

V. Controlling technology transfers and foreign direct investment: The limits of export controls

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A key focus of national and multilateral controls on the export of dual-use items and arms is regulating transfers of ‘sensitive’ or ‘strategic’ technology. In the context of export controls, technology is defined as ‘specific information which is required for the “development”, “production” or “use” of a controlled item’.¹ Detecting unauthorized transfers of technology defined in this way is a particularly challenging aspect of export controls. Unlike almost all other items that are subject to export control, technology can take an intangible form (e.g. knowledge that is carried in an individual’s head) and be transferred using intangible means (e.g. emails or other means of transferring data electronically).² In its broadest sense, technology refers to ‘machinery and equipment developed from the application of scientific knowledge’.³ Transfers of this type of technology are regulated by a range of different instruments, including systems for screening and blocking foreign direct investment (FDI). FDI is ‘Investment from one country into another (normally by companies rather than governments) that involves establishing operations or acquiring tangible assets, including stakes in other businesses’; it ‘is not just a transfer of ownership as it usually involves the transfer of factors complementary to capital, including management, technology and organisational skills’.⁴ In recent years a number of states, including the United States and several European states, have taken steps to strengthen their FDI screening tools for two sets of related reasons.

First, rapid advances in a range of areas, such as artificial intelligence, biotechnology, robotics and autonomous systems, are expected to have significant implications for the capabilities of conventional arms and weapons of mass destruction (WMD).⁵ However, the pace at which these advances are

¹ Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-use Goods and Technologies, ‘List of dual-use goods and technologies and munitions list’, WA-LIST (16) 1 Corr. 1, 17 Feb. 2017; and Missile Technology Control Regime, ‘Equipment, software and technology annex’, 19 Oct. 2017.

² Bromley, M. and Maletta, G., *The Challenge of Software and Technology Transfers to Non-proliferation Efforts: Implementing and Complying with Export Controls* (SIPRI: Stockholm, Apr. 2018); Brockmann, K., ‘Drafting, implementing, and complying with export controls: The challenge presented by emerging technologies’, *Strategic Trade Review*, vol. 4, no. 6 (2018), p. 7; and Bromley, M., Brockmann, K. and Maletta, G., ‘Controls on intangible transfers of technology and additive manufacturing’, *SIPRI Yearbook 2018*, pp. 437–47.

³ ‘Technology’, *Concise Oxford English Dictionary*, 12th edn (Oxford University Press: Oxford, 2011).

⁴ ‘Definition of foreign direct investment’, *Financial Times*.

⁵ See e.g. Breedlove, P. and Kosal, M. E., ‘Emerging technologies and national security: Russia, NATO, & the European theater’, Hoover Institute, 25 Feb. 2019; and Brockmann, K., Bauer, S. and Boulanin, V., *Bio Plus X: Arms Control and the Convergence of Biology and Emerging Technologies* (SIPRI: Stockholm, Mar. 2019).

occurring and the extent to which many of them are primarily focused on the development of civilian products—such as self-driving cars, medicines and manufacturing tools—make it difficult to identify specific items that could be made subject to export control without affecting levels of competitiveness and innovation in the sectors involved. Moreover, the fact that many of these advances are being made in the civilian sector—and not by companies in the defence sector or those involved in government-run or government-funded research—can make it harder for national authorities to know which companies and research institutes are involved and to exert control or influence over them. A state has a unique relationship with the defence sector—acting as customer, sponsor and regulator—which allows it to control, influence or oversee the systems that are being developed.⁶ The lines of control and influence are more tenuous in the commercial sector and it is here that many of the key developments are taking place. For example, although companies in the defence sector are investing heavily in developing systems of automation, the resources concerned are small compared to those deployed by the information and communications technology (ICT) and transport sectors.⁷

Second, many states—and particularly China—are seeking to invest in or take over many of the companies and research institutes that work in these areas. In the case of China, these investments form part of an ambitious set of economic development strategies that the Chinese Government is pursuing, which also involves investing in companies engaged in the construction and management of critical infrastructure.⁸ This raises a range of concerns regarding (a) the potential for Chinese companies to gain a commercial advantage over their Western competitors; (b) the ability of Western militaries to maintain secure and reliable supply chains for key materials; and (c) the ability of the Chinese Government to either influence or collect intelligence about Western states' economic and security policies. However, a key concern is the extent to which these investments are allowing Chinese companies to gain access to technology that might not be subject to export controls but, for the reasons highlighted above, could benefit China's military capabilities.⁹ There are a number of covert and overt mechanisms through which transfers of such technology from the West to China can occur, such

⁶ Heidenkamp, H., Louth, L. and Taylor, T., *The Defence Industrial Triptych: Government as Customer, Sponsor and Regulator*, Whitehall Paper (Royal United Services Institute: London, 2013).

