World order dynamics and technological- and economic advancement

Christian Damsgaard Thomsen

Keystrokes: 175.053

Keywords: China, United States, World Order, Technological and economic advancement, power

Supervisors; Meng Xiaoxu, UIR & Li Xing, AAU

Summary

In the beginning of 2018 the United States engaged in a restrictive economic policy regarding imported goods, which in the beginning of the summer 2018 evolved to a bilateral trade-war between the US and China. The US has claimed that China's behaviour regarding intellectual property rights is unfair and exploitative of the American corporation's knowledge. China has increased its economic capabilities since opening up in 1978 after beginning to become integrated in the liberal world economy, which have brought about a categorisation of China as one of the two contemporary superpowers.

Throughout history, it may be observed that when a nation has increased its economic and technological capabilities their overall power has risen, and other nations have perceived the rising nations as a challenge to the status quo. The relations of China and the US may be perceived throughout the two first decades of the 21st century as a power struggle of two opposing ideologies and mode of governance. The rise of China has influenced the dynamics of the international community, which has brought about a situation where China is taking on greater responsibility and has begun to take up leadership positions. China has stated that it aims to become the world's leading innovative nation in the sphere of Artificial Intelligence before 2050, where a challenge of the US' technological hegemony may be conceived. This notion of China's pursuit of becoming the leading technological nation has brought about a ponder of a plausibility of potential latent structures in the US-China trade-war, which further has brought about a ponder of the plausibility of a power transition period of the world order.

The world economy is undergoing instabilities that has been established by the US' approach to achieving the goal; "Make America Great Again", which brings about connotations of a US that aims to strengthening of the overall capabilities and power of the US. The analytical approach has

assumed; China's technological and economic advancement have interrupted the status quo and the stability of the US' hegemony, which has been utilised in a deductive mode of inquiry. The deductive mode of inquiry has been based on utilisation of a qualitative and comparative method to highlight the economic and technological development of the US and China. The overall power of China and the US has been examined through economic and technological development, where AI has played the core role to highlight the disruption of the status quo of the US' technological hegemony, where it has been concluded that AI has capabilities to interfere with the national security of nations, and that China and the US have established a "knowledge-gap" between them and the other nations of the international community, based on China and the US' leading position in different sectors of AI.

The technological and economic development of China and the US has been examined through the utilisation of hegemonic stability theory and power transition theory, in relation to the current trends, cases and situations in the international community which has caused this thesis to conclude on the current era and the research question of this thesis; that the US-China trade-war is constituting a conflict of mutual economic deterrence, which can be concluded to constitute a power transition period, where the hegemon has imposed deterrence towards the challenging nation, who has retaliated with its own deterrence. This thesis has concluded that the technological- and economic advancement of a nation has the potential to disrupt the status quo of the world order.

Contents

Introduction

After several decades of showcasing compliance to World Trade Organisation (WTO), China finally became a fully integrated member in December 2001. This integration into the liberal economic order may be perceived as a critical juncture of enhancing the China-US power rivalry, which later led to the 2018 US-China trade-war(Lipton 2018). When China became integrated into the liberal world economy China's economy was not bigger than France's, which have developed throughout the first two decades of the 21st century, hitting an all-time record nominal GDP of 13,46T USD(The World Bank, International Comparison Program database 2018). It may be observed that China have had an exponential growth since the ascension into the WTO, which have caused the US to focus intensively on the rise of China and the possible China "threat". The US has been the dominant nation since the establishment of the Bretton Woods system in the end of the WWII and have had several encounters with the opposing ideology of socialism, e.g. The Soviet Union, the Marshall plan (focus on eastern Europe and containing the soviet followers) and the "Vietnam-US" war. In the wake of the 21st century a new threat to the US hegemonic position has shed its light(Hass and Balin 2019); the rise of China and the possibility of a hegemonic power struggle. The hegemonic position of the world is still the US's position, but China's rise is being debated to have the potential to overhaul the US in several crucial areas.

Throughout history it may be observed that the greatest military powers are those who have held the position as hegemon (The Roman empire, Great Britain' rule, The United States), the nations with economic advantages have had a faster and easier developmental process, regarding technological- and political expansion. Furthermore, political-, economic-, societal- and technological development in nations have throughout history meant an increase in a nation's power. An increase in power may influence the position of a nation in the international community, who reacts to the dynamics of the respective nation's rise in power, meaning that the hegemon will react when another

nation is increasing its potential to challenge the hegemon. China's reforms since its "opening-up" have been a part of establishing a domestic economic growth that may be observed as the fastest growing domestic economic growth in modern history, which caused the US to act and react.

This behaviour of the US may be observed to have been predictable, if one is to listen to the word of the Greek historian Thucydides, who wrote about ancient Greece's *polis'* (city-states) of Sparta and Athens, who collided in the Peloponnesian war, due to the rise of Athens and the fear of Sparta, according to Thucydides. A power-struggle that may be observed in the current international system, is the situation of China's and the US' behaviour in the end of the 20th century and the beginning of the 21st century, which have caused the US to focus on "the China threat", as a part of the "1992 Defense Planning Guidance" (Klare 2005), which was further emphasised in 2018(U.S. DEPARTMENT OF DEFENSE 2018).

The China "threat"

After several decades of American "fear" of "the China threat" the US "declared economic war" on China the 6th of July 2018, after a "pre-war period" of imposing economic tariffs on import of washing machines, solar panels, steel and aluminium, and later China-specific tariffs. Since the "Donald Trump" presidential campaign in the US in 2016, Donald Trump established an awareness of the China-US trade balance, which he made a focal point in the domestic politics of the US. In the awareness campaign Donald Trump officially stated that he would focus on decreasing the US' trade deficit, establish better trade relations for American corporations and fairer trade among China and the US. After the US-election was won by Donald Trump the liberal world economy and the international community began to be disrupted from within. The US began to take an isolationist and protectionist approach, both in the political- and economic sphere, where several critical junctures are mentionable; e.g. the withdrawal from the Paris agreement, imposing of international trade tariffs, and withdrawal from the 2015 Iran Nuclear deal. These withdrawals may be interpreted to have had

an influence on the international system, the status quo of the unipolar world order and the liberal world economy.

The US' behaviour after the 2016 election may be interpreted to have provided room to other nations to seize power, positions and take on some more responsibility, which historically have led to a power struggle or a hegemonic power transition. In the case of the ongoing power transition(Hass and Balin 2019), the struggle for hegemony may be interpreted to be determined by the development of the domestic sphere and the different political, economic and military areas. Furthermore, the technological development in the age of information has been deemed to be crucial in the hegemonic power struggle.

China and the US' power struggle

Soon after WWII ended, and the US was "victorious", and Europe was to be rebuild, the US assumed that a danger was emerging in the East; the Soviet Union, who fought on the eastern front in the war, a threat that was not only militarily based, but also ideological. The old enemy, Adolf Hitler's Germany, was of opposing ideology and political system (authoritative vs. democratic), which also was the case with the socialist state of the Soviet Union and the spread of communism in eastern Europe and south east Asia. The competition of ideologies escalated throughout the next several decades, while the "Communist and Soviet threat" blossomed in the US, which led to the emergence of "the Cold-War", which led to the dissolution of the Soviet Union in 1991. The US' position a hegemon was ensured again, but soon after one enemy was defeated, 1992(Klare 2005), the US began to focus on China, another ideologically opposing nation with potential to challenge the US' hegemonic position, thus established a new "enemy" in the everlasting game of "*them and us"*.

From a realist perspective; the rational mode of thought for the US is that they should attempt to secure sovereignty of their domestic territory, but also their role in the international community.

The US may be compared with Ancient Sparta, due to its position as the ruling power, as well as being the challenged nation. China may be compared to Athens, due to its fast development and its position in the hierarchy, while the US' hegemonic position may be compared to Sparta's.

The fear of another political system, that have created the developmental results that China have, is challenging the existing leading nation's political systems and its value- and norm-based system, and the West's focus on democracy and human rights, which may establish what the scholar Graham T. Allison have coined; the "Thucydides Trap"(Allison 2017). Allison has pointed out that there has been sixteen situations where an emerging power has threatened to disrupt the world order dynamics, in which twelve of them resulted in war(Allison 2017). The most recent situation, in which disruption of the status quo of the world order was emerging, was when the Soviet Union "challenged" the US. The most severe competition from "the Cold-War" may be the nuclear arms race, which according to Allison made the US and the Soviet Union unable to "kill" each other, due to the substantial damage a nuclear war would cause. China and the US is now in a situation, where the US is feeling threatened by China's development and the rules of the game.

Even though the US has been a part of establishing the contemporary rules for the international community, they have not been a part of the reformation of China's domestic rules and law, naturally, which have resulted in a controversy between China and the US about intellectual property rights. This controversy, from the US' perspective, is a big part of the technological development of China, as the US is blaming China for intellectual property theft regarding China's mode of retrieving knowledge from American corporations that are becoming integrated into the domestic market of China. This may be perceived as the US' realist mode of thought, where survival of the nation is making the US think the unthinkable about potential dangers to the status quo(Allison 2017). When Allison coined the "Thucydides Trap", he argued that not only does the behaviour of a nation in the international community matter, but the performance and development of a nation's domestic sphere

are crucial. By observing China's development since opening up in 1978, it may be deduced that China have had a consistent growth rate, which has influenced China's societal sphere greatly, with over 700 million Chinese being lifted out of poverty. The economic and societal spheres of China are not the only sphere's that have had a positive development, the political sphere has additionally had growth, and China has succeeded in establishing good relations with other emerging power, e.g. the BRICS coalition.

The BRICS coalition may further be perceived as a threat to the status quo, as their partnership is not based on democratic values and human rights but consist of another shared goal; economic prosperity. This shared goal may further be perceived as a challenge to the US' hegemonic position, as it may disrupt the Western established norms and values, due to the developing nations emerging position as rule-shapers. Since the BRICS coalition began to collaborate on projects, the US may have had a growing concern about the potential and capabilities of this non-Western alliance, especially after China began to invest in high-technology development, such as the growing expenditure towards Research & Development (R&D), the establishment of high-technology research institutions and the success that these universities and public institutions have had. The interplay of China's technological capabilities and the BRICS coalitions investments abroad, especially in Africa, may have caused concern in the US about exports of Chinese and non-American technology to developing countries, making them independent of the non-hegemon's technology.

The world has developed and so has technology, in which the US has been the leading nation since WWII, a leadership that now is being challenged by China, a nation which is non-western and is challenging the status quo, while stating that they are not contesting for hegemony(BBC News 2018d). It needs to be kept in mind that whether the nations do not publicly state their true intentions, the nations development need to be analysed to get an overview of the current situation and the possible future. The US-West led world order is directly and indirectly being challenged by China, which

is predicted to overtake the US as the biggest economy in the next decades and already is competing with the US in several other political and innovative spheres.

High-technology development in China and the US

The US and China may be perceived to be a part of a high-technology competition, a competition that the US have had a leading role in almost 100 years, opposing China who not have been a part of the high-technological top 5 until 2003(Veugelers 2017, 2–4). Since China climbed into the top 5, the nation have exported more high-technology goods and products than the US from 2004 (US 139.38B USD vs. China 163.01B USD) and is still holding the leading position compared to the US (2017: US 110.12B USD vs. China 504.381B USD)(The World Bank, International Comparison Program database 2019h).

Knowledge-intensive sectors have been a focal point for China since the beginning of the economic rise, and the expenditure and output have increased significantly the last two decades. In 2001, the US' expenditure on Research & Development (R&D) was 2.64% of the US' nominal GDP (10.62T USD), where China's was 0.91% of GDP (1.34T USD)(The World Bank, International Comparison Program database 2019h). In 2017 the US's expenditure on R&D was 2.74% of the GDP(19.39T USD)(The World Bank, International Comparison Program database 2019h), where China's was 2.11%(12.24T USD)(The World Bank, International Comparison Program database 2019h). It may be observed that China has increased its expenditure based on GDP, an increase of 1.5%, and the US' expenditure has increased by 0.10% in 2017 since 2001. Both countries are spending over 2% of their GDP on R&D.

The AI competition is the newest high-tech competition that is getting China's and the US' attention. This competition is not a new phenomenon but have been going since 1960, and the sector of AI consist of 340.000 "patent families" and over 1.6 million published scientific literature (mid

2018) (World Intellectual Property Organisation 2019, 39). 17 out of 20 in the overall top 20 universities or public institutions for AI research is based in China(World Intellectual Property Organisation 2019, 61), and World Intellectual Property Organisation (WIPO) is deeming China to be the leading nation of AI technology, which is based on each nations amount of patent families(World Intellectual Property Organisation 2019, 61–62), though the US' patent families are the most cited(World Intellectual Property Organisation 2019, 89). The US is in second place in the overall "patent family" competition based on amount, but are still in the lead in several sectors in AI, e.g. transportation, telecommunication and business, where China is leading in several others, e.g. industry and manufacturing, networks and energy management (World Intellectual Property Organisation 2019, 65–71).

It may be observed that China and US are prioritising the high-technology AI sector highly, which may be deduced from the expenditure towards this sector, the patent filings, and the amount of research that is being done. The AI-competition may be perceived as not merely a development issue, but also as a political and economic issue. The political and economic perspective to the competition may be interpreted through the potential disruptive force of AI-technology, as the outcome may influence political and economic relations, e.g. world order dynamics and ideological rivalry(Hass and Balin 2019). This AI-competition may further be perceived to have increased the tensions between the US and China and may have intensified the American concern of China and the American coined term; "the China threat".

This thesis will seek to examine, analyse and interpret on the economic and technological development of China and the US to explain the contemporary dynamics of the international community regarding world order.

Research question

Does the US-China trade war constitute a hegemonic power transition?

Methodology

Research focus

The focus of this thesis will be grounded in the field of world order studies, specifically in power transitions, hegemonic stability and world order. The US is no longer the sole dominant economy and political entity in the international community, the competition between China and the US has never been so intense, and China is predicted to become the top 1 economy. The exponential growth of China may be perceived as a threat to the US' hegemony, which in interplay with the technological and economic development of China further may be perceived as a change in power dynamics in the international community.

China and the US as nations both employ billions of dollars into establishing economic, military, technology, societal and political growth, of which this thesis will focus on the economic and technological growth of China and the US. The research focus will consist of the assumption; China's technological and economic advancement have interrupted the status quo and the stability of the US' hegemony.

The thesis is construed by different research methods to get an extensive overview of the dynamics of the 21st century world order and the contemporary US-China power struggle; the US-China trade-war.

World order study – realist perspective

This thesis is grounded in international relations studies, in which the subfield of world order studies has emerged as a result of scholars arguing that politics and economics must be analysed together to get a comprehensive overview of foreign affairs and the world order dynamics(Mittelman 1983, 325–28). The field of world order studies emerged as an alternative to traditional international relations and as a movement to encourage critical international scholars(Mittelman 1983, 325).

This study will additionally be grounded in Marxist world order studies, thus making this thesis have its starting point in "*Man must produce to subsist*" and "*Man must consume to satisfy his needs"*(Mittelman 1983, 328). This means, that the mode of thought will be based on China's and the US' need to expand and the need of satisfaction. Satisfaction that is being sought for by China and the US by increasing their capabilities in the political-, economic-, technological- and societal sphere, thereby ensuring subsistence by expansion of power.

Furthermore, this thesis will focus on the structural changes and the historical dynamics of the international community, with the situation of the US-China trade-war as a critical juncture in the US-China competition. The variables that this thesis will analyse in the light of the ruling mode of production; capitalism, to be able to answer the research question comprehensively, are: hegemony, structures, transition and the state(Mittelman 1983, 330–42). The concept of hegemony will be analysed as the political-, intellectual-, economic- and moral leadership of the international community, in which structures, transition and the state will be the focus.

The US will be analysed and compared, the structures of the international community will be analysed through data consisting of technological and economic development, to interpret on the domestic development of China and the US. Transition will further will analysed through the usage of data consisting of technological and economic development, which is inspired by Stephen D. Krasner and Michael C. Webb's empirical assessment of Hegemonic Stability Theory(Webb and Krasner 1989), in which international economic relations is highlighted as an important variable for interpreting power dynamics of the international community. The mode of analysis is further inspired by Jacek Kugler and A.F.K. Organski's empirical assessment of nuclear power and power transition(Kugler and Organski 2011), in which they analysed the dynamics of deterrence and power transition.

This thesis will analyse the dynamics of technological- and economic development in relation to the transition periods that Kugler and Organski used in their study "*The Power Transition: A Retrospective and Prospective Evaluation"*(Kugler and Organski 2011, 187). Organski and Kugler utilised nuclear power and development over time as variables for observing the dynamics of the power struggle of the US and the Soviet Union, the same method that this thesis will utilise. The analysis will use this analytical instrument and the variables of; economic development over time and technological development over time, to observe the dynamics of the 21st century technological and economic competition, to interpret on whether the status quo will prevail, or the US-led hegemony is decreasing.

Additionally, the analysis will focus on critical junctures in the technological and economic spheres, to give an overview of the US' and China's development in attitude, ideas, structures and the state. The critical junctures as data will help envision the development of the two superpowers' contemporary capabilities. The utilisation of both economic and technological development will help clarify the correlations between economic capabilities and technological capabilities, in which the extended focus of this thesis is AI, which is heavily dependent on high-technology investments and knowledge, thus making research & development a crucial variable for the interpretation of the contemporary world order dynamics.

World order studies will help clarify the main assumption of this thesis; China's technological and economic advancement have interrupted the status quo and the stability of the US' hegemony.

Qualitative method, qualitative and quantitative data

This thesis will consist of both qualitative and quantitative research, which will be utilised in a qualitative method of inquiry. The research will consist of two theoretical starting points, Power transition theory, Hegemonic stability theory, which have helped shape the research design into a

process of theoretical applications to the selected data(Bryman 2012, 161), technological- and economic development, in which quantitative data, datasets of economic and technology variables from the World Bank's International Comparison Database, will be utilised to analyse the dynamics of the world order. The quantitative data will be processed and analysed through the selected theories. The quantitative data will be utilised to examine and analyse the dynamics of China's and the US's domestic growth, thus making it possible to interpret on the situation of China, the US and technological- and economic development.

The analysis will further consist of qualitative data, to give an extensive overview of the measurable and the non-measurable variables of the world order, as well as to highlight different scholar's perspective on the examined data or case. The qualitative and quantitative data and the findings hereof will be utilised to answer this thesis' assumption about the China, the US, technology, economy, the US-China trade-war and world order. The quantitative data in this thesis, the observable statistics of China's and the US' development, is selected to be utilised as indicators for making distinctions between the US and China to establish an instrument that is consistent for comparations and to be more precise in comparisons between China and the US(Bryman 2012, 164).

