McKinsey Global Institute




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Investing in growth: Europe's next challenge

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Preface

Four years into the global economic slowdown, Europe's governments, businesses, and consumers are looking ahead to future sources of economic growth. Beyond the immediate challenges of the European debt crisis and questions over the future of the eurozone, the imperative is to revitalise economic growth. This report looks in detail at the evolution of private investment over the past five years in Europe and over the past 30 in advanced economies more broadly. Our aim is to provide a fact base that will help policy makers prioritise sectors where interventions to stimulate private investment are likely to be most effective. Drawing on past MGI work, we also aim to provide several principles that policy makers should keep in mind in order to maximise the likelihood of their interventions being successful. The report is a contribution to MGI's broad research agenda on the topic of growth and renewal.

Charles Roxburgh, a director of MGI and McKinsey, guided this work with valuable advice from Eric Labaye, MGI chairman and a director of McKinsey based in Paris. Tilman Tacke, a consultant in McKinsey's Berlin office, and Fraser Thompson, an MGI senior fellow based in London, led the research, with additional input from Jan Mischke, an MGI senior fellow based in Zurich. Duncan Kauffman managed the project team, which comprised Y. Arvind Eashwar, François-Alexandre Léonard, Tim McEvoy, Thomas O'Reilly, and Arthur Worsley. We are grateful for the advice and input of many McKinsey colleagues, including Klaus Behrenbeck, François Bouvard, Florian Budde, Bing Cao, Fredrik Dahlqvist, Ian Davis, John Dowdy, Diana Farrell, Heiner Frankemölle, Nicklas Garemo, Marc Goedhart, Vivian Hunt, Bin Jiang, Tim Koller, Peter Lambert, Susan Lund, Jürgen Meffert, Detlev Mohr, Jaana Remes, Christian Riis-Hansen, Jürgen Rugholm, Jay Scanlan, Paul Sheng, Ruben Verhoeven, and Antonio Volpin. The team would like to thank Janet Bush, MGI senior editor, for her editorial help; Rebeca Robboy and John Cheetham in external communications; Julie Philpot, MGI's editorial production manager; and Marisa Carder, visual graphics specialist.

Many experts in academia have offered invaluable guidance and suggestions. Our particular thanks go to Martin Baily, a senior adviser to McKinsey and a senior fellow at the Brookings Institution; Richard Cooper, Maurits C. Boas Professor of International Economics at Harvard University; Hans-Helmut Kotz, senior fellow at the Center for Financial Studies, Goethe University, Frankfurt; Jean-Hervé Lorenzi, president of the "Cercle des Economistes"; and Laura Tyson, S. K. and Angela Chan Chair in Global Management at the University of California, Berkeley.

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.

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December 2012

The challenge

€350 billion fall in EU-27 private investment in 2007–11, larger than any previous decline in absolute terms

The fall in private investment was

20 times the drop in private consumption and

4 times the decline in real GDP

$1 trillion fall in private investment in the EU-27, United States, and Japan combined in 2007–11

26 of 27
EU economies had not recovered to 2007 private investment levels by 2011

75%+
of the private investment fall occurred in Greece, Ireland, Italy, Portugal, Spain, and the United Kingdom

...the opportunity

More than
€2 trillion private investment in the EU-27 vs. less than

€0.3 trillion
of government investment

€750 billion
excess cash holdings of listed European companies in 2011

Closing only 10% of variation in capital stock per worker at subsector level in Europe could require additional investment of
€360 billion+

€290 billion
new investment in EU-27 fixed telecoms needed to deliver desired data speeds over the next decade

€37 billion
per year of investment in 2010–30 needed to improve the energy efficiency of new and existing buildings in Europe

Contents

Executive summary

Behind Europe's growth stagnation is an unprecedented weakness in private investment. European companies and households have been buffeted by the global financial and sovereign debt crises and uncertainty about the future of Europe's economic and monetary union. The fall in private investment between 2007 and 2011 was larger than any previous decline in absolute terms and four times the decrease in real GDP over the same period. History tells us that advanced economies take an average of five years to recover from such a drop in private investment. By that standard, the 27 economies that make up the European Union (EU-27) are, on average, running behind schedule.

Yet Europe's policy debate has focused more on how to balance public budgets than how to reignite growth. And when governments *do* discuss growth, the emphasis has tended to be on increased government investment (including on infrastructure) and private consumption, rather than private investment. Given the central role of private investment in Europe's downturn, we believe that it merits greater attention. In parallel with continuing efforts to restore macroeconomic stability, action to stimulate a recovery in private investment needs to be part of a pro-growth strategy that also embraces reform to labour markets and service sectors.

Private investment has been the hardest-hit component of GDP during the European economic crisis. In 26 of the 27 EU countries, private investment in 2011 remained below its 2007 level, weighed down by a weak demand outlook and ongoing macroeconomic uncertainty. But private investment holds significant promise as a driver of recovery and sustained medium-term growth. Other sources of GDP growth are constrained in many countries and could remain so for some time. Across Europe, the one economic sector that has the capacity to spend is the non-financial corporate sector. Government investment—which in any case accounts for only around 12 percent of total investment in Europe—and government consumption are likely to remain subdued in many European economies as policy makers strive to reduce public debt. Private consumption is under pressure as unemployment rises and as households in parts of Europe rebuild their finances after years of high borrowing. Net exports have been by far the fastest-growing GDP aggregate during the recovery. Nevertheless, the fact is that roughly 60 percent of EU-27 exports are to other EU-27 countries, and many of Europe's major external export markets are experiencing slow or weakening growth.

In contrast to the strapped finances of the public and household sectors, companies have significant cash that they could invest. Listed European companies had excess cash holdings of €750 billion in 2011, close to their highest real level for two decades.[1] To put this into perspective, the value of these cash holdings is more than double the drop in private investment between 2007 and 2011. But despite the low interest rates that prevail in much of Europe, European companies remain hesitant, and private investment remains well below its previous peak. An essential part of the recovery is therefore to get the private sector investing again.

The appropriate balance between government efforts to stimulate demand and to cut high sovereign debt is rightly the subject of ongoing debate. Whatever judgments European governments make on where that balance should lie, it is vital that they individually and collectively do all they can to restore macroeconomic stability. However, in parallel, European economies need a new kind of industrial strategy focused on microeconomic reform. In the 1970s, "picking winners" was often the industrial policy of choice. Europe's taxpayers footed substantial bills as governments offered large financial incentives to investment or acted as investors themselves through nationalised companies and other vehicles. Bitter experience shows that there were as many if not more failures than successes. In any case, given current fiscal constraints, such an approach is not feasible. What European economies need today are activist policies focused on targeted microeconomic reforms that mitigate or remove barriers to private investment and create the conditions for the non-financial corporate sector to propel European growth and renewal.

Even in the short term—and in today's weak demand conditions—governments could unlock private investment by removing regulatory barriers that currently stand in the way. Many projects, from airports to university campuses, benefit from returns over decades and therefore weak demand in the short term will only have limited impact on their overall viability. Even among more near-term projects, there will be those at the margin that could become viable with sufficient action from policy makers. Examples of investment that could kick in relatively quickly include retrofitting buildings with more energy-efficient features and investing in telecoms infrastructure to support Europe's growing data needs. Such investment would not only make a contribution to growth but could also potentially inspire confidence in other firms that are holding back. Through removing barriers, governments could trigger a virtuous circle of private investment. Appropriate microeconomic activism would also mean that, even for projects that are dependent on demand, the right conditions are in place so that when growth returns, investment comes back as a flood rather than a trickle.

In this report, we explore what has driven the sharp decline of private investment and use analysis of past contractions in European and other advanced economies to gain insight into prospects for its recovery. Finally, we discuss a framework for designing a programme of microeconomic activism at the sector level focused on unleashing a wave of new investment that can drive Europe's recovery.

1 McKinsey Corporate Performance Analysis Tool and Standard & Poor's Capital IQ. We define "excess cash" as the sum of cash above 2 percent of revenue.

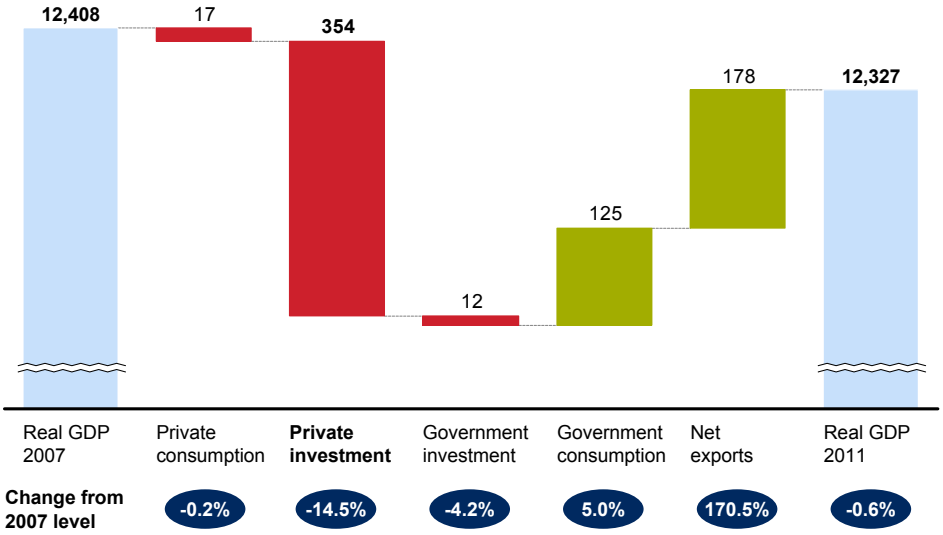
BEHIND EUROPE'S STAGNATION IS A CRISIS OF PRIVATE INVESTMENT

The economic downturn in Europe has hit private investment harder than any other component of GDP. Between 2007 and 2011, annual private investment in the EU-27 fell by more than €350 billion—20 times the drop in private consumption, and four times the decline in real GDP (Exhibit E1).[2]

Exhibit E1

Private investment has been the hardest-hit component of EU-27 GDP

Change in real GDP, EU-27 countries, 2007–11
Constant 2005 € billion



SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

The fall in private investment during the current European economic crisis is larger than any previous decline in absolute terms. Private investment is today nearly 15 percent below its 2007 level. In some countries, the decline was significantly larger than the aggregate fall across the EU-27. For instance, Spain's private investment fell by 27 percent from 2007 to 2011. In Ireland, the decline was 64 percent.

More than 75 percent of the private investment drop occurred in Greece, Ireland, Italy, Portugal, and Spain—the GIIPS group—and the United Kingdom. Yet these countries account for only 42 percent of EU-27 GDP. France, too, experienced a substantial decline in private investment. Indeed, the private investment drop in France and the United Kingdom combined was larger than that observed in Spain.

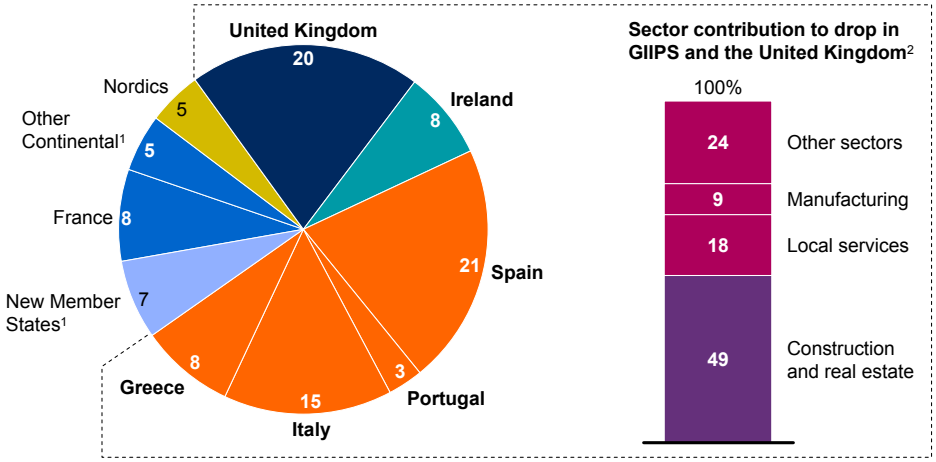
2 All data on GDP and its components, including private investment, are shown in constant 2005 euros.

A collapse in investment in construction and real estate—sectors where investment boomed before the economic crisis—accounted for a significant share of the overall drop in fixed investment between 2007 and 2011. In the GIIPS group and the United Kingdom, construction and real estate accounted for nearly 50 percent of the drop in combined fixed investment (Exhibit E2). Some of this past investment was the product of an unsustainable property market boom, and a swift return to those investment levels would not be expected or desired.

Exhibit E2

GIIPS[1] and the United Kingdom accounted for more than 75 percent of the private investment fall; construction and real estate dominated

% of the overall drop in private investment in the EU-27, 2007–11[2]



1 GIIPS: Greece, Ireland, Italy, Portugal, and Spain; Continental: Austria, Belgium, France, Germany, Luxembourg, and the Netherlands; New Member States: Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, and Slovenia; Nordics: Denmark, Finland, and Sweden.
2 Sector-level data are available for combined private and government fixed investment only.

SOURCE: IHS Global Insight; McKinsey Global Institute analysis

It is difficult to disentangle the effects of many potential causes for the drop in investment. Nevertheless, two factors appear to have played a leading role. First and foremost has been the weak demand outlook and slack capacity in many sectors across Europe. In countries where investment has dropped the most, there has also been a large decline in growth expectations. This relationship has been particularly marked in the construction and real estate sectors. The collapse of the real estate bubble in some European countries and the large amount of spare residential dwelling capacity left in its wake have resulted in a glut in some markets with little new investment taking place. This situation has been compounded by high levels of economic uncertainty—downside risks loom larger than those on the upside. In combination, these forces have sapped firms' confidence to invest. Household and corporate deleveraging in parts of Europe has further dampened residential real estate investment. The second factor is the cost of, and access to, financing for investment. The fall in private investment coincided with tightened credit conditions, especially for small and medium-sized enterprises (SMEs), in parts of Europe. On the evidence, the issue of financing appears to have played only a secondary role, but it will still be an important determinant of the speed and scale of the recovery.

PRIVATE INVESTMENT IS CRUCIAL FOR RENEWED EUROPEAN GROWTH—BUT ITS RECOVERY LAGS BEHIND HISTORICAL STANDARDS

An analysis of 41 episodes in which real GDP fell and private investment dropped by at least 10 percent—as they have in Europe in recent years—shows that current trends in the components of GDP are quite distinct from those observed in the past. Private investment may be the most viable means of kick-starting European growth this time around:

- **Private consumption has led recovery in the past but remains weak in many countries today.** Typically, once GDP has started to grow again after a contraction, private consumption generates around one-third of real GDP growth. But EU-27 private consumption stagnated in 2011. Consumers appear to be unusually pessimistic about their economic prospects. In the United Kingdom and Spain, for example, households built up significant debt before the crisis and are now deleveraging only slowly. This process could still have many years to run.[3]

- **Government investment and consumption are unlikely to fill the hole left by Europe's private investment.** Government investment in the EU-27 accounted for only 12 percent of total investment on average between 1980 and 2011. To make up for the drop in annual private investment between 2007 and 2011, EU-27 governments would have to more than double their combined annual investment. This is highly unlikely given the strain on European public finances. Many of Europe's largest economies are reducing their deficits in order to try to comply with the criteria on debt and deficits prescribed in the Stability and Growth Pact. The International Monetary Fund (IMF) projects that total government expenditure as a share of EU-27 GDP will fall from 48.4 percent in 2011 to 45.5 percent in 2017. Without a major reversal of current policy, expansion of government expenditure is unlikely to be a significant stimulus to growth.

- **Net exports have played a strong role in the recovery so far, but further export-led growth faces headwinds.** Net exports accounted for two-thirds of the 1.6 percent growth in real GDP in the EU-27 in 2011. However, efforts by European governments to promote exports are unlikely to be sufficient to drive economic recovery across Europe. Economies in the eurozone cannot gain export competitiveness through unilateral devaluation; they require structural reform, typically a long and painful process. Additionally, roughly 60 percent of EU-27 exports are to other EU-27 countries, and growth across the EU is anaemic. Outside Europe, with the exception of China, the EU's main export markets are developed economies where GDP growth is also weak.

3 *Debt and deleveraging: Uneven progress on the path to growth*, McKinsey Global Institute, January 2012.

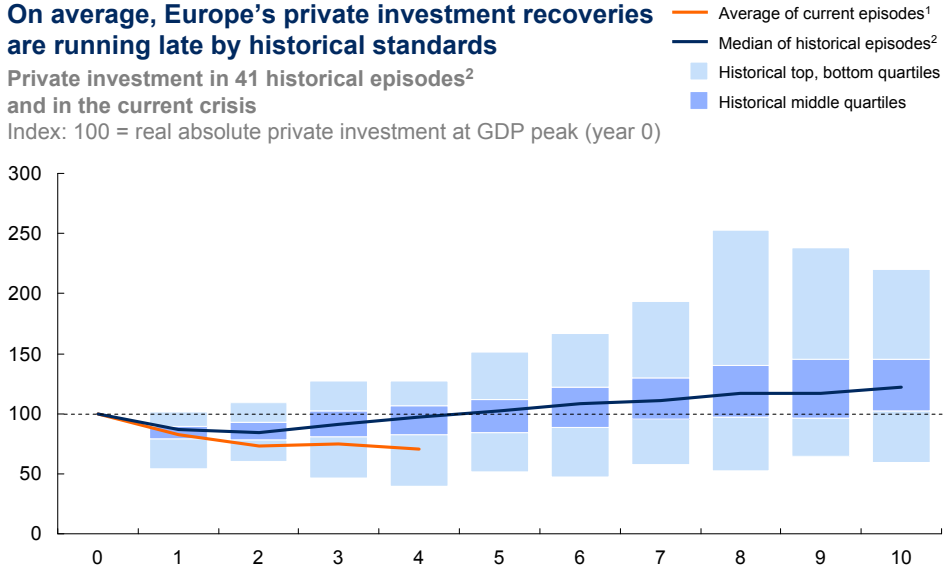
- **Private investment is less restricted, but its recovery is running late by historical standards.** Historically, private investment contributes about the same share of GDP growth during recoveries as during periods of normal growth. Private investment has, in the past, generated about one-third of GDP growth in the first two years of a recovery before settling back to a contribution of about one-quarter of growth. Our analysis of the 41 episodes shows that the median recovery time for private investment was five years from the year in which real GDP peaked. Even by that sobering standard, on average the private investment recoveries in the EU-27 economies are running behind schedule (Exhibit E3). In countries such as Greece and Spain, which had the largest falls in private investment of up to 40 percent or more, private investment had not yet begun to rise again by the end of 2011. However, private investment today is less constrained than other sources of GDP growth and therefore could potentially play a larger role than it has typically done in the past. The one economic sector that has capacity to spend across Europe is the non-financial corporate sector. European companies have significant cash that they could invest: listed European companies had excess cash holdings of €750 billion in 2011.

Exhibit E3

On average, Europe's private investment recoveries are running late by historical standards

Private investment in 41 historical episodes[2] and in the current crisis

Index: 100 = real absolute private investment at GDP peak (year 0)



1 Unweighted average of the 26 European countries that suffered a GDP contraction (in Poland, real GDP did not fall).
2 Episodes in which private investment fell at least 10 percent from GDP peak to GDP trough; this excludes 17 episodes when private investment fell by less than 10 percent. All values in year 0 are equal to 100 since private investment is indexed to 100 in that year.

SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

POLICY MAKERS NEED TARGETED MICROECONOMIC ACTIVISM TO UNLOCK PRIVATE INVESTMENT

Restoring macroeconomic stability and confidence by working through the current sovereign debt crisis is essential but will not be sufficient in itself to create an investment-driven recovery. There is rightly a debate in many European economies around the appropriate balance between using fiscal policy to stimulate demand and the imperative to cut high public debt levels. Whatever judgment individual European governments make on that balance, they need to combine any action to restore macroeconomic stability with microeconomic activism that aims to remove microeconomic barriers to private investment.

A range of such barriers currently constrains private investment in virtually every sector across Europe. In retail, for instance, planning regulations in many European countries limit the growth of more productive large-format stores and therefore deter investment. In construction, a large variety of specifications on anything from the height of ceilings to staircase areas means that, in some countries, construction projects are inefficient and expensive—another barrier to investment.[4] In transport, the fact that regulation is not uniform across Europe's internal borders acts as a barrier—consider that there are 11 separate signalling systems for rail freight in the EU-15, for instance.

Countries that have tackled such microeconomic barriers have achieved significant productivity and investment gains. After Sweden eased planning laws in retail during the 1990s, the sector posted the strongest productivity growth of any retail sector in Europe (and outstripped that of the US sector) between 1995 and 2005.[5] In European telecoms, standardisation and liberalisation led value added and productivity to grow at a rate of 9 percent in this period, compared with an estimated 6 percent on both measures in the United States.[6]

Overall, the potential to revive private investment by addressing such microeconomic barriers in Europe could be substantial. If European countries were to close only 10 percent of the variation in capital stock per worker at the subsector level, the impact could be more than €360 billion in additional investment—outstripping the €354 billion difference in private investment between 2007 and 2011.[7]

4 *Beyond austerity: A path to economic growth and renewal in Europe*, McKinsey Global Institute, October 2010.

5 *Creating economic growth in Denmark through competition*, McKinsey & Company, November 2010.

6 *Beyond austerity: A path to economic growth and renewal in Europe*, McKinsey Global Institute, October 2010.

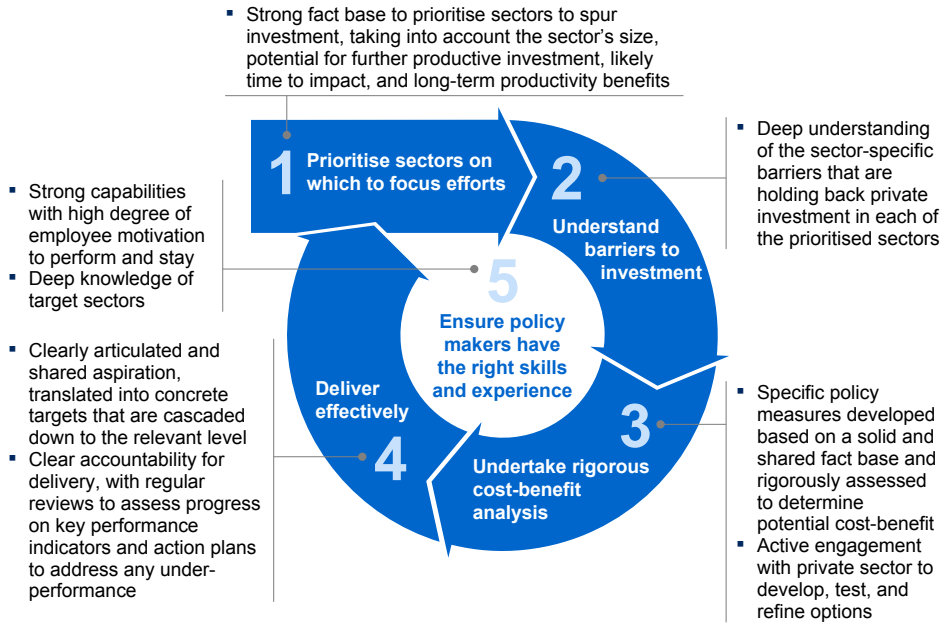
7 This is the gap between countries with similar labour costs. This analysis includes the 20 largest countries in the EU. The estimate is conservative as it excludes several sectors and also does not take account of the higher future investment growth path that closing the capital stock per worker gap would generate (both from the replacement of the additional capital stock that will depreciate in future years and continuing to keep the gap in capital stock per worker narrower than it is today). See Appendix B: Technical notes for more detail.

Yet despite these large potential benefits, the importance of microeconomic reform for investment and growth in Europe appears to have been overlooked in the current public debate. A review of the European media since 2009 finds that the press coverage of fiscal policy has been four times as great as that of microeconomic reform.

It is vital that any programme of microeconomic activism avoids some of the ineffective and costly attempts at policy intervention in the past. MGI's large body of research on productivity and sector competitiveness suggests that adhering to five essential disciplines will help to ensure that policy intervention is effective and to maximise the odds of success (Exhibit E4).

Exhibit E4

Targeted microeconomic activism comprises five essential disciplines



SOURCE: McKinsey Global Institute analysis

First, policy makers need to focus microeconomic activism on those sectors where intervention is most likely to trigger renewed investment on a sufficiently large scale to boost GDP growth and quickly enough to enable private investment to drive the recovery. Many current government strategies focus on innovative sectors such as semiconductors, but such cutting-edge sectors tend to lack the scale to have a sizeable impact on overall investment and economic growth. There may be other good reasons to launch initiatives in these sectors, but microeconomic activism by governments in these areas is unlikely to have a material impact on growth over the medium term.

Second, having established priority sectors, policy makers should develop a deep understanding of the sector-specific barriers holding back private investment. For example, an unsupportive regulatory framework stands in the way of the emergence of a European-wide energy grid. In the United Kingdom, there is evidence that immigration limits inhibit the expansion of the university sector.[8]

8 *Overseas students and net migration*, Business, Innovation and Skills Committee, House of Commons, United Kingdom, September 2012.

Third, governments should undertake a rigorous cost-benefit analysis before making any policy intervention to ensure that any investment is as productive as possible.

Fourth, governments need to deliver these interventions effectively, learning from how others in the public and private sectors have implemented policy. Finally, policy makers need to ensure that they have the right expertise, for example by hiring people with deep knowledge of the target sector. Singapore's impressive economic development has been strengthened by the ability of its public sector, including agencies such as its Economic Development Board, to attract and retain top talent. Because of the need to develop skills, microeconomic activism is not costless. However, because such activism often involves fiscally neutral changes in government policy, its costs are far less than government consumption or investment.

Independent of policy developments, there are three priorities for businesses in the investment sphere. First, they should examine their investment decision-making processes to ascertain whether they are identifying and acting to pursue all promising investment opportunities or whether a "bias against risk" is preventing them from doing so. Too often, managers add an arbitrary "risk premium" on top of the agreed cost of capital in an attempt to "compensate" for risk. Second, businesses need to arm themselves with the detail they need to guide their investment decisions effectively. Past McKinsey research has emphasised the importance of focusing analysis on "micro-markets" of specific products at the level not just of countries but even of areas within those countries, including rapidly growing cities. Based on a sample of 234 European-based companies, more than two-thirds of revenue growth from 1999 to 2009 came from growth in sub-industry segments, with the remainder from mergers and acquisitions and shifts in market share.[9] Finally, there is a need to create a step change in the efficiency with which capital is deployed. Past McKinsey research unearthed opportunities to achieve savings of more than 30 percent on project costs through approaches such as maintaining a top-level focus on value, providing project managers with a well-structured tool kit, and ensuring the project team has the right skills to deliver effectively. Doing so will ensure that more investment projects are viable and productive.

9 These data are from McKinsey & Company's Granularity of Growth database.

1. Behind Europe's stagnant growth is a crisis in private investment

The European economy has been battered since 2007. At the heart of the region's disappointing growth performance has been an unusually steep decline in private investment. A wave of negative economic developments—the bursting of the construction and real estate bubble, recession, banking and sovereign debt crises, and continuing uncertainty about the future of the euro—have dented the confidence of companies and households.[10]

Private investment accounts for nearly 90 percent of the total investment that takes place in the EU-27.[11] Although private investment tends to be volatile, the recent plunge was greater than is usual in an economic downturn, reflecting Europe's unprecedented economic difficulties. Private investment—expenditure by firms and households that adds to the capital stock of buildings, equipment, and inventories, and thereby boosts the economy's capacity to produce more goods and income in the future—has been the hardest-hit component of GDP. It is notable that the fall in private investment was 20 times as great as that in private consumption, and four times that in real GDP.

Our analysis offers a number of new insights. It may not come as a surprise that some of the sharpest drops in private investment have been in Greece, Ireland, Italy, Portugal, and Spain. Less expected, perhaps, is the fact that private investment also dropped sharply in the United Kingdom and France. Indeed, the fall in private investment in these two economies combined was larger than that in Spain. Among the more resilient countries, private investment in Germany fell by less than 1 percent between 2007 and 2011 and in Sweden by less than 3 percent. Despite these modest declines, both these countries still have potential for further private investment, as we explain in Chapter 3.

In this chapter, we discuss the decline in private investment since 2007 in the context of previous economic downturns and the drivers of that fall.

10 *The future of the euro: An economic perspective on the eurozone crisis*, McKinsey & Company, January 2012.

11 We define "private investment" as real private gross fixed capital formation, which we abbreviate to "private fixed investment" throughout this report, plus net additions to inventories (i.e., stock building) in real terms. It does not include investment in stocks, bonds, or other financial assets.

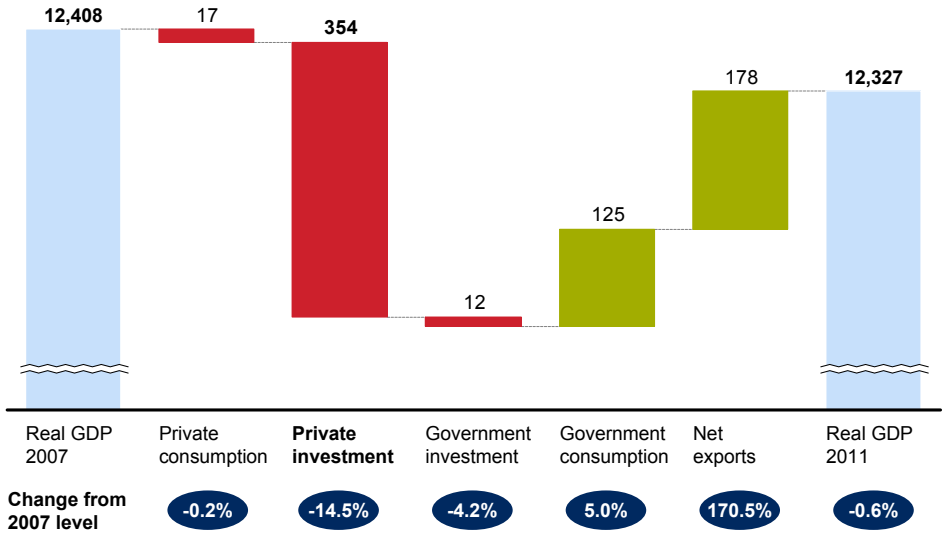
PRIVATE INVESTMENT HAS BEEN THE HARDEST-HIT COMPONENT OF EU-27 GDP SINCE 2007

The economic contraction in Europe has hit private investment harder than any other component of GDP (Exhibit 1). Between 2007 and 2011 (the most recent year for which annual data are available), private investment in the EU-27 fell by €354 billion from its 2007 high of €2,440 billion. Its share of GDP has dropped from 20 to 17 percent.[12] This compares with a €12 billion fall in government investment and a €17 billion drop in private consumption. Government consumption, meanwhile, increased by €125 billion and net exports rose by €178 billion.[13] The fact that the aggregate decline in private investment was 20 times the drop in private consumption over the same period partly reflects a housing boom in some countries before the crisis. Fixed investment in construction and real estate increased more than 50 percent faster than the European average across all other sectors between 2007 and 2011. The decline in private investment also dwarfs the €81 billion decline in total GDP.

