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Introduction to evidence

I am Director of Defence and Security for Democracy (DSD) at the think tank Civitas and a Fellow of the Institute of Economic Affairs. I have a PhD from Imperial College London (on Chinese political economy) and an MPhil in Chinese Studies from the University of Cambridge.

Defence and Security for Democracy (DSD) at Civitas exists to analyse and raise awareness of the challenges to UK security and democracy created by major authoritarian states, which informs the following submission. However because Civitas is a think tank with no corporate view, this evidence is submitted in a personal capacity.

The evidence draws on two papers published by the author at Civitas (please consult these papers for full citations). These are:

A Long March through the Institutions: Understanding and responding to China's Influence in international organisations (August 2020, co-author Robert Clark). <https://www.civitas.org.uk/content/files/A-Long-March.pdf>

Inadvertently Arming China? The Chinese military complex and its potential exploitation of scientific research at UK universities (February 2021, co-author Robert Clark)

<https://civitas.org.uk/publications/inadvertently-arming-china/>

Because this evidence is over 3,000-words long, it begins with a short summary. The evidence that follows is divided into two sections.

¹ As noted in the introduction, this submission draws on two reports co-authored with Robert Clark. Please also see the written evidence submitted by Robert Clark (TRC0008)

Submission of evidence

Summary

This evidence addresses, first, China's use of Belt and Road (BRI) institutions including the Asian Infrastructure Investment Bank (AIIB) as the tools of an increasingly expansionist foreign policy that poses growing challenges for liberal values, outlining proposals for an improved UK response; second, the submission provides evidence of investments in UK universities by Chinese military conglomerates and military-linked universities and the resulting scientific outputs, demonstrating the risk of inadvertently aiding the technological development of the Chinese military.

The resulting proposals include the following:

- UK membership and funding of the Chinese-dominated Asian Infrastructure Investment Bank (AIIB) is liable to strengthen China's 'debt diplomacy' abroad and help China develop institutions intended to engage in competition with liberal norms. The United States and Japan declined to become members of the AIIB for these reasons. Similar concerns should inform the UK's approach to the Belt and Road Initiative (BRI) generally. UK membership and funding of the AIIB should cease;
- The UK is far behind the US in taking action against PRC companies and institutions that pose a threat to our national security, to human rights, and to our international interests. These continue to be able to invest in the UK, including in scientific research in UK universities which is liable to be used for military purposes in the PRC. The UK should list all those Chinese military-linked companies and institutions that it wants to bar from sponsoring scientific research in UK universities and from research cooperation in general;
- The UK should also list those entities it wishes to prevent making inward investments generally into the UK. This has been the practice of the US government and is continuing with the new administration;
- Government should initiate a public audit of UK universities' sponsorship policies to establish the total Chinese funding of UK technology research and establish new rules for universities

themselves, as well as for UKRI, Innovate UK, the Royal Society, and research councils;

- Set up the mooted UK equivalent of the Committee on Foreign Investment in the United States (CFIUS), whose role would include monitoring and assessment of university sponsorship, but should do so as an interagency organisation, as in the United States, instead of one within a single government department; and
- While it is important to preserve academic freedom, the government should more deeply assess whether some of what is currently deemed 'basic scientific research', or research with findings in the public domain, may have possible dual-uses in sanctioned countries including China, and where approval for research centres may have allowed projects which are exposed to this risk to take place, and reassess which areas of scientific research can be carried out by public research institutions and/or in which research findings can be publicly released.

Section 1

China's approach

This section of evidence is in response to Questions 1 and 2 under the heading "China's approach":

1. What are the implications of China's pursuit of major international strategic initiatives (such as the Belt and Road Initiative) for the UK's foreign, development and security interests? Are these in conflict with, or compatible with, the UK's interests?

2. How and in what ways does China use its economic strength as a foreign policy tool? How should the UK respond to this approach?

The evidence is drawn from the paper above *A Long March through the Institutions: Understanding and responding to China's Influence in international organisations* (August 2020, co-author Robert Clark).