Comparative method

Additionally, this thesis will be construed by a comparative research design, in which the US's and China's economic and technological development will be compared to highlight similarities, differences and the behaviour of the two superpowers. Furthermore, the findings and objectives of this thesis will be compared to earlier cases of power transitions and hegemonic stability, in which the case of the Cold-war will be utilised to establish similarities and differences in the ongoing power struggle of the 21st century and the power struggle of the Cold-war. For the research design, this means, that the US and China's development will be analysed and highlighted throughout the analysis, specifically in the chapter of "Domestic growth in theoretical reflections. The variables of the

comparative analysis of this thesis will focus on statistics of economic and technological development, with an extended emphasis on interpretation of the statistics in relation to critical junctures of technological and economic development in the 21st century.

Deductive mode of inquiry

The mode of inquiry in this thesis will be done according to a deductive mode of inquiry, in which the research question of this thesis will be hypothetically tested and answered. The assumption of this thesis; China's technological and economic advancement have interrupted the status quo and the stability of the US' hegemony, is based on the selection of theories and their applicability to the situation of the instability of the world economy and the world order. The assumption will be analysed alongside the economic and technological development of China and the US, and will be verified or falsified in relation to the objectives and findings of the analysis (Bryman 2012, 24).

Choice of theory

Power transition theory

The theory of Power Transition Theory is chosen because of its arguments of power transitions and how power transition periods may be observed and interpreted. Power transition theory will be utilised to understand, analyse and elaborate on what may be a crucial variable for the heated China-US relations, the US-China trade-war. The theory has been chosen as it may help explain the power struggle of US-China and may help explain the current tendencies in relation to its arguments of power transition periods.

Hegemonic stability theory

The theory of Hegemonic Stability Theory is chosen due to its explanatory power of stability of the world order, the implications of challenges to the status quo and the hegemon. Hegemonic stability theory argues that the capitalist world economy and the international community are more

expected to be stable and consistent when the world order is unipolar, and a hegemon is present, while challenges from other nations may disrupt the unipolar hegemony and establish an instable world economy. This theory will help explain the stability or instability of the contemporary potential transition period, caused by the rise of China and the reactions of the US. The current US-China trade-war may be perceived as an instability in the world economy and as a reaction to changing power dynamics, which hegemonic stability theory may help explain. Lastly, hegemonic stability theory may help clarify the emergence of the China-US trade-war in relation to the world order dynamics on contemporary time.

Choice of data

Economic development

Scholars of international relations claim that a nation's capabilities may be determined through the variable of overall power, together with the variable of military capabilities. The economic development of China has caused the US' economic dominance to fade, which has resulted in the Chinese economy gaining on the American, which makes this thesis ponder the plausibility of a power transition period based on instability, in which the contemporary hegemon is challenged by a rising power. This makes this thesis utilise variables of economic growth, which is determined to be; Nominal GDP, GDP with the applied measurement tool Purchase Power Parity (PPP), nominal GDP per capita, GDP with PPP per capita, nominal share of world's GDP, PPP share of world's GDP, Growth rate. These selected indicators will provide insights of dynamics of the world economy, to reveal the macroeconomic trends of China and US, as well as providing insight in the current trends of high-technological development and the competition for what may be interpreted to be: "*Economic- and Technological hegemony*".

Technological development

The *"Economic- and Technological hegemony"* will further be explored through the usage of technological development variables; Research & Development, Patent applications, High-technology exports, Researchers in research and development, Scientific and technical journal articles published, and High-technology exports. These indicators may provide knowledge of the technological development of China and the US', which may explain the contemporary tendencies and trends of the 21st century in the technological sphere. The technological sphere may be interpreted as comparable to the interdependence between economics, politics and military in the 21st century, as technology is a crucial part of the modern individual's life, the daily life of 21st century private enterprises and corporations, and crucial for ensuring the survival of a nation's state and military. The high-technological data of this thesis will be extended to the sector of AI-technology.

Artificial intelligence

This thesis will focus on the high-technological field of AI, in which several indicators will be analysed; Amount of research and development, expenditure of research and development, and the quality and capabilities of AI. The amount and expenditure will be analysed through statistics that show the development of China's and the US' investment in AI, and qualitative reports and articles may show the development in quality and capabilities of each nations AI sector. A part of the analysis will consist of a comparative analysis of the US and China, which will focus on these variables of technological development. Lastly, the AI-data utilised in this thesis will be based on the World Intellectual Property Organisation's 2019 report on current trends of AI(World Intellectual Property Organisation 2019), which will provide insight of the current state of AI in general, but also the current state of China and the US' development of AI technology.

Delimitations

This thesis will focus on the economic and technological development of China and the US, to explore the power dynamics of the international system. This focus will consist of the earlier mentioned indicators and variables, which establishes some limits for this research. The thesis is limited to the study of China, the US and world order dynamics, with the appliance of international relations theory, and technological- and economic development as the selected data-perspective. Furthermore, the examination of China and the US' development is limited to the years between 2001, due to China's accession to the World Trade Organisation, thereby became subject to the same rules as the US regarding international trade, and 2018, because the US reacted to China's economic development and behaviour towards international trade, when the US launched the China-US trade-war.

Theory

Power transition theory

The theory of Power Transition is a model that describes the international system, in which a rejection of three fundamental realist assumptions; the international system is not anarchical but is made up by a hierarchy, the rules that govern the international political system are fundamentally similar to the domestic rules, and the international competition is driven by the potential net gains, not power as balance-of-power theory argues, whether it is in conflict or in cooperation(Kugler and Organski 2011, 172). The power transition theory is explorable through the perspective of hierarchy in the world order, where the dominant nation, the hegemon, is the most powerful state, great nations are below the hegemon and do not have the capabilities to match the hegemon on a one to one basis but may with time develop its power to be able to challenge, and below the great nations are the middle power, small powers and colonies(Kugler and Organski 2011, 173–74). Furthermore, power transition theory

argues that the next hegemon or challenger to the hegemon is to be found in the "great nations" sphere.

Even though power transition theory is rejecting the three fundamental realist assumptions, the theory is strongly connected with the realist school, as power transition theory is stressing power as a critical and influential variable of the order of the international system. Another variable that power transition theory argues to be an influential variable for the world order is *satisfaction* with the established system regarding distribution of goods, which together with the power-variable are two critical determinants of conflict and peace(Kugler and Organski 2011, 173). The satisfied great nations will provide support to the hegemon in maintaining the status quo, which power transition theory conceives as alliances as a reliable and stable tool that are not easy to reshape.

Dissatisfaction of nations who are weak does not pose a threat to the hegemons dominance, whether the nations establish a coalition consisting of other weak nations or are isolating themselves, but when a great nation is becoming dissatisfied, and is catching up or has caught up with the hegemon, the challenge of a major conflict will be present(Kugler and Organski 2011, 174). When a great nation has grown in power in the existing system, and they are receiving all benefits of being a great nation, the status quo is challenged when a great nation seeks to establish a new position for themselves in the international community, based on its capabilities. As Thucydides argued about the emergence of the power struggle between Athens and Sparta, Organski has argued that a war will emerge when a challenging nation is approaching power parity with the hegemon(Kugler and Organski 2011, 182), which will be brought about by the challenging nations ability to maintain faster growth and is threatening to catch up or surpass the hegemon.

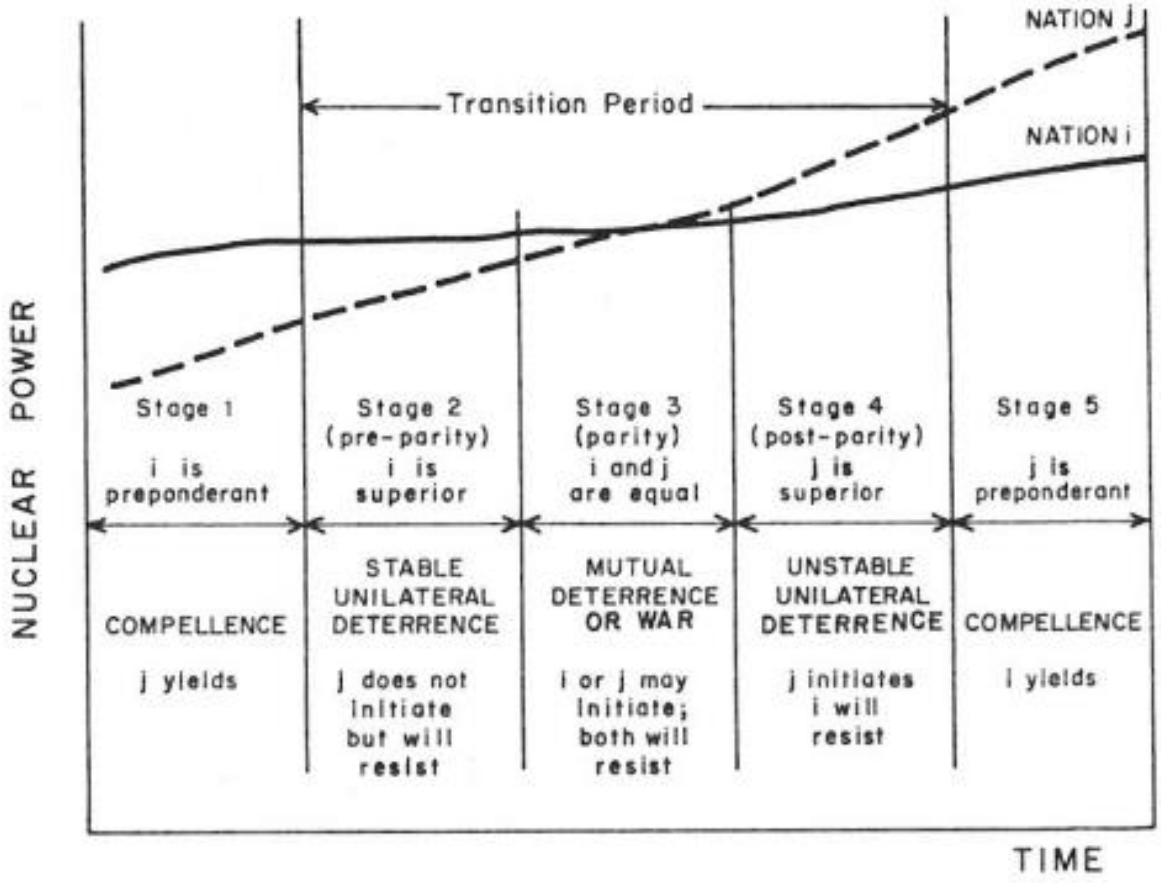


FIGURE 7.3. *Power transition and the dynamics of deterrence.*

Kugler and Organski developed the power transition theory further by testing "*ratio of power between the dominant and the challenging nation associated with war initiation*"(Kugler and Organski 2011, 183), in which they concluded that challenging nations have not initiated an attack on the dominant nations position before surpassing the dominant state in power. The timing of war is bound to specific implications, in which Kugler and Organski has argued that the advent of nuclear weapons has not changed but the absolute cost of war has increased, and the cost and losses of a great nation challenging the hegemon is still providing imperative conditions for a war to emerge(Kugler and Organski 2011, 185). Furthermore, power transition theory conceives status quo of the world order to be able to be stable when satisfaction is present, as the satisfaction establishes no incentives to contest.

Power transition theory was further developed in 1987, "*power-overtaking structure in Figure 7.3 to account for stable deterrence[…]"*(Kugler and Organski 2011, 186–87), which argued that conditions for a conflict between two nations, the hegemon and a challenger, is almost always present in a transition period, and will be magnified by growth in the challenging nation. Stage 1 may be explained by the challenger's ability to be compliant of the hegemon's demands, thus establishing imperative conditions for a conflict to emerge(Kugler and Organski 2011, 187–88). Lastly, power transition theory has its attention on "*domestic developmental processes rather than to international interactions to understand peace and war.*"(Kugler and Organski 2011, 194).

Several assumptions and arguments of power transition theory has now been highlighted, in which several variables of war and peace has been noted. The first is the hierarchical structure of the international system, which in relation to the US as the hegemon and China as the challenging great nation will be examined. The satisfaction and dissatisfaction of the international community will be examined in the light of the changed politics of the US regarding the international community. The conflict of the US-China trade-war will further be examined as a conflict of war, though with the variable of economic deterrence as the means for disrupting the China's development and the potential power transition brought about by the rise of China. China's development through the last two decades will be examined in relation to power transition theory's notion of domestic growth and power.

Hegemonic stability theory

The theory of hegemonic stability theory will further be the foundation of this thesis. Hegemonic stability theory argues that the world economy and the international system is more likely to be stable when the world order is being comprised of a singular dominant state(Webb and Krasner 1989, 183). Hegemonic stability theory is based on the basic contention; "*[…] the distribution of power among states is the primary determinant of the character of the international economic*

system."(Webb and Krasner 1989, 183), which will be a premise for the analysis in interplay with the domestic growth of the US and China. Hegemonic stability theory consists of two perspectives, a "logic of collective goods"- and a "security" perspective.

The collective goods version has been developed by the liberal economist Charles Kindleberger(Kindleberger 1981), who argued that the stability of world economy is based on a collective good, which only a strong hegemon can maintain. The maintenance of the stability of the world economy is being challenged by the small and medium states, who do not provide to the production of the collective good due to their belief of their contribution being of low significance compared to overall production, which Kindleberger determines as free-riders that are establishing underproduction, while benefitting of the production from the hegemon(Webb and Krasner 1989, 184). The security perspective is developed by Robert Gilpin and Stephen. D. Krasner(Krasner 1976; Gilpin and Gilpin 1987, 72), who accept Kindleberger's argument of the collective good and stability through unipolarity, but extends hegemonic stability theory further in the economic sphere, where they have argued that instability of systems is based on international economic interactions to gain power and security for the nation(Webb and Krasner 1989, 184). Gilpin and Krasner argues that a dominant nation can increase and promote liberalisation in the world economy without risking "essential security objectives"(Webb and Krasner 1989, 184).

Kindleberger's version may be perceived to be from the liberal school of thought, where Gilpin and Krasner's version may be perceived to be from the realist school, as Kindleberger focuses on the nations of the world economy's beneficial position established by a unipolar world order, and the instability of a system without a hegemon, and Gilpin and Krasner's does not accept the notion of nations common interest of liberalisation in the world economy or stability in the international system. The opposing perspective is based on Gilpin and Krasner's argument on nations benefits from trade liberalisation and relative gains, in which some nations will gain more than others. Gilpin and

Krasner argues that relative gains may influence the dominant nations perception of the nation which is gaining the most and may cause the dominant nation to perceive the rising nation as a threat to its security, which will cause the dominant state to implement restrictions to the world economy, though the restrictions may cause the dominant state's overall development to slow down.

The assumptions of hegemonic stability theory that will be utilised in the analysis has been highlighted, in which several important notions have come to attention. The notion of the world economy, openness and stability will be examined in the light of the current US-China trade-war, in which the *collective goods* and the *security* version will be reflected in relation to trends of the world economy and critical junctures related to either free-riding or patterns of restrictive behaviour in the international community. The monetary structures in the world economy will be examined in the light of the rise of China to get insights in the contemporary dynamics of the world order. Hegemonic stability will provide a framework with two perspectives, which may be able to explain the current trends of China, the US and world order stability.

Literature Review

This section will provide an insight in studies that is closely connected to the research of this thesis, in which the different variables and aspects of China, the US, economic- and technological development, AI and world order, will be examined through former research in the related topics, that this thesis is construed of. This utilisation of secondary literature will further provide knowledge and insight of the debate of world order dynamics and knowledge of the impacts, potential and possibilities of high-technological capabilities in the 21st century.

China and the struggle over the future of international order

The scholar Zhongying Pang has written the chapter "China and the struggle over the future of the international order(Pang 2018), which is a part of the book "*The rise and decline of the Post-*

Cold war international order" by Hanns W. Maull, which elaborates on the dynamics on the 21st century power- and world order dynamics. Pang researched the evolution of China's political approach to the international order, where he observed that China became a "status quo" power after joining the World Trade Organisation (Pang 2018, 3).

Pang elaborates, that the former leader of China, Deng Xiaoping, never wanted China to take the lead, but China has gradually changed its behaviour and is challenging the traditional stance of foreign affairs and the idea of international issue-based cooperation with China as the leader. Pang furthermore argues that this international leadership may be deduced from China's role in the establishment of the United Nations agreement "the Paris accord" of 2015. Pang additionally argues that China changed its mind about the world order, and want to democratise the international community, with the establishment of several development initiatives, the Belt and Road initiative, the establishment of China-led development banks (AIIB and NDB) and the establishment of the BRICS contingent reserve arrangement. Pang furthermore argues that China has become a reformist state in the international community, which he concludes as being necessary and reasonable, as it may lead to an enhanced multilateral global governance. Lastly, Pang concludes that both China and the US are building international institutions that are violating the existing liberal world order, which have the risk of fragmentation of the global governance(Pang 2018, 15).

The economic Thucydides trap between China and the US

Graham Allison is not the only scholar that have utilised the words of the Greek historian Thucydides, who established a theory of power transition regarding security, but Thucydides' theory has further been utilised by the economist Dr. Jiong Gong.

Dr. Jiong Gong gave a speech at the Forum Istanbul Summit the 3rd of May 2018, which has been transcribed into a paper, which elaborates on "*The economic Thucydides trap between China*

and the US"(Gong 2018). Dr. Jiong Gong argued that the US' actions regarding international trade, especially China-US trade, may be attributed China's corporate innovative rise and China's competitiveness in the world economy. Jiong further argued that China's growing economic power is a direct challenge to the American economy, and thereby may be compared with a security trap which is imperative to resolve, or else the global economy and the status quo of the international system may become challenged regarding peace, development and security. Additionally, Jiong highlights the importance of the USTR section 301 report(Office of the United States Trade Representative 2018), to understand the real intentions of the US.