⁷ Boulanin, V. and Verbruggen, M., *Mapping the Development of Autonomy in Weapon Systems* (SIPRI: Stockholm, Nov. 2017).

⁸ Wübbeke, J. et al., *Made in China 2025: The Making of a High-tech Superpower and Consequences for Industrial Countries*, Mercator Institute for China Studies (MERICS) Papers on China no. 2 (MERICS: Berlin, Dec. 2016).

⁹ Kania, E. B., 'China's threat to American government and private sector research and innovation leadership', Testimony before the Permanent Select Committee on Intelligence, US House of Representatives, 19 July 2018.

as industrial espionage, acquisitions, research collaboration with Western companies and universities, and the establishment of joint ventures between Chinese and Western companies. However, FDI has emerged as one of the main avenues through which these transfers are pursued.¹⁰

Western states have responded by seeking to determine whether there are possible gaps in their existing technology export controls that need to be filled by adding new items to the control lists. However, they have also become increasingly interested in systems for regulating, screening or blocking FDI. Unlike the foreign acquisition of companies, FDI often involves ‘the transfer of factors complementary to capital’, such as organizational skills, management, and—crucially—technology.¹¹ Since the 1970s there has been a global shift towards a greater liberalization of states’ controls on FDI, which has led to sustained growth in this area.¹² Despite this trend, there are still significant variations in how states regulate FDI and the extent to which they view potential transfers of sensitive or strategic technology as an issue that states should take into consideration when implementing their controls.¹³

In 2018 the European Union (EU) and the USA took steps to modify their FDI screening mechanisms. For the USA, which has long viewed national security concerns as a central component of its FDI screening processes, this represented an accentuation of previous trends and involved expanding the powers of the Committee on Foreign Investment in the United States (CFIUS), the main regulatory body charged with oversight in this area. For the EU, which has long viewed the encouragement and facilitation of FDI as one of its main policy objectives, this represented a change of course and involved the proposed adoption of common standards aimed at enabling states to better control investments that might pose a threat to ‘public order and security’. The regulatory measures that the USA and the EU are developing, the extent to which they are likely to establish stricter controls on transfers of sensitive or strategic technology, and the likely challenges they will need to overcome in order to achieve their objectives are discussed below.

US controls on foreign direct investment and emerging technologies

The US national export control system has traditionally focused not only on preventing the proliferation of arms and WMD, but also on furthering the

¹⁰ Nowens, M. and Legarda, H., ‘China’s pursuit of dual-use technologies’, International Institute for Strategic Studies, 18 Dec. 2018.

¹¹ ‘Definition of Foreign Direct Investment’ (note 4).

¹² Thomsen, S. and Mistura, F., *Is Investment Protectionism on the Rise? Evidence from the OECD FDI Regulatory Restrictiveness Index* (Organisation for Economic Co-operation and Development (OECD): Paris, 2017), p. 1.

¹³ Thomsen and Mistura (note 12), figure 5, p. 5.

