



European
Commission

European **Political
Strategy** Centre

EU INDUSTRIAL POLICY AFTER SIEMENS-ALSTOM

*Finding a new balance between
openness and protection*



A NEW BALANCE BETWEEN OPENNESS AND PROTECTION

The European Commission's decision of 6 February 2019 to prohibit Siemens' proposed acquisition of Alstom has triggered a new phase in Europe's ongoing debate on industrial policy. In December 2018, eighteen EU Member States had issued a joint call for a more ambitious and strategic EU industrial policy, highlighting industry as 'a key driver for growth'.¹

There is a palpable feeling that Europe risks being left behind unless urgent action is taken. On the one hand, there is rising worry that others are not playing by the same rules and that Europe's openness is being used against its own strategic interests. On the other, there is a realisation that Europe may not have done enough to prepare for digitalisation and rising competition, particularly from Asia. Both these concerns must now be addressed in a much more concerted and unified manner.

This paper explores a possible new balance between openness and protection; between playing defence and offence – as part of a joined-up strategy. After a brief examination of the Siemens-Alstom case, and of the bigger picture and international context in which Europe's industrial firms operate, it lays out a number of policy options to create a more level global playing field, while shoring up industrial innovation and productivity at home.

The current sense of urgency is long overdue and welcome – and must be used for a fact-based reflection, an honest self-assessment and a vigorous discourse on the way forward. Most importantly, it should result in a number of coordinated and transformative actions that are visible and tangible, both in Europe and across the world. As the world's second largest economy, the EU can and must do better in defending its industrial excellence, and the time to do so is now.

European Political
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THE TRIGGER: SIEMENS-ALSTOM

The recent European Commission decision to block the proposed Siemens-Alstom rail merger unleashed a significant backlash against EU competition policy. Frustrations ran particularly high in France and Germany,² despite the move being fully justified on the grounds of a thorough economic analysis, established methods and applicable law. The decision was also supported by EU Member States' national competition authorities,³ as well as large swathes of the business community.

In effect, the European Commission's investigation found that the overall impact on the economy – and on European citizens – would have been negative. This was especially the case in markets for signalling systems and very high-speed trains, where the merger would have cut competition, depriving customers of a choice of suppliers and products, and raising prices, including for final consumers. The European Commission also found that the Chinese state-owned rail enterprises CRSC and CRRC were unlikely to be able to become serious competitors in the EU market for the foreseeable future – while the merger could actually have led European customers to turn to foreign competitors as they would have been faced with higher prices and fewer choices at home.

While feelings are understandably still raw, attention needs to focus on the real challenges Europe is facing, rather than losing time and energy on finding a scapegoat.

First of all, it is important to get the facts straight: **competition enforcement does not prevent the creation of European champions.** If anything, by keeping markets fair and competitive, the enforcement of competition policy creates the conditions for better, more efficient and innovative industries to emerge.⁴

Moreover, the vast majority of merger transactions in the EU are cleared unconditionally. **Over the past ten years (2009-2019), the European Commission has approved over 3,000 mergers and blocked only nine.** A number of significant merger transactions that helped to build strong 'European champions' while sustaining robust competition in European markets were cleared, such as Peugeot's takeover of Opel, or AB InBev's acquisition of SABMiller.

Secondly, it must be clear that **relaxing merger control, antitrust or state aid rules presents no panacea to alleged weaknesses and competitiveness challenges of European industry** and carries significant risks – notably if this translates into authorising anti-competitive transactions.

Specifically, relaxing conditions for the assessment of mergers (e.g. when it comes to market definition), even if limited to a given case or sector, would inevitably entail systemic consequences, limiting the European Commission's scope to intervene against clearly anti-competitive transactions elsewhere. Moreover, making it possible for the Council to overrule competition decisions or allowing for non-competition considerations to play a decisive role in vetting mergers would result in more opaque decisions, with fewer internal checks and balances, and imply an unfair arbitrage between benefits for specific companies versus costs accruing to consumers and workers elsewhere. **Europe could find itself in a downward spiral of economic inefficiency and political arbitrariness, ushering in mistrust and internal divisions** as larger Member States would ultimately be able to impose their will on those with smaller economies – hardly contributing towards strengthening its position in the global economy.

As European Commissioner for Competition Margrethe Vestager put it: **open competition is an active 'strategic choice' that Europe has made, together.**

This is certainly not to suggest that Europe should naively turn a blind eye to global and domestic market realities. But **competition policy is just one piece of**

a much broader jigsaw – and relaxing its enforcement would be a slippery slope towards creating inefficient markets. If anything, competition enforcement may need to be sharpened as the economy digitalises. Indeed, tools such as merger control and antitrust may need adapting to deal with the increasing concentration levels in the digital landscape.

EUROPE VERSUS CHINA ON RAIL: NOT JUST A QUESTION OF COMPETITION POLICY

The competitiveness of Europe's railway supply industry has been a problem for years, largely due to hugely fragmented markets. **The European rail sector is a patchwork of disparate national systems and networks, each applying their own technical and operating standards.** Numerous different signalling systems, various widths of track gauges, and electrified railway networks that operate at different voltages⁵ – all this makes the construction of pan-European vehicles and railway equipment a challenging and expensive task.

Against this background, one of the key aims of European transport policy has been to create the Single European Rail Area. Investments in the European railway sector have been prioritised under the Connecting Europe Facility, which has already invested over 16 billion euro in 253 railway projects. A European public-private partnership – the Shift2Rail Joint Undertaking – was also set up in 2014, with 450 million euro in EU co-funding for the period 2014-2020 to boost research and innovation in the railway sector.

Yet, **Europe's efforts still fall short when compared to China's in terms of size, ambition and zeal.** Beijing has made advanced rail transport equipment one of its **ten priority areas under its 'Made in China 2025'** industrial policy, investing massively in rail research and modern railway infrastructure. The Chinese state-owned rail enterprise CRRC received 240 million euro in R&D grants in 2015 alone.⁶

A global leader in railway technology, China is also home to two thirds of the world's high-speed rail tracks.⁷ In 2019 alone, it approved new rail projects worth some 110 billion euro and plans to add 6,800km of rail lines, of which 3,200km are for high-speed rail.⁸ Most of this will be China-built, as **procurement markets are extremely difficult to access for foreign competitors due to licensing and localisation requirements.** And yet, China itself finances numerous large-scale railway projects abroad under its *Belt and Road Initiative*, including in Central and Eastern Europe – some of which are potentially inconsistent with EU rules and policy priorities. China's recipe for winning over foreign markets includes **cheap sovereign loans and tax breaks that enable its companies to defeat competitors on local markets**, thereby locking in their own infrastructure standards.

This is not to say that Europe should mirror China's approach. However, it is clear that, **amid this context, the Siemens-Alstom merger would have been of little avail:** The merger would not have helped European companies gain access to the rapidly-expanding markets in China – the openness of which remains largely arbitrary. Nor would it have helped them compete on a more level footing against heavily state-subsidised Chinese players in other regional markets. And it would not have helped Europe overcome its fragmented railway ecosystem, which is one of the core causes of the rail industry's high production costs and low operational margins.⁹ To the contrary, as indicated in the merger investigation, stripped of competition, prices for signalling systems would have gone up, slowing down the deployment of the European Rail Traffic Management System (ERTMS) and the completion of the single railway market.

THE BIGGER PICTURE

TECHNOLOGICAL DISRUPTION TRANSFORMING INDUSTRY

The world is in the midst of a technological revolution. Digitalisation has dramatically augmented the reach, flexibility and agility of companies, big and small.

Today's most successful businesses are those that use digital technology not just to boost productivity and improve internal processes, but **as a means of reinventing themselves**: their operational models, their value chains and their customer relationships.

Value creation and innovation increasingly take place at their intersection between goods and service markets, as business-related services become decisive in making products attractive to the consumer, while also generating most of the value added in growth and employment. Traditional industrial value chains are being flouted as a new generation of economic actors – technology-intensive, data-driven firms – are moving into industrial markets and creating those of the future. **Around the globe, traditionally strong industries are losing out to tech start-ups.**

Although this phenomenon is common around in the world, the emerging champions of this competition tend not to be European, but rather American and, increasingly, Chinese.

