Introduction

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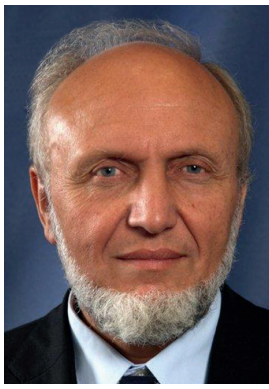


Ladies and Gentlemen,

This year we are focussing on competitiveness and innovation, and only indirectly on the European crisis. Do you remember the Lisbon European Council statement of the year 2000? "The Union has today set itself a new strategic goal for the next decade to become the most competitive and dynamic knowledge-based economy in the world by 2010". What happened? Looking at growth in selected countries and regions up to the present, Chinese growth is off the chart followed by Sub-Saharan Africa and the ASEAN countries, which are all above the world average. At the very bottom are the EU28 and the Eurozone, the laggards of the world. The Lisbon goals have not been reached; aspirations did not match reality (see Figure 1).

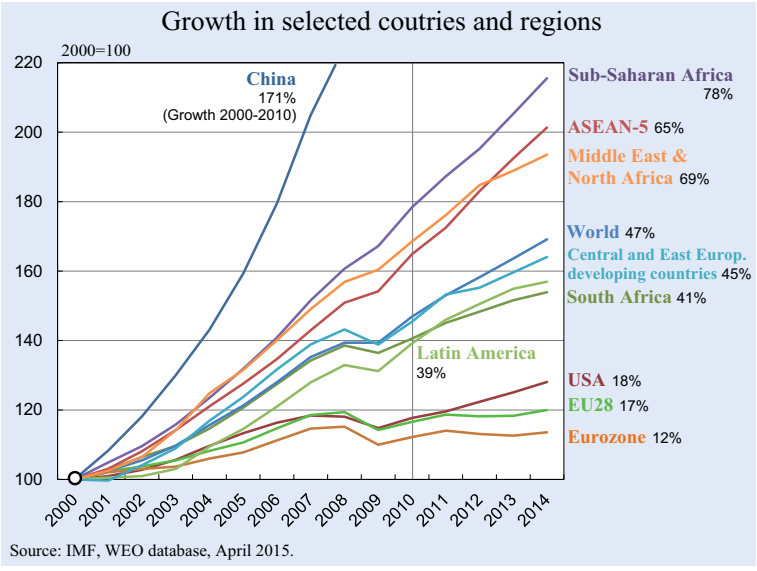
There were many projects that were not successful. Do you remember the Google competitor Quarero supported by Chirac and Schroeder? It failed just like Exalead, Lycos and Theseus. In this case Europe was not successful in competing with the Americans. There were some good examples of policy action, however. Airbus has been very successful, as has the Ariane rocket project; and based on it the new Galileo endeavour, which will provide us with our own GPS system as of next year. These are common European projects that have succeeded.

Europe, unfortunately, is not developing evenly, as shown by comparing value-added in manufacturing as a share of GDP in Figure 2. Germany's share has remained constant over the years at 20 percent, but in other major economies' manufacturing share has declined, and in Britain the share is now only half of what it is in Germany. In terms of patent applications at the European Patent Office, Germany's share (37 percent) is as large as that of the next four countries below it combined (France 15 percent, the Netherlands 9.5 percent, Britain 8 percent and Sweden 6 percent) – see Figure 3. The competitiveness and innovation of the manufacturing sector is clearly uneven across Europe.

Some European countries opted to expand the government sector, but is the government able to deliver similar services and productivity as the private sector? Government expenditure is now 44 percent of GDP in Germany compared with 57 percent in France. Bringing the people who lost their jobs in the private sector into the public sector may help temporarily, but not in the long term (see Figure 4).

