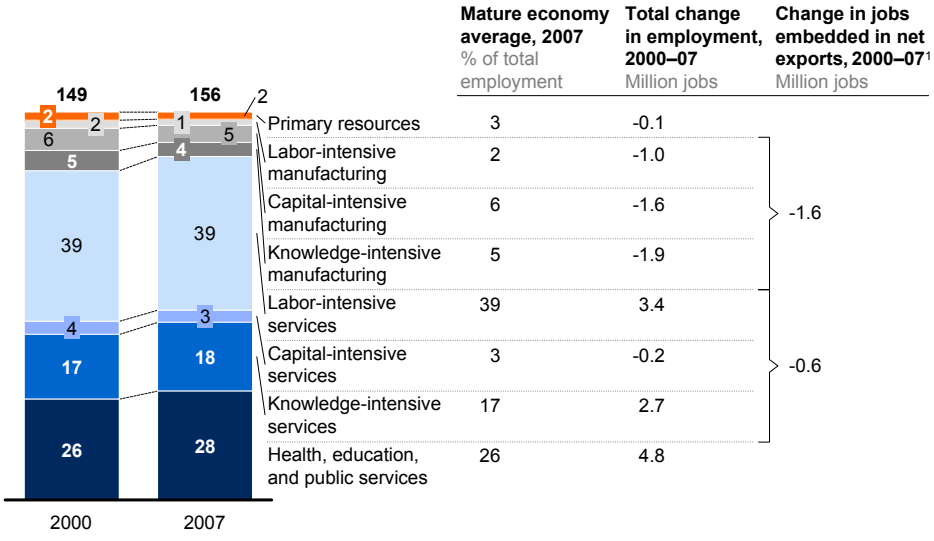
NOTE: Numbers may not sum due to rounding.

SOURCE: OECD; McKinsey Global Institute analysis

Exhibit A6

Employment share by sector: United States

% of total workforce; million jobs



1 Rough approximation. See Appendix B for details.

NOTE: Numbers may not sum due to rounding.

SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

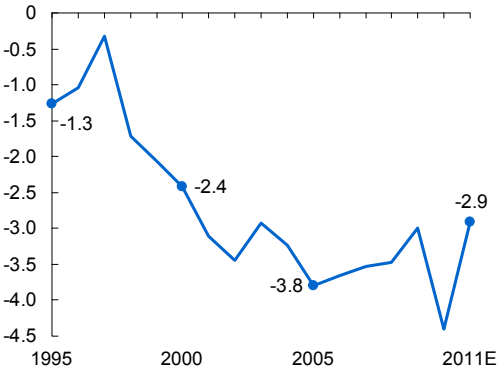
UNITED KINGDOM

The United Kingdom has had a trade deficit since 1983. From a peak in 1997, net exports declined to minus 3.8 percent of GDP in 2005, before improving again to minus 2.9 percent in 2011 (Exhibit A7). Besides the Southern European, France, and the United States, the United Kingdom has the largest trade deficit in our sample of mature economies.

Exhibit A7

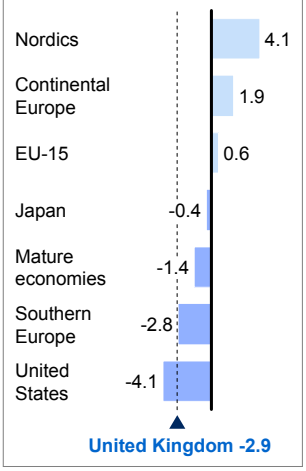
Overall trade balance: United Kingdom

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	-15	-36	-87	-72
Exports % of GDP	28	27	26	32

Net exports, 2011E[1]
% of GDP



1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; IMF; McKinsey Global Institute analysis

In contrast to other mature economies, the United Kingdom had a sizable 5.3 percent of GDP trade deficit in manufactured goods in 2008, including knowledge-intensive manufacturing; that amount was 1.4 percentage points higher than in 2000 (Exhibit A8). Real manufacturing value added essentially stagnated in the decade prior to the crisis. In manufacturing, the United Kingdom has run a persistent deficit since 1977, with a negative balance for most of the previous century.

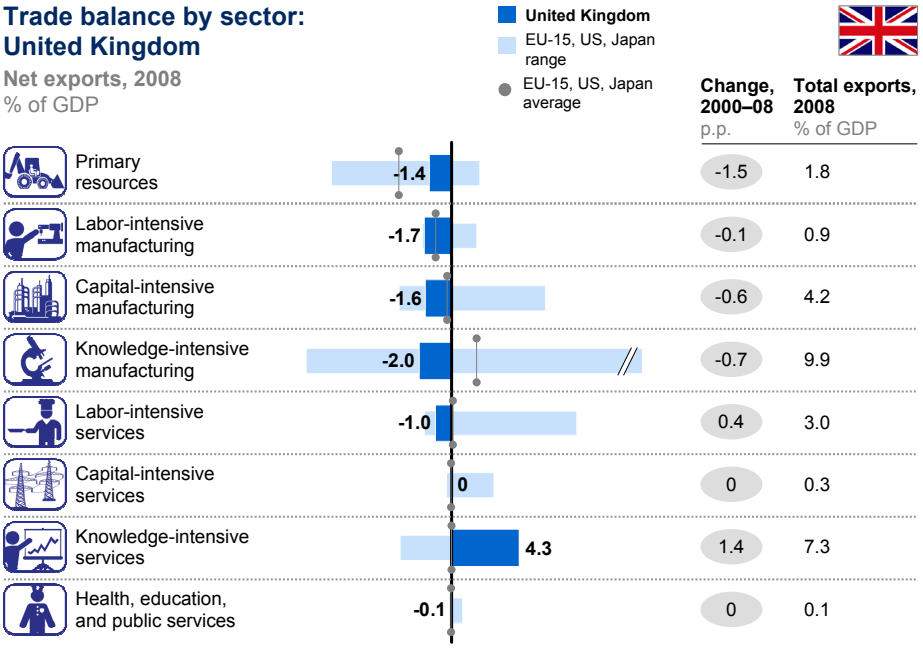
Reflecting the United Kingdom's oil production, the deficit in primary resources was much lower at minus 1.4 percent of GDP than in other mature economies. However, the deterioration in net exports was still most significant in primary resources (minus 1.5 percentage points of GDP), and increasing resource productivity might help revert this decline and put the United Kingdom back into surplus in primary resources.

And the deterioration in the manufacturing trade balance in the 2000s was no larger than the improvement in surplus in knowledge-intensive services, which are a benchmark among mature economies, reflecting both the City of London's financial services and business services such as legal, accounting, management, R&D, and IT.

Exhibit A8

Trade balance by sector: United Kingdom

Net exports, 2008
% of GDP



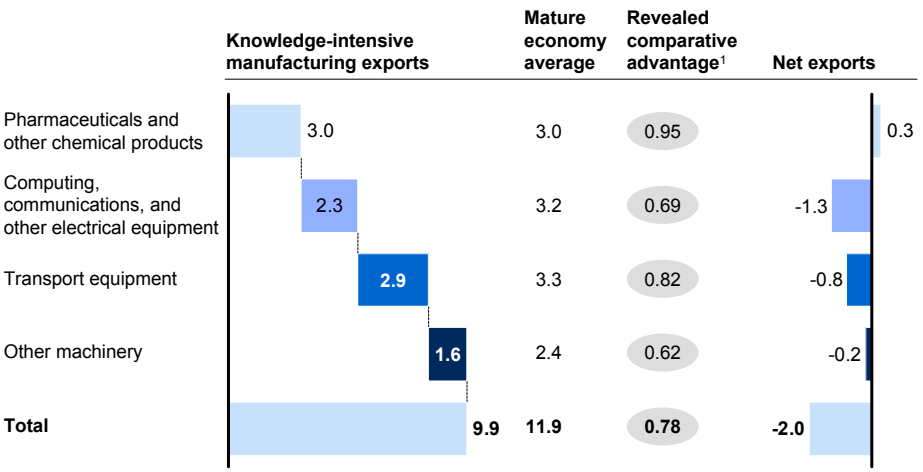
SOURCE: OECD; McKinsey Global Institute analysis

Apart from Greece, Portugal, and Spain, the United Kingdom has Europe's largest trade deficit in knowledge-intensive manufacturing. Relative to GDP, the United Kingdom exports only around 70 percent as much computing and communication equipment as other mature economies. This is not a new development. The United Kingdom's largest trade deficit over the past ten years was in knowledge-intensive manufacturing. Only pharmaceuticals and other chemical product exports are in line with other mature economies and show a trade surplus (Exhibit A9). All other sectors and subsectors are in deficit, including, since 2008, aircraft and spacecraft.

Exhibit A9

Knowledge-intensive manufacturing: United Kingdom

% of GDP, 2008



1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.

NOTE: Numbers may not sum due to rounding.

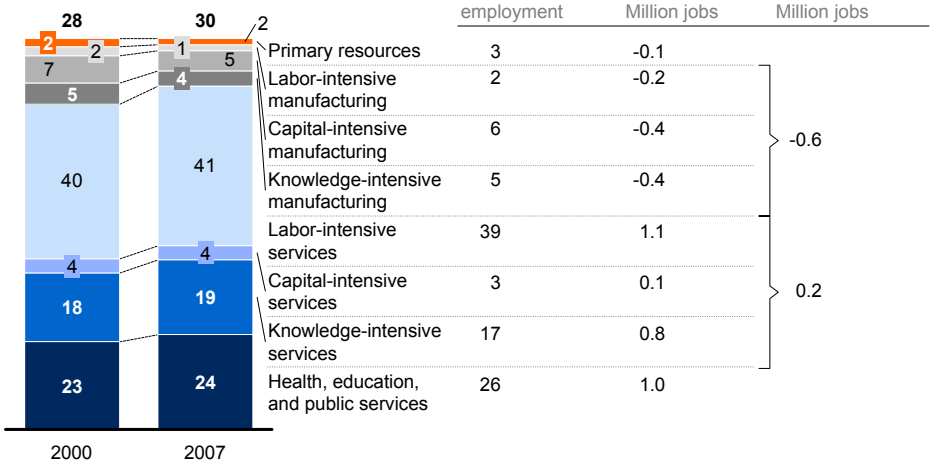
SOURCE: OECD; McKinsey Global Institute analysis

From 2000 to 2007, United Kingdom service employment increased considerably (Exhibit A10). Labor-intensive, knowledge-intensive, and public service sectors added nearly three million jobs. Manufacturing employment, in turn, declined by one million.

Exhibit A10

Employment share by sector: United Kingdom

% of total workforce; million jobs



	Mature economy average, 2007 % of total employment	Total change in employment, 2000–07 Million jobs	Change in jobs embedded in net exports, 2000–07[1] Million jobs
Primary resources	3	-0.1	
Labor-intensive manufacturing	2	-0.2	
Capital-intensive manufacturing	6	-0.4	
Knowledge-intensive manufacturing	5	-0.4	-0.6
Labor-intensive services	39	1.1	
Capital-intensive services	3	0.1	
Knowledge-intensive services	17	0.8	0.2
Health, education, and public services	26	1.0	

1 Rough approximation. See Appendix B for details.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

The United Kingdom seems to be exceptional in the fact that trade specialization did play a major role in this pattern of job creation and losses. In our rough estimate, the substantial increase in business and financial service net exports was equivalent to around 600,000 more jobs, or around three-quarters of the total increase in employment in these sectors from 2000 to 2007. And the deterioration of the manufacturing trade deficit over the same period was equivalent to a decline of around 600,000 manufacturing jobs—more than half of the total loss in manufacturing jobs from 2000 to 2007.[41] It is important to note, however, that this seems to have been a temporary development in the years from 2000 to 2007 (and also the late nineties) when the shift in trade to services occurred. The trend decline in manufacturing employment before and after that period was no faster than in other mature economies and reflected productivity and demand changes.

41 The other half of manufacturing job losses during that time relates to productivity increases outpacing growth in domestic demand for manufactured goods. The deterioration of the manufacturing trade deficit was also equivalent to a loss of around 400,000 jobs among service suppliers to manufacturing companies, offsetting some of the trade-related gains from increasing business service exports.

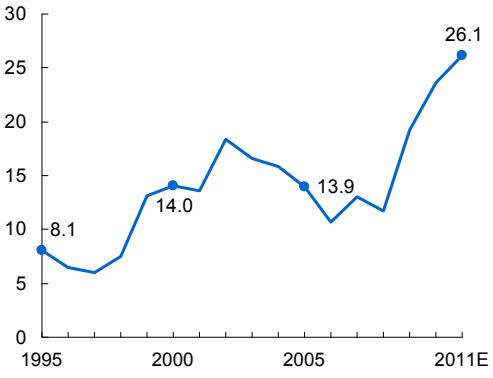
IRELAND

Relative to the size of its economy, Ireland is the largest net exporter in our sample of mature economies (Exhibit A11). This reflects growth in total exports over the past 15 years, owing to a combination of a favorable business environment, an abundant supply of English-speaking talent, and favorable corporate tax rates that have attracted numerous multinational firms to base their production, R&D, and regional headquarters in Ireland. Irish exports increased from $50 billion in 1995 to $227 billion in 2008, and net exports went up to18 percent of GDP already in 2002. Net exports expressed as a share of GDP have exploded since 2008 again, due to a decline in imports reflecting deleveraging and less demand as well as a decline in nominal GDP (which inflates the net exports-to-GDP ratio).

Exhibit A11

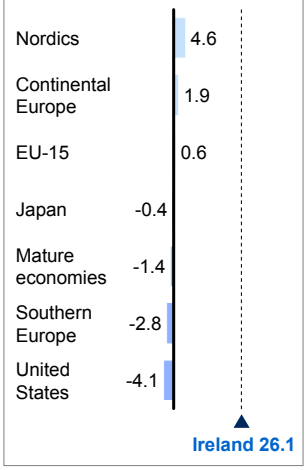
Overall trade balance: Ireland

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	5	14	28	58
Exports % of GDP	73	96	84	105

Net exports, 2011E[1]
% of GDP



1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; IMF; McKinsey Global Institute analysis

Combined exports in knowledge-intensive manufacturing and services accounted for more than 70 percent of GDP and around 85 percent of Ireland's exports (Exhibit A12). Ireland's positive trade balance comes entirely from knowledge-intensive manufacturing surpluses at more than 20 percent of GDP. In knowledge-intensive services, Ireland exported around $35 billion in IT services in 2008 but imported an equivalent amount of royalties and license fees. The overall deficit in knowledge-intensive services reflects large imports of R&D and advertising services. Ireland's trade data need to be interpreted with great care, however, as the country is exposed to various complex tax-optimization strategies of multinational companies.

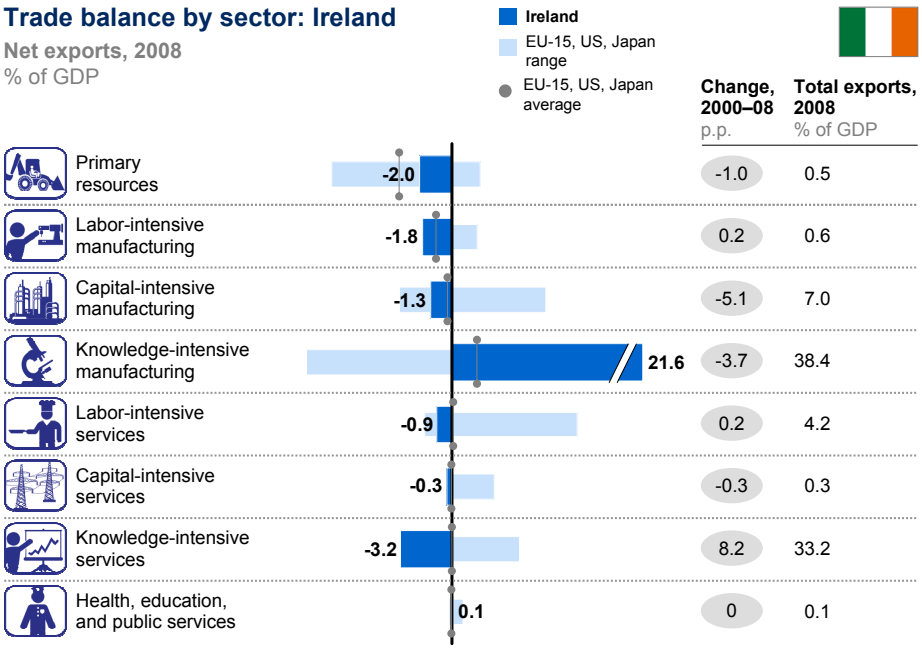
The knowledge-intensive manufacturing sector, specifically pharmaceuticals, chemical products, and electronics, accounts for nearly Ireland's entire substantial trade surplus (Exhibit A13). Ireland's trade surplus in knowledge-intensive manufacturing totaled nearly 22 percent of GDP in 2008, more than twice the 1995 surplus. Irish exports of pharmaceuticals and other chemical products totaled 25 percent of GDP in 2008, compared with just 3 percent in the mature economy average. Computing, communications, and other electrical

equipment exports totaled 12 percent in 2008—nearly four times the share in the mature economy average. The high comparative advantage in these sectors makes up for the comparative disadvantage in transport equipment and other machinery. Ireland's trade surplus in these sectors is strongly linked to the successful attraction of foreign direct investment by multinational companies. In turn, a net 17 percent of 2008 GDP was income earned by foreign owners.