Opportunities are greatest for those who master a more 'systemic' presence across sectors such as energy provision, modern transport and mobility, or food production. The world's largest companies today – Apple, Amazon, Alphabet, Tencent, Alibaba (Figure 2) – have all understood this and are continuously moving into new 'physical' areas of activity, producing high-tech gadgets and services that range from e-books, smartphones and semiconductors, to electric or self-driving cars, drone delivery, as well as moving into the retail and health sectors. **Data, in particular, is at the heart of their success** – enabling them to seamlessly connect different sectors of activity, all the while customising products and services to the continuously rising expectations of users. In this new world, **it is never entirely clear where disruption is likely to come from**, and the pace of 'creative destruction' has accelerated significantly: the average life expectancy of a Fortune 500 firm today is 20 years, down from 60 in the 1950s and 90 in the 1930s.¹³

CAN EUROPE STAY ON TOP AS THE AUTOMOTIVE INDUSTRY UNDERGOES A REVOLUTION?

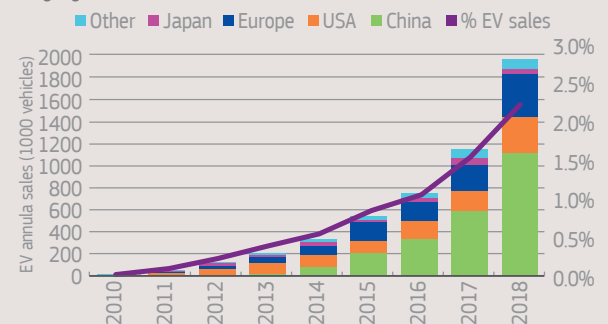
The automotive sector has long enjoyed a central place in Europe's industrial landscape. It supports some 13.3 million jobs (6.1% of total EU employment)¹⁰ and, in 2017, Europe boasted a net trade surplus worth nearly 90 billion euro for cars and light commercial vehicles.¹¹

And yet, **the future of Europe's car industry could not be more uncertain** as the car markets of the future are increasingly dominated by non-European companies. To date, **the undisputed leader of self-driving cars is the US' Waymo – a subsidiary of Alphabet** – and one of the many tech firms, including Apple, Nvidia, Microsoft, Huawei or Uber – to have thrown itself into the race for autonomous driving leadership.

At the same time, **the electric car market is dominated by China**, which accounted for 56% of global sales in 2018. While China and the US both saw their sales rise by close to 80% compared to 2017, European growth was limited to 34%.¹² Ultimately, the winners of the electric car battle are likely to be those able to produce the best-performing batteries – but here too the odds are currently stacked in China's favour.

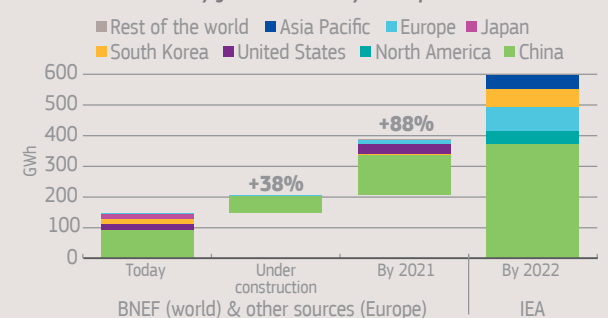
Figure 1: China dominates global battery and electric vehicle markets

Half of the world's electric vehicles sales are in China



Source: Electric Vehicle World Sales Database

China also leads by far on battery sale production



Source: Joint Research Centre, Bloomberg New Energy Finance

What is clear, however, is that Europe has been comparatively slow to adapt – both in terms of integrating digital into existing industrial processes, and even more so in terms of understanding the transformative nature of digital technologies. Late 2017, only 24% of enterprises had adopted big data analytics, 16% had integrated robotics and automated machinery, and only 5% were working with Artificial Intelligence or 3D printing.¹⁴ This also reflects a general shortage of **highly-skilled tech professionals** in these areas¹⁵ – hardly surprising when one considers that in 2017, 43% of the EU population had an insufficient (less than basic) level of digital skills, while those with low overall digital skills had actually increased from 23% in 2015 to 26% in 2017.¹⁶ These numbers speak for themselves, and the repercussions down the road could be severe: Europe can hardly expect to become a global leader in Artificial Intelligence if its companies fail to master its most basic feature, namely big data analytics.

SCALE – EUROPE'S BIGGEST CHALLENGE?

This is not to say that Europe does not have its own industrial success stories. **Many European firms are very innovative, operating in niche high-tech areas** ranging from aeronautics and the Internet of Things, to health tech, advanced logistics, clean tech and biotech – often with a global footprint. These 'hidden champions' are in many cases medium-sized, family-owned companies – deservedly seen as the backbone of the European economy. But too few succeed at growing their systemic presence. In addition, **many find it difficult to access fast-growing overseas markets** or compete in large-scale international projects, where Chinese firms are often at an advantage thanks to steadfast support from their government, especially in the *Belt and Road Initiative* projects that have been rolled out in more than 30 countries since 2013.¹⁷

At the heart of Europe's scale problem, however, is Europe's inability – or political unwillingness – to complete its Single Market and bring it squarely into the realities of the 21st century digital age.

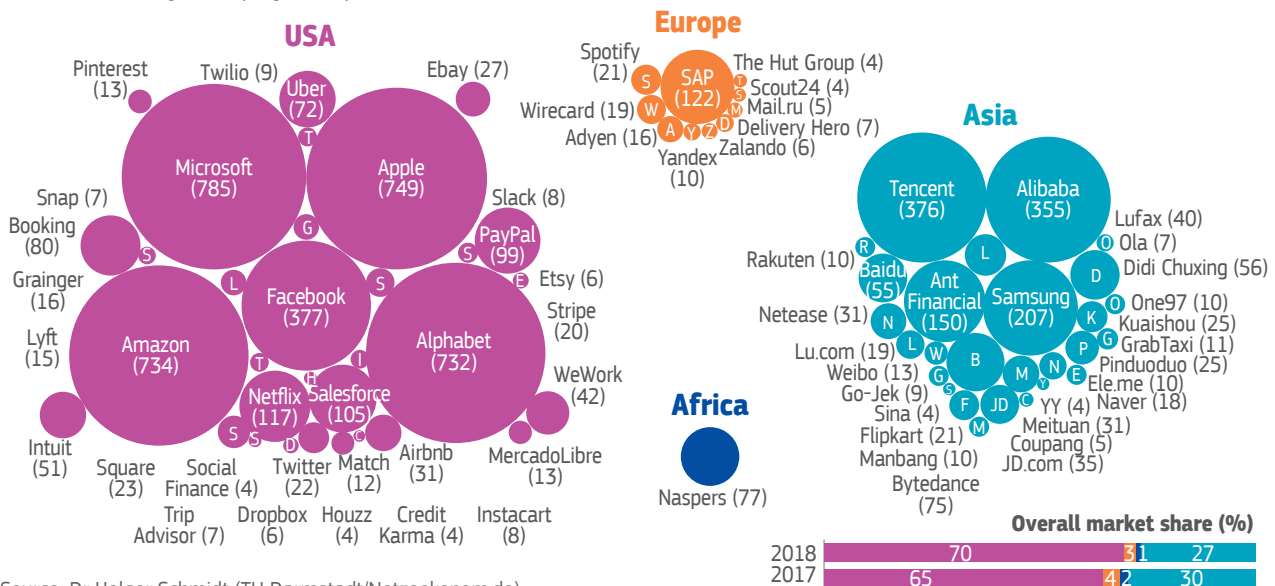
The last European corporation that achieved truly global stature was the software firm SAP, founded in Germany back in 1972. And, while the EU was home to 42 'Fortune 100' businesses in 2007, it boasted only 28 in 2017.¹⁸ Likewise, only 5 of the world's top 100 unicorns – companies with a valuation of over 1 billion US dollars – are from the EU27, with the first only in 56th place.¹⁹

Importantly, **scale in the digital age no longer necessarily implies mass.** Gone are the days when the market value of a company largely corresponded to the size of its workforce or its physical assets. Intangible assets such as data, online user pools, software, design, firm-specific skills, or business model innovation now complement traditional levers of innovation such as R&D spending and patents as the key ingredients of modern-day corporate success. **This 'scale without mass' is a genuinely new phenomenon that has proven highly disruptive to incumbent firms, as well as labour markets.** And it has proven particularly cumbersome for Europe's start-up scene. Indeed, very strong network effects and economies of scale in the digital space have enabled the **rise of online behemoths capable of 'vacuuming up' smaller promising start-ups** – along with all their know-how, copyrights and patents – rather than allowing them to grow into challengers.