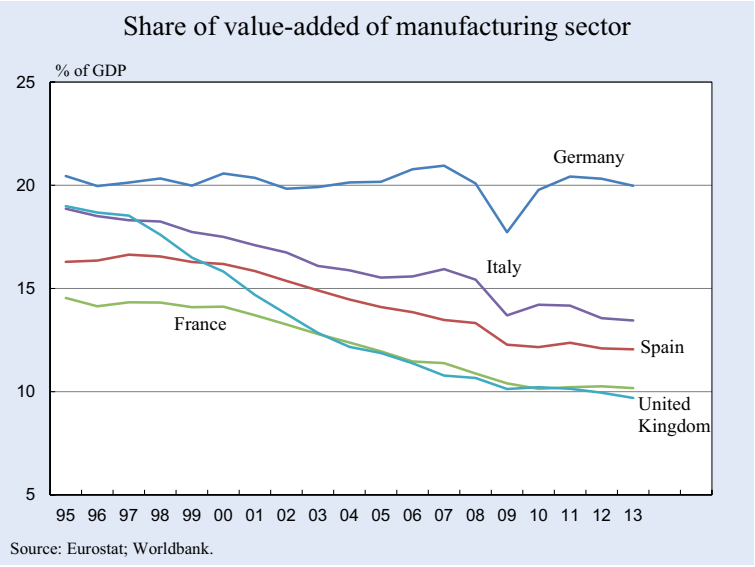
Emerging from the crisis has been difficult in manufacturing. German manufacturing output has now returned to its pre-crisis level, but it will take a decade for Germany to exceed its previous output peak. France has suffered an output decline of 17 percent and Italy, after a triple-dip recession, has seen a 25 percent down-

Figure 1



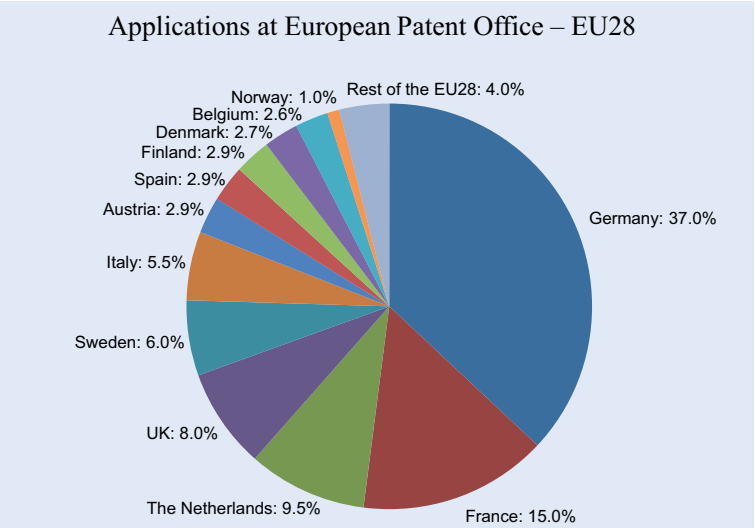
Source: IMF, WEO database, April 2015.

Figure 2



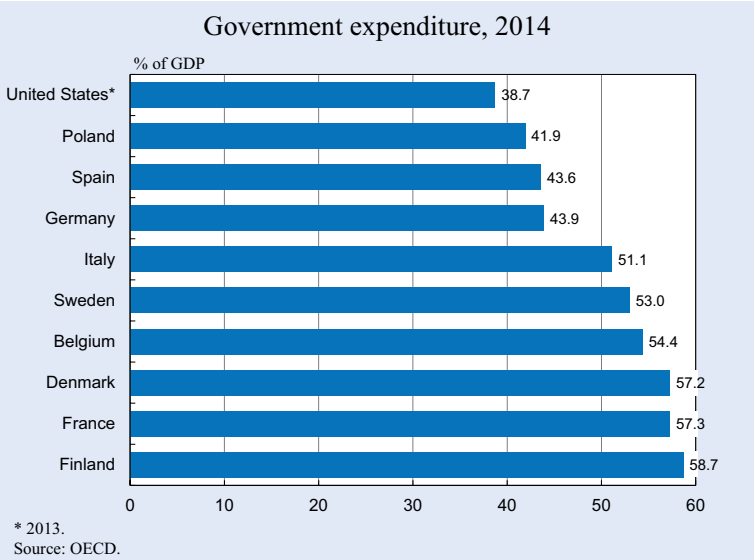
Source: Eurostat; Worldbank.

Figure 3



Source: European Patent Office.