<https://www.civitas.org.uk/content/files/A-Long-March.pdf>

The Covid crisis and the relationship between China and the WHO has prompted a reassessment of China's relationship with international institutions. There are broadly two 'fronts' to China's increasingly expansive strategy:

1. Influencing and potentially co-opting existing organisations such as UN bodies;
2. Creating rival Chinese-dominated international institutions to propagate political norms and to promote China's regulatory and technical standards.

We focus here on the second area. China's new, parallel, BRI-linked institutions include the Asian Infrastructure Investment Bank (AIIB), where Beijing has overall control of major operations and which Washington and Tokyo believe may come to rival the World Bank.

The Shanghai Cooperation Organisation (SCO) meanwhile accounts for half the world's population, and its charter shows how it sees itself as a counter to NATO.

The UK and its allies need to build a clearer picture of the mechanics and aims of Chinese-originated institutions. It is already apparent that UK membership – and funding – of the Asian Infrastructure Investment Bank (AIIB) is liable to strengthen China's 'debt diplomacy' abroad. Similar concerns should inform the UK's approach to the Belt and Road Initiative (BRI).

Here, the UK should begin by working in a much more coordinated fashion with allies in the provision of infrastructural aid and spending especially, to create scale that can compete with Chinese offers to developing countries, and attach conditions designed to prevent the entrenchment of Chinese debt diplomacy.

The UK should go a step further by supporting the establishment of a proposed 'D10'. The D10 alliance would include the G7 countries (Japan, Italy, Germany, France, the UK, US, and Canada), in addition to India, South Korea and Australia. This bloc would make up some of the world's largest democracies, plus some of the globe's leading technology markets, and can develop competing digital infrastructure to that offered by Beijing, and help make global technology standards more robust to Chinese practices.

The way Xi Jinping himself describes China's emerging foreign policy approach is illustrative. The appearance of the concept of the 'strong nation dream' (including in his first speech as leader in 2013), is taken by many scholars to be a reference to the major 2009 work of strategic literature *The China Dream* by Colonel Liu Mingfu of Beijing's National Defence University, which advocates the concept in pursuit of the 'Hundred-Year Marathon' (discussed by Michael Pillsbury in his book of the same name), whereby China surpasses the US as 'hegemon' by 2049: Xi has also stated that the 'dream' will be realised in 2049. This informs new approaches to China's institutional behaviour, including: the Belt and Road Initiative (BRI) with its internationalisation of China's currency (through denomination of investment in Renminbi) and institutions such as the Asian Infrastructure Investment Bank (AIIB), given their capacity to become rivals to international institutions – and its use of existing institutions to promulgate authoritarian norms.

Creating authoritarian alternatives to the liberal order

Two years before Covid emerged in China, Roy Kamphausen, Commissioner for the US-China Economic and Security Review Commission, testified for the House Committee on Foreign Affairs that BRI represents a test case for China's vision for a new international order throughout Eurasia, possibly even the world. The BRI has now extended

into the Western Hemisphere, Europe, and the Arctic, launching what the Communist Party of China (CCP) calls a 'Digital Silk Road' and a 'Space Silk Road'. China has used the BRI to promote its influence in economic governance and, more fundamentally, international order.

This was noted by President Xi in a speech in August 2018, when he declared that the initiative 'serves as a solution for China to improve global economic governance... and build a 'community of common human destiny'', a term used by Chinese leaders to refer to progressive re-alignment.

The Asian Infrastructure Investment Bank (AIIB), like Chinese state-owned enterprises (SOEs) and development banks, is tasked by Beijing with the financing of BRI projects, but is liable to pose a challenge for open market economies, as China begins to create parallel institutions, especially international financial institutions and development banks linked to the BRI. In the process, China appears to be structuring these institutions to align with its own governance styles.

The Belt and Road Initiative (BRI) and Chinese strategy

The Belt and Road Initiative (BRI) promotes Chinese-led alternative financial institutions across Eurasia and the Indo-Pacific. By January 2020, 2,951 BRI-linked projects with a combined value of \$3.87trn were planned or under way. Drafting an infrastructure or energy project to the BRI through an MoU provides crucial access to Chinese finance from its state-owned enterprises (SOEs) and development banks, the two largest being the Export-Import Bank of China and the China Development Bank (CDB).

