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Offline? How Europe can catch up with US technology

By John Springford

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- ★ The EU is right to make the digital economy a central plank of its economic growth strategy. But it is wrong to fret about digital jobs or dominant firms. Günther Oettinger, the digital economy commissioner, says that Europe is too “dependent on a few non-EU players”. Digital companies are, however, not huge employers: Google has 50,000 employees, while the Volkswagen group has 570,000. The impact of digital technology on broader economic performance is what matters, and the EU needs a strategy for the diffusion of digital technology across the services sector.
- ★ The European Commission’s digital single market strategy contains some good ideas – harmonised online consumer protection rules, curbing ‘geo-blocking’, which is largely used to charge different prices in different countries, and reducing VAT compliance costs for sales online, to name a few.
- ★ But there are also whiffs of protectionism. Oettinger has called for a new EU body to help predominantly European retailers and publishers get a better deal from predominantly American internet platforms, which charge producers to gain access to their platform’s marketing power.
- ★ The EU’s competition case against Google also seeks to level the playing field between suppliers and platforms. The Commission worries that the search giant’s shopping service might damage competition, because Google’s dominant position in web search might lead to dominance in e-commerce. But Google Shopping appears to benefit consumers. The Centre for European Reform took the prices of 63 consumer goods from Britain’s consumer inflation basket, and compared prices on Google Shopping with those of the first placed retailer in normal search. Google Shopping was 2.9 per cent cheaper.
- ★ Why does Google refrain from exploiting its market power? Internet markets are characterised by periods of monopolistic power after a breakthrough innovation – but these periods are short-lived, and the threat of market entry polices monopolists’ behaviour. Thus internet monopolies help consumers to receive cheaper and better goods, content and services.
- ★ The Juncker Commission has not produced a new strategy for the single market in services, and has narrowly focussed on the internet. But as a percentage of GDP, Europe’s information and communication technology (ICT) capital stock has fallen to about two-thirds that of the US, from close to parity in 1991. This is the biggest reason why Europe’s services productivity growth grew by just 1.3 per cent per year between 1995 and 2007, and by 3 per cent in the US.
- ★ The US enjoyed a productivity surge because it has more integrated services markets, and higher digital investment. American companies take more advantage of economies of scale, and competition between them is fiercer, since barriers to commerce are lower. This sharpens incentives to invest.
- ★ It follows that companies confronting greater, EU-wide competition will be encouraged to invest in productivity-boosting technology. The EU should apply the ‘mutual recognition’ principle in sectors where services are most tradable and have the most potential for digitisation. This principle allows firms to sell services in other member-states but be regulated at home, which reduces the regulatory cost of entering markets in other states. To give itself the best chance of taking advantage of technology’s benefits, the EU needs a more expansive plan to promote competition across the single market.

In April 2015, EU competition commissioner Margrethe Vestager announced that she would bring a case against Google. Her predecessor, Joaquín Almunia, had failed to find a deal with the American internet giant before the end of the last Commission's term in office; a settlement fell apart three times, after complaints by Google's French, German and British competitors, among others. It is no secret that many European politicians, as well as media and telecoms giants, distrust Google both for its widening online empire and for its association with the US National Security Agency scandal. The Commissioner for Digital Economy and Society, Günther Oettinger, has been pushing for stronger regulation of internet 'platform' companies, and has called for an EU tax on Google for displaying snippets of copyrighted material in search results. For its part, the French Senate voted in April 2015 to require search companies to share their search algorithms with competitors and post links to competitor search sites.

The fight over Google displays Europe's mixed feelings about the digital economy. European policy-makers know that online commerce is growing quickly, and that it offers new opportunities to encourage trade by reducing the cost of transactions across borders. But American companies dominate online business, which is leading some Europeans to succumb to protectionist impulses.

Their first fear is that American giants – Facebook, Apple, Google and Amazon – have become so dominant in their respective markets that they have gobbled up all the jobs, and Europe will lose out unless their dominance is challenged. Yet digital technology companies do not create enormous numbers of jobs. Facebook has 9,000 employees; Google has 50,000, Amazon has 90,000 and Apple 100,000 (although this does not include all the jobs in Apple's supply chain). The Volkswagen Group, which controls around one quarter of the European car market, employs 570,000 people, more people than these companies put together.¹

The EU's second, related concern is over the tendency towards monopoly in internet commerce. Google controls over 90 per cent of the European search market. Amazon has a 65 per cent share of the e-book market, while Facebook has 1.4 billion active users globally. This raises some legitimate questions. Do these monopolies damage consumer interests? And, if so, should the EU try to reduce their market share?