Exhibit A12

Trade balance by sector: Ireland

Net exports, 2008
% of GDP

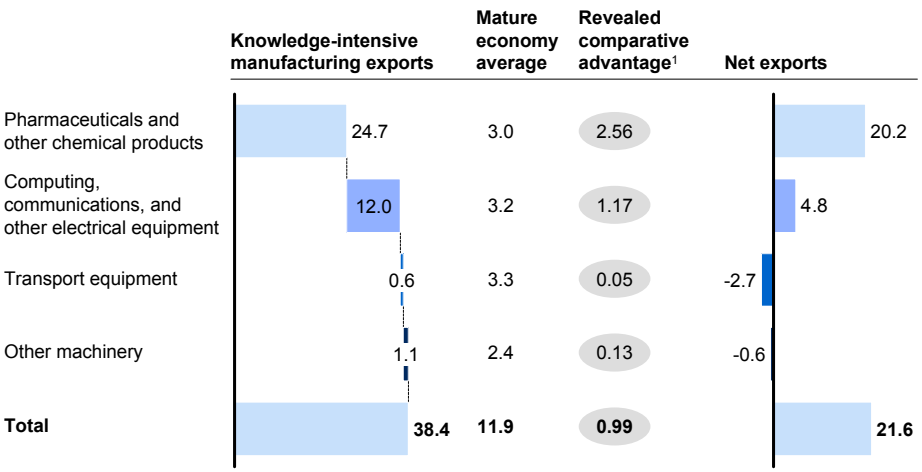


SOURCE: OECD; McKinsey Global Institute analysis

Exhibit A13

Knowledge-intensive manufacturing: Ireland

% of GDP, 2008



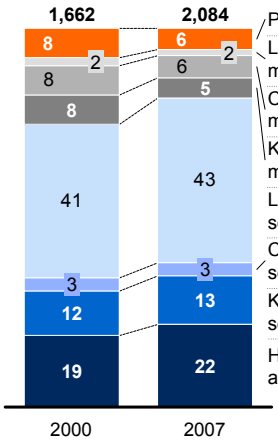
1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; McKinsey Global Institute analysis

While knowledge-intensive manufacturing accounts for Ireland's substantial trade surplus, the Irish workforce is not concentrated in this sector. In fact, Ireland achieves significant knowledge-intensive manufacturing exports with the same share of its total workforce—5 percent—as in the mature economy average. Instead, Ireland employs more of its workforce in primary resource and labor-intensive service sectors than most other mature economies (Exhibit A14). Moreover, from 2000 to 2007, manufacturing employment declined by 20,000, while labor-intensive services employment grew by almost 230,000—more than 100,000 of which was in construction alone, reflecting the real-estate boom. Around 200,000 workers joined knowledge-intensive and public services, although as of yet both these sectors still employ a significantly smaller share of the Irish workforce compared with the mature economy average.

Exhibit A14

Employment share by sector: Ireland

% of total workforce; thousand jobs



	Mature economy average, 2007 % of total employment	Total change in employment, 2000–07 Thousand jobs	Change in jobs embedded in net exports, 2000–07[1] Thousand jobs
Primary resources	3	-12	
Labor-intensive manufacturing	2	-4	
Capital-intensive manufacturing	6	-6	-10
Knowledge-intensive manufacturing	5	-11	
Labor-intensive services	39	228	
Capital-intensive services	3	16	
Knowledge-intensive services	17	67	140
Health, education, and public services	26	143	

1 Rough approximation. See Appendix B for details.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

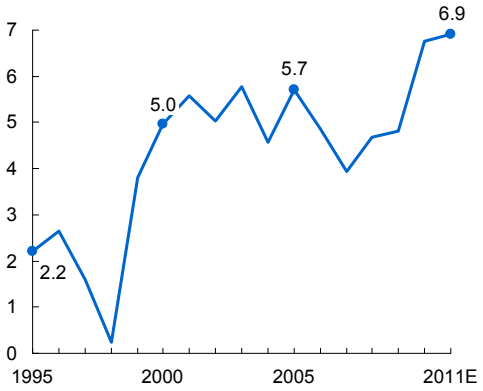
DENMARK

In the 1990s, Denmark's trade balance averaged almost 3 percent of GDP, with a low of 0.2 percent of GDP in 1999 (Exhibit A15). Since then, Denmark's net exports have nearly doubled, averaging over 5 percent of GDP over the past decade. This had coincided with a surge in total exports from 30 percent of GDP in 1995 to 54 percent in 2011. Next to Luxembourg, Ireland, and the Netherlands, Denmark had the largest trade surplus (relative to GDP) in our sample of mature economies in 2011.

Exhibit A15

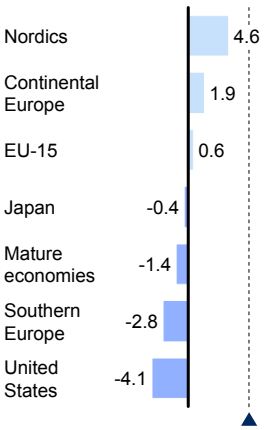
Overall trade balance: Denmark

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	4	8	15	24
Exports % of GDP	30	44	49	54

Net exports, 2011E[1]
% of GDP



1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; IMF; McKinsey Global Institute analysis

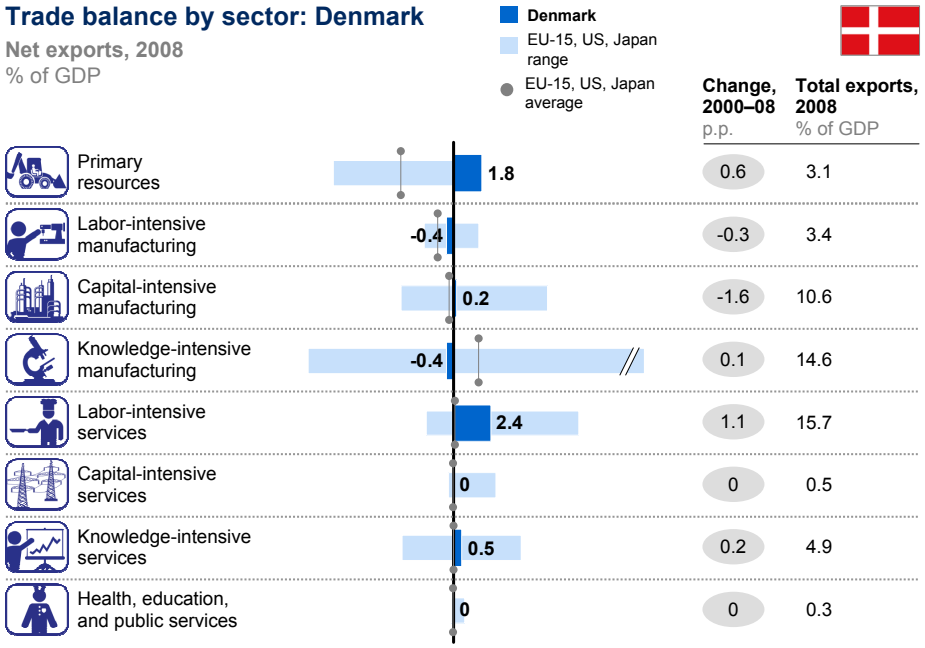
Denmark is the only country in our sample that runs a trade surplus in primary resources, due to its oil and gas extraction from the North Sea combined with significant use of renewable energy sources such as wind for the country's own energy needs. In the 1990s, Denmark's primary resources trade netted a surplus of 0.2 percent of GDP. In 2008 this surplus reached 1.8 percent of GDP, or $6.3 billion (Exhibit A16). Labor-intensive services trade accounts for the rest of Denmark's total trade surplus. This sector, particularly shipping and transportation with a 2008 surplus of almost $13 billion, accounts for 30 percent of Denmark's total trade.

Denmark has a trade deficit in the knowledge-intensive manufacturing sector (Exhibit A17). Across all subsectors—particularly transport equipment—Denmark has a disadvantage compared with the rest of our sample of mature economies. Denmark had a transport equipment trade deficit totaling 2 percent of GDP in 2008, a mirror image to the strong shipping sector. While Denmark's exports, relative to GDP, in other knowledge-intensive manufacturing sectors exceed the average of mature economies, these sectors are relatively underrepresented in Denmark's total export profile.

Exhibit A16

Trade balance by sector: Denmark

Net exports, 2008
% of GDP

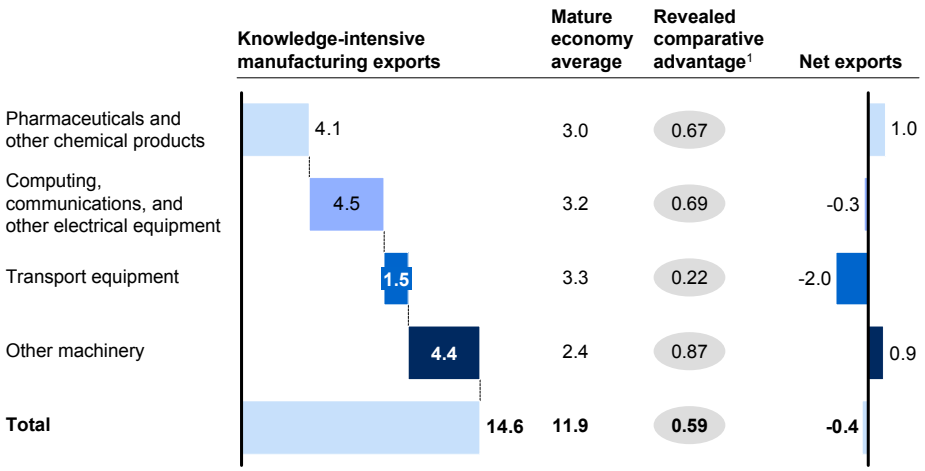


SOURCE: OECD; McKinsey Global Institute analysis

Exhibit A17

Knowledge-intensive manufacturing: Denmark

% of GDP, 2008



1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.

NOTE: Numbers may not sum due to rounding.

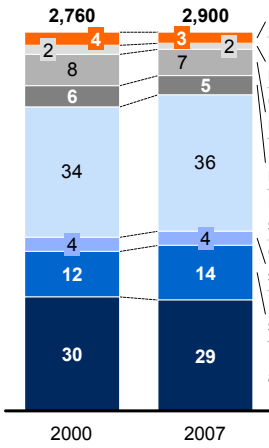
SOURCE: OECD; McKinsey Global Institute analysis

Service sectors employ 85 percent of Denmark's workforce (Exhibit A18). Denmark's private service sector—particularly labor-intensive and knowledge-intensive services—employs a smaller share of the total Danish workforce than the mature economy average in our sample. Instead, more Danes work in health, education, and public services. This sector accounts for 29 percent of all jobs in Denmark, compared with 26 percent in the mature economy average. The deterioration of the trade balance accounts for a substantial share of the decline in Danish manufacturing employment from 2000 to 2007.

Exhibit A18

Employment share by sector: Denmark

% of total workforce; thousand jobs



	Mature economy average, 2007 % of total employment	Total change in employment, 2000–07 Thousand jobs	Change in jobs embedded in net exports, 2000–07[1] Thousand jobs
Primary resources	3	-13	
Labor-intensive manufacturing	2	-14	
Capital-intensive manufacturing	6	-34	-40
Knowledge-intensive manufacturing	5	-5	
Labor-intensive services	39	93	
Capital-intensive services	3	1	7
Knowledge-intensive services	17	93	
Health, education, and public services	26	18	

1 Rough approximation. See Appendix B for details.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

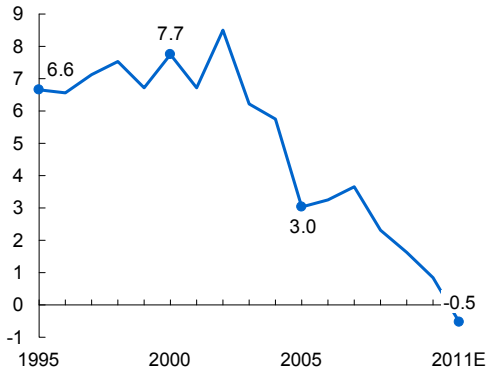
FINLAND

Finland's trade surplus has declined considerably over the past decade from a high of nearly 9 percent of GDP in 2002 to a deficit of 0.5 percent of GDP by 2011 (Exhibit A19). Finland's considerable trade surplus was built in the first half of the 1990s. It reflected the devaluation of the Finnish markka and subsequent export strength in wood, pulp and paper, basic metals, and transport equipment. But the balance of trade in those sectors declined in the mid 2000s and again in 2009, while increasing primary resource prices further weighed on the overall trade balance. In addition, the expansion of Finland's communications industry as evidenced by Nokia reinforced export and net export strength from the late nineties until 2008; exports and the trade balance in this industry fell sharply by almost three quarters, however, in 2009, and did not recover in 2010.[42]

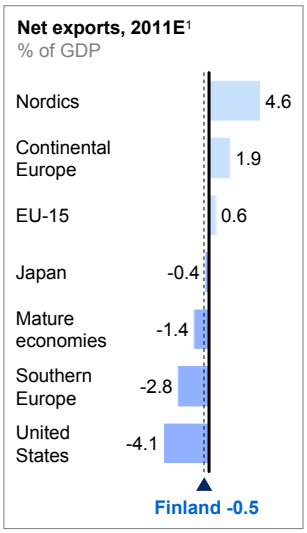
Exhibit A19

Overall trade balance: Finland

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	9	9	6	-1
Exports % of GDP	37	43	42	39



1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; IMF; McKinsey Global Institute analysis

Like many mature economies in our sample, Finland's primary resources trade deficit has grown over the past decade. In 2000, its primary resources trade deficit stood at minus 3.8 percent of GDP. By 2011, the trade deficit in this sector widened to minus 5.9 percent of GDP, one of the larger primary resource deficits in our sample and more than double Finland's average primary resource deficit in the 1990s (Exhibit A20). Unique among mature economies is Finland's trade surplus in capital-intensive manufacturing. At 5.9 percent of GDP in 2008, it is the highest in our sample of mature economies. This is due to Finland's exports of pulp and paper products, as well as processed minerals and metals.

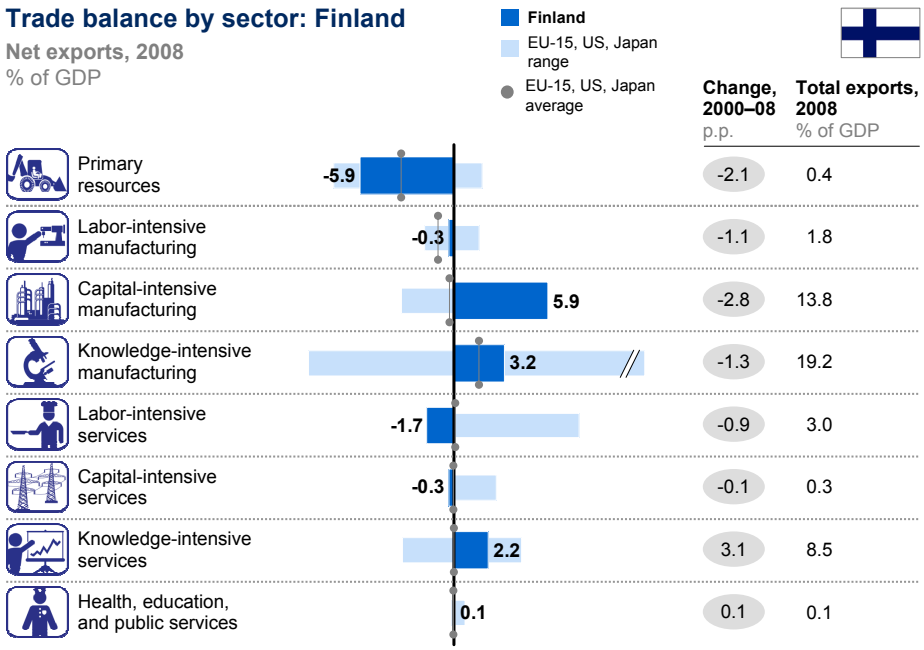
42 For more information on the role of exports in the Finnish financial crisis, see *Debt and deleveraging: Uneven progress on the path to growth*, McKinsey Global Institute, January 2012 (www.mckinsey.com/mgi).

Knowledge-intensive manufactured goods account for 40 percent of Finland's exports (Exhibit A21). Finland has a significant advantage compared with other mature economies in exports of computing, communications, and electrical equipment. Exports of these electronics totaled $52 billion, or 8.5 percent of GDP, in 2008. This is not surprising, given the success of the telecoms giant Nokia and other companies that support this industry in Finland. Trade deficits in pharmaceuticals and transportation equipment temper some of Finland's trade surplus in electronics and machinery trade.

Exhibit A20

Trade balance by sector: Finland

Net exports, 2008
% of GDP

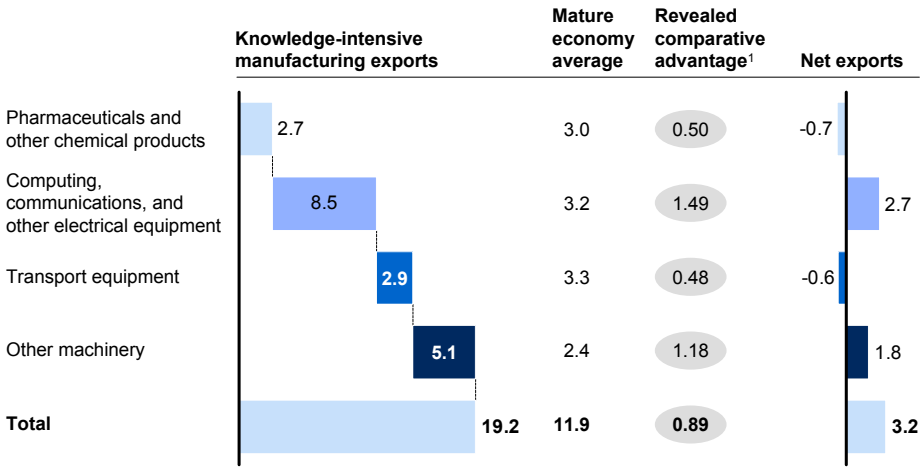


SOURCE: OECD; McKinsey Global Institute analysis

Exhibit A21

Knowledge-intensive manufacturing: Finland

% of GDP, 2008



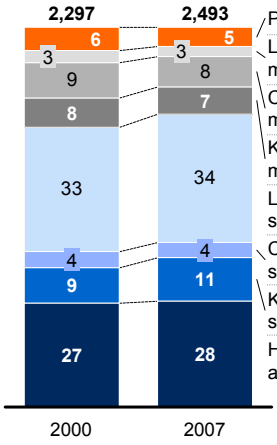
1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; McKinsey Global Institute analysis

In Finland, manufacturing employs a larger share of the workforce than in the mature economy average (Exhibit A22). Pulp and paper and other capital-intensive manufacturing employed 8 percent of the Finnish workforce in 2007, compared with 6 percent in the mature economy average. In the same year, knowledge-intensive manufacturing employed 7 percent of the Finish workforce, compared with 5 percent in the mature economy average. The share employed in the primary resources sector is also nearly twice as large as the average in our sample of mature economies. By contrast, Finnish private service sectors (excluding health, education, and public services) employs ten percentage points less of the workforce than the mature economy average.