Exhibit 1

Private investment has been the hardest-hit component of EU-27 GDP

Change in real GDP, EU-27 countries, 2007–11
Constant 2005 € billion



SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

It is not unusual for private investment to fall sharply during a contraction in real GDP.[14] However, its contribution to the recent GDP contraction in the EU-27 is among the largest on record. Between 2007 and 2011, private investment accounted for 92 percent of the €384 billion "gross" drop in those GDP aggregates that fell (private consumption, private investment, and government investment).

12 These figures are in constant 2005 euros and are based on an estimate of the government share of investment for those countries where government investment data are not available separately. For further detail, see Appendix B: Technical notes.

13 IHS Global Insight.

14 Capital expenditure has the highest standard deviation of all elements of GDP. See, for example, Robert Chirinko, "Business fixed investment spending: Modeling strategies, empirical results, and policy implications", *Journal of Economic Literature*, volume 31, December 1993.

The slump in investment in Europe is not only constraining current GDP growth but could also cause long-term damage to the Continent's economic capacity. If we assume a modest 7 percent real rate of return, the "missing" annual private investment (excluding residential real estate) in 2008, 2009, 2010, and 2011 relative to 2007 implies €543 billion in returns that Europe will forgo between 2009 and 2020.[15]

We should note that the private investment crisis is not unique to Europe. The United States and Japan have experienced comparable GDP contractions concentrated in private investment (see Box 1, "Falling private investment is an international phenomenon").

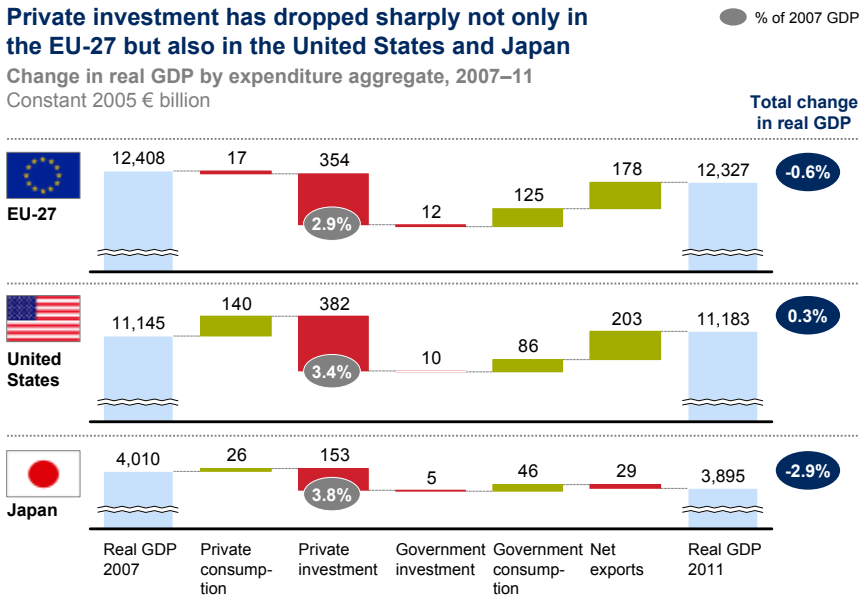
Box 1. Falling private investment is an international phenomenon

A fall in private investment is the most marked point of similarity between the evolution of GDP in the EU-27, the United States, and Japan between 2007 and 2011. Stagnant GDP growth since the crisis began has been in large part due to private investment declines of between 2.9 percent of GDP (in the EU-27) and 3.8 percent (in Japan) (Exhibit 2). However, in the United States and Japan, the impact on growth of substantial falls in investment has been somewhat cushioned by an increase in private consumption. This has not been in the case in the EU-27, where private consumption has also fallen. The combined fall in investment across these three economies has been nearly €900 billion, or more than $1 trillion.

Exhibit 2

Private investment has dropped sharply not only in the EU-27 but also in the United States and Japan

Change in real GDP by expenditure aggregate, 2007–11
Constant 2005 € billion



SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

15 We compute this figure by taking the difference between non-residential investment in 2007 and its level in each of 2008, 2009, 2010, and 2011, and then assuming that this "missing" investment would have grown at a 7 percent real rate of return. We exclude residential real estate to remove any effect of property bubbles. This estimate is therefore conservative.

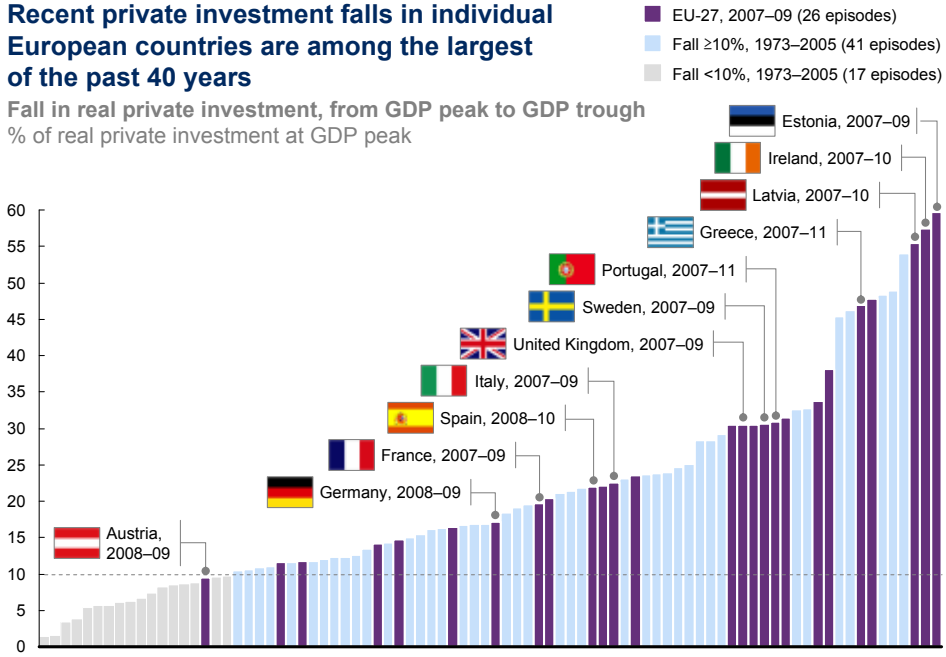
THE CURRENT DECLINE IN EUROPEAN PRIVATE INVESTMENT IS LARGER THAN ANY PREVIOUS DECLINE IN ABSOLUTE TERMS

We have identified 41 episodes in EU and non-EU advanced economies between 1973 and 2005 in which real GDP contracted and real private investment declined by more than 10 percent.[16] We chose episodes where private investment fell by more than 10 percent because this reflects the current situation in Europe. These 41 episodes include, for example, the "stagflation" recession in the United States between 1973 and 1975 and the downturn in Sweden between 1990 and 1993. Some of the 41 economic contractions coincide with technical recessions, while others do not.[17]

Never before have we seen such a widespread crisis across Europe. Between 2007 and 2011, the fall in private investment in the EU-27 in aggregate totalled nearly 15 percent; only Poland bucked this widespread decline. In some countries, the decrease was even larger. For instance, Ireland's private investment fell by 64 percent between 2007 and 2011. In Greece, the fall was 47 percent. Spain experienced a decline of 27 percent (Exhibit 3). Among the 20 largest historical falls in private investment recorded since 1973, 13 have been in European economies during the recent crisis. The overall fall in EU-27 private investment in aggregate was larger than any previous decline in absolute terms.

Exhibit 3

Recent private investment falls in individual European countries are among the largest of the past 40 years



SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

16 Consistent data sets are available only from 1973, and we exclude episodes after 2005 from the historical sample to demarcate current episodes. For further detail, see Appendix B: Technical notes.

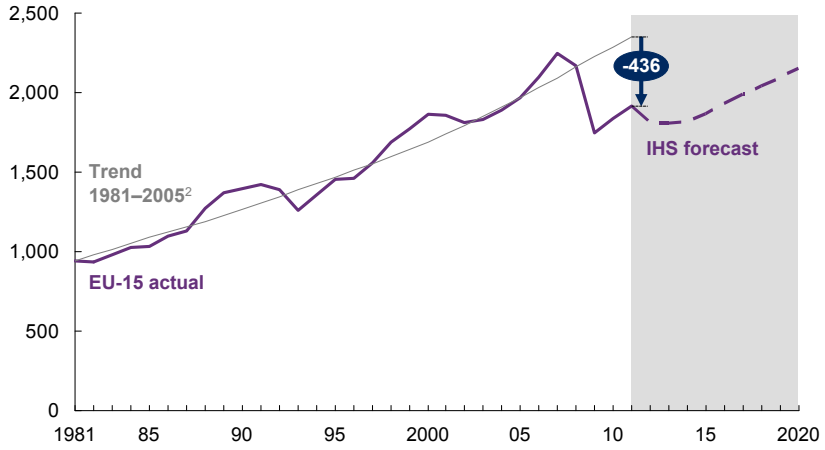
17 The definition of "recession" differs across countries. One common definition—two consecutive quarters of negative GDP growth—is not easily applied to data decomposing GDP that are available only annually for a large number of countries. The 41 episodes we analyse do not, for example, include instances in which GDP fell during the first two quarters of a calendar year but recovered fully in the third and fourth quarters. See Appendix B: Technical notes for further details of the episodes covered in this analysis.

Europe's investment crisis is a departure not only from the heady days of 2007 when investment was strong—in some cases too strong—but more notably, from a 25-year trend (Exhibit 4). Private investment per working-age person in EU-15 countries grew at an annual rate of 2.6 percent between 1981 and 2005.[18] Applying this trend to growth in the EU-15 population between 2005 and 2011, private investment in the EU-15 should have been €2,350 billion in 2011. Instead, it was €1,914 billion—more than €430 billion lower. This gap is larger than the €354 billion difference between the €2,443 billion in private investment in the EU-27 recorded in 2007 and the €2,089 billion posted in 2011. Although private investment was above its long-term trend in 2007, using the 2007 value of private investment as a benchmark is not deceptive because, on its long-term trend, private investment should have reached that level by 2011.

Exhibit 4

In the EU-15, private investment is more than €400 billion below its long-term trend

Real private investment[1]
Constant 2005 € billion



1 Real gross fixed capital formation less government investment, plus change in inventories.
2 Trend adjusted for working-age population, based on the compound annual growth rate of real private investment per working-age person between 1981 and 2005.

SOURCE: IHS Global Insight; Economist Intelligence Unit; Eurostat; McKinsey Global Institute analysis

18 We use the EU-15 rather than the EU-27 since data on investment are not available for all EU-27 countries from 1981 to 2005. The trend is set from 1981 to 2005. The year 1981 is the first for which data are available for all EU-15 economies. We choose 2005 as the end point for the trend in order to exclude the years immediately before the crisis when investment was unusually high.

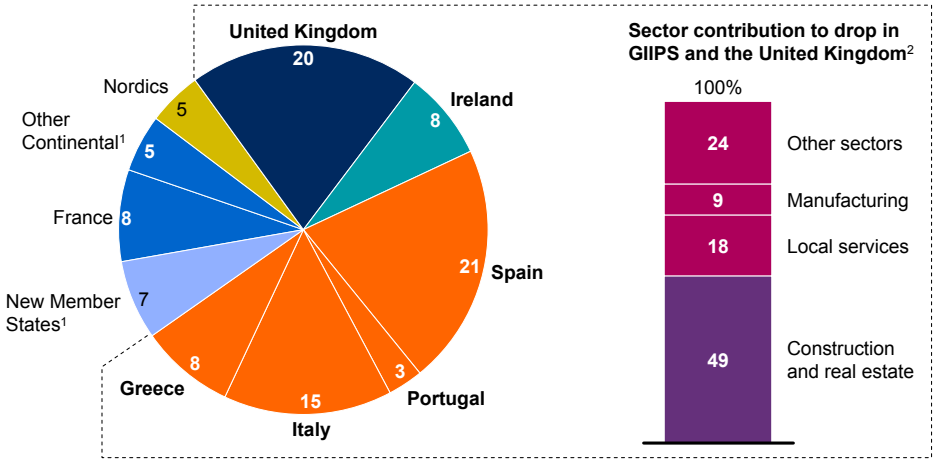
THE FALL IN PRIVATE INVESTMENT HAS VARIED AMONG INDIVIDUAL EUROPEAN ECONOMIES AND SECTORS

The fall in private investment has not been uniform across the EU. More than 75 percent of the total decline in private investment occurred in the GIIPS group of countries and the United Kingdom (Exhibit 5). These six economies have been among the hardest-hit by the crisis, recording falls in real GDP during this period ranging from 2 percent in Spain to 13 percent in Greece. France, too, has experienced a sharp decline in private investment mainly because of falls in the construction and real estate, manufacturing, and health, education, public administration, and defence sector groups.

Exhibit 5

GIIPS[1] and the United Kingdom accounted for more than 75 percent of the private investment fall; construction and real estate dominated

% of the overall drop in private investment in the EU-27, 2007–11[2]



1 GIIPS: Greece, Ireland, Italy, Portugal, and Spain; Continental: Austria, Belgium, France, Germany, Luxembourg, and the Netherlands; New Member States: Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, and Slovenia; Nordics: Denmark, Finland, and Sweden.
2 Sector-level data are available for combined private and government fixed investment only.
SOURCE: IHS Global Insight; McKinsey Global Institute analysis

The extent of the decline in investment has varied considerably among sectors. Construction and real estate boomed in parts of Europe between 2002 and 2007. The investment boom in these sectors was concentrated in Southern Europe, Ireland, and the United Kingdom, which together accounted for nearly half of the increase in construction and real estate investment.[19] But bust followed boom, and investment in these sectors has accounted for half of the overall drop in investment across Europe between 2007 and 2011. Construction and real estate in the GIIPS and the United Kingdom alone accounted for 40 percent of the drop in combined fixed investment.[20] We observe that residential fixed investment, which accounts for nearly one-third of total combined investment, has been hit

19 IHS Global Insight.

20 We use IHS Global Insight data on fixed investment by sector to analyse the change in investment at the sector level. These data do not break out private and government elements of fixed investment. Nevertheless, European governments are unlikely to account for much investment in the real estate or construction sectors. Because data are available for only the 20 largest EU countries by population, we omit Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia. These seven countries account for only 1.33 percent of EU-27 total investment and 1.32 percent of private investment in 2011, so this data gap is negligible. See Appendix B: Technical notes for more detail.

the hardest. It dropped by 19 percent between 2007 and 2011, compared with an 11 percent fall in non-residential investment.[21] Some of this past investment was, of course, the product of an unsustainable property market boom, and a swift return to those investment levels in these sectors would not be expected or desired.

TWO FACTORS APPEAR TO LIE BEHIND THE STEEP FALL IN EUROPE'S PRIVATE INVESTMENT: WEAK DEMAND AND CONSTRAINED FINANCING

It is difficult to disentangle the effect of many potential causes for the drop in investment. However, two factors appear to have played a role. The first—and seemingly the most important—is the weak demand outlook and the slack capacity that has resulted. A high degree of economic uncertainty has compounded the impact of weak demand with downside risks looming larger than those on the upside. The second factor is the cost of, and access to, financing for investment. The fall in private investment has coincided with tightened credit conditions in parts of Europe. On the evidence, this factor appears to have played only a secondary role. Nevertheless, limited credit supply could be a crucial constraint on the speed and scale of the recovery.

We consider the weak demand outlook combined with slack capacity to be the most important explanation for the drop in private investment in Europe. As an economy deteriorates, current and future demand fall short of prior expectations, leaving some existing capacity unused. This "overhang" leads companies to postpone investment until they have used spare existing capacity.

This is the pattern we are now observing in Europe. Investment has dropped the most in countries (Greece, Ireland, and Spain) and sectors (construction and real estate) that have experienced the largest fall in growth expectations. The bursting of the property bubble in some European countries, which has left a large amount of spare residential dwelling capacity, means that little new construction is taking place. Household and corporate deleveraging in parts of the region has compounded the negative context and coincided with depressed residential real estate investment (see Box 2, "What lies behind the sharp fall in European construction and real estate investment?").

21 These figures are for the 14 large EU economies for which such a breakdown is available. Non-residential investment includes all changes in inventories.

Box 2. What lies behind the sharp fall in European construction and real estate investment?

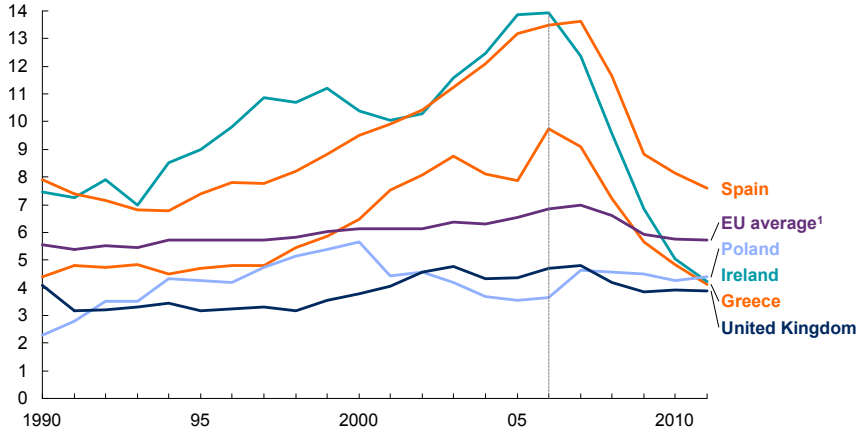
Fixed investment in the construction and real estate sectors fell by 18 percent between 2007 and 2011. This accounted for around half of the total drop in combined fixed investment, well above these sectors' one-third share of fixed investment. Sharp falls in Greece, Ireland, and Spain accounted for 30 percent of the total. Outside these countries, the percentage drop in investment in these sectors was comparable to that observed in other sectors, reflecting a broad loss of confidence. Sales volumes fell by 20 percent in residential construction and by 14 percent in non-residential construction but by only 6 percent in civil engineering.[1]

The drop in investment coincided with the bursting of what, in hindsight, was an unsustainable property bubble in Greece, Ireland, and Spain (Exhibit 6). From 2007, the construction and real estate investment share of GDP in these economies returned towards the European average.

Exhibit 6

Greece, Ireland, and Spain saw a construction and real estate bubble, but further potential may exist in the United Kingdom and Poland

Fixed investment in construction and real estate
% of GDP



1 Weighted average comprising Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden, and the United Kingdom. Sector-level data for the seven other EU-27 countries are unavailable.

SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

The boom was fuelled by increases in household debt, which rose significantly as a share of GDP in some countries between 2002 and 2008; in Ireland it increased from 50 percent to 108 percent and in Spain from 49 percent to 82 percent.[2] Corporate debt in the construction and real estate sectors also rose; by 2008, it was more than double its 2003 level.[3]

The demand outlook in the construction and real estate sectors has weakened considerably since the bubble burst. Greece, Ireland, and Spain have been left with significant overcapacity. If demand were to remain at 2011 levels and construction of new dwellings stopped entirely, clearing the stock of dwellings vacant in 2011 would take five years in Spain, six years in Ireland, and up to 22 years in Greece.[4] However, there may be potential for a revival in some countries such as Poland and the United Kingdom, where construction and real estate investment has been well below average, by removing planning barriers to investment and increasing the energy efficiency of buildings.[5]

1 Civil engineering is the design and construction of large public works such as dams, bridges, tunnels, and highways. These data cover the EU-15 as well as the Czech Republic, Hungary, Poland, and Slovakia.

2 Data from national economic sources, Haver Analytics and McKinsey Global Institute analysis

3 McKinsey Corporate Performance Analysis Tool (CPAT) and Standard & Poor's Capital IQ. These data are in nominal terms.

4 We divide the total stock of vacant housing in 2012 by the increase in households from 2010 to 2011. In the case of Ireland, we take the average annual increase in households between 2006 and 2011. This assumes no mismatch in the mix between dwellings vacant and those demanded, for example by geography. The data are sourced from the Central Statistics Office in Ireland, Caixa Catalunya in Spain, and the Hellenic Statistical Authority and Imerisia in Greece.

5 See Chapter 3 for a discussion of these issues.

Economic uncertainty has intensified—on one measure, nearly doubling between 2007 and 2011.[22] Academic studies have demonstrated the negative impact of uncertainty on fixed investment.[23] At the country level, one measure of uncertainty is the volatility in sovereign bond rates. Private investment has dropped the most in countries where this volatility has been most pronounced—the countries of Southern Europe and the New Member States.[24]

As a result of this high level of uncertainty, companies appear to have diverted cash flow away from fixed investment. European companies' excess cash holdings increased by 27 percent in real terms in 2009, the year in which investment dropped the most.[25] Capital-intensive sectors with large and lumpy investment pipelines are most likely to see sharp drops in investment. This is because they are likely to have larger amounts of slack capacity, and because firms have a greater incentive to defer large investment projects until they are able to be more confident in the demand outlook. In Europe, the fixed investment of sectors prone to overcapacity fell by 14 percentage points in 2009, while the rest of the economy experienced a decline of only eight percentage points.[26]

There has been a great deal of discussion about whether the rising cost of finance and difficulties in accessing it has been a major cause of the private investment crisis. To establish a view on this debate, it is helpful to dissect the impact on companies of different sizes.

SMEs rely heavily on banks for financing and therefore investment. Net new lending to non-financial corporations was negative in all major EU countries in 2009. Since then, there has been very little recovery, and lending volumes contracted again in 2012 in many countries.[27] The share of SMEs reporting unsuccessful bank loan applications quadrupled from 3.2 percent in 2007 to

22 Baker, Bloom, and Davis construct an index of policy-related economic uncertainty in Europe using newspaper coverage and variation in economic forecasts for France, Germany, Italy, Spain, and the United Kingdom. The monthly average of this index was 77.0 in 2007 and 148.6 in 2011. See Scott Baker, Nicholas Bloom, and Steven J. Davis, "Europe Monthly Index", www.policyuncertainty.com.

23 See, for example, Chistopher Baum, Mustafa Caglayan, and Oleksandr Talavera, "On the sensitivity of firms' investment to cash flow and uncertainty", *Oxford Economic Papers*, volume 62, issue 2, April 2010.

24 See Appendix B: Technical notes for an explanation of the regional groups used in this report. Another proxy for uncertainty is volatility in the equity market. The VSTOXX index measures volatility in the EURO STOXX 50 by indexing the cost of a basket of EURO STOXX 50 index options quoted at, or out of, the money. Increases in the index indicate higher expected volatility over the coming 30 days. Since 2008, this index has seen record highs, reflecting high equity market volatility.

25 McKinsey Corporate Performance Analysis Tool (CPAT) and Standard & Poor's Capital IQ. The increase of 27 percent in 2009 corresponds to an increase of €159 billion in 2011 euros in the EU-27.

26 These data draw on the McKinsey Corporate Performance Analysis Tool, Standard & Poor's Capital IQ, and IHS Global Insight. We define sectors prone to overcapacity as those with 2000 to 2011 average capital expenditure to sales ratios of above 4 percent.

27 According to the European Central Bank and the Bank of England. These data track net new lending less repayment and write-downs in France, Germany, Ireland, Italy, Spain, and the United Kingdom. Net new lending turned positive in France and Germany by 2012 but was still less than 30 percent of its 2007 level in each country.

12.9 percent in 2010.[28] This trend was particularly marked in the GIIPS group of countries, where the proportion of unsuccessful applications increased nine-fold from 1.5 percent in 2007 to 13.9 percent in 2010. Any difficulties SMEs face in accessing finance are material for the economy as a whole, since these companies appear to account for a significant share of overall investment in Europe. Firms with 250 or fewer employees appear to account for nearly half of business fixed assets in the EU.[29] Moreover, Europe's economy is more dependent on SMEs than is the economy of the United States.[30] We should treat these trends with care for two reasons. First, credit conditions in the GIIPS group were too loose in the years leading up to 2007; in that year, the loan rejection rate in the GIIPS was half that of the EU average.[31] Second, the worsening economic outlook has warranted action by banks to tighten their lending criteria in light of the deteriorating credit quality of applicants. When asked to identify the most pressing issue limiting their growth, 37 percent of SME respondents cited the general economic outlook or demand while only 4 percent cited financing.[32]

Large companies have had a different experience. As bank loan financing has fallen, these enterprises appear to have shifted to capital markets for their financing. Corporate bond issuance in the EU-27 rose by nearly 80 percent between 2008 and 2009.[33] The cost of issuing investment-grade bonds fell between 2008 and 2010.[34]

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28 Manfred Schmiemann, *Access to finance of SMEs: What we can learn from survey data*, Eurostat presentation to the European Central Bank, December 2010. The findings in this paper were based on a Eurostat survey conducted in 2007 and 2010 in Belgium, Bulgaria, Cyprus, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Spain, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Slovakia, Sweden, and the United Kingdom. The figures are arithmetic averages of country-specific data.

29 These data are from Bureau van Dijk's Amadeus database of public and private companies across Europe.

30 Companies with fewer than 250 employees account for 67 percent of non-financial business employment in the EU-27, according to 2008 statistics from Eurostat, while companies with fewer than 300 employees account for only 45 percent of business employment in the United States, according to 2009 figures from the US Small Business Administration.

31 Manfred Schmiemann, *Access to finance of SMEs: What we can learn from survey data*, Eurostat presentation to the European Central Bank, December 2010. These rates are unweighted averages of country-specific rates. The GIIPS figure excludes Portugal. The EU average is comprised of Belgium, Bulgaria, Cyprus, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Slovakia, Spain, Sweden, and the United Kingdom.

32 These data come from Eurostat, 2010. It is difficult to attribute the increased difficulties SMEs report in accessing finance to a unilateral withdrawal of supply by banks—i.e., to assess whether credit conditions have tightened beyond the degree that would be expected given risk factors alone. In the case of the United Kingdom, the Breedon Review found "some evidence that this has occurred: business insolvencies and loan losses have remained at modest levels; and credit losses on non-CRE [construction and real estate] business portfolios appear to have remained modest by historical comparison". See *Boosting finance options for business: Report of industry-led working group on alternative debt markets*, chaired by Tim Breedon, March 2012.

33 According to Dealogic. The increase is expressed in total proceeds, which rose from €469 billion to €843 billion, well above €575 billion in 2006.

34 Bloomberg data on the five-year Eurozone corporate composite bond.

In summary, the cost and availability of financing appears to have had only a secondary role in the recent reduction of investment. Nevertheless, this factor could prove crucial to the speed and scale of the recovery. At the time of writing, the amount of credit extended to the private sector was falling in the eurozone. In comparison with their volume a year previously, loans were 0.6 percent lower in August 2012, 0.9 percent lower in September, and 0.7 percent lower in October of that year.[35]

□ □ □

Private investment trends have played a dominant role in Europe's recession and subsequent growth stagnation. Given the sharpness of the fall in private investment that Europe has witnessed, isn't there every prospect of a strong bounce back? History gives us reason to be cautious about such expectations. In Chapter 2, we look at past episodes when GDP contracted and private investment fell to attempt to ascertain the outlook for private investment and the role it could play in Europe's growth and renewal.

35 *Monetary developments in the euro area: October 2012*, European Central Bank press release, November 2012.

2. Private investment will be vital for recovery—but could take time

Our analysis of 41 episodes in which real GDP contracted and private investment fell by at least 10 percent shows that current trends in the components of GDP are quite distinct from those observed in the past. Private investment needs to play a greater role in the EU-27 recovery than it has after past GDP contractions. Private and government consumption are usually important drivers of recovery, but, in a context of deleveraging, these are constrained in many European countries today and could remain so for some time. Net exports have driven the recovery so far, but they face challenging headwinds. General economic conditions will clearly influence the trend in private investment. Nevertheless, the large amounts of cash held by the non-financial corporate sector today suggest that private investment could rebound relatively quickly if governments were to remove some of the impediments to this investment.

In this chapter, we discuss prospects for recovery in each of the major components of GDP, tracking current trends against past experience.

THE MAIN DRIVERS OF PAST EUROPEAN RECOVERIES REMAIN CONSTRAINED

Current trends in the components of GDP—and the stages at which they start to drive recovery—are quite different from patterns in the past. Private investment has a bigger role to play in the current crisis because the other potential drivers of GDP growth are so constrained.

- **Private consumption has led recovery in the past but remains weak today.** Historically, the biggest growth driver of GDP has been private consumption. In normal periods of economic growth in the EU, consumption generates 46 percent of GDP growth.[36] In the past, once GDP started to grow again, consumption's contribution was at least one-third of GDP growth. However, in the current crisis, consumption has experienced a second dip as a driver of growth. In the first year of the recovery in 2010, consumption accounted for one-third of GDP growth but in 2011, it generated only 3 percent of GDP growth. As unemployment rises and households rebuild their finances after the high-debt years, consumers are unusually pessimistic about the economic environment and prospects. Eurostat's Consumer Confidence Indicator for the EU-27 deteriorated from minus 5 in 2007 to minus 22 in 2009 and still languished at minus 20 in 2012 as a clear majority of respondents remained uncertain about their economic situation.[37] MGI has previously underlined the role excessive leverage played in the current

36 In 2011, private consumption accounted for 57 percent of EU-27 GDP. We include all years when GDP grew apart from GDP recoveries following a contraction.

37 The Eurostat Consumer Confidence Indicator is defined as the difference between the percentage of respondents with a positive perception of their economic well-being (i.e., financial situation, general economic situation, price trends, unemployment, major purchases, and savings) and the percentage of respondents with a negative expectation.

downturn in Europe and elsewhere.[38] Debt in developed economies including major EU economies has increased over the past two decades. Historically, nearly all significant financial crises since World War II have been followed by a period of deleveraging that has lasted six to seven years on average, during which total debt as a percentage of GDP has declined by about 25 percent. Of acute relevance to Europe's situation today are the deleveraging episodes in Sweden and Finland in the 1990s. These episodes show that households and companies reduce their debt over a period of several years, putting downward pressure on GDP through lower consumption. Once GDP growth returns, government debt reduces gradually over the course of many years. Households in several European countries will be striving to pay down their debts and save over coming years. Taking the United Kingdom and Spain as examples, deleveraging is proceeding only slowly, imposing an ongoing constraint on private consumption.[39] Private consumption is therefore not likely to drive recovery in many European countries.

- **Government investment and consumption cannot fill the hole left by private investment.** Government investment today accounts for less than 3 percent of EU-27 GDP. Because of this small share of overall investment, EU-27 governments would have to more than double their current combined investment from €275 billion to more than €600 billion to make up for the drop in private investment between 2007 and 2011. Given the many strains on Europe's public finances, government investment on this scale is highly unlikely. Even if governments opted for an all-out growth strategy centred on government investment—and opted for non-compliance with the Stability and Growth Pact as well as the Fiscal Compact—they are likely to encounter capacity constraints in identifying and then managing enough "shovel-ready" investment projects to achieve such an increase.[40] As Europe's largest economies strive to reduce their deficit and debt levels—in order to try to comply with the Stability and Growth Pact and Fiscal Compact limits on debt and deficits—the IMF projects that total government expenditure as a share of EU-27 GDP will fall from 48.4 percent in 2011 to 45.5 percent in 2017. So neither government investment nor government consumption is likely to provide widespread stimulus to GDP growth in the short or even the medium term.

38 *Debt and deleveraging: The global credit bubble and its economic consequences*, McKinsey Global Institute, January 2010; *Debt and deleveraging: Uneven progress on the path to growth*, McKinsey Global Institute, January 2012. These reports focused on ten mature economies (including France, Italy, Spain, and the United Kingdom) and found their debt as a share of GDP rose from about 200 percent in 1995 to more than 300 percent by 2008.