Jiong additionally notes that the USTR report is focused emphasises "distortionary trade practices" of China(Gong 2018, 119–20), that is disrupting the traditional trade practices. This may be observed as a part of the US' shift in "China policy", in which Jiong notes that the shift is based on the US' disappointment of China's "growth path" after joining the World Trade Organisation, a development path that is not based on the Washington consensus, which have caused the shift in policy to be classified as a situation that lack engagement but is based on constructive confrontation(Gong 2018, 120). Jiong further stresses the importance of AI, robotics and other future high-technological fields as a part of a venture capital race between China and the US. Jiong notes that the China-US situation is different from the other cases of hegemonic power struggles, "wars" and the Thucydides trap, in which Jiong argues that China's and the US's economies are very intertwined and fundamentally complementary, which is the reason for the definition of the power struggle as an economic Thucydides trap, rather than a regular, security, Thucydides trap(Gong 2018, 122–23). Lastly, Jiong concludes that the US and China are in an economic Thucydides trap, which they must escape by thinking globally when they implement new development strategies.

Understanding the U.S.-China trade war

Tao Liu and Wing Thye Woo have published the article "*Understanding the U.S.-China Trade war"*, in which they analysed the cause of the China-US trade war. Tao and Wing focuses on the three major concerns; China's surplus trade with the US and the effect on American job-creation, the US' concern of China's behaviour regarding unfair methods of acquiring technological knowledge, and the concern of a weakened US national security and position in the international system as an effect of China's policies and behaviour in the international community and the world economy. By analysing the trade balance of China and the US, Tao and Wing came to the conclusions; that the situation is effected by analytical confusion over the term "equilibrium exchange rate", the second conclusion is that the China-US trade balance is an effect of the domestic economic conditions of both nations and a solution of the issue requires political change for both China and the US, and the third conclusion which argues that the issue of exchange rate misalignment has caused the focus of the issue to be on the unfairness of the trade relations, rather than focus on structural variables as the determinants for the trade imbalance and the US' job transition programs(Tao and Wing 2018, 320–21).

Furthermore, Tao and Wing concluded on the dispute on intellectual property "theft", that it is an effect of China's strategy of utilising its market power to profit on the expense of its trading partners(Tao and Wing 2018, 321). Secondly, Tao and Wing concluded on the issue of intellectual property theft, that China can only be forced to stop, if its trading partners retaliate as a single entity, and that China's mode of governing industrial policy has been utilised too much for macro-stabilisation and therefore are deeply embedded in China's industrial policies(Tao and Wing 2018, 321). Regarding the weakening of the US' national security, their conclusion is; the conventional wisdom of national security in the US' trade policy is based on ignorance of variables of American capabilities

in innovation, by focusing on keeping China from developing freely, thus establishing a weaker technological and vulnerable US(Tao and Wing 2018, 321).

US-China trade war is battle for tech hegemony in disguise

Another article about the US-China trade-war has been published by Hiroyuki Akita, who argued that the US initiated the trade-war due to China's challenge of American technological hegemony (Akita 2018). Akita further argued that the US is trying to avoid that China will fulfil its technological development strategy "Made in China 2025", which may cause China to become a high-technological superpower. Akita elaborated on the US' technological rankings, in which the focus is amount of patent applications (2017), supercomputer speed (2018), number of supercomputers (2018), and amount of companies that research and develop AI, in which Akita highlights that China is the leader in "amount of supercomputer", whereas the US is the leader in the other three variables. Akita additionally argued that the US-imposed tariffs was not legitimised though the trade deficit but is based on the "violations regarding intellectual property rights and high-technology, which he examined in relation to a statement from a senior U.S. government official regarding China's "unfair" practices and the US' plans of not easing the import tariffs, even if the trade deficit is moderated.

Akita further highlighted that Tetsuo Kotani, associate professor at Meikai University in Japan, has highlighted the national security strategy of the US, 2017, as consisting of a new concept of a national security innovation base, and that the US is focusing on this concept to "*[…] strengthen the high-tech innovation base in order to win strategic competition with China […]"*(Akita 2018). Additionally, Kotani notes that the playing field may be the trade-war, but the US is utilising the trade imbalance with China to boost its innovation capabilities and slow down China's high-tech innovation capacity as a part of a long-term security strategy.

A Blueprint for the future of AI

The two superpowers of China and the US is both focusing on developing their own technological capabilities, which in the 21st century may be observed as a power struggle and as damaging to the China-US relations. The Washington based public policy organisation; The Brookings institution, have had a focus on "AI and the future" and have created the report-series "A Blueprint for the future of AI", in which AI in interplay with several political, economic and security aspects is analysed.

How artificial intelligence is transforming the world

As a part of the Brookings Institutions "*A Blueprint for the future of AI",* the report "*How artificial intelligence is transforming the world*" has been published by Darrell M. West and John R. Allen, in which they elaborate on the impacts and effects of the growing emphasis on AI(West and Allen 2018). West and Allen describes AI as "*[…] a wide-ranging tool that enables people to rethink how we integrate information, analyse data, and use the resulting insights to improve decision making-and already it is transforming every walk of life."*(West and Allen 2018, chap. Summary). In their report on AI and its potential impacts on the world, they focus on plausible financial-, national security., criminal justice-, transportation-, smart cities- and health care impacts. West and Allen argues that the common definition of AI is "*[…] machines that respond to stimulation consistent with traditional responses from humans, given the human capacity for contemplation, judgment and intention."*(West and Allen 2018, chap. Introduction).

Furthermore, West and Allen explains that China has implemented the criminal justice programme "Sharp Eyes", a programme based on AI that helps the Chinese law enforcement by analysing videos, Social Media behaviour, online consumerism patterns, personal identity and travel records in to what West and Allen deem a "police cloud", which the Chinese law enforcement may use as a database to observe the potential law-breakers and terrorists. West and Allen argues that China has

developed into the world's most prominent AI powered surveillance state(West and Allen 2018, chap. Criminal justice). West and Allen additionally notes that China has set a national goal and plan to invest 150B USD before 2030, thus becoming the global leader in AI.

The field of national defence is also being affected by the investments in AI, which Allen and West elaborate on in the report, in which they argue that the US has implemented AI in the national security field through the "Maven" project. The US' "Project Maven" is helping the American military by analysing "*[…] massive troves of data and video captured by surveillance[…]"* to alert the analysts of abnormality, suspicious behaviour and patterns of activity(West and Allen 2018, chap. National security). This utilisation of AI by the US and China in the national security sphere is helping their militaries to react quickly on potential threats and decision-making, which will cause traditional warfare to be accelerated so fast, that a new term of warfare has been coined: "Hyperwar", argues West and Allen(West and Allen 2018, chap. National security). Furthermore, Allen and West argue that the US may never go to war with "artificially intelligent autonomous lethal system", due to ethical and legal reasons, but China and Russia are not as focused on the legal and ethical debate.

Lastly, West and Allen concludes the AI is revolutionising many political, economic, societal and military sectors, but the AI systems will need to be developed further and understood better, to secure the society and international system from the implications that AI has brought about(West and Allen 2018, chap. Conclusion).

US-China relations in the age of AI

As presented by West and Allen, the tensions between the US and China are intensifying, especially in the era of AI. Ryan Hass and Zach Balin are two scholars who have analysed these intensifying tensions between the US and China in relation to AI in the Brookings Institution report "*US-China relations in the age of artificial intelligence*"(Hass and Balin 2019).

Hass and Balin argue that after Donald Trump became the president of the US, the American foreign policy principles have shifted to great power competition between China and the US and are comparing the contemporary situation to the US-Soviet Union power struggle of the 20th century, where the arms race of the US-Soviet Union struggle is compared with the US-China high-technological competition. Balin and Hass' main argument of their reports is that the narrative of the role of AI in the China-US power struggle needs to change, as it is more focused on the bilateral competition between China and the US, but does not focus on the gap that China and the US are establishing between them and the rest of the world, regarding economic growth, innovation and overall national power(Hass and Balin 2019, chap. Introduction).

Hass and Balin explain that China's focus on AI became "*an AI fever*" in 2016, when an AI powered Google system went into competition with Lee Sedol in a game of "Go" and beat the 18 times world champion in front of 280M Chinese viewers(Hass and Balin 2019, chap. How did we get here?). In extension of the presentation of the critical juncture that made China revise its AI plans, cf. Hass and Balin, China displayed in 2017 the "New Generation AI Development Plan", which explained China's new plan in development of AI capabilities and set the year 2030 as the year China want to become the global leader of AI.

China's enhanced focus on high-technological development, its rhetoric of promoting civil-military fusion of technological development to decrease the competitive edge that the US has, in interplay with the Belt and Road Initiative, may enable China to set the global technological norms and standards and cause hysteria in the US, argues Balin and Hass(Hass and Balin 2019, chap. How did we get here?). Balin and Hass further argues, that the "New Generation AI Development Plan" shows that China wants to replace the US as the "technological hegemon" is going to make the US react by seeking to slow down China's development by focusing on foreign investments in the "core technologies", analysing the Chinese academic exchanges, implementation of targeted tariffs in key

sectors, enhance focus on Chinese individuals involved with "economic espionage" and increase investment in counter-intelligence institutions and operations(Hass and Balin 2019, chap. How did we get here?).

Additionally, Balin and Hass argued that the security and military sphere of the US and China are being confronted by a dilemma, where the actions of the opposition may cause fear and result in countermeasures, due to the integration of AI in weapons systems(Hass and Balin 2019, chap. Military and security). The technological competition between China and the US is causing risks of separation of technological domains, with Europe, North America, South America and Australia supporting the US' technological hegemony, and Asia, the Middle East and Africa supporting China, argues Balin and Hass further(Hass and Balin 2019, chap. Trade), which may be observed in the ongoing competition and battle of 5G internet, thus making the technological development-sphere a political and economic situation. According to Balin and Hass, AI is highly plausible to disrupt the political relations between China and the US, as it may become an instrument of ideological competition, especially if one nation is able to interfere in the domestic politics of the opposing(Hass and Balin 2019, chap. Politics). Lastly, Hass and Bain conclude that China and the US does not have the capabilities to impose its own will or dominate the other as long as peace is status quo(Hass and Balin 2019, chap. Conclusion).

China's rise as a science and technology powerhouse

The senior fellow Reinhilde Veugelers published together with the Brussels based economic thinktank, Bruegel, a policy contribution in 2017, that explored and explained *"The challenge of China's rise as a technology powerhouse"*(Veugelers 2017). China is building its science and innovation spheres and has ambitions of becoming the global leader by 2050, which is possible, argues Veugelers. She further notes that China is outperforming the EU in research and development, which

is based on expenditure as share of GDP. Veugelers additionally notes that China's natural science and engineering sphere is equalling the US in scientific publications, which have developed out of the Chinese scholars and students whom have studied in the US and returned to China after finishing their studies, thus utilising the knowledge they have gained abroad to help develop their home country(Veugelers 2017, 8). Veugelers examines "the rise of China in science"(Veugelers 2017, 4), in which it may be observed that China accounted for 6,4% of the world scientific articles in 2003, where the US accounted for 26,8% and the EU accounted for 31%. Furthermore, the development in share of the world's scientific papers, Veugelers highlights that the US accounted for 18,8%, the EU 25,4% and China 18,2%.

Veugelers further examines the quality of the published scientific articles by number of citations in percent, in which she notes that the US is the is less contented(Veugelers 2017, 5). Additionally, Veugelers has observed that China is producing approximately 6 times (approximately 1.200.000 vis-à-vis 200.000 in 2012) university degrees than the US in the fields of natural science and engineering(Veugelers 2017, 6). China is also in the lead in amount of PhD's produced in natural science and engineering, approximately 30.000 vis-à-vis 25.000 in 2012. This is because of China's programme to "build-up" its scientific capacity, which has been concentrated on specific research institutions where 6% of China's 1700 state-authorised research institutions are consuming 70% of funds, and are producing 1/3 of all Chinese undergraduates, 2/3 of graduates and 4/5 of doctoral studies(Veugelers 2017, 7).

Lastly, Veugelers argued that the Chinese companies will utilise the situation of "the rise of China as a scientific powerhouse" to increase their competitive performance to challenge the Western companies(Veugelers 2017, 10).

Hegemonic Power and Technology Advancement

The scholars O.F. Bahrisch and Jin-Suk Kim published in 2011 a chapter, "*Hegemonic Power and Technology Advancement",* in the book "*Grid and distributed Computing"* in 2011(Kim et al. 2011), in which they analysed the relationship between technological advancement and hegemonic stability(Bahrisch and Kim 2011). Bahrisch and Kim argued that there are two plausible outcomes of the contemporary power dynamics, in which the first outcome will further establish the US as the world's hegemon, and the other outcome is a challenge from another great power.

Bahrisch and Kim argue that the US' hegemonic position is militarily out of reach, due to the US' expenditure on military, but further argued that the US is not spending as much as they should to remain the hegemon(Bahrisch and Kim 2011, 569). Additionally, Bahrisch and Kim highlights that the Stockholm International Peace Research have evaluated China to be top 2 when it comes to military spending, but when compared to the US' naval forces; no nation, not even China, have the capacity and capability to challenge the hegemonic status quo before 2030(Bahrisch and Kim 2011, 569–70).

Additionally, Bahrisch and Kim argued that the other outcome of the contemporary power dynamics may result in a new hegemon, which may have been brought about by the US' military engagement in Iraq and Afghanistan. The US' military engagement in Iraq and Afghanistan has left little to no room to manoeuvre, militarily and economic, which further have been decreased by the financial crisis of 2008, thus establishing a high public debt(Bahrisch and Kim 2011, 570). The public debt of the US has not been this high since the end of WWII, and increasing debt is one of the main variables for demise of a hegemon(Bahrisch and Kim 2011, 570).

Lastly, Bahrisch and Kim highlights that the scholar A.T. Mahan argued in 2004 that the survival of a nation, the nation's security and international greatness is revolving around a nation's

navy, technological superiority of weapons and naval force, and control of important trade routes, but development of these areas does not directly constitute a power transition period, but may influence other innovative sectors that may disrupt the status quo of the world order(Bahrisch and Kim 2011, 570–71).

The presented literature will be considered when analysing the contemporary power dynamics and the power struggle between China and the US. "*The struggle of China and the future of the world order*" will be utilised to discuss the contemporary power struggle from the perspective of China as an actor in the international community(Pang 2018), who has developed its capabilities and capacity to challenge the status quo of the world order. *"The economic Thucydides trap between China and the US"* will be utilised to nuance the debate of a Thucydides trap between China and the US(Gong 2018), in which this thesis ponder the plausibility of a technological Thucydides trap between the US and China. "*Understanding the US-China trade war"* may be utilised to understand the contemporary power- and trade struggle between the US and China.

Furthermore, the article "*US-China trade war is a battle for tech hegemony in disguise"* will be utilised to understand the latent structures of the ongoing trade-war. Additionally, "*A Blueprint for the future of AI"* and the two reports that have been selected from the series will be utilised to highlight the relations between US and China in the age of AI and its impact on the international system(West and Allen 2018; Hass and Balin 2019). "*China's rise as a science and technology powerhouse*" will be utilised to highlight China's technological development and the impact on the international power dynamics(Veugelers 2017), in which a challenge of the US' technology hegemony may be deduced. Lastly, "*Hegemonic power and technology advancement"* will be utilised to highlight the causal connection between hegemony and technology(Bahrisch and Kim 2011), which is the main research focus of this thesis.

Analysis

In the aftermath of China's ascension into WTO and the establishment of the economic alliance of BRIC (now BRICS), China developed exponentially in the political-, economic-, and the technological sphere. As a result of the West's interest in China and American company's mobilisation of production to China, in interplay with the implemented economic reforms of China, the economic growth of China has risen from a nominal GDP of 1,40T USD in 2001 to 13,46T USD in 2018, with an average growth rate of 8,75%. This development of the economic sector in China has caused a spill-over effect in the total domestic and foreign investment of China, which may influence whether China may overtake the US in technological capabilities and capacity, thus challenging the existing world order.

This analysis will consider whether the US-China trade war is a modern and nuanced Thucydides trap, that is constituted by an economic and high-technological competition, in which AI and technological- and economic development are the main variables. The concept of a Thucydides Trap may be observed to be grounded in the domestic development of a nation, which causes the hegemon to react by declaring war (12 out of 16 (Allison 2017)). After the development of weapons of mass destruction and nuclear weapons, the nations of the world have acknowledged that a traditional all-out war would cause more overall damage than it would benefit. The great nations of the 21st century is too interdependent and intertwined for an all-out nuclear to be beneficial for their overall prosperity, which may have caused the great powers to focus on economic sanctions and "economic war".

The China-US trade war may be deduced to be an implication of the rise of China, China's successful integration into the Western liberal world order, and the US' changing mode of international governance. The analysis will be construed by theoretical reflections based on Power Transition Theory and Hegemonic Stability Theory, in which a qualitative analysis will present the economic

and technological development of China and the US to analyse the contemporary world order dynamics: whether the international system and the 21st century world order is being challenged by China's AI rise, whether the 21st century concept of world order needs revision to consist of a technological pillar of hegemony, and whether the contemporary power struggle of the US-China trade war constitute a power transition period, in which economic hegemony and technological hegemony are the main variables.

Secondly, the analysis is construed by a comparative method, which is utilised to emphasise the economic capabilities of China and the US and to highlight the development tendencies and capacity of the two superpowers, as a part of the theoretical reflections. The comparative analysis will further be construed by the notions of Hegemonic Stability Theory and Power Transition Theory, to give an overview of the contemporary power dynamics between China and the US.

Lastly, the analysis will be based on the technoeconomic development of China and the US, where a comparative analysis will give an overview of the domestic development of AI and Research & Development tendencies, as a part of the theoretical reflections. The findings in the comparative analysis' will be considered with the selected theories to explain and discuss the assumption of this thesis.

World order dynamics – theoretical reflections

The international system and AI: forced adaption of non-traditional national security?

According to Moore's law(Seel 2012), technological development of computing hardware is doubling every two years, in which the capability of integrating transistors in circuits grow exponentially. The case of technological development, Cf. Moore's law, may be interpreted to develop at a higher pace for every year and decade that goes by. This exponential development may also be the case in AI, which further may be deduced as a great influence on the governance of nations, especially in the

economic and military spheres. With the exponential development and integration of high-technology in the governmental sphere, the nations of the world must expand their security focus, as modern technology has the capabilities to interfere with a nation's domestic security.

This non-traditional security dilemma, the adaption of AI in the governmental sphere, may be observed in the international system, which have caused the nations to focus on the negatives of AI, in which it may be observed that several cases of "misapplication" of AI systems have happened, e.g. Wikileaks and the Edward Snowden case. The governments' use of AI to monitor behaviour domestically and internationally may be observed as the modern government's mode of keeping control. To monitor domestically may on the one hand establish a society with fewer criminal activities, and on the other hand it may establish a situation where the population may feel monitored and controlled. This makes the international systems tendencies of AI to be interpreted as a double-edged sword, that may both damage and improve society. The damaging edge of the AI-sword may further be interpreted to be damaging towards other nations domestic sphere, or establish fear of interference from other nations, e.g. the 2016 US election and claims of Russian interference. This claim makes this thesis ponder the plausibility of a contemporary situation, in which the development and adoption of AI, by nations in their governmental sphere, may challenge the established international system, influence the traditional hierarchy and change the power dynamics of the world order.