USA's own national security concerns more broadly. Officials have expressly formulated the aim of protecting strategic advantages in key military and dual-use technologies, including in emerging technology areas with military applications, as one of the main goals of US export controls. For example, one of the goals of the US Export Control Reform Initiative, which was launched in 2012 during the presidency of Barack Obama and has continued since 2017 under President Donald J. Trump, is to focus controls on 'the items that provide the United States with a critical military or intelligence advantage'.¹⁴ Moreover, in addition to its export control system, the USA operates several other regulatory mechanisms—in particular controls on FDI—that can be applied to transfers of technology. As noted above, the main instrument exerting control with regard to FDI is CFIUS, a multi-agency committee chaired by the Secretary of the Treasury that is tasked with reviewing FDI in the light of possible national security concerns.¹⁵ A combination of the extraterritorial powers available under US law and the political and economic influence of the US Government means that CFIUS is even able to block the acquisition of foreign firms that hold US assets. For example, in 2016 CFIUS blocked plans by Chinese investors to purchase the German chip manufacturer, Aixtron, and the sale of Lumileds lighting by the Dutch company Philips to a Chinese fund.¹⁶

These aspects of US export controls have become more pronounced under the Trump administration. In 2018 two new laws strengthened US controls on FDI and put a particular focus on 'emerging and foundational technologies' in both export controls and FDI screening: the Export Control Reform Act and the Foreign Investment Risk Review Modernization Act (FIRRMA).

The 2018 Export Control Reform Act re-established a permanent statutory basis for the Export Administration Regulations (EAR) enacted by the Department of Commerce.¹⁷ These had previously required prolongation by presidential executive order since their lapse in 2001.¹⁸ The reform included a review of licensing requirements for states that are subject to sanctions and requires the Department of Commerce to consider the impacts of export licensing 'on the US defense industrial base'.¹⁹ In addition to these changes to the US export control system, the Department of Commerce's Bureau of Industry and Security (BIS) also began a process of public consultation as

¹⁴ US Bureau of Industry and Security, Commerce, 'Revisions to the Export Administration Regulations: Initial Implementation of Export Control Reform', 16 Apr. 2013.

¹⁵ For more information on CFIUS see US Department of the Treasury, 'The Committee on Foreign Investment in the United States (CFIUS)'.

¹⁶ Auchard, E., 'Chinese drop investment in maps firm HERE after US resistance', Reuters, 26 Sep. 2017.

¹⁷ The Export Control Reform Act is Subtitle B of Title XVII of the National Defense Authorization Act for Fiscal Year 2019, Public Law no. 115-232, signed into law 13 Aug. 2018.

¹⁸ Hogan Lovells, 'Export control reform 2.0', 21 Aug. 2018.

¹⁹ Hogan Lovells (note 18).

part of an Advance Notice of Proposed Rulemaking (ANPRM). The process sought the views of companies and research institutes to identify ‘specific emerging technologies that are essential to the national security of the United States’.²⁰ As part of the ANPRM, BIS for the first time identified 14 ‘representative technology categories’ that broadly outline the scope of which technologies could be considered emerging technologies.²¹ While this public consultation is only the first step in formalizing these categorizations, it will be significant for both export controls and the CFIUS, as it will shape the scope of the FDI that will be scrutinized.

The 2018 FIRRMA is set to expand the kinds of investment, industry and technology covered by CFIUS in the light of growing concern that some forms of FDI have fallen outside its jurisdiction. It will also make CFIUS processes timelier and more effective.²² Some of the key provisions on ‘critical technologies’—defined by FIRRMA as technologies covered by US export control regulations and by the multilateral export control regimes, including ‘emerging and foundational technologies controlled pursuant to section 1758 of the Export Control Reform Act’—were rolled out as part of an 18-month pilot programme, which invited public comments during the first month.²³ Under the programme the jurisdiction of CFIUS is expanded to cover non-controlling investments by foreign persons in US companies involving critical technologies or producing, designing, testing, manufacturing, fabricating or developing such technologies for use in a specific set of industries.²⁴

The European Union’s proposed rules on the screening of foreign direct investment

EU member states have less restrictive controls on FDI compared with many other parts of the world.²⁵ In fact, one of the key goals of the EU has been to facilitate this type of cross-border investment. Article 63 of the Treaty on the

²⁰ US Department of Commerce, Bureau of Industry and Security, ‘Advance notice of proposed rulemaking: Review of controls for certain emerging technologies’, *Federal Register*, vol. 83, no. 223 (19 Nov. 2018).

²¹ The 14 technology categories are biotechnology, artificial intelligence, position, navigation and timing (PNT) technology, microprocessor technology, advanced computing technology, data analytics technology, quantum information and sensing technology, logistics technology, additive manufacturing, robotics, brain-computer interfaces, hypersonics, advanced materials and advanced surveillance technologies. US Department of Commerce (note 20).