39 Ibid.

40 Resolution of the European Council of June 17, 1997, on the Stability and Growth Pact, OJ C 236, 1997 ("Stability and Growth Pact"); Treaty on Stability, Coordination and Governance in the Economic and Monetary Union, signed on March 2, 2012 ("Fiscal Compact").

- **Export-led growth faces headwinds in Europe today.** Between 2007 and 2011, net exports were the fastest-growing component of EU-27 GDP, adding €178 billion. An increase in exports of €267 billion outweighed a rise in imports of €88 billion. Net exports accounted for two-thirds of EU-27 GDP growth in 2011, well above the 15 percent share of GDP growth they typically have in the years after a GDP contraction. The Continental economies experienced the largest increase in exports during this period—€155 billion, which represented nearly 60 percent of the overall increase in the EU.[41] In the eurozone, exports have been supported by depreciation in the trade-weighted value of the euro by 6.4 percent between 2007 and 2011.[42] In addition, the large trade-related contribution to GDP was supported by a €147 billion fall in imports in Ireland, Southern Europe, and the United Kingdom, reflecting weak demand. In 2011, net exports accounted for two-thirds of the modest 1.6 percent real GDP growth in the EU-27. If imports in the Southern countries had remained at their 2007 levels, EU-wide net exports in 2011 would have been sharply lower at €181 billion instead of €283 billion. In any case, further export-led growth across Europe faces headwinds. About 60 percent of exports are between European countries—Germany's main export market is France, for instance—and growth across the EU is weak.[43] Outside Europe, with the exception of China, the EU's main export markets are developed economies where GDP growth is slow or weakening; even forecasts for China's growth have recently been revised down.[44] Many economies around the world are simultaneously looking to net exports as a route towards renewed growth—not all will win the competition to improve trade balances.[45] Economies in the eurozone are hindered by their inability to gain export competitiveness through unilateral devaluation. Instead, they must either reduce labour costs—a long and painful process—or increase productivity, not least through increased investment. Taking all these factors and trends into account, we find that efforts by European governments to promote exports to stimulate growth are unlikely to be sufficient to drive economic recovery.

41 IHS Global Insight and Economist Intelligence Unit. The Continental economies are Austria, Belgium, France, Germany, Luxembourg, and the Netherlands.

42 Bank of International Settlements. The euro is compared with a basket of currencies weighted according to volume of eurozone members' trade. This metric is volatile. The 6.4 percent figure represents the difference between the arithmetic averages of monthly values in 2007 and 2011.

43 World Integrated Trade Solution Database, World Bank; OECD.

44 The EU's main external export markets are the United States, China, Switzerland, Russia, and Turkey, according to Eurostat (Comext, Statistical regime 4) in January 2012. In April 2012, the World Bank projected that China's GDP growth would be 8.2 percent in 2012 and 8.6 percent in 2013. However, in October 2012, the bank revised these projections down to 7.2 percent in 2012 and 7.6 percent in 2013. See *China quarterly update: Sustaining growth*, World Bank, April 2012; and *East Asia and Pacific Economic Data Monitor*, World Bank, October 2012.

45 Although exports can increase simultaneously (if all countries export and import more), this is not possible for net exports.

PRIVATE INVESTMENT IS LESS CONSTRAINED—BUT ITS RECOVERY IS RUNNING LATE BY HISTORICAL STANDARDS

Historically, the contribution of private investment to GDP growth in the years following a GDP contraction has been broadly in line with its contribution in normal times. Private investment has, in the past, generated about one-third of GDP growth in the first two years of a recovery before settling back to a contribution of about one-quarter of growth. In Europe today, however, private investment is less supply-constrained than the other sources of GDP growth and can therefore potentially play a bigger part in the recovery.

The one economic sector that unquestionably has the ability to spend across Europe is the non-financial corporate sector. European companies have significant cash that they could invest. Listed European companies had excess cash holdings of €750 billion in 2011, close to their highest real level for two decades. To put those cash stocks into perspective, their total is double the drop in private investment between 2007 and 2011. Between those years, companies in the health and education sectors increased their cash reserves by more than 25 percent and those in the construction and real estate sectors by more than 60 percent.[46] Yet only in Poland was private investment higher in 2011 than in 2007. Of course, the cash position of companies varies widely. The large total of excess cash holdings disguises the fact that many companies continue to need some external financing.

Past episodes show significant variation in the time it takes for private investment to recover. Private investment in Belgium took eight years to recover from its 19 percent fall between 1980 and 1981, while in France it took only three years to recover from its 14 percent fall between 1992 and 1993.[47] Of the five episodes in modern history when investment fell by more than 40 percent, two are particularly relevant for those European countries—including Greece and Ireland—that have experienced falls of this magnitude during the current episode. The contractions in Sweden between 1990 and 1993 and Finland between 1989 and 1993 both involved financial crises and property busts. Economies often take time to work through an excess stock of real estate after a property bust. Nevertheless, it is important to note that Sweden and Finland both undertook comprehensive programmes of structural reform to help stimulate investment and growth (see Chapter 3 for further discussion on the importance of reform). Without such reform, it is an open question whether the recovery in private investment in the countries which had the sharpest falls could take even longer than the nine years it took in Sweden and the 15 years it took in Finland.

46 McKinsey Corporate Performance Analysis Tool and Standard & Poor's Capital IQ. The absolute high was in 2010. The sample includes all publicly listed companies with revenue greater than $100 million in at least one year between 1985 and 2011. We define "excess cash" as the sum of cash above 2 percent of revenue. The two numbers should be compared with care because the fall in private investment is a flow, while the excess cash is a stock. The €750 billion is a conservative estimate; OECD data suggest that non-financial corporations in the 21 EU countries that are OECD members held €3.1 trillion in currency and deposits on their balance sheets in 2011.

47 Consistent with our approach throughout this chapter, these recovery times measure the years from the previous real GDP peak. For example, Belgium reached its 1980 level of private investment in 1988.

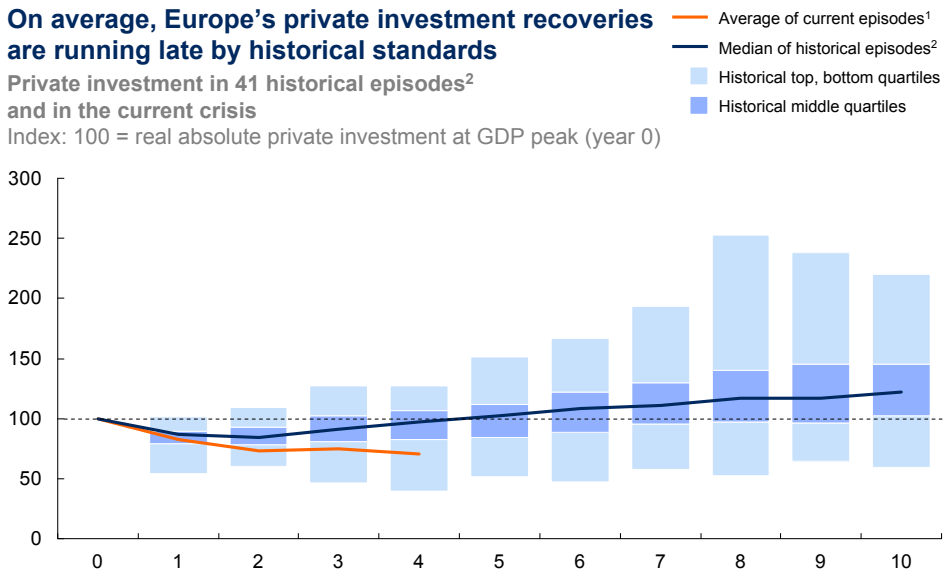
Our analysis shows that the median recovery time for private investment following a drop of 10 percent or more that coincides with a real GDP contraction is five years from the year in which real GDP peaked. On this basis, the European countries where real GDP peaked in 2007 might have hoped for a complete recovery in private investment by 2012. However, the private investment recoveries in Europe have been disappointing. On average, these recoveries are running late, lagging behind the historical median (Exhibit 7). So far, their performance on average is consistent with the bottom quartile of historical episodes, underscoring the scale of the investment challenge in many European economies.

Exhibit 7

On average, Europe's private investment recoveries are running late by historical standards

Private investment in 41 historical episodes[2] and in the current crisis

Index: 100 = real absolute private investment at GDP peak (year 0)



1 Unweighted average of the 26 European countries that suffered a GDP contraction (in Poland, real GDP did not fall).
2 Episodes in which private investment fell at least 10 percent from GDP peak to GDP trough; this excludes 17 episodes when private investment fell by less than 10 percent. All values in year 0 are equal to 100 since private investment is indexed to 100 in that year.

SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

Not only have Europe's economies varied in the scale of their private investment falls but they have also experienced different recovery paths. We can divide the EU-27 into three broad categories. Countries in the first group, including Belgium and Germany, experienced falls in private investment of between 9 and 20 percent, but bounced back; by the end of 2011, they had almost recovered to their 2007 levels of private investment. In Austria, for example, private investment in 2011 was 99 percent of its 2007 level. Countries in the second group, which include the United Kingdom and France, tended to experience larger falls in private investment of 20 percent or more. In these countries, private investment was once again on a positive trajectory by the end of 2011, though the pace of recovery varied; in Sweden private investment in 2011 had reached 97 percent of its 2007 level, whereas in Denmark this figure was 73 percent. Countries in the third group, including Greece and Spain, tended to experience the largest falls in private investment, in some cases of 40 percent or more. By the end of 2011 private investment in these countries had not yet begun to rise again. In Greece, for example, private investment in 2011 was 53 percent of its 2007 level.

□ □ □

History shows that investment can take a considerable time to recover, especially when the fall was very substantial. The recovery in private investment in the EU-27 today lies in the bottom quartile of previous episodes in which GDP and private investment fell simultaneously. Private investment in some countries is nearly back to 2007 levels, but the average is held down by countries where investment continues to fall. But given constraints on other drivers of GDP growth, this cannot stand. Europe needs to accelerate the revival of private investment. In Chapter 3, we discuss the imperative for governments to put in place an ambitious and proactive programme of targeted microeconomic reform to remove barriers to private investment and to institute effective incentives for the private sector to invest.

3. A path forward for policy makers and businesses

Restoring macroeconomic stability and confidence by working through the current sovereign debt crisis is essential but will not in itself be sufficient to trigger a strong recovery. Europe needs to combine any action on macroeconomic policy with bold microeconomic activism that aims to remove barriers to private investment. Despite an uncertain and difficult environment, businesses, too, should examine whether they are making the most of investment opportunities.

In this chapter, we describe some of the microeconomic barriers constraining private investment in Europe and offer policy makers a step-by-step framework to guide effective microeconomic activism. We also discuss briefly what companies can do to re-examine the way they handle their investment decisions.

REMOVING MICROECONOMIC BARRIERS COULD UNLOCK A LARGE AMOUNT OF PRIVATE INVESTMENT

A lack of current demand and pessimism about the growth outlook in Europe are deeply troubling issues dissuading many companies from investing. Continuing debate about the appropriate balance between government efforts to stimulate demand and the imperative of addressing high public debt levels is entirely justified.

But while demand is undoubtedly an important issue for companies contemplating investment, we are convinced that a great deal of private investment could proceed even in this depressed economic environment if governments address the microeconomic barriers holding it back. Many projects, from airports to university campuses, benefit from returns over decades, so even weak short-term demand will only have limited impact on their overall viability. Even among more near-term projects, there will be those at the margin that could become viable with sufficient action from policy makers. For instance, we believe that private investment is available and ready to finance the expansion of airport infrastructure in Europe if governments removed the regulatory barriers to doing so. Across Europe, the removal of a range of sector-level barriers would bring forward projects and, as demand returns, would allow more projects to proceed faster than they would otherwise. Twinning macroeconomic policy with microeconomic reforms can help to ensure that companies revive their investment plans on a sufficiently large scale for their spending to become a material driver of a robust recovery.

A great deal of investment is concentrated in sectors where governments have significant influence. Together, the three sector groups of construction and real estate, utilities (including energy and telecoms), and transport accounted for 45 percent of total fixed investment in Europe's 20 largest economies in 2011.[48]

48 All sector-level data presented in this report are for Europe's 20 biggest economies (for which sector data are available). They are Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden, and the United Kingdom.

Because governments have such deep influence in these sectors, microeconomic reform is likely to have a significant impact on the amount of private investment that occurs.

The barriers to private investment vary from sector to sector. The following sector examples provide an illustration of how barriers constrain productivity and investment across Europe:

- **Retail trade.** One of the most common microeconomic barriers constraining productivity and investment in the retail sectors of many European countries is planning regulation that limits the growth of more productive large-format stores and therefore deters investment. In Denmark, for example, productivity levels in grocery retail are around 30 percent below those of the best-performing European countries reflecting a lack of scale in retail stores because of planning regulation—specifically, limits on the development of hypermarkets. Such restrictions have deterred leading foreign retail operators from investing in the country; for example, only two of the top-ten European food retailers operate in Denmark.[49] Planning restrictions have a similar impact in the United Kingdom, limiting the number of high-productivity, large-format stores, which are five times as productive as traditional stores. It has been hard to push through planning reform, given a public perception that the country is already sufficiently developed. The Barker Review found that more than 60 percent of residents think that half or more of England's land is already developed, while the true figure is nearer to 10 percent—and much of the developed land is made up of gardens.[50] Despite these misconceptions, the UK government is enacting measures to streamline planning on the grounds that the current system is a constraint on growth.

- **Construction.** The planning regime can impose barriers that impede investment in both new construction and extensions. Moreover, a large variety of product specifications acts as a constraint on private investment in this sector. For example, specifications on ceiling heights and staircase areas in residential housing vary by more than 40 percent for individual construction companies even within the same European country.[51] This means that projects have vastly different costs and levels of efficiency. In Denmark, the absence of harmonisation of building-material standards is a barrier to greater investment in construction.[52] Although there is little appetite for renewed real estate investment in some European countries, others, including Germany and the United Kingdom, might have potential for greater investment in this sector.

- **Tourism.** A lack of coordination often hinders investment and growth, because the attractiveness of a tourist destination relies on the complementarity of a variety of physical assets such as airports, holiday resorts, and conference centres, as well as services. In many European countries, the responsibility

49 *Creating economic growth in Denmark through competition*, McKinsey & Company, November 2010.

50 *From austerity to prosperity: Seven priorities for the long term*, McKinsey Global Institute and McKinsey & Company, November 2010. See also *Coniugare austerità e crescita economica in Europa: uno sguardo all'Italia* (*Combining austerity and economic growth in Europe: A look at Italy*), McKinsey & Company, January 2011.

51 *Beyond austerity: A path to economic growth and renewal in Europe*, McKinsey Global Institute, October 2010.

52 *Creating economic growth in Denmark through competition*, McKinsey & Company, November 2010.

for the tourism sector has tended to be fragmented, parcelled out between several government departments. For example, in Greece 13 ministries are involved in 27 tourism-related activities and responsibilities.[53] This has made it more difficult to develop a focused and coherent tourism strategy that would, in turn, spur investment.

- **Transport.** Investment in transport capacity such as railways or airports often requires government permission at the national or local level, or both, and long planning processes delay and can even ultimately cancel large-scale infrastructure projects. At the European level, the fact that regulations change when one crosses a national border is an obstacle to investment. Consider that there are 11 separate signalling systems for rail freight in the EU-15.

- **Professional and business services.** Many regulations affecting ownership and pricing deter investment. For instance, most European countries limit the number of pharmacies. In the case of architects and lawyers in Italy, there are price ceilings or floors. In Spain, complex and inflexible regulations relating to starting a business and accessing services are a barrier to further expansion, and thus investment, in business services.[54]

- **Manufacturing.** Investment in manufacturing can be constrained by a lack of high-skilled labour, as is the case in Germany's machinery and machine tools industry. Without policy reform, there will be an estimated 2.4 million fewer university graduates than needed across German industry by 2030.[55]

Countries that have tackled such microeconomic barriers have reaped considerable benefits in the form of higher productivity and investment. During the 1990s, Sweden eased zoning laws and liberalised opening hours in retail. Reform opened the way to new entrants and stronger growth in large-scale formats, which, in turn, boosted the use of information technology, intensified competition, and led to much higher productivity. Swedish retail posted the strongest productivity growth of any retail sector in Europe (and outstripped that of the US retail sector) between 1995 and 2005.[56] After Russia opened its retail sector to foreign investors and more modern formats, investment increased significantly and retail productivity more than doubled from 15 percent of the US level in 2000 to 31 percent in 2010.[57]

In Europe's telecoms sector, standardisation and liberalisation produced value added and productivity growth of 9 percent between 1995 and 2005, compared with 6 percent on both measures in the United States.[58] When Europe liberalised its road freight sector during the 1990s, investment and productivity growth accelerated. Measures included removal of barriers to market access,

53 *Greece 10 years ahead: Defining Greece's new growth model and strategy*, McKinsey & Company, April 2012).

54 *A growth agenda for Spain*, McKinsey & Company and Fundación de Estudios de Economía Aplicada (FEDEA), December 2010.

55 *Germany 2020: Future perspectives for the German economy*, McKinsey & Company, 2008; *Wettbewerbsfaktor Fachkräfte: Strategien für Deutschlands Unternehmen* (*Skilled labour as a competitiveness factor: Strategies for German companies*), McKinsey & Company, June 2011.

56 *Creating economic growth in Denmark through competition*, McKinsey & Company, November 2010.

57 *Beyond austerity: A path to economic growth and renewal in Europe*, McKinsey Global Institute, October 2010.

58 Ibid.

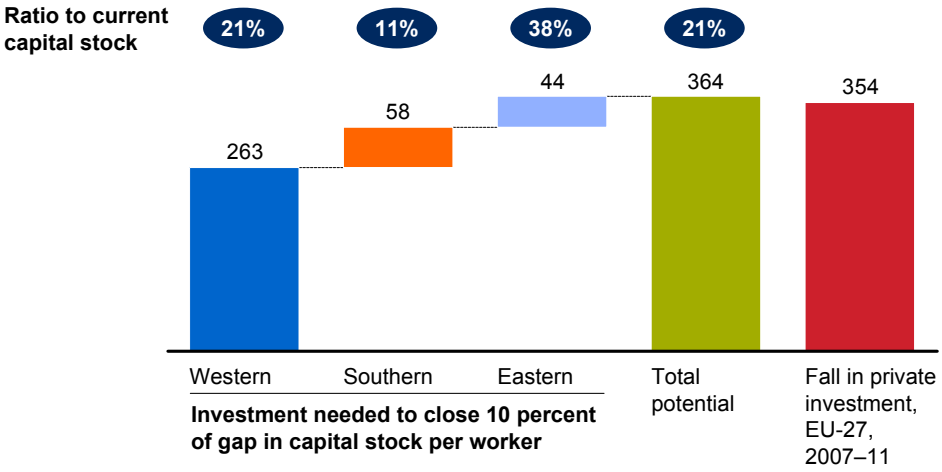
deregulation of fixed price lists, and relaxation of capacity restrictions. These reforms stimulated competitive intensity and cross-border demand, resulting in higher average truck sizes, longer hauls, industry consolidation, and investment in IT tools such as GPS and route optimisation. Productivity in the freight sector in France and Germany increased by 5 and 5.2 percent per annum, respectively, between 1990 and 2000, far exceeding productivity gains in the United States, which averaged 1.2 percent per annum over this period.[59]

The overall benefits for European countries if they address microeconomic barriers could be substantial. For example, closing only 10 percent of the variation in capital stock per worker at the subsector level would outweigh the entire fall in private investment since the onset of the crisis.[60] Put in monetary terms, the impact could be more than €360 billion in additional investment. This exceeds the €354 billion fall in private investment between 2007 and 2011 (Exhibit 8).

Exhibit 8

The investment needed to close only 10 percent of the gap in capital stock per worker exceeds the fall in private investment from 2007 to 2011

Investment potential versus drop in private investment[1]
Constant 2005 € billion



1 Conservative estimate excluding several subsectors where convergence in capital stock per worker may be optimistic; see Appendix B: Technical Notes for further detail.
SOURCE: IHS Global Insight; Eurostat; Statistisches Bundesamt; McKinsey Global Institute analysis

Despite this opportunity, the importance of microeconomic reform for investment and growth in Europe appears to have been lost in the current public debate. A review of European media suggests that the focus on microeconomic reform is limited compared with fiscal policy, which has commanded nearly quadruple the media coverage since 2009.[61]

59 François Bouvard and Stephan Kriesel, "French and German trucking: IT for the long haul", *The McKinsey Quarterly*, February 2003.

60 This is the gap between countries with similar labour costs. This conservative estimate excludes several sectors and the increase in future investment from maintaining a higher capital stock per worker than exists at present. See Appendix B: Technical notes for more detail.

61 See Appendix B for further details on the methodology used in this media search.

POLICY MAKERS NEED TARGETED MICROECONOMIC ACTIVISM TO UNLOCK PRIVATE INVESTMENT

In the 1970s, a strategy of "picking winners" was the industrial policy of choice. Europe's taxpayers footed substantial bills as governments offered large financial incentives for investment or invested themselves through nationalised companies and other vehicles. Bitter experience shows that there were as many if not more failures than successes. Rather than follow approaches typically used by governments in the past, Europe needs a new kind of industrial strategy focused on targeted microeconomic reforms at the sector level that mitigate or remove barriers to private investment.

We define "microeconomic activism" as the use of targeted intervention by government—in collaboration with the private sector—to address the root causes of barriers to private investment. Microeconomic activism includes action to remove regulatory barriers such as planning constraints that limit the development of more productive large-scale retail formats, or to price externalities such as carbon emissions. It includes intervention that strengthens key enablers of investment by, for example, developing a financial system that allows SMEs to access credit or creating new accreditation for apprenticeships to help in the development of necessary skills. And it includes measures that address failures of coordination or information such as developing a cross-sector tourism strategy or improving the availability of data collected by government.

Microeconomic activism targets individual sectors because the barriers to greater productivity, investment, and growth (including policy uncertainty) are typically sector-specific.[62] Where multiple barriers constrain investment in a sector, it will be important to address them jointly.[63] Identifying the sector-specific barriers to investment may reveal patterns in which barriers occur in multiple sectors.[64] These patterns may merit coordinated "horizontal" policies across sectors. However, governments should only take a cross-sector approach once they have gathered sector-level detail about barriers to investment.

62 For example, the competitiveness of a country's sectors matters more for a country's competitiveness and growth than its sector mix. See *How to compete and grow: A sector guide to policy*, McKinsey Global Institute, March 2010.

63 Georg Zachmann, "Smart choices for growth", *Bruegel Policy Contribution*, issue 2012/21, November 2012.

64 Some barriers to investment cut across sectors. These include: regulation of business formation; ease of access to land, labour and capital; investor protection; economy-wide tax arrangements; trade policies; and skills policies. However, the relative importance of each of these barriers will vary by sector, as will competitive dynamics, inputs, and the nature of government's influence.

FIVE ESSENTIAL DISCIPLINES DETERMINE THE SUCCESS OF TARGETED MICROECONOMIC ACTIVISM

How can European governments optimise action to stimulate private investment? MGI's large body of work on productivity and sector competitiveness suggests that adhering to five essential disciplines will help ensure that policy intervention is effective (Exhibit 9).[65]

1. **Prioritise sectors on which to focus efforts.** Policy makers need to prioritise sectors using a strong fact base, taking into account a sector's size, its potential for further productive investment, the time it is likely to take for that investment to have an impact on the broader economy, and the long-term productivity benefits. This prioritisation is not about picking winners but about identifying those sectors where the time and money spent intervening are likely to have the most beneficial impact.

2. **Understand the barriers to investment.** Having established priority sectors based on a sound understanding of the current situation in each, including competitiveness, policy makers need to develop a deep understanding of the sector-specific barriers that are holding back private investment. Beyond macroeconomic issues, these barriers typically relate to regulatory failures, weak enablers, and failures of coordination and information.

3. **Undertake rigorous cost-benefit analyses.** Governments need to develop specific policy measures only after a rigorous assessment of their potential costs and benefits. As part of this process, policy makers need to engage actively with the private sector to develop, test, and refine options. Each intervention must aim to encourage productivity-enhancing private investment. Public subsidies or co-investments, other than in public goods, must have a catalytic effect and should not persist for prolonged periods.

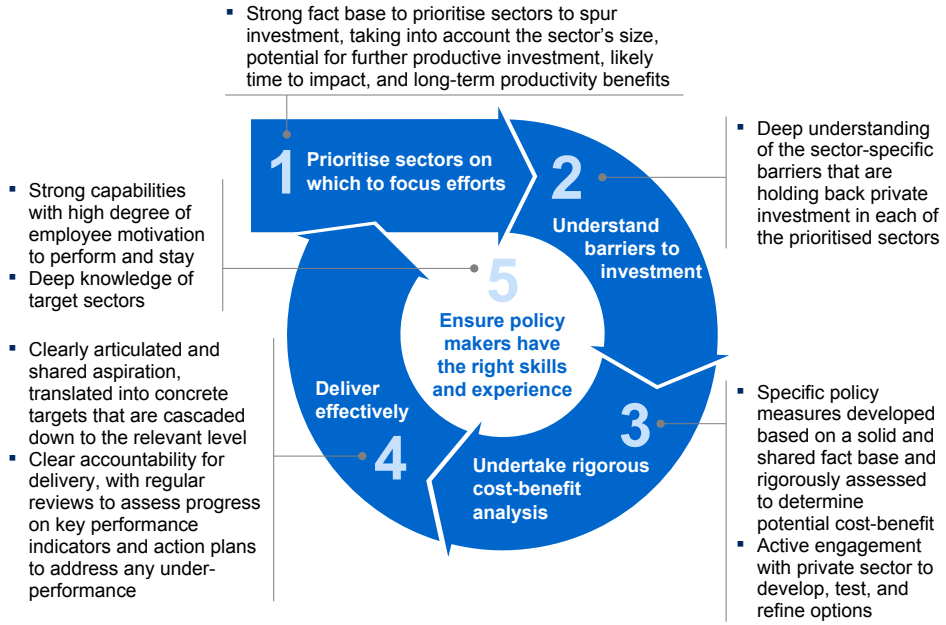
4. **Deliver effectively.** Effective delivery systems share a number of attributes. These include clearly articulated and shared aspirations translated into concrete targets, transmitted to all relevant levels of government departments or agencies. There needs to be clear accountability for the delivery of policy, enforced through regular progress reviews that embody explicit criteria for continuing or ending a policy intervention. The departments or agencies delivering policy must be sufficiently empowered to react quickly to changing market conditions and they need dedicated resources allocated in a transparent and accountable manner.

5. **Ensure policy makers have the right skills and experience.** Successful microeconomic activism requires strong capabilities in government. To achieve them requires the targeted recruitment of people with the sector-specific skills required, dedicated training, and programmes aimed at retaining skilled personnel.

65 *How to compete and grow: A sector guide to policy*, McKinsey Global Institute, March 2010.

Exhibit 9

Targeted microeconomic activism comprises five essential disciplines



SOURCE: McKinsey Global Institute analysis

We now discuss each of these in turn.

1. Prioritise sectors on which to focus efforts

Making the most of finite government resources necessarily involves decisions about when and where to intervene in the economy. Governments need to prioritise those sectors where policy intervention to remove barriers is likely to have greatest impact on private investment in the shortest feasible time and thereby deliver the highest return in GDP growth and job creation. Policy makers need to select the most promising sectors in their economy based on a robust fact base—and could even usefully publish the criteria they use to maximise transparency. They should ask four questions about each sector to determine its priority.

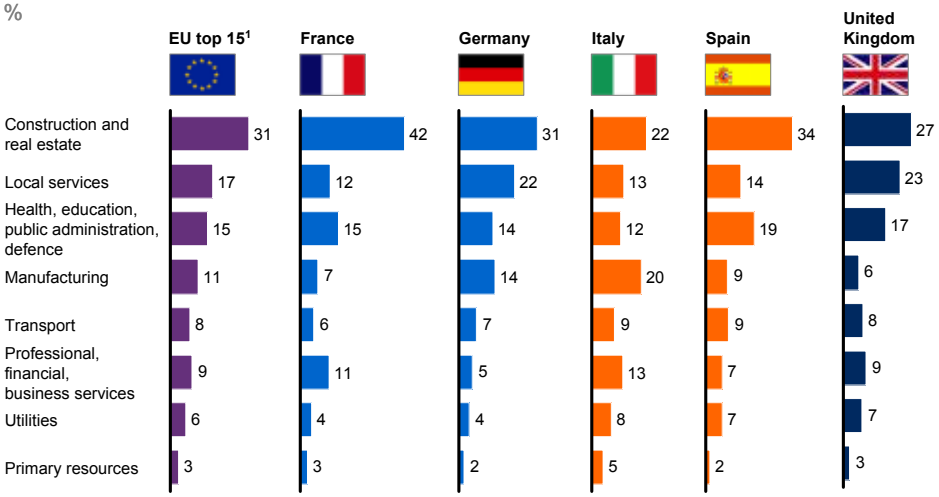
Question 1: How big is the sector's share of total investment?

The existing size of a sector is an important factor in whether policy makers should focus efforts to stimulate private investment on it (Exhibit 10).

Exhibit 10

The largest EU economies exhibit differences in the sector distribution of fixed investment, particularly in services sectors

Sector groups by share of total fixed investment (private and government)
%



1 The EU top 15 are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Poland, Portugal, Spain, Sweden, and the United Kingdom.
NOTE: Numbers for each country may not sum to 100 due to rounding.
SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

Governments sometimes display enthusiasm for innovative sectors such as semiconductors.[66] However, such sectors account for only a very small share of total investment. Governments may wish to foster such sectors for the long-term development of new technologies, but they should not do so in the expectation that these sectors can make a meaningful contribution to any recovery in private investment. Meanwhile, large sectors such as transport and utilities cannot easily be ignored.

The construction and real estate sectors are obvious candidates for microeconomic activism. They account for nearly 6 percent of GDP, around one-third of fixed investment, and half of the decline in European fixed investment between 2007 and 2011—a far larger share than any other sector group—as well as more than 17 million jobs in the EU-27.[67] Investment in construction and real estate in Greece, Ireland, and Spain is unlikely to rebound to pre-crisis levels for several years. However, many other European economies may have potential for further investment in construction and real estate. Italy, Sweden, the United Kingdom, and five Eastern European countries—Bulgaria, the Czech Republic, Hungary, Romania, and Slovakia—have been investing at a rate below the European average in construction and real estate for 20 years.

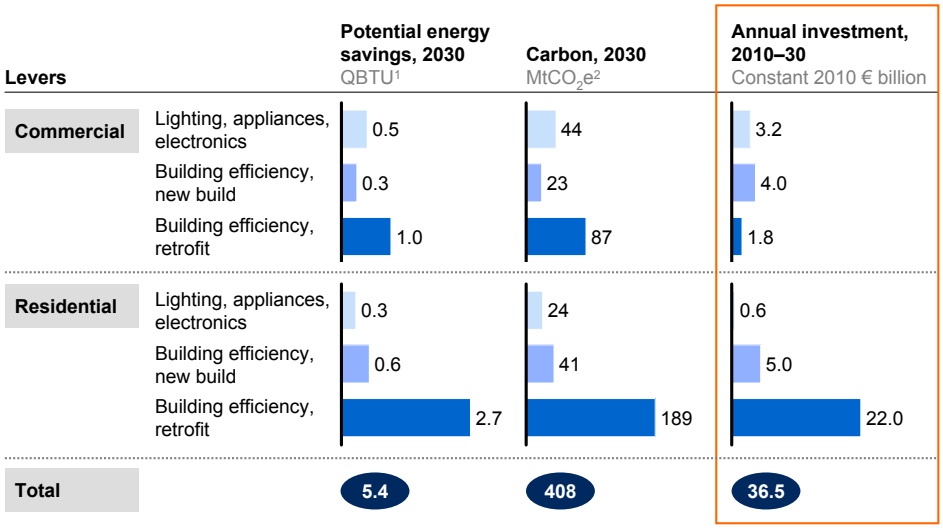
66 For example, in August 2012 the EU Commission launched a public consultation on policy measures needed to create, expand, and maintain the competitiveness of semiconductor clusters in Europe.