Exhibit A22

Employment share by sector: Finland

% of total workforce; thousand jobs



	Mature economy average, 2007 % of total employment	Total change in employment, 2000–07 Thousand jobs	Change in jobs embedded in net exports, 2000–07[1] Thousand jobs
Primary resources	3	-14	
Labor-intensive manufacturing	2	-8	
Capital-intensive manufacturing	6	-12	-19
Knowledge-intensive manufacturing	5	-1	
Labor-intensive services	39	96	
Capital-intensive services	3	-1	26
Knowledge-intensive services	17	68	
Health, education, and public services	26	68	

1 Rough approximation. See Appendix B for details.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

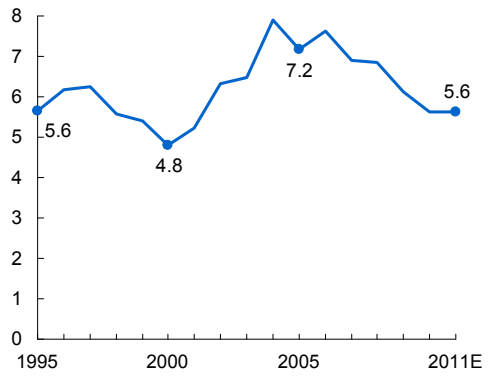
SWEDEN

In the early 1990s, during its financial crisis, Sweden's net exports averaged 1.5 percent of GDP. In line with a material devaluation of the krona and major reforms to overcome the crisis, net exports increased rapidly and averaged more than 6 percent of GDP since 1995, peaking at 7.9 percent of GDP in 2004 (Exhibit A23).[43] Over the past decade, total exports have remained about the same, at 45 percent of GDP annually. In 2011, Sweden's trade surplus was among the highest of our sample of mature economies.

Exhibit A23

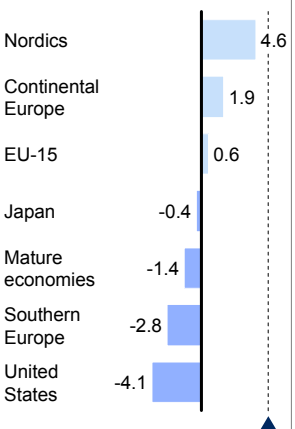
Overall trade balance: Sweden

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	14	12	27	32
Exports % of GDP	37	44	47	47

Net exports, 2011E[1]
% of GDP

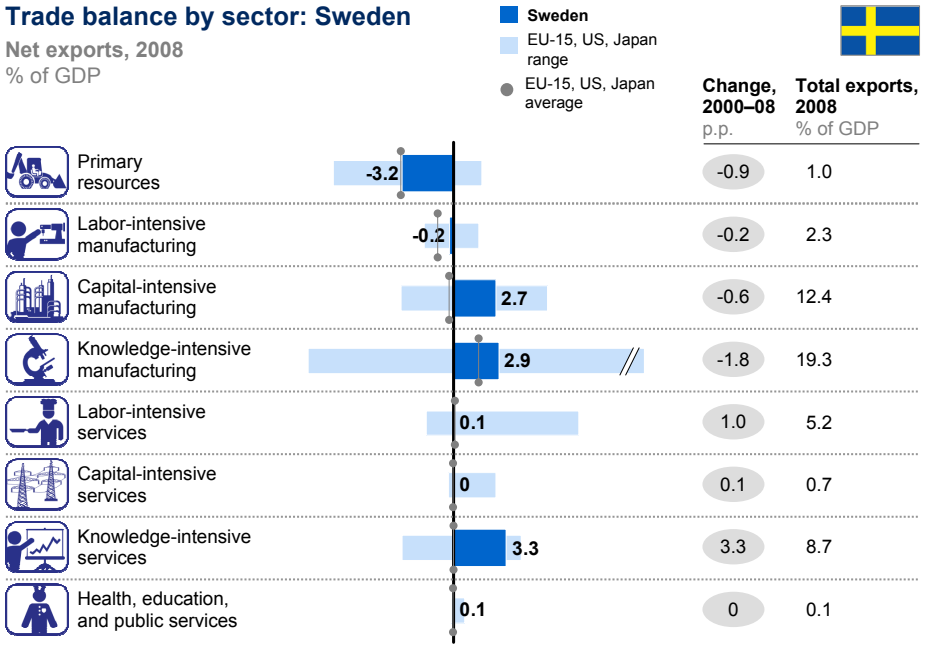


1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; IMF; McKinsey Global Institute analysis

While Sweden's net exports consistently averaged 6.6 percent of GDP between 2000 and 2008, underlying trade balances by sector evolved (Exhibit A24). Knowledge- and capital-intensive manufacturing sectors generated a trade surplus of 8 percent of GDP in 2000. By 2008, that surplus had declined to 5.6 percent of GDP. The surplus was concentrated in pulp and paper, basic metals, and machinery. Over the same period, knowledge-intensive services trade changed from being in balance to a surplus of 3.3 percent of GDP, fueled by a rapid increase in exports and surpluses in computer and IT services as well as other business services such as nonfinancial trading, engineering, and R&D. Most other sector trade balances have remained steady, except for primary resources, whose deficits increased by 0.9 percentage points of GDP.

43 For more information on the role of exports in the Swedish financial crisis, see *Debt and deleveraging: Uneven progress on the path to growth*, McKinsey Global Institute, January 2012 (www.mckinsey.com/mgi).

Exhibit A24



SOURCE: OECD; McKinsey Global Institute analysis

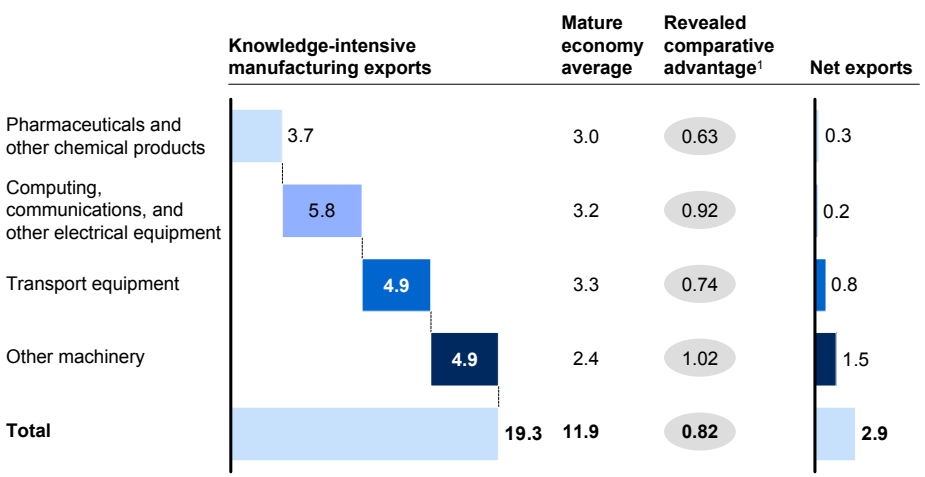
Knowledge-intensive manufacturing accounts for Sweden's second-largest sector trade surplus (2.9 percent of GDP), just behind knowledge-intensive services (3.3 percent). Knowledge-intensive manufacturing exports totaled 19 percent of GDP in Sweden in 2008, around 50 percent higher than for the mature economy average in line with Sweden's overall high trade intensity (Exhibit A25). Revealed comparative advantage analysis, however, shows that Sweden is as specialized as the mature economy average only in machinery and derives most of its surplus from this sector. Large pharmaceutical surpluses are offset by trade deficits in chemicals. And well-known exports of communications equipment are offset by large imports of computing and other office machinery.

Health, education, and public services employed nearly one-third of Sweden's total workforce in 2007, compared with 26 percent in the average mature economy (Exhibit A26). By contrast, private sector services employed only 51 percent of Sweden's workforce, compared with 59 percent in the average mature economy. Private sector services increased their share by four percentage points from 2000 to 2007 at the expense of manufacturing and primary resources.

Exhibit A25

Knowledge-intensive manufacturing: Sweden

% of GDP, 2008

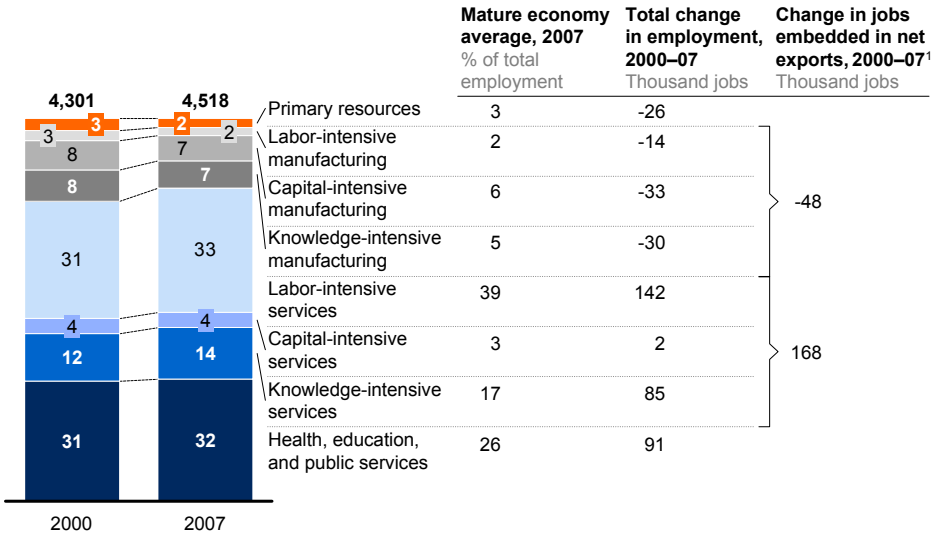


1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; McKinsey Global Institute analysis

Exhibit A26

Employment share by sector: Sweden

% of total workforce; thousand jobs



1 Rough approximation. See Appendix B for details.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

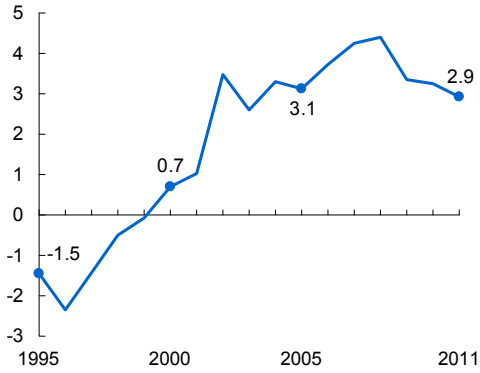
AUSTRIA

Austria's trade balance has improved rapidly over the past 15 years (Exhibit A27). In 1996, Austria had a trade deficit of more than 2 percent of GDP; by 2002, it swung to a surplus of 3.5 percent. Since joining the eurozone, Austria's trade balance has always been positive, peaking at 4.4 percent of GDP in 2008 and totaling 2.9 percent of GDP in 2011. Austria's growing trade surplus is in sync with a surge in total exports—Austria's total exports grew from 35 percent of GDP in 1995 to nearly 60 percent by 2011.

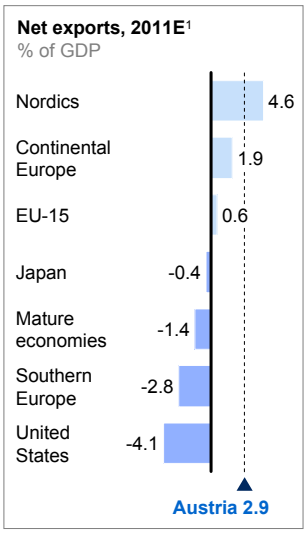
Exhibit A27

Overall trade balance: Austria

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	-4	1	9	12
Exports % of GDP	35	45	53	57



1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; IMF; McKinsey Global Institute analysis

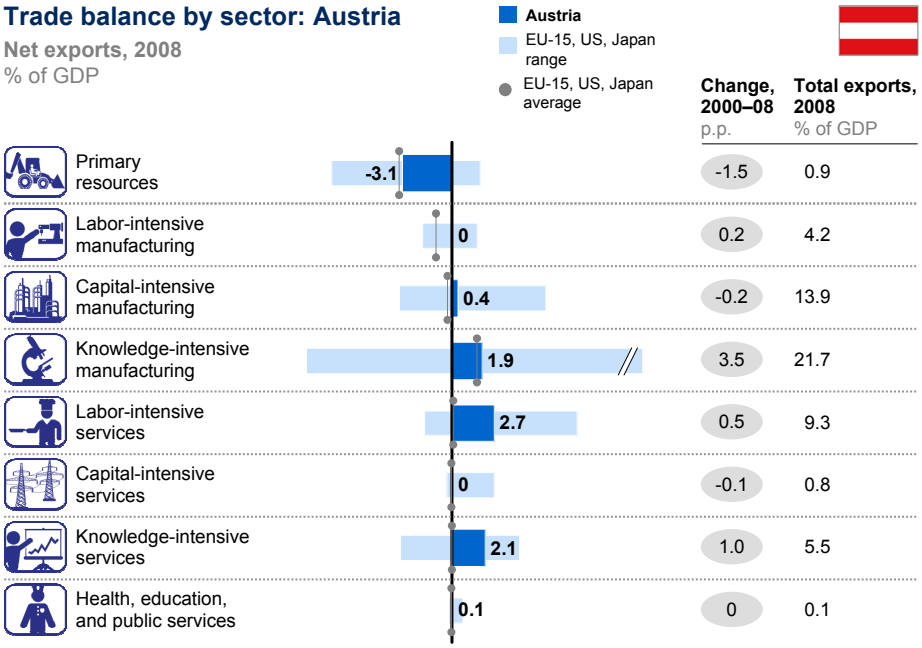
Austria's trade profile is in line with other mature economies except for significant surpluses in labor-intensive services, due to $10 billion net tourism exports in 2008, and knowledge-intensive services, from a $8 billion export surplus in business services such as architecture, engineering, R&D, and trade in nonfinancial goods (Exhibit A28). The latter is also a key driver of Austria's growing overall trade surplus, combined with an increase in knowledge-intensive manufacturing from minus 1.5 percent of GDP to 1.9 percent in 2008—most pronounced in machinery and equipment. Over the same period, in line with other mature economies, Austria's primary resource imports have grown, widening the trade deficit in this sector to more than minus 3 percent of GDP in 2008.

Growing exports of knowledge-intensive manufactured products account for the majority of the improvement in Austria's trade balance over the past 15 years. Relative to GDP, Austria's exports of machinery, transport equipment, computing and communications equipment, and pharmaceuticals exceed the average of the knowledge-intensive manufacturing exports in our sample of mature economies (Exhibit A29). However, only in the exports of machinery does Austria have an advantage compared with the other economies in our sample. Exports of specialized engineering and construction equipment, heating and cooling machinery, and other specialized industrial parts account for nearly Austria's entire trade surplus in this sector.

Exhibit A28

Trade balance by sector: Austria

Net exports, 2008
% of GDP

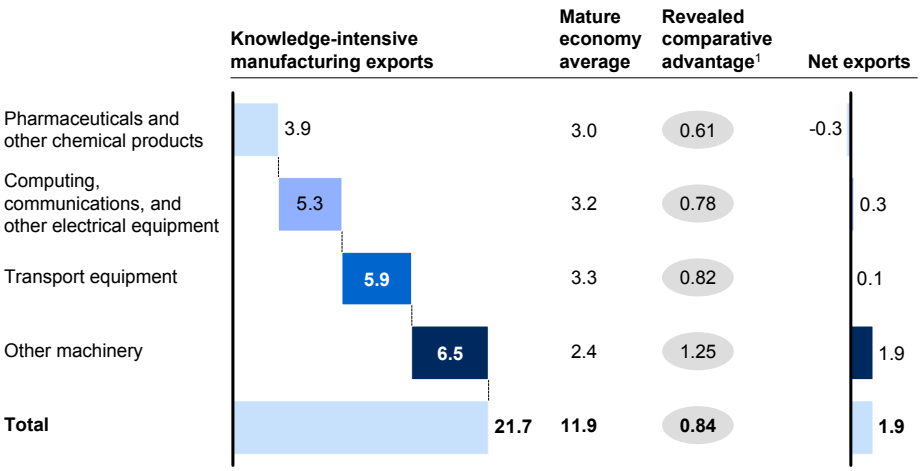


SOURCE: OECD; McKinsey Global Institute analysis

Exhibit A29

Knowledge-intensive manufacturing: Austria

% of GDP, 2008



1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.

NOTE: Numbers may not sum due to rounding.

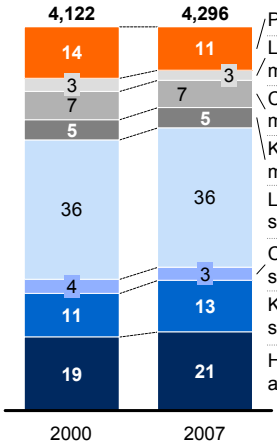
SOURCE: OECD; McKinsey Global Institute analysis

Austria has a relatively high proportion of its workforce employed in the primary resources sector—11 percent compared with just 3 percent in our sample of mature economies (Exhibit A30). Due in part to a prevalence of small-scale, family-owned farms rather than capital-intensive mass food production, Austria maintains around half a million jobs in agricultural sectors. Austria has fewer workers in service sectors than other European countries. And while knowledge-intensive manufacturing accounts for 40 percent of Austria's total exports, this sector employs only 5 percent of Austria's total workforce—on par with the mature economy average in our sample. In contrast to other mature economies, manufacturing employment decreased by only 17,000, or less than 3 percent, from 2000 to 2007.