Since the end of the WWII the US has been the world's hegemon, both in the technological, economic, military and political sphere, after the Bretton Woods conference in New Hampshire in the summer of 1944. The US hegemony have throughout the last seven and a half decades been challenged by the East; the spread of communism in Eastern Europe and Asia, the rise of the Soviet Union, and now by the rise of China. The US overcame the challenges that it faced in the 20th century but the US' power gap has been decreasing slowly, while other nations have increased their power, which have brought about a situation of instability in the unipolar international system. The US is

still the hegemon of the world, but several indicators of the US' overall power may be deduced to have been decreasing, especially after the rise of China, and the US' global war of terrorism which have caused the US to increase its public debt and military expenditure, which have weakened the American economy.

The political hierarchy of the world may still be perceived qua the American values of liberalism, democracy and human rights, but several nations of the world is beginning to dissociate themselves from a value-based, the Washington model, world order and are beginning to welcome the developmental growth model of China, a more issue-based approach. In the age of the Trump administration, it may be deduced that the US does not want to finance the development of the world but still is trying to force its democratic values on nations. It may be observed that the nations on the African continent have started to cooperate with China and the BRICS coalition, which several scholars have deemed a challenge to the US' mode of governance(Brütsch and Papa 2013; Bond 2018; Guerrero 2013; X. Li 2016), especially after the BRICS coalition established their *own* multilateral development banks, e.g. the Asian Infrastructure Investment Bank (AIIB) and the New Development Bank (NDB, also known as the BRICS bank). The hierarchical structure of the US led hegemony may be perceived to not be as dominant as it has been, but to what degree it has been decreased is hard to tell, especially after the US' behaviour in the international community after the 2016 US election. The US' approach the to the international system has changed, and the US is emphasising on rebalancing and developing domestically, while leaving room to manoeuvre to other nations and coalition, e.g. China and the EU's leading role in the fight against global climate change.

Hierarchical challenge

The hierarchical structure may be interpreted to be at a crossroad in which the US is on the one side and China at the other side, which further may be perceived as an ideological struggle, especially after the modifications of socialism that China has introduced in their mode of governance:

"Socialism with Chinese characteristics". For developing nations, the state-led development model of China may be intriguing, as it may help lift the whole society based on the nations decision-making rather than relying on capitalist corporations, that may have the capitalist core concept of maximising profits for own winnings sake, rather than an approach of solidarity. The gathering-power of the China-promoted "issue-based cooperation" may attract the developing nations of the world, due to a new framework for economic growth is proposed that is not forcing nations to implement foreign values that may lead into conflict, as may be observed in the case of American interference in the Middle East. Democracy may be deemed to be the most including mode of governance, but all nations may not benefit from changing to a democratic society due to what may be interpreted to be culture, interests and what may be noted as political and societal underdevelopment – compared to the Western degree of development.

This issue-based cooperation of the BRICS coalition may be observed to have attracted several nations in the African continent, which be interpreted to be a part the last continent to catch up, development-wise. Due to the being in position of trying to catch up the nations of Africa may need to import goods and services from other nations if they want their development to increase rapidly. The African nations have accepted offers from China, and are establishing better relations with China, which have brought about a growing present in Africa, which may establish better relations in international trade and in international politics.

Prof. Li Xing has argued that China is changing the role of Africans nations from "migrant worker and Aid recipients" to "buyers, sellers and contractors"(X. Li 2016, 91), which may be interpreted as a challenge to the hierarchy of the world, as China is establishing room to manoeuvre for the African nations, who earlier have been the exploited continent. It is worth to note the dependency relation that China may establish in Africa, as exports of Chinese technology to African nations may impact the industrialisation of Africa(X. Li 2016, 100), in which technological development may be a low

priority, due to imports of Chinese technology. China is able to enhance its own position by establishing dependency relations with developing countries, which may cause the hierarchy of the international community to become revised, as the US is potentially losing export-volume to developing countries while China is establishing good relations with them.

Power

The hierarchical structure may be perceived to be undergoing changes, in which the rise of China may be observed to be a disrupting variable. As mentioned earlier, The US is waging war on terror which have caused them to build and establish military bases in the Middle East, demonstrating their capabilities. China's military is not as present worldwide as the US', but for the first time China has built an overseas military base, in the nation of Djibouti on the Horn of Africa. The scholar Elizabeth Economy has argued about this China's overseas base; "*Starting with Djibouti, China is testing an emerging strategy of using its economic influence to advance its security interests"*(Economy 2018). This new strategy of China may on the one hand be perceived as China's way of becoming a part of the war on terror, and on the other hand it may be perceived as China securing its economic plans. China's government argued that the reason for establishing this overseas military base was to get the Chinese soldiers on missions in the Gulf of Aden and waters of Somalia to make refuelling and refreshments easer, as they have had practical difficulties earlier on(Ministry of Foreign Affairs of The People's Republic of China 2017).

Furthermore, the Foreign Ministry of China spokesperson, Geng Shuang, informed during a press conference in the middle of July 2017 that China has built the Djibouti base to "*[...] make greater contributions to stability and peace in Africa and Beyond."* and "*China is committed to a peaceful development and has a defensive national defence policy*.", a policy that will remain unchanged (Ministry of Foreign Affairs of The People's Republic of China 2017). Though China is arguing that the military base is purely for securing peace and stability in Africa, the US interpreted

it as challenge to their interests in Djibouti and threatens the US military's activities(Osborn 2018). In continuation of these economic and political influence-concerns that the US has about China's military presence in Africa, China's "Belt and Road Initiative" is pressuring the US' economic activities.

The infrastructure project of the Belt and Road Initiative is planned to have a sea route by the Horn of Africa, which may be the reason China has built the military base; to secure its economic interests in a challenged but also geostrategic area. With the notions of the US' concerns about China in Africa; politically, military and economic, it may be perceived that the US conceived to be challenged by China's global presence and China's promotion of relations in Arica, thus increasing its international relations and thereby increasing its power in the international system.

The challenge that the US may be conceiving may further be interpreted through the level of satisfaction of the nations of the international community, in which it may be observed that not all nations are following the US and the Washington consensus, but to a certain degree is following China and the Beijing consensus. The values of the Washington consensus may be perceived to not be shared be all nations of the international community, and more of the developing countries are focusing on establishing economic growth without focusing on western democratic values and human rights.

By observing the contemporary trends of development, it is impossible to leave out China, the BRICS and the Belt and Road Initiative of the discussion. The Belt and Road initiative may be interpreted to be an alternative economic world order, which is based on international economic cooperation to promote prosperity, connectivity and economic growth for the involved nations, whose focus is to enhance international trade to establish overall development for the world. The essence of the established world order may be conceived in the liberal principle of international economic openness

that the Belt and Road Initiative is projected to build upon. The multilateral development banks that are funding the Belt and Road Initiative have one thing in common, which may be perceived to be a common understanding of modern – non-western - international cooperation based on the issue/goal of enhancing the liberal world economy to enhance their own domestic economy. This new and alternative approach to international cooperation may be interpreted as dissatisfaction with the establishing economic world order and the US' hegemony.

After the election of Donald Trump, the US began to implement nationalistic policies, which resulted in the "attack" on globalisation and the liberal world economy, which President Xi Jinping addressed in his speech at the opening plenary at the 2017 World Economic Forum in Davos(Xi Jinping 2017). In his speech Xi talked about the doubled-edged sword of economic globalisation and that the international community should attempt to avoid the negative impacts of economic globalisation, instead of dissociating oneself from it. Furthermore, Xi addressed that all countries of the international community are entitled to participate in decision-making and enjoy privileges on an equal level, which may be deduced as a dissatisfaction with the unipolar world order.

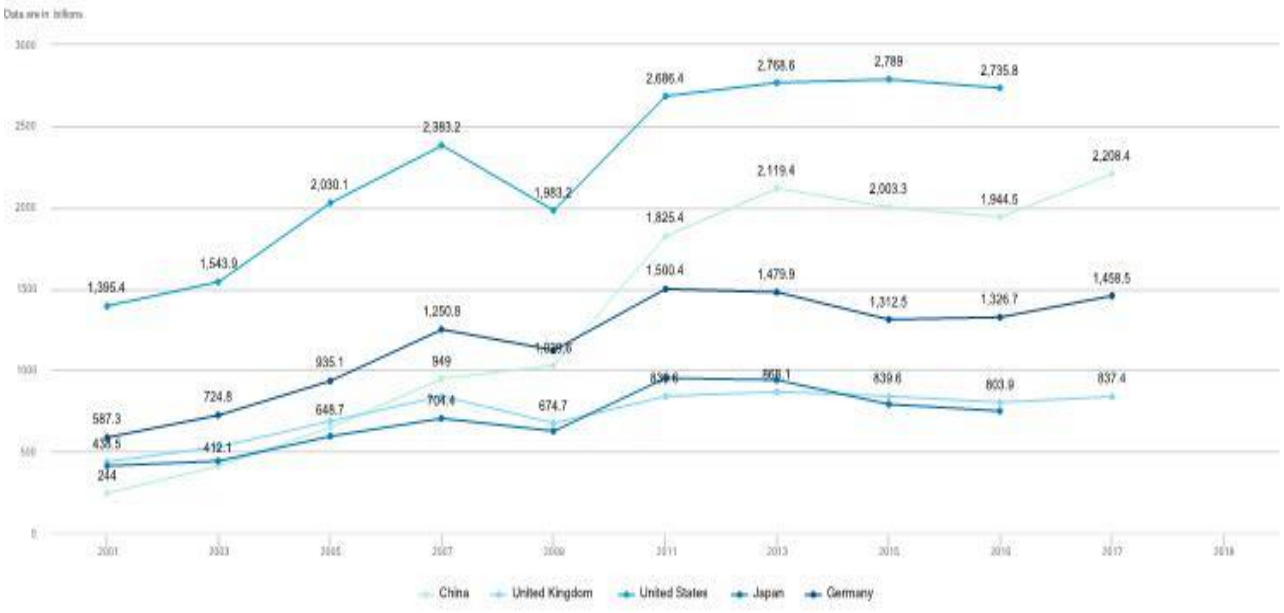
Monetary control

The US has adopted nationalistic policies which have resulted in a trade-war against China, due to imbalances of trade and disagreements of intellectual property, which may be interpreted to be a result of the US' contribution to the collective good. While China may have been free-riding and benefitting of the US' production of the collective good throughout its development, the US may have imposed restrictive conditions as which may be a result of the instability of the world order and US' decreasing power gap. The liberal world economy and the free market may be conceived to be under attack, which may be interpreted to have impacted the US' reactions to foreign affairs, in which an expensive war on terror may be deduced to have increased the public debt of the US and its perspective on international affairs. While the US have had its focus on military conflicts in the Middle East,

China has focused on establishing better economic relations and connections with the nations of the international community, which caused China to become the biggest economy of the world, if the measurement tool of *Purchase power Parity* (PPP) is applied.

This exponential economic growth of China may have caused the unipolar dictation and control of the monetary resources, which may be observed through the exports of goods and services of China and the US, in which it may be observed that China surpassed the US in 2013(China, 24.51% of GDP, 2.354T USD vs. US, 13.639% of GDP, 2.277T USD), 2014(China, 23.49% of GDP, 2.463T USD vs. US, 13.62% of GDP, 2.374T USD) and 2015(China, 21.35% of GDP, 2.362T vs. US, 12.50% of GDP, 2.265T USD), but lost its leading position in 2016 (China, 19.66% of GDP, 2.2T USD vs. US, 11.89% of GDP, 2.215T USD)(The World Bank, International Comparison Program database 2019a, 2019b).

It may further be observed that China's exports are at the same monetary level as the US', though at a higher percentage of GDP. The monetary distribution in relation to foreign direct



Series : Imports of goods and services (current US$)
Source: World Development Indicators
Created on: 04/11/2019

investment, may be observed to have the US as the leading nation (379.22B USD 2017)(The World Bank, International Comparison Program database 2019c), with China ranking 6th (101.91B USD 2017)(The World Bank, International Comparison Program database 2019c), which means that the US is still the most investing nation in foreign nations.

It is worth to note the high-technological exports of China and the US, as distribution of technology has been deemed to be a variable of influence for world order dynamics, as technology, especially high-technological goods and knowledge, play a big part in the development of a nation's domestic sphere. It may be observed that China is the leading exporter of high-technology and has been since 2004 (163.01B USD), while the US (139.38B USD) got surpassed, not only by China but also by Germany in 2009 (139.96B USD vs. US, 132.407B USD).

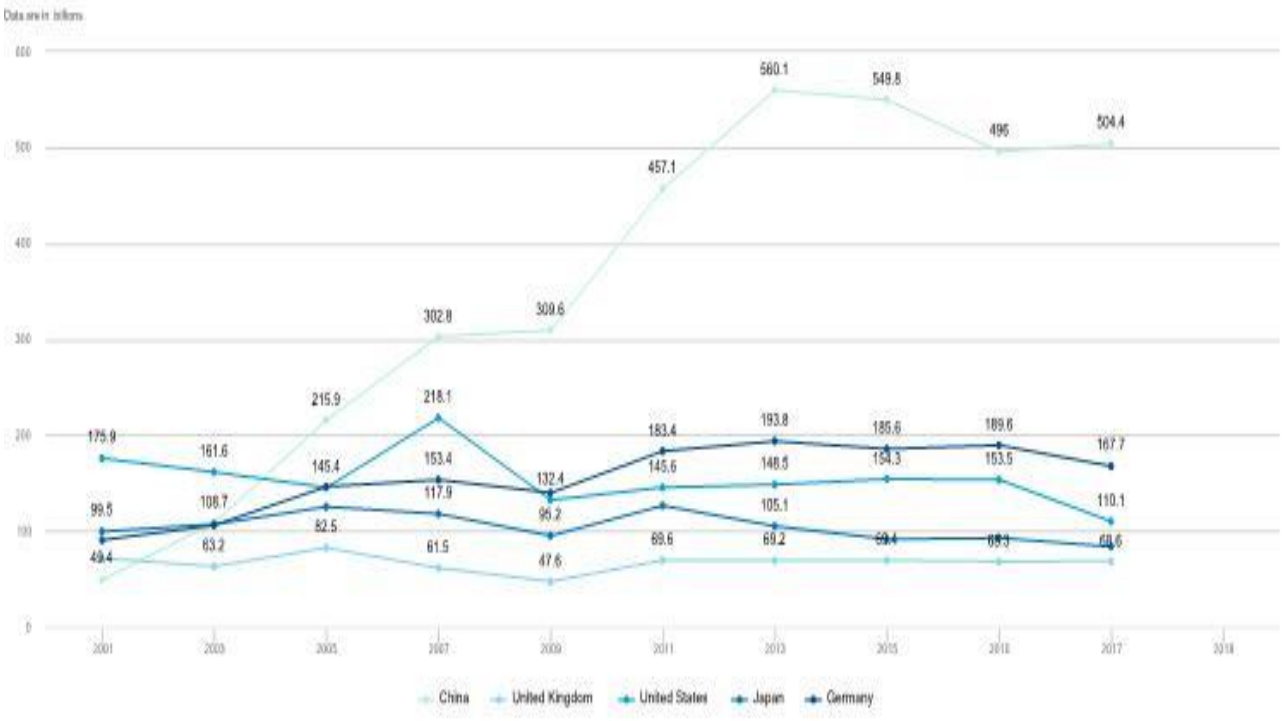
This development of high-technology exports may be observed to have continued and China have established a 300B+ USD gap from their leading position (504.38B USD) to Germany in second place (167.75B USD), while the US (110.12B USD) is in 5th place after Hong Kong (141.72B USD) and Singapore (136.16B USD).

It may be observed that China is dominating in high-technology exports, which in interplay with the alternative economic system that China has introduced and implemented, may be deduced to be a challenge to the US' control and dictation of development, as other hegemons have done throughout history. It may be observed that China is the leading manufacturer and exporter, which may be deduced to potentially reshape the current power dynamics on the one hand, which on the other hand is up to the overall strategy and plans of China, whether hegemony is to be contested, which often has been denounced by Chinese officials, e.g. the Foreign Ministry China's spokesperson Geng Shuang(Ministry of Foreign Affairs of The People's Republic of China 2017). Even though China is officially stating that do not want to challenge the US' hegemony the US has initiated a

trade-war against China; a variety of war that may be perceived as a modern mode of war, in which restrictions of the world economy may be observed, a situation that may be deemed as a conflict of power and not strictly due to economic and intellectual reasons.

The initiation of an economic war may not be as costly as a regular war, as difficult to legitimise and as overall damaging as a nuclear war, which has been deemed a modern and economic Thucydides trap(Gong 2018), due to the reaction of the US after China became fully integrated in to the world economy and started to promote another development strategy; state-led capitalism.

The conflict of the ongoing China-US trade-war may be a product of an economic or "technological" Thucydides trap, as it may be observed that the US have had a negative trade balance with the EU the last two decades without engaging in a conflict that may be categorised as a trade war(US Census Bureau Foreign Trade Division 2019c), while having the same negative trade balance with



Series : High-technology exports (current US$)
Source: World Development Indicators
Created on: 04/11/2019

China(US Census Bureau Foreign Trade Division 2019b), though the trade balance with China is almost 3 times the amount of the EU-US trade balance. It may further be noted that the EU, its member-states and the US have history of cooperation and share the same most of the same liberal norms and values of democracy and human rights promotion, which may be interpreted as a political alliance, thereby meaning that the EU and its member-states benefit greatly from the US' hegemonic position.

The conflict does not only concern trade, as intellectual property rights are a big part of the debate, which the US have had a big focus on, as several American corporations have claimed that Chinese corporations are stealing their technological knowledge and sharing the knowledge with the Chinese government, e.g. The case of Sinovel (China) vs. American Superconductor (US) in 2018(Raymond 2018). Even though fines have been given out, the Chinese ambassador to the World Trade Organisation rejects these claims of forced technology transfer and argue that "*The transfer of technology from the U.S. companies to China is normal business. It is done based on mutually agreed terms between the businesses, and such transactions represent the companies' own will."*(Xinhua 2018).