67 IHS Global Insight. These data are for the 20 largest EU economies for which sector-level data are available. In this analysis, we combine the two sectors because it is difficult to analyse them separately.

The type of future real estate investment will differ from country to country. In some parts of Europe, including Spain and Ireland where property booms have left large housing overhangs, additional private investment could still occur through efforts to boost energy efficiency in new buildings and from retrofitting, for example. If Europe were to meet its 2020 energy targets, we find that retrofitting existing buildings and improving the energy efficiency of new buildings, including the installation and use of more energy-efficient materials and equipment, could lead to roughly €37 billion a year of additional investment between 2010 and 2030 (Exhibit 11 and Box 3, "The investment opportunity from retrofitting to boost energy efficiency").[68]

Exhibit 11

Increasing energy efficiency promises up to €37 billion of annual investment between 2010 and 2030



1 Quadrillion British thermal unit.
2 Metric tonne of carbon dioxide equivalent.
NOTE: Assumes $/€ exchange rate of 1.25. Numbers may not sum due to rounding.
SOURCE: Global Greenhouse Gas Abatement Cost Curve v3.0; McKinsey Global Institute analysis

68 EU 2020 energy targets are reducing greenhouse gas emissions by 20 percent from 1990 levels, raising the share of EU energy consumption produced from renewable resources to 20 percent and improving the EU's energy efficiency by 20 percent.

Box 3. The investment opportunity from retrofitting to boost energy efficiency

Previous MGI research has found that raising the energy efficiency of buildings would reduce global energy demand by 31 quadrillion British thermal units (QBTU)—20 percent more than the global use of energy by shipping and air transport combined.[1] In Europe, there is the opportunity to reduce energy demand by more than 5 QBTU by improving the energy efficiency of buildings. Of that opportunity, nearly 70 percent is from improved building heating and cooling performance through retrofitting existing buildings. The remaining opportunity is split fairly evenly between improving the heating and cooling performance of new buildings and switching to more efficient lighting, appliances, and electronics. In many cases, there are very attractive returns from investing in retrofitting existing buildings. Simply cleaning air-conditioning coils (even with soap and water in some cases) could reduce electricity consumption by more than 5 percent. More broadly, we find that many basic retrofits have attractive internal rates of return of more than 10 percent.

So what is holding back further investment in this area? A number of barriers constrain investment in retrofitting buildings, including: (1) a lack of awareness of opportunities for energy savings; (2) a lack of certainty that promised savings will be achieved; (3) the inability of projects to meet an organisation's financial payback criteria; (4) split incentives between landlords and tenants; (5) a lack of available capital for investment in such projects; and (6) technical expertise.[2]

Improved standards in building codes, government awareness programmes, innovative financing methods, and support for the development of specialised energy service companies are among the approaches that could overcome these barriers. In the United Kingdom, the Green Deal entails energy-efficiency service providers making energy-efficiency improvements—enjoyed by consumers at no upfront cost—in return for instalment payments added to consumers' future energy bills. If implemented effectively, such schemes could help overcome financing constraints on retrofitting investment in economies such as Spain and Greece.

1 *Resource Revolution: Meeting the world's energy, materials, food, and water needs*, McKinsey Global Institute and McKinsey Sustainability & Resource Productivity Practice, November 2011.

2 Institute for Building Efficiency, 2011 energy efficiency indicator: Global survey results, June 2011.

Question 2: Does the sector have large potential for further productive investment?

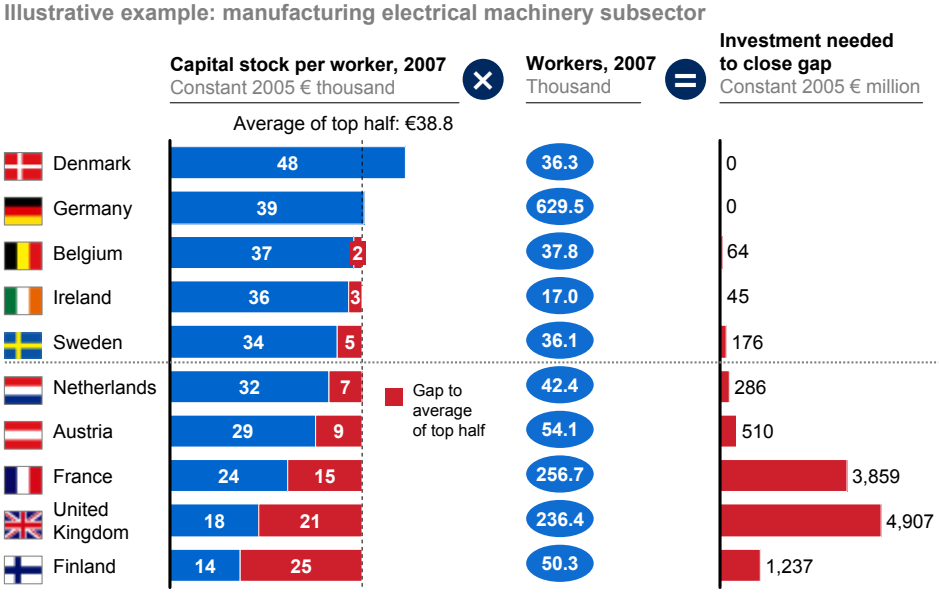
Assessing a sector's potential for further productive investment involves three steps. First, policy makers need to ascertain whether a sector is lagging behind comparable sectors in other countries in its use of capital. Second, they can assess the potential for investment by analysing a country's inherent strengths—or comparative advantage—in each sector. Third, policy makers need to determine whether any emerging technological or demographic trends could alter the scope for additional investment in the sector.

- **Comparing capital stock per worker.** One way of establishing whether a sector has potential for further investment is to compare a country's capital stock per worker in a particular subsector with its counterpart in similar economies. While there is no single optimal degree of capital intensity, a gap on this measure could indicate that investment is being impeded by regulation and other microeconomic barriers specific to that sector in that country. Capital intensity varies structurally according to the labour costs of an economy as firms substitute capital for labour to varying extents depending on their relative cost. For this reason, it is important to select peer countries with comparable labour costs. Exhibit 12 contains an example of this analysis for one subsector.

Exhibit 12

The capital stock per worker methodology calculates potential for further investment at the subsector level

Illustrative example: manufacturing electrical machinery subsector



SOURCE: IHS Global Insight; Eurostat; Statistisches Bundesamt; McKinsey Global Institute analysis

- **Understanding comparative advantage.** When assessing the potential of future investment, policy makers need to take into account comparative advantage: in which sectors will an economy be able to achieve sufficient productivity to compete in global markets? This depends on the availability, cost, and quality of inputs such as labour, energy, and technology, as well as on infrastructure and access to demand. A helpful technique is revealed comparative advantage (RCA) analysis that calculates whether a sector accounts for a greater share of a country's exports than it does for the world as a whole. The RCA index is the ratio of the sector's share in the country's exports relative to its share in world exports. A value of more than one implies that the country has a revealed comparative advantage in that sector. Sectors that already have a strong presence in an economy's export mix are likely to enjoy inherent advantages on which they can further capitalise. The competitive advantage suggested by the RCA should be confirmed by identifying the underlying drivers of that advantage including, for example, access to skilled labour and competitive transport costs. Comparative advantage can occur within both goods and services sectors. In goods, for instance, Italy's "textile and apparel" segment has an RCA index of 2.1, indicating the strong export performance of the country's renowned fashion labels. In services, Greece performs strongly in travel—with an RCA index of 1.4—thanks to its attractive natural scenery and classical history.[69] In the United Kingdom, higher education is an example of a sector with significant comparative advantage (see Box 4, "Investing in higher education in the United Kingdom").

- **Implications of emerging trends.** A third useful criterion to consider is whether any emerging trends—technological, demographic, and environmental—could boost the potential for significantly greater investment in the future. Demographic trends such as ageing could have a profound impact on Europe's investment needs. One in four people in the EU-27 will be aged 65 and over in 2025 and therefore the number of people needing long-term care is likely to rise.[70] Although this may reduce demand for residential floor space, it will also necessitate the construction of new residential homes, retirement communities, and support systems within people's homes. All of these could be major sources of future investment. Another obvious trend is increasing concern about the environment in general and climate change in particular. The growing share of renewable energy in the primary energy mix of European countries will necessitate increasing integration of electricity grids—another potential source of new private investment (see Box 5, "Further integrating energy grids to reach EU climate targets").

69 McKinsey Global Institute analysis using data from UN Comtrade and UN Service Trade via Trade Map. MGI has previously noted that government has an important role to play in the tourism sector as a coordinator "strategic architect" of private investment. See *How to compete and grow: A sector guide to policy*, McKinsey Global Institute, March 2010.

70 These data are from *World population prospects, the 2010 revision*, United Nations, 2011.

Box 4. Investing in higher education in the United Kingdom

Higher education is a high-growth sector that requires the construction of educational facilities and student accommodation. The United Kingdom has inherent strengths in the sector: English is the international language in a globalised world, and universities such as Cambridge, Oxford, Edinburgh, and the London School of Economics are internationally known brands. One recent survey found that 56 percent of Chinese respondents would consider the United Kingdom a top choice for their child's university education, second only to the United States and significantly higher than any other country.[1] Merely maintaining the United Kingdom's share of the international higher education market by 2020 would mean an additional 530,000 students, equivalent to more than 30 additional large campuses.[2]

The opportunity could be a major source of new investment. In 2011 the overall education sector in the United Kingdom accounted for £9.1 billion of fixed investment. Recent individual projects include £250 million for a new 14,000-student campus at the University of Ulster, a £330 million new site at the University of Northampton, and a £1 billion new campus at the University of Cambridge.[3] Assuming £250 million of capital expenditure per campus, the opportunity could total nearly £9 billion in investment by 2020.

Recent funding changes have helped to give the UK system a more market-focused outlook but there are still barriers to capturing this investment opportunity. For instance, growth can happen only at the rate at which the student visa quota increases. Immigration rules must also ensure that sufficient high-quality academics are able to teach at UK universities. Planning reform is necessary to allow the expansion of campuses. Making progress on all these fronts is required if the United Kingdom is to make the most of its comparative advantage in this sector and seize the initiative in a growing market.

1 YouGov-Cambridge survey conducted between August 10 and 25, 2012.

2 Ibid. The calculation assumes large-scale campuses of 15,000 students.

3 The websites of the University of Ulster, the University of Northampton, and the University of Cambridge's North West Cambridge development.

Box 5. Further integrating energy grids to reach EU climate targets

As Europe strives to increase its use of renewable energy, one problem it faces is that the generation by some of these sources is intermittent. How can power supply and demand be balanced given the unpredictable supply from sun- and wind-based technologies? One way of overcoming this issue is to increase the size and reach of Europe's power networks through stronger cross-border links. The larger the network, the more likely it is that fluctuations in demand or supply in one area of the network are cancelled out by those in other areas. Grids also need strengthening so that they can take on larger amounts of intermittent renewable sources.

Several barriers stand in the way of further Europe-wide grid integration. Among them are lengthy and ineffective permit procedures (resulting in a typical transmission line taking 10 to 15 years from conception to completion, compared with 5 years for new power plants or 2 to 3 years in the case of wind or solar farms), limited coordination between national regulators, and agency issues related to cross-border interconnectors due to the asymmetrical distribution of benefits when the cost of power-generating capacity varies between countries.

However, if Europe could overcome those barriers, the scope for investment could be large for all EU economies. The European Climate Foundation has noted that building transmission capability across Europe is a prerequisite for integrating power markets and is "the most cost-effective means to accommodate higher levels of diverse renewable energy sources in a secure and robust power system". The foundation estimates that meeting targets on the use of renewable energy by 2030 will require investment of €46 billion from 2010 to 2020 and €68 billion between 2020 and 2030.[1]

1 *Power perspectives 2030: On the road to a decarbonised power sector*, European Climate Foundation, November 2011.

Question 3: How long would investment take to have a measurable impact on GDP growth?

Given the depth of the private investment crisis and its importance for the resumption of GDP growth in Europe, governments should focus on removing barriers to investment in sectors where this would have a measurable impact on GDP growth in the short to medium term. One such opportunity, as we have noted, is the retrofitting of buildings to improve their energy efficiency. In contrast, the development of a shale gas industry in Europe is unlikely to have a significant impact on private investment in Europe within the next ten years (see Box 6, "Investing in shale gas extraction").

Question 4: Would investment in the sector provide long-term productivity benefits?

The primary focus in this report is the immediate impact of private investment on GDP through outlays that contribute to demand. The first three questions in this section refer to the direct contribution that private investment could make to the European recovery. However, investment, unlike consumption, can also add to the long-term productive capacity of the economy by increasing productivity, and thus GDP growth. After screening for those sectors where private investment can have a significant direct impact on Europe's GDP growth in the relatively short term, policy makers should also identify sectors where a revival in private investment can not only make a meaningful contribution to the short-term recovery but also raise the long-term potential rate of GDP growth.

The long-term benefits of an investment typically accrue to the company that makes it—for example, the insurer that invests in new IT systems or the aerospace company that builds a new factory. But investment in some sectors—including energy, telecoms, and transport—can offer broader economic benefits that increase the productivity and competitiveness of a wide range of firms in other sectors. For instance, previous MGI research has found that the ability to handle large volumes of data can dramatically boost economic value in fields as diverse as retail trade, health care, and manufacturing. Investment in telecoms infrastructure would support the use of data by firms and households, which can, in turn, raise the productivity of businesses and generate an economic surplus to consumers (see Box 7, "Investing in European telecoms to meet data needs").[71] Governments should take such spill-over effects into account when prioritising sectors.

71 Financing the necessary R&D, software, hardware, and education programmes will allow levers such as higher transparency, automated algorithm decision making, and smarter transport to spur productivity. These improvements will affect the economy as a whole and more specifically such sectors as financial services, government, and health care. See *Big data: The next frontier for innovation, competition, and productivity*, McKinsey Global Institute, May 2011.

Box 6. Investing in shale gas extraction

Much of the attention on shale gas has centred on the development of this industry in the United States.[1] But Europe also has major potential in this area. Technically recoverable EU shale gas resources are 499 trillion cubic feet, 58 percent of the US level.[2]

The experience in the United States, where it took 35 years to move from discovery to production, suggests that the development of shale gas is subject to a lengthy learning curve. Europe is at the start of this process—only 30 exploratory wells have been drilled since 2005. A number of significant hurdles today stand in the way of the development of a European shale gas industry: there are technical challenges due to many deposits appearing to be deeper in the EU than in the United States, and those drilled so far have encountered higher clay content. Land ownership is much more fragmented in Europe than in the United States. Publicly owned below-soil land rights also give less incentive for European residents to support nearby drilling. Public concerns about the environmental impact of shale gas are intense, and bans on the industry are in place in Bulgaria, France, and the state of North Rhine-Westphalia in Germany.

Because of these barriers, the investment potential for shale gas in Europe over the next ten years is unlikely to exceed €6 billion.[3] However, the investment potential over the next 20 years could be far larger—anywhere from €55 billion to €180 billion. As seen in the United States, there are also potential broader benefits—including creating employment, adding to economic growth, and potentially mitigating greenhouse gas emissions (by substituting for coal-based power generation)—from the active development of Europe's shale gas assets. Making this happen will require a far more active and coordinated approach to shale gas development by European policy makers than is in place today. This approach could include reducing the complexity and uncertainty of current permit procedures, supporting the development of technology that can help improve the cost efficiency of the processing of European deposits through hydraulic fracturing—"fracking"—and, importantly, mitigating any negative environmental impact and more actively engaging with citizens to help address their concerns.

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1 Over the past decade, the development of shale gas has created more than 260,000 jobs in four major sites. See Timothy J. Considine et al., *The economic opportunities of shale energy development*, Manhattan Institute, May 2011. US households have benefited from an average reduction in energy costs of almost $800 a year, a drop of around one-quarter since 2005. Lower energy costs have also helped to boost the competitiveness of industrial companies, reducing price volatility. In addition, the replacement of coal power with natural gas has reduced carbon emissions. See US Energy Information Administration, *Annual energy review 2010*, October 2011.

2 US Energy Information Association, *World shale gas resources: An initial assessment of 14 regions outside the United States, April 2011*.

3 McKinsey Oil & Gas Practice.

Box 7. Investing in European telecoms to meet data needs

The use of high volumes of data is increasingly important to firms and households, and upgrading the bandwidth of fixed and mobile network infrastructure is critical. In 2011, total fixed investment in the telecoms sector in Europe's 20 largest economies totalled €55 billion, 2.1 percent of total capital spending that year. By 2015, investment in the sector could reach €65 billion.[1]

In the fixed network alone, approximately €230 billion to €290 billion of investment over the next decade is needed to deliver desired levels of data speeds in the EU-27.[2] Services such as video-on-demand consume more data and therefore require the rollout of fibre-optic broadband technology through telephone exchanges, street cabinets that connect to household phone lines, and direct connections to households. Much of the necessary investment would be on the civil works needed to install cabling.

In the case of the mobile network, much of the existing infrastructure is 5 to 15 years old. In urban areas, mobile capacity is running close to its maximum, which makes data handling inefficient. By upgrading to Long-Term Evolution technology (LTE, also known as 4G), Europe could meet growing demand and achieve much higher transmission speeds. Overall, capital spending per unit of data is three to seven times more efficient in the case of LTE than in 3G networks.[3] To cope with increased speed and data requirements, €50 billion to €70 billion of investment is needed in the EU-15 in addition to ongoing upgrades. Unfortunately, there have been long delays in the auctions of spectrum in several countries. Auctions in France, Italy, and Spain did not occur until 2011, and the auction in the United Kingdom is not scheduled until early 2013. This compares poorly to the situation in North America. Canada and the United States allocated LTE spectrum in 2008 and have already achieved a substantial rollout, accounting for ten times more LTE subscriptions than Europe in the second quarter of 2012.[4]

Through improved regulation, European governments have an opportunity to fast-track investment over the next two to three years, which would reduce maintenance costs and expand potential sales, boost the sector's growth, generate a surplus for consumers, and increase business productivity.

1 IHS Global Insight. These data are similar to those of the European Telecommunications Network Operators' Association, which estimates total sector capital expenditure of €44.5 billion in 2010.

2 Estimates from McKinsey Telecoms Practice.

3 Ibid.

4 Global Mobile Suppliers Association.

These four questions can help policy makers prioritise sectors on which to focus microeconomic activism. Target sectors in each country will be those that are large enough to ensure that increased private investment would have benefits for the broader economy, have significant potential for increased private investment within a reasonable time frame in order to contribute meaningfully to the European recovery, and where investment would help to improve the long-term productivity of the economy, due to productivity improvements in the sector itself or through spill-over benefits in other sectors.

2. Understand the root causes of barriers to investment

Once they have prioritised sectors for microeconomic activism designed to boost private investment, policy makers need to identify the market failures that stand in the way of that investment. They need to conduct this audit at a sufficiently detailed level to identify barriers that are typically specific to a particular sector, tapping into the experience and know-how of both experts and companies active in the sector. MGI experience has found that policy makers often fail to distinguish between the barriers that the different players in a sector face—for instance, potential new entrants compared with incumbents, or small companies compared with large ones. As well as gathering input from existing players in a sector, it would be useful to gather intelligence from foreign companies that may not have entered that sector because of certain barriers.

Beyond restoring confidence and a stable macroeconomic environment, governments must consider three categories of microeconomic barriers to investment (Exhibit 13). These apply in times when companies and households are confident about the economic outlook as well as periods when they are uncertain.

Exhibit 13

Each sector has a unique combination of barriers to investment

		Description
Regulatory failures	**Regulatory restrictions**	Microeconomic regulations, including taxes, planning restrictions, product market issues, labour market inflexibilities, or market access constraints, inhibit sector's expansion and investment
	Regulatory framework	Lack of regulatory structures, such as failure to price externalities associated with production, unclear legal situations, or an ineffective competition regime, that are conducive to investment
Weak enablers	**Financial capital**	Equity or debt financing is difficult for potential investors to access or is available only at prohibitively high cost
	Human capital	Labour force has insufficient supply of the knowledge and capabilities required for the construction or eventual operation of capital investments
	Infrastructure	Supporting infrastructure for investment, including the transport system, scientific research institutions, energy infrastructure, telecommunications or water networks, is absent or of insufficient quality
	Technology	Critical technology for investment is unproven or not yet at commercial/industrial scale
Coordination problems, information failures	**Coordination problems**	Coordination problems with key stakeholders including inadequate scale, insufficient clustering, weak supply chains, ineffective interaction by public bodies, poor firm-union relations or need for complementary investments
	Information failures	Lack of investor information on the benefits and costs of the opportunity

SOURCE: McKinsey Global Institute analysis

3. Undertake rigorous cost-benefit analyses

Ill-conceived microeconomic activism can do more harm than good. To avoid this, policy makers must undertake a rigorous cost-benefit analysis of the proposed intervention including those costs and benefits that accrue to stakeholders other than the government itself. High-quality cost-benefit analysis is demanding. It is typically very sensitive to the assumptions used, and it is often difficult to capture the indirect effects that are likely to unfold, such as a change in the value of real estate as a result of the construction of transport infrastructure. It is therefore important to delegate the cost-benefit analysis to a skilled and independent team and to scrutinise its assumptions carefully. The Economic Development Board in Singapore and the Office of Information and Regulatory Affairs (OIRA), part of the US Office of Management and Budget, are two agencies that have built a successful track record in this regard. OIRA's longstanding central position in the US regulatory process has provided the depth of experience necessary to develop expertise.

A critical element of the cost-benefit analysis is assessing the impact of any policy intervention on productivity growth—the long-term driver of prosperity.[72] Public co-investment or subsidies, other than in public goods, must have a catalytic effect and should not remain in place for prolonged periods. There is a proven danger of governments spending money to support "white elephant" projects by the private sector which fail to provide a positive return for the broader economy. Efforts to protect a domestic sector from competition coupled with high subsidies to promote investment can be counterproductive.[73]

4. Deliver effectively

Three types of best practice can help governments execute microeconomic intervention effectively.[74] The first is strong performance management, which involves assigning accountability for outcomes to individuals, holding regular performance dialogues informed by standardised performance-management data, and publicly circulating target outcomes and progress towards them. Second, small, high-powered delivery units can provide the alignment and coordination necessary for most microeconomic activism. Successful delivery units typically enjoy a clear and narrow mandate and a successful leader with top-level access. They are also small enough to preserve flexibility and focus, allow selective hiring, and develop a talented group of highly motivated staff. Third, governments must communicate the policy initiative and its rationale, and form supportive coalitions to help put the plan into action.[75] Best practice in this regard has tended to involve prominent private and public-sector representatives championing a policy approach. In Finland, the prime minister personally led an effort to reorient the economy around high-technology industries in order to win the support of the nation for this initiative. In France, the minister for industry convenes policy makers, journalists, company leaders, unions, R&D

72 *How to compete and grow: A sector guide to policy*, McKinsey Global Institute, March 2010.

73 India sought to incubate its nascent automotive industry through a combination of trade barriers and a ban on foreign-direct investment. This approach helped to establish a domestic industry but one that could not compete on cost and performance with global companies. High subsidies encouraged domestic investment but led to overcapacity. Subsequently, India changed tack and removed trade and investment barriers. In the 1990s, the automotive sector's productivity more than tripled. See *How to compete and grow: A sector guide to policy*, McKinsey Global Institute, March 2010.

74 *Delivery 2.0: The new challenge for governments*, McKinsey & Company, October 2012.

75 Ibid.

organisations, and financial institutions on steering groups to design and implement sector competitiveness plans (*filières*).[76]

5. Ensure policy makers have the right skills and experience

Government departments or dedicated agencies charged with designing, coordinating, and implementing microeconomic activism need to have sufficient people with the necessary capabilities and skills in a range of areas. For instance, they need enough people with robust analytical and quantitative abilities to enable them to "read" the data on different sectors and to perform rigorous cost-benefit analyses. They need to recruit talented people who have the ability to engage systematically with companies and other stakeholders in that sector and to roll out policy rapidly and effectively. Hiring people with deep knowledge of the target sector is also important and has the added benefit of bringing private-sector best practice and business know-how into government. Singapore's highly effective Economic Development Board, for instance, has a long record of attracting high-quality and motivated people by offering compensation commensurate with that available in the private sector, including a substantial variable component linked to performance. It helps in recruiting talent if the department or agency implementing policy is seen to be engaged in activities that are important to the government in question. Organisations such as IDA Ireland, the Irish development agency, are high-profile institutions that are—and are perceived to be—at the heart of policy making. Beyond hiring staff with the right skills, policy makers must be sure to offer appropriate training, both in terms of quality and content. Too often training is used as a reward, and this can lead to a mismatch between the training and the skills required. Effective retention programmes need to be in place to limit the risk of losing the best talent to the private sector.

BUSINESSES HAVE THREE PRIORITIES FOR PRODUCTIVE INVESTMENT

Independent of policy developments, businesses should examine whether they are making the most of the investment opportunities that exist, notwithstanding the undoubtedly difficult and uncertain economic environment. Are their internal processes capturing opportunities that would not pose undue risk and might offer lucrative returns? Do they have a detailed enough view of the different markets where investment might usefully take place? And are they applying proven levers to drive capital productivity? We see these three areas as priority questions that businesses should seek to answer.

76 There is one plan for each of 11 industries considered strategic for the economy: aerospace, automotive, biotechnology, chemicals, fast-moving consumer goods, food, green industries, luxury goods, rail transport, ship building, and telecommunications. See Ministère de l'Économie, de l'industrie et de l'emploi, *Appel à projets "structuration des filières industrielles françaises" (Call for projects to increase competitiveness of French industrial sectors)*, July 2010.

1. Strengthen investment decision making against a risk bias

McKinsey has found evidence that by changing their investment decision-making processes, businesses can increase the productive investment they make. Mid-level managers who make routine investment decisions are often too risk averse—even in an uncertain economic climate.[77] In aggregate, the decisions that they make can shift an entire company's risk profile.[78]

Two types of behaviour appear to be largely responsible for this risk aversion. The first is that managers fear potential losses on a project more than they value its potential gains.[79] The second is that managers weigh potential investments as if there were only a single potential outcome instead of viewing them as part of the company's larger portfolio of investments—so-called narrow framing.[80] Unfortunately, managerial approaches to capital allocation and evaluation too often reinforce this risk aversion. Companies tend to hold individuals responsible for the outcomes of single projects and do not differentiate between failure caused by events that are "controllable" as opposed to "uncontrollable". The following approaches are useful to consider:

- **Up the ante on risky projects.** Risk-averse organisations often discard attractive projects before anyone formally proposes them. Instead, senior executives could ask managers for project ideas that are risky but have high potential returns, encouraging them to analyse these options further before formal review.

- **Avoid overcompensating for risk.** Companies should pay attention to the discount rates they use to evaluate projects. Unnecessarily high discount rates lead to worthwhile investments being forgone. Too often, managers add an arbitrary "risk premium" on top of the agreed cost of capital in a misguided attempt to "compensate" for risk. Such a risk premium is seldom fact-based but instead embeds opaque assumptions about the risk of the investment that are difficult to isolate and scrutinise.[81] Managers should instead incorporate assumptions about risk into the cash-flow projections of the investment using scenario analysis. Managers would then value these cash-flow projections at the (unadjusted) cost of capital and calculate the average outcome weighted by the estimated probability of each scenario.

77 Tim Koller, Dan Lovallo, and Zane Williams, "A bias against investment?" *The McKinsey Quarterly*, September 2011.

78 Tim Koller, Dan Lovallo, and Zane Williams, "Overcoming a bias against risk", *McKinsey on Finance*, number 44, summer 2012.

79 This is a manifestation of the "loss aversion" that is well documented in behavioural economics. See Charles Roxburgh, "Hidden flaws in strategy", *The McKinsey Quarterly*, May 2003.

80 Daniel Kahneman and Dan Lovallo, "Timid choices and bold forecasts: A cognitive perspective on risk-taking", *Management Science*, volume 39, number 1, January 1993.

81 Ryan Davies, Marc Goedhart, and Tim Koller, "Avoiding a risk premium that unnecessarily kills your project", *McKinsey on Finance*, number 44, summer 2012. See also Charles Roxburgh, "The use and abuse of scenarios", *The McKinsey Quarterly*, November 2009.

2. Identify investment opportunities at a granular level

Well-tuned decision-making processes for individual investments should be complemented by a sophisticated organisational approach for identifying where to invest. McKinsey research has emphasised the importance of companies taking a granular view of expansion opportunities by focusing their analysis on sub-industries or even product-region categories.[82] Such decisions on where to compete appear much more important for growth than subsequent decisions on how to compete. McKinsey research has found that growth in the sub-industry segments in which a company competes and the revenue it gains through mergers and acquisitions account for around 80 percent of the variation in large companies' top-line revenue growth; by contrast, the gain or loss of market share accounts for only around 20 percent. Based on a sample of 234 European-based companies, more than two-thirds of revenue growth from 1999 to 2009 was driven by growth in the sub-industry segments in which these companies compete, with mergers and acquisitions and the gain or loss of market share accounting for the remainder.[83] Companies should therefore "de-average" their view of markets and develop a granular perspective on trends, future growth rates, and market structures. Companies investing in Europe know that they need to make capital allocation decisions at a country level rather than for Europe as a whole. MGI research into urbanisation suggests they should go even further, localising decisions to regional or city-level "micro markets".[84]

3. Apply proven levers to drive capital productivity

Past McKinsey work in Europe across a broad range of sectors (including oil and gas, utilities, chemicals, telecoms, mining, and advanced industries) has found opportunities across a range of investment sizes to achieve savings of more than 30 percent, increasing the return on invested capital of these projects by up to 4 percent. In addition to strengthening the way they select projects by ensuring that investment decisions take a sufficiently detailed view of growth opportunities and overcome any bias against risk, European companies can benefit from three lessons at the project level to drive capital productivity.[85] First, instilling a mindset of continuous improvement, coupled with a relentless top-level focus on value, helps to identify and capture all value-creation opportunities during the life cycle of a capital project. Top-down targets for final unit cost can help balance engineering objectives and cost considerations. Strong performance management minimises leakage and deviation from these plans. Second, firms should develop a customised and well-structured optimisation "tool kit" to help managers identify and capture opportunities to extract maximum value from capital projects over all stages of the project life cycle. Concept and design optimisation, contracting strategy, procurement optimisation, construction and approval process efficiency, and ramp-up acceleration are important elements of best practice in this regard. Third, to maximise capital productivity, a project team with superior execution skills is essential. The development of internal capabilities, particularly of project managers, is crucial and can be bolstered by striking partnerships with companies that have complementary talent needs.

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82 Mehrdad Baghai, Sven Smit, and S. Patrick Viguerie, "The granularity of growth", *The McKinsey Quarterly*, May 2007.