²² US Department of Treasury, Summary of the Foreign Investment Risk Review Modernization Act of 2018, [n.d.]. The Foreign Investment Risk Review Modernization Act is Subtitle A of Title XVII of the National Defense Authorization Act for Fiscal Year 2019 (note 17).

²³ US Department of Treasury, Office of Public Affairs, ‘Interim regulations for FIRRMA pilot program’, Fact sheet, 10 Oct. 2018; and US Department of Treasury, Office of Public Affairs, ‘Q&A: Interim regulations for FIRRMA pilot program’, 10 Oct. 2018.

²⁴ Reynolds, J. B. et al., ‘First step toward defining “emerging technology” under export control reform act’, DavisPolk, 28 Nov. 2018.

²⁵ Thomsen and Mistura (note 12).

Functioning of the European Union (TFEU) prohibits ‘all restrictions on the movement of capital between Member States and between Member States and third countries’.²⁶ However, the TFEU also notes that such restrictions may be put in place for the achievement of the objectives defined in the treaty, ‘including on public security and public policy grounds’.²⁷ The practices of EU member states in this area vary significantly and there is no compulsory policy-coordination mechanism for member states, even concerning situations where FDI might have cross-border security implications involving multiple EU states.²⁸ Currently, 14 EU member states have FDI screening mechanisms in place but several have recently introduced—or are planning to introduce—more stringent systems that pay closer attention to investment that raises national security concerns.²⁹

In 2016 key EU member states began to raise concerns about the level and origin of certain types of FDI that they were witnessing. Between 2015 and 2016 annual Chinese FDI in the EU rose by two-thirds to €35 billion.³⁰ The value of Chinese FDI in the EU has since fallen—to €29 billion in 2017 and €17 billion in 2018—possibly in response to China’s imposition of tighter controls on outward financial flows and because of the policy responses of EU member states.³¹ In October 2016 Germany’s minister of economic affairs and energy, Sigmar Gabriel, raised concerns about China being ‘on a shopping tour’ in Europe with the aim of acquiring strategically important technologies.³² Gabriel called for the creation of an EU-wide ‘safeguard clause’ that could be used to block foreign takeovers of firms that produce, own or handle technology deemed strategic for Europe’s competitiveness.³³ In February 2017 France, Germany and Italy sent a joint letter to the European Commission asking it to establish a new legal instrument that would allow EU member states to put in place additional mechanisms to monitor and block

²⁶ Consolidated Version of the Treaty on the Functioning of the European Union, *Official Journal of the European Union*, C 326, 26 Oct. 2012.

²⁷ European Commission, ‘Proposal for a Regulation of the European Parliament and of the Council Establishing a Framework for Screening of Foreign Direct Investment into the European Union’, 13 Sep. 2017.

²⁸ Hogan Lovells, ‘New EU framework for screening foreign direct investment’, Lexology, 4 Dec. 2018.

²⁹ The 14 member states are Austria, Denmark, Germany, Finland, France, Latvia, Lithuania, Hungary, Italy, the Netherlands, Poland, Portugal, Spain and the United Kingdom. European Parliament, Committee on International Trade, ‘Deal on screening of foreign direct investment backed in trade committee’, Press release, 10 Dec. 2018; and Hogan Lovells (note 28).

³⁰ Hanemann, T. and Huotari, M., *EU–China FDI: Working Towards Reciprocity in Investment Relations*, Mercator Institute for China Studies (MERICS) Papers on China no. 3 Update (MERICS: Berlin, May 2018).

³¹ Hanemann, T., Huotari, M. and Kratz, A., *Chinese FDI in Europe: 2018 Trends and Impact of New Screening Policies*, Mercator Institute for China Studies (MERICS) Papers on China (MERICS: Berlin, Mar. 2019).

³² Nienaber, M., ‘German minister ups rhetoric against takeovers ahead of China trip’, Reuters, 29 Oct. 2016.