James Andrew Lewis from the Center for Strategic and International Studies (CSIS) has argued in the report "*Technological Competition and China"* that the phenomenon of the Thucydides trap cannot be observed in the contemporary competition between China and the US, and the reason for enhanced tensions between the US and China is not based on the rise of China but on the means China has utilised in its rise (Lewis 2018, chap. A Fundamentally Different China). Lewis furthermore argued that the US and China will not be likely to engage in a military war, as both nations seek to avoid damage in risky military actions due to the presence of nuclear weapons, but adds that small military conflicts may emerge(Lewis 2018, chap. A Fundamentally Different China). It may be noted that the fear of causing more damage than winning is keeping China and the US from engaging in

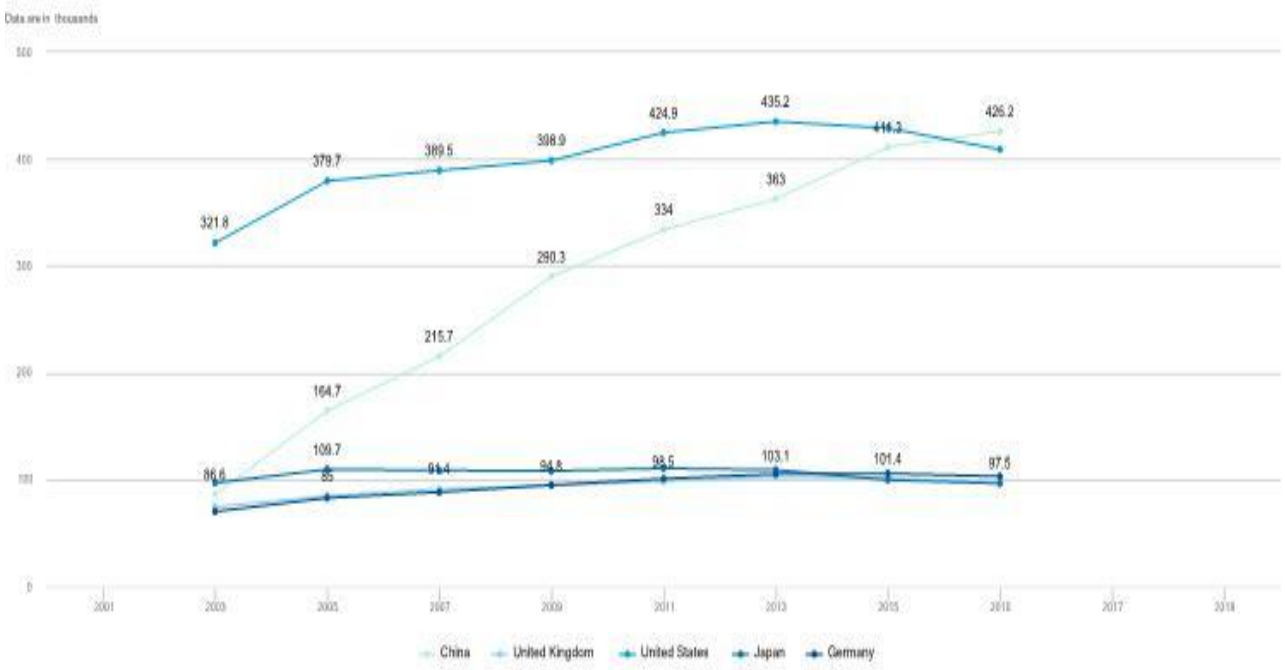
war, cf. Lewis. This may be interpreted to have impacted the means the US is utilising to slow down China's growth, while keeping themselves from increasing the trade deficit to China and establish themselves as a strong hegemon. Though, the means that the US is utilising may be interpreted to be trade tariffs directed at making American consumers and the American based industries to buy less goods from China, as the price has increased. The US has threatened to increase the tariffs further if China was not going to play an active part in decreasing the uneven trade and import more goods and services from the US (The tariffs was increased while writing this analysis, 10th of May 2019,(Office of the United States Trade Representative 2019)).

The conflict of the US-China trade-war emerged in the aftermath of the 2016 election where Donald Trump emphasised the US' relationship with China in his campaign, which in a retrospective perspective may be observed as the start of the enhanced tensions between China and the US. Trump wanted to focus on revising the American economy to kickstart the domestic growth of the US, and on rebalancing the international system and the agreed decisions by the international community, e.g. the Syria conflict and the US' role herein, and the accepted agreement of the United Nations COP15 convention, the Paris Accord.

Trump was quick to withdraw the US from this globally accepted agreement, the Paris Accord, which caused several leaders of different nations to criticise the American presidents decision(Watts and Connolly 2017), e.g. the French President Emmanuel Macron's "*Make our planet great again" tweet and announcement* (Ward 2017; Abrams 2017). It may be observed the international community became dissatisfied with the US and its new approach to the international community after the US started to distribute its responsibilities, which further increased when the US imposed its first round of trade tariffs in January 2018. After imposing tariffs on imports of washing machines, solar panels, steel and aluminium the EU retaliated and imposed tariffs on US' exports to the EU(BBC News 2018a). This dissatisfaction from the international community alongside the

alternative economic cooperation framework that China and the BRICS coalition is providing may influence the US' position as hegemon, as the nations may be less willing to cooperate with the US, if the US' mode of cooperation is based on a restrictive behaviour if the cooperation benefits the US less than its partners.

The zero-sum game approach by the US may be harmful to its international relations as it may impact its trade with other nations, which may cause China's trade relations to become increased. As mentioned earlier, China's presence in Africa is growing and China's overall impact on the African nations is impacting potential influence in the international community, as the Chinese loans to the African countries may result in a debt trap(European Foundation for South Asian Studies (EFSAS) 2017, 5–6), thus establishing long-term relations based on African nation's dependency on China. The dissatisfaction with the US in contemporary time may be observed to convenient for China, as their military-, economic-, technological- and political power and overall development has resulted



Series : Scientific and technical journal articles
Source: World Development Indicators
Created on: 04/11/2019

in the categorisation of China as a great nation. China may be observed to be the only true contender to the US' hegemony in contemporary time, which makes this thesis ponder the plausibility of the categorisation of China as one of the two true superpowers of the beginning of the 21st century.

The technological capabilities of China are growing exponentially and in interplay with the growing societal development and the new possibilities of social mobility, e.g. attending university to get an education easier, may pave the way for an overtaking of "technological" hegemony, due to the intellectual property perspective in China and the increasing technological capabilities in interplay with the size of China's population and the increasing share of the individuals in China with a degree in Natural Sciences and Engineering, which will be examined later on. It may be observed in the table "Scientific and technical articles", that China (426.2 thousand in 2016) has overtaken the US (408.99 thousand in 2016) in number of articles published in the scientific and technical areas(The World Bank, International Comparison Program database 2019m), which may be interpreted as China overtaking the leading position in the technological sphere, by observing the development of China and the US' quantitatively. To look at the quality of the published papers from China and the US, it is crucial to examine the number of citations of the published articles, especially in the sphere of AI. Kai-Fu Lee has in his book "*AI Superpowers, China, Silicon Valley, and the New World Order*" examined a study from Sinovation Ventures(K.-F. Lee 2018, 104–5), in which Lee observed that Chinese authors had a 23.2 percent share of the top 100 of published articles regarding AI in 2006, a share that grew to 42.8 percent in 2015(K.-F. Lee 2018, 104–5), though the Chinese authors is both scholars who work and resides domestically and abroad, but the most of them are working in China(K.-F. Lee 2018, 104–6). The power gap that the US have had earlier in history regarding scientific and technical articles, especially in the AI sphere, may be deemed to have decreased as a result of the technological and scientific rise of China.

AI Power

Kai-Fu Lee has further examined how China increased its capabilities in AI research, which he traced to have emerged from the Microsoft Research China institution(now Microsoft Research Asia) where training of over 5000 AI researchers happened(K.-F. Lee 2018, 105). Some of these Chinese researchers created the global image-recognition system "ResNet", which later became one of the building blocks for Google's AI system "AlphaGo Zero", accordion to Kai Fu-Lee. This situation of the West teaching China how to utilise AI and China being innovative and expanding the capabilities of the western ideas may be compared to the current trends in the international community. The comparison may be made in the sphere of economic development, in which it may be interpreted that China has integrated into the world economy and has now proposed an alternative economic growth model, that is based on the capitalist and liberal structures of the world economy, but is tweaked and developed into being state-led, non-value based international cooperation to promote prosperity for the cooperating nations and ignore the domestic policies of the cooperating nations. It may further be interpreted that Chinese and American scholars of AI are utilising each other to establish a faster growing community and capabilities(K.-F. Lee 2018, 105–7), without integrating the everlasting competition of "*Them and us"*, which may be perceived as a great contrast to the trends of the world economy and the behaviour of the US.

The power-gap between the US and China may be perceived, in the technological sphere, to have decreased as an effect of the growing scientific and technological expenditure of China, the cooperation of the scientists and scholars of AI and the US' and China's roles in the international community. The US is undergoing a revisionist establishment in its government, which have paved the way for other nations of the world to take on greater responsibilities, which may be deduced to be an "invitation" from the hegemon to challenge it. Furthermore, China as a great nation is projecting capabilities that are matching the US', which in interplay with the revisionist approach of the US may

be interpreted as the US' mode of establishing restrictions to safeguard its hegemonic position and to mitigate the free riding of a nation. Additionally, a situation of an all-out military war has been deemed to damaging for both China and the US, which may have influenced the nations perspective and reactions to a challenging nation, meaning that an economic or technological war is more feasible for both sides. A technological competition may provide greater inventions at a faster pace, while an economic war may decrease the economic capabilities and thereby decreasing investment in inventions of a nation, thus decreasing the potential growth of capabilities of the challenging nation. The potential decrease of power-gaining capabilities of the challenging nation may on the one hand cause the challenging nation to revise its approach and relations with the hegemon, e.g. if China revises its strategy towards the US-China trade-war and becomes fully complaint, thus decreasing power to challenge and accept the status quo of the US' hegemonic position. On the other hand, it may cause China to become defiant and accept the restrictions implemented by the US, which may bring about more instability to the world economy and the potential increase of the welfare of the world's population. The US-China trade-war may be interpreted as implementation of restrictions by the US in the world economy and may be conceived as an approach to establish stability and status quo in the international community, as a result of the rise of China and the means utilised in the rise of China.

Technology and influence

An attempt to decrease a challenging nations economic and technological growth may be perceived in current time, as the US has engaged in a conflict with the Chinese telecommunication brand Huawei, who is challenging the position as leader in "internet-developer" with its research and development in the fifth-generation mobile internet(Johnson and Groll 2019). Huawei became the world's largest telecommunications-equipment corporation in 2018 (107B USD in revenue) and second largest smartphone seller, overtaking the American corporation Apple(Johnson and Groll 2019; Mollman 2018). Huawei is now facing claims of intelligence-gathering and distribution to the

Chinese government via Huawei's products, which the US' government have indicated and argued may pose a security threat to the US and other liberal and democratic countries, which has resulted in a ban on Huawei and the Chinese telecommunication company; ZTE(T. B. Lee 2018).

The NATO Cooperative Cyber Defence Centre of Excellence (CCDCOE) published the report "*Huawei, 5G and China as a security Threat"* in the beginning of 2019, where the authors concluded that *"[…] the Huawei et al. debate is not a narrow technology issue."*(Kaska, Beckvard, and Minárik 2019, 19) and *"It remains a concern because procurement of a particular vender's technology creates a degree of dependence: procuring digital technology is not merely about procuring 'an object', it involves long-term commitment to a relationship with a supplier."*(Kaska, Beckvard, and Minárik 2019, 19). The western institution concludes thereby that China's technological rise may establish dependence between China and the nations China are selling its high-technology goods to, which may be interpreted as the west's fear of losing its political influence in other nations by losing a dependency-relationship through exports of high-technology goods, e.g. telecommunication equipment as in the cases of ZTE and Huawei.

The cases of Huawei and ZTE have emerged after the US accused Chinese companies for intellectual property theft from American companies, which further makes this thesis ponder the plausibility of the latent structures of the emergence of the China-US trade-war being the technological, scientific and economic development of China. The Huawei case became international, as several nations of the West joined the US in its competition with China and Huawei, by "sidestepping" deployment of 5G internet, e.g. the Danish telecommunications company "TDC" in Denmark who chose the Swedish telecommunication company "Ericsson" as provider of fifth-generation mobile internet in spite of long-standing relations with Huawei(Kjeldtoft and Markussen 2019; Morris 2019), Australia's ban on both Huawei and ZTE(BBC News 2018c), and the UK' National Cyber Security Centre's (NCSC) warning and blacklisting of ZTE equipment(Huawei Cyber Security Evaluations

Centre (HCSEC) 2018, 17–18; BBC News 2018b). This behaviour of several Western nations may be interpreted as an attempt to maintain the status quo of the world order, as the develop nations are keeping the other develop nations, including the hegemon, from decreasing their dependence relations with the developing nations, while keeping a developing nation from challenging the hegemon. China's rise as a technology and science powerhouse and the current nationalistic and disruptive tendencies of the contemporary US government may thereby be deduced to have led the world order to a stage of transition, where both opposing sides are attempting to influence the outcome.

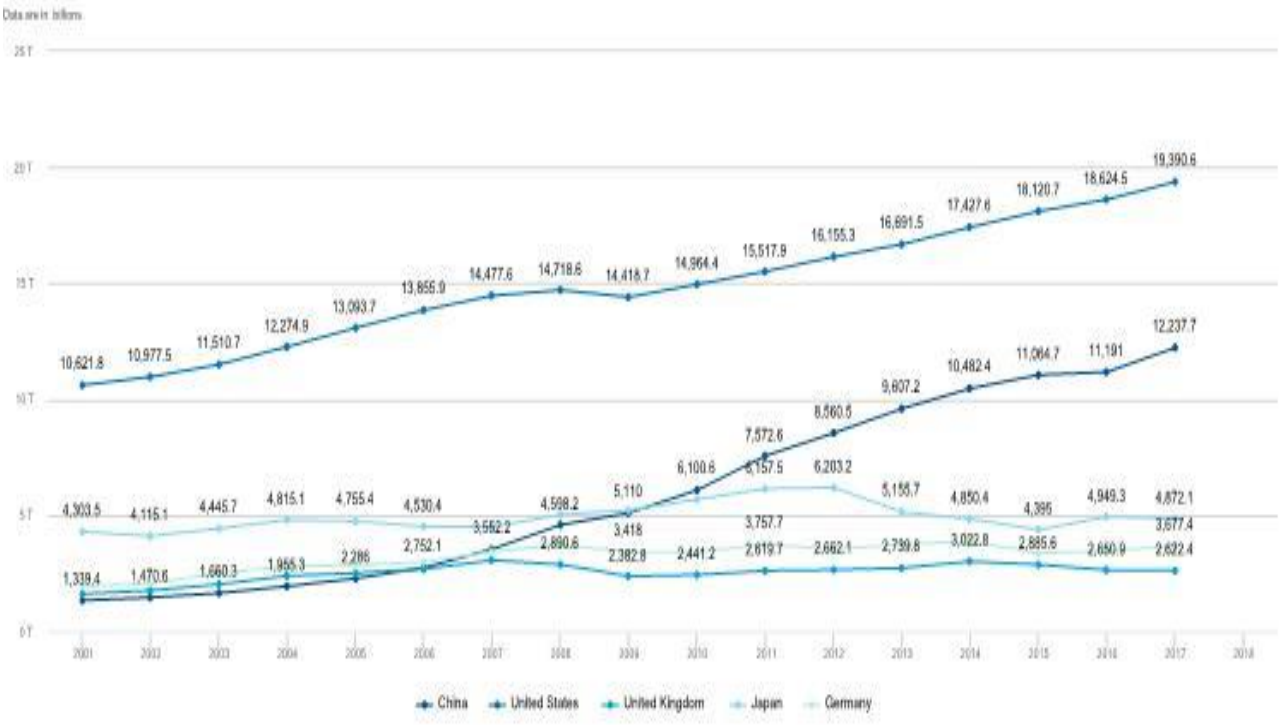
Jacek Kugler's figure for explaining power-structures and deterrence propose several variables which may be observed in the current international system(Kugler and Organski 2011, 187). The stage of the US being the preponderant nation has been argued to be challenged by the scientific, economic and technological rise of China, especially in the sphere of AI, which establishes a non-status quo situation, which may be described as a "parity" situation: the US is still superior and have initiated unilateral deterrence (imposing tariffs on China in the first half of 2018), where China did not impose retaliatory tariffs, yet. When China imposed retaliatory tariffs throughout the summer of 2018 the situation of non-initiation of China may be observed to have evolved to a situation of initiation, where both China and the US are utilising trade-tariffs as economic deterrence. The framework of Kugler argues that when the two struggling nations enters a period of either unilateral deterrence and mutual deterrence a transition period may be observed. This argument brings about the question of the current status of the world order, in which the domestic growth of the two opposing nations needs comparison to determine the stage of transition. To understand the dynamics of the contemporary world order, a comparison needs to be made between China and the US, in which several variables needs to be compared and analysed.

As mentioned earlier, the framework for comparing power of the US and China, the framework established by Michael C. Webb and Stephen D. Krasner will be utilised (established for

measuring the power of a hegemon), which mentions these variables: The aggregative size of economy compared to closest competitors(Webb and Krasner 1989, 186), per capita income compared to main competitors(Webb and Krasner 1989, 186), relative economic growth rate(Webb and Krasner 1989, 187), share of world trade compared to main competitors(Webb and Krasner 1989, 189), share of international investment and share of monetary reserve(Webb and Krasner 1989, 189). Furthermore, the variables of high-technology exports, expenditure on research and development, and published scientific and technological articles.