Of course, successful start-ups are also more likely to exit European markets in a context where they are unable to access sufficient **scale-up funding** – as has long been the case in Europe due to the **absence of deep, liquid and integrated capital markets.** European unicorns like Spotify, for example, had to turn to foreign investors to gain access to the capital they needed to scale up and become globally competitive.

Figure 2: The platform economy is increasingly binary, with Europe a distant third

Market valuations of online platforms by continent, in billion US dollars (December 2018)



Source: Dr Holger Schmidt (TU Darmstadt/Netzoekonom.de)

THE RAPID RISE OF THE EAST

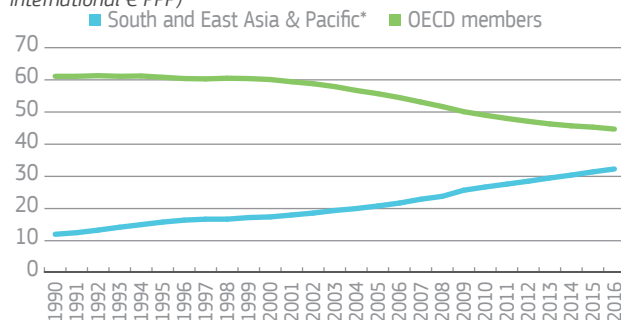
In parallel with the digital revolution, the last decades have seen **an impressive rise of emerging economies, in particular China, followed by India and Indonesia.** The EU economy has performed well in relative terms but it has been under increasing competitive pressure. **In 2005, the size of the European economy at current market prices was more than six times larger than China's** (11.6 trillion euro for the EU 28 versus China's 1.8 trillion euro). **Today, China has all but caught up**, with an economy worth 11.4 trillion euro, against 15.9 trillion for the EU 28 or 13.5 trillion for the EU27.²⁰

The global economy's shift to the East (Figure 3) entails major new market openings for European companies. As an example, China and India are set to stand for almost half (46%) of the growth in renewable energy markets between 2015 and 2021.²¹ But it also means that European industry faces **ever-fiercer competition as emerging countries move rapidly up the value chain.** This includes sectors such as clean tech, where Europe's early leadership on climate change and the transition to a low-carbon economy has made it home to many of the world's biggest businesses in the field (Figure 4). **The case of solar panels is, however, a telling example** of the speed and force with which foreign firms – Chinese ones in particular – were able to conquer markets in which European industries held a clear first-mover advantage (Figure 5).

China's path to global supremacy in many future-oriented industries, including solar panels – but perhaps more importantly, Artificial Intelligence – has been driven by an ambitious, unitary, state-driven industrial policy. **'Made in China 2025'**, the country's ten-year plan aimed at transforming it into a leader in advanced manufacturing, has been taken up with enthusiasm by a dynamic, innovative and entrepreneurial economy that possesses significant competitive advantages. Above all, **China offers sheer size:** 1.4 billion inhabitants with rapidly rising purchasing power, operating in a comparatively seamless market – versus Europe's 512 million inhabitants and a Single Market still fragmented along national lines, particularly in capital markets, digital and energy.

Figure 3: The global economy's centre of gravity is shifting East

Share (%) of developing Asia in total world GDP (constant 2011 international € PPP)



* excluding high income countries like Japan, Korea, Singapore, Australia and New Zealand

Source: World Bank

CHINA PLAYING OUTSIDE THE RULES

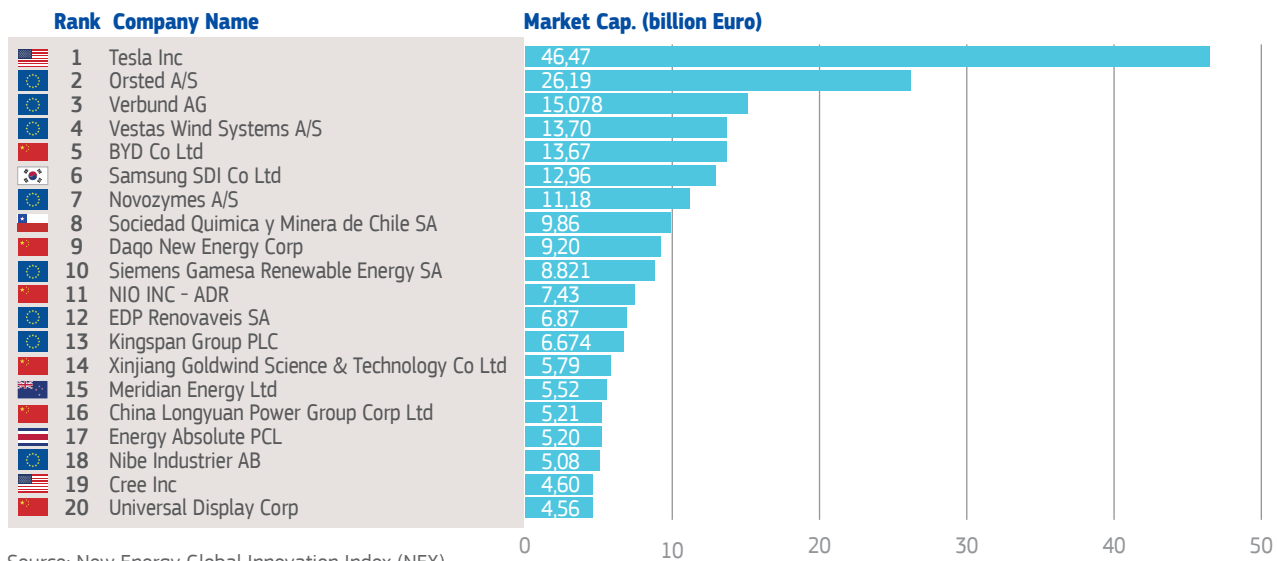
While China should be recognised for making genuine advances in innovation and technology, it is also clear that at least part of its success is owed to generous state subsidies, significant market protection and a lengthy track record of unfair trade practices, commercial espionage and intellectual property right infringements.²² Its **'Made in China 2025'** strategy specifically gives Chinese companies preferential access to capital, both to conduct R&D but also to penetrate markets abroad. Meanwhile, much of the Chinese market remains largely closed for industrial firms from elsewhere, due to a mix of market access restrictions, licencing and technology transfer requirements, as well as domestic laws and regulations.

Most worryingly, though, is the strong role of the state itself in nurturing of Chinese companies at home and abroad – right down to the Communist party which seeks greater control of the private sector and now routinely has representatives embedded in companies.²³ This is in stark contrast to market-based principles which foresee a clear distinction between the 'private' and 'public' sector. The increasing blurring of these two sectors often gives an unfair competitive advantage to Chinese firms and puts all others at a disadvantage in a number of ways. Firstly, Chinese companies can underbid in **public tenders** since they do not operate according to market principles and do not face the same accountability, good governance and transparency requirements of Western publicly-listed companies. Secondly, the **subsidisation of state-owned and state-linked enterprises** has led to the build-up of significant **overcapacities** in China, with excess domestic production regularly dumped on foreign markets. The Chinese steel sector is an example of that. In addition, state subsidies have enabled Chinese firms to go on a 'shopping spree' in Europe and elsewhere, outbidding European or other competitors by being able to overpay for assets. Finally, once a firm is acquired by a Chinese company, it is routine for its **supply chain to change** considerably, with domestic or European suppliers quickly switched to Chinese firms. This kind of national patronage is a formidable threat to European strategic value chains and also raises important questions with regard of Europe's ability to protect its critical infrastructures, given the high stakes that China has obtained in large swathes of Europe's electricity grids, transportation infrastructure and communication networks.

Altogether, these developments call for urgent attention and action to give European industry a more level global playing field. **Helping companies achieve greater scale and technological leadership needs to be combined with measures to reign in unfair practices.** What is at stake is not only economic growth but also Europe's entire value system and the global rule-book for years to come.