A third problem is the fact that Europe lags behind the US in the development and diffusion of digital technology. The output of companies that make ICT is small in comparison to ICT's impact on the rest of the economy. This policy brief is an attempt to appraise the EU's emerging approach to governing the internet economy in two areas: competition policy, and the regulatory steps outlined in the EU's digital single market agenda. First, however, the paper considers whether and how digital technology generates economic growth. ICT has the potential to raise productivity in many different sectors of the economy, yet Europe lacks a coherent plan for its deployment.

Technology and growth

Before the industrial revolution, the world's economy grew at an almost imperceptible rate. According to historical world GDP data estimated by Brad DeLong, an economist at Berkeley, global growth was 0.3 per cent a year between 1300 and 1700, and only 0.6 per cent a year between 1700 and 1800, the period of the first industrial revolution's big innovations. But, in the 19th century, growth jumped to 2.7 per cent a year, as Britain, then the US, France, Germany and Japan industrialised. In the 20th century, global GDP took off, as the compound effects of an average 4.5 per cent growth rate transformed human prosperity (see Chart 1).

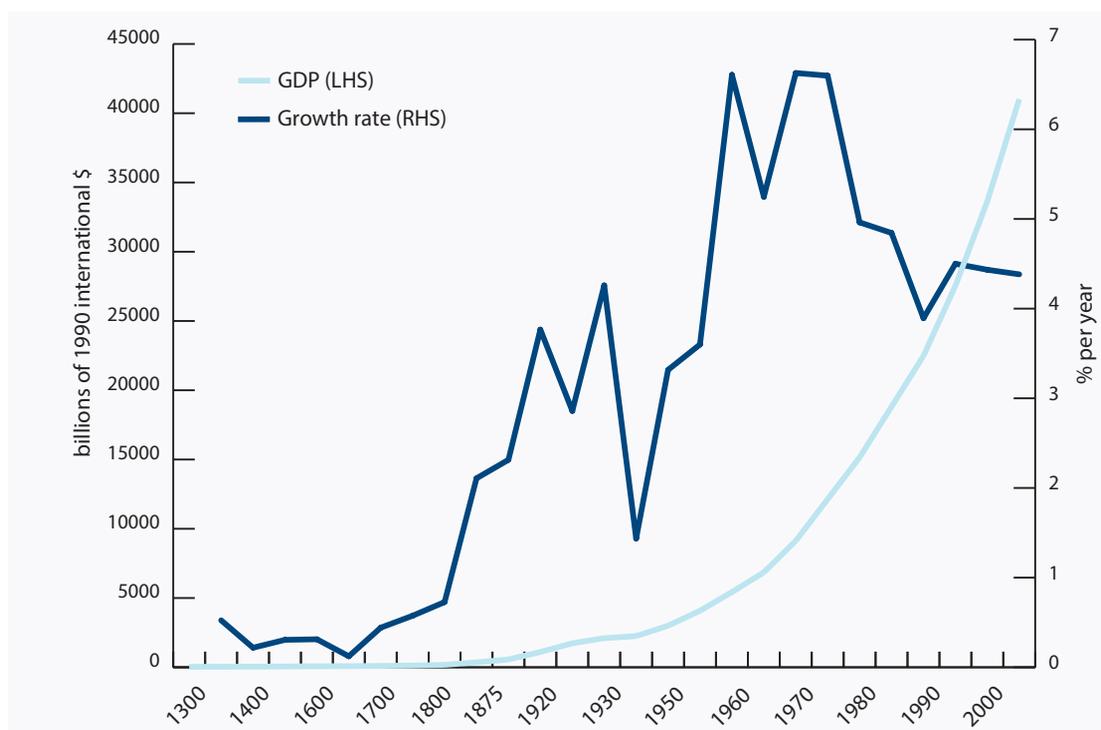
The American economic historian Robert Gordon divides the industrial period into two phases. The "first industrial revolution" saw the invention and deployment of steam engines, mechanised spinning and looms, and railways, between 1750 and 1830. The more important "second revolution", between 1870

and 1900, had three "central inventions": electricity, the internal combustion engine and mass-produced indoor plumbing. Their impact upon productivity was enormous and long-lasting, as the foundational technologies were turned into labour and life-saving sub-technologies. Electricity allowed many more tasks to be mechanised, not only in factories but in the home, relieving people from hours of hard and repetitive work. Cars, lorries and planes rid urban streets of toxic horse manure, reduced transportation times and costs, and expanded markets. The wide installation of indoor plumbing and running water slashed the number killed by water-borne diseases, and also liberated people from fetching clean water and discarding waste. It took some time for this new technology to be deployed across the developed world, but the productivity gains they provided eventually fell away. For example, jet planes today fly no faster than they did in 1958, when the Boeing 707 first took off.²

1: Data, from the fourth quarter of 2014, from company websites.