83 These data are from McKinsey & Company's Granularity of Growth database.

84 *Urban world: Cities and the rise of the consuming class*, McKinsey Global Institute, June 2012.

85 See *Beyond the boom: Australia's productivity imperative*, McKinsey Global Institute, August 2012.

□ □ □

The important role of private investment in Europe's growth downturn—and the central part it could play in the recovery—is not widely appreciated. Given severe constraints on all other drivers of growth, it is vital for the European economy that private investment bounces back from its steep fall. Governments can do much to remove barriers to investment and ensure that effective incentives are in place—even in the relatively short term and despite today's difficult economic climate. In the context of pressure on budgets, any policy action needs to be thoughtful and targeted at those sectors where scope for renewed investment is greatest and where that investment is most likely to have a material—and relatively rapid—impact on growth. For businesses, it is crucial that they re-examine their decision-making processes to ensure that they do not miss attractive investment opportunities; that they guide their investment decisions with a more granular perspective on trends, future growth rates, and market structures; and that they support these investments with proven levers to drive capital productivity.

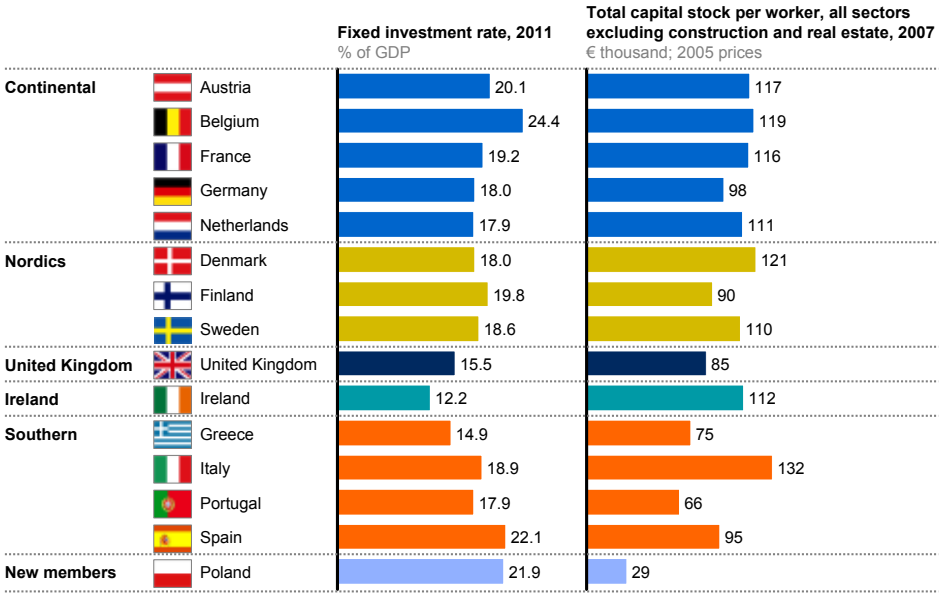
Appendix

A. Private investment by country

This report has discussed aggregate private investment across the EU-27, but there are significant differences among the constituent economies of the EU (Exhibit A1). Of the Continental economies, Belgium is the most capital-intensive with 2007 capital stock per worker excluding the construction and real estate sectors of approximately €119,000, ahead of Austria (€117,000) and France (€116,000). In Southern Europe, Italy had the highest capital stock per worker in 2007 at €132,000, ahead of Spain (€95,000). Poland had the lowest capital stock per worker at €29,000.[86] These economy-wide figures mask significant variations at the subsector level.

Exhibit A1

The EU top 15 differ significantly in both their fixed investment rate and total capital stock per worker



SOURCE: IHS Global Insight; McKinsey Global Institute analysis

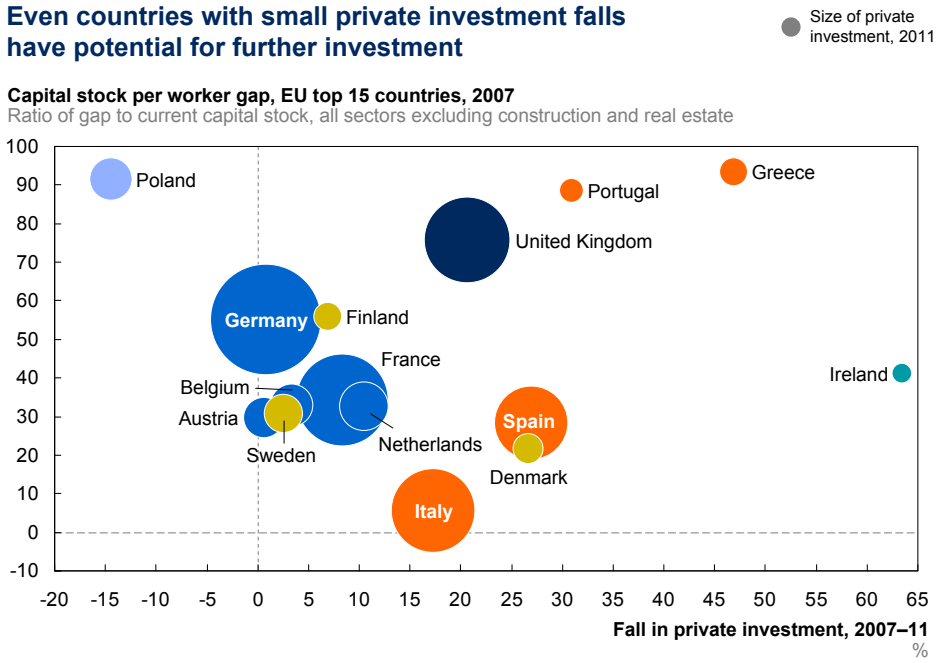
86 Numbers are in constant 2005 euros. The New Member States are Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, and Slovenia.

In this appendix, we present some of the analyses in Chapter 1 for the 15 largest EU economies. We refer to these economies collectively as the "EU top 15".[87] This group is very similar to the EU-15 group of member states prior to the accession of ten new countries in May 2004, with Luxembourg excluded but Poland added.

The severity of the falls in private investment between 2007 and 2011—both in absolute magnitude and relative to 2007 level of private investment—varies among the countries of the EU top 15. Combining these data with the capital stock per worker for all sectors excluding construction and real estate, we can see that even countries that saw small falls in private investment, such as Germany and Sweden, have an opportunity for increased investment (Exhibit A2).

Exhibit A2

Even countries with small private investment falls have potential for further investment



SOURCE: IHS Global Insight; Eurostat; Statistisches Bundesamt; McKinsey Global Institute analysis

87 The EU top 15 are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Poland, Portugal, Spain, Sweden, and the United Kingdom.

For each of the EU top 15, we show an exhibit with three sections (Exhibit A3):

- **Pre-crisis investment trends.** The first section assesses the "structural" differences in investment across the 15 countries. It shows the historical evolution in the investment rate, which we define, consistent with standard practice, as fixed investment (both private and government) as a share of GDP. To understand the structural reasons for the difference between each country and the EU top 15 average, we decompose the difference between the two into eight sector groups drawn from previous MGI research.[88]

- **Evolution of investment during the crisis.** The second section looks in detail at what happened to investment between 2007 and 2011. It includes a decomposition of the change in real GDP into the five main expenditure aggregates described in Chapter 1: private consumption, private investment, government investment, government consumption, and net exports. We show the sector contribution to the change in *fixed* investment, both private and government, by decomposing the change in fixed investment into the same eight sector groups featured in the first section.[89] Given the property investment bubble in some countries in 2007, as a second point of reference we show the gap between private investment in 2011 and its trend between 1981 and 2005, adjusted for changes in the working-age population.[90] We extrapolate this trend to 2011 using the compound annual growth rate in private investment per member of the working-age population from 1981 to 2005, combined with the actual change in the working-age population from 2005 to 2011.

- **Initial view of sector prioritisation.** The third section provides an initial indication of the sector groups that policy makers may wish to investigate for sector-specific barriers to investment. To reflect the first criterion for prioritising target sectors for microeconomic activism discussed in Chapter 3—the size of a subsector—we show the eight sector groups by fixed investment as a share of national GDP in 2011. On the second criterion, as an indication of the potential for greater investment we show on the right-hand side the amount of additional capital stock needed to close the subsector capital stock per worker gap to the average of the top half of a country's peer group in 2007. Because we calculate potential at the subsector level, most sector groups show some potential for all countries. For the construction and real estate sector group, we calculate the gap based on combined capital stock per head of population. We do not attempt to compare sector groups using the time-to-impact and long-term productivity benefit criteria. For this reason, the sector groups highlighted in light of the first two criteria are only initial indications of where policy makers should focus.

88 *From austerity to prosperity: Seven priorities for the long term*, McKinsey Global Institute and McKinsey & Company, November 2010. For further detail, see Appendix B: Technical notes.

89 By definition, fixed investment does not include changes in inventories (stock building).

90 Consistent with our approach throughout this report, private investment in this exhibit comprises private fixed investment and all stock building. That is, we assume all stock building is private investment rather than government investment. All values are shown in constant 2005 euros.

Exhibit A3. Country profile

Austria

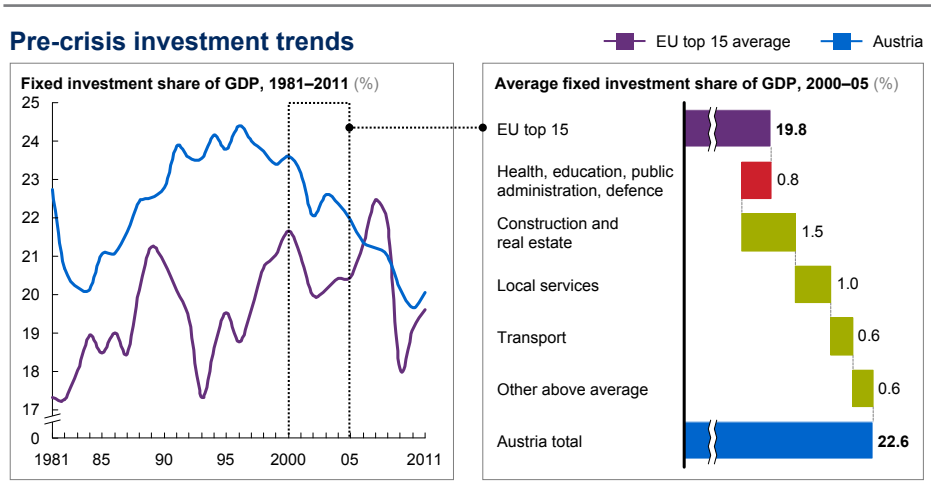
Austria's fixed investment as a share of GDP was substantially higher than the EU top 15 average during the 1980s and early 1990s (Exhibit A4). Between 2000 and 2005, construction and real estate, local services, and transport helped Austria's investment rate exceed the EU top 15 average; only the health, education, public administration, and defence sector group trailed that average. However, during this time the investment rate fell steadily, and by 2006 it had converged with the EU top 15 average. The investment rate fell less sharply than in other large European economies between 2007 and 2011 to finish slightly above the average. Nevertheless, Austria's investment rate has fallen by nearly four percentage points since 1995. This trend is worrying and requires a detailed investigation of root causes.

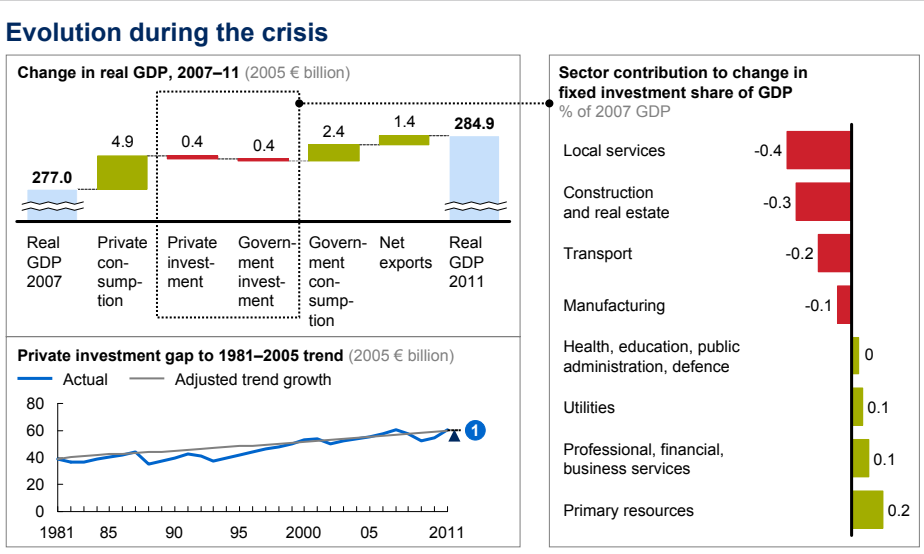
Between 2007 and 2011, Austria's real GDP increased from €277 billion to €285 billion. Private and government consumption and net exports together increased by nearly €9 billion during this period, while private and government investment fell by nearly €1 billion. Investment in half of the eight sector groups fell during these years. Local services and the construction and real estate sector group contributed the most to the overall decline in fixed investment, while the primary resources sector group partly made up for the fall. Austria's private investment was narrowly above its working-population-adjusted trend at the end of 2011.

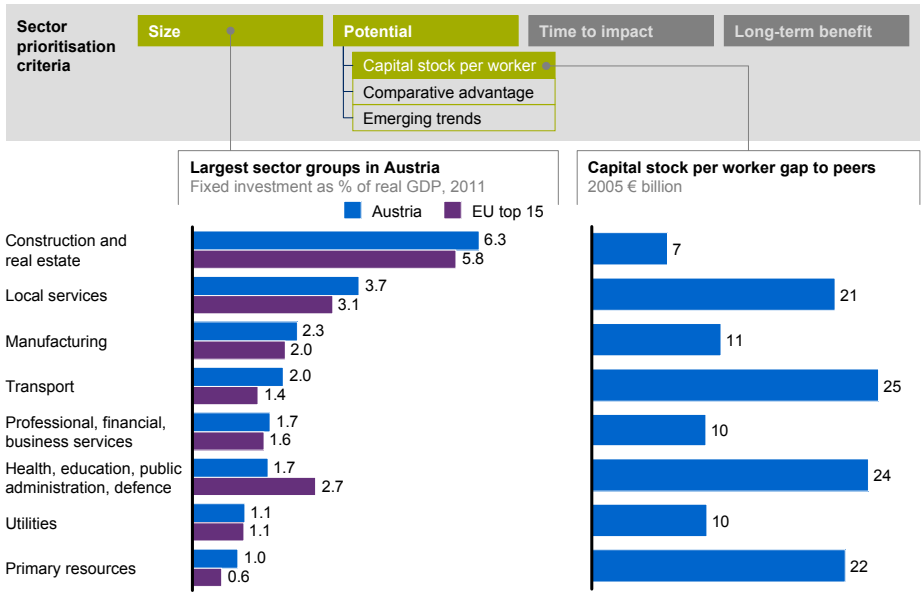
Looking ahead at sectors to prioritise on the size criterion, construction and real estate is the largest sector group and local services are also significant. On the second criterion, the capital stock per worker methodology indicates the sector groups with greatest potential for further investment are: transport; health, education, public administration, and defence; primary resources; and local services. Existing research suggests there is potential for greater investment if, for example, Austria reduced barriers to entry in network industries—especially by relaxing ownership restrictions in the production and distribution of electricity and by increasing competition in rail transport.[91]

91 *Going for growth report 2011*, OECD, April 2011.

Exhibit A4. Austria







SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

Belgium

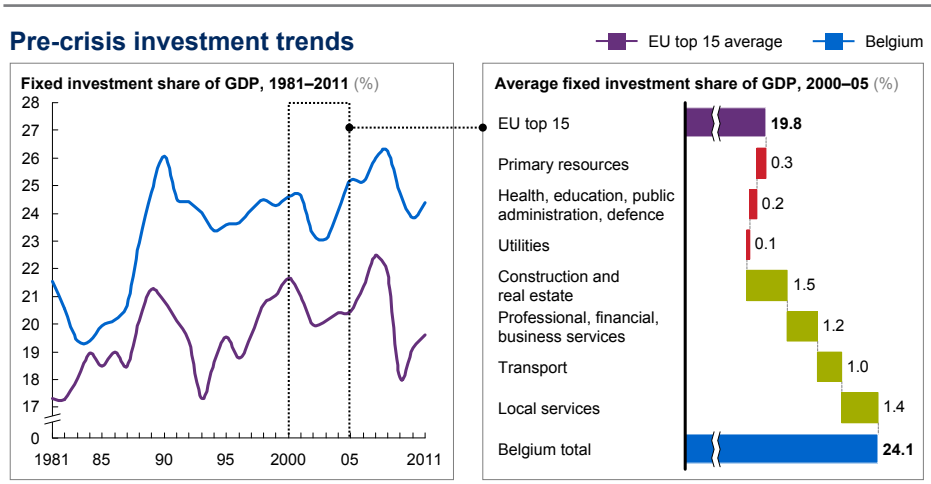
In the early 1990s, Belgium's fixed investment as a share of GDP exceeded the average in the EU top 15 and its economy proved more resistant to the general slowdown in investment seen in Europe (Exhibit A5). Between 2000 and 2005, the investment rate underwent a sharp V-shaped contraction but recovered to well above the EU top 15 average, thanks to above-average investment in construction and real estate, professional, financial, and business services, and transport. No sector groups during that period lagged more than 0.2 percent behind the EU top 15 average. The investment rate fell less sharply than in other large European economies between 2007 and 2011 and remained well above the average.

Between 2007 and 2011, Belgium's real GDP increased modestly from €336 billion to €345 billion. Private and government consumption together increased by €14 billion during this period, offset by a combined fall in private investment and net exports of nearly €6 billion. Investment in half of the eight sector groups fell during these years. The manufacturing, local services, and construction and real estate sector groups contributed the most to the overall decline in fixed investment, while the utilities sector group partly made up for the fall. Belgium's private investment remained below its working-population-adjusted trend at the end of 2011. We estimate that the gap to the trend for private investment was €15 billion, much larger than the difference between 2007 and 2011.

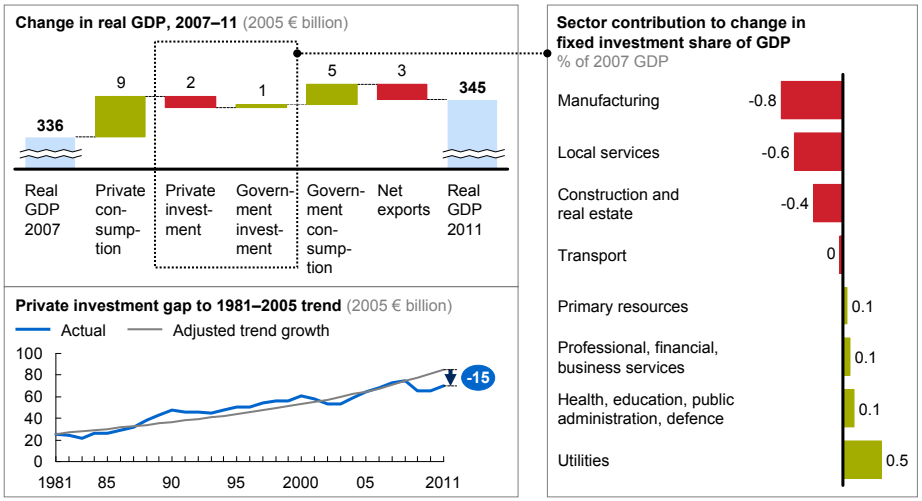
Looking ahead at sectors to prioritise on the size criterion, construction and real estate is the largest sector group, and local services, manufacturing and the professional, financial, and business services sector group are also significant. On the second criterion, despite the fact that Belgium traditionally has a high investment rate compared with other EU top 15 economies, large gaps in capital intensity remain with its Western European neighbours. The capital stock per worker methodology indicates that the sector groups with the greatest potential for further investment are: health, education, public administration, and defence; construction and real estate; local services; and utilities. These sector groups warrant further attention to investigate the sector-specific barriers to further investment.

Exhibit A5. Belgium

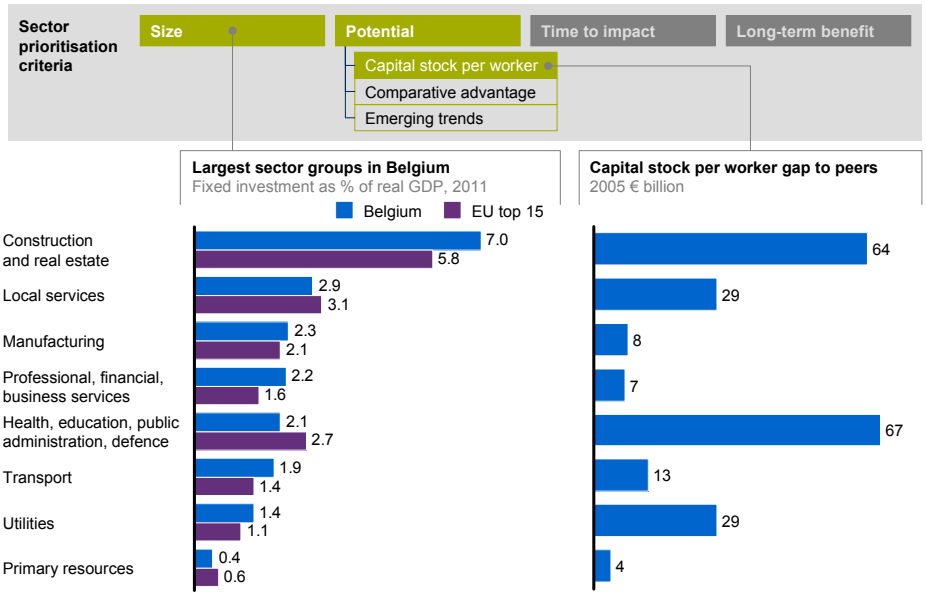
Pre-crisis investment trends



Evolution during the crisis



Initial view of sector prioritisation



SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

Denmark

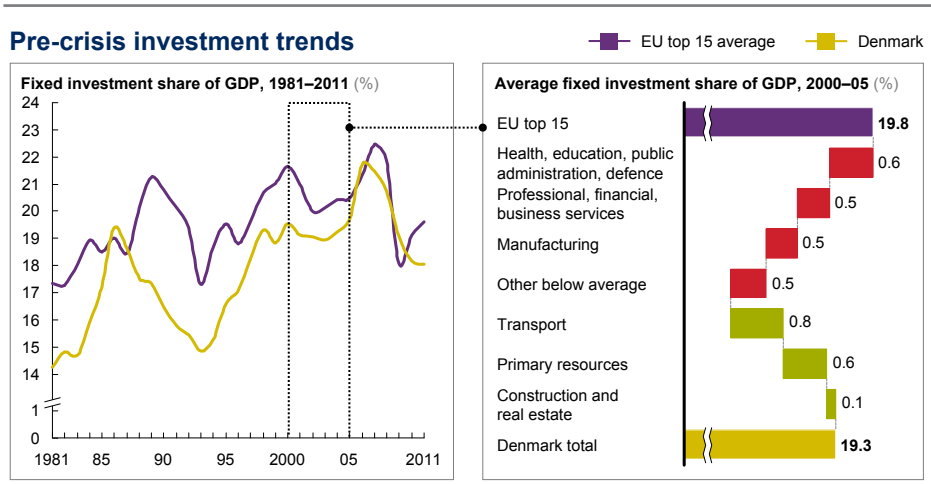
In the early 1990s, Denmark's fixed investment as a share of GDP trailed the EU top 15 average, falling sharply from 1986 to 1993 (Exhibit A6). Between 2000 and 2005 the investment rate continued to lag behind the average due mainly to below-average investment in: health, education, public administration, and defence; professional, financial, and business services; and manufacturing. This was partly offset by above-average investment in transport, primary resources, and construction and real estate. After converging to the EU top 15 average between 2004 and 2006, the investment rate fell steadily to end 2011 well below the average.

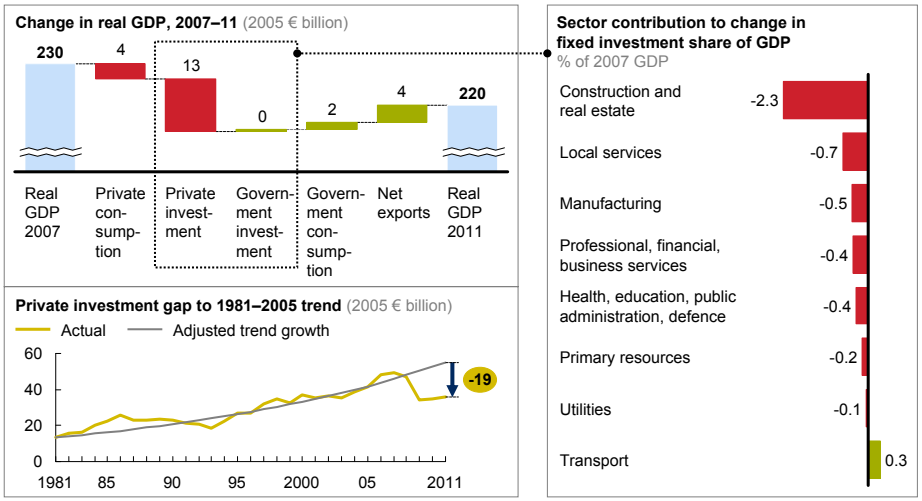
Between 2007 and 2011, Denmark's real GDP fell from €230 billion to €220 billion. Government consumption and investment and net exports together increased by more than €6 billion during this period, while private investment and private consumption fell by €17 billion. Investment in seven of the eight sector groups fell during these years, led by the construction and real estate sector group and local services; transport was the only bright spot. Denmark's private investment remained well below its working-population-adjusted trend at the end of 2011. We estimate that the gap to the trend for private investment was €19 billion, larger than the difference between 2007 and 2011.

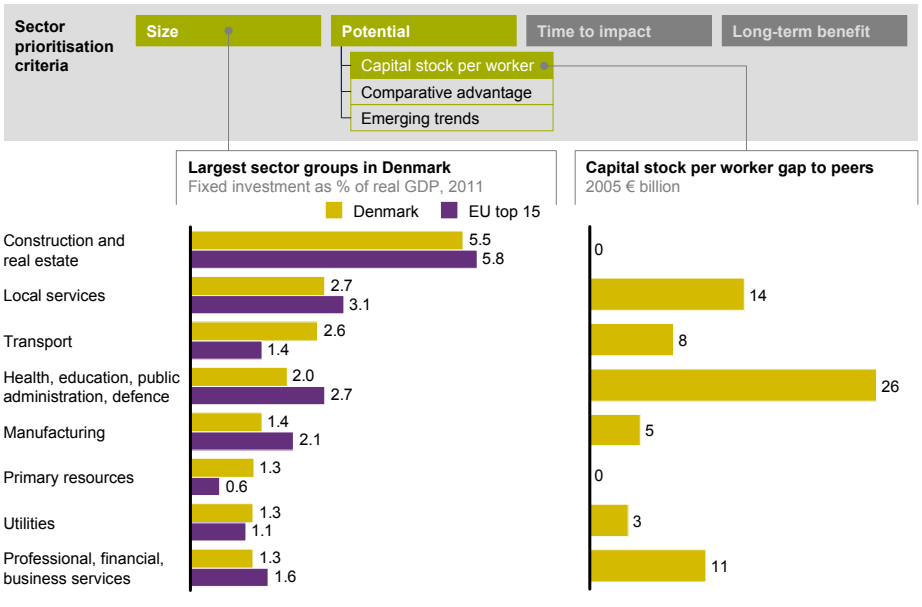
Looking ahead at sectors to prioritise on the size criterion, the construction and real estate sector group and local services are the largest; the transport sector and the health, education, public administration, and defence sector group are also significant. On the second criterion, the capital stock per worker methodology suggests that the sector groups with the greatest potential for further investment are: health, education, public administration, and defence; local services; and professional, financial, and business services. McKinsey research has found that regulatory reform that removes barriers to foreign competition can unleash higher productivity in professional services.[92] Reform that removes barriers to scale in health care and local services can lead to higher productivity and investment in those sectors. In retail, for instance, reform of planning restrictions could pave the way for investment in larger and more productive retail formats and in the IT enablement made possible by economies of scale.

92 *Creating economic growth in Denmark through competition*, McKinsey & Company, November 2010.

Exhibit A6. Denmark







SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

Finland

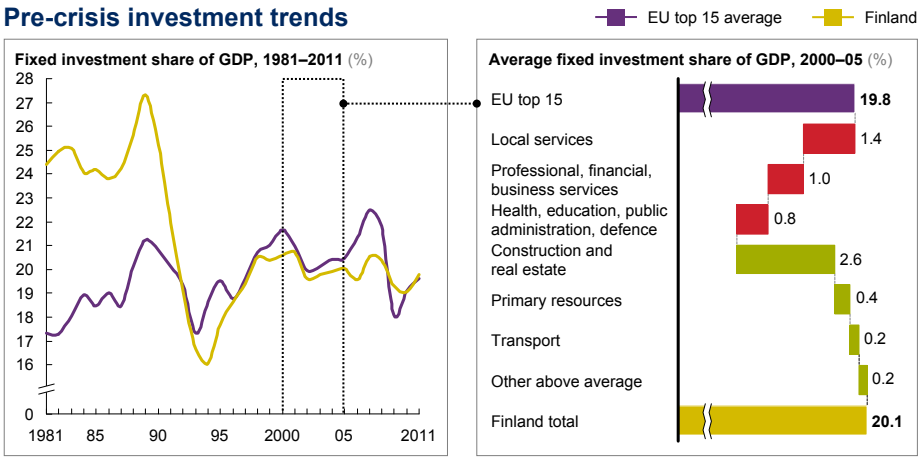
In the early 1990s, Finland's fixed investment as a share of GDP converged abruptly to the average in the EU top 15 as its economy struggled with a financial crisis and property bust (Exhibit A7). Between 2000 and 2005, the investment rate continued to trail the EU top 15 average due to below-average investment in: local services; professional, financial, and business services; and health, education, public administration, and defence. Investment in construction and real estate was well above the EU top 15 average during the period. The investment rate fell less sharply than in other large European economies between 2007 and 2011 and finished that period in line with the average.

Between 2007 and 2011, Finland's real GDP fell from €181 billion to €177 billion. Private and government consumption together increased by more than €5 billion during this period, while private investment and net exports fell by nearly €10 billion. Investment in half of the eight sector groups fell during these years. Construction and real estate contributed the most to the overall decline in fixed investment, while the utilities sector partly made up for the fall. Finland's private investment remained below its working-population-adjusted trend at the end of 2011. We estimate that the gap to the trend for private investment was €4 billion, much larger than the difference between 2007 and 2011.