Figure 4: Europeans are still well represented among the world's biggest clean tech companies

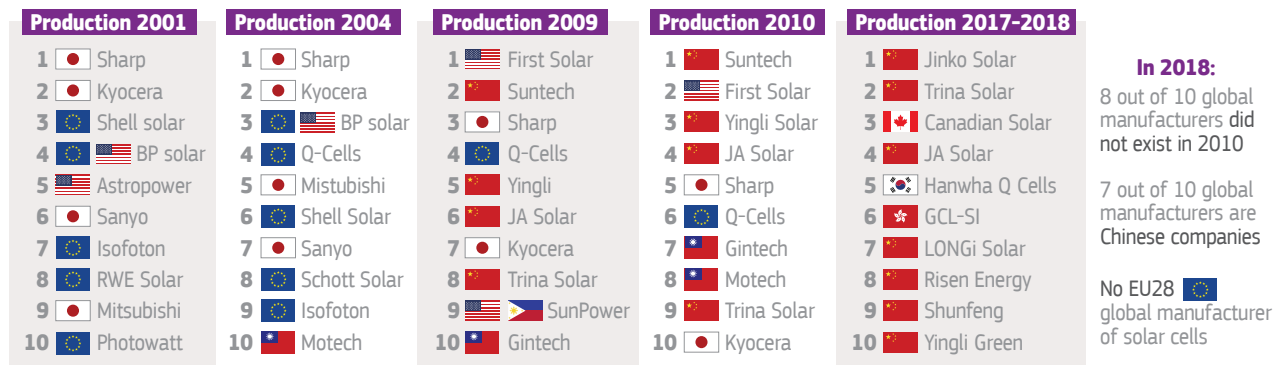
Largest companies in the New Energy Global Innovation Index (NEX), by market capitalisation (February 2019)



Source: New Energy Global Innovation Index (NEX)

Figure 5: Less than 15 years for China to take over the solar photovoltaic sector

Top 10 manufacturers of solar panels / cells, 2001 to 2018



Sources: Luxembourg Ministry of the Economy, Photon International, Joint Research Centre, PV-Tech.org

FOREIGN DIRECT INVESTMENT: CHINA'S USE OF STATE SUPPORT TO ACCESS FOREIGN MARKETS

A European Commission anti-subsidy investigation, concluded in November 2018, found evidence of Chinese state aid worth more than 1.4 billion euro used for the acquisition of the Italian tyre-maker Pirelli in 2015,²⁴ channelled through state-owned enterprises and preferential loans by state-owned banks. This aid not only discounted other companies from making a competitive bid, it also gave Pirelli an unwarranted advantage on the European market – one that would have undergone investigation under the EU's own state aid rules had the Italian government wanted to prop up its domestic champion. As a result of the investigation, the European Commission imposed countervailing measures in the form of a specific duty per tyre imported from China.

Pirelli is not an isolated case. Chinese investment in the EU has multiplied in recent years – almost always in the form of mergers and acquisitions – rarely greenfield – and regularly using state support. In the meantime, **the majority of Chinese EU takeovers could not have happened the other way around due to higher restrictions on foreign investments** (Figure 6).

Figure 6: Foreign investment restrictions higher in China than in the EU in all sectors but real estate

Foreign Direct Investment Restrictiveness Index (1=closed ; 0=open)



Source: Mercator Institute for China Studies (MERICS), 2018

LEVELLING THE GLOBAL PLAYING FIELD

'We will only succeed if we are capable of defending our technologies, companies and markets'

Franco-German manifesto for a European industrial policy fit for the 21st century, 19 February 2019

For decades, Europe has benefited enormously from being one of the world's most open markets to trade and foreign direct investment, becoming not only the number one trader of goods and services, but also the largest destination for foreign investment. But European industry can no longer be exposed to undue pressure by partners who do not play by the rules. **Openness should remain the name of the game, but it must be a two-way street.** Action on this front should revolve around the following initiatives.

1. MAKING THE WORLD TRADE ORGANISATION FIT FOR PURPOSE

The EU remains a firm believer in the rules-based multilateral trade framework, from which it has benefited immensely in terms of growth, jobs, and competitiveness. Yet, it is also clear that this framework has become somewhat dysfunctional.

The current rules remain void or incomplete on entire sectors of the modern economy, such as digital trade and e-commerce. Rules to address market-distorting subsidies contain significant loopholes that have allowed for a proliferation of indirect industrial subsidies, e.g. in the form of tax cuts and cheap sovereign loans to state-owned enterprises. Compliance with obligations on subsidy notification is also at an all-time low: 55% of members failed to report any subsidies in 2018.²⁵

Finally, even if it were to comply with all the rules, **China continues to benefit from preferential treatment under the cover of its 'developing economy' status**, despite the fact that this no longer reflects the reality. As a result, it can uphold a wider set of market access barriers. The old belief that by joining the World Trade Organisation and reforming economically, the country would eventually evolve towards the same general market features as the EU or the US does not have much credence anymore.

Ideally, a strengthened World Trade Organisation, able to update its rules to the new global context, impose their application in a transparent manner, and collect evidence and insights into ongoing cases and trends, would be the way forward. The EU has been pushing hard for such a reform, but the process has remained largely stalled, reflecting the difficulty of working with 164 members under unanimity rules.

In any case, envisaged changes to the global trade rules would hardly take place overnight. In the meantime, **Europe urgently needs to update its own toolset to better cope with changing global circumstances**, striking a balance between its long-standing commitment to the multilateral rules-based order, and the need to work with a growing array of actors that play according to different rules.

2. GROWING THE EU'S ARSENAL OF DEFENSIVE TOOLS

Trade defence instruments: strengths and limitations

When it comes to creating a global level playing field, much of the focus up until now has been on trade. In December 2017 and May 2018, the EU revamped its well-established set of **trade defence instruments** to further strengthen the protection of European companies against injurious imports.²⁶ These tools have proven their usefulness over the years: measures currently in place are estimated to be protecting 320,000 direct industrial jobs.²⁷

Nevertheless, their application will inevitably remain tricky due to the need to precisely substantiate the link between injury and dumping or subsidisation. What is more, trade defence instruments can only address the effects of unfairly priced imports in the EU market. Other instruments are needed to counter unfair competition to which EU companies are confronted in non-EU countries. Finally, they address goods only, not unfair trade in services.

Foreign direct investment screening: a more sensible protection of European strategic assets

Following the surge in foreign acquisitions of EU firms – some of which targeted critical infrastructures and key strategic assets – the EU has pushed through **harmonised rules to enable improved scrutiny of direct investments coming from third countries on the grounds of security or public order**.²⁸ The new framework will facilitate cooperation and exchange of information between Member States and the European Commission in order to better identify and assess specific concerns, while leaving decisions in the hands of national governments. The instrument – which will enter into force in April 2019 – is **an attempt to stay open to much-needed foreign investment, while enabling a sensible protection of European strategic assets**.

Indeed, according to recent research, **as many as 83% of Chinese foreign direct investment transactions in the EU in 2018 could have been covered by this new screening mechanism**.²⁹ This goes to show that Member States must assess more strategically the nature of sometimes seemingly innocuous business investments in light of their larger designs. In order to get the full picture, Europe-wide considerations need to be fully taken into account, as investment decisions in one Member State can have an impact on security and public order in others or for the EU at large. This is all the more true given the growing complexity and interconnectedness of value chains.

Protecting critical technologies and value chains: is Europe doing enough?