Chart 1:
A long-run
history of
world GDP and
growth rates

Source: Bradford J
Delong, 'Estimating
world GDP, one million
B.C. - present', 1998.



The lesson is that new technology increases incomes when it raises productivity. It does so by increasing the output that a given combination of labour and capital can produce. For that reason, economists are engaged in a vigorous debate about the impact of Gordon's "third revolution" – the introduction of the microchip and the internet – on economic growth.

The Nobel prize-winning economist Robert Solow famously said that "we can see the computers everywhere but in the productivity statistics". Gordon is also a sceptic. He points out that labour productivity has been in decline throughout the developed world, as the growth caused by the second industrial revolution's innovations has been exhausted. While there was a small boost to productivity as a result of ICT investment, it appeared to peter out in the mid-2000s. And in any case, productivity has fallen everywhere as a result of the collapse of investment after 2008, commodity price spikes, as well as more structural issues like adverse demographics and growing inequality. So ICT-led productivity gains – themselves not as large as the gains from the second industrial revolution – face gale-force headwinds, even in the US.

The peak impact of ICT on American productivity was between 1996 and 2004, when the internet first took off: US labour productivity in that period rose by 2.5 per cent per year, after a surge of ICT investment.³ But there is no denying Robert Gordon's point that before and after that period, between 1972 and 1995 and 2005 to 2014, US labour productivity only grew at 1.2 to 1.4 per cent a

year, despite the fact that many digital technologies were being rolled out (see Chart 2).

However, technology optimists retort that this argument rests heavily on data from a period that includes the Great Recession, which caused productivity growth to fall for cyclical reasons. They also point out that the first industrial revolution included periods of downturn and stagnation. MIT's Andrew McAfee and Erik Brynjolfsson have shown that there is usually a long lag between the invention of a technology and its impact on productivity: it takes time for new inventions to be honed and adapted for use.⁴ Others, such as Harvard's Martin Feldstein, argue that national income data could be underestimated, because prices of many digital goods have fallen rapidly, which statisticians can easily measure, while quality has risen. Official statistics agencies try to calculate the improvement in the quality of digital goods like smartphones, software and TVs, but this is difficult in practice, since quality is hard to objectively 'count'. Since we are buying better goods and services for less money, national income could be higher than the official statistics suggest.⁵

However, in Europe, the impact of ICT in the official statistics has been even weaker than in the US. Between 1996 and 2004, EU labour productivity only managed a paltry 1.6 per cent (Chart 2). ICT contributed less to EU productivity for two reasons. First, European companies invested less in ICT than the US: as a percentage of GDP, Europe's ICT capital stock has fallen

2: Robert Gordon, 'Is US economic growth over? Faltering innovation confronts the six headwinds', Centre for Economic Policy Research, September 2012.

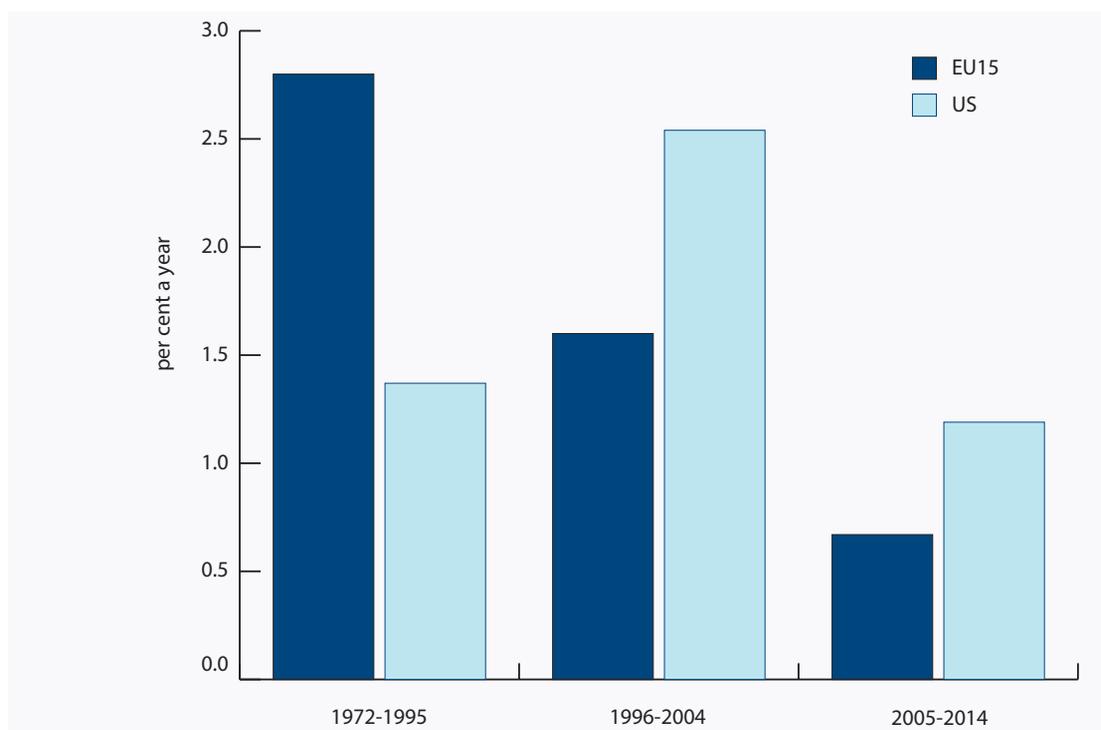
3: John Fernald and Bing Wang, 'The recent rise and fall of rapid productivity growth', Federal Reserve Bank of San Francisco, February 9th 2015.