Exhibit A30

Employment share by sector: Austria

% of total workforce; thousand jobs



	Mature economy average, 2007 % of total employment	Total change in employment, 2000–07 Thousand jobs	Change in jobs embedded in net exports, 2000–07[1] Thousand jobs
Primary resources	3	-71	
Labor-intensive manufacturing	2	-24	
Capital-intensive manufacturing	6	-6	81
Knowledge-intensive manufacturing	5	14	
Labor-intensive services	39	71	
Capital-intensive services	3	-12	88
Knowledge-intensive services	17	111	
Health, education, and public services	26	90	

1 Rough approximation. See Appendix B for details.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

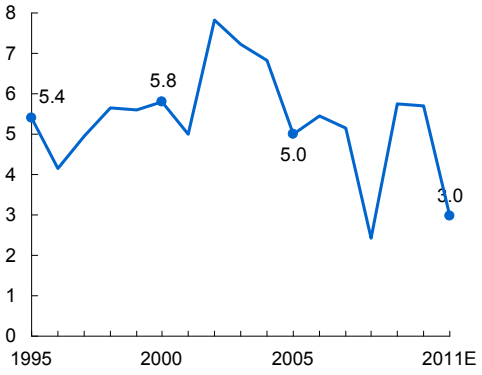
BELGIUM

Belgium has a relatively high trade surplus compared with other mature economies in our sample (Exhibit A31). Belgium's net exports have averaged near 6 percent of GDP over the past 15 years, peaking at 7.8 percent of GDP in 2002. Exports and imports have grown roughly at the same pace, maintaining Belgium's trade surplus. After declining to 2.4 percent of GDP in 2008 during the crisis, Belgian net exports rebounded in 2009 and 2010 before declining again in 2011.

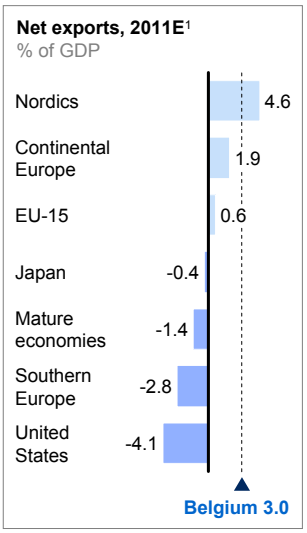
Exhibit A31

Overall trade balance: Belgium

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	15	14	19	16
Exports % of GDP	59	80	104	85



1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; IMF; McKinsey Global Institute analysis

Relative to GDP, Belgium has the largest primary resources trade deficit in our sample of mature economies (Exhibit A32). While Belgium exported 6.6 percent of GDP in primary resources in 2008, it imported about 15 percent of GDP during the same year. By contrast, Belgium has run a significant net trade surplus in capital-intensive manufacturing over the past ten years. Total capital-intensive manufacturing exports totaled $143 billion, or 28 percent of GDP, in 2008. This includes particularly processed agricultural and food products, as well as petroleum products.

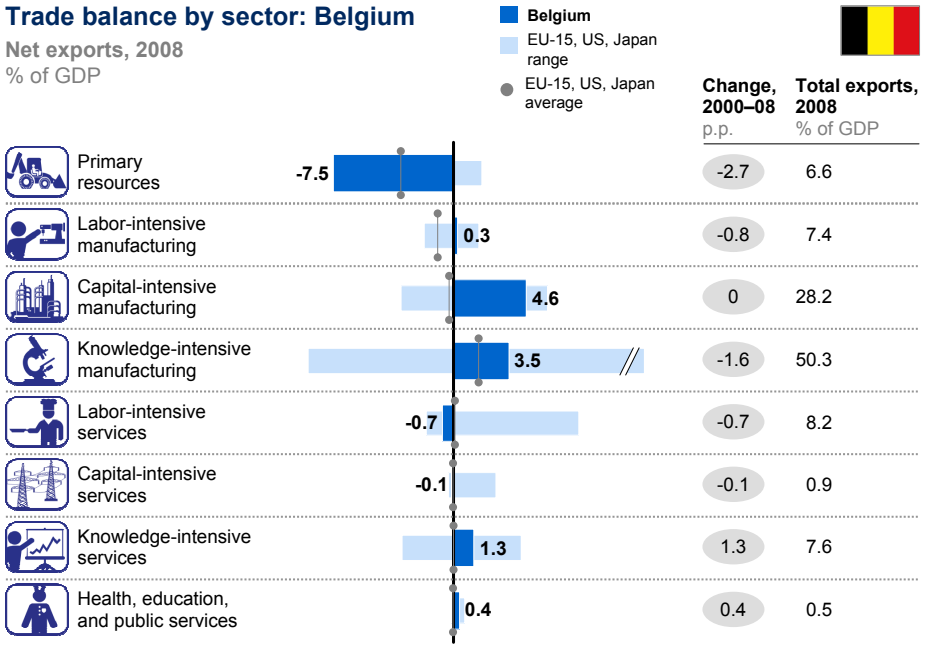
Belgian knowledge-intensive manufactured good exports accounted for 50 percent of GDP in 2000 (Exhibit A33). Pharmaceuticals and other chemical products exports, which totaled $150 billion in 2008, account for more than half of these exports. Supported by a dense hospital network, significant R&D spending, and fast clinical trial approval, Belgium has a significant revealed comparative advantage (2.12) in pharmaceutical and other chemical product exports compared with the other mature economies in our sample.[44] This advantage accounts for Belgium's knowledge-intensive manufacturing trade surplus. While pharmaceuticals and chemicals trade resulted in a surplus of 4.9 percent of GDP in 2008, other knowledge-intensive manufacturing yielded a deficit of minus 1.4 percent of GDP.

44 For more information, see Marten Abrahamsen, Ozan Acar, Dany Bahar, Ben Brinded, and Vered Rainisch, *The Belgian pharmaceutical cluster*, Institute for Strategy and Competitiveness at the Harvard Business School, 2011.

Exhibit A32

Trade balance by sector: Belgium

Net exports, 2008
% of GDP

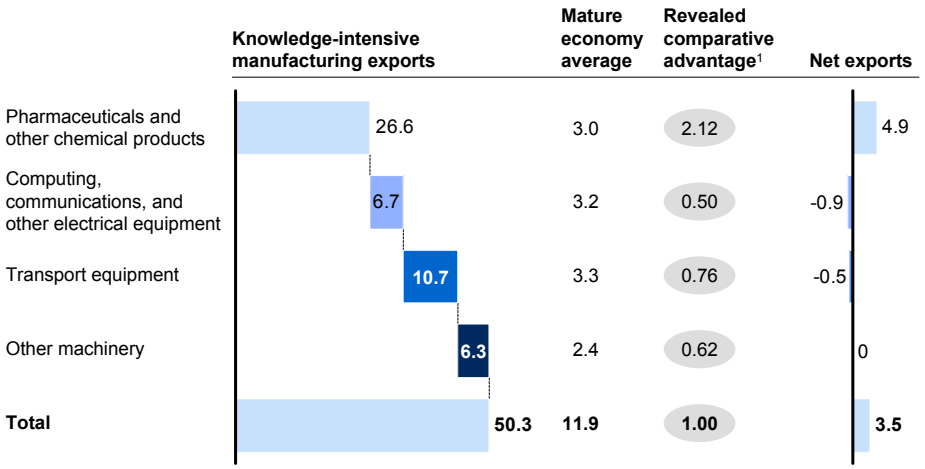


SOURCE: OECD; McKinsey Global Institute analysis

Exhibit A33

Knowledge-intensive manufacturing: Belgium

% of GDP, 2008



1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.

NOTE: Numbers may not sum due to rounding.

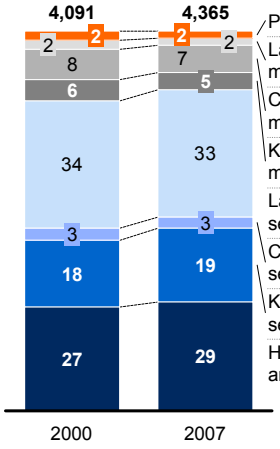
SOURCE: OECD; McKinsey Global Institute analysis

The distribution of Belgium's labor force has changed little over the past decade (Exhibit A34). While knowledge-intensive manufacturing accounts for the majority of Belgium's exports, this sector does not account for a disproportionate share of Belgium's workforce compared with other mature economies. Belgium employs a smaller share of its workforce in labor-intensive services but a higher share in knowledge-intensive and public services compared with other mature economies.

Exhibit A34

Employment share by sector: Belgium

% of total workforce; thousand jobs



	Mature economy average, 2007 % of total employment	Total change in employment, 2000–07 Thousand jobs	Change in jobs embedded in net exports, 2000–07[1] Thousand jobs
Primary resources	3	-13	
Labor-intensive manufacturing	2	-22	
Capital-intensive manufacturing	6	-15	
Knowledge-intensive manufacturing	5	-30	-13
Labor-intensive services	39	89	
Capital-intensive services	3	-1	
Knowledge-intensive services	17	125	26
Health, education, and public services	26	139	

1 Rough approximation. See Appendix B for details.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

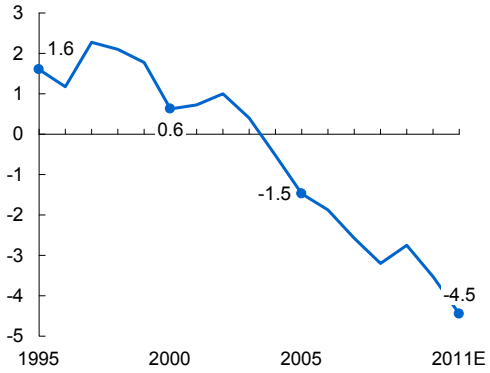
FRANCE

France's trade balance has declined steadily for 15 years (Exhibit A35). France had a trade deficit in the late 1980s, but from 1992 to 1999 posted an average trade surplus of 1.5 percent of GDP. France's trade balance turned negative in 2004 and accounted for minus 4.5 percent of GDP in 2011—more than the US trade deficit. While France's total exports, relative to GDP, stayed about the same over the past decade, total imports increased from 27 percent of GDP in 2000 to 32 percent in 2011.

Exhibit A35

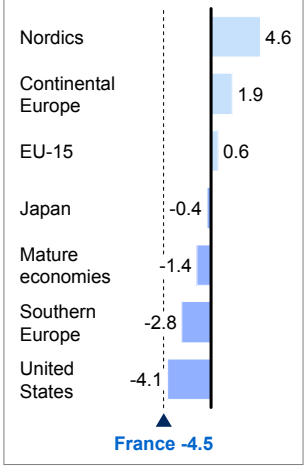
Overall trade balance: France

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	25	8	-32	-125
Exports % of GDP	23	28	26	27

Net exports, 2011E[1]
% of GDP



1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; IMF; McKinsey Global Institute analysis

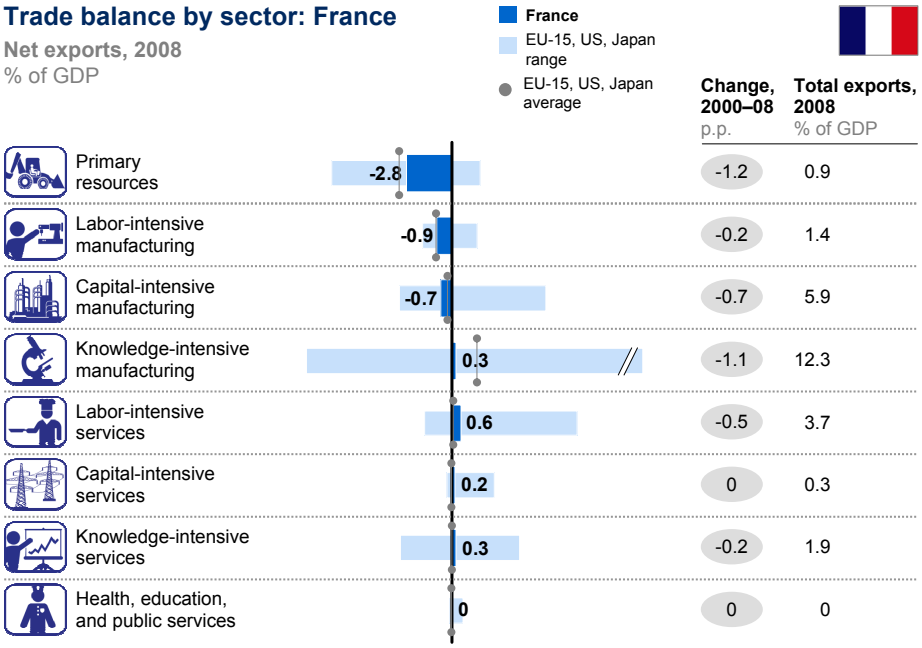
France's trade balance declined from 2000 to 2008 in nearly every sector, particularly in primary resource and knowledge-intensive manufacturing sectors (Exhibit A36). Primary resources trade resulted in a trade deficit of minus 2.8 percent of GDP in 2008, nearly four times as large a deficit as in any other sector. The cumulative trade deficit in labor- and capital-intensive manufacturing widened from minus 0.7 percent of GDP in 2000 to minus 1.6 percent in 2008. And while total knowledge-intensive manufacturing exports totaled $350 billion in 2008, significant goods imports resulted in a trade surplus of only 0.3 percent of GDP in this sector, well short of other mature economies or France's level in 2000. Even in labor-intensive services, which include the traditionally strong tourism sector, the balance of trade declined by 0.5 percentage points.

Knowledge-intensive manufactured goods account for almost 50 percent of total French exports (Exhibit A37). France exports more transport equipment, pharmaceuticals, and other chemical products than the mature economy average. Airbus, Renault, PSA Peugeot Citroën, and other transport equipment manufacturers exported $119 billion worth of goods in 2008, resulting in a net trade surplus of $18 billion, or 0.6 percent of GDP. France's pharmaceutical and chemical industry also has comparative advantage relative to other mature economies—net exports in this sector accounted for 0.3 percent of GDP in 2008. However, deficits in electronics and machinery trade limited the aggregate knowledge-intensive manufacturing trade surplus to $9 billion.

Exhibit A36

Trade balance by sector: France

Net exports, 2008
% of GDP

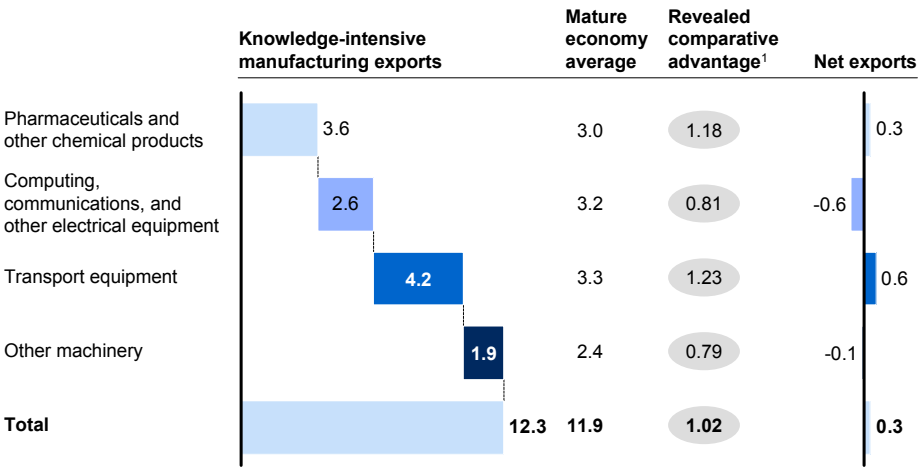


SOURCE: OECD; McKinsey Global Institute analysis

Exhibit A37

Knowledge-intensive manufacturing: France

% of GDP, 2008



1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.

NOTE: Numbers may not sum due to rounding.

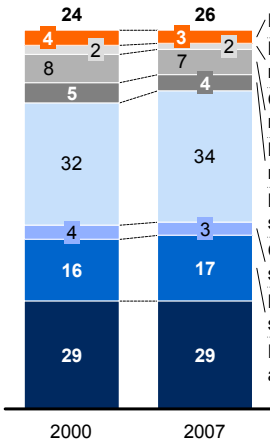
SOURCE: OECD; McKinsey Global Institute analysis

Employment in French manufacturing across all sectors declined by a total of 400,000 jobs from 2000 to 2007. This meant that the French manufacturing employment share decreased from 15 percent of the total workforce in 2000 to 13 percent by 2007—in line with the mature economy average (Exhibit A38). Our analysis suggests that increasing trade deficits could explain a good part of this decline, while productivity developed more slowly than in other mature economies. Over the same period, nearly two million French workers joined the private and public sector service sectors. Public service employment remained at 29 percent of the total workforce, three points above the mature economy average, while private sector service employment increased by two percentage points from 2000 to 2007.

Exhibit A38

Employment share by sector: France

% of total workforce; million jobs



	Mature economy average, 2007 % of total employment	Total change in employment, 2000–07 Million jobs	Change in jobs embedded in net exports, 2000–07[1] Million jobs
Primary resources	3	-0.1	
Labor-intensive manufacturing	2	-0.1	
Capital-intensive manufacturing	6	-0.1	-0.3
Knowledge-intensive manufacturing	5	-0.2	
Labor-intensive services	39	1.0	
Capital-intensive services	3	0	-0.3
Knowledge-intensive services	17	0.5	
Health, education, and public services	26	0.4	

1 Rough approximation. See Appendix B for details.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

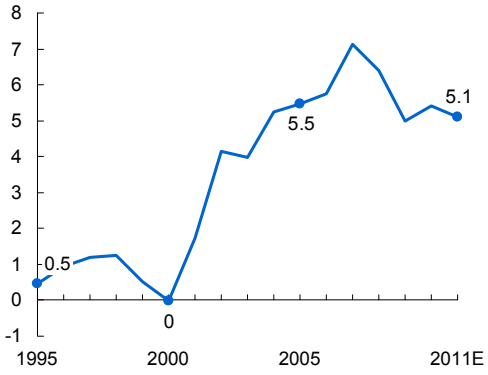
GERMANY

Germany's trade balance climbed steadily over the past decade. But Germany's trade surplus rarely exceeded 1 percent of GDP during the 1990s and was as low as zero percent of GDP as recently as 2000. From 2000 to 2007, led by a surge in total exports, Germany's trade surplus increased on average 1 percentage point of GDP per annum, peaking at 7.4 percent of GDP in 2007 (Exhibit A39). During the ongoing euro crisis, Germany's trade surplus has declined to 5.1 percent of GDP ($187 billion) in 2011, but relative to the size of its economy, that surplus remains one of the highest in our sample.