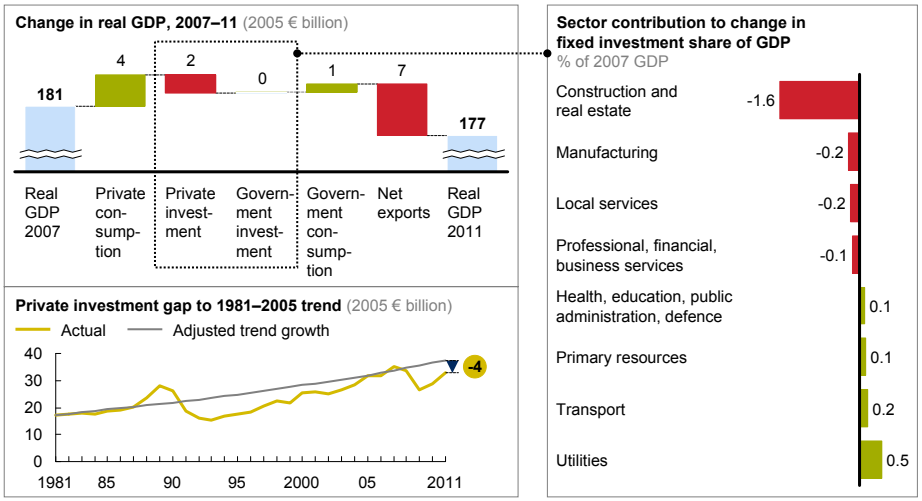
Looking ahead at sectors to prioritise on the size criterion, the largest sector groups are construction and real estate, manufacturing, and transport. On the second criterion, the capital stock per worker methodology indicates that the sector groups with the greatest potential for further investment are: health, education, public administration, and defence; and local services where fixed investment is just over half the EU top 15 average.

Exhibit A7. Finland

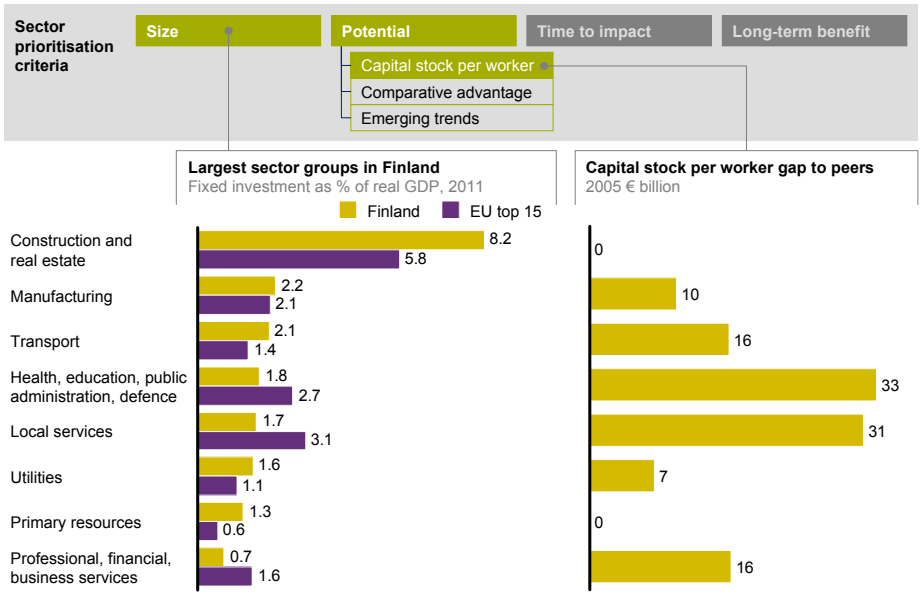
Pre-crisis investment trends



Evolution during the crisis



Initial view of sector prioritisation



SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

France

For nearly 30 years, France's fixed investment rate as a share of GDP has trailed behind the EU top 15 average (Exhibit A8). Between 2000 and 2005 the investment rate converged towards that average because of above-average investment in: construction and real estate; health, education, public administration, and defence; and professional, financial, and business services. Sectors where private investment lagged behind the average included local services, manufacturing, and transport. Fixed investment fell less sharply than in other large EU economies between 2007 and 2011 and converged towards the EU top 15 average during that period.

Between 2007 and 2011, France's real GDP stagnated, standing at €1,891 billion in 2007 and €1,890 billion in 2011. Private and government consumption together increased by nearly €51 billion during this period, but private and government investment and net exports fell by just over that amount. Investment in six of the eight sector groups fell during these years. The construction and real estate sector group and manufacturing contributed the most to the overall decline in fixed investment. France's private investment remained well below its working-population-adjusted trend at the end of 2011. We estimate that the gap to the trend for private investment was €29 billion, in line with the difference between 2007 and 2011.

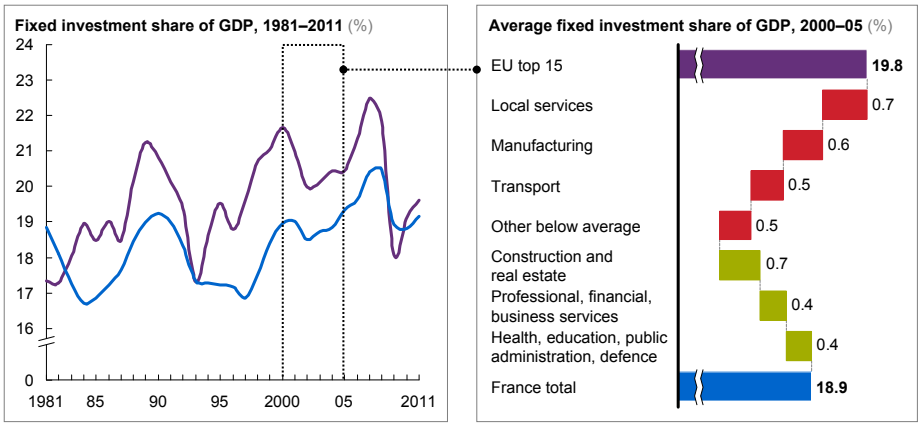
Looking ahead at sectors to prioritise on the size criterion, the construction and real estate sector group and health, education, public administration, and defence are the largest; local services and professional, financial, and business services are also significant. The capital stock per worker methodology indicates there may be greatest potential for further investment in: local services; construction and real estate; and health, education, public administration, and defence. This is consistent with previous MGI research noting the importance of regulatory reform in labour-intensive sectors such as retail, health care, manufacturing, and construction, as well as in France's already strong tourism industry where a repositioning away from holiday homes, camping, and two-star hotels to resorts could spur greater private investment.[93] The recent Gallois report outlined a road map to improve private-sector competitiveness.[94] Successful implementation of such reforms could spur sizeable investment in France.

93 *French employment 2020: Five priorities for action*, McKinsey Global Institute, March 2012.

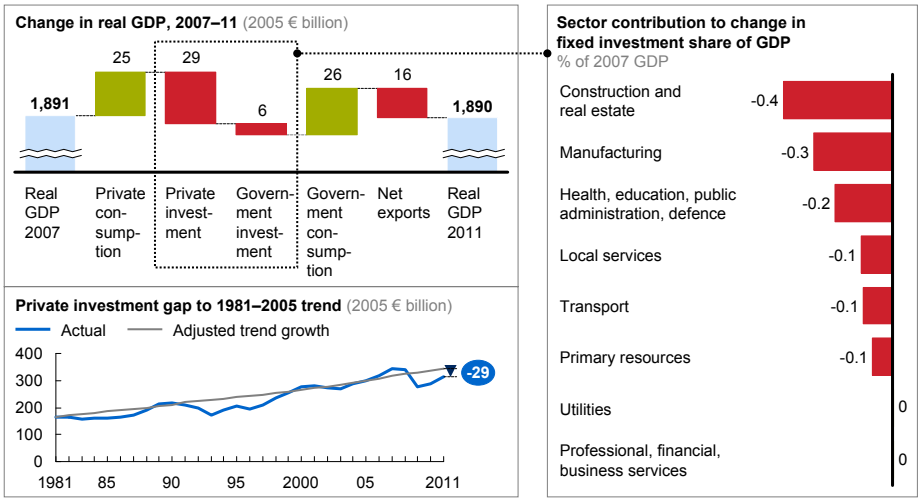
94 Louis Gallois, *Pacte pour la compétitivité de l'industrie Française: Rapport au Premier Ministre (Roadmap for the competitiveness of French industry: Report to the Prime Minister)*, November 2012.

Exhibit A8. France

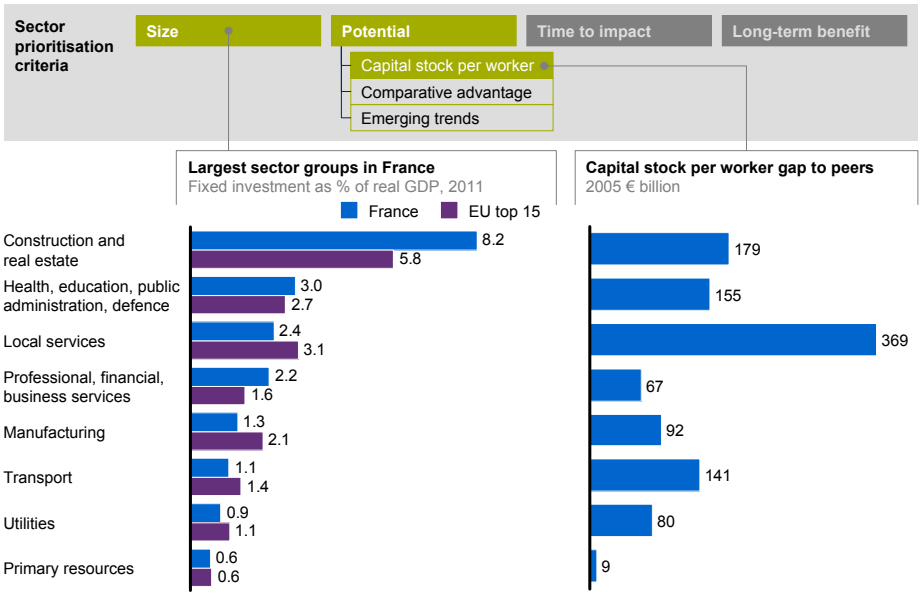
Pre-crisis investment trends



Evolution during the crisis



Initial view of sector prioritisation



SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

Germany

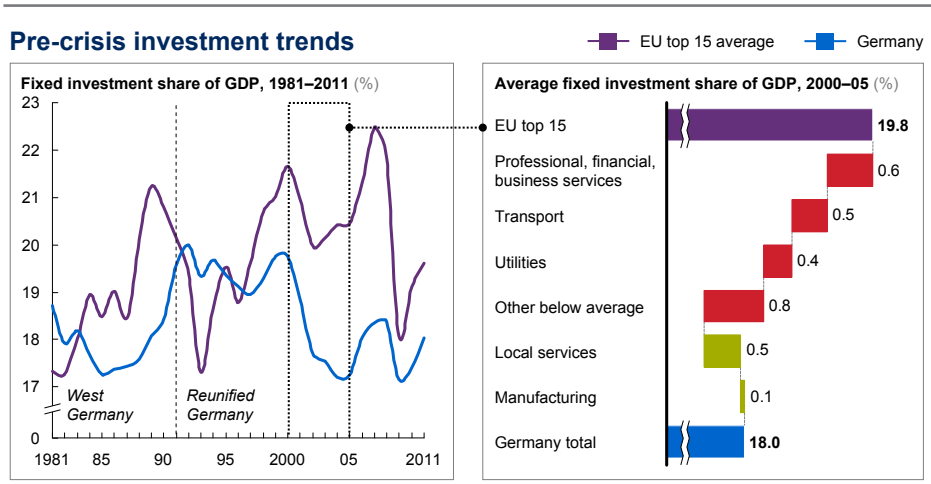
The average fixed investment rate in West Germany during the 1980s was 17.8 percent (Exhibit A9). Germany's reunification in 1990 caused a period of higher investment. Towards the end of the 1990s, the fixed investment rate again rose, similar to the experience in France and Italy. However, after 2000, the rate returned closer to the West German level prior to reunification. By 2005, the investment rate was significantly lower than the EU top 15 average, which is surprising given Germany's comparably strong economic position. Sector groups in which fixed investment lagged behind the average share of GDP between 2000 and 2005 included professional, financial, and business services, transport, and utilities. The fixed investment rate fell less sharply than in other large European economies between 2007 and 2011, which meant that some of the gap between Germany and the EU top 15 had closed by the end of that period.

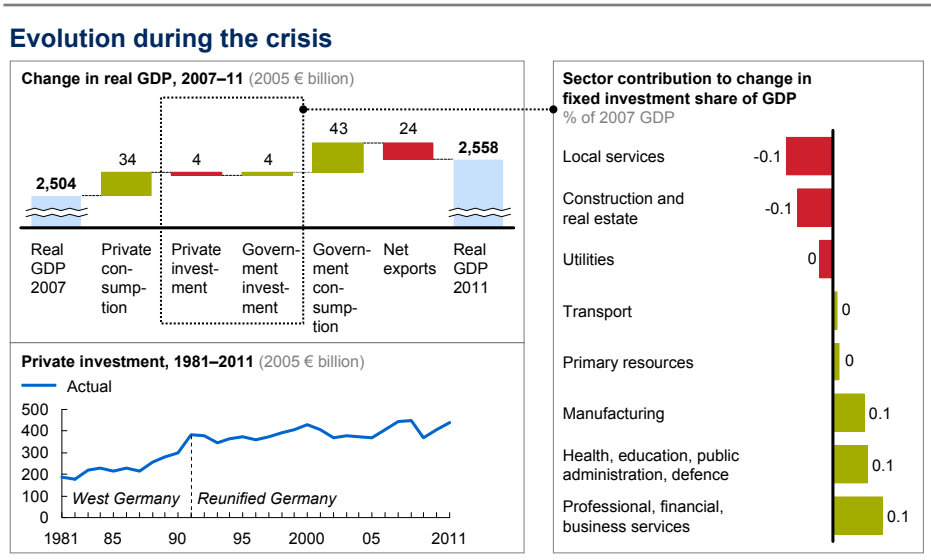
Between 2007 and 2011, Germany's real GDP rose slightly from €2,504 billion to €2,558 billion. Private and government consumption together increased by €77 billion during this period, but a small rise in government investment was offset by a fall in private investment and net exports fell by €24 billion. Investment fell in only three of the eight sector groups during these years, with the largest declines observed in local services, and construction and real estate. In absolute terms, the additional investment of the 1990s compared with the 1980s can be explained by reunification. Private investment in Germany was flat from 1991 to 2005. We have therefore refrained from calculating a long-term trend for German investment because any trend starting in the early 1980s would be distorted by the reunification if we only use investment in the 1980s in the Federal Republic of Germany (West Germany), or by the low investment in the German Democratic Republic (East Germany) if we calculate the sum of the combined investment of Germany's two halves in the 1980s. A calculation of the trend beginning in the early 1990s would also be distorted because it would use the reunification investment boom as its starting point. Given that the investment rate seems to have reverted to its long-term average of around 18 percent, the long-run investment trend appears in line with long-range GDP growth.

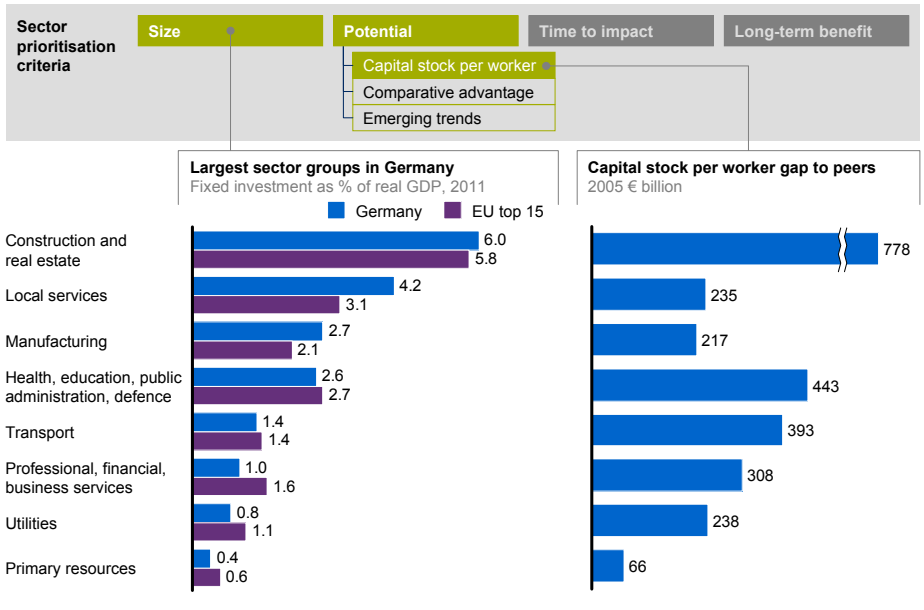
Looking ahead at sectors to prioritise on the size criterion, the construction and real estate sector group and local services are the largest; health, education, public administration, and defence as well as manufacturing are also significant. The capital stock per worker methodology indicates potential for further investment in several sector groups, which is consistent with previous McKinsey research.[95] Deregulation in the health care sector would encourage private investment. Additional investment in transport would increase the economy's competitiveness. For instance, Germany could invest in intelligent traffic-management systems to reduce congestion and prevent infrastructure capacity constraints around some major cities as well as continue to mitigate carbon emissions by converting truck fleets to low-carbon technology. In telecommunications, higher investment in fibre-optic networks would allow the rollout of new and higher-quality services such as Internet video calls and 3D gaming, even in rural areas. Service sectors, including local services and professional, financial, and business services, also have significant potential for further investment. Increasing the investment rate by two percentage points, which corresponds to the gap with the EU top 15 average between 2000 and 2005, would add €50 billion of investment each year.

95 *Germany 2020: Future perspectives for the German economy*, McKinsey & Company, 2008.

Exhibit A9. Germany







SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

Greece

In the early 1990s, Greece's fixed investment as a share of GDP lagged behind the average in the EU top 15 and diverged further after 1993 (Exhibit A10). Between 2000 and 2005, the investment rate spiked but fell sharply soon afterwards. During this period, Greece experienced above-average fixed investment in: transport; construction and real estate; and health, education, public administration, and defence. Fixed investment fell much more sharply than in other large European economies between 2007 and 2011 and finished 2011 dramatically below the EU top 15 average.

Between 2007 and 2011, Greece's real GDP fell from €232 billion to €201 billion. Private and government consumption together fell by nearly €18 billion during this period, while private and government investment fell by more than €30 billion. Only net exports increased—by €17 billion. Investment in all eight sector groups fell during these years. Construction and real estate contributed by far the most to the overall decline in fixed investment. Greece's private investment remained well below its working-population-adjusted trend at the end of 2011. We estimate that the gap to the trend for private investment was €20 billion, two-thirds the size of the gap between 2007 and 2011. Before 2008, Greece's GDP growth relied heavily on private consumption. The economy has failed to attract foreign investment partly because of a high level of regulation.[96] Since 2008, Greece's growth trajectory has deteriorated. GDP contracted by 13 percent between 2007 and 2011, more than any other country in the EU-15 and second only to Latvia (16 percent) in the EU-27.[97] Today, the Greek economy faces stark challenges.

Looking ahead at sectors to prioritise, the construction and real estate group, and health, education, public administration, and defence are the largest sectors. On the second criterion, the capital stock per worker methodology indicates there may be greatest potential for further investment in the health, education, public administration, and defence sector group. McKinsey research has emphasised the potential for Greece to invest more in higher education and tourism.[98] There may also be potential in construction and real estate, although this is unlikely to be the case in residential real estate, given that the economy has a significant amount of vacant housing stock, the legacy of the bursting of a property bubble.

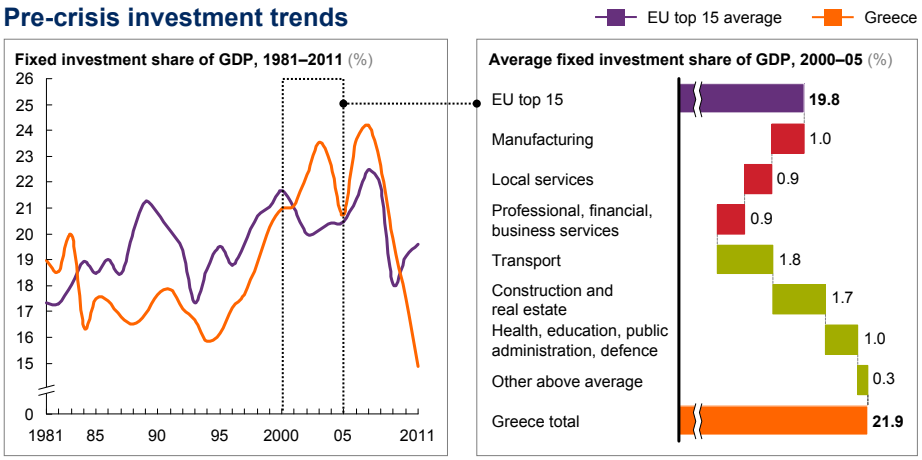
96 *Greece 10 years ahead: Defining Greece's new growth model and strategy*, McKinsey & Company, April 2012.

97 IHS Global Insight.

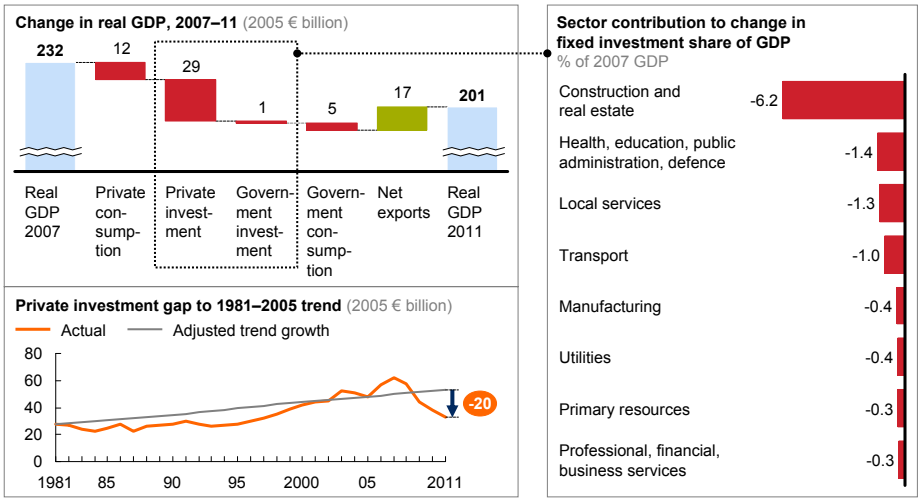
98 *Greece 10 years ahead: Defining Greece's new growth model and strategy*, McKinsey & Company, April 2012.

Exhibit A10. Greece

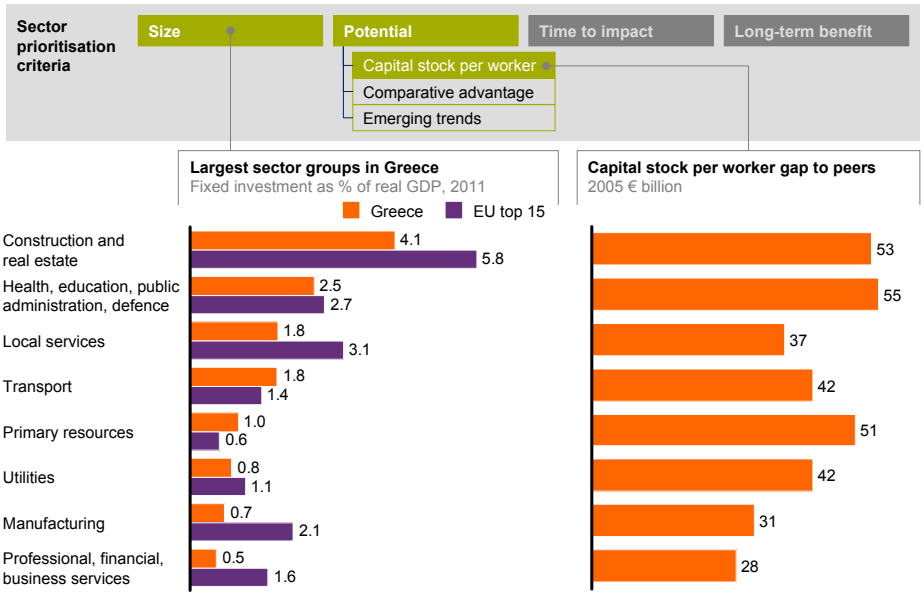
Pre-crisis investment trends



Evolution during the crisis



Initial view of sector prioritisation



SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

Ireland

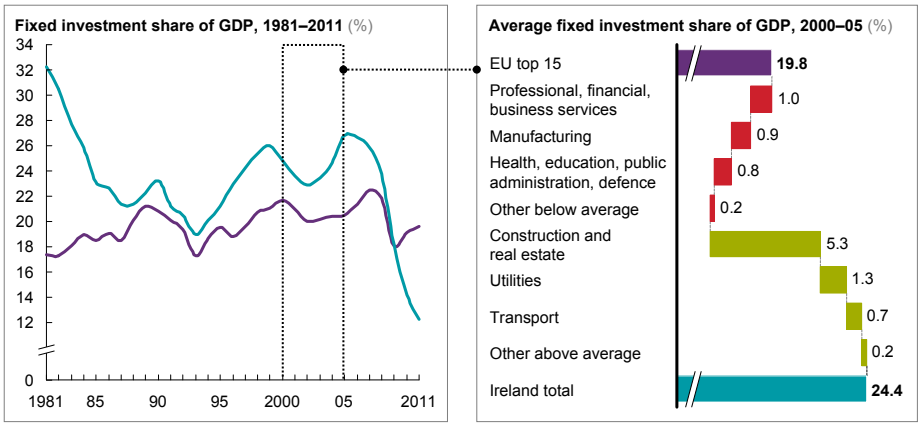
Ireland's fixed investment as a share of GDP began the 1980s well above the average in the EU top 15 before converging (Exhibit A11). Between 2000 and 2005, the investment rate underwent a sharp V-shaped contraction but still remained well above the EU top 15 average. Fixed investment in the construction and real estate, utilities, and transport sector groups was above average during this period (due to a speculative bubble in the case of construction and real estate), offset somewhat by below-average fixed investment in: professional, financial, and business services; manufacturing; and health, education, public administration, and defence. After 2007, the investment rate fell much more sharply than in other large European economies and remained well below the EU top 15 average in 2011.

Between 2007 and 2011, Ireland's real GDP fell from €193 billion to €177 billion. Private and government consumption together decreased by €10 billion during this period, while private investment declined by €27 billion, compounded by a small drop in government investment. Net exports provided some relief, rising nearly €23 billion. Investment in all eight sector groups fell during these years, led by a steep fall in the construction and real estate sector after the property bubble burst. Ireland's private investment remained well below its working-population-adjusted trend at the end of 2011. We estimate that the gap to the working population-adjusted trend for private investment was €57 billion, double the difference between 2007 and 2011.

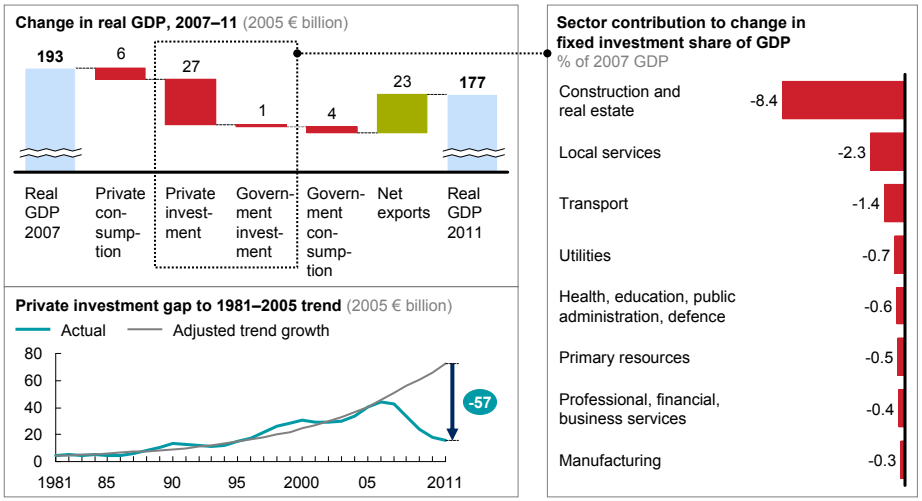
Looking ahead at sectors to prioritise on the size criterion, aside from construction and real estate, transport and local services are the largest sector groups. On the second criterion, the capital stock per worker methodology indicates the sector groups with the greatest potential for further investment are: local services; health, education, public administration, and defence; and professional, financial, and business services. There may also be potential in manufacturing. The physical manufacturing of many of Ireland's export goods takes place outside the economy, and policy makers could explore how more of that manufacturing could be done domestically, leading to higher investment.

Exhibit A11. Ireland

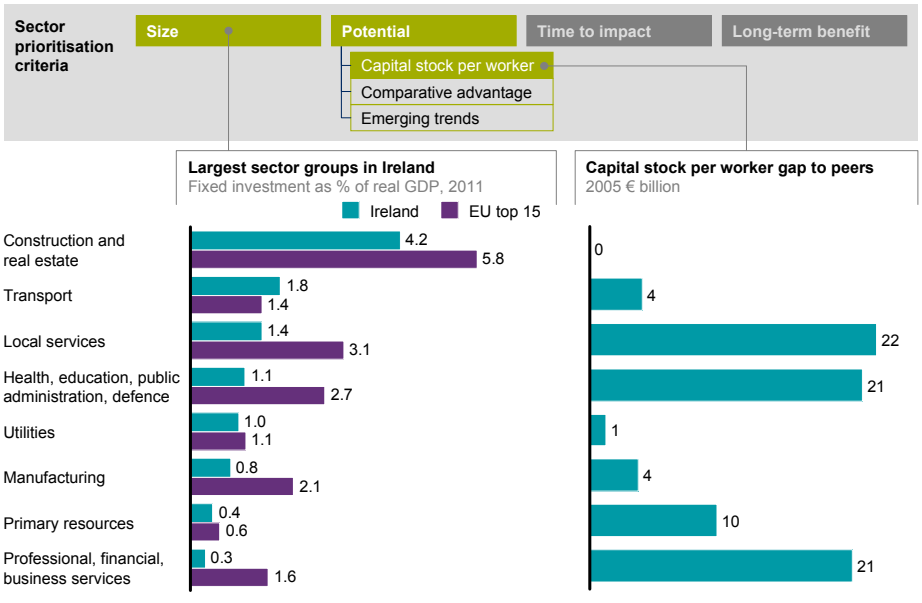
Pre-crisis investment trends



Evolution during the crisis



Initial view of sector prioritisation



SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

Italy

For most of the 1980s Italy's investment rate was above the average in the EU top 15 (Exhibit A12). Between 2000 and 2005, the investment rate overtook that average because of above-average investment in: manufacturing; professional, financial, and business services; and utilities. Sectors where private investment lagged behind the average included construction and real estate and local services. Therefore, although Italy's overall fixed investment share has developed in line with the EU top 15 average, its composition differs. The investment rate fell less sharply than in other large European economies between 2007 and 2010, and stood above the EU top 15 average at the end of 2010. However, the investment rate fell below the average in 2011 as real investment in Italy dropped again while the EU top 15 total increased.