4: Erik Brynjolfsson and Andrew McAfee, 'The second machine age: Work, progress and prosperity in a time of brilliant technologies', W.W. Norton, 2014.

5: Martin Feldstein, 'The US underestimates growth', *The Wall Street Journal*, May 18th 2015.

Chart 2:
Growth in
output per
hour worked
(constant
US\$ at PPP)

Source: CER analysis of
Conference Board data.
The EU15 series is the
average of member-
states' output per hour
weighted by their GDPs.



to about two-thirds that of the US, from close to parity in 1991.⁶ Second, productivity growth was higher in American companies that produced or used ICT than in their European counterparts – and these companies were responsible for a greater proportion of US output than their EU equivalents.⁷

What explains this divergence? The US has a very large single market, which allows American companies to take more advantage of economies of scale than European ones. Competition in the US is stronger than in Europe, where markets are fragmented along national lines, and where there are more services-market regulations at a national level that impede competition.⁸ Larger economies of scale, combined with stronger competition, sharpen incentives for managers to invest in productivity-boosting technology. And they find it easier to raise finance to do so: the American financial system is better at deploying capital to where it can be

used most productively, and in more diverse forms than Europe's fractured and bank-dominated system. This is why America invented and developed most of the central innovations of the modern age – and why they were quickly diffused throughout the US economy.

This potted history of technology tells us three things. First, technology causes economic growth if it raises productivity, or reduces prices and raises the quality of goods and services. Second, digital technology's impact on growth has been smaller than seen in earlier periods of technological advance, even in the US. But the deployment of past inventions has been slow, which suggests that further gains are possible – and it may be that economic benefits are being under-estimated in the official statistics. Third, Europe lags behind the US on the take-up and use of ICT, largely because of fragmented markets and national regulations that inhibit competition.

The EU and digital technology

The EU therefore needs policies to boost competition – not only between mobile and broadband companies, or between providers of digital services online, but also between the many companies that could use digital technology to improve productivity. Yet two recent policies – the competition enquiry into Google, and the European Commission's 'digital agenda' – suggest that the EU is more concerned with the needs of established businesses than unleashing digital technology's powers of creative destruction.

6: Oxford Economics, 'Capturing the ICT dividend', April 2011.

7: Bart van Ark and others, 'ICT and productivity in Europe and the United States: Where do the differences come from?', The Conference Board, 2003.

The lessons of the Google case

Do big internet 'platforms' – internet companies that match suppliers of information, services and retail goods with consumers – cause harm to those consumers when they become too dominant? This is the central question that underpins the European Commission's competition case against Google.

Textbook economics tells us that, unless one side is deluded or being lied to, both buyers and sellers must

8: See, for example, Jens Matthias Arnaud and others, 'Does anti-competitive regulation matter for productivity? Evidence from European firms', IZA, February 2011.

potentially benefit for an exchange to take place. But, if a company controls the market, it can charge prices far above its costs, generating excess profits, or 'rents', and thus eat into the benefits the consumer receives.

The EU has been keener to intervene in internet markets than the US: the American competition authorities decided not to bring a case against Google in 2012. This is because the EU is willing to use competition policy as a precautionary tool. It will not necessarily wait for evidence of consumer harm, but will seek to intervene in markets to confront companies with large market shares.⁹ The debate on the Google case hinges on whether such precautionary moves against market dominance are beneficial to consumers in platform markets.