Domestic power

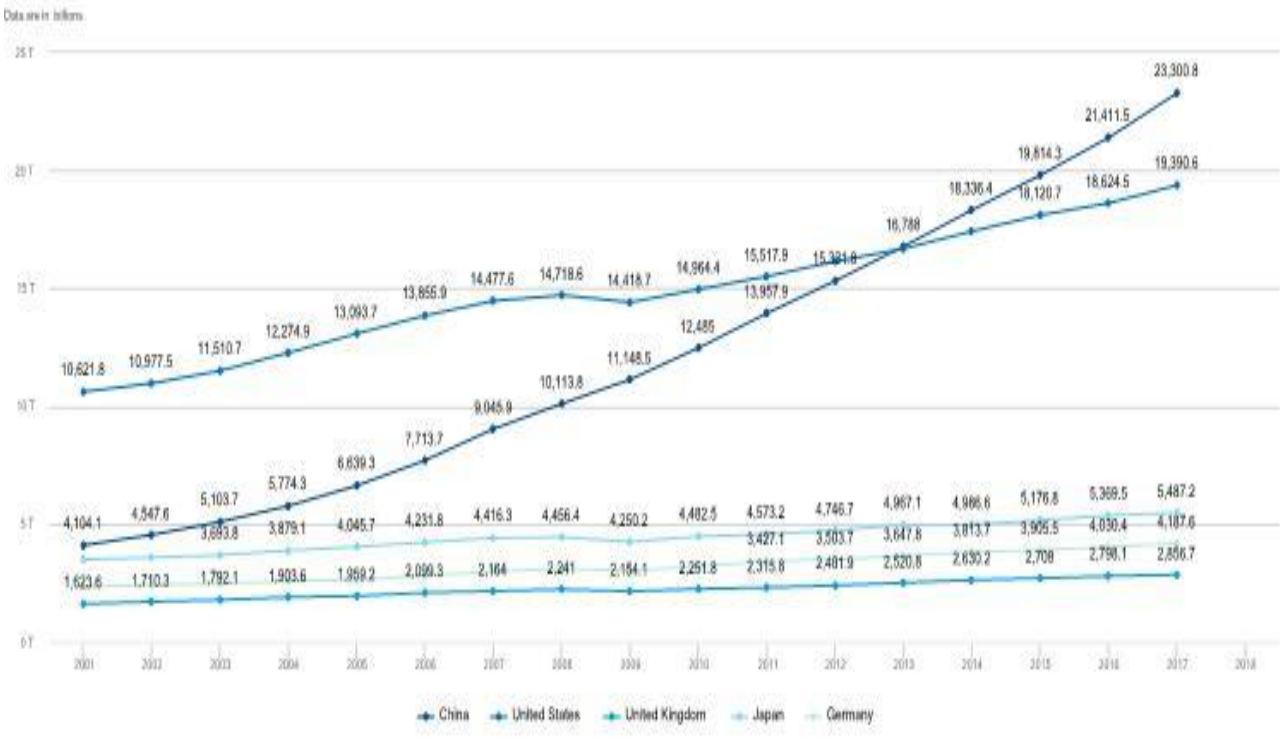
It may be observed that the US' economy har been dominant and had a gap to the other top 5 countries by observing the development of the US' economy from 2001, chart below (GDP (current USD)), and the US' GDP (19.390T USD) it not challenged by China's GDP (12.237T USD).



Series : GDP (current US$)
Source: World Development Indicators
Created on: 04/11/2019

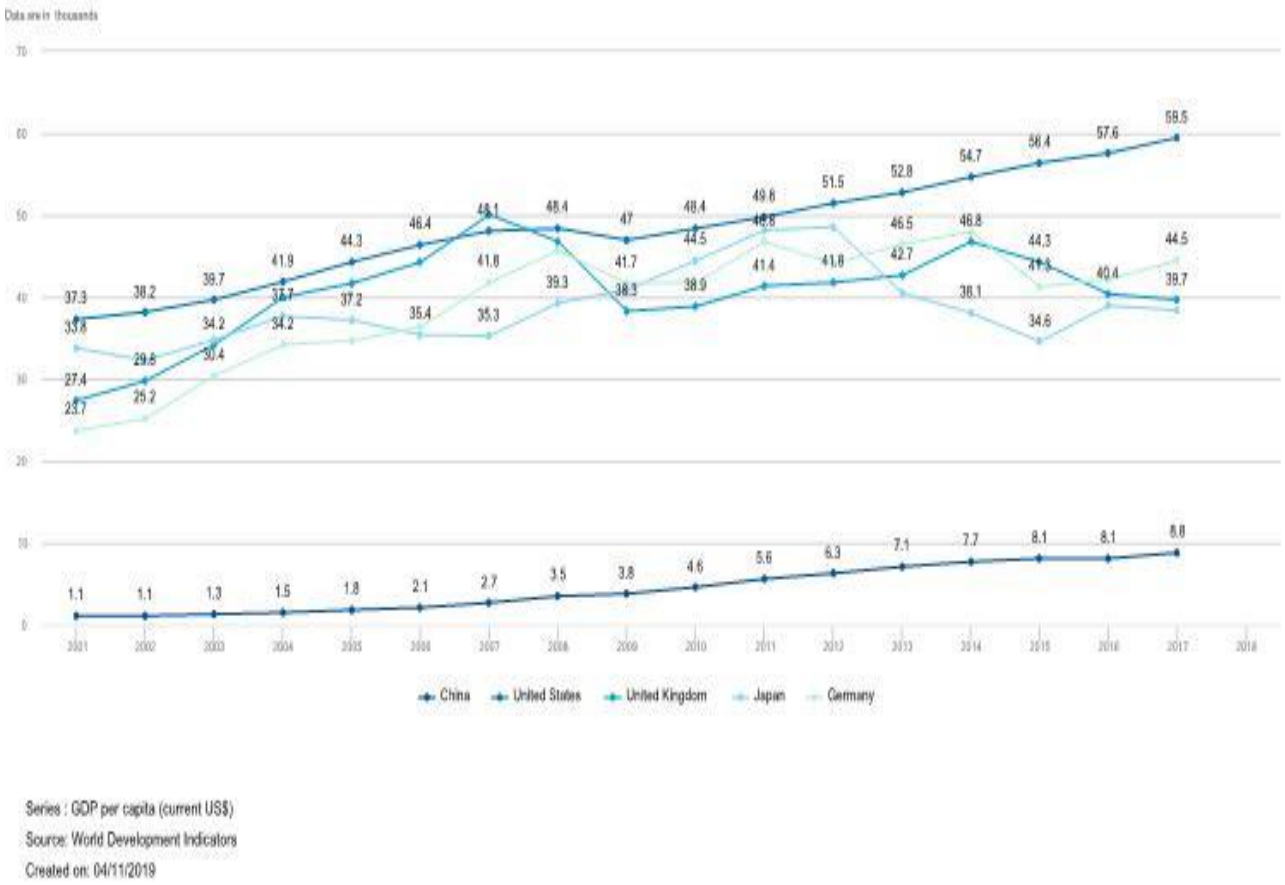
Furthermore, it may be observed that China's GDP (1.339T USD in 2001) has increased exponentially compared to the US' GDP (10.622T USD) since 2001, in which it additionally may be observed that in spite of China's exponential growth, China and the US have almost increased their GDP by the same amount, though China's increase has been larger (2017: China 9.283T USD vs. US 8.768T USD). The other top 5 nations: Japan, Germany and the United Kingdom, have not had equal growth rates compared to the two leading nations, but may be observed to have steady economies, quantitatively speaking.

Though, if the measurement tool of PPP is applied the economic development of the US and China may be observed to be a different outcome. Due to the PPP tool's premises of the American purchase power parity, meaning that the US' PPP may be observed to be value 1, due to goods and services being calculated via the American prices, the economic development of the US does not



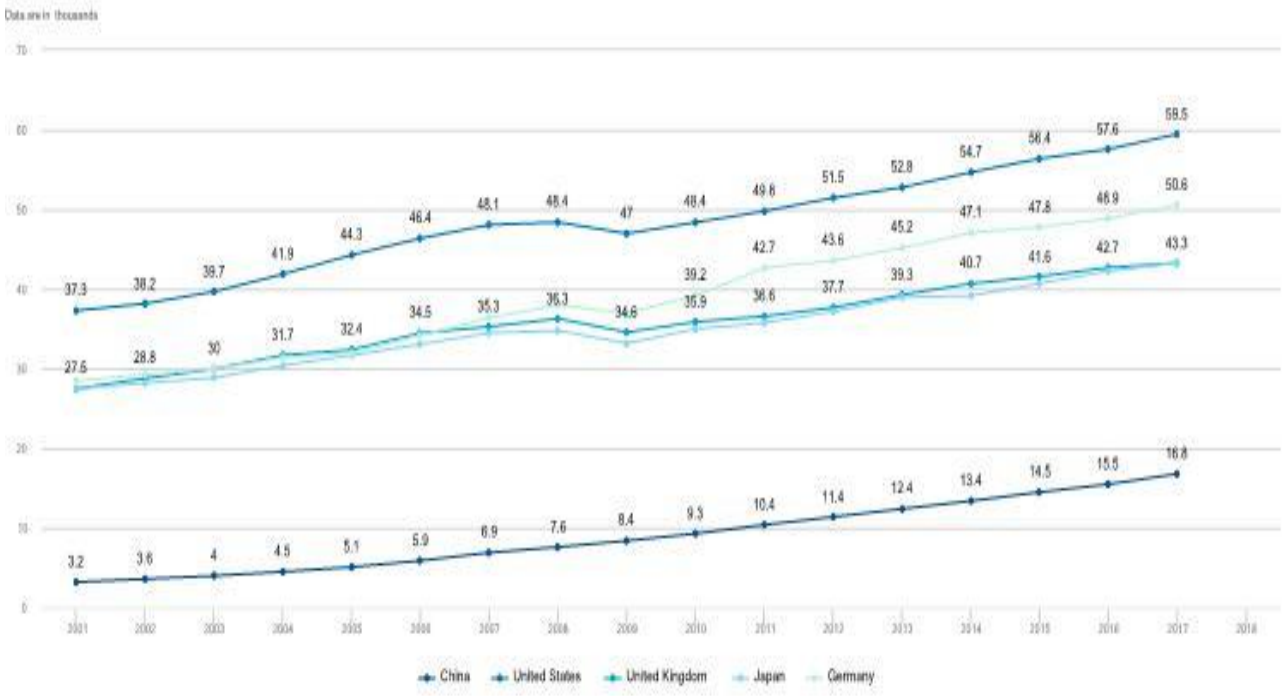
Series : GDP, PPP (current international $)
Source: World Development Indicators
Created on: 04/11/2019

change when PPP is applied. According to the World Bank's International Comparison Program database; China's PPP conversion factor is 3.55 (2017)(The World Bank, International Comparison Program database 2019g), meaning that China's purchasing power is higher than the US'. This means that China's GDP with PPP may be observed to have increased from being lesser than the US' GDP (China 4.104T USD vs. US 10.622T USD in 2001) to have become the superior economy (China 23.301T USD vs. US 19.391T USD in 2017), an overtake that happened in 2013 (China 16.788T USD vs. US 16.692T USD), according to the World Banks comparison database (see chart above (GDP, PPP (current international $)). This means that China has greater economic capabilities if the GDP were to be concentrated domestically. The economic development with PPP applied clearly shows that the US has lost its economic dominance which has been overtaking by China, which may be interpreted to have impacted the strategy of the US concerning stability.



The variable of GDP per capita is noteworthy due to its explanatory power of a nation's output in relation to population. It may be observed, via the chart below (GDP per capita (current US$)), that the US is the leading nation with a GDP per capita of 59.5 thousand USD (2017) and China has a GDP per capita of 8.8 thousand USD, a gap of 50.7 thousand USD. Another noticeable development of the economies of China and the US are the increase of both nations GDP per capita, where it may be observed that China in 2001 had a GDP per capita of 1.1 thousand USD, meaning that the GDP per capita of China have become 8 times bigger in two decades.

The US' GDP per capita may be observed to have increased more than China's GDP per capita in the last two decades; the US had a GDP per capita of 37.3 thousand USD in 2001 (59.5 thousand in 2017), an increase of 22.2 thousand USD, meaning that the US' GDP per capita has become approximately 1.6 times larger. By comparing the growth of China and the US, it may be observed that the US' GDP per capita is 6.8 times bigger than China's, though it is worth to mention,



Series : GDP per capita, PPP (current international $)
Source: World Development Indicators
Created on: 04/11/2019

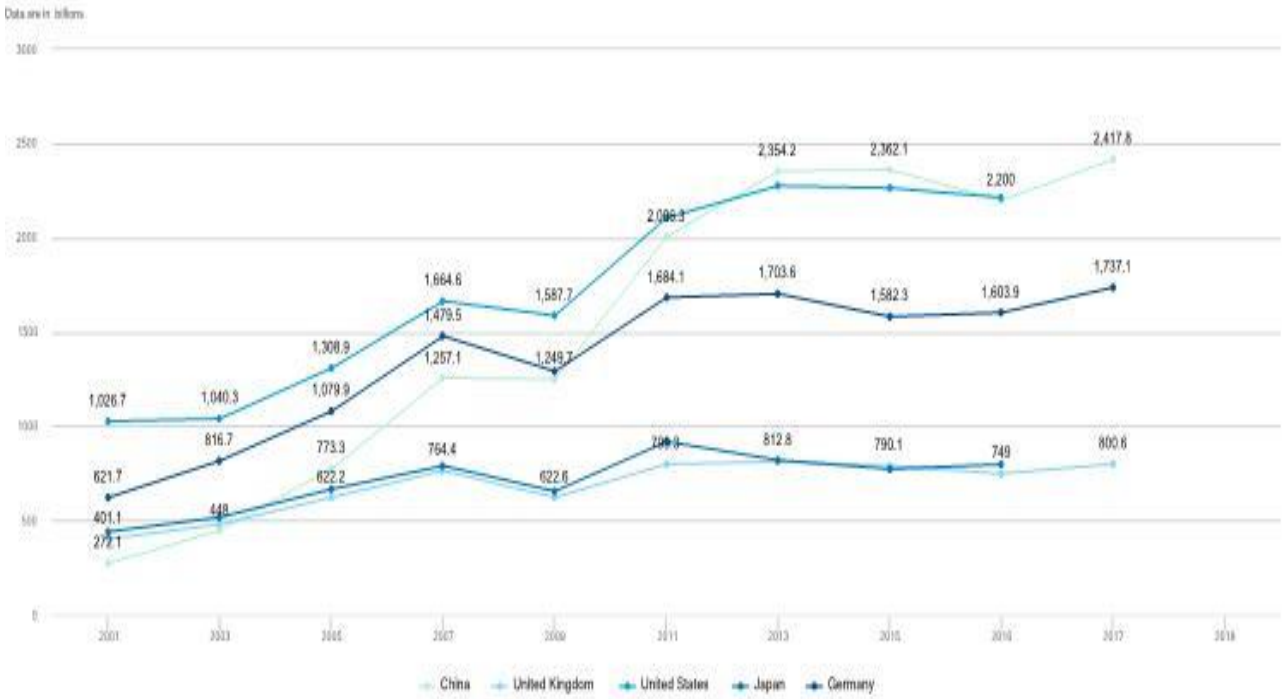
that China's population is 1.39B people and the US' population is 328.7M people. This means that China's population is 4.23 times bigger than the US', thus making China need to increase their GDP 4.23 times to equal the US' GDP per capita.

The measurement tool of PPP has been utilised earlier to get a perspective of the nation's domestic growth based on the nation's purchasing power, which brought about a different result than when the nominal GDP of China and the US was examined, a result that showed China as the leading economy and the US in second. By observing the GDP per capita with PPP, China's GDP per capita may be highlighted as the only noticeable change with a GDP per capita with PPP on 3.23 thousand in 2001 and 16.81 thousand in 2017(The World Bank, International Comparison Program database 2019e), still ranking behind the US with 42.69 thousand per capita.

Additionally, China and the US' trade will be examined through their imports and exports, which will show both nation's share of the world's trade.

It may be observed in the chart below, Exports of goods and services (current US$)(The World Bank, International Comparison Program database 2019b), that trade of the top 5 nations have all increased, but China and the US are the largest exporting nations of the world. It may further be observed that China was ranking below all tip 5 counties in 2012 with exports worth of 272.1B USD, where the US had exports worth of 1.03T USD. China became the second largest exporter in 2010 with exports worth of 1.6T USD, overtaking Germany's exports worth of 1.44T USD, still ranking behind the US' exports worth of 1.85T USD. Two years later, in 2012, the US' export-gap to 3 of the top 5 exporters was still increasing, US exports worth of 2.19T USD, but China managed to keep up with the US and even challenge the position of top 1 exporter, with exports worth of 2.18T USD.

China's challenge to the position as top 1 exporter in the world became a reality the year after, 2013, where the US' exports was worth 2.28T USD and China's was worth 2.35T USD. This position



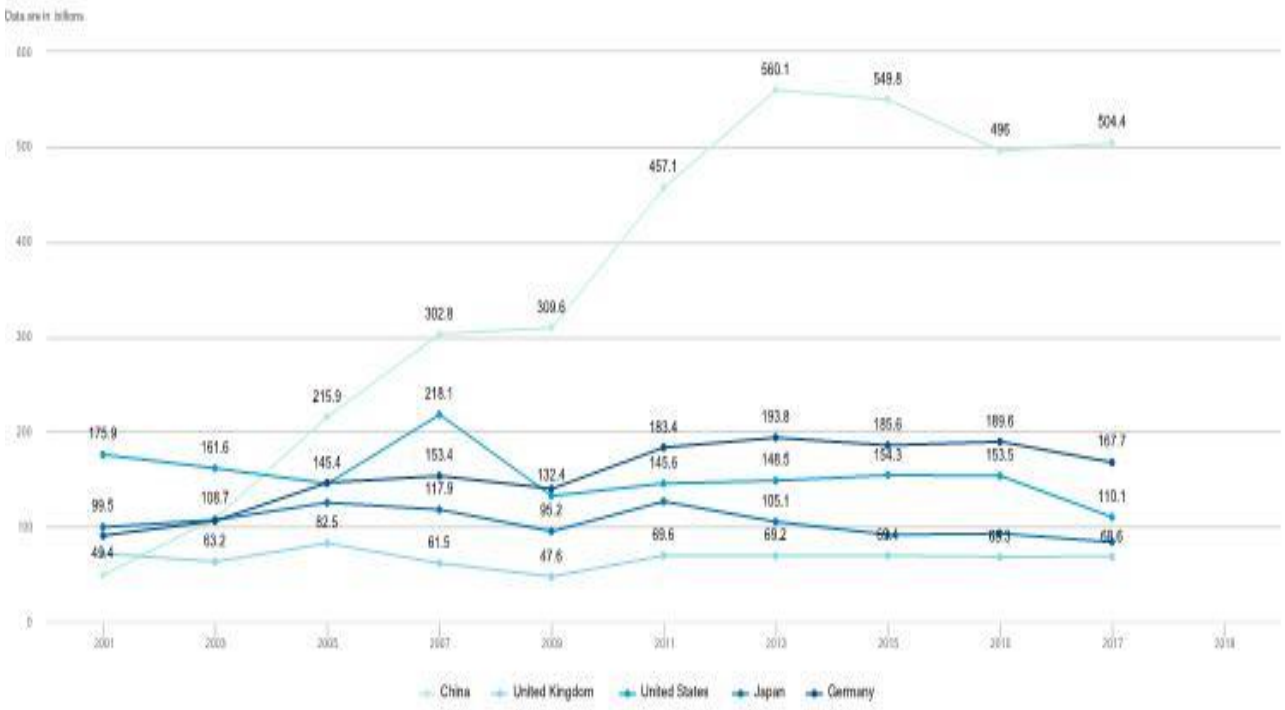
Series : Exports of goods and services (current US$)
Source: World Development Indicators
Created on: 04/11/2019

was reclaimed by the US in 2016, with exports worth of 2.215T USD, while China's exports was worth 2.2T USD. The chart does not show the US' exports in 2017 and 2018, but according to the US Census Bureau Trade Division, the exports in 2017 was worth 2.35T USD, and in 2018 the US' exports was worth 2.5T USD(US Census Bureau Foreign Trade Division 2019b). The exports of China in 2017, according to The World Bank's comparison database, was 2.42T USD, which made China reclaim the leading position in 2017, but lost that position in 2018, according to Reuters, who highlighted in January 2019, that China's exports had decreased by 4.4 percent, which may be interpreted to have decreased China's exports to 2.304T USD. It may further me deduced that China has lost its newly reclaimed title as top exporter to the US in 2018. The total exports of the world are worth 23.064T USD (2017), according to The World Bank, which means that China's share of the world's exports was 10.49 percent in 2017 and the US' was 10.19 percent.