Exhibit A39

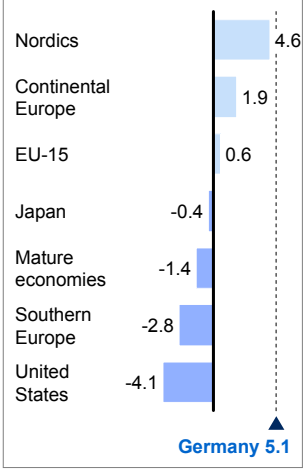
Overall trade balance: Germany

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	12	0	152	187
Exports % of GDP	24	34	41	50

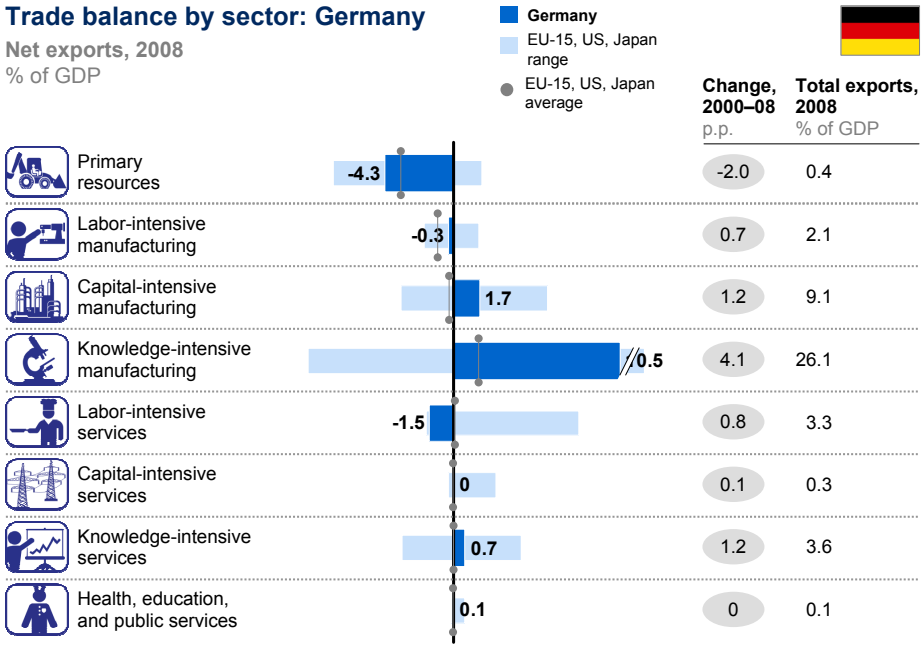
Net exports, 2011E[1]
% of GDP



1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; IMF; McKinsey Global Institute analysis

Like most mature economies, Germany runs a large and growing deficit in primary resources trade (Exhibit A40). Primary resource exports totaled only $14 billion, or 1 percent, of Germany's $1.7 trillion in total exports in 2008. Germany's primary resources trade deficit, at minus 4.3 percent of GDP, is larger than the total trade deficit of the United Kingdom or the United States. Germany's great export strength lies in capital-intensive and, even more so, knowledge-intensive manufacturing. Germany exported $950 billion worth of knowledge-intensive manufactured goods in 2008—more than 50 percent of total exports. Furthermore, these exports are growing, and the net trade balance in this sector increased from 6.5 to 10.5 percent of GDP from 2000 to 2008. Germany also runs a surplus in knowledge-intensive services, specifically in IT, R&D, and engineering services, and also in nonfinancial trading.

Exhibit A40



SOURCE: OECD; McKinsey Global Institute analysis

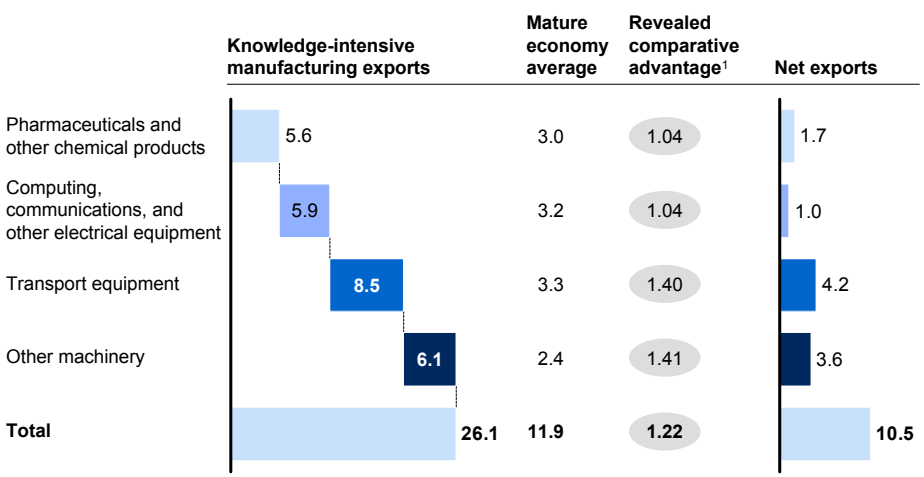
Germany exports more, relative to GDP, than the mature economy average across all subsectors of knowledge-intensive manufacturing, and it also maintains a revealed comparative advantage vis-à-vis other mature economies and a positive trade balance in all four subcategories (Exhibit A41). Germany is most specialized in transport equipment and other machinery—these two sectors account for a greater share of Germany's total exports than in the mature economy average. The success of German automakers such as BMW, Mercedes, and Volkswagen, as well as suppliers such as Bosch, Continental, and ZF, together with large R&D and production sites of global producers such as Ford and GM, was at the heart of a trade surplus in transport equipment of 4.2 percent of GDP, or $152 billion, in 2008. Germany's engineering strength is also reflected in its machinery trade balance—trade in this sector accounted for a surplus of 3.6 percent of GDP, or $132 billion, in 2008. Exports in these two sectors alone totaled more than $500 billion in 2008.

Germany employs a much larger share of its workforce in the manufacturing sector than do other mature economies—19 percent of those employed, compared with just 13 percent—despite a 600,000 decline between 2000 and 2007 (Exhibit A42). Our rough estimate is that the rapidly increasing trade balance attracted an additional 1.5 million workers to the sector over that period, partly compensating for the fast decline from productivity outpacing domestic demand. Still, employment in knowledge-intensive services and health, education, and public services is rapidly outgrowing all other sectors.

Exhibit A41

Knowledge-intensive manufacturing: Germany

% of GDP, 2008

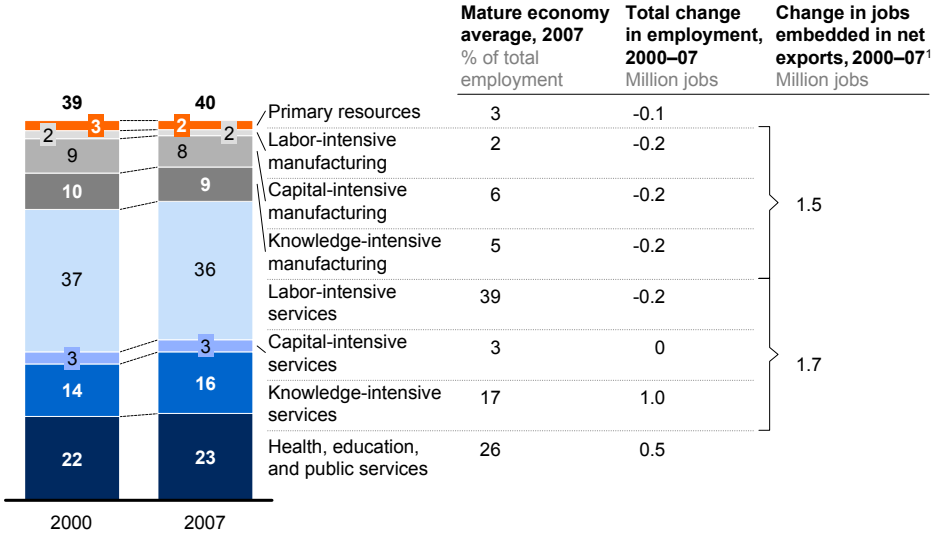


1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; McKinsey Global Institute analysis

Exhibit A42

Employment share by sector: Germany

% of total workforce; million jobs



1 Rough approximation. See Appendix B for details.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

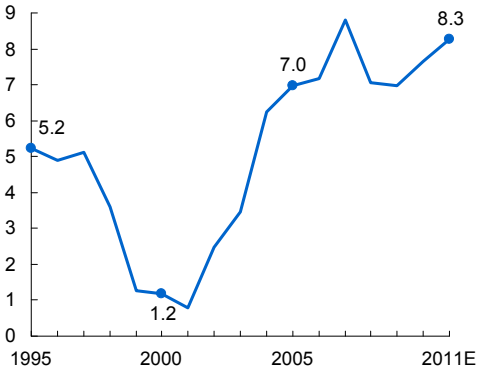
NETHERLANDS

The Netherlands is one of the largest net exporters in the eurozone relative to its GDP. Its net exports increased from 1.3 percent of GDP in 1999 to 8.3 percent in 2011 (Exhibit A45). The steady increase in net exports is the result of strong growth in exports. Total exports increased from 55 percent of GDP in 1999 to 83 percent in 2011.

Exhibit A43

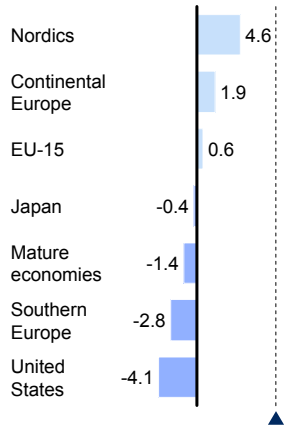
Overall trade balance: Netherlands

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	22	5	45	71
Exports % of GDP	54	60	65	83

Net exports, 2011E[1]
% of GDP



1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; IMF; McKinsey Global Institute analysis

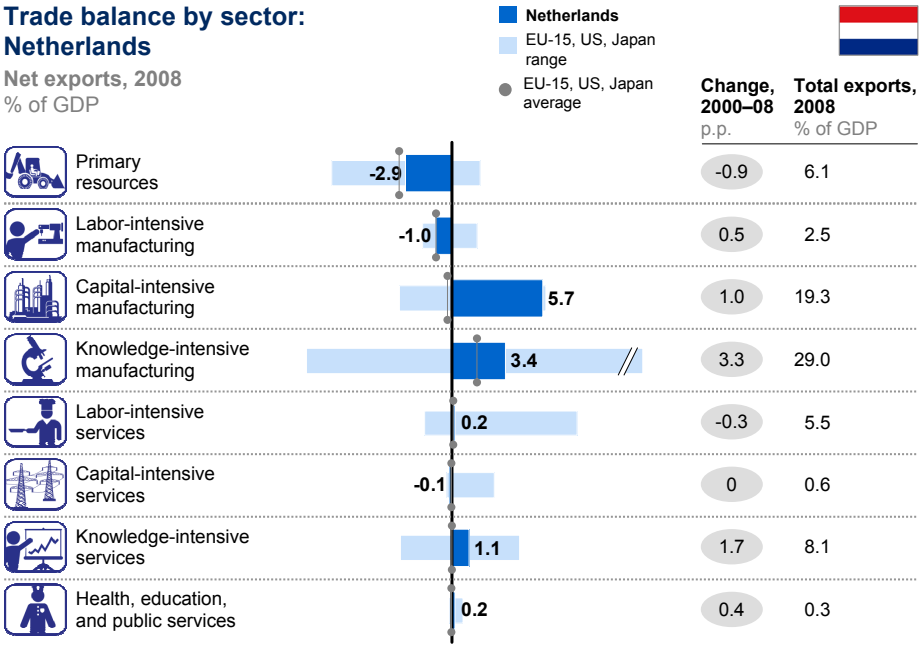
The Netherlands's growing trade surplus is the result of higher surpluses in several sectors (Exhibit A46). Dutch exports of capital-intensive manufactured goods totaled 19 percent of GDP in 2008 and resulted in a trade surplus of 5.7 percent of GDP—among the highest in our sample of mature economies—reflecting large surpluses in both refining ($27 billion in 2008) and food and beverage products ($21 billion). The knowledge-intensive manufacturing trade balance in the Netherlands has also improved over the past few years. From 2000 to 2008, Dutch trade surplus in this sector increased by 3.3 percentage points of GDP to stand at 3.4 percent of GDP in 2008, concentrated in machinery and chemicals. In labor-intensive services, high spending on travel abroad compensates for income from a traditionally strong transport sector. And the buildup of a surplus in knowledge-intensive services reflects growing royalty and license fee income.

The Netherlands' knowledge-intensive manufacturing exports totaled 29 percent of GDP, or $250 billion, in 2008—40 percent of total Dutch exports (Exhibit A47). Revealed comparative advantage analysis shows that the Netherlands has an advantage in exports of chemical products and different types of electronic equipment compared with other mature economies. Dutch chemical and pharmaceutical manufacturing yielded a net trade surplus of 2.7 percent of GDP. Because of the strength in capital-intensive manufacturing, however, the Netherlands overall is less specialized in knowledge-intensive manufacturing than are other mature economies.

Exhibit A44

Trade balance by sector: Netherlands

Net exports, 2008
% of GDP

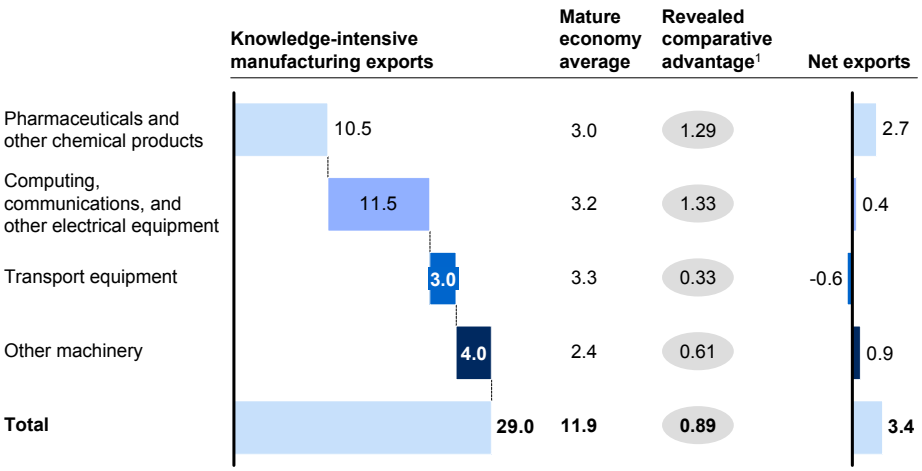


SOURCE: OECD; McKinsey Global Institute analysis

Exhibit A45

Knowledge-intensive manufacturing: Netherlands

% of GDP, 2008



1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.

NOTE: Numbers may not sum due to rounding.

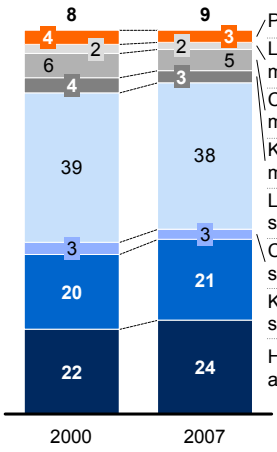
SOURCE: OECD; McKinsey Global Institute analysis

In the Netherlands, manufacturing accounted for only 11 percent of total employment in 2007, less than the average 13 percent in our sample of mature economies, and was concentrated in capital-intensive manufacturing industries (Exhibit A48). Financial, business, and other knowledge-intensive services account for a larger share of employment in the Netherlands than they do in the average mature economy. In 2007, knowledge-intensive services account for 21 percent of the total Dutch workforce—four percentage points more than the average mature economy. From 2000 to 2007, 200,000 workers joined the knowledge-intensive service sector, an increase of 14 percent.

Exhibit A46

Employment share by sector: Netherlands

% of total workforce; million jobs



	Mature economy average, 2007 % of total employment	Total change in employment, 2000–07 Million jobs	Change in jobs embedded in net exports, 2000–07[1] Million jobs
Primary resources	3	0	
Labor-intensive manufacturing	2	0	
Capital-intensive manufacturing	6	-0.1	0.3
Knowledge-intensive manufacturing	5	0	
Labor-intensive services	39	0.1	
Capital-intensive services	3	0	0.3
Knowledge-intensive services	17	0.2	
Health, education, and public services	26	0.3	

1 Rough approximation. See Appendix B for details.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

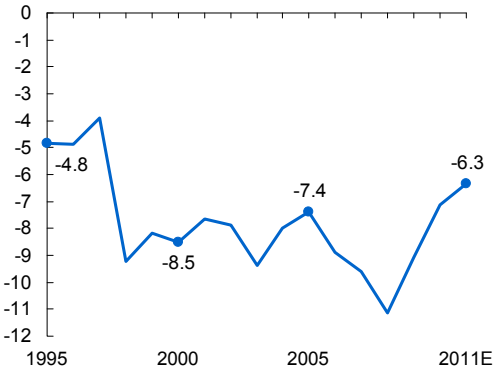
GREECE

Since 1970, Greece has run persistent trade deficits. Greece's trade balance showed some improvement during the 1990s. From 1993 to 1997, Greece's trade balance averaged about minus 4 percent of GDP. The adoption of the euro fueled an additional inflow of capital and an import boom. With few exports apart from labor-intensive services, Greece's trade deficit grew sharply. In 2008, Greece's trade deficit peaked at minus 11.1 percent of GDP (Exhibit A49). Since then, imports have declined rapidly, as Greece weathers its economic crisis.