The US strategist and former senior Defense Department official Michael Pillsbury (above) has described how Xi's language illustrates long-term Chinese strategy. Herein the notion of 'harmony' in Chinese strategy and geopolitics is understood as referring in part to the possibility of unipolar dominance – the 'Chinese dream' for a 'common human destiny'. CCP leaders have since described the BRI as a test for this effort.

One of the means by which Beijing seeks to apply leverage through the BRI is debt, which according to the Oxford Business Group (2020) implies developing economies 'risking unsustainable debt burdens for projects that are not necessarily in their national interest'. In December 2017, Sri Lanka formally ceded 70 percent of control of Hambantota Port to a Chinese state-owned enterprise (SOE) on a 99-year lease, after it became unable to repay loans from China with which it had paid for the construction of the strategic \$1.3bn port in the Indian Ocean.

In dealing with BRI-linked states, and issuing loans, grants and infrastructure projects, China seeks no preconditions or favourable governance models, as western countries often do, which may hinder the promotion of human rights and civil liberties.

The Asian Infrastructure Investment Bank (AIIB)

Frustrated by what China regarded as their favourable policy towards the US, Europe and Japan, Beijing has sought to create an alternative to the World Bank, IMF and Asian Development Bank (ADB). Officially launched by President Xi on a state visit to Indonesia in October 2013, the Asian Infrastructure Investment Bank (AIIB) is a multilateral development bank (MDB); whereas the US and Japan have refused to join the organisation, the UK has, in addition to France, Germany and Italy. In the AIIB, the UK's \$3,054.7m subscription gives it a 2.9 percent vote-share – overshadowed by China's \$29,780.4m subscription and 26.6 percent vote.

However, rather than act as an MBD along similar lines to the World Bank/IMF, China expects not simply more influence in the institution but overriding control and veto power in the bank's operations.

These powers include many means by which other members might attempt to change bank governance, currently weighted in China's favour. China's voting power in the AIIB of 26.6 percent overrides a 75 percent majority vote and is significantly larger than the 15.02 percent US vote share in the World Bank or Japan's 12.84 percent vote share in the ADB. China also has more control over the appointment of the President of the AIIB than the US in the World Bank or Japan in the ADB.

In addition to control and veto power, there are important concerns about the bank's internal governance arrangements, and whether these provide acceptable checks on Beijing's power. Like other multilateral development banks, the AIIB has a three-layer governance structure involving a Board of Governors, a Board of Directors, and management. In contrast to the AIIB, the World Bank and IMF were established with executive boards to act as a political check on decisions.

The Shanghai Cooperation Organisation (SCO)

Founded in 2001 by China, Uzbekistan, Kazakhstan, Kyrgyzstan, Tajikistan, and Russia, the Shanghai Cooperation Organisation (SCO) is headquartered in Beijing, with the Regional Anti-Terrorist Structure (RATS) in Tashkent, Uzbekistan. The organisation includes eight member

states (India and Pakistan were admitted in 2015), in addition to four observer states (Afghanistan, Belarus, Iran and Mongolia), and six dialogue partners, including Turkey. By 2017, the eight full members accounted for approximately half the world's population, a quarter of its GDP, and 80% of the Eurasian land mass.

According to the SCO's founding charter, its objectives include making 'joint efforts to maintain and ensure peace, security, and stability in the region – and moving towards the establishment of a democratic, fair and rational new international political and economic order'. Two dominant factors can be inferred from the charter. First, the SCO is primarily a regional security alliance. Critical to this effort is counter-terrorism operations across member states, conducted by RATS, which combat the 'three evils' of terrorism, separatism, and 'extremism'. The second observation is that the SCO is a counter to NATO and the North Atlantic security alliance generally. By describing itself as 'fair' and 'rational' it also implies a challenge to the legitimacy of existing security alliances', particularly through the prism of central Asian security concerns following the US-led War on Terror in addition to threats from separatism and Islamic radicalisation.

Russia's Foreign Minister Sergey Lavrov has implicitly confirmed the SCO's role as a counter to NATO. In an article for Rossiyskaya Gazeta on 10 September 2014, Lavrov suggested: 'The SCO is fully in tune with the realities and demands of the 21st century, unlike the relics of a past era that rely on rigid adherence to discipline that exists within particular blocs of countries'.