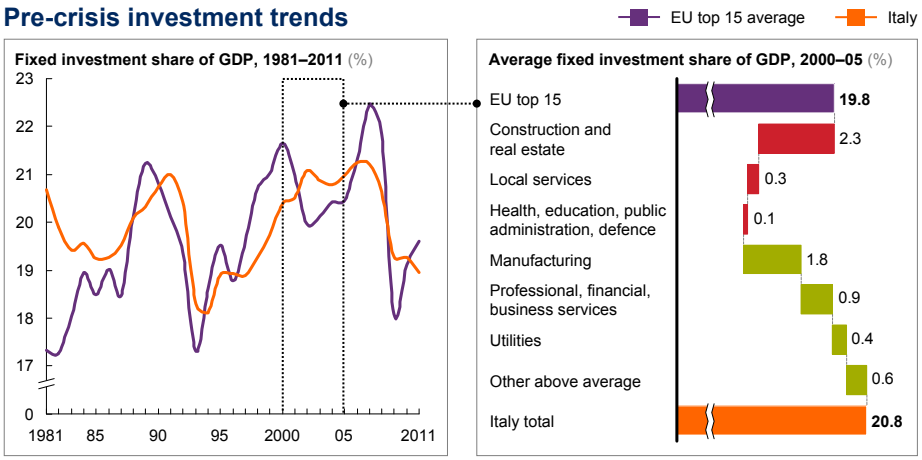
Between 2007 and 2011, Italy's real GDP fell from €1,567 billion to €1,497 billion. Private and government consumption together decreased by €9 billion during this period; private investment dropped by over €52 billion, in addition to a combined decline in government investment and net exports of nearly €8 billion. Investment in all eight sector groups fell during these years. The construction and real estate, manufacturing, and local services sector groups contributed the most to the overall decline in fixed investment. Italy's private investment remained well below its working-population-adjusted trend at the end of 2011. We estimate that the gap to the trend for private investment was €59 billion, which is €6 billion larger than the difference between 2007 and 2011.

Looking ahead at sectors to prioritise, on the size criterion the construction and real estate sector group and manufacturing are the largest, while local services, professional, financial, and business services, and health, education, public administration, and defence are also significant. On the second criterion, the capital stock per worker methodology indicates that the construction and real estate sector group and transport may have the greatest potential for further investment. Italy could spur such investment if the government pursued regulatory reform.[99] For instance, state-owned enterprises largely dominate transport and other network industries. Professional services such as legal services are highly regulated. Allowing new participants to enter these markets is likely to yield significant additional investment. In retail, relaxing restrictions on opening hours, reforming high wages for weekend working and evening shifts, and lifting limits on large retail formats would all increase productivity and therefore attract additional investment into the sector.

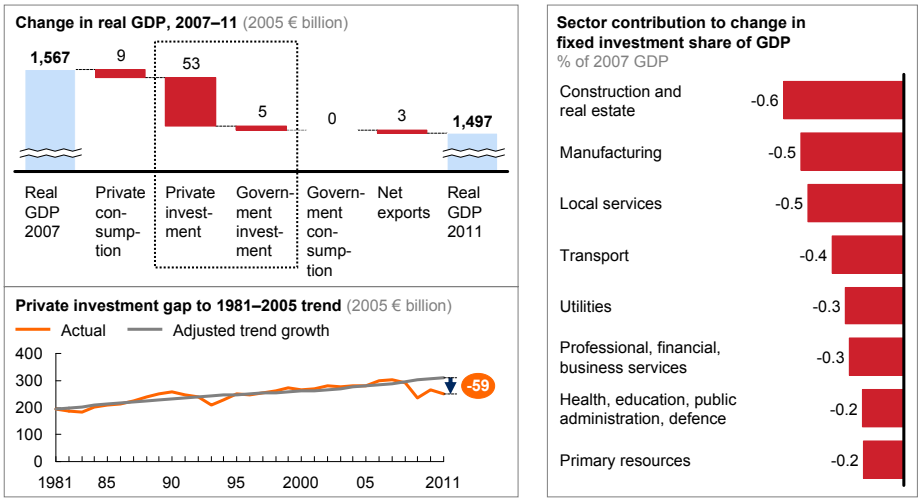
99 *Coniugare austerità e crescita economica in Europa: Uno sguardo all'Italia (Combining austerity and economic growth in Europe: A look at Italy)*, McKinsey & Company, January 2011.

Exhibit A12. Italy

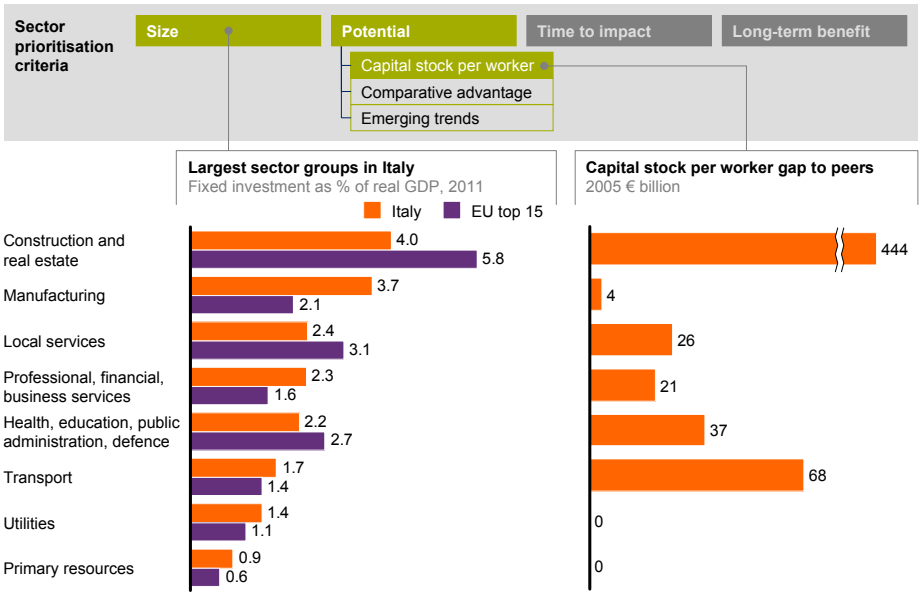
Pre-crisis investment trends



Evolution during the crisis



Initial view of sector prioritisation



SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

The Netherlands

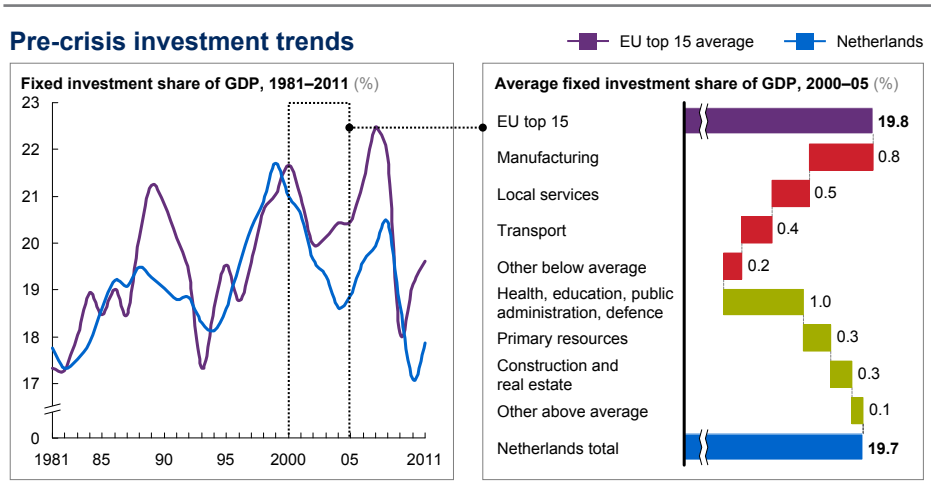
In the early 1990s, the Netherlands was relatively resistant to the general slowdown in investment seen in Europe (Exhibit A13). Between 2000 and 2005, the investment rate fell below the EU top 15 average mainly because of below-average investment in manufacturing, local services, and transport. During that period, investment in the health, education, public administration, and defence sector group significantly outperformed investment in this sector group in neighbouring countries although overall there was still a sharp decline in investment. Fixed investment fell later than in other large European economies between 2007 and 2010 and has recovered more slowly.

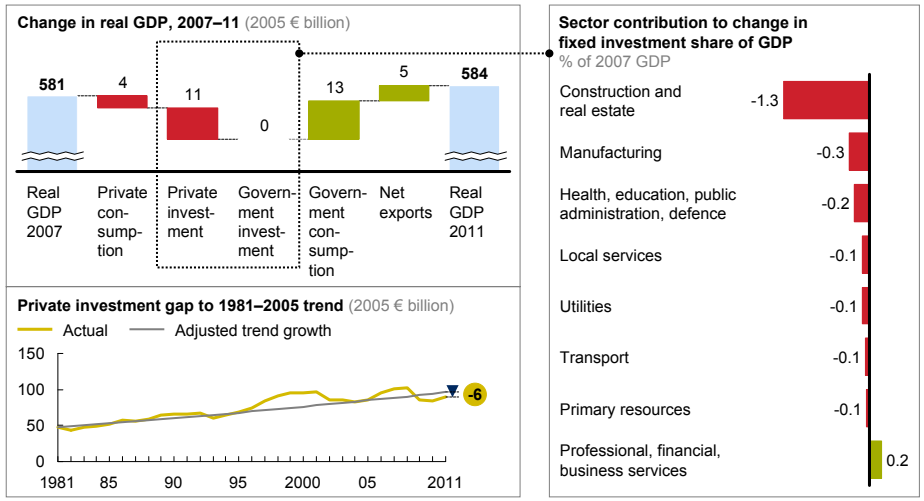
In recent times, real GDP has stagnated, standing at €581 billion in 2007 and €584 billion in 2011. Government consumption rose by nearly €13 billion during this period, while net exports increased by €5 billion. Private consumption and private investment fell by over €14 billion. All sectors except for professional, financial, and business services contributed to the overall decline in fixed investment. The Netherlands' private investment remained below its working-population-adjusted trend at the end of 2011. We estimate that the gap to the trend for private investment was €6 billion, nearly two-thirds of the size of the difference between 2007 and 2011.

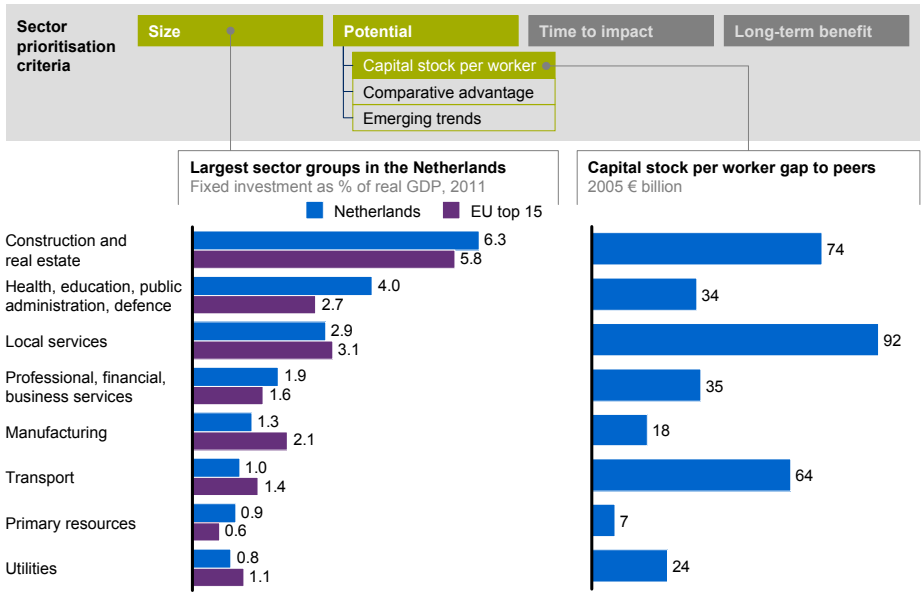
Looking ahead at sectors to prioritise on the size criterion, the construction and real estate sector group and health, education, public administration, and defence are the largest; local services and professional, financial, and business services are also significant. Local services experienced lower investment than the EU top 15 average before the crisis and a sizeable capital gap exists relative to its Western European peers. Previous MGI research has highlighted a range of barriers that can prevent consolidation in the retail sector, including municipal limits on retailers expanding their portfolios to high levels of rent protection. Removing these barriers could spur greater investment.[100] The capital stock per worker methodology indicates that local services, construction and real estate, and transport may have the greatest potential for further investment.

100 *Beyond austerity: A path to economic growth and renewal in Europe*, McKInsey Global Institute, October 2010.

Exhibit A13. Netherlands







SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

Poland

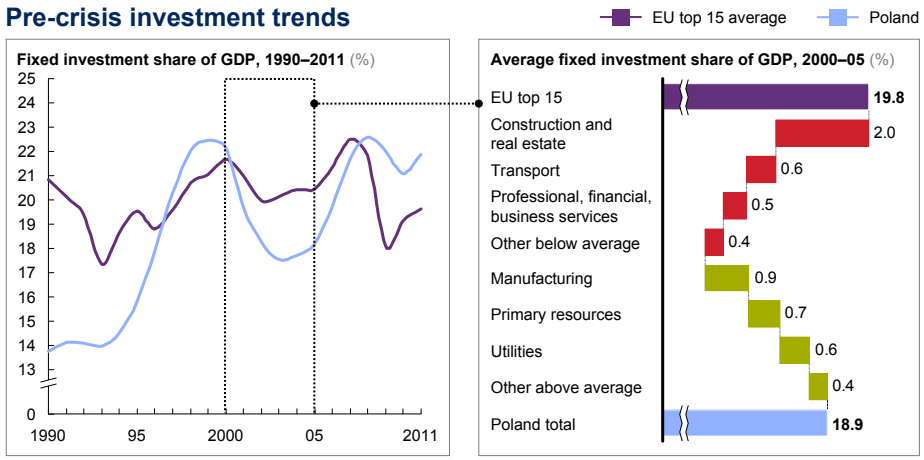
In the early 1990s, Poland's investment rate rose sharply to converge with, and then exceed, the average in the EU top 15 (Exhibit A14). Between 2000 and 2005, this trend reversed. Poland had below-average investment in the construction and real estate, transport, and professional, financial, and business services sector groups, partly offset by above-average investment in manufacturing, primary resources, and utilities. The investment rate fell only slightly in 2009 and remained well above the average in 2011.

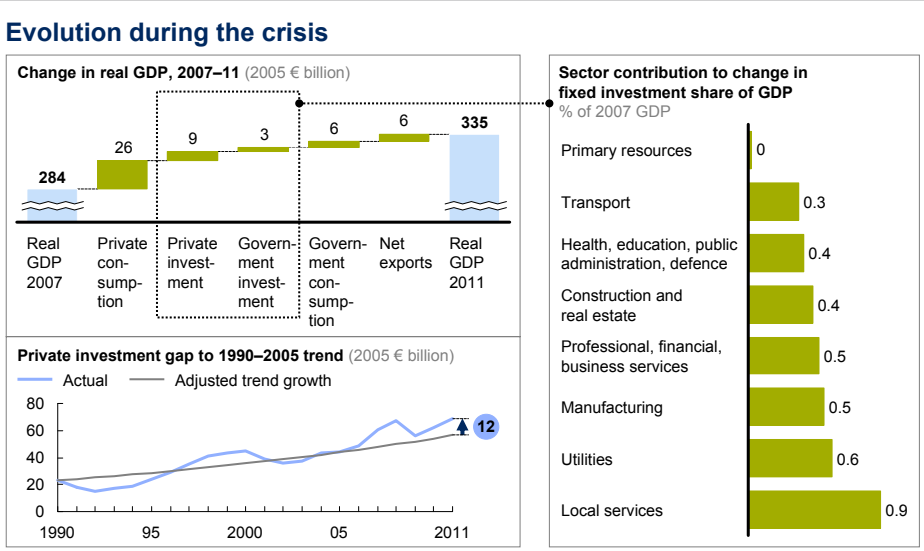
Between 2007 and 2011, Poland's real GDP increased from €284 billion to €335 billion. All elements of GDP rose during this period. Private and government consumption together increased by more than €32 billion, while private and government investment increased by nearly €18 billion. Investment in all eight sector groups rose during these years. Local services, manufacturing, and utilities contributed the most to the overall rise in fixed investment. Poland's private investment was €12 billion above its working-population-adjusted trend at the end of 2011.

In 2003, McKinsey research called for a renewed focus on boosting foreign direct investment.[101] Since then, Poland's fixed investment rate has risen steadily but further improvement in private investment is possible. Looking ahead at sectors to prioritise on the size criterion, local services, manufacturing, and construction and real estate are the largest sector groups, while health, education, public administration, and defence, and utilities are also significant. On the second criterion, the capital stock per worker methodology indicates that the sector groups with the greatest potential for further investment are: primary resources; utilities; and health, education, public administration, and defence.

101 *Poland—Europe's service center? New foreign direct investment opportunities in Poland*, McKinsey & Company, October 2003.

Exhibit A14. Poland





SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

Portugal

In the 1980s, Portugal's investment rate underwent a V-shaped contraction before climbing again from 1991 onwards (Exhibit A15). Between 2000 and 2005, Portugal experienced above-average investment in health, education, public administration, and defence, transport, and utilities, although the investment rate fell towards the average throughout this period. The investment rate fell consistently after 2007 and by 2011 was below the EU top 15 average.

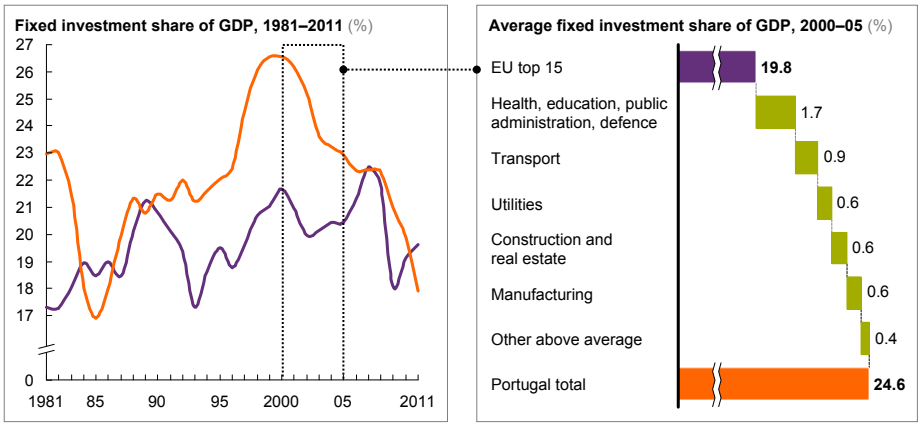
Portugal's real GDP fell modestly from €168 billion in 2007 to €163 billion in 2011. Private consumption and investment together dropped by nearly €14 billion during this period, while government consumption and investment were flat and net exports increased by nearly €8 billion. Investment in all eight sector groups fell during these years. Construction and real estate and manufacturing experienced the largest drops. Portugal's private investment remained below its working-population-adjusted trend at the end of 2011. We estimate that the gap to the trend for private investment was €13 billion, larger than the gap between 2007 and 2011.

Looking ahead at sectors to prioritise on the size criterion, aside from construction and real estate, the health, education, public administration, and defence sector group and local services are the largest. On the second criterion, the capital stock per worker methodology indicates that the sector groups with the greatest potential for further investment are construction and real estate, and primary resources. Previous MGI research noted that Portugal could attract more investment if it raised productivity by, for instance, addressing a high level of informality in the economy, relatively heavy regulation of product markets, cumbersome planning and licensing processes, and labour market rigidities.[102]

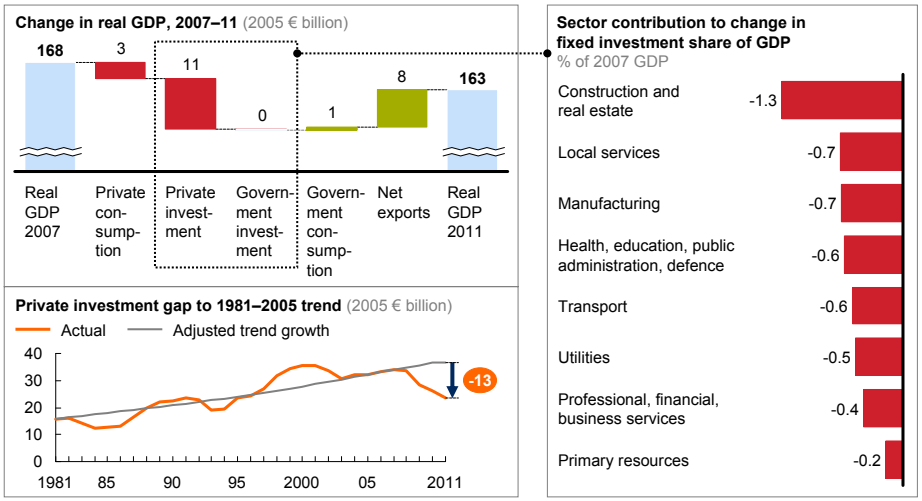
102 *Portugal 2010: Increasing productivity growth in Portugal*, McKinsey Global Institute, September 2003.

Exhibit A15. Portugal

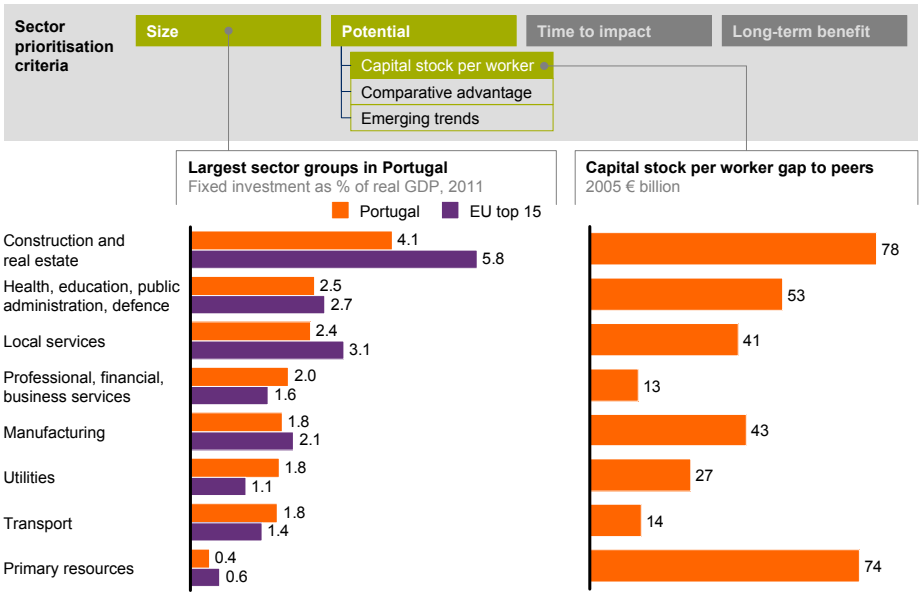
Pre-crisis investment trends



Evolution during the crisis



Initial view of sector prioritisation



SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

Spain

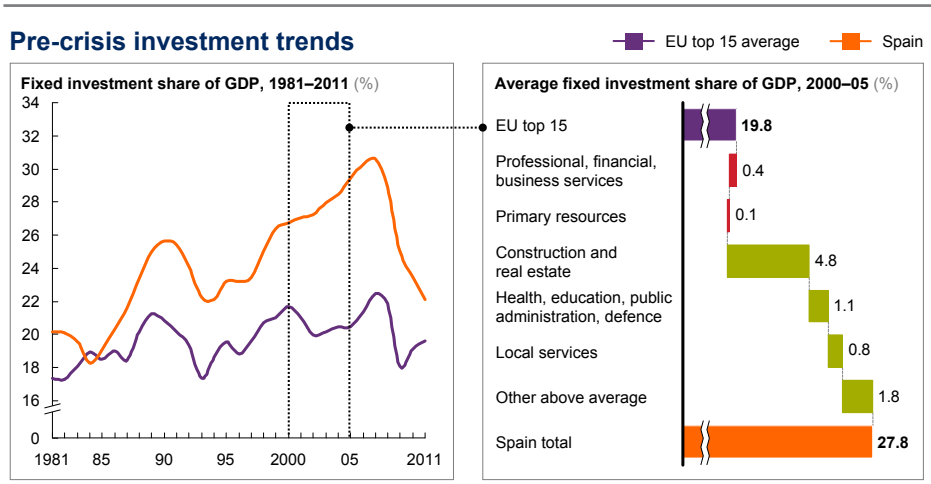
Since the 1980s, Spain's investment rate has consistently exceeded the average in the EU top 15 (Exhibit A16). Between 2000 and 2005, the investment rate further diverged from that average. Spain had above-average investment in: construction and real estate; health, education, public administration, and defence; and local services. Investment lagged slightly behind the average in professional, financial, and business services and in primary resources. The investment rate fell towards the EU top 15 average between 2007 and 2011 but remained well above it at the end of 2011.

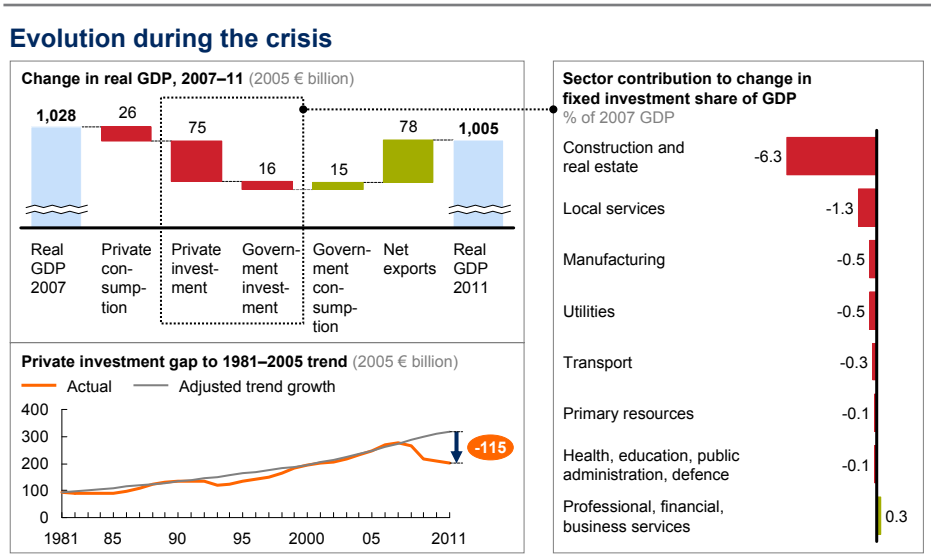
In recent times, Spain's real GDP has stagnated, standing at €1,028 billion in 2007 and €1,005 billion in 2011. Government consumption and net exports together increased by €93 billion during this period, but private investment fell by €75 billion, compounded by a combined fall in private consumption and government investment of over €41 billion. Investment in seven of the eight sector groups fell during these years, led by declines in the construction and real estate sector group and manufacturing. Spain's private investment remained well below its 1981 to 2005 working-population-adjusted trend at the end of 2011. We estimate that the gap to the trend for private investment was €115 billion, much larger than the difference between 2007 and 2011.

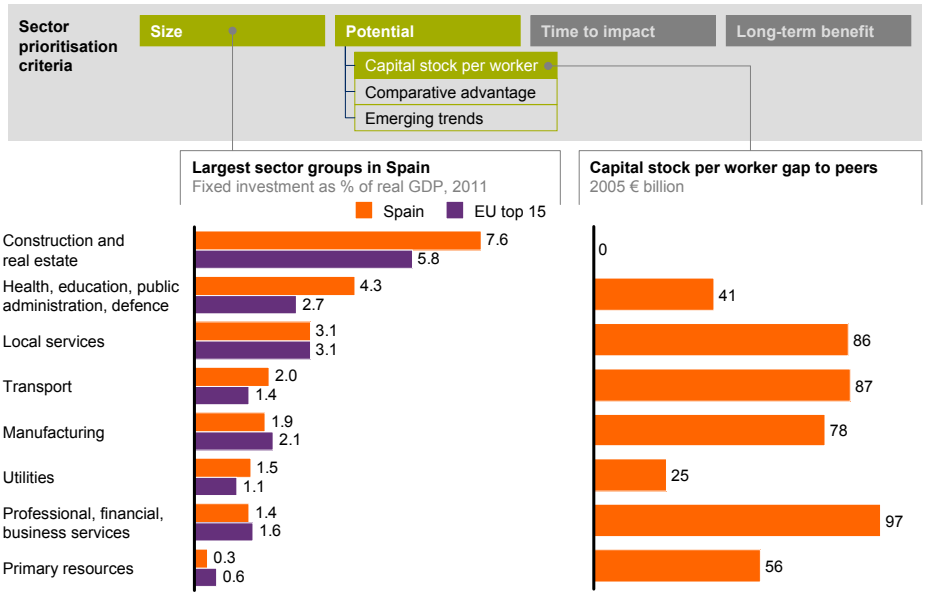
Looking ahead at sectors to prioritise on the size criterion, the construction and real estate sector group and health, education, public administration, and defence are the largest, while local services and transport are also significant. On the second criterion, the capital stock per worker methodology indicates that the sector groups with the greatest potential for further investment are professional, financial, and business services, transport, and local services. This is consistent with previous McKinsey research, which recommended government action to foster a healthier ecosystem in business services by promoting standards or certifications to generate confidence, and recommended pro-competition reforms in local services, for example by reducing barriers to new entrants, restrictions on opening hours, and labour market regulation.[103] This work also found potential for further investment in rail freight transport.

103 *A growth agenda for Spain*, McKinsey & Company and Fundación de Estudios de Economía Aplicada (FEDEA), December 2010.

Exhibit A16. Spain







SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

Sweden

Since the 1980s, Sweden's investment rate has trailed behind the average in the EU top 15 (Exhibit A17). Between 2000 and 2005, the investment rate began to catch up with that average. Sweden had above-average investment in the manufacturing, transport, and utilities sector groups. Investment lagged behind the average in the construction and real estate sector group and local services. The investment rate fell less than in other large European economies between 2007 and 2011 and stood close to the EU top 15 average at the end of 2011.

Sweden's real GDP grew from €338 billion in 2007 to €351 billion in 2011. Private and government consumption together increased by over €14 billion during this period, with a small fall in private investment offset by a small rise in government investment. Investment in four of the eight sector groups fell during these years. A fall in construction and real estate investment was partly offset by increases in the health, education, public administration, and defence sector group and utilities. Sweden's private investment remained slightly below its working-population-adjusted trend at the end of 2011. We estimate that the gap to the trend for private investment was over €5 billion, well above the difference between 2007 and 2011.