Exhibit A47

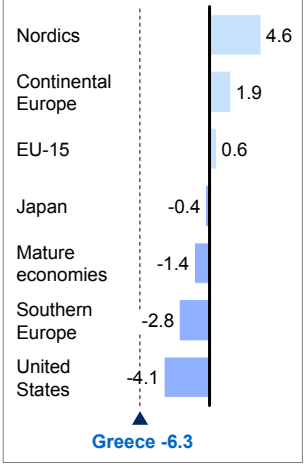
Overall trade balance: Greece

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	-6	-11	-18	-20
Exports % of GDP	18	19	21	22

Net exports, 2011E[1]
% of GDP



1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; IMF; McKinsey Global Institute analysis

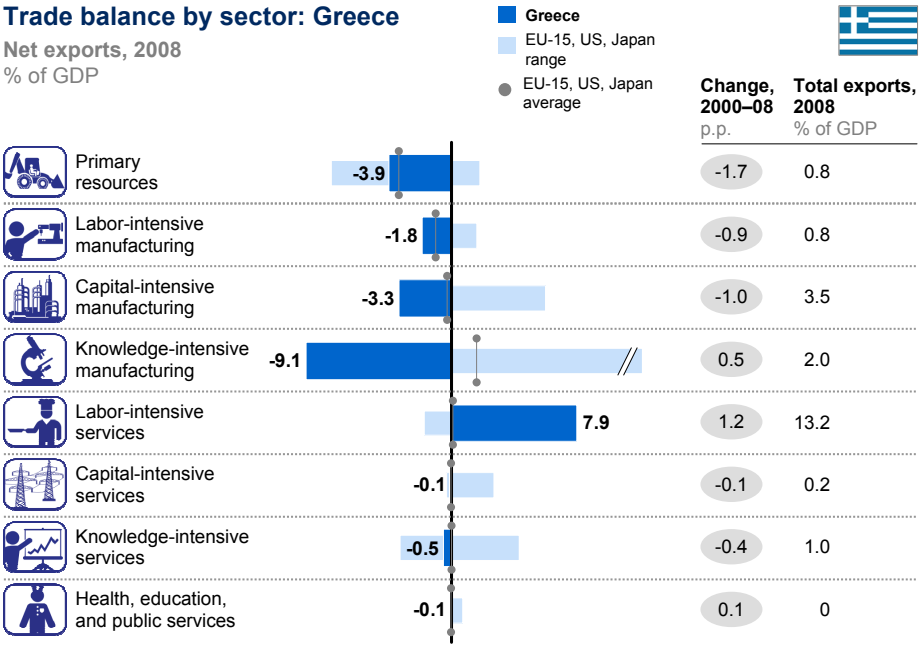
In fact, Greece has the largest trade deficits in labor-, capital-, and knowledge-intensive manufacturing in our sample of mature economies. While joining the eurozone exacerbated the size of these deficits, the Greek manufacturing trade balance has been negative for 40 years. Only in labor-intensive services does Greece have a positive trade balance—the largest in our sample—due to its significant exports related to tourism and transport. Greece has substantial trade deficits in primary resources and all types of manufacturing (Exhibit 50).

Relative to the size of its economy, Greece has the smallest total exports of knowledge-intensive manufactured goods in our sample of mature economies (Exhibit A51). This does not just reflect its relatively low total exports; Greece also has a significant comparative disadvantage across all types of knowledge-intensive manufactured goods. Greece imports more than five times the amount it exports in this sector.

Exhibit A48

Trade balance by sector: Greece

Net exports, 2008
% of GDP

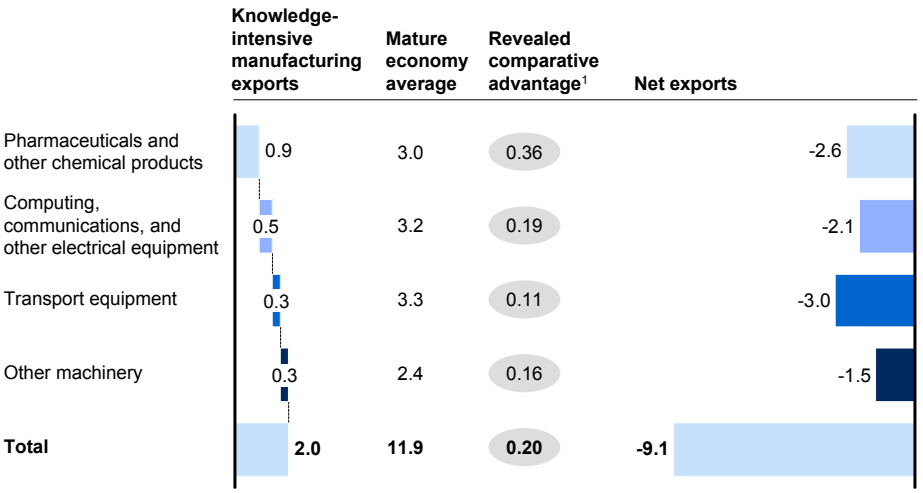


SOURCE: OECD; McKinsey Global Institute analysis

Exhibit A49

Knowledge-intensive manufacturing: Greece

% of GDP, 2008



1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.

NOTE: Numbers may not sum due to rounding.

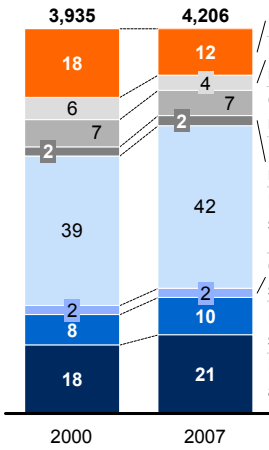
SOURCE: OECD; McKinsey Global Institute analysis

Compared with other mature economies, Greece has a unique distribution of its workforce across the different sectors (Exhibit A52). The primary resources sector, in agriculture, employs 12 percent of Greek workers, almost as many as all manufacturing sectors combined. Labor-intensive sectors, both in manufacturing and services, are relatively overweight. Finally, knowledge-intensive service and public service sectors employ only 31 percent of the total workforce, compared with 43 percent in the mature economy average.

Exhibit A50

Employment share by sector: Greece

% of total workforce; thousand jobs



	Mature economy average, 2007 % of total employment	Total change in employment, 2000–07 Thousand jobs	Change in jobs embedded in net exports, 2000–07[1] Thousand jobs
Primary resources	3	-192	
Labor-intensive manufacturing	2	-57	
Capital-intensive manufacturing	6	-6	-30
Knowledge-intensive manufacturing	5	11	
Labor-intensive services	39	252	
Capital-intensive services	3	9	105
Knowledge-intensive services	17	93	
Health, education, and public services	26	160	

1 Rough approximation. See Appendix B for details.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

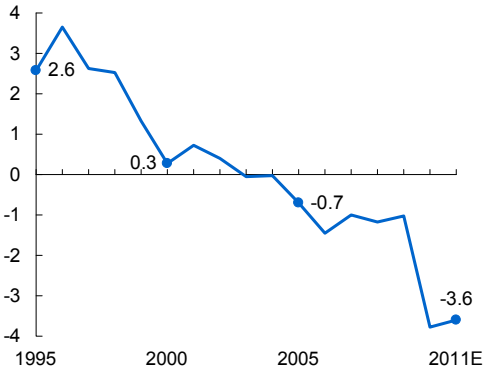
ITALY

Italy's trade balance has deteriorated steadily for 15 years. In 1995, Italy ran a total trade surplus of 2.6 percent of GDP. Since then, Italy's trade balance has declined each year by an average of 0.4 percentage points of GDP. By 2011, it stood at minus 3.6 percent of GDP—nearly the same as the United States (Exhibit A53). While Italy's total exports as a share of GDP have remained more or less the same over this period, imports have increased steadily—from 22 percent of GDP in 1995 to 33 percent in 2011.

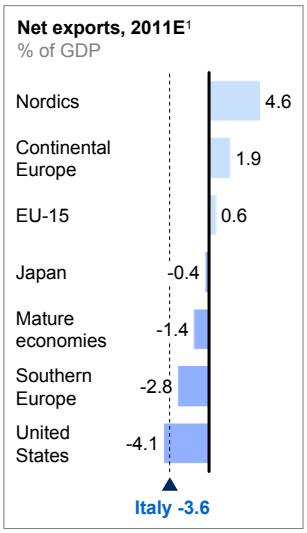
Exhibit A51

Overall trade balance: Italy

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	29	3	-13	-81
Exports % of GDP	25	27	26	29



1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; IMF; McKinsey Global Institute analysis

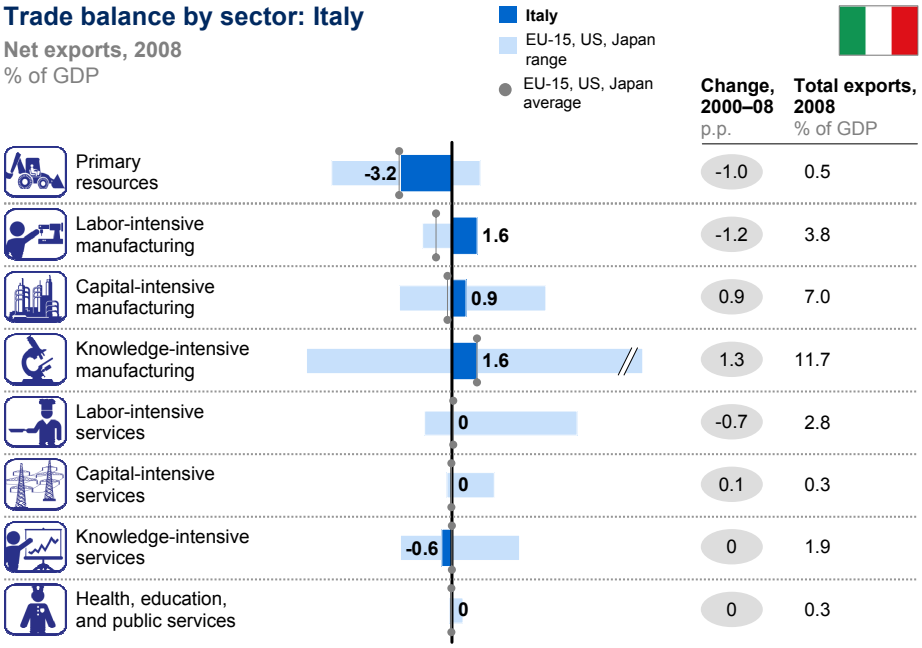
Italy's current trade deficit stems largely from its deficit in primary resources trade. The deficit in this sector doubled over the past 15 years from minus 1.5 percent of GDP in 1995 to minus 3.2 percent in 2008 (Exhibit A54). Italy also has a trade deficit in knowledge-intensive services. By contrast, Italy has a trade surplus in all three manufacturing sectors. Italy's trade balances in knowledge- and capital-intensive manufacturing have grown since 2000. In 2008, these sectors generated trade surpluses of 1.6 and 0.9 percent of GDP, respectively. While the trade balance in labor-intensive manufacturing has declined since 2000, this sector still yielded a trade surplus of 1.6 percent of GDP in 2008, the highest of all mature economies, reflecting a $24 billion surplus in textiles, apparel, and footwear, a traditional Italian stronghold. In labor-intensive services, an increasing deficit in transport compensates for traditional tourism surpluses.

Italy's trade surplus in knowledge-intensive manufacturing is the result of its machinery exports (Exhibit A55). Italian exports of machinery totaled 5 percent of GDP in 2008—more than twice that of the mature economy average. This resulted in a machinery trade surplus of 3.1 percent of GDP in 2008. However, deficits in electronics, pharmaceuticals and transport equipment trade—despite Italy's long automotive tradition—temper the surplus in machinery trade, resulting in a cumulative knowledge-intensive manufacturing surplus of 1.6 percent of GDP, or $36 billion, in 2008. Also, Italy is less specialized in knowledge-intensive manufacturing overall than the mature economy average.

Exhibit A52

Trade balance by sector: Italy

Net exports, 2008
% of GDP

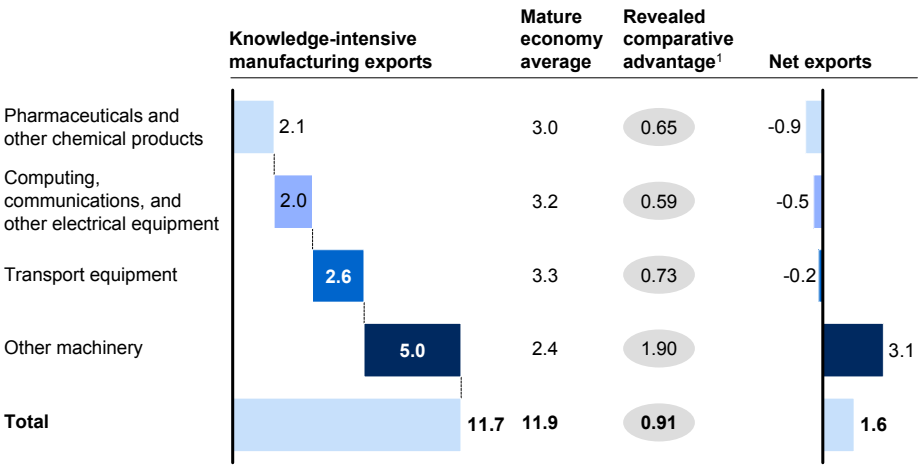


SOURCE: OECD; McKinsey Global Institute analysis

Exhibit A53

Knowledge-intensive manufacturing: Italy

% of GDP, 2008



1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.

NOTE: Numbers may not sum due to rounding.

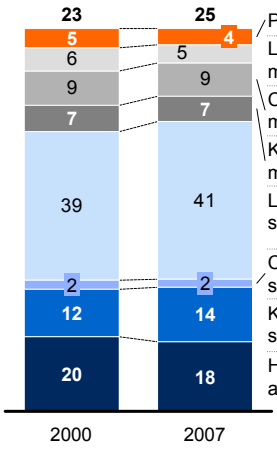
SOURCE: OECD; McKinsey Global Institute analysis

Manufacturing still employed five million Italians, or 20 percent of the workforce, in 2007, compared with 13 percent in the mature economy average (Exhibit A56). Moreover, against the broad trend, manufacturing employment in Italy increased slightly from 2000 to 2007 as the trade balance in manufactured goods improved slightly and productivity stagnated or even declined in some sectors. Labor-intensive services employed 41 percent of the Italian workforce, or 10.3 million men and women, in 2007. From 2000 to 2007, employment in this sector increased by 16 percent, or 1.4 million jobs. Over the same period, 700,000 workers joined the knowledge-intensive service sector. However, knowledge-intensive services still employ a relatively small share of the Italian workforce—14 percent in 2007, compared with 17 percent in the mature economy average. Health, education, and public services employ just 18 percent of the Italian workforce—eight percentage points less than in the mature economy average.

Exhibit A54

Employment share by sector: Italy

% of total workforce; million jobs



	Mature economy average, 2007 % of total employment	Total change in employment, 2000–07 Million jobs	Change in jobs embedded in net exports, 2000–07[1] Million jobs
Primary resources	3	-0.1	
Labor-intensive manufacturing	2	-0.2	
Capital-intensive manufacturing	6	0.1	0.0
Knowledge-intensive manufacturing	5	0.1	
Labor-intensive services	39	1.4	
Capital-intensive services	3	0	-0.2
Knowledge-intensive services	17	0.7	
Health, education, and public services	26	0.1	

1 Rough approximation. See Appendix B for details.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

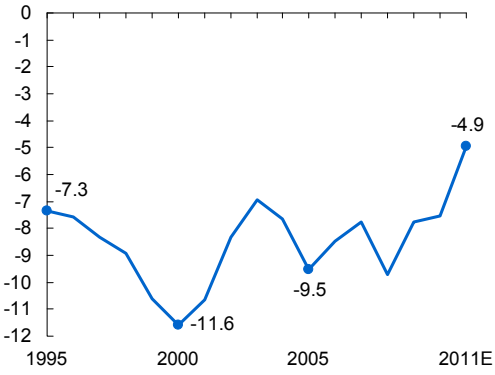
PORTUGAL

The Portuguese trade balance has been persistently negative for more than 40 years, declining slowly to nearly minus 12 percent of GDP in 2000 (Exhibit A57). Since then, the Portuguese trade deficit has shrunk as growth in exports outgrew Portugal's demand for foreign goods and services. In the first three quarters of 2011, Portugal's net exports stood at minus 4.9 percent of GDP—Portugal's smallest trade deficit in nearly 20 years.

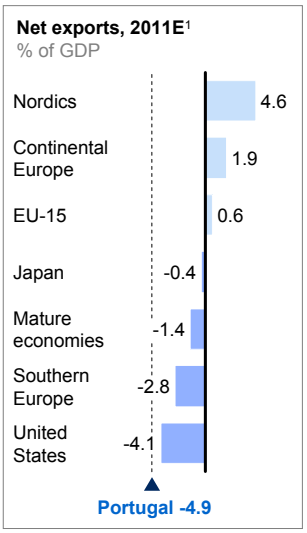
Exhibit A55

Overall trade balance: Portugal

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	-9	-14	-18	-12
Exports % of GDP	27	29	28	35



1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; IMF; McKinsey Global Institute analysis

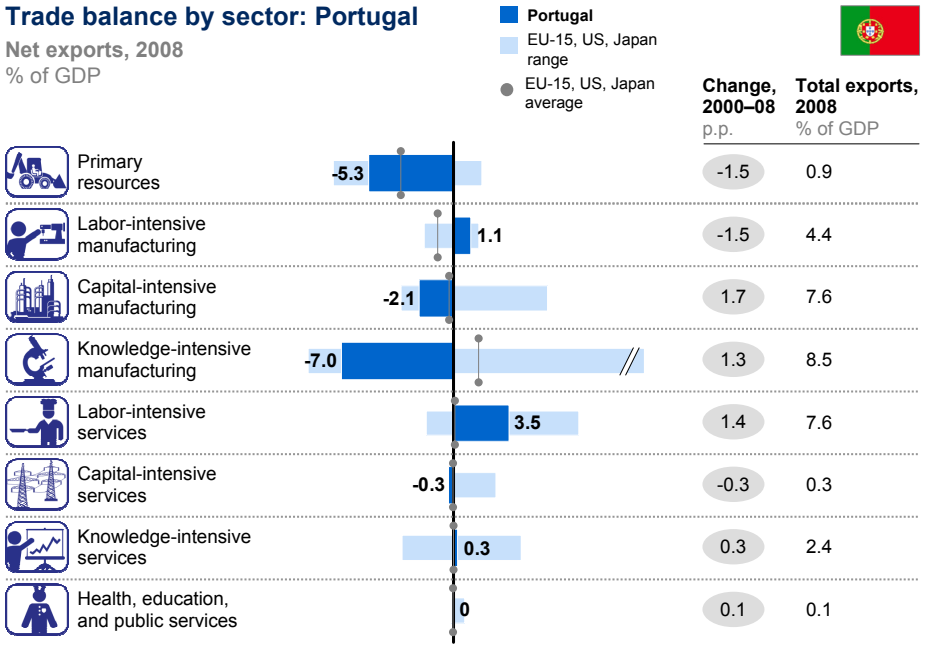
Primary resources, capital-intensive manufacturing, and knowledge-intensive manufacturing account for Portugal's trade deficits (Exhibit A58). While Portugal's capital- and knowledge-intensive manufacturing trade balances improved by a combined three percentage points of GDP from 2000 to 2008, Portugal's primary resource deficit increased by 1.5 percentage points. Portugal has sizable surpluses only in labor-intensive industries: tourism revenue in services, and textiles, leather, footwear, wood, and cork products in manufacturing.