Google faces several accusations, but Commissioner Vestager has opened a case against its shopping service, while saying that other cases might be brought in the future. The company has elevated its own shopping search service to a prominent position on its search page: the top-left hand corner is the most lucrative spot, since people read from top-left to bottom-right. Google's search algorithm is supposed to be neutral: the secret of its success lies in its ability to deliver the right web page with the least clicking and scrolling. Google's opponents, a consortium of competitors in digital, retail and publishing, point out that Google bypasses its algorithm by putting its shopping service at the top. This service gives Google's suppliers prominence. Their products are pictured and priced, at the top of the page (search for "camera", for instance, and five different cameras sold on various online retailers will be shown above normal search results). And because Google has cornered the search engine market, it is able to use that platform to direct shoppers to its own shopping service, rather than rival platforms and individual online retailers.

But does Google Shopping impose losses on consumers? A simple experiment shows that those who lose most from Google's behaviour are producers, not consumers, at least in the UK. The CER took 63 products that are part of the Bank of England's retail price index basket, and are available on Google's shopping search service. We compared the price of the first product shown on Google Shopping with the price on the first retailer that came up under general search. If Google's prioritisation of its own shopping service gave it monopoly power, one would expect prices to be higher in its own service. But they are not: the total bill for the 63 items through Google Shopping was £9,265.09, compared to £9,543.04 for the first website that came up under general search. Google was 2.9 per cent cheaper.

The work of Jean Tirole, the 2014 economics Nobel-prize winner, helps to explain why this is the case, and why attempts to intervene in platform markets can be

misguided. Tirole showed why consumers pay less to transact on platform markets than suppliers.¹⁰ In Google's case, the two sides are users and sellers. Users seek information, and provide Google with data about their preferences through their search queries. Sellers receive the marketing power of the Google search algorithm. But the prices that Google charges to each side of the market are very different. Users receive Google's services for free, while sellers must pay Google for prominence, either through formal advertising or to be included in Google Shopping. Why? Because the more users that Google can get, the greater the potential number of 'eyeballs' that will see the products, and the more beneficial the platform is to sellers. So Google charges nothing to users, to encourage as many of them to use the service as possible, and who 'pay' by providing data about their behaviour and preferences.

“Internet markets are characterised by periods of monopoly after a breakthrough innovation – but these periods are short-lived.”

The obvious rejoinder is that Google, by charging retailers to have prominence, will damage consumer interests since retailers will pass those charges on to the consumer. Yet prices are lower on Google's service: the company makes retailers pay a fee to receive the prominence that Google Shopping provides, but retailers do not raise prices as a result. Google reduces the producer's benefit from the transaction rather than the consumer's, just as Jean Tirole's analysis suggested it would.

Google might eventually use its market power in shopping to dampen consumer choice or raise prices. But this is unlikely: barriers to entry are low in e-commerce. This is because such commerce has low 'switching costs'. In a very short period of time, consumers are able to compare prices and goods from a variety of sellers. It only takes a few clicks to compare the cost of a camera on Amazon or on Google Shopping, and if Google were to attempt to raise prices, consumers could simply switch to Amazon. If Google tried to reduce Amazon's visibility further on its search engine, there is little to stop consumers from going to the Amazon site directly. Should Google try to reduce consumer choice or raise prices, it would lose market share.

Internet platforms, then, generate sizeable benefits for consumers. There are positive 'network' effects in play: consumers receive more benefits, the more producers sign up to the platform, and costs are skewed towards producers more than consumers. And the internet is a dynamic place: Spotify has challenged iTunes's dominance; MySpace gave way to Facebook;

9: Simon Tilford, 'Is EU competition policy an obstacle to innovation and growth?', CER Essay, November 2008.

10: Jean-Charles Rochet and Jean Tirole, 'Platform competition with two-sided markets', *Journal of the European Economic Association*, 2003.

and now Google is challenging Amazon's dominance of e-commerce. This shows that these markets are characterised by periods of monopolistic power after a breakthrough innovation – but that these periods are short-lived, and low switching costs and the threat of entry keeps monopolists from reducing quality, raising prices or easing up on innovation.

The EU's 'digital agenda'

Large internet platforms are the ideal mechanism for creating a digital single market, since they can bring together suppliers and consumers across the continent. But the EU's digital single market barely exists. In the US, the majority of internet transactions are conducted across state lines.¹¹ But in the EU, only 15 per cent of households say they have bought something online from another member-state.¹² The inter-state costs for an internet company selling across the US are shipping costs, plus the regulatory costs imposed by the state that they use as their basis of operations. By contrast, the European Commission estimates that a company's cost of compliance with e-commerce regulations is €9,000 per EU member-state, since each has its own rules for consumer compensation, intellectual property, VAT, and so on.¹³

A seamless EU digital market, such as that of the US, will not be possible, not least because of language differences. But progress is possible, and needed. Broadly, there are three main barriers to digital commerce that the EU should try to dismantle:

- ★ Consumer regulations. There are 28 different sets of rules; consumers therefore do not trust websites outside their country, and sellers do not know what obligations they have when selling across borders.