Figure 4



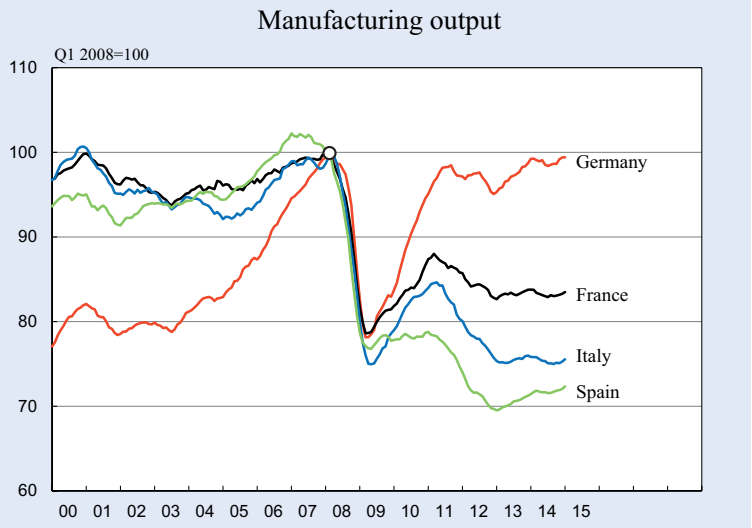
* 2013.
Source: OECD.

turn, while Spain posted a 30 percent dive, matching the decline in the Great Depression (see Figure 5). Europe has a deep and severe competitiveness problem.

As illustrated in Figure 6, the unemployment rate during Germany's own euro crisis ten years ago rose to 12 percent, but currently stands at 5 percent. France is now close to where Germany was 10 years ago, Italy is even above that level and Spain has a current unemployment rate of 23 percent. During its crisis, Germany introduced the Agenda 2010 reforms, which deprived millions of Germans of their second-tier unemployment compensation benefits, pushing them down to the social-assistance level and reducing their reservation wages, creating a low-wage sector, which did help. A look at the development of unemployment in Germany since 1970 shows an upward trend up to Agenda 2010 and a trend reversal thereafter, signalling an employment miracle (see in Figure 7). After every recession there had been an increase in unemployment of 800,000, but after the Agenda the upturn was 350,000 fewer, meaning that an additional 1.15 million jobs became available through this reform.

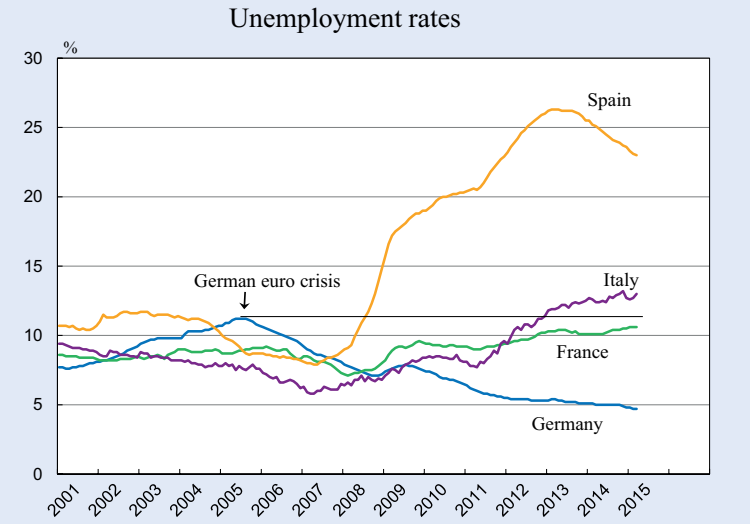
Other European countries stand before similarly difficult adjustment phases, and they have resulted in changes in price levels. A comparison of the GDP deflator in Figure 8 shows an increase since 1995. Spain experienced far higher inflation and a loss of competitiveness, and now in the crisis it is dis-inflating by keeping prices constant. This is the right path to follow, but it is a long and painful process. Italy is not yet dis-inflating and France is only

Figure 5



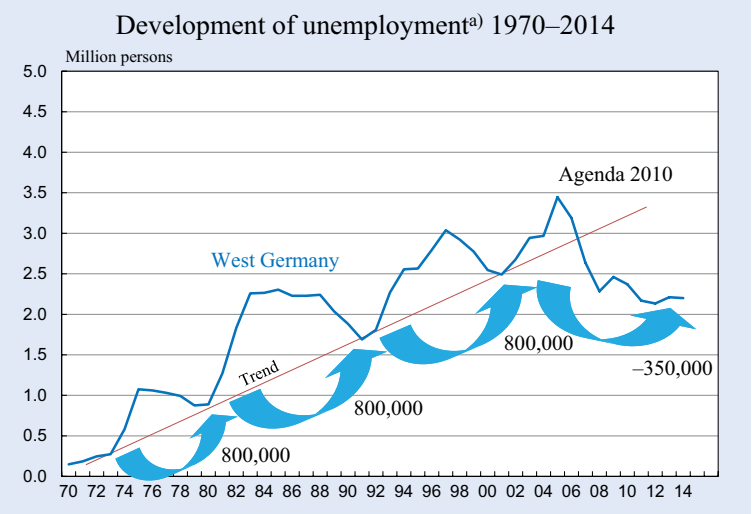
Source: Eurostat.