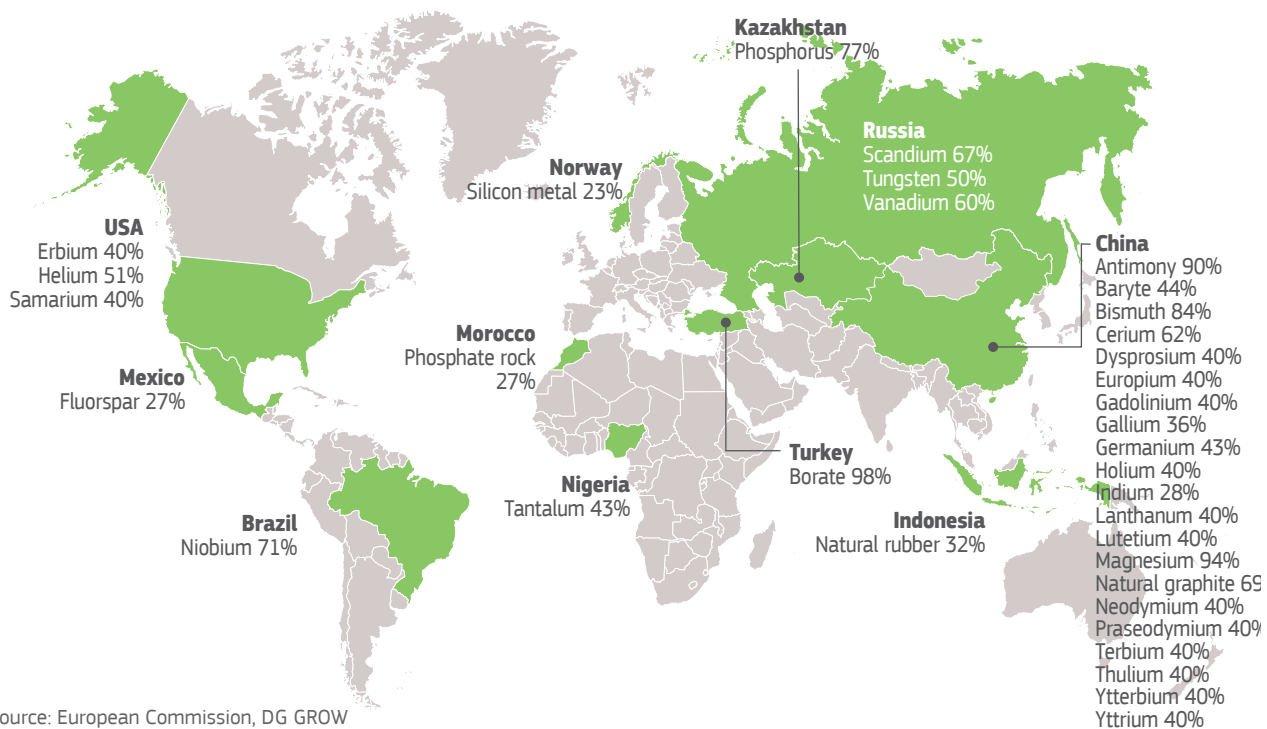
Foreign Direct Investment is just one means that foreign players have of **accessing sensitive European technologies and business secrets, or gaining influence over critical infrastructure** – particularly as industrial value chains increasingly rely on **digital infrastructure that can be hacked or sabotaged**. The EU's high reliance on foreign imports and technologies can also expose it to **supply chain disruptions or the risk of compromised equipment penetrating its critical infrastructure**. Indeed, the EU's advanced manufacturing industries rely extensively on imports for many critical raw materials (Figure 7) and key components.

Europe needs to undertake **a more thorough analysis** of its vulnerabilities and map them against its defensive instruments to identify where additional counter-measures are needed to safeguard its strategic autonomy. These could include, for instance, **a review of EU public procurement market rules** to allow for a more thorough examination of the role of foreign bidders in critical markets – in particular when it comes to state-owned and/or supported companies. Greater visibility, as well as stronger engagement vis-à-vis relevant trading partners, is also needed around the EU's **strategic value chains** to address critical dependencies.

The rollout of **5G** is, however, a stark example where neither foreign investment screening nor procurement rules apply, as the network components are purchased by private operators. Yet, the impact in terms of cybersecurity and susceptibility to espionage can be considerable.

Figure 7: European value chains are vastly dependent on foreign suppliers of critical raw materials

Non-EU countries accounting for largest share of EU supply of critical raw materials, according to 2017 review



Source: European Commission, DG GROW

3. SHIFTING INTO OFFENSIVE GEAR: BEEFING UP RECIPROCAL MARKET ACCESS AND BUILDING UP LEVERAGE

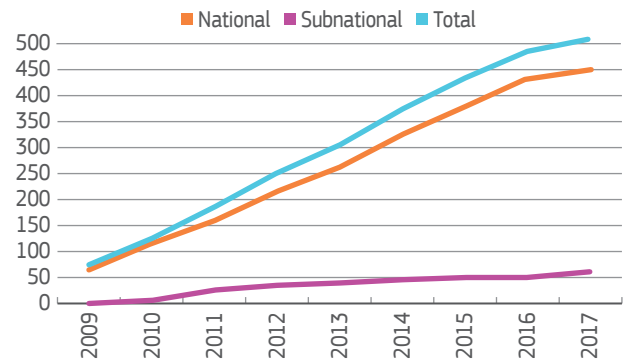
Remaining on the defensive is hardly going to help European companies to scale and gain access to new, job-creating markets – many of which are today located in Asia. To the contrary, applying protectionist measures is always costly, even when it is a form of justified retaliation, or if it can boost specific industries in the short term.

The EU must focus on removing remaining barriers to overseas markets, many of which are strongly protected today. The Juncker Commission has shown that a more strategic approach to addressing discriminatory trade barriers is possible. Since 2014, a record 123 barriers have been removed, generating 6 billion euro in additional EU exports each year.³⁰

More can still be done – in particular in the field of public procurement, where there has been a steady increase in the number of discriminatory procurement measures globally over the years – and EU Member States are among the most affected (Figure 8). Initiatives in the pipeline such as the International Procurement Instrument could provide additional impetus in this regard by providing the EU with greater leverage to level the playing field.

Figure 8: Discriminatory public procurement measures on the rise worldwide

Discriminatory public procurement measures by level of implementation



Notes: Total reflects the number of measures currently applied at national and subnational level. The EU Member States most affected include Germany (402 active measures), France (387) and Italy (387). Source: WTO, Global Trade Alert database (2017).

More such initiatives are needed. The European Commission should launch a **wide-ranging mapping exercise covering all its tools and policies** – e.g. access to the Single Market, development aid, among others – **to identify other areas that could lend themselves to creating further leverage in levelling the playing field**, while staying true to EU and international laws and values.

▶▶ PUTTING POLICY INTO PRACTICE: **THE INTERNATIONAL PROCUREMENT INSTRUMENT**

Failing progress in the WTO, **the EU urgently needs to consider alternative means to ensure equal access and reciprocity in public procurement.**

The European Commission's International Procurement Instrument (IPI) proposal – first put forward in 2012, and revised in 2016 – would provide a powerful tool obliging key trading partners to take action with regard to identified market access shortcomings – or face consequences.

As it stands, it is a balanced, non-protectionist instrument, beneficial to the EU economy and compatible with the 'best value for money' principle that is key to efficient procurement. The IPI proposal could also be fine-tuned in such a way as to reduce administrative burden, increase certainty, and promote the use of existing flexibility in public procurement rules to allow factors other than price – such as security, cybersecurity or sustainability – to be taken into account. **In the presence of political will, this tool could be adopted in 2019 still, as it is already in the legislative process.**

A BRIEF GUIDE TO THE IPI PROCEDURE:

- 1. Public investigation:** In cases of alleged restrictive and/or discriminatory measures or practices against EU companies in foreign procurement markets, the European Commission can initiate a public investigation.
- 2. Consultation:** If the investigation confirms such measures or practices, the European Commission can invite the country concerned to start consultations to remedy the situation.
- 3. Response:** As a last resort, the European Commission could, after consultation with Member States, apply measures restricting the access to the European procurement market for companies, goods and services from the third country concerned, thereby levelling the playing field.

INDUSTRIAL LEADERSHIP STARTS AT HOME

'We will only succeed if we are the ones creating, developing and producing new technologies'

Franco-German manifesto for a European industrial policy fit for the 21st century, 19 February 2019

The question of how best to support European industry has been a persistent issue for the EU. The Juncker Commission itself placed industry at the heart of its political priorities. In September 2017, it took a first step towards updating the EU's Industrial Policy Strategy – with a comprehensive package³¹ that brought existing instruments under one roof, and included a number of new initiatives around the free flow of non-personal data, cybersecurity, the circular economy, sustainable finance and the deployment of 5G.

Yet despite this and earlier efforts to strengthen Europe's industrial base and innovation potential, it is fair to conclude that, on balance, the results in Member States have been disappointing – particularly in light of the pace of rapid change that the world is now undergoing.

The desired step change can only materialise if synergy effects are generated through unity of action. Up till now Member States have not been able to find sufficiently common ground on which to launch truly transformative joint initiatives.

As long as markets are fragmented along national borders, or research money is spent irrespective of the ability to facilitate knowledge transfer into businesses and the wider economy, the innovation cycle will remain broken. There are no easy shortcuts: no single policy change can undo the many years during which issues that have now come to the fore did not receive the policy priority they deserved.

The onus is now clearly on Member States to come together around a coherent set of actions that they truly embrace and commit to. These could be organised around four major initiatives.