As for the imports of China and the US, it may be observed that the US has dominated the import market, ranking top 1 the last two decades, with no other nation near to challenge. China have the last two decades increased its imports from 243.974B USD in 2001 to 2.208T USD in 2017(The World Bank, International Comparison Program database 2019i), an increase of imports by 9.05 times. The US imported goods and services in 2001 worth of 1.395T USD and have increased its imports to be worth 2.736T USD in 2016, an increase by 1.96 times. Compared to the world's total imports, it may be observed that in 2001 the world's imports was worth 7.685T USD, making the US' share in 2001 on 18.15 percent, and China's share on 3.17 percent. In 2016 the world's imports was worth 20.408T USD, which made the US' share of total imports on 13.41 percent, which indicates a decrease of share by 4.74 percent, where China have increased its share to 9.53 (1.944T USD) percent in 2016(The World Bank, International Comparison Program database 2019i). According to the US Census Bureau of Foreign Trade, US' imports was worth 2.903T USD in 2017 and 3.121T USD in 2018(US Census Bureau Foreign Trade Division 2019a), in which it may observed that the US' share of the world's imports was 12.91 percent in 2017. With the examined imports and exports of the US and China in relation to the world's overall imports and exports, it may be observed that the US has lost several percentages of control of the world's total trade, whereas China has become a bigger part of both the import- and export market. It may furthermore be observed that the US' total share of the world trade in 2017 (as all data may be found officially this year) was 23.1 percent, and China's share was 20.02 percent, which means that the US is still the leading trading nation in the World.

Another important variable for measuring power in the 21st century has been determined to be high-technology development, in which the measurable factors of high-technological exports, expenditure on research and development, and number of researchers and their published articles.

By observing the chart below, High-technology exports (current US$)(The World Bank, International Comparison Program database 2019f), China's development may be deemed as an exponential increasing growth, that has left a gap between China and the rest of the nations of the top 5 economies. China exported in 2001 high-technology goods worth of 49.41B USD, same year the US exported high-technology commodities worth of 175.87B USD, 3.6 times higher high-technology export-volume than China. China increased its exports the next couple of years and surpassed the US in 2004, China 163.01B USD vs. US 139.38B USD, which started China's increasing exports for the next one and a half decade, reaching 496.01B in 2016, of the world's total high-technology exports (1.989T USD) in 2016(The World Bank, International Comparison Program database 2019f). China accounted for 504.38B USD of high-technology exports in 2017, enhancing its leading position and its gap to the other nations of the top 5 of high-technology exports. No official data on high-



Series : High-technology exports (current US$)
Source: World Development Indicators
Created on: 04/11/2019

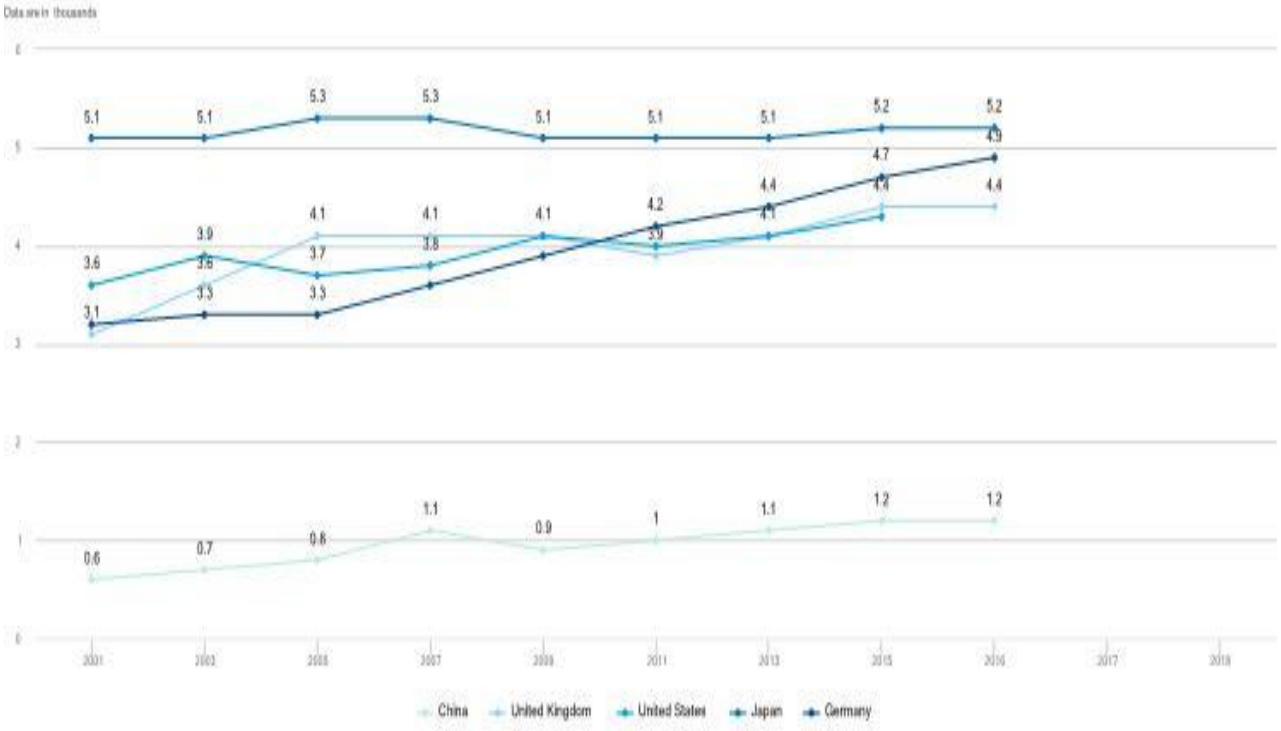
technology exports of the US may be found for 2017, therefore are the comparisons regarding share of high-technology trade being made with 2016.

It may be perceived that the US hit a decline after the financial crisis of 2008/2009, which may have caused the US to focus less on expanding its high-technology exports, which may be interpreted qua the development of the US' high-technology exports from 2008 to 2016, ranging between 220.88B USD in 2008, 132.41B USD (2009), 153.51B USD (2016) reaching its lowest exports level in the 21st century with high-technology exports worth of 110.12B USD. This decrease has developed alongside China's increase in high-technology exports, which retrospectively may be observed as the US started the 21st century out by having a share on 16.77 percent of the world's total high-technology exports (1.049T USD in 2001), where China had a 4.71 percent share. The roles have changed throughout the first two decades and China had in 2016 a market share of high-technology exports on 24.94 percent (496.01B USD out of 1.989T USD), and the US had a market share on 7.72 percent. It may be further be noted that the US' exports decreased from 2016 to 2017, which makes this thesis ponder the plausibility of an even bigger decrease of US' market share, though the official amount of the high-technology export market may not be observed in The World Bank's or the United Nations "comtrade database"(The World Bank, International Comparison Program database 2019f).

Though, it may be observed from the increase in China's high-technology exports and the decrease of the US' high-technology exports that China has taken the leading position in the high-technology market. This notion may be important, as a new report from the NATO Cooperative Cyber Defence Centre of Excellence (CCDCOE) has deemed high-technology exports to be influential for the exporting nations role in the importing countries(Kaska, Beckvard, and Minárik 2019, 19).

The number of researchers in the US and in China is another variable that is important for analysing the domestic development of the two nations, as a growing research area or new research

areas may be deduced to develop alongside a growing base of researchers. By observing the development of the number of researchers in research and development several indications of the two nations research and development strategy may be deduced.



Series : Researchers in R&D (per million people)
Source: World Development Indicators
Created on: 04/11/2019

By observing the chart above, Researchers in R&D (per million people) by United Nations Educational, Scientific, and Cultural Organisation (UNESCO) Institute for Statistics(The World Bank, International Comparison Program database 2019l), China and the US' development may be deduced. First, it may be observed that the data does not cover the years 2016, 2017 or 2018, and the data only covers the years from 2001-2016 for China.

Secondly, it may be observed that China had 575.338 researchers per million people in research and development in 2001, which increased to 1184.47 researchers per million people in research and development in 2008, which decreased to 852.26 in 2009, where a tendency of positive

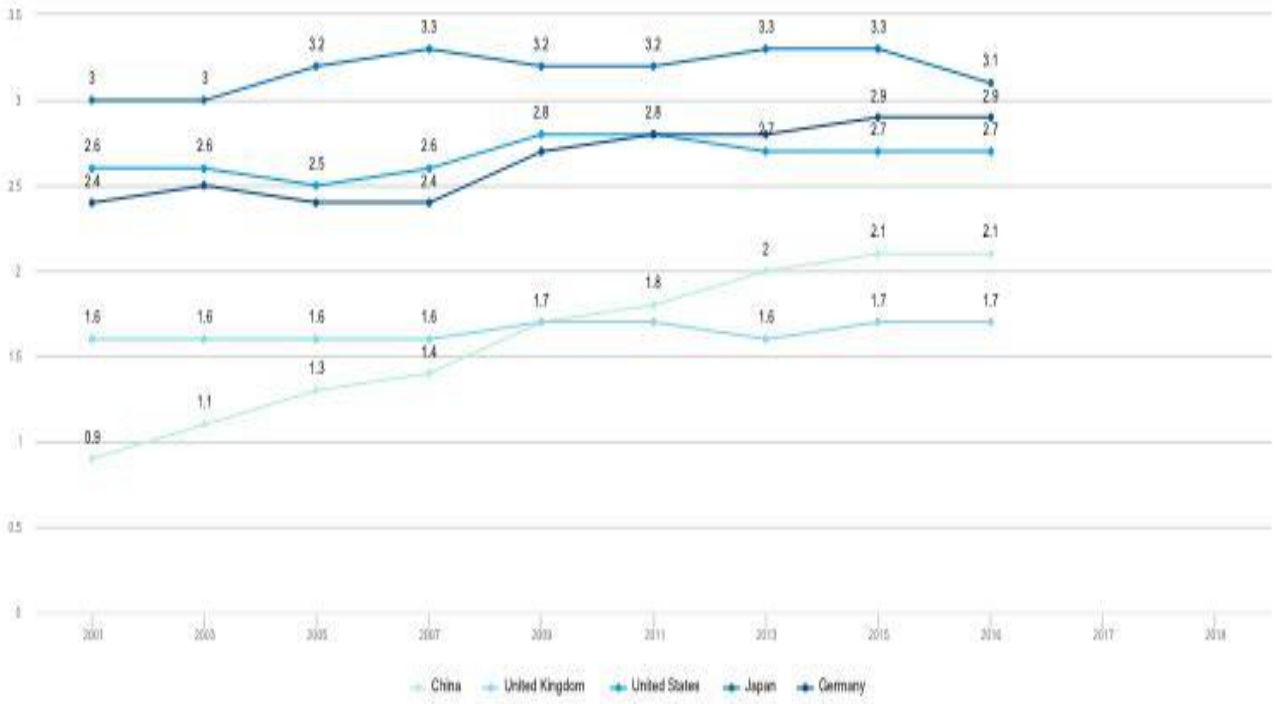
development may be perceived, which caused China to have 1205.68 researchers in research and development in 2016. The median for the world's researchers in research and development may be observed to have developed from 1196.11 per million people in 2005 to 1272.13 in 2010 and 1473.17 in 2015. This means that China have had less researchers in research and development throughout the last two decades than the median of the world. Regarding the US, it may be observed that the US had 3557.58 researchers per million people in research and development per million people in 2001, and a positive development throughout the last two decades, with a research base of 3925.71 researchers per million people in 2008 and 4313.38 in 2015. It may clearly be observed that China is lacking behind the US, in which the statuses of both China and the US are crucial for this distinction, as China is acknowledged as a developing nation, where the US is acknowledged as a developed nations, it may be argued that the US is the most developed nations, if the argument is based on overall GDP (nominal top 1) and GDP per capita (nominal top 8)(The World Bank, International Comparison Program database 2019d).

In relation to the two nation's expenditure in research and development, chart below (Research and development expenditure (% of GDP))(The World Bank, International Comparison Program database 2019k), it may be observed that the World's median expenditure of GDP on research and development was 2.09% in 2001, lower than the expenditure on research and develop by the US, who spent 2.64% of its GDP, but higher the China, who spent 0.94% of its GDP in 2001. The US decreased its expenditure throughout the first half of the first decade of the 21st century, but started to increase its expenditure it in 2005, which caused US to reach a record on 2.82% of GDP spent on research and development in 2009, thereafter the US decreased its expenditure to become stable at 2.69% to 2.74% in the years 2013-2016.

China on the other hand may be observed to have had an increase by every year since 2001 but have not managed to equal the median of the World's expenditure on research and development

in percentage of GDP, China spent 2.11% of GDP in 2016, the World averaged 2.31%. It may therefore by observed that China is trying to catch up with the world's average, and with China's increase in GDP and expenditure of GDP on research and development, it may be interpreted, that if China continues to increase its expenditure on research and development as well as GDP, China (top 12) may overtake the US (top 9).

In relation to the development plan of technological advancement proposed by China, the "Made in China 2025" plan, it may be interpreted that China is aiming to become the world's leading scientific powerhouse, but it will take time and acceptance from the international community. Though, it seems like the members of the international community is accepting China's mode of governance and China's high-technology products, which is based the volume of China's high-technology exports and its overseas and global presence, e.g. the African continent (e.g. Djibouti)(Pilling

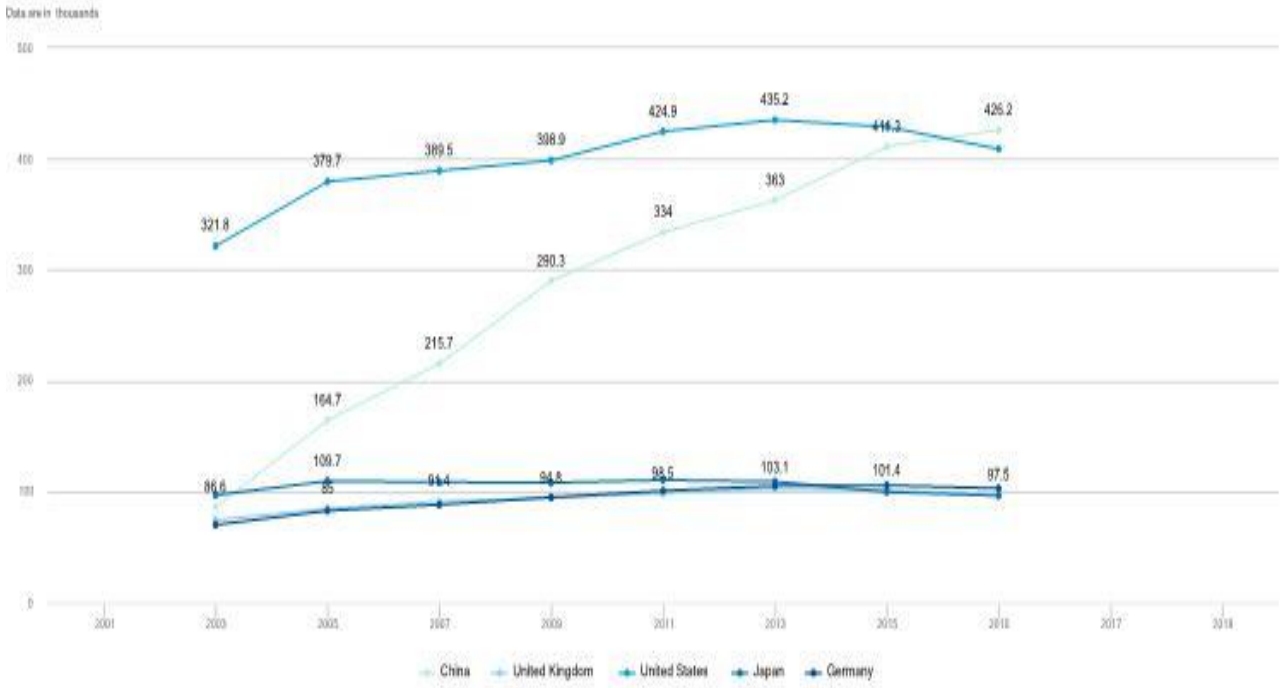


Series : Research and development expenditure (% of GDP)
Source: World Development Indicators
Created on: 04/11/2019

2017), Eastern Europe (The Belt and Road initiative)(Pepermans 2018). The global presence of China may be interpreted to have influenced the US' strategy, as they used to be the *primus motor* in international trade and research and development, and now China is challenging them in several spheres. It may be deduced that China has overtaking the US in several developmental areas and are increasing their influence in several disputed or underdeveloped areas in the world, compared to the West; Djibouti, Eastern Europe and South America.

The last variable that will be examined is the number of scientific and technical journal articles published by China and the US, in which it may be observed in the chart below, Scientific and technical journal articles published(The World Bank, International Comparison Program database 2019m), that in 2003 China published 86.621 scientific and technical journal articles, the US published 321.765 thousand.