However there are two major differences between the SCO and NATO. While NATO in general is a collection of Euro-Atlantic liberal democracies, the six SCO founding members are generally authoritarian states. The second major difference is that while the cornerstone of NATO is Article Five, assuring collective self-defence for all members, there is no such guarantee within the SCO.

China has also transformed the SCO from what had been described as a central Asian security alliance combatting terrorism and 'extremism' to include mechanisms for collaboration on trade, finance, development and legal issues, including establishing the Interbank Association in 2005, Business Council in 2006, and Development Fund in 2009, institutions created to strengthen cooperation between the major banks of the SCO nations, helping implement regional investment projects and drive economic and trade relations between member states. Beijing uses these mechanisms to strengthen its SCO role, including through loans to SCO member countries. Beijing used a 2009 heads of state summit to announce a \$10bn credit line for SCO members to help them 'counter the

shock of the international financial crisis'. This precedent that was set in 2004 when Beijing pledged \$900m of preferential export buyers' credit to SCO members.

Beijing has been able to utilise these financial and trade mechanisms to develop the BRI among SCO members, such as the Central Asia-China Gas Pipeline which crosses Uzbekistan and Kazakhstan to Xinjiang; China has also promised a \$16.3bn fund to 'integrate' the region within BRI. China will also invest \$5.8bn in the Moscow-Kazan High Speed Railway and its extension through China, creating a continuous rail network from China's industrial heartlands to western Europe.

Section 2

Trade

This section is in response to Question 2 under the heading "Trade":

2. How important is Chinese investment to the UK? What are the principal sources of current and potential investment (for example private companies or sovereign wealth funds)? Which sectors receive the most investment?

The evidence that follows is drawn from the paper above, *Inadvertently Arming China? The Chinese military complex and its potential exploitation of scientific research at UK universities* (February 2021, co-author Robert Clark).

<https://civitas.org.uk/publications/inadvertently-arming-china/>

There is a pervasive presence of Chinese military-linked conglomerates and universities in the sponsorship of high-technology research centres in UK universities.

In many cases, these UK universities are or have been generating research that is sponsored by and/or may be of use to China's military conglomerates, including those involved in the production of Weapons of Mass Destruction (WMDs), including intercontinental ballistic missiles (ICBMs) as well as hypersonic missiles, in which China is involved in a new arms race and seeks 'massively destabilising' weaponry. None of the evidence below implies that UK universities or UK-based researchers have intentionally helped the development of the Chinese military: we believe they have entered into these relationships in good faith.

Much of this research is entirely based at UK universities, while other research outputs include cooperation with researchers in China, often at the military-linked universities or companies sponsoring the UK research centre. Many research projects will have a civilian use. UK-based researchers will be unaware of a possible dual use that might lead to a contribution to China's military industries.

Most Russell Group universities and many other UK academic bodies have or have had research relationships with Chinese military-linked manufacturers and universities. Much of the research at the university centres and laboratories is also being sponsored by the UK taxpayer through research councils, Innovate UK, and the Royal Society.

This should be seen in the context of China's stated aim to equal the US military by 2027 and to use advanced military technology to leapfrog the US by 2049, the centenary of the founding of the People's Republic of China (PRC). Beijing's strategy of 'civil-military fusion' also involves the integration of military and civilian industry and technology intended to give the People's Liberation Army (PLA) a leading edge in adapting emerging technologies. The existence of this strategy makes any claim to be able to reliably cooperate only with the civil branches of Chinese military-linked companies and universities less credible.

Our report analysed the relationships that UK universities have established with 22 Chinese military-linked universities as well as weapons suppliers or other military-linked companies. Many of these Chinese universities are deemed 'Very High Risk' by the Australian Strategic Policy Institute (ASPI). The report also included statements from the UK institutions analysed: provided they responded to our enquiries, the position of each was represented to the fullest extent possible.