- ★ Geo-blocking. Firms try to force consumers to buy from a website based in their own country. This allows firms to charge different prices for the same products in different countries. Some geo-blocking is legitimate – public TV stations financed by taxation have a right not to offer their services for free to people in other countries, for example. But much is done simply to 'segment' markets, and charge higher prices or provide less choice in some countries.

- ★ VAT rules. Companies supplying goods ordered online must pay VAT to the country where the order was placed. The Commission estimates a company's VAT compliance costs to be €5,000 a year per country.

In practical terms, it is not difficult to tackle these problems:

- ★ Different online consumer protection rules could be tackled by the old work-horse of the single market: mutual recognition. A cross-border internet purchase should be

governed by the consumer regulations of the suppliers' country of residence – this would solve the problem for suppliers. Meanwhile, minimum EU-wide online consumer standards would help to raise consumer trust in cross-border purchases. Another idea is an EU consumer protection rulebook for companies to opt into – a '29th regime'. Such a regime would allow online companies to opt into EU-level rules, and so liberate consumers from the confusion of 28 different national sets of regulations.

- ★ Geo-blocking can be resolved by another single market work-horse: enforcing the right to so-called passive sales, whereby companies are not allowed to restrict sales to residents of the country where they are based. In the 1980s, car companies used to price discriminate through 'exclusive dealerships'. These were national contracts between car manufacturers and dealerships, which set national prices. Under these contracts, dealers refused to sell to non-residents. The EU's competition authorities subsequently forced dealers to make passive sales, and banned restrictions on sales against people who lived in other member-states. This principle could be applied to digital content, and goods and services sold online, so that consumers could shop around on different countries' sites. This would end unjustified geo-blocking and reduce the variation in prices charged in different countries.

- ★ The solution to the VAT problem is obvious: make VAT on all online sales of goods and services payable in the country where the supplier is based, not where the order was placed. This would eliminate VAT compliance costs.

Some of these ideas have been picked up in the European Commission's digital market proposals, which is welcome. The Commission proposes mutual recognition for online consumer protection rules for goods and services, and an EU '29th regime for digital content. It promises to end "unnecessary" geo-blocking, although it does not define what is unneeded, and pay-TV and film companies are lobbying hard against an expansive definition. And the Commission proposes that VAT should be paid in the supplier's country for goods, services and content sold online.

These moves would make big internet platforms, which are largely American, the instrument of the single market. Over time, consumers would be able to buy goods and services on Ebay, Amazon, iTunes, Netflix, Google Shopping and other platforms across the EU, with cheaper prices and more choice. Small and medium-sized enterprises (SMEs) would sell via these platforms, providing content, services and consumer goods.

But there are some less welcome, more protectionist ideas in the Commission's digital agenda, too. Digital economy

11: Liran Einav and others, 'Sales taxes and internet commerce', *American Economic Review*, 2014.

12: Eurostat, ICT survey of households and individuals, 2014.

13: European Commission, 'A digital single market strategy for Europe – analysis and evidence', May 2015.

commissioner Günther Oettinger has been pushing for regulation of internet platforms. The digital agenda proposal says that “some platforms control access to online markets and can exercise significant influence over how various players in the market are remunerated”. The proposal says this “warrants further analysis beyond the application of competition law in specific cases”. In April 2015, the *Wall Street Journal* and *Quartz* obtained a policy document, written by Oettinger’s staff, which points out that the EU has a negative trade balance in online ‘apps’ for smartphones and tablets.¹⁴ The document suggests some fairly innocuous and possibly beneficial policies for the short-term, such as insisting that consumers know how their data will be used and that people who store data with online ‘cloud’ companies can easily switch to another supplier. But it also calls for “an EU-level structure” to intervene in “dispute resolution” between suppliers of goods and services and the platforms that they use to market their wares. Such an institution would help predominantly European suppliers to get a better deal from predominantly American platforms. But the EU would not consider intervening in the prices that TV companies charge to advertisers, despite the fact that high prices prevent SMEs from having access to TV’s marketing power.

For its part, the European Parliament has adopted a resolution demanding that search engines be prevented from engaging in other commercial services, and has proposed that Google should be forced to sell its non-search businesses. Yet the prevention of internet giants from entering new markets could damage the consumer interest, rather than promote it, if it shields incumbents in those markets from competition.

This analysis extends to all sorts of platforms that many European countries find rather threatening. One obvious example is Uber, which is eating into the market share of established taxi companies. Taxi drivers have staged strikes in London, Paris, Madrid and Berlin over Uber’s main service, an app which matches passengers with mini-cabs, and calculates fares. Licensed cab drivers claim that this is tantamount to providing a meter and allowing hailing from the street, over which they have an official monopoly. Germany, Spain, the Netherlands and France have all banned the firm’s other service, Uberpop, which offers ride-sharing as a low-cost replacement to taxis, because Uberpop’s drivers are not licensed. As usual, Uber’s platform provides benefits to consumers at the expense of taxi drivers, by offering lower fares.