Many of the mature countries in our sample are net exporters of knowledge-intensive manufactured goods, across some or all subsectors. Portugal is one of the few countries that shows a comparative disadvantage across all types of knowledge-intensive exports. In all subsectors—pharmaceuticals and chemicals, electronics, transport equipment, and machinery—Portugal exports less (relative to the size of its economy) than its mature counterparts and runs a trade deficit of minus 1 to minus 2.5 percent of GDP (Exhibit A59). While this trade balance has improved by 1.3 percentage points of GDP since 2000, the trade deficit in this sector has averaged about minus 8 percent of GDP over the past 30 years.

Exhibit A56

Trade balance by sector: Portugal

Net exports, 2008
% of GDP

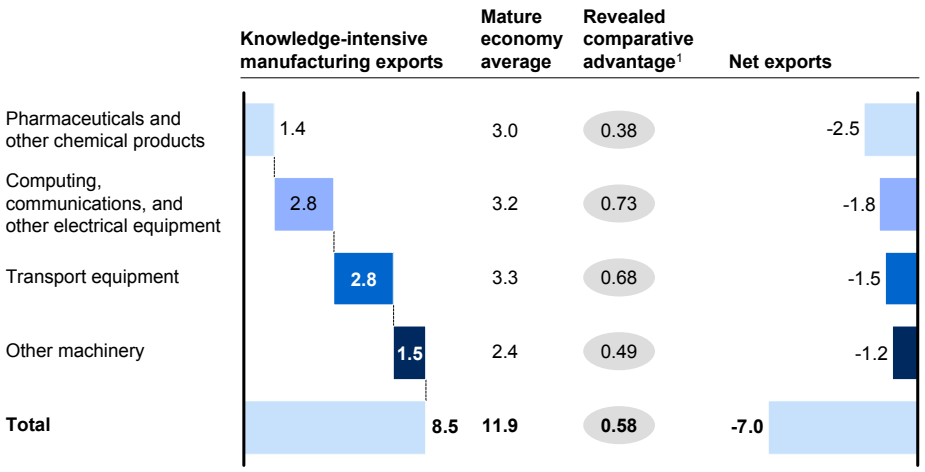


SOURCE: OECD; McKinsey Global Institute analysis

Exhibit A57

Knowledge-intensive manufacturing: Portugal

% of GDP, 2008



1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.

NOTE: Numbers may not sum due to rounding.

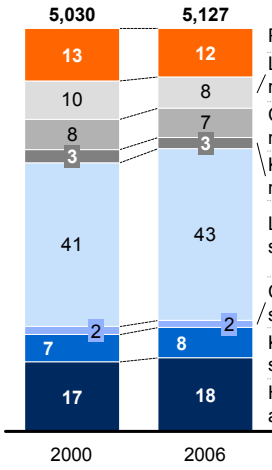
SOURCE: OECD; McKinsey Global Institute analysis

Labor-intensive services and manufacturing sectors combined accounted for 51 percent of Portuguese employment in 2006—nine percentage points more than the mature economy average (Exhibit A60). In particular, textiles, apparel, and other labor intensive manufacturing employs four times the share of the total workforce in Portugal than in other mature economies. Portugal also employs four times the share of the workforce in primary resources than in the mature economy average, reflecting very low productivity in agricultural sectors. By contrast, only 8 percent of Portuguese men and women worked in knowledge-intensive services in 2006, compared with 16 percent in other mature economies.

Exhibit A58

Employment share by sector: Portugal

% of total workforce; thousand jobs



	Mature economy average, 2006 % of total employment	Total change in employment, 2000–06 Thousand jobs	Change in jobs embedded in net exports, 2000–06[1] Thousand jobs
Primary resources	3	-29	
Labor-intensive manufacturing	2	-82	
Capital-intensive manufacturing	6	-13	52
Knowledge-intensive manufacturing	5	-25	
Labor-intensive services	40	145	
Capital-intensive services	3	-12	112
Knowledge-intensive services	16	51	
Health, education, and public services	24	63	

1 Rough approximation. See Appendix B for details.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

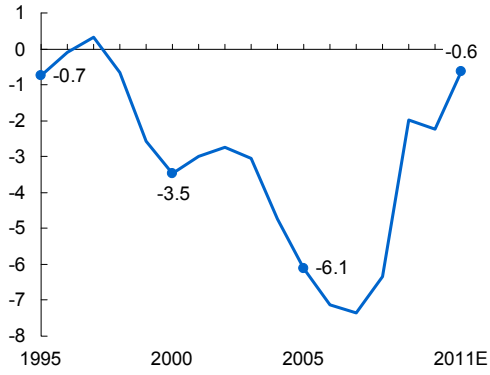
SPAIN

Spain's trade balance has been volatile for 15 years. Imports surged when Spain joined the eurozone and reached 33 percent of GDP in 2007. This resulted in a trade deficit that peaked at minus 7.3 percent of GDP in the same year (Exhibit A61). Since the onset of the global financial crisis and the collapse of Spain's housing bubble, Spanish imports in 2011have slowed to 30 percent of GDP—about the same as total exports.

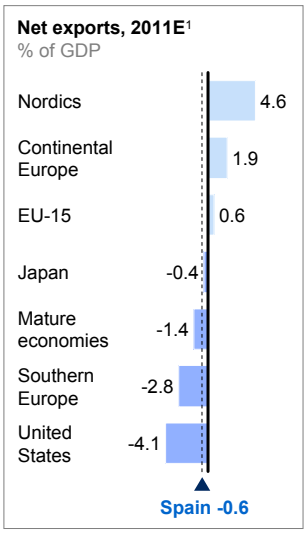
Exhibit A59

Overall trade balance: Spain

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	-4	-20	-69	-10
Exports % of GDP	22	29	25	30



1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; IMF; McKinsey Global Institute analysis

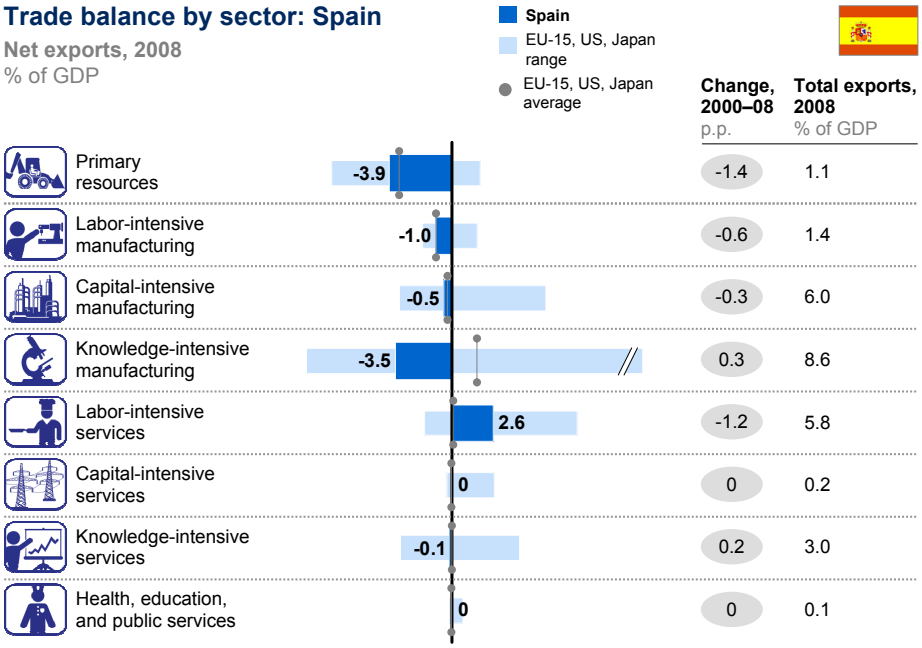
Primary resources and knowledge-intensive manufacturing make the largest contributions to Spain's trade deficit (Exhibit A62). The primary resources trade balance decreased from minus 2.5 percent of GDP in 2000 to minus 3.9 percent by 2008, and the deficit became larger than that in knowledge-intensive manufacturing, which has stayed steady at nearly minus 3.5 percent of GDP in the decade prior to the crisis. Spain's attractiveness as a tourist location has fueled years of surplus in labor-intensive service trade, although this surplus has declined by 1.2 percentage points of GDP since 2000.

Knowledge-intensive manufacturing trade yields a persistent deficit for Spain (Exhibit A63). Spain has a substantial comparative disadvantage in pharmaceutical and chemical products, electronics, and machinery—Spanish exports in these sectors equal only half to two-thirds those in the mature economy average as a share of GDP. Only in transport equipment exports—particularly shipbuilding and automobile assembly for both domestic and foreign carmakers—does Spain Exhibit A comparative advantage. Spanish transport equipment exports totaled $63 billion in 2008, or 3.9 percent of GDP.

Exhibit A60

Trade balance by sector: Spain

Net exports, 2008
% of GDP

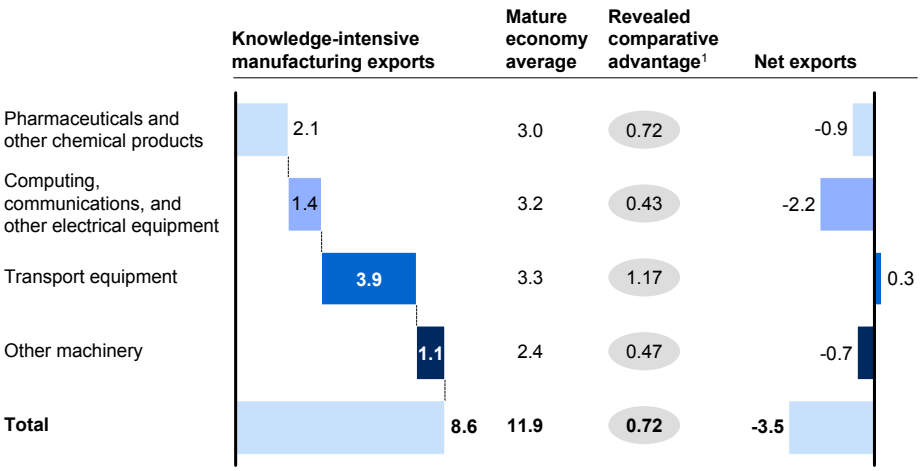


SOURCE: OECD; McKinsey Global Institute analysis

Exhibit A61

Knowledge-intensive manufacturing: Spain

% of GDP, 2008



1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.

NOTE: Numbers may not sum due to rounding.

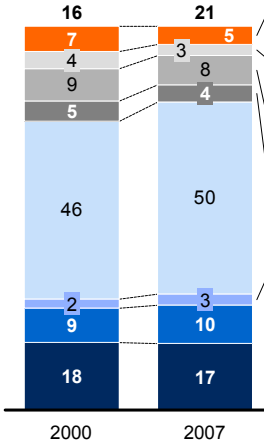
SOURCE: OECD; McKinsey Global Institute analysis

Spain employs a majority of its workforce in labor-intensive sectors. In 2007, tourism, retail, construction, and other labor-intensive services employed 50 percent of Spanish workers, 11 percentage points more than the mature economy average (Exhibit A64). From 2000 to 2007, 2.7 million workers moved into this sector—an increase of nearly 40 percent—of whom 0.9 million were in construction, thanks to the real-estate boom. Increasing trade deficits reflected more employees moving to domestic sectors. Employment in other private and public services increased by 1.5 million workers as a combination of immigration and rapid increases in participation of women helped boost the size of the Spanish workforce by almost one-third from 2000 to 2007.

Exhibit A62

Employment share by sector: Spain

% of total workforce; million jobs



	Mature economy average, 2007 % of total employment	Total change in employment, 2000–07 Million jobs	Change in jobs embedded in net exports, 2000–07[1] Million jobs
Primary resources	3	-0.1	
Labor-intensive manufacturing	2	-0.1	
Capital-intensive manufacturing	6	0.2	-0.4
Knowledge-intensive manufacturing	5	0.1	
Labor-intensive services	39	2.7	
Capital-intensive services	3	0.2	-0.4
Knowledge-intensive services	17	0.6	
Health, education, and public services	26	0.7	

1 Rough approximation. See Appendix B for details.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

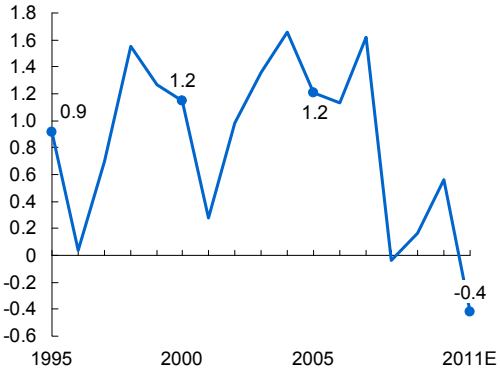
JAPAN

From 1995 to 2010, Japan's trade balance averaged 0.9 percent of GDP, with a high of 1.7 percent of GDP in 2004 and a low of 0.0 percent in 2008 (Exhibit A65). Both exports and imports have grown steadily since the depths of Japan's economic crisis in the mid-1990s, increasing from around 10 percent of GDP in 1995 to 15 percent today. In 2011, Japan's trade balance turned negative for the first time since 1980, as natural disasters prompted additional imports of needed supplies.

Exhibit A63

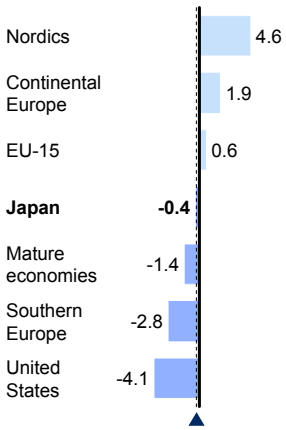
Overall trade balance: Japan

Net exports, 1995-2011E[1]
% of GDP



	1995	2000	2005	2011E
Net exports $ billion	48	54	55	-25
Exports % of GDP	10	11	14	15

Net exports, 2011E[1]
% of GDP



1 2010 and 2011 figures based on annualized quarterly data (with data available through Q3 2011).
SOURCE: OECD; Eurostat; IMF; McKinsey Global Institute analysis

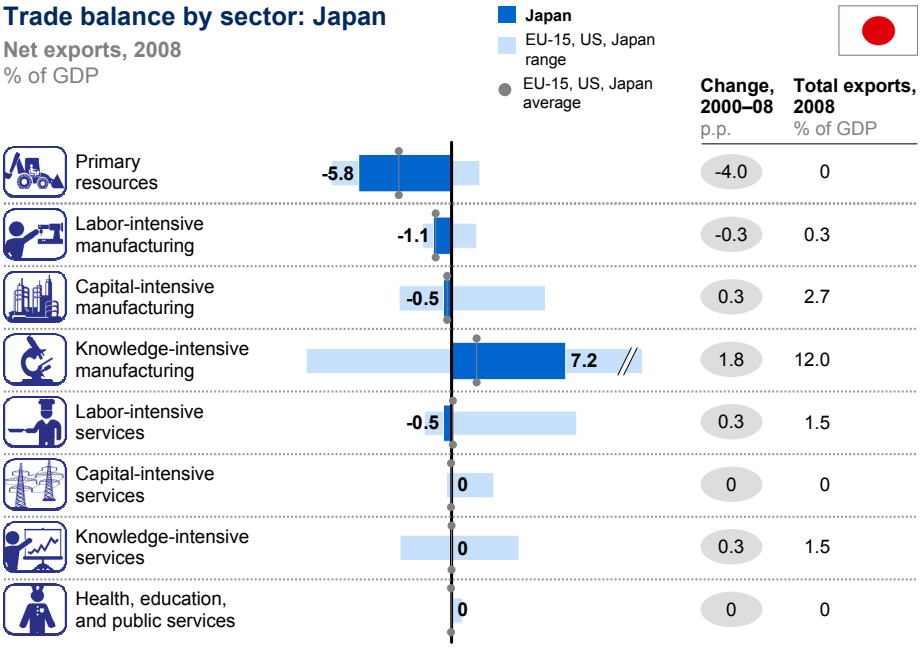
Japan's primary resources trade deficit of minus 5.8 percent of GDP in 2008 is among the highest in our sample of mature economies. With a dearth of domestic natural resources, Japan must rely on imports for almost all its oil, natural gas, and other primary inputs. And this deficit is growing. Since 2000, the trade deficit in primary resources has declined by four percentage points of GDP. By contrast, Japan had a trade surplus in knowledge-intensive manufacturing of more than seven percent of GDP in 2008. Two-thirds of Japan's total exports were in knowledge-intensive manufacturing, to a large extent derived from motor vehicles, radio, television, and communication equipment, and chemicals. Japan's overall trade balance hides significant surpluses and deficits in different sectors

Japan has a comparative advantage in almost all knowledge-intensive manufacturing sectors, in particular transport and computing, communications, and other electrical equipment. Japan's knowledge-intensive manufacturing exports totaled nearly $600 billion, or 12 percent of GDP, in 2008 (Exhibit A67). Japan is a significant exporter of automobiles—with total exports of $207 billion in 2008, automakers in Japan account for nearly 20 percent of trade in cars and trucks in our sample of mature economies. Japan's computing, communications, and other electrical equipment exports totaled $190 billion, or more than 4 percent of GDP, while exports of precision machines and other machinery and equipment totaled $118 billion, or 2.4 percent of GDP.