Sponsorship of high-technology research in UK universities covers areas such as:

- Metals and alloys;
- Aerospace physics and hypersonic technology;
- Ceramics, piezoelectrics and rare earths;
- Drones and radars;
- Shipbuilding;
- Data science, AI, and facial recognition;
- Robotics (land, sea and space).

Significant UK university relationships

Our investigations and analyses suggest the following (please consult the paper for more detail):

Imperial College London

Imperial has at least four research centres sponsored by major Chinese weapons suppliers. One of Imperial's sponsors is developing China's next-generation stealth fighters, for which engine research has been a major challenge. It recently described a major breakthrough in turbine blades that also happened to be in an area of research one of its subsidiaries has sponsored at its Imperial centre. The firm also sponsors composites research at Imperial, including carbon fibre-reinforced plastic (CFRP), a radar-absorbing stealth material that is receiving 'ever more

attention from the arms industry'. Imperial researches other types of composite that, in other applications, appear to be used in strike fighters.

Cambridge University

Beijing has said that exchanges between Cambridge and NUDT will 'greatly raise the nation's power [in] high-precision navigation'. One scientist who is a teaching fellow at a constituent college of Cambridge (though, like many fellows at Cambridge, not employed by the university directly) is also a Distinguished Visiting Professor at NUDT. He has researched with a scholar in the PRC whose other work includes studies of high-altitude nuclear detonation.

Manchester University

Manchester University has provided China's main nuclear inter-continental ballistic missile (ICBM) conglomerate with a UK taxpayer-subsidised research centre. One member of staff's research has been funded by the EPSRC and includes drones and air-breathing hypersonic vehicles, including a study on improved manoeuvrability with a Chinese military-linked university; a recent paper illustrates missiles moving towards the same target. One Manchester lab sponsored by a major Chinese weapons firm produces research on drone swarms.

A Manchester researcher from the PRC investigates ceramic coatings for hypersonic vehicles with a major military laboratory at China's Central South University. Manchester states this has possible 'defence purposes', and one of the papers presenting the findings calls these ceramics 'desirable for applications [in] defence sectors'. When in military use, hypersonic missiles travel at over Mach 5, with manoeuvrability that renders target-prediction impossible. An Obama-era official has called them 'leader-killers'. The EPSRC has helped fund research, by scholars from the PRC, on air-breathing hypersonic vehicles. Images from China in November 2020 showed what appeared to be a 'potentially air-breathing and nuclear capable' hypersonic missile attached to a military plane manufactured by one of Imperial's Chinese sponsors.

Another member of staff at Manchester has researched an aluminium alloy with staff at a Chinese military-linked laboratory which has separately been funded by the National Defense Program of China for research into the same alloy.

Birmingham University

Birmingham states that its practice of collecting internet users' data to predict online behaviour in cooperation with Baidu (called 'China's Google' but under US sanctions for military connections) is 'controversial'. Another project, sponsored by US-sanctioned companies including Chinese military jet manufacturers, will allow 'end-users' to 'transfer technologies to their supply chain'.

Strathclyde University

Strathclyde hosts another UK university laboratory sponsored by China's leading ICBM manufacturer whose fields include drone 'swarming technology'. A separate Strathclyde centre, for image processing, is backed by Chinese military-linked universities as well as the Royal Society. Strathclyde researchers have cooperated with PRC institutions on research including 'person re-identification' in camera networks (for 'learning deep features').

University of Kent

One research centre at Kent has cooperated with Huawei as well as researching numerous fields, including radars and Global Navigation Satellite System (GNSS).

Warwick Manufacturing Group (WMG)

WMG trained one of the pioneers of China's ICBM programme in 1983 and is a partner of China's main ICBM-developing conglomerate today. WMG says that its priorities 'align closely with the main priorities of the State Council's plan', boasting that its '[taught] courses have been of benefit to a wide range of organisations [including weapons giant] China North Industries Corporation' (aka Norinco, whose other customers include Zimbabwe). WMG staff have researched with an alloys supplier to the Chinese military, and a military-linked university in high energy-density polymer nanocomposites: this research stated that 'functional polymer composites are attracting interest [for] high power weapons.'