Figure 6



Source: Eurostat.

Figure 7



[a] West Germany including West Berlin.
Source: Federal Labour Office; regional differentiation of Berlin: Ifo Institute estimates.

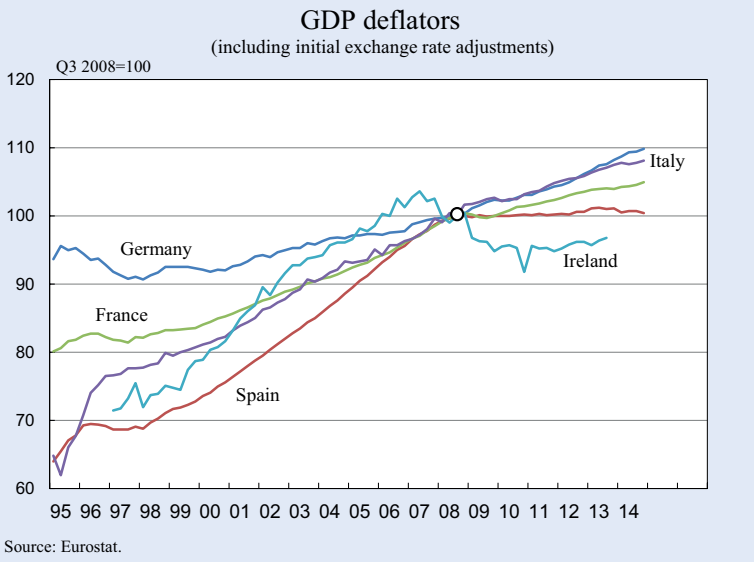
doing so to a limited extent. Ireland devalued by 13 percent in real terms against the rest of the Eurozone, giving it 20 percent growth in manufacturing output last year.

Innovation is one of the keys in the longer term. Innovation and growth are strongly correlated, as demonstrated in the calculation by Gregory Clark of world GDP per capita and important inventions from the eighteenth century until the present (see Figure 9). Universal technologies like fossil energy, electricity, etc. made a significant contribution to growth, as Robert J. Gordon showed in a similar study ("Does the 'New Economy' Measure Up to the Great Inventions of the Past?", *Journal of Economic Perspectives* 14, 49–74) – the IT effect itself accounted for 37 percent of aggregate worldwide growth from 1995 to 2000, as demonstrated in Figure 10.

Given that European societies are ageing, robots are taking over the jobs. VW now uses as many robots as it does people in manufacturing the car bodies for its Golf automobile series. In other words, robots are in the process of overtaking people in terms of quantity (see Figure 11).

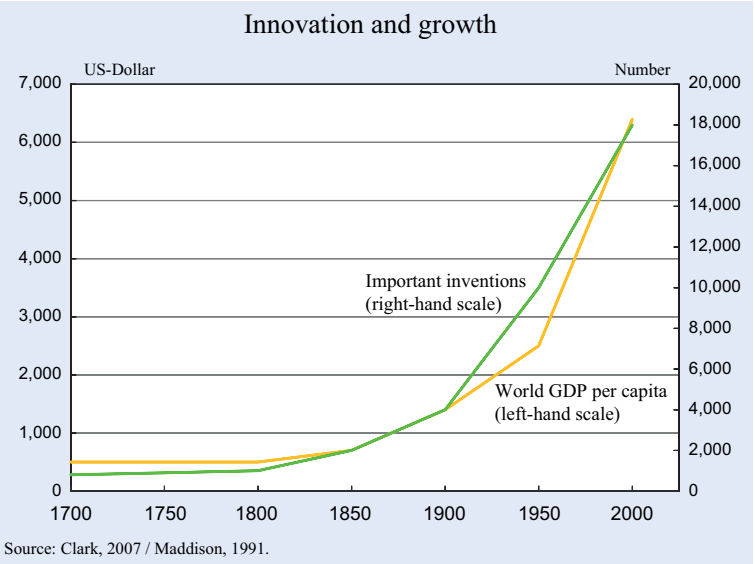
We are now heading toward the Economy 4.0, where the parts of a product communicate among themselves, all connected through an internet, and a central computer knows where each part is at a given point in time and what each machine is doing, thus automatising the whole production process. People now play only a small role in the synchronising of logistics. This makes production more flexible, more individualised than before, much faster and