1. SINGLE MARKET RENAISSANCE

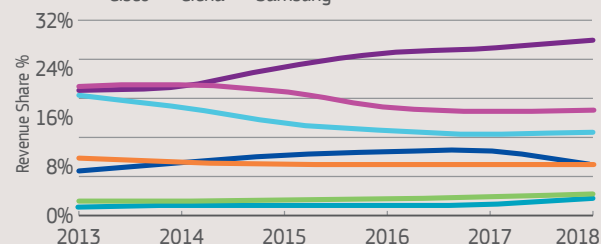
If anything gives weight to Europe in the global context, it is its Single Market. Nonetheless, it has not yet been fully brought into the realities of the 21st century digital age. Despite significant advances – e.g. on roaming, free flow of non-personal data, e-commerce – the Digital Single Market is a far cry from the seamless digital markets in the United States or China. The European digital economy will never be able to thrive if it continues to consist of 27 different consumer markets, with businesses having to leapfrog over 27 different regulatory regimes, and some countries lagging far behind on digitalisation. *All* Member States must get behind initiatives to further boost EU

5G: A TESTING GROUND FOR EU INDUSTRIAL POLICY?

Two European digital champions, Nokia and Ericsson remain in the global top three 5G equipment vendors worldwide, behind China's Huawei. In Q3 2018, Huawei had a 29% share of the global telecom equipment market, but Nokia still had 17% and Ericsson 13.4% – despite China's market being largely closed off (domestic production currently stands at 75%). Other foreign companies lagged behind (Figure 9). As the rollout of 5G will take several years and European companies still have a good chance of fulfilling a large share of market demand, this could provide a good testing ground for a genuine European industrial policy.

Figure 9: EU providers remain in the top 3

Revenue shares (%) of worldwide service provider equipment*
 ■ Huawei ■ Nokia (inc Alcatel Lucent) ■ Ericsson ■ ZTE
 ■ Cisco ■ Ciena ■ Samsung



Note: *includes broadband access, carrier IP telephony, microwave, mobile RAN, optical, SP router and CE switch, wireless packet core
 Source: Dell'Oro, 2018

connectivity, accelerate the **adoption and diffusion of digital technologies among Europe's traditional industries**, and create the necessary scale for Europe's digital economy to thrive is urgently needed. **The deployment of 5G wireless technologies would in particular gain from more coordination at EU level.**

And in a modern world in which the highest value added of an industrial product is often a service, it goes without saying that anyone who purports to care about industry has to also care about the services markets that underpin advanced manufacturing.

2. INNOVATION & FUNDING: FAST-TRACKING INVESTMENTS INTO THE SECTORS OF THE FUTURE

Strategic investments in key areas of R&D

European industry needs to be able to draw on research excellence in areas of strategic importance. Spending at EU level needs to converge further around a number of strategic industrial partnerships, as well as missions or moonshots that aim to solve societal challenges. In addition, private investment needs to be further incentivised. In 2015, overall expenditure on R&D in the EU amounted to two-thirds that of the US, was 49% higher than in China, and more than double the amount spent by Japan. However, little more than half of this (55.3%) originated from business, compared to 78% in Japan, 74.7% in China or 64.2% in the US.³² This should be a cause for concern and points to a wider issue of the overall conditions of doing business in Europe (see Box on 'Doing business in Europe'). An industrial policy that relies too heavily on public sector R&D is unlikely to yield the desired results because of its distance to manufacturing processes and market conditions.

Supporting breakthrough innovation

The EU innovation policy framework has for too long lacked instruments to support disruptive or breakthrough innovation, aimed at creating new markets. The new vehicle to address this gap, the European Innovation Council, is currently in the pilot phase but already has a budget of some 2.2 billion euro for 2019-2020, including combined grant and equity investments to fill market gaps for fast-growing, technology-based companies, and for targeted support to next-generation technologies (digital twins, human-centric AI, etc.). The European Commission has proposed to scale this up to 10 billion euro under the next budgetary cycle, with a focus on breakthrough innovation.

Ensuring protection and diffusion of knowledge

Much like other advanced economies, the European economy is characterised by an uneven diffusion of innovation throughout the economy. Given the rapid pace of technological development, the gap between front-runners and laggard firms is increasing. Improvements in the linkages between science and industry, boosting the absorptive capacity of firms by providing technical assistance and training, and stronger mobility of talent, can all help to address this problem. **Although Europe boasts the largest publicly-funded research programme in the world (Horizon 2020), only about 1% of this funding is dedicated to knowledge and tech transfer.**³³ What is more, where R&D funding results in successful innovations, there are too few guarantees that these will be industrially deployed in Europe. A more holistic approach is needed, which acknowledges the interlinkages between the different stages from research to innovation, and from lab to company.

DOING BUSINESS IN EUROPE: AN INTERNATIONAL REALITY CHECK

Creating an environment where businesses thrive is at the heart of the European project. A healthy business environment allows winners to grow organically, requiring limited direct state support or protection. However, according to the World Bank's *Ease of Doing Business* ranking, **the EU is steadily losing its competitiveness with respect to other economies in its ability to foster a dynamic firm environment.** Only two of 28 Member States saw improvements in their ranking in the 2019 report, three retained their positions, **while all the rest saw a decline, compared to 2018.**

A closer inspection of the sub-indexes of the ranking shows that many Member States maintain public administration and judiciary hurdles for firms.

In the areas of contract law and administrative capacity, many obtain low scores in dealing with construction permits, registering property and enforcing contracts. EU firms are also struggling to get access to credit in over half of Member States. Furthermore, insolvency laws prevent rapid exit of firms and bankruptcy laws remain overly punitive in over a third of Member States.

The report also highlights some EU Member States' declining competitiveness from both a tax rate and tax administration perspective. Many of the larger euro area countries maintain high corporate tax burdens, inhibiting investment and job creation. Furthermore, the number of EU tax jurisdictions make for a complex business environment, especially for start-ups and SMEs. As a result, firms operating in the EU face a higher tax compliance burden than firms in the US, Japan, Australia or Canada, effectively reducing EU firm competitiveness in global markets.

Seamless funding throughout the innovation cycle

Finally, the modest scale of the EU budget means it can best play its role by crowding in public and private investors. **A particular effort is needed to incentivise private venture capital investments** – in particular from large institutional funds (pension funds, insurance companies, sovereign wealth funds) which are currently chronically underrepresented in venture capital, and by crowding in trusted foreign investors. **While Europe has made real advances in narrowing the gap to the US with regards to seed and early-stage funding for start-ups, it lags behind on later-stage funding of companies.** In 2017, growth capital still represented less than 7.5% of overall funding in Europe – at 6.7 billion euro, against 92 billion euro of total private equity raised.³⁴ This is one of the key reasons why Europe’s most successful companies often end up in the hands of third country firms or investment funds (Figure 10).

The success achieved with the **European Fund for Strategic Investments** must be continued, reinforced and broadened. The proposed InvestEU fund under the EU’s next Multiannual Financial Framework should do this, with a proposed contribution from the EU budget of 15.2 billion euro – expected to mobilise more than 650 billion euro of additional investment across Europe.

Meanwhile, efforts are also needed on the regulatory and policy front. The **Capital Markets Union** has not gone as far as it should have, despite the obvious and often lamented need for liquid capital markets that can turn European start-ups into global scale-ups.

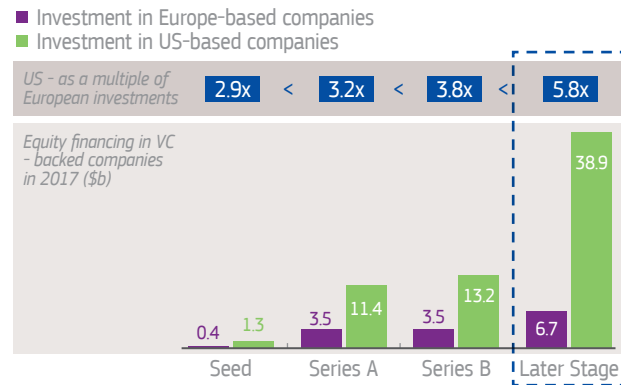
3. REGULATION & STANDARDS: BUILDING UP 'BRAND EUROPE'

Shaping global rules and standards the 'EU way'

The EU and European stakeholders already carry significant weight in shaping global rules according to the EU’s core values, be it on trade and investment, climate, labour, human rights or development

Figure 10: Funding gap between the US and Europe is widening in later stages...