Another example of protectionist thinking is the digital agenda’s treatment of ‘over the top’ (OTT) companies, such as Skype and Whatsapp. These companies are

providing stiff competition for traditional telecoms companies since they provide phone and messaging services for free over the internet. The telecoms companies complain that they have weak incentives to invest in super-fast broadband or 4G mobile internet capacity when they find it difficult to monetise that investment, since their shares in text messaging and calls are declining.

“US internet platforms are a mechanism to build a single market, as they could bring together firms and consumers across the EU.”

This is not very convincing. Telecoms companies charge users for the delivery of capacity: if their revenues are declining because users are making fewer calls, there is nothing to stop them from raising line rental or data prices to pay for faster internet speeds, if that is what consumers want. But they have put pressure on the Commission to try to make OTT companies subject to the same regulatory regime, insofar as they offer competing services. One of mobile companies’ complaints is that, unlike them, OTT companies do not have to make user data ‘portable’, so that a customer can take their mobile contact lists to another provider. This prevents consumers from being locked in to particular providers. But since OTT services are generally provided for free, regulations to encourage switching are not needed from a consumer point of view. Consumers pay for landlines and mobile contracts, and so easy switching is needed to prevent companies from over-charging. It makes little sense to apply regulations designed for fixed and mobile phone networks to internet telephony. Where regulation is needed, it should be designed with OTT companies in mind.

These three examples – Google, Uber and OTT communication – are platforms whose activities are likely to provide small boosts to EU GDP. Online shopping allows consumers access to a wider variety of goods and services, and because price comparison is made very easy, it has the effect of lowering prices. Uber undercuts taxi drivers, who have had the misfortune to pay very large sums for licenses and charge high prices. And Skype and Whatsapp also reduce consumer costs – this time for telephone calls. By lowering prices, these internet platforms increase consumers’ purchasing power for other goods and services, so raising demand. And they may improve consumers’ quality of life in other ways – by giving them more variety and choice – that will not show up in the national accounts.

¹⁴: Quartz.com, ‘These documents reveal the EU’s thoughts on regulating Google, Facebook, and other platforms’, April 23rd 2015.

An EU strategy to diffuse ICT

Yet the biggest problem with the EU's digital economy proposals is their lack of ambition. There are some worthwhile initiatives to dismantle national barriers in online markets, and some rather retrograde attempts to 'level the playing field', which tends to mean curbing American internet giants. But the connections between innovation and productivity, outlined in the first section of this paper, should encourage the EU to consider a more expansive strategy to diffuse technology. The internet is a helpful tool to promote services trade. Banking, culture, shopping, wholesale supply, logistics and scientific research – to name a few – can now be conducted remotely. Thus the internet offers the EU a chance to better integrate its fragmented services markets, raise the level of competition, and improve incentives to invest. But the digital economy does not only take place online. Many firms could invest more in ICT to improve productivity within their organisation.

More ICT will be deployed across Europe when incentives to invest are strengthened. This requires member-states to do some things: improve numeracy and computing skills; remove tax distortions that favour established and unproductive firms; and remove barriers that inhibit the growth of new companies. The EU's role, however, is its traditional one: increase competition and lower barriers to trade and foreign investment, in both traditional offline services markets and internet-based markets.

Productivity growth in services – which make up the majority of European output – must be at the heart of any long-term growth plan. But such productivity growth has been weak in the EU, with the EU15 averaging only 1.3 per cent a year between 1995 and 2007 – when the US managed 3 per cent annual growth.¹⁵ Europeans buy nine-tenths of their services from firms established in their home country. Small, national markets do not generate the levels of competition necessary to drive the deployment of new technology and management practices, and with it, faster productivity growth.

The EU needs a plan to open services markets, so that more productive firms in one country can move into another and win a larger share of the market. Mutual recognition – where a country allows a foreign firm access to its market, while that firm remains regulated by its home country – would be the most effective way

to do so. Companies would not have to sign up to new rules, reorganise their insurance, find workers with the right diplomas, or change their ownership structure to establish themselves in other member-states.

The EU has tried this before. The draft of the 2006 'Bolkenstein directive' originally included mutual recognition for firms selling services abroad. But the mutual recognition clause was removed by the European Parliament, under pressure from France, Belgium, Germany and the trade unions. The directive failed because it was too sweeping, trying to impose mutual recognition in all markets at once. Services markets are more highly regulated than goods markets, and member-states balked at foreign legal firms providing services while being regulated abroad, for example.