³³ Nienaber (note 32).

foreign acquisitions.³⁴ In May 2017 the European Commission published a reflection paper on ‘harnessing globalization’ that stressed the need for the EU to remain open to investment while also acknowledging concerns about patterns of FDI and ‘the need to defend the EU’s essential interests’.³⁵

On 13 September 2017 the European Commission published a proposal for a regulation that would establish a common EU legal framework for the screening of flows of FDI into the EU.³⁶ Following negotiations between the European Parliament, the European Commission and the Council of the EU, a final version of the regulation was agreed on 20 November 2018, and it was adopted in early 2019.³⁷ The regulation does not require EU member states that do not have a screening mechanism to put one in place nor does it spell out in detail what features such a mechanism should have. Instead, it sets out basic requirements that should be common to any screening mechanism, creates an obligation on states to share information about cases they are considering, and allows states to provide comments on cases of FDI that are taking place elsewhere in the EU. The European Commission will also be able to issue non-binding opinions on cases of FDI that are ‘likely to affect projects and programmes of Union interest on grounds of security or public order’.³⁸

Controlling the transfer of sensitive or strategic technologies is only one of the challenges that the regulation seeks to address. However, many of the concerns that led to its drafting relate to this issue and references to it were strengthened during the drafting process. The final version says that states should consider the potential effects on ‘critical technologies and dual use items as defined in point 1 of Article 2 of Council Regulation (EC) No 428/2009, including artificial intelligence, robotics, semiconductors, cybersecurity, aerospace, defence, energy storage, quantum and nuclear technologies as well as nanotechnologies and biotechnologies’ when deciding whether to approve FDI, as well as whether the foreign investor is ‘directly or indirectly controlled by the government, including state bodies or armed forces’.³⁹

³⁴ ‘France, Germany, Italy urge rethink of foreign investment in EU’, Reuters, 14 Feb. 2017.

³⁵ European Parliament, ‘Legislative train schedule: A balanced and progressive trade policy to harness globalisation’, 14 Dec. 2018.

³⁶ European Parliament (note 35).

³⁷ European Parliament, Committee on International Trade, ‘Provisional agreement resulting from interinstitutional negotiations’, 6 Dec. 2018; and Regulation (EU) 2019/452 of the European Parliament and of the Council of 19 March 2019 establishing a framework for the screening of foreign direct investments into the Union, *Official Journal of the European Union*, L 79 I, 21 Mar. 2019.

³⁸ Regulation (EU) 2019/452 (note 37), para. 19.

³⁹ Regulation (EU) 2019/452 (note 37), articles 4(1)(b) and 4(2)(a). The cited regulation is the EU Dual-use Regulation. Council Regulation 428/2009 of 5 May 2009 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items’, *Official Journal of the European Union*, L 134, 29 May 2009.

Conclusions

The new EU regulation will not force member states to put FDI screening measures in place. However, the exchanges of information that will take place and the creation of agreed minimum standards are likely to encourage more to do so and to help to ensure that the measures that do exist are better harmonized and more effective. If it is to operate effectively, however, the regulation will have to overcome a number of significant obstacles. EU member states do not necessarily have a harmonized view of which cases of FDI represent a threat to 'public order and security'. Not all EU member states have a clear sense of which companies and research institutes based on their national territory are producing or developing sensitive or strategic technology. Some EU member states may be unwilling or unable to share details of cases of FDI that they are considering if this means sharing commercially sensitive information. Finally, not all EU member states have the legal and regulatory powers in place to allow investments to be blocked.

In the USA, all of the relevant instruments, powers and decision-making structures in the field of FDI controls are centrally located and the state has a clear, economically driven rationale for what it is trying to achieve through their application. Moreover, this effort is taking place in tandem with a wider attempt to map which technologies should be considered 'sensitive' or 'strategic' and to determine whether there are items that need to be added to or removed from the US export control list. No equivalent mapping is taking place at the EU level. However, the model being pursued by the USA is one that few other states could realistically expect to emulate, given its reliance on the broader economic and political power that the USA wields. Moreover, this pursuit is both driven and underpinned by the growing protectionist tendencies of the Trump administration and in the shadow of a slowly escalating trade war with China. As such, it may come to be seen as further evidence of the willingness of the USA to use trade controls to further its own economic interests. In the long term, this might undermine the value of trade controls as a multilateral tool for countering destabilizing transfers of arms and dual-use items.