Southampton University

Harbin Engineering University, supervised by the PLA Navy, says its joint centre with Southampton in naval architecture has helped it move into a 'world class' position. A Southampton researcher has investigated very large floating structures (VLFS) with at least two Chinese military-

affiliated institutions. VLFS bases would allow improved sea and air power projection into disputed waters.

Queen Mary University of London (QMUL)

QMUL calls itself 'very honoured' to have a large joint research centre with Northwestern Polytechnic University, an institution which says it is 'devoted to improving and serving the national defence science and technology industry.' One of the centre's PRC-based Chief Scientists is an authority on aero engines who has been funded by China's National Defense Technology Foundation for Scientific Research. Another has advertised his interests in modern strike fighters and hypersonic missiles.

Cranfield University at Shrivenham

Cranfield is home to Cranfield Defence and Security, a secure military site whose partners include the Atomic Weapons Establishment (AWE). A researcher at Cranfield's Centre for Electronic Warfare, Information and Cyber (CEWIC) has researched as part of a project developing automated camera surveillance of people showing physical symptoms of stress with counterparts in China. The Cranfield researcher is an expert in Electro-Optics and has been a visiting professor at Nanchang HangKong University, where optoelectrics is a designated area of military research.

Glasgow University

Glasgow has established a joint college with a major military-backed PRC university whose collaborations include with a Chinese nuclear warhead manufacturer, the Chinese Academy of Engineering Physics.

Heriot-Watt University

One Heriot-Watt researcher from the PRC cooperated with a researcher affiliated with Harbin Engineering University on research entitled *Snoopy: Sniffing your smartwatch passwords via deep sequence learning*, where UK taxpayers funded research into a password-breaking tool with a leading Chinese military-linked university which is under US sanctions, known to specialise in information security, and whose staff have been charged with espionage. The research speculates: 'in the wrong hands, Snoopy can potentially cause serious leaks of sensitive information'.

One researcher has been funded by UK defence groups to work on MIMO Radar. She has researched radar-jamming with China's military-linked Key Laboratory of Radar Imaging and Microwave Photonics, including Target Tracking While Jamming by Airborne Radar for Low Probability of Detection, which discussed stealth aircraft avoiding detection.

University of Surrey

Surrey has partnered with the China Academy of Space Technology (CAST), a subsidiary of CASC, to develop 5G technology. Its parent company is a major part of China's nuclear weapons programme.

Conclusions and recommendations

China has a long history of weapons sales to regimes that carry out grievous human rights abuses including Iran, Syria, Burma and North Korea. In addition, China's development of a surveillance state is already leading to systematic human rights abuses, with its treatment of the Uighur minority credibly described as genocide.

The methods by which the UK monitors and controls Chinese involvement in UK university research are inadequate. The companies sponsoring UK-based research centres include China's largest weapons manufacturers, including producers of strike fighter engines, ICBMs, nuclear warheads, stealth aircraft, military drones, tanks, military-use metals and materials, and navy ships. For the UK government and taxpayer to risk funding and assisting the technological development and possibly the force-projection capabilities of the military of the People's Republic of China is not in the British national interest.

This points to the need for a strategic reassessment for new rules for scientific research with PRC universities and companies, some of which should be applied directly to the UK's research councils and universities, while some may require legislation. Other rules are needed for scientific research in wider potentially sensitive scientific fields generally and in universities in particular.

Therefore we propose that the UK government should:

- List all those Chinese military-linked companies and institutions that it wants to bar from sponsoring science research in UK universities and from research cooperation in general;

- List those entities it wishes to prevent making inward investments generally into the UK. This has been the practice of the US government continues under the new administration;
- Initiate a public audit of UK universities' sponsorship policies to establish the total Chinese funding of UK technology research and establish new rules for universities themselves, as well as for UKRI, Innovate UK and research councils;
- Ensure that the new UK equivalent of the Committee on Foreign Investment in the United States (CFIUS), whose role will include monitoring and assessment of university sponsorship, is an inter-departmental organisation; and
- While it is important to preserve academic freedom, the government should more deeply assess whether some of what is currently deemed 'basic scientific research', or research with findings in the public domain, may have possible dual-uses in sanctioned countries including China, and where approval for research centres may have allowed projects which are exposed to this risk to take place.

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