Figure 8



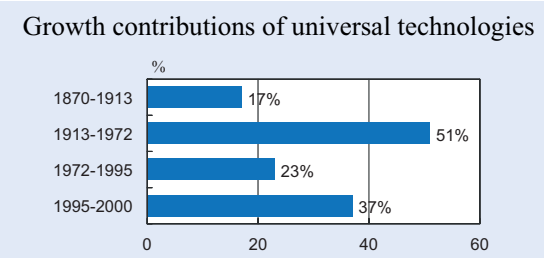
Source: Eurostat.

Figure 9



Source: Clark, 2007 / Maddison, 1991.

Figure 10



Source: Robert J. Gordon (2000), "Does the "New Economy" Measure Up to the Great Inventions of the Past?", Journal of Economic Perspectives 14, p. 49-74.

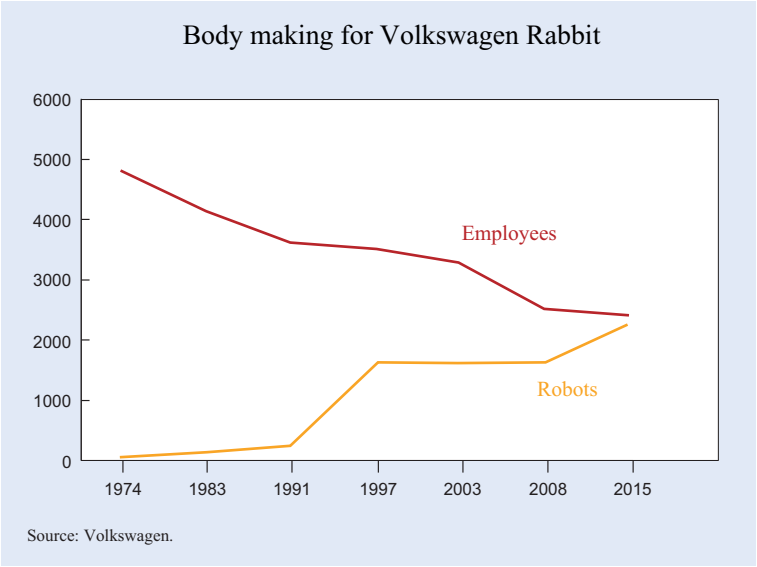
there is a huge gain in productivity. But we need communication standards for this process, which is a task for policy-makers.

Autonomous driving is coming, just in time for my old age, so I won't have to concentrate when driving long distances. Revolutions are in sight. Uber's market value of 40 billion US dollars is not just based on calling a taxi. Uber aims to take over the entire vehicle market, assuming that individuals will not own their vehicles in the future. If tomorrow's taxis cost little because they are computer-driven, they will be cheaper than cars, making car ownership unnecessary. Uber and the market obviously think that this is a revolution.

It will be a revolution because all sorts of transportation services will be synchronised and more efficient as a result. Drones may even fly goods to your backyard. 3D printing is much more than for art and photography: it means a decentralisation worldwide of the production process. We now have low-cost 3D home printers, but there will be more of them in the future and they will decentralise the production process throughout the world. We will all use the method that MAN employs. The company MAN produces diesel engines for ships and trucks, and 60 percent of the ton mileage of the world is transported using MAN engines. Since many of these machines are too big to be transported, MAN sells the design for a machine to other companies in the world, who produce the machines under the MAN label. This will be the pattern for 3D printing. Exporters will sell the design, but no longer export physically.