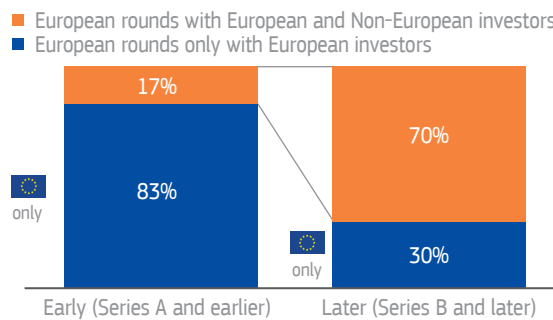
Investments in Europe and US by stage focus in 2017, in billion US dollars



Source: Dow Jones VentureSource

...and non-European investors are filling the void

European company financing rounds



Source: CB Insights

cooperation. By raising the level of quality and fairness of these international rules, the EU not only contributes to levelling the playing field for business and consumers, **it also provides a strong model of economic and societal development that is a necessary counterweight to alternative approaches** that are less centred around values, and less concerned with good governance, transparency and accountability.

TOWARDS A EUROPEAN 'SOVEREIGN WEALTH FUND'?

Countries like China systematically use sovereign wealth funds (SWFs) – state-owned or supported investment vehicles – as strategic tools to acquire competitive advantages and strategic inroads abroad. These funds not only offer a return on investment but also an opportunity to inform and shape economic developments elsewhere.

The EU has no real SWF, which limits the set of tools it can use to support and diversify its economy, and puts it at a comparative disadvantage.

A European SWF could provide an optimal and future-oriented way of developing strategic sectors with a strong focus on innovation.

Of course, this would require a properly designed governance and accountability framework, as these types of tools often suffer from lack of transparency in their structure, investment strategy and returns. Naturally, the ability of a European SWF to deliver an impact would be a function of the resources it can mobilise.

CHINA'S GROWING STANDARDISATION PROWESS

While the debate about the security implications of China's growing digital influence is grabbing headlines around the world, the question of technical standards has received less attention up till now, despite being at the very heart of the matter.

China's stance towards international standards has changed from one of active adoption to one of active shaping, largely centred on developing Chinese standards and promoting them abroad. The *Belt and Road Initiative* is undoubtedly also envisaged as a vehicle to promote – or even impose – Chinese standards in third countries, also with a view to locking in future markets.

Chinese companies are also increasingly active in international standard-setting bodies such as the International Telecommunication Union (ITU), the International Organisation for Standardisation (IOS) and the International Electrotechnical Commission (IEC), where they have invested heavily in shaping information technology standards, and in particular 5G. China's Huawei, in particular, has been extremely active in setting global 5G standards, including in European platforms like the Third-Generation Partnership Project (3GPP)³⁵ or the European Telecommunications Standards Institute (ETSI), where it benefits from full membership status and voting rights thanks to its European branches.

Similarly, the ability to shape rules and standards governing emerging technologies will be crucial both for industrial leadership and profitability – and for the defence of Europe's strategic autonomy and broader values. If these are left to be defined by others, European firms and consumers risk being increasingly subjected to rules and standards that do not take into account European interests and values. Crucially, this ability is to a large extent a function of the footprint that Europe has in the digital sector.

Up till now, Europe's large market for online content and data-based services has enabled it to implement ambitious consumer and data protection regulations that have had a strong signalling effect on the global level and already prompted action by many other jurisdictions. However, **European players have not yet managed to capture sufficiently large market shares in the Internet economy to achieve a similar norm-making status.** Similarly, although European tech companies were well-positioned in the specification of international technical standards for cellular networks such as 2G, 3G and 4G, they are not yet in a similar position regarding 5G.

And yet, as the Internet of Things becomes a reality, with literally billions of devices connected, and as Artificial Intelligence spreads, there is clearly scope for a growing demand for a 'European way' of regulating new technologies to ensure they remain human-centric, safe and ethical. **Europe already enjoys substantial trust and confidence with regard to its regulations and standards. It now needs to balance this with the sufficient speed and agility to match market dynamics.** Otherwise, others will inevitably fill in the void.

4. PARTNERSHIPS FOR THE FUTURE

Rethinking 'European champions'

In a world shaped by disruption and constant change, **there is nothing that requires a European 'champion' to be a single company.** A champion could very well be a temporary collaboration, or a consortium of companies that complement each other's services and can therefore provide a more complete offer. As an example, Sweden's Ericsson, Telia and Volvo CE recently teamed up with a view to combining their expertise to increase industry efficiency and sustainability through 5G testing. Another option would be for companies to come together to undertake joint technology development, for instance in the context of a Joint Undertaking or an 'Important Project of Common European Interest' (see box).

By supporting interdisciplinary collaboration that purposefully breaks down the silos between sectors, Europe can help its companies to build their systemic presence, deliver a more complete set of products and services, and/or increase research and development impact. Such approaches need to target future-oriented and globally competitive value chains, ensuring that Europe implements an approach that pools all available resources – EU, national, regional, local, public and private – together wherever possible.

Particular attention needs to be paid to areas: a) where Europe possesses or is developing a **competitive advantage**, b) chooses to prioritise and invest public resources, given their importance in addressing **societal challenges**, c) sees as vital to its **strategic autonomy**.

▶▶ PUTTING POLICY INTO PRACTICE: IMPORTANT PROJECTS OF COMMON EUROPEAN INTEREST

In 2014, the European Commission breathed new life into its 'Important Projects of Common European Interest' (IPCEI) – a tool enshrined in the Treaty on the Functioning of the European Union (Article 107(3) (b)), but hardly applied to date. By developing new guidelines for the application of this instrument, the European Commission sought to encourage Member States to channel their public spending to large, highly-innovative, transnational research and innovation projects that make a clear contribution to growth, jobs and competitiveness in Europe. The central focus is on areas where private initiatives fail to materialise because of the significant risks that transnational cooperation in such projects may entail. In such cases, EU state aid rules provide a possibility for Member States to fill the funding gap and overcome the market failure – albeit under strict conditions so as not to distort the level playing field in Europe, and in line with international rules.

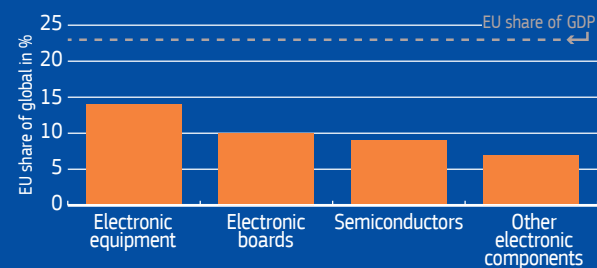
A good idea in theory, in practice it has been difficult for the IPCEI to get off the ground. It took four years to agree on the first project – covering **microelectronics** – which was finally launched in December 2018. In the digital age, this is an eternity and this is therefore something that needs to change going forward. The project is nonetheless crucial as

it covers semiconductors, sensors, optical equipment and compound semiconductor materials – all of which are central to the future development of Artificial Intelligence and edge computing, but where Europe remains vastly underrepresented in global value chains (Figure 11). France, Germany, Italy and the UK will provide a total of 1.75 billion euro in funding, with an additional 6 billion euro in investment from the private sector.

Efforts to identify additional strategic value chains began in January 2018 and are set to conclude June 2019 – a total of 1,5 years. It will be important that the next iteration of IPCEI work begin without further delays. Likely future areas are batteries and automated vehicles. There is no time to lose if Europe hopes to be a player in these important areas (Figure 11).

Figure 11: EU underrepresented in global electronics value chains

EU share of global production of electronic systems (in %) and EU share of global GDP



Source: European Political Strategy Centre, based on data from DECISION Etudes & Conseil

Many of these areas have already been identified in the EU's 2017 Industrial Policy Strategy, such as automotive (including batteries), energy systems, the Internet of Things, robotics, Artificial Intelligence, defence, space and the bio economy. However, action in these areas needs to be stepped up and accelerated if Europe is to stay in the global race. Focus should also be placed on key enabling technologies such as 5G or quantum technologies that will be central to Europe's future cybersecurity.