Exhibit A64

Trade balance by sector: Japan

Net exports, 2008
% of GDP

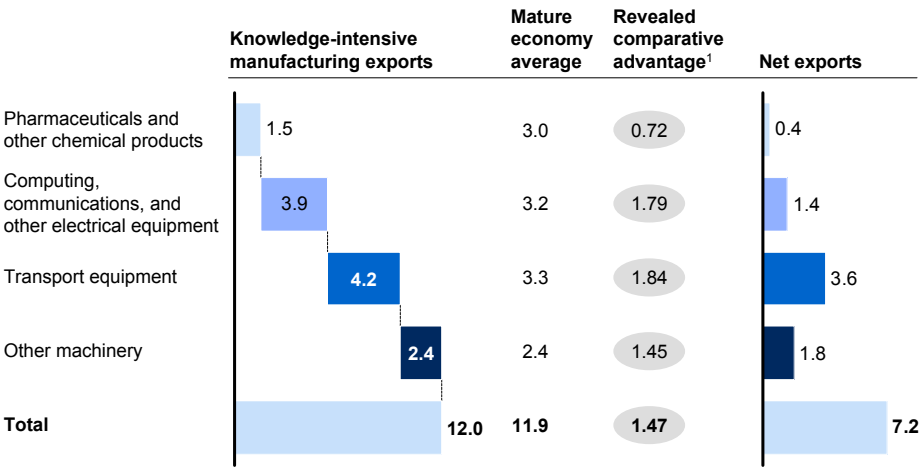


SOURCE: OECD; McKinsey Global Institute analysis

Exhibit A65

Knowledge-intensive manufacturing: Japan

% of GDP, 2008



1 Defined as the share of a country's exports in a certain sector compared with the share that sector has in our 17-country sample.

NOTE: Numbers may not sum due to rounding.

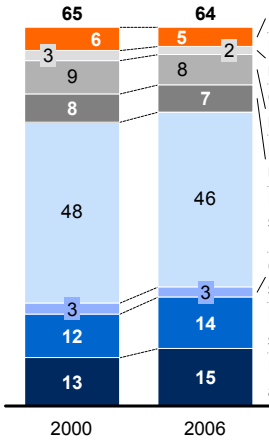
SOURCE: OECD; McKinsey Global Institute analysis

In line with other mature economies, Japanese manufacturing employment declined by 1.4 million from 2000 to 2006 (Exhibit A68). However, in contrast to the United States or European economies, total service sector jobs also declined by 500,000 over the same period. An improving trade balance over the period was equivalent to around 0.8 million additional net export-related jobs. But aging caused the size of the labor force to decline by one million workers overall, a trend that is set to continue as Japan's older population retires.

Exhibit A66

Employment share by sector: Japan

% of total workforce; million jobs



	Mature economy average, 2006 % of total employment	Total change in employment, 2000–06 Million jobs	Change in jobs embedded in net exports, 2000–06[1] Million jobs
Primary resources	3	-0.6	
Labor-intensive manufacturing	2	-0.6	
Capital-intensive manufacturing	6	-0.5	0.3
Knowledge-intensive manufacturing	5	-0.3	
Labor-intensive services	40	-1.5	
Capital-intensive services	3	-0.2	0.5
Knowledge-intensive services	16	1.2	
Health, education, and public services	24	1.4	

1 Rough approximation. See Appendix B for details.
NOTE: Numbers may not sum due to rounding.
SOURCE: OECD; EU KLEMS; Global Insight; McKinsey Global Institute analysis

Appendix B: Methodology

CALCULATION OF THE CONTRIBUTION OF PRODUCTIVITY, DEMAND CHANGES, AND TRADE TO JOB SHIFTS AND LOSSES

We use US Bureau of Economic Analysis (BEA) per-sector employment data (full-time–equivalent jobs plus self-employed) for 2000 and 2010 and explain the change in employment over that period based on changes in final demand in the economy and productivity. We compute the impact from final demand changes on jobs using multipliers based on a 2000 annual input-output table from BEA. For the productivity impact, we calculate the jobs needed to generate 2000 output at 2010 productivity levels. Finally, we show the residual impact as "other."

Estimating jobs change from changes in final demand

Jobs multipliers based on input-output tables enable us to estimate the impact of a change in final demand, both directly and indirectly, on output and then jobs industry by industry. We develop an industry-by-industry domestic total requirements table based on BEA 2000 data following standard input-output methodologies. We then calculate the jobs multiplier table by adjusting the industry-by-industry total requirements table for 2000 by the ratio of employment to gross output for each sector.

We then take final demand (final uses) from the BEA 2000 input-output table and split it into domestic final demand plus net exports. We do the same for the BEA 2010 input-output table, rebasing final demand and net exports into 2000 US dollars using BEA gross output deflators for consistency of currencies in the calculation.[45] For computers and electronic products, we adjust the deflator to unity (equivalent to using nominal values) to avoid hedonic deflation, because improvements in such factors as processing speed appear to be of limited relevance for production employment. We thus derive final demand in 2000, change in net exports, change in domestic demand, and final demand in 2010, all in 2000 US dollars.

We multiply the 2000-based job multiplier matrix with the vectors of change in net exports from 2000 to 2010 to get the employment impact from net export changes, and change in domestic demand from 2000 to 2010 to get the employment impact from domestic demand changes. Note that we do not distinguish between changes in domestic demand to local or foreign suppliers, but rather show all changes in the consumption and investment in the United States as changes in demand, and the respective changes in imports as part of net trade. For instance, if US consumers purchase more cars but import those cars from abroad, we would show a positive employment impact from demand but a negative impact from net trade in line with increased imports.

45 The accuracy of the calculation could be improved even further by applying specific deflators for domestic demand, exports, and imports separately.

Estimating jobs change from changes in productivity

We use BEA value added and employment data per sector to calculate productivity (real value added per full-time–equivalent including the self-employed) in 2000 and 2010, deflating 2010 value added to 2000 US dollars with BEA value-added deflators. We then derive the number of full-time–equivalent jobs needed when producing year 2000 output at 2010 productivity levels per sector and compare this number with actual 2000 employment. Again, we adjust the deflator in computers and electronics products to one to avoid hedonic deflation that would lead to an outsized productivity impact. The use of unadjusted data would result in an increase of 0.5 million manufacturing job losses from productivity.

Residual

Finally, we calculate the residual to actual 2010 employment data. This residual has a number of interpretations: the combined or multiplicative effect from the separate levers; statistical discrepancies; and changes in the structure of the value chain—e.g., outsourcing that can lead to fewer jobs in a sector that are captured in neither the final demand nor the value-added–based productivity numbers. The latter point merits further discussion. For instance, if health care buys more inputs from knowledge-intensive manufacturing, this would mean a negative residual for health care and a positive one for manufacturing, due to increased intermediate demand without increased final demand.

Because we base the calculation on sector-level data, it can only partially account for outsourcing or offshoring of activities within a sector. Consider the following example. ManuCo has demand for its products of $10 billion (gross output) and generates $5 billion of value added with 200,000 manufacturing jobs. Purchases of intermediate goods and services make up the other $5 billion and generate a further 200,000 jobs among suppliers. We illustrate three scenarios of outsourcing and offshoring, and how they would be reflected in our calculation:

1. ManuCo decides to outsource its human resources department domestically, and this is equivalent to 10,000 jobs. Final demand and net trade would not change, as only intermediate demand alters. Our 2000 multipliers would show no changes due to final demand or net trade. There would be no impact on productivity. The residual to 2010 employment would mean that we show a minus 10,000 residual impact in manufacturing and a positive 10,000 residual impact in business services.

2. ManuCo decides to offshore half of its own activities, equivalent to 100,000 jobs, to a low-cost country. Assuming these activities are as high in value as the ones remaining in the domestic economy, they would pay 50 percent of their value added, i.e., $2.5 billion, to their low-cost country operations, while intermediate inputs from suppliers remain unchanged. Net trade would deteriorate by $2.5 billion, which our analysis would translate into 50,000 jobs lost in ManuCo and another 50,000 among the suppliers. Because the supplier jobs would often be in a different industry (typically in services), our analysis would show a somewhat different industry mix for the jobs lost than what is happening in reality. The residual to actual job losses would correct for that—i.e., in this case show another 50,000 job losses in ManuCo, bringing the total to 100,000, and a 50,000-job gain among the suppliers, bringing the total to zero.

3. This is the same scenario as (2) but the 100,000 jobs ManuCo offshores lead to imports worth only $1 billion rather than $2.5 billion, assuming as an extreme scenario a 60 percent landed cost saving due to sourcing from a low-cost country (or a pre-selection of outsourced jobs to reflect only low-value activities). The job impact from net trade in the model would be only minus 20,000 in manufacturing and minus 20,000 among suppliers, in line with the lower price for the imports. But as ManuCo retains the $1.5 billion in cost savings as margin, there would be a significant measured productivity impact. After the offshoring, ManuCo would deliver $4 billion in value added ($5 billion minus $1 billion of imports) with 100,000 jobs, or a productivity of $40,000 per worker, while previously it had a productivity of only $25,000 per worker ($5 billion in value added with 200,000 workers). Our model would show that ManuCo can deliver its pre-offshoring value added of the year 2000 of $5 billion at a year 2010 post-offshoring productivity of $40,000 rather than $25,000 per employee, or with 125,000 employees instead of 200,000, and therefore show job losses related to productivity growth of 75,000 employees. Finally, the residual would correct to actuals and show another loss of 5,000 jobs for ManuCo and a reduction of the loss by 20,000 jobs among the suppliers.

The last scenario is an extreme case, but it demonstrates the importance of understanding what part of measured productivity growth may have been driven from cost savings when switching to offshore sourcing.

In a slightly different context, Houseman et al. have estimated that real value-added growth, and therefore growth in labor productivity, in manufacturing in the United States could be overstated by 0.2 to 0.5 percentage points a year due to such an offshoring bias, because price deflators do not reflect price declines in inputs from changing suppliers, for instance to offshored operations.[46] With the current import profile of the United States, they show that this is somewhat equivalent to a 30 percent price advantage when switching to suppliers in developing countries. This bias suggests that around 0.3 million to 0.8 million of the manufacturing jobs lost in the United States in line with productivity increases actually reflect price advantages from offshoring that do not properly get reflected in net export changes or value-added deflators. In our analysis, we therefore identify the mid-point of 0.6 million as “offshoring-related efficiencies” within the productivity-related job decreases.

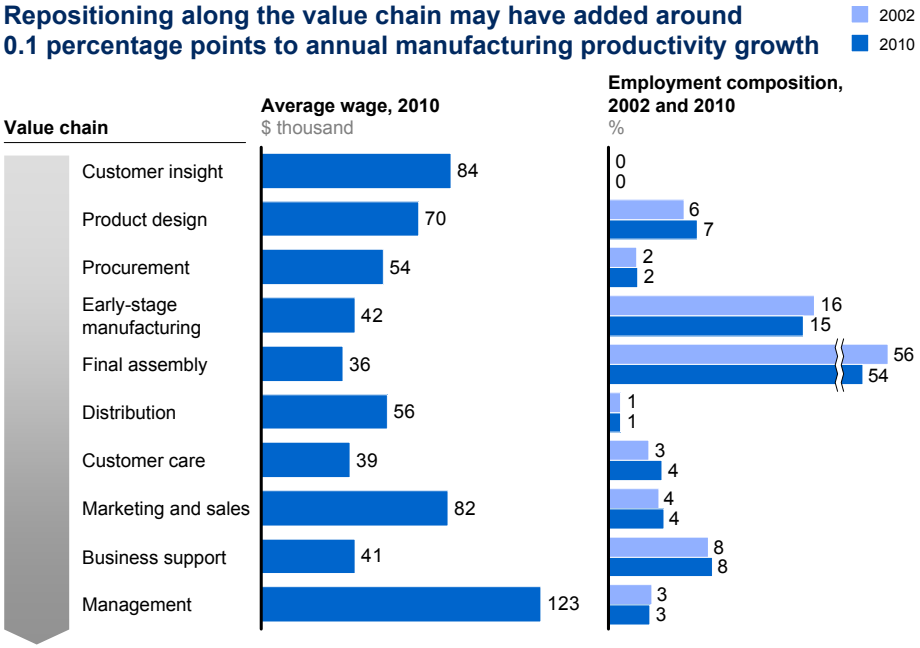
46 Susan Houseman, Christopher Kurz, Paul Lengermann, and Benjamin Mandel, “Offshoring bias in US manufacturing,” *Journal of Economic Perspectives*, Vol. 25, No. 2, Spring 2011.

Several further angles help make these results plausible:

- Assessment of productivity impact from changes in the composition of the value chain. From 2002 to 2010, there was a 2.1 percentage point shift of employment out of assembly and into R&D at one end of the value chain, and into sales and customer care at the other end. This change in composition was equivalent to a 0.1 percent annual increase in average real manufacturing wages from shifting to higher value-added activities (Exhibit B1). This change is lower than we expected because the compositional shift was stronger from assembly jobs to similarly low-wage customer-care jobs rather than high-value R&D jobs. While wages can never be a solid proxy for productivity—they represent only the labor compensation portion of value added and productivity—the results still suggest that the impact of this kind of trade-related specialization on measured productivity growth may be small compared with the overall annual rate of productivity growth in manufacturing.

Exhibit B1

Repositioning along the value chain may have added around 0.1 percentage points to annual manufacturing productivity growth



SOURCE: US Bureau of Labor Statistics; McKinsey Global Institute analysis

- Analysis of productivity impact by sector. Sectors that show the largest negative employment impact from productivity growth in our analysis are computers and electronics products (-1.1 million), machinery (-0.6 million), and wood products, electrical equipment, furniture, food, printing, apparel, chemical, and plastics (each around -0.2 million). Examples of contracting out or offshoring assembly work are concentrated in computers and electronics products. Assuming a rough scenario in which all productivity growth in those sectors was related to offshoring (and there was no offshoring-related productivity impact in other sectors) would mean that 1.1 million of the 4.8 million productivity impact is related to offshoring.

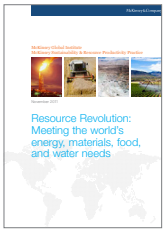
- Analysis of Chinese processing exports. In 2009, China's imported goods for processing were worth $322 billion, and re-exported processed goods were worth $587 billion, retaining a processing value added of $265 billion—$220 billion more than in 2000. Assuming that all of this processing could be done in the United States instead—at a cost of 1.5 times the Chinese cost—would be equivalent to around 3.3 million US jobs. The vast majority of those jobs—2.2 million—would correctly show up in the job decomposition analysis as job losses from trade (which did not materialize as other sectors and activities improved their net trade position accordingly). But 1.1 million jobs, in line with the assumed cost improvement achieved from offshoring, would be reflected as productivity gains in our analysis.

CALCULATION OF THE CHANGE IN JOBS EMBEDDED IN NET EXPORTS IN THE COUNTRY APPENDIX

For the country appendix, we use a much simpler methodology to obtain rough estimates of the impact that net trade changes have on the job composition. First, we divide changes in net exports per sector from 2000 to 2007 by 2000 sector productivity for a high-range estimate of the embedded jobs. Then, we divide the same changes in net exports by 2007 sector productivity for a low range of the embedded jobs. We then average both approximations and sum up the impact on primary resources, manufacturing, and services.

As a final step, we reallocate the embedded job impact in line with the fact that a large share of manufacturing exports is based on intermediate service inputs (see Myth 5, Exhibit 5.4). As a rough approximation, we use US data for all countries. In the United States, according to OECD 2005 input/output tables, around 37 percent of the domestic value added part of manufacturing exports accrue to service suppliers, 60 percent to manufacturers, and 3 percent to primary resource suppliers. In line with these numbers, we reallocate 37 percent of the jobs embedded in changes in manufacturing net trade to services and 60 percent to manufacturers. The other way around, for services, the manufacturing value added is only 4.5 percent, while the service content is 94 percent (with the remainder, again, in primary resources), so we reallocate 4.5 percent of the embedded jobs in service net exports to manufacturing and 94 percent to services.

Related McKinsey Global Institute publications



Resource revolution: Meeting the world's energy, materials, food, and water needs (November 2011)

The resource challenge can be met through a combination of expanding their supply and a step change in the way they are extracted, converted, and used. Resource productivity improvements that use existing technology would satisfy nearly 30 percent of demand in 2030. Fifteen areas, from more energy–efficient buildings to improved irrigation, could deliver 75 percent of the potential for higher resource productivity.

European growth and renewal: The path from crisis to recovery (July 2011)

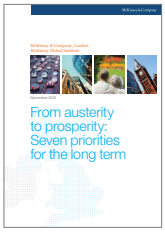
Europe is growing again, but the recovery is uneven and under threat from the continuing eurozone debt crisis. Europe has significant strengths on which to build but needs to address profound long-term challenges that could limit its future growth. MGI sets out a perspective on where the European economy stands today, the challenges it faces, and the very considerable strengths on which it can build.

An economy that works: Job creation and America's future (June 2011)

For the United States to return to the employment level before the 2008 recession—finding work for the currently unemployed and accommodating new entrants into the labor force this decade—the US economy will need to create 21 million jobs by 2020.

Growth and renewal in the United States: Retooling America's economic engine (February 2011)

More than ever, the United States needs productivity gains to drive growth and competitiveness. As baby boomers retire and the female participation rate plateaus, increases in the labor force will no longer provide the life to US growth that they once did. To match the GDP growth of the past 20 years and the rising living standards of past generations, the United States needs to boost labor productivity growth to a rate not seen since the 1960s.



From austerity to prosperity: Seven priorities for the long term (December 2010)

The United Kingdom's productivity growth over the past 15 years has been encouraging, but productivity levels remain nearly 20 percent below those in the United States and 10 percent lower than in Germany. Moving from austerity to prosperity requires a step change in actions on seven fronts spanning sector productivity, multinational attraction, infrastructure investment, and innovation.

How to compete and grow: A sector guide to policy (March 2010)

MGI offers policy makers a pragmatic guide to help them make the right decisions and trade-offs, drawing on a bottom-up, sector-based approach. MGI studied competitiveness and growth in six industries—retail, software and IT services, tourism, semiconductors, automotive, and steel—across eight or more countries including both emerging and high-income economies.

www.mckinsey.com/mgi

eBook versions of selected MGI reports are available at MGI's Web site, Amazon's Kindle bookstore, and Apple's iBookstore.

Download and listen to MGI podcasts on iTunes or at www.mckinsey.com/mgi/publications/multimedia/

McKinsey Global Institute
May 2012

www.mckinsey.com/mgi
@McKinsey_MGI
McKinseyGlobalInstitute