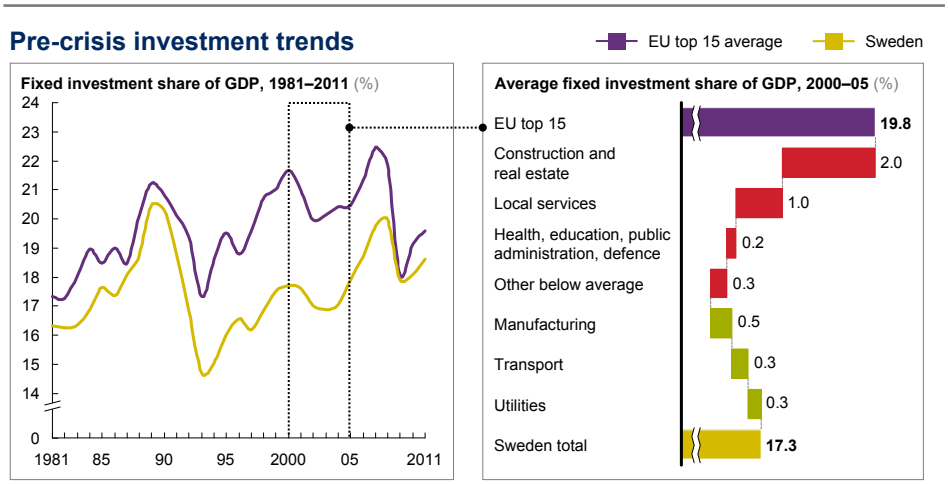
Looking ahead at sectors to prioritise, on the size criterion, the construction and real estate sector group and health, education, public administration, and defence are the largest, while local services and manufacturing are also significant. On the second criterion, the capital stock per worker methodology indicates that the sector groups with the greatest potential for further investment are: construction and real estate; local services; and health, education, public administration, and defence. MGI research has previously suggested the large scope Sweden has to become a world leader in higher education and to unlock private investment in local services through further deregulation.[104] Investment in the construction and real estate sector group has lagged behind other sector groups in Sweden for many years, and its fall between 2007 and 2011 exceeded all other sector groups in Sweden.[105] There may be potential for additional private investment in these sectors, for example, through reforming regulation in the construction sector to increase competition and reduce unnecessary losses in construction projects.[106]

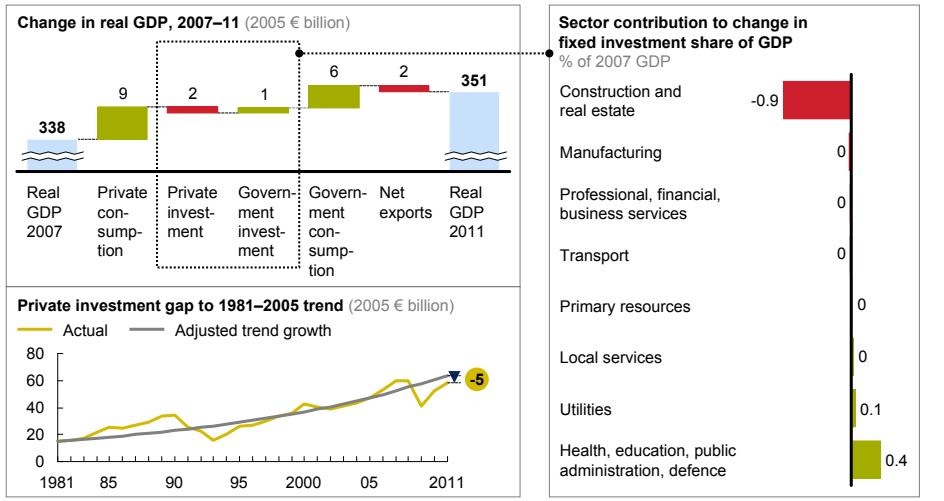
104 *Tillväxt och förnyelse i den svenska ekonomin: Utveckling, nuläge och prioriteringar inför framtiden (Growth and renewal in the Swedish economy: Development, current status, and future priorities)*, McKinsey Global Institute, May 2012.

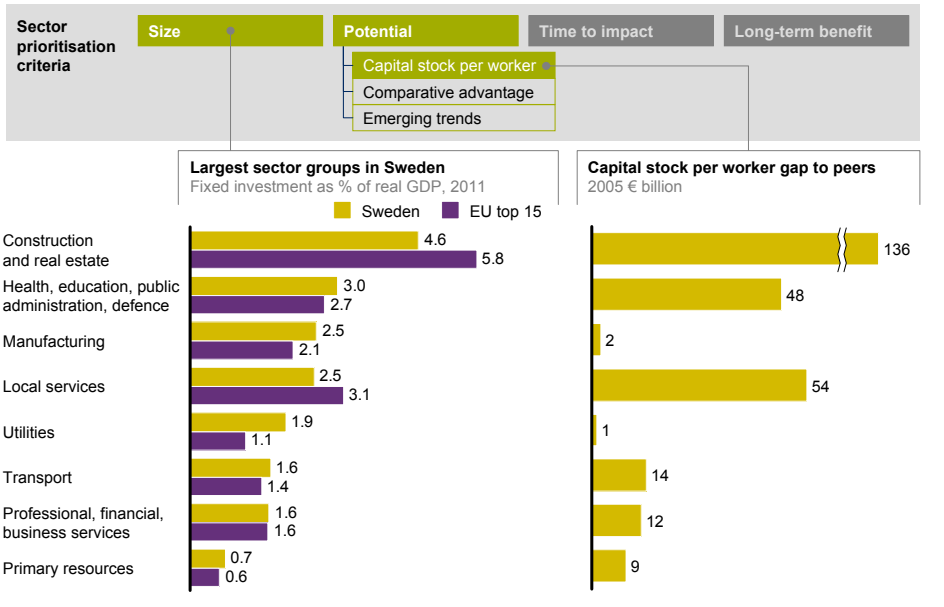
105 IHS Global Insight.

106 *Tillväxt och förnyelse i den svenska ekonomin: Utveckling, nuläge och prioriteringar inför framtiden (Growth and renewal in the Swedish economy: Development, current status, and future priorities)*, McKinsey Global Institute, May 2012.

Exhibit A17. Sweden







SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

United Kingdom

Since 1981 there has been a persistent gap between the United Kingdom's investment rate and the average in the EU top 15 (Exhibit A18). Between 2000 and 2005, sectors in which private investment lagged the most behind the average included construction and real estate, manufacturing, and health, education, public administration, and defence. The investment rate fell just as sharply as in other large European economies after 2007 and dipped again in 2011 even as the EU top 15 average began to recover.

In recent times, the United Kingdom's real GDP fell, standing at €2,049 billion in 2007 and €1,991 billion in 2011. Private consumption fell by €56 billion, although this was offset by rises in government consumption and net exports of €13 billion and €50 billion, respectively. Private investment fell even further, posting a €72 billion decline, offset only slightly by a €7 billion increase in government investment. Investment in seven of the eight sector groups fell during these years. The construction and real estate group and local services contributed the most to the overall decline in fixed investment. In the United Kingdom, even more than most countries of the EU top 15, private investment remained well below the UK working-population-adjusted trend at the end of 2011. We estimate that the gap to the trend for private investment was €155 billion, significantly larger than the difference between 2007 and 2011.

The fall in investment during the crisis and the United Kingdom's structural investment gap with its EU top 15 peers suggest that the economy has significant potential for more investment. Looking ahead at sectors to prioritise on the size criterion, the construction and real estate sector group and local services are among the largest, while health, education, public administration, and defence are also significant.[107] On the second criterion, the capital stock per worker methodology indicates that the sector groups with the greatest potential for further investment are: construction and real estate; health, education, public administration, and defence; local services; and transport. As we have noted, reform of the planning regime could spur further investment in construction and real estate, and further investment in education could enable further construction and expansion of university campuses. Previous MGI research has noted the importance of these and other reforms.[108] An investment gap exists even in manufacturing—a long-term focus for policy makers—and government should undertake a detailed audit of barriers to see how further investment can be encouraged.[109]

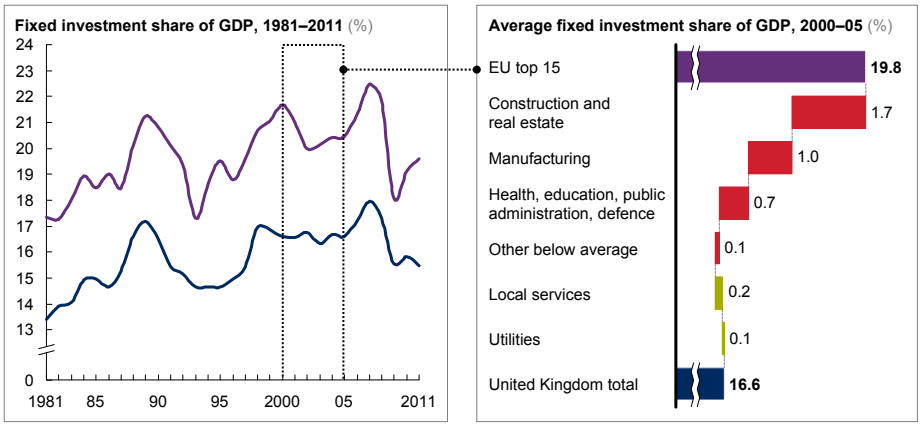
107 The United Kingdom's underinvestment in housing is at odds with the perception of the United Kingdom as an economy that is overly dependent on real estate. The United Kingdom does have a high proportion of mortgage debt to GDP. However, this debt is used to finance the purchase of existing homes rather than building new homes. This analysis confirms the potential for more investment in the United Kingdom by expanding the stock of housing.

108 *From austerity to prosperity: Seven priorities for the long term*, McKinsey Global Institute and McKinsey & Company, November 2010.

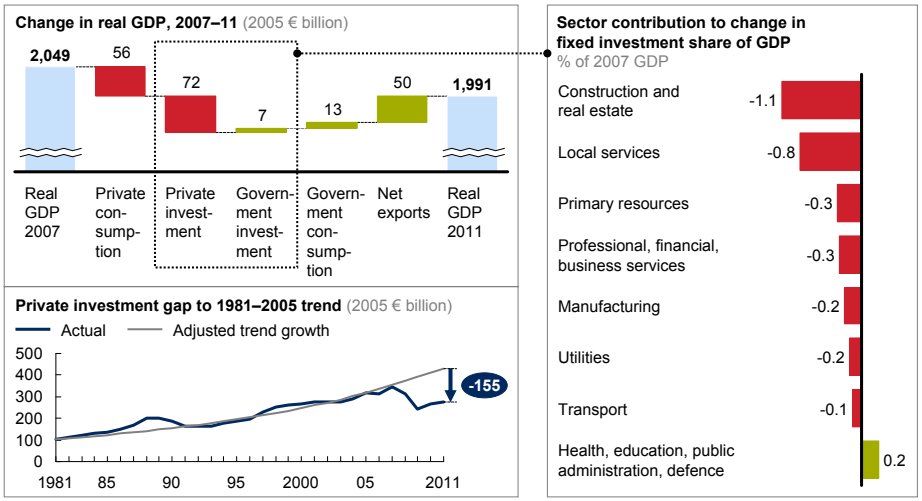
109 *Manufacturing the future: The next era of global growth and innovation*, McKinsey Global Institute, November 2012.

Exhibit A18. United Kingdom

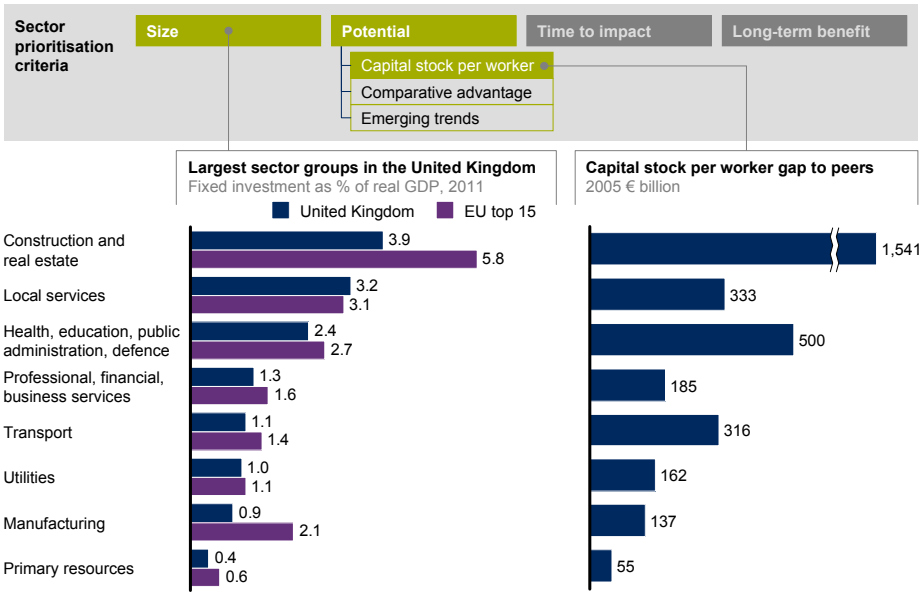
Pre-crisis investment trends



Evolution during the crisis



Initial view of sector prioritisation



SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

B. Technical notes

This appendix provides additional detail on the methodology, definitions, and data sources that we use in this report. Specifically, it expands on the following points:

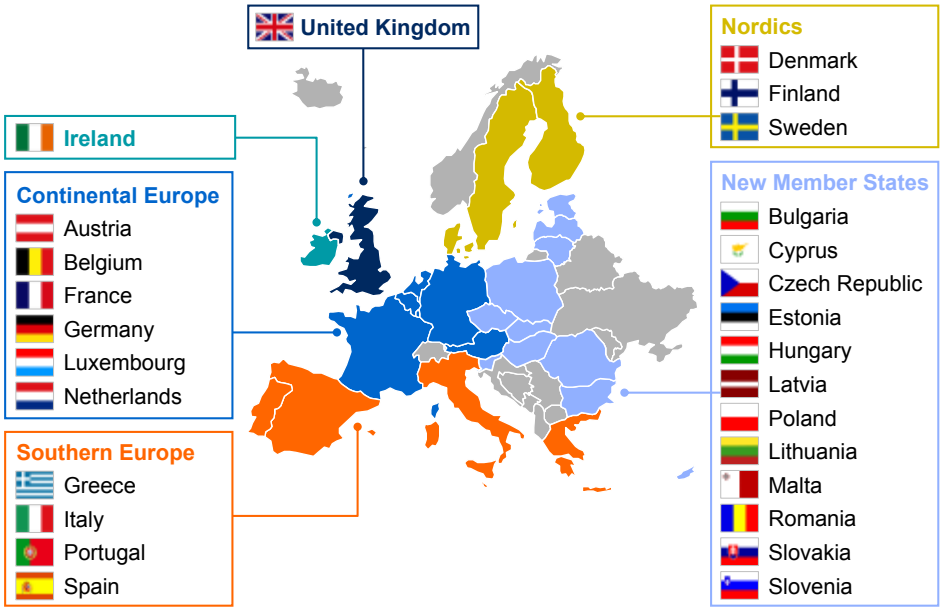
1. Grouping EU-27 economies into geographic clusters
2. Decomposing GDP
3. Identifying relevant historical episodes
4. Calculating the long-term trend in private investment
5. Comparing the public discussion of fiscal policy and microeconomic reform
6. Estimating the size of microeconomic barriers to investment

1. GROUPING EU-27 ECONOMIES INTO GEOGRAPHIC CLUSTERS

Following previous MGI research, we group the EU-27 economies into six geographic clusters, which tend to show largely distinct patterns of aggregate performance (Exhibit A19).[110]

Exhibit A19

Geographic clusters in the EU-27



SOURCE: McKinsey Global Institute analysis

110 *Beyond austerity: A path to economic growth and renewal in Europe*, McKinsey Global Institute, October 2010.

2. DECOMPOSING GDP

To track the evolution of real GDP, we decompose it into the classical "CIGNX" expenditure elements of the national accounts: private consumption (C), investment (I), government consumption (G), and net exports (NX). We source data on each expenditure element from IHS Global Insight, supplementing them where necessary with data from the Economist Intelligence Unit.

Following standard practice, we define "investment" as real gross fixed capital formation in assets such as infrastructure, housing, plant, machinery, and equipment plus real stock building (also known as net changes in inventories). This definition does not include investment in shares, bonds, or other financial assets. We define "net exports" as real exports of goods and services less real imports of goods and services. We calculate all real GDP values as the sum of these expenditure elements, not including the "statistical discrepancy" between the income and expenditure measures of GDP. All data on GDP and its components are shown in constant 2005 euros.

Estimating private and government investment

To provide a sharper focus on private (as opposed to government) investment, we have attempted to decompose combined investment where possible. At the economy-wide level, IHS Global Insight provides data on private fixed investment and government fixed investment for 14 EU-27 countries, drawing from a range of governmental and private economic sources including official releases of national accounts data. These are originally compiled from the investment spending listed in company tax returns in the case of private investment, and from the accounts of government bodies in the case of government investment.[111] For the remaining 13 countries, we assume a ratio of private to total fixed investment equal to the non-weighted average of the other 14.[112] We assume that all stock building is private investment—i.e., we assume that government inventories are zero.

Obtaining subsector investment data

For fixed investment at the subsector level, we use IHS Global Insight data for the 20 largest EU economies by GDP using International Standard Industrial Classification (ISIC) subsectors.[113] We aggregate these subsectors into eight groups of sectors based on earlier MGI research: primary resources; construction and real estate; local services; health, education, public administration, and defence; manufacturing; utilities; transport; and professional, financial, and business services (Exhibit A20).[114] Using this approach, we are able to isolate trends in investment by sector group at the country level (e.g., construction and real estate in Spain).

---

111 The 14 countries are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Sweden, Spain, and the United Kingdom.

112 The 13 countries for which data are not available are Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovakia, and Slovenia.

113 IHS Global Insight classifies subsectors for 2007 data using Revision 3 of the ISIC. The 20 countries are Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden, and the United Kingdom.

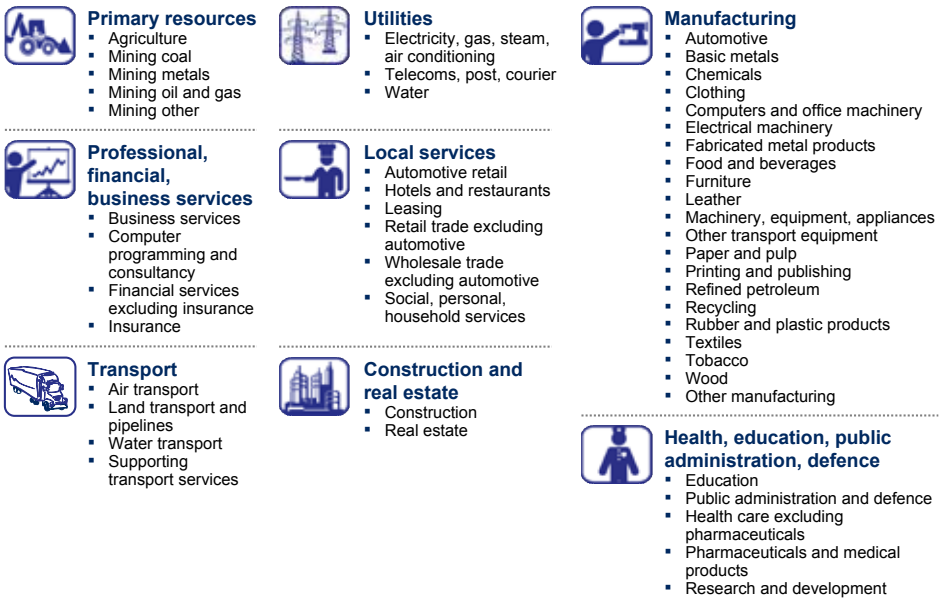
114 *From austerity to prosperity: Seven priorities for the long term*, McKinsey Global Institute and McKinsey & Company, November 2010.

Available sector-level data do not break down fixed investment into private and government, and we have not attempted to do so. In the EU-27 in its entirety, government investment comprises only 12 percent of total investment.[115] We are therefore relatively comfortable that the inability to break down the government and private elements of investment in the EU does not materially affect the trends we outline in private investment. However, the lack of a breakdown clearly masks variation among sectors. For example, government investment is likely to comprise a far smaller share of fixed investment in the professional, financial, and business services sector group than in the health, education, public administration, and defence sector group. Sector-level data on investment therefore need to be treated with some caution.

We further note that sector-level investment data are available for only 20 of the EU-27 and that we therefore do not have a complete view. Nevertheless, the available data are likely to be representative, given that the seven countries for which we do not have data account for only 1 percent of EU-27 fixed investment and GDP.[116]

Exhibit A20

We have classified the 50 subsectors into eight sector groups



SOURCE: United Nations Statistics Division; McKinsey Global Institute analysis

115 Weighted average of 2007 levels, for 14 countries where IHS Global Insight data are available

116 Those seven countries are Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, and Slovenia.

3. IDENTIFYING RELEVANT HISTORICAL EPISODES

From the data set of GDP aggregates used in this report, we identified 41 historical episodes in which (1) annual real GDP contracted and (2) private investment fell more than 10 percent from GDP peak to GDP trough (Exhibit A21). We take OECD membership as a proxy definition of advanced economies. Therefore, to be included in our analysis, a country must have joined the OECD by the year real GDP peaked before contracting. We exclude all episodes from 2006 to avoid current episodes during which GDP declined. As illustration, the episode "Belgium 1980–81" means that GDP peaked in 1980, contracted in 1981, and then picked up again in 1982; private investment in Belgium contracted more than 10 percent between 1980 and 1981, and Belgium was a member of the OECD in 1980.

Exhibit A21

Our historical analysis centres on 41 episodes in advanced economies from 1973 to 2005 when GDP fell and private investment fell by more than 10 percent

Episodes included in sample

EU-27

EU-15 (24 episodes)

- Austria 1974–75
- Belgium 1980–81
- Denmark 1973–75
- Denmark 1979–81
- Denmark 1992–93
- Finland 1989–93
- France 1992–93
- Greece 1973–74
- Greece 1980–83
- Greece 1986–87
- Ireland 1982–83
- Italy 1992–93
- Luxembourg 1980–81
- Netherlands 1974–75
- Netherlands 1980–82
- Portugal 1974–75
- Portugal 1982–84
- Portugal 1992–93
- Spain 1992–93
- Sweden 1980–81
- Sweden 1990–93
- United Kingdom 1973–75
- United Kingdom 1979–81
- United Kingdom 1990–91

EU New Member States (1 episode)

- Czech Republic 1996–98

Non EU-27

Asia-Pacific (10 episodes)

- Australia 1982–83
- Australia 1990–91
- Canada 1981–82
- Canada 1990–91
- Japan 1997–99
- Mexico 1994–95
- New Zealand 1973–78
- New Zealand 1990–91
- South Korea 1997–98
- United States 1973–75

Other (6 episodes)

- Iceland 1982–83
- Iceland 1990–92
- Norway 1987–88
- Switzerland 1990–93
- Turkey 1993–94
- Turkey 1998–2001

SOURCE: IHS Global Insight; Economist Intelligence Unit; McKinsey Global Institute analysis

4. CALCULATING THE LONG-TERM TREND IN PRIVATE INVESTMENT

To calculate the long-term trend in private investment, we divide the historical data for private investment by the working-age population, defined as those aged from 15 to 64 and sourced from Eurostat. We use the working-age population because it is the best measure of long-term changes to the stock of labour that does not vary with the economic cycle.

We calculate the long-term trend for the EU-15 countries rather than the EU-27 because consistent long-term data are available only for the EU-15 and only from 1981 onwards. For this reason, and to remove the effect of Europe's investment boom and subsequent bust, we define the long-term trend as the period from 1981 to 2005. We calculate the compound annual growth rate of the resultant time series of private investment per member of the EU-15 working-age population for the years 1981 to 2005 and create a trend line of this time series by applying this constant growth rate forward from the 1981 level through to 2011. We multiply this by the actual working-age population for these years to create the trend line shown in Exhibit 4.

5. COMPARING THE PUBLIC DISCUSSION OF FISCAL POLICY AND MICROECONOMIC REFORM

To compare the public discussion of fiscal policy and microeconomic reform, we use a Factiva press search of "major news and business publications" in the EU between January 1, 2009, and November 1, 2012. As a proxy for a discussion of fiscal policy, we count the number of articles mentioning one or more of 20 terms: economic stimulus, fiscal stimulus, stimulate demand, countercyclical, fiscal policy, demand management, Keynesian, demand stimulation, fiscal consolidation, excessive deficit, reduce deficits, budget consolidation, budget balancing, deficit reduction, debt reduction, balance the budget, austerity programme, government spending cuts, public spending cuts, or government cuts. As a proxy for discussion of microeconomic reform, we count the number of articles mentioning one or more of 18 terms: microeconomic activism, structural reform, microeconomic reform, regulatory reform, structural barriers, microeconomic barriers, regulatory barriers, structural restrictions, microeconomic restrictions, regulatory restrictions, supply-side activism, supply-side reform, red tape, deregulation, deregulate, liberalisation programme, or liberalisation reforms.

6. ESTIMATING THE SIZE OF MICROECONOMIC BARRIERS TO INVESTMENT

To estimate the size of microeconomic barriers to investment by subsector and by EU country, we have estimated the capital stock per worker immediately prior to Europe's recent downturn for every subsector in the 20 largest EU economies. We compare the capital stock per worker at the subsector level of European countries that are relatively similar to each other using five steps: (i) we estimate the capital stock at the country subsector level in 2007, the year before the current crisis began; (ii) we divide the capital stock by the number of workers at the country subsector level in 2007; (iii) we exclude subsectors where activity is too heterogeneous or where convergence of capital stock per worker is unrealistic for some other reason; (iv) we sort European countries into three groups according to their average compensation per worker; and (v) we compare the capital stock per worker in a given country to the mean of the countries in the top half of its peer group in that same subsector. We now discuss each of these five steps in turn.

(i) Estimating the capital stock

We define "capital stock" as the value of total fixed capital assets at the end of each period, excluding inventories and other working capital.[117] We estimate the 2007 capital stock at the subsector level for the 20 largest EU countries for which subsector investment flow data are available. We deliberately chose 2007 because it pre-dates Europe's economic stagnation. We use the "perpetual inventory method" to estimate the capital stock.[118] This is the most widely used approach to measure a stock of fixed assets. It assumes that the capital stock comes from accumulating the annual flow of investment each year at constant prices and adjusting for retirement and depreciation:

$$K_{i,t} = K_{i,t-1}(1-\delta_i) + I_{i,t}$$

where $K_{i,t}$ is the capital stock in subsector i at time t, δ_i is the depreciation rate for that subsector, and $I_{i,t}$ is the real fixed investment in subsector i in year t. Thus, the capital stock in any period is the previous capital stock, less depreciation, plus investment at constant prices in that year.

Following standard practice, we construct the initial capital stock using a growth rate approach that is based on the assumption that investment will replace depreciated assets and add capital to maintain growth:

$$I_{i,1} = K_{i,0}\,(g_i + \delta_i)$$

where $I_{i,1}$ is the real fixed investment in subsector *i* in year 1, $K_{i,0}$ is the initial capital stock, g_i is the annual growth rate in investment, and δ_i is the depreciation rate in subsector *i*. We can rewrite this identity to derive the initial capital stock, $K_{i,0}$:

$$K_{i,0} = \frac{I_{i,1}}{g_i + \delta_i}$$

117 This was the definition used in *Farewell to cheap capital? The implications of long-term shifts in global investment and saving,* McKinsey Global Institute, December 2010.

118 *Measuring capital—OECD manual*, OECD, 2009.

To estimate the initial capital stock in each subsector, we assume a constant growth rate equal to the compound annual growth rate of GDP in the first five years of the series based on available data on GDP and investment. To estimate both the initial capital stock and to depreciate subsequent investment, we use one depreciation rate per subsector for all countries and all years, although differences exist in depreciation across countries and over time. We select the geometric depreciation rate for each subsector by taking the average of German subsector depreciation rates from 2003 to 2007, sourced from the Statistisches Bundesamt, the German National Statistics Office. We use IHS Global Insight data on subsector fixed investment for the 20 EU countries for which it is available.

(ii) Dividing capital stock by the number of workers

We use Eurostat employment data for 2007 for the 20 EU countries on which we focus. Eurostat classifies subsectors for 2007 data using version 1.1 of the Statistical Classification of Economic Activities in the European Community (NACE).[119] To reconcile the difference in sector classification between IHS Global Insight and Eurostat, we map comparable subsectors across the two data sets using the lowest common denominator. For example, the lowest common denominator of the Eurostat NACE 1.1 subsector Publishing, printing and reproduction of recorded media and the IHS Global Insight ISIC Rev.3 subsectors (D221) Publishing, (D222) Printing and Related Services, and (D223) Reproduction of Recorded Media, is a single subsector that we designate "printing and publishing".

(iii) Excluding subsectors

We exclude subsectors where it is unreasonable to expect convergence for any number of reasons. One reason is that a particular subsector is not likely to be homogenous enough for comparison across European countries and available data are not sufficiently detailed to pick up differences between this subsector in different countries. For example, the "manufacturing–other" subsector is likely to involve different activities in the various countries of the EU. Since we cannot identify these constituent activities, we take a conservative approach and exclude this subsector. A second reason is that activity in a subsector may be excessively dependent on local geography—for instance, "mining metals", which may entail different types of mining depending on the country—and therefore have different capital requirements that hinge on the availability of, and ease of access to, local resources. A third reason is that pre-crisis levels of private investment may have reflected "bubble" conditions that may not be present elsewhere, as in the case of the construction and real estate subsectors. In total, we exclude 21 of the 50 subsectors from the conservative estimate in Chapter 3. To give a fuller picture, in Appendix A we include all these subsectors.

119 NACE stands for *nomenclature statistique des activités économiques dans la Communauté Européenne*.

(iv) Sorting countries into peer groups using average compensation per worker

Differences in the cost of labour may lead to differences in the capital-labour mix among different European countries. Firms in countries with a significantly higher cost of labour may substitute labour with capital and therefore have higher levels of capital stock per worker. Although microeconomic barriers may cause such differences (e.g., if labour market regulation increases the cost of labour by making it difficult to hire new employees), we do not consider that such countries are good benchmarks for this analysis. We therefore cluster the 20 EU countries on which we focus into three peer groups according to their average cost of labour defined as total compensation divided by total employees at the economy level. These three peer groups are: (1) Western European economies that have the highest levels of compensation per worker; (2) Southern European economies that largely border the Mediterranean and have intermediate levels of compensation per worker; and (3) the Eastern European economies that joined the EU in the 21st century and whose compensation per worker is lowest.[120]

(v) Comparing countries with the average of top performers in their peer group

For each of the subsectors, we rank the countries in each peer group in descending order of capital stock per worker. For the countries below the average of the top half in a given subsector, we calculate the amount of investment that would be required to converge their capital stock per worker to the mean of the countries in the top half of their peer group.[121] The sum of these amounts is the "convergence gap" that represents the amount of expected investment that would result if microeconomic barriers responsible for the divergences in capital stock per worker were dismantled.

In Appendix A, we adopt a slightly different approach for the construction and real estate subsectors. Because part of the capital stock in these subsectors is an output of production rather than a factor of production (for example, residential dwellings) we divide the combined capital stock in these two subsectors by the total population in each country. We thereby obtain capital stock in construction and real estate per head of population. We rank countries in each peer group and calculate the investment that would be required to converge each country below the average to the mean of the entire peer group.

Even after making these adjustments, some questions remain. For instance, we have not made a separate adjustment for comparative advantage. We believe that differences in comparative advantage largely reflect variations in the size of a sector and therefore that our approach already captures them. Although there are other options such as total factor productivity, we believe the methodological challenges of estimating these other proxies outweigh the benefit from using

120 The Western European economies are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, the Netherlands, Sweden, and the United Kingdom. The Southern European economies are Greece, Italy, Portugal, and Spain. The Eastern European economies are Bulgaria, the Czech Republic, Hungary, Poland, Romania, and Slovakia.

121 The Western group contains ten countries, and we therefore estimate the investment needed for the bottom five countries to reach the average of the top five. For the Southern group, we take the average of the top two; for the Eastern group, we take the average of the top three.

them.[122] Nor have we used purchasing power parity (PPP)-adjusted values in the perpetual inventory method. For example, in the construction subsector, the cost to build an identical structure can vary between countries by 50 percent or more. Controlling for this would require PPPs that reflect the investment of a sector rather than the prices in the sector. These are not readily available.[123] For simplicity, when calculating the total convergence gap, we have simply excluded the subsectors where this is likely to be problematic in step (iii) above.

122 Total factor productivity is calculated by (i) regressing output against capital and labour levels; (ii) assuming a Cobb-Douglas or other well-defined production function; (iii) estimating the coefficients for labour and capital; and (iv) designating the unexplained residual as total factor productivity. However, data quality varies among countries, which would call into question the results of this analysis.

123 One way to do so would use construction sector gross output PPPs, updated where necessary by relative gross output deflators at the sector level.

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