Towards greater EU economic diplomacy

China's policies can only be matched by a similarly joined-up approach. For instance, in the context of its *Belt and Road Initiative*, Chinese firms often offer access markets as part of complete 'packages', often supported by the Chinese state – from funding to providing a full range of services. All this is delivered in a coordinated and seamless fashion. In contrast, EU businesses find it harder to invest and operate in some foreign markets, in particular in developing countries.

A comprehensive approach including all EU policies – trade and investment, development, environmental and energy-related – and instruments – including the European Development Fund, the External Investment Fund and financial capacity from the European Investment Bank and the European Bank for Reconstruction and Development (EBRD) – **would facilitate EU business presence in foreign markets.**

Trade and investment promotion conducted by EU Member States would benefit from a coordinating role and complementary support by the European Commission. To this aim, the European Commission should continue and expand joint business missions and actively support and create new European business associations through European Union Chambers of Commerce in third markets. It could also adopt a more systematic approach to including industry in missions to third countries, providing a single contact point and facilitating the witnessing of deal signings.

TWO SIDES OF THE SAME COIN:

REDUCING EXPOSURE TO PROTECTIONISM WHILE RESTORING INDUSTRIAL LEADERSHIP AT HOME

This is not the time for an ideological discussion about the virtues of openness versus the pitfalls of protectionism. Externally, **Europe should remain a champion of free trade and investment in the world, but it also needs to push back on attempts to exploit its good will.**

Once the strategic choices about industrial priorities are made, **the EU needs to take decisive action to stem unfair practices** on the side of third countries and fight protectionism at its source.

Internally, **clarity is needed about the nature of support for European industry.** Needless to say, it is not for governments or European institutions to replace the market. However, clearly, leaving it entirely to the mercy of market forces is not sustainable, given the evidence of market failures, the costs of externalities such as climate change, and the widening gap between 'winners' and 'losers' of globalisation and technological change. In addition, it is fair to say that European firms have not always pursued the most suitable business strategies over the past decade, perhaps absorbed by the economic and financial crisis, but also as many failed to acknowledge the transformative impact of digital technologies.

Incentives can and should be given, drawing on past experience, knowledge about evolving trends and societal objectives, hence 'nudging' markets in a direction that can optimise value creation. However, being over-prescriptive is not the answer, given the risk of inefficiencies and wrongly-informed decisions. The best tools would create a **dynamic business**

and **innovation environment**, foster an agile and smart **regulatory ecosystem**, support essential factor conditions such as **knowledge** and **skills** on the one hand, and broad development and diffusion of **technologies** on the other, **without picking winners.**

Most importantly – and what has received insufficient attention up until now – is to ensure that **the two pillars of EU industrial strategy – external and internal, defensive and offensive – work hand-in-hand.**

In order for this to happen, procedures need to be adapted. First of all, the political level needs to make **strategic choices** about support for broad technologies or industries – and all existing investment, regulatory and enabling tools need to be brought together around this range of industries of strategic interest to Europe. Secondly, there has to be close monitoring of distortions to the **level-playing field** on the part of Europe's main competitors with immediate action being taken. Policymakers also need to receive regular reports on the state of foreign protectionism affecting European industry. Thirdly, there has to be agile, continuous, and honest assessment of the **competitiveness of EU industries** vis-à-vis Europe's main competitors, with necessary adjustments made speedily and decisively.

Openness must be a two-way street. Europe needs to become more strategic in planning its technological and industrial future, and far less naïve with regard to unfair competition from other countries. A policy that will best serve Europe's interests is one that supports industry at large, rather than individual technologies, and one that rejects free-riding on the part of competitors.

1. Friends of Industry, Joint Statement by France, Austria, Croatia, Czech Republic, Estonia, Finland, Germany, Greece, Hungary, Italy, Latvia, Luxembourg, Malta, Netherlands, Poland, Romania, Slovakia, Spain, 18 December 2018.
2. The German Ministry for Economy and Energy and the French Ministry for Economy and Finances published a 'Joint Franco-German Manifesto for a European industrial policy fit for the 21st Century', 19 February 2019.
3. Open letter on Siemens-Alstom from national competition authorities to European Competition Commissioner Vestager,
4. For a review of the literature, see OECD, "Competition Policy, Industrial Policy and National Champions", 2009 and Mario Mariniello, "Why Competition Matters for Growth", Bruegel, 2014 (retrievable here: <http://bruegel.org/2014/02/why-competition-policy-matters-for-growth/>)
5. Transport research market uptake (Market-up; Project ID: 265841): D2.1 – Characterisation of the context of RTD initiatives in the Rail Sector, December 2011
6. UNIFE, Presentation to the Competitiveness of the European Rail Supply Industry First Workshop on Procurement and International Aspects Brussels, 5 October 2017
7. Financial Times, '[China's high-speed rail and fears of fast track to debt](#)', 13 August 2018.
8. Financial Times, '[China steps up fiscal spending as it approves \\$125bn of rail projects](#)', 6 January 2019.
9. European Commission, Impact Assessment accompanying the Proposal for a Council Regulation establishing the Shift2Rail Joint Undertaking, December 2013.
10. European Automobile Manufacturers Association, '[Employment Trends in the EU Auto Industry](#)', June 2018.
11. European Commission, Eurostat, '[International trade in cars](#)'.
12. The Electric Vehicle World Sales Database, '[Global EV Sales for 2018 – Final Results](#)'.
13. Fortune 500
14. European Commission, 2018 Digital Transformation Scoreboard
15. 67% of European HR leaders surveyed said that skills shortages are damaging top-line growth. See: EY, '[Building a better working Europe](#)', 2018.
16. Eurostat, Digital Skills, Data for the year 2017. Fortune 100 database.
17. EPSC estimate based on available *Belt and Road Initiative* data.
18. Fortune 100
19. CB Insights, List of Top 100 Unicorn Companies, March 2019.
20. European Commission and International Monetary Fund, World Economic Outlook. For the EU 27, it was 9.6 trillion euro.
21. International Energy Agency, <https://www.iea.org/renewables2018/>
22. Stout, K. L., 'Cyber warfare: Who is China hacking now?', CNN online, 29 September 2016; Gertz, B., 'China cyber espionage continues', The Washington Times online, 28 September 2016; Gady, F. Z., 'Top US Spy Chief: China Still Successful in Cyber Espionage Against US', The Diplomat online, 16 February 2016.
23. Mercator Institute for China Studies, '[Chinese telecommunication companies: Political and legal vulnerabilities and how Europe should deal with them](#)', March 2019.
24. As a result of the 2015 transaction, Pirelli was delisted from the Milan stock exchange in November 2015. Because the Chinese shareholder divested part of its stakes in the meantime, Pirelli returned to the stock exchange ahead of schedule in October 2017.
25. European Commission, '[WTO modernisation Introduction to future EU proposal](#)' and World Trade Organisation, '[G/SCM/W/546/Rev.9](#)'
26. Regulation (EU) 2018/825 of the European Parliament and of the Council of 30 May 2018.
27. European Commission, DG Trade estimates for TDI measures in force at the end of 2018.
28. Council of the European Union, [press release](#): 'Council greenlights rules on screening of foreign direct investments', 5 March 2019.
29. Rhodium Group and Mercator Institute for China Studies, '[Chinese FDI in Europe: 2018 trends and impact of new screening policies](#)', March 2019.
30. European Commission, DG Trade estimates
31. European Commission, Industrial Policy Strategy, September 2017
32. European Commission, Eurostat, '[R&D expenditure by sector of performance](#)'.
33. European Commission, DG RTD estimates relating to the following Horizon 2020 tools: InnovFin Equity; support actions on capacity building for Technology Transfer Offices and IP support; the invest Horizon Coordination and Support Action; a dissemination booster to assist projects in finding their way to the market; the European Research Council proof of concept programme; as well as support under thematic work programmes and the Innovative Medicine Initiative.
34. Invest Europe, '2017 European Private Equity Activity Report', May 2018.
35. Mercator Institute for China Studies, 'Chinese tech standards put the screws on European companies', 29 January 2019.



European Political Strategy Centre

The European Political Strategy Centre (EPSC) is the European Commission's in-house think tank. It reports directly to President Juncker and operates under his authority.

The mandate of the EPSC includes: **strategic analysis and policy advice**, both short- and long-term, to the President and the College on issues related to the policy priorities of the Juncker Commission (as defined by the President in his political guidelines presented to the European Parliament on July 15 2014); and **outreach** to decision-makers, think tanks and civil society at large.