The US reached 409.853 thousand published journal articles in 2010 and peaked in 2014 with 440.229 thousand scientific and technical journal articles published. After 2010, the leading position of the US became challenged by China's rise in science and technology, and the US' number of published scientific and technical journal articles decrease to 408.985 thousand in 2016, where China have had growth every year but in 2012, decreasing from 334.045 to 332.082 in 2012, but since began to challenge the US' leading position, which China overtook in 2016 with 426.165 thousand scientific and technical journal articles published. With this overtake taken into account in relation to the earlier mentioned quality of the US' and China's scientific and technical journal articles, especially in AI, and increase in undergraduate-, graduate- and Ph.D. degrees in natural science and engineering(Veugelers 2017, 6–7), it may be deduced that China is challenging the US' leading position in the technological- and scientific sphere and has even overtaken leading positions that earlier has been the US', e.g. overall exports and high-technology exports.



Series : Scientific and technical journal articles
Source: World Development Indicators
Created on: 04/11/2019

Due to the intertwined relationship between a nation's domestic- and international politics, the domestic growth of both the US and China have been observed and analysed, where several deductions and interpretations have been made. First, it has been observed that China have had positive an exponential development in all the examined variable, where the US' growth also may be noted, though mat it be observed that the US have had a slower growth. which have caused the US to react to the China's development, which has been conceived to have resulted in the US-China trade-war. Second, it has been observed that the US has been overtaken by China in GDP with PPP, but not by nominal GDP or GDP per capita, but has the highest growth rates of the two compared nations. Third, it has been observed that the US has implemented a more nationalistic economic policy, which has been interpreted as a strategy of the US to rebalance the hierarchical dynamics of the 21st century, which, in relation to the growing presence of China globally, China's leading position in high-technology exports and NATO's report on China's and Huawei's technological capabilities for

establishing a dependence on Chinese technology in other nations additionally has been interpreted as a causal connection with the ongoing China-US trade-war. It has been observed that China officially has stated that it will pursue technological hegemony through the development plan of "Made in China 2025" and through its extensive increase of its research and development area, the increasing number of natural science- and technical- university degrees and extensive focus on developing AI.

The World Intellectual Property Organisation (WIPO) published a report in early 2019 about "*Technology Trends 2019: Artificial Intelligence"*(World Intellectual Property Organisation 2019), which deemed the US and China to have the best universities in the world, a significant amount of AI research to come from these two nations, and that each nation's government has established business ecosystems and have provided funding to AI research which have caused other nations to fall behind in capabilities(World Intellectual Property Organisation 2019, 9). The report further explains that the American companies IBM and Microsoft are the leading companies in AI patenting, where China is to be found in the top 20, where The State Grid Corporation of China is to be observed(World Intellectual Property Organisation 2019, 15). The patents filed in the US, as the first nation to be filed in, are filed in other nations 32 percent of the time, where the patent's filed in China, as the first nation to be filed in, are being filed in other nations 4 percent of all the filings, which WIPO explains: Chinese companies and universities tend to only file for patent in China, compared with the US(World Intellectual Property Organisation 2019, 16). Additionally, the report explains that China and the US are the leading nations in numbers of scientific publication, and China has been in the leading position in numbers of first patent filings in AI since 2014 and the US is in second place(World Intellectual Property Organisation 2019, 32–33). Lastly, the report has highlighted that the US, China and Japan accounts for 78 percent of the world's total patent filing(World Intellectual Property Organisation 2019, 32–33). The WIPO report has accounted for the measurable variables of comparative perspective between China and the US, where it may be observed, the China and the US are the leading

nations, where each nation is leading in different sectors, but the AI patents filed in China are not as likely to be filed in other nations compared to trends of AI patents filed in the US.

Though, the domestic development of a nation is not enough for a conflict between the hegemon and the challenging nation to emerge, especially after the development of nuclear weapons and weapons of mass destruction, as these inventions have brought about a situation of an all-out war being too hurtful for nations with these weapons. It has been observed that the means for the conflict between China and the US may be found in the economic sphere, as the US has utilised economic means to get China's economy and thereby investment capabilities to slow down and become less of a challenge for the US' hegemonic position. This domestic development of both the US and China may be deduced to have shaped the members of the international community's tendencies of trade, especially high-technology trade, as it may be observed, in the data of high-technology exports ranging from 2001-2016, that China is dominating the market (24% of the high-technology exports in the world comes from China), which is due to domestic development in interplay with the foreign policies and practices that China has reformed during the last 4 decades, while the US has been attempting to promote liberal ideas globally and have engaged in wars, that have increased the US' public debt to approximately the same negative level as after the WWII.

Domestic- and international politics in interplay

The domestic politics of a nation may influence the international community, as it may be observed after the 2016 US election and after the opening-up of China in 1978, where one case may be observed as an attempt to economically open up the economy, where the other may be interpreted as an attempt to establish restrictions to the world economy. As mentioned earlier, the US adopted nationalistic economic policies, which caused several debates in the international community to emerge, mostly in the sphere of trade and climate change, which may be a result of the growing governmental debt in the US and the overall negative trade alongside its main competitor, China, who

has positive growth in both trade, GDP and international relations. It may be perceived that China's main goal is economic development, which have caused China to focus on the interplay of the domestic- and international sphere. China have had tendencies throughout the last four decades of observing and integrating into the US-led world order and institutions of the international community, where reforms of national policies have been made to be able to integrate fully in the liberal world economy, e.g. China's accession into the World Trade Organisation after several decades of projecting compliance to the international institution and its member states.

Furthermore, it may be observed that a nations potential power may be measured by domestic growth, but its true power may only be interpreted through its action in the international community. After decades of reforms in its domestic sphere and after the integration into the world economy China began to be more active in global debates, e.g. the COP15 in meeting in Copenhagen in 2009, where China got a role as a central actor in a global issue(Lieberthal 2009), and the COP21 meeting in Paris in 2015, where took a leading role(A. H. F. Li 2016, 50–51). The domestic growth of China and its behaviour in the international community may have brought about a situation the US and the liberal world order has not faced before: an alternative international economic system established by developing nations, with potential of disrupting the status quo of the Bretton Woods institutions hegemony.

Leadership and aspirations

The New Development Bank established by the BRICS coalition is a part of the Chinese initiative the Belt and Road Initiative, together with the China-led multilateral infrastructure development bank Asian Infrastructure Investment Bank (AIIB) and the Silk-road Foundation (SRF), which may be interpreted to challenge the US-led liberal economic world order, due to the magnitude of the new and alternative multilateral development banks. AIIB may be observed to be the second largest international multilateral development bank, measured by members(Gutner and Patrick 2018, chap.

The AIIB Today). Tomas Gutner of the American University's School of International Service has argued that:

"*[…] China is attempting to step into the leadership void by promoting global cooperation and supporting international organizations. The best showcase of China's leadership aspirations is its regional development bank, Asian Infrastructure Investment Bank[…]"*(Gutner and Patrick 2018, chap. introduction).

China has increased its potential power domestically and are now, according to Gutner, starting to reveal its leadership aspirations, which in interplay the economic system China has proposed may be interpreted as an attempt to revise the unipolar world order by promoting multilateralism, which may threaten the contemporary regional- and global hierarchies through disruption of the traditional monetary and political structures. China is promoting a non-interference mode of cooperation and a positive-sum game, where the main foci of international cooperation are mutual prosperity and mutual gains based on issue-based cooperation.

The contemporary world order of the Bretton Woods is based on liberal norms and values, may be perceived to be challenged by the rise of China and the issue-based cooperation that China is promoting, which may be observed in earlier examined trade dynamics and the earlier mentioned cases of debates in the international community.

Dirk Nabers of the University of Kiel, Germany, analysed in 2010 *"Power, leadership, and hegemony in international politics: the case of East Asia"* in which he argued that "*Leadership is necessarily based on hegemony, while hegemony can only be sustained through leadership.", "Leaders are coalition-builders; they rarely act alone."* and that "*[…] leadership requires an institutionalised context*(Nabers 2010, 931, 946, 948). Nabers argued, that leadership establishes hegemony and hegemony may be maintained by leadership, which in contemporary time is an important argument,

as the US is creating instability in the global hierarchy of the international community, while China is taking on responsibilities. Though, the responsibility of mitigation of global climate change may be perceived to be China's responsibility, as China is the largest manufacturer in the world (manufacturing worth of 3.223T USD in 2016, 3.591T in 2017, approximately 25% of the world's overall manufacturing)(The World Bank, International Comparison Program database 2019j).

It may be perceived that China is establishing institutions for regional- and global growth, which Nabers would have deemed to be an attempt of establishing leadership and thereby hegemony. This perception of China's behaviour in the regional community of East Asia, e.g. establishing and increasing trade relations and infrastructure initiatives for growth, and in the international community, e.g. the leadership-role in climate change, alongside China's overall positive development, technological, economic, scientific, etc., and in relation to the ongoing China-US trade-war and the US' behaviour in the international community, may be interpreted as a period of two nations that is superior in different spheres of influence. The development of both nations may be deduced to have influenced the member states of the international community to be at a crossroads, as both the US and China have established models of development, which may be interpreted as an ideological competition, which the US may perceive as an attack on its establishing norms and value-based institutions and therefor an attack on the US' hegemony. The perspective of Power Transition theory has brought about an explanation of the dynamic of the contemporary world order dynamics, where several deductions have been made.

The theoretical framework has paved the way for an analysis of the US' and China's technoeconomic develop since China became a member of the WTO, 2001, until contemporary time, by utilising the latest data projected by the World Bank and the United Nations' databases. It has been deduced that China has not only challenged the US' leading positions in the economic and technological spheres, but has also overtaken the US in e.g. the high-technology exports, which in the

perspective of Power Transition theory, in relation to the analysed conflict of the China-US trade-war, may be perceived as the trigger for initiating deterrence – in this conflict the means for deterrence has been deemed to be in the economic sphere; trade tariffs.

Stability and unipolar hegemony

AI and world order stability are two variables that have been linked together since scholars and researchers began to study the subjects of AI. The globally watched Hollywood movies with Arnold Schwarzenegger, "The Terminator series", have displayed a negative and dystopian world where the machines based on AI-algorithms have taken control over the world and its population, which may have caused nations to increase their awareness of the possibilities of AI. The dystopian world order scenario projected in the Hollywood movies may be deemed to be an extreme scenario, far away from the AI capabilities in contemporary time. The contemporary dynamics of the world order may be perceived to have been influenced by the growing research in AI, as data-analysis algorithms may establish possibilities of establishing missile systems based on AI, thus removing the human decision and potential guilt.

The contemporary world order has been analysed and several variables indicates that a power transition period may be observed, according to the domestic development of China and the US in interplay with the US' tendency of withdrawing from agreements in the international community and China's enhanced role in the international community. The China-US trade-war has been observed as a conflict between the hegemon and a challenging great nation, as the initiation of the trade-war where the attempt to decrease the increasing problem is based on a restrictive world economy. Kindleberger argued that international economic stability is a collective good, which only a hegemon has the capabilities to maintain, as smaller nations tend to not contribute and thereby freeride which will cause an instable world economy. It may be observed that Donald Trump have not had a focus on keeping the world economy stable or want the US to finance projects globally, which made him

officially state to the international community, that the responsibilities of contemporary time are to be shared among the members, e.g. Trump's reminder to the members of NATO to increase their expenditure of GDP on military to the agreed 2%, an agreement that only few nations was upholding, withdrawing from "unfair" international agreements; the Paris Agreement and Iran Nuclear agreement of the JCPOA negotiated by the US' former president, Barack Obama. Trump focused on China's development and the capabilities of China, which may be interpreted as a negative impact on China's development of power. As it has been observed throughout this analysis, the US is still the largest economy nominally, but has been observed to be a smaller economy in a GDP calculated with purchasing power, while China has overtaken the leading position, and that the US is losing the trade-game with China. It has been observed that China exported high-technology worth of 496.01B in 2016, while the US exported high-technology worth of 110.12B USD. These variables may be interpreted as the US is losing the leading position in the economic sphere, while also losing potential influence in other nations, according to the UN's report on the potential impacts of importing high-technology communication commodities from China and Huawei(Kaska, Beckvard, and Minárik 2019, 19). Furthermore, it may be observed that China has established new multilateral development banks that has backup and potential to challenge the established international institutions and are utilising these multilateral development banks to establish projects in the Eurasian continent and East Africa under the Belt and Road initiative, which may be interpreted as an alternative economic system.

This alternative economic system may be perceived to has been brought about by the rise China and what may be interpreted as dissatisfaction in the international community with the institutions of the Bretton Woods order of the 20th century. From the perspective of two economic systems in the world economy, it may be interpreted through the notions of Hegemonic Stability Theory, that the world economy is undergoing instabilities, where the collective good is not being respected by an

emerging nation that have developed into a great power, thus establishing a situation of hegemonic instability. Gilpin and Krasner have argued that implications of international economic interactions and behaviour influences a nations power and security in non-hegemonic systems. This argument brings out a question of the implications for the world economy brought about by nationalistic tendencies of a hegemon, which is an approach that may be traced back to Europe in the 17th century, e.g. France and UK, where power-struggles between nations often led to war as a result of tensions. Though, the comparison is unfair as the current opposing nations are each other's biggest opportunity to enhance their growth on a bilateral level, due to the magnitude of the two nations' economies, and the modern military means, especially after the invention of nuclear weapons, may be perceived to be more damaging, both physical damage on a nation and relational damage with the other nations of the international community.

Predominance in the 21st century?

The international community's members are becoming interdependent of each other, and economic openness is essential to maintain stability, and a hegemon must manage the international economic system, especially in periods of crisis. As it has been argued earlier, the China-led multilateral development banks have established an alternative economic system, which may be interpreted to disrupt the US' control of the international monetary system and thereby disrupt the US' hegemonic position. Li Xing har argued that the concept of hegemony needs to be conceptualised differently after the rise of China(X. Li 2017), in which an understanding of handle John Ikenberry's consideration of the contemporary world order: "*today's power transition represents not the defeat of the liberal order but its ultimate ascendance"*(Christensen and Li 2016, 15–16). Li has further argued that the hegemonic crisis of the US is characterising the world's current phase but the "*[…] structural essence of the world capitalist system (market access, capital accumulation and mode of production) is not necessarily in crisis; rather, this system is maintained an extended by the emerging*

powers."(Christensen and Li 2016, 16), which may be observed through the behaviour of the BRICS coalitions behaviour in the international community. The maintenance of the structural essence of the capitalist world system by the emerging powers may be observed in e.g. China and the BRICS' mode of liberal cooperation(Brütsch and Papa 2013), the establishment of multilateral development banks(Dove 2016), and China's promotion of multilateralism in the international community(Chinese Mission to the United Nations and Other International Organizations in Vienna 2018). This perspective may be perceived as the hegemonic stability of the US-led world order is being challenged not only by the rise of China, but also by the dynamics, models and innovations that the rise of China have brought about. The structural essence of liberal trade has been deemed to be under maintenance by the emerging powers, who has established a push and pull relationship with the developed nations, which raises the question of whether the unipolar hegemonic system is being reshaped into a multipolar hegemonic system. As Hegemonic Stability theory argues; the stability of the international system is based on a strong hegemon to maintain the structures of world system, which in the extension of the notions of Li Xing and the behaviour of the US in the international community, which on the one hand may be interpreted to lacking in the current world order and that the current world order is instable and may be undergoing changes.

Collective goods and security

It has been observed throughout the analysis, that the US' market share has decreased overall, but is the biggest importer of goods and services (2.928T USD 2017)(The World Bank, International Comparison Program database 2019i), while China (2.208T in 2017) is in second place(The World Bank, International Comparison Program database 2019i). This may be deduced on the one hand as the US is financing the collective good of the world, and that China with its position as the second biggest importer is challenging the US hegemonic position, and on the other hand, it may be perceived as China is trying to help the US with responsibilities of the hegemon and great nations. Though, the

collective good of the world may not directly be deduced via imports of nations, but also by the nation's actions in the international community. As it has been argued in the analysis, China is taking on bigger responsibility in the international community and emphasising shared development and mutual gains, while the US is focusing on strengthening its domestic economy and deprioritise the international community's agreements, e.g. the Paris agreement, due to "unfair" economic terms for the US(Statement by President Trump on the Paris Climate Accord 2017). It may be interpreted in Trump's statement from 1st of June 2017, that the president does not want the US to produce or finance the collective good of the world due to the economic burdens that it will impose on the US' economy:

"*[…] the United States will cease all implementation of the non-binding Paris Accord and the draconian financial and economic burdens the agreement imposes on our country. This includes ending the implementation of the nationally determined contribution and, very importantly, the Green Climate Fund which is costing the United States a vast fortune."*(Statement by President Trump on the Paris Climate Accord 2017).

It may be deduced that President Trump has revised the US' policies on being willing to finance the development of the world, which indicates that the US is actively distributing their leadership due to terms of "draconian financial and economic burdens" of being the dominant nation, which may be interpreted as being due to free-riders in the international community, who have exploited the collective good provided by the US and focused on domestic growth.

Krasner and Gilpin have argued, that a hegemon can promote liberalisation when the distribution of power in the international community is based on unipolar hegemony, as the national security objectives will not become compromised or threatened, and that nations does not have a common in stability and liberalisation of the world economy and international system, which may be

interpreted in current time, with the US' initiation of the China-US trade-war. The initiation may be perceived as the US' mode of strategically rebalancing the world order dynamics, as awareness of China's mode of cooperation with American corporations have been brought about. The claims of unfair mode of cooperation between Chinese- and American corporations indicates a claim of free-riding, as China has been proclaimed to be cheating by "stealing" intellectual property and utilise the knowledge to develop and create high-technology products, similar to American products. Krasner and Gilpin have further argued that if a hegemon perceives its national security to be threatened, international economic liberalisation will be restricted, which may be observed in the contemporary world economy and the ongoing China-US trade-war.

Technological advancement and hegemonic stability

According to hegemonic stability theory, small and medium sized nations tend to free-ride, meaning that they tend to exploit their position and the collective good, which may be the reason China has been able to have had the exponential development in most of its domestic spheres, as China has been acknowledged and is still being acknowledged as an emerging market and a developing nation. Immanuel Wallerstein has argued that the world system may be categorised through 3 layers(Wallerstein 2000, 56), the periphery, semi-periphery and the core, and that core nations export high-technological goods to the semi-periphery and the periphery, which have been the case with e.g. the US, Germany and Japan in the 20th century(The World Bank, International Comparison Program database 2019f). The US, Germany and Japan are nations that may be categorised as core-nations and developed nations which explains the high-technology exports, according to Wallerstein, while China may not be observed directly in Wallerstein's categories but