“The internet can let the EU integrate its fragmented services markets, raise the level of competition, and improve incentives to invest.”

The solution is to introduce mutual recognition sector by sector.¹⁶ There should be two criteria for deciding whether to introduce mutual recognition. First, is that sector highly 'tradable'? Consider consumer insurance markets, where customers can use comparison websites to quickly identify cheap deals. Consumer insurance should be highly tradable, since it can be done entirely online. Here, the use of ICT in the production process is very high, because speedy communication and the analysis of data are at the centre of the service that firms provide. In general, it is true that services that are traded across borders are more productive, and use ICT more intensively than less tradable services.¹⁷

The second criterion should be the scope for those services to benefit from ICT investment. Sectors that have most potential for productivity growth are those which could deploy ICT more effectively. Retail and wholesale companies are a good example: longer and more complex supply chains and bigger stores with more choice and cheaper prices require ICT investment to take advantage of economies of scale. These are the economic sectors where the difference in productivity growth between the US and the EU has been most marked.¹⁸

15: Mary Mahoney and others, 'Productivity growth in Europe and the US: A sectoral study', Review of Economics and Institutions, 2010. Including data after the financial crisis would include productivity shortfalls that are attributable to the financial crisis, not supply-side constraints.

16: For a broader discussion, see John Springford, 'How to build European services markets', CER Policy Brief, September 2012.

17: Antoine Gervais and J Bradford Jensen, 'The tradability of services: geographic concentration and trade costs', US Census Bureau Center for Economic Studies, January 2014.

18: John Van Reenen and others, 'The economic impact of ICT', LSE Enterprise, January 2010.

Finance is another sector where digital and services integration are complementary. The mooted capital markets union, if implemented correctly, will allow a more efficient deployment of capital by removing national rules

that fracture European financial markets.¹⁹ This would help capital to flow to digital and services firms that could export across Europe.

Conclusion: Towards a digital social contract

ICT's impact on US productivity has not been enormous, and it has been even lower in Europe. It follows that the EU can only use ICT to boost its own productivity through an expansive programme to boost competition in many markets – not only online, but also in services where ICT investment could lead to higher productivity. Yet such a programme to diffuse technology would not be an unalloyed good. Digital technology has the potential to improve productivity because it replaces routine work with computers and other machines, which can carry out tasks faster and more accurately than workers. Low-skilled jobs have been more vulnerable to computerisation in the past, but as technology improves, it will take over some medium- and even highly-skilled jobs. It is now broadly accepted that an important cause of rising inequality is technological change, which confers an advantage on the workers capable of developing, deploying and using technology.²⁰

If the EU is to fully embrace ICT's potential productivity and consumer benefits, and cope with the inequality that technology promotes, there should be a new social contract between technology companies and European workers. These companies have shown a marked tendency to locate headquarters in countries with low corporate tax rates, or low VAT rates, in order to minimise their tax bill.

The EU has begun work on more co-ordinated tax rules, in partnership with the OECD. One way to stop the expansion of the digital economy from spurring harmful tax competition is to establish a common, consolidated corporate tax base. This would ensure that corporate tax is payable to each member-state in proportion to the revenues earned in that member-state. The European Commission relaunched this proposal in June 2015, after failing to find agreement on their previous proposal, in 2011 – after Ireland, Britain, Luxembourg and other countries with low corporate tax rates

rejected it. Agreement will be difficult to reach, since EU action on fiscal policy requires unanimity. Yet big countries, including Britain, are the clear losers from the current arrangements, since they provide multinational companies with the majority of their revenues, and if they were to gang up on smaller countries, there might be some hope of agreement.

“If the EU is to embrace ICT, a new social contract is needed to confront the higher inequality that technology promotes.”

The EU will also need common VAT rules. If – as suggested above – VAT on online goods and services should become payable in the supplier's home state to reduce compliance costs, then minimum VAT rates for online purchases would also be required. Otherwise companies would have stronger incentives to locate their headquarters in countries with low VAT rates. Luxembourg and Ireland, the two foremost examples of countries with low-tax regimes, should no longer be allowed to free-ride on consumer demand elsewhere in the EU.

The jury is still out on the impact of digital technology on productivity and living standards. But to give itself the best chance of taking advantage of technology's benefits, the EU needs a more expansive plan to promote competition across the single market – and to make multinational companies trading on- and offline pay their share of tax.

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19: Hugo Dixon, 'Unlocking Europe's capital markets union', CER Policy Brief, October 2014, and Christian Odendahl, 'The low-hanging fruit of European capital markets', CER insight, April 8th 2015.

20: For an overview, see Giovanni Violante, 'Skill-biased technological change', The New Palgrave Dictionary of Economics, 2008.