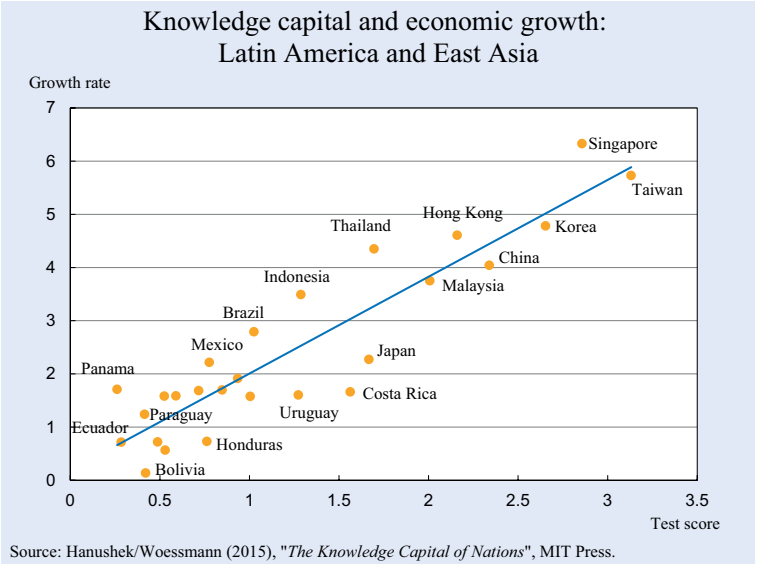
A nation's knowledge capital will be more important to growth than anything else. I highly recommend the book *The Knowledge Capital of Nations: Education and the Economics of Growth* by Eric Hanushek and Ludger Woesmann just released in a CESifo series by MIT Press. They show that the growth rate of an economy depends largely on education in the long run. The correlation between knowledge capital, determined by PISA test scores, and economic growth is very close (see Figure 12). This factor is essential if Europe is to be a knowledge-based society.

Figure 11



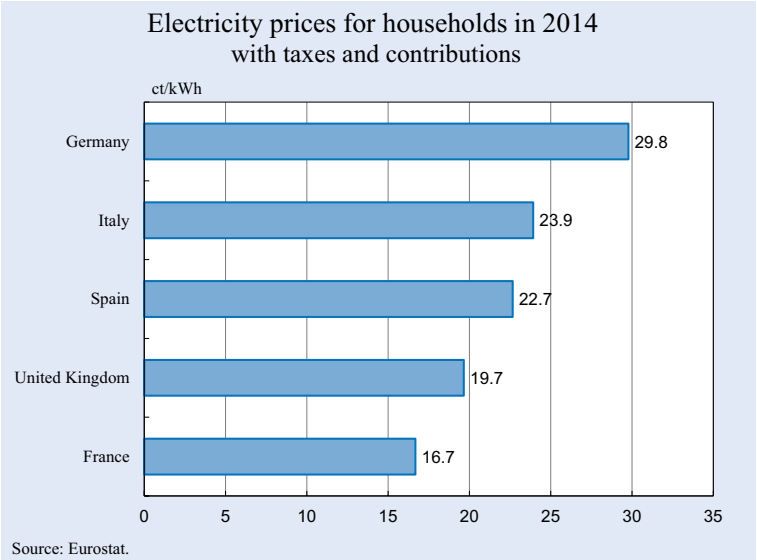
Source: Volkswagen.

Figure 12



Source: Hanushek/Woessmann (2015), "*The Knowledge Capital of Nations*", MIT Press.

Figure 13



Source: Eurostat.

Finally, what we need in Europe is an energy union. Electricity prices for households differ widely in Europe, especially between Germany and France (see Figure 13). The 'law of one price', which is the most prominent of all economic laws, does not seem to apply here. If prices differ then there must be something wrong in the economy – namely huge inefficiencies, as can clearly be seen in this particular market. I appeal to German policy-makers to seek an energy union with France, so that Germany can enjoy their low energy prices in the future. This, of course, means that some nuclear electricity will cross the border, but maybe it can be sent *via* Switzerland, so that it seems somewhat less 'poisonous'.

My conclusion is that mere proclamations like the Lisbon Agenda are useless. But there are good EU initiatives that deserve to be repeated – we have to learn from the past. Some EU countries are now experiencing severe competitiveness problems because they have neglected their manufacturing sector. Others have inflated too much and now have to dis-inflate, which is a somewhat painful process. The ECB, however, is currently helping with its quantitative easing programme by trying to inflate the whole euro area, so disinflating is less painful when the average inflation rate is high.

Europe needs to participate in the digital revolution, and forge an Economy 4.0 made in Europe. We also have to invest in the knowledge capital of nations. Finally, Europe urgently needs an energy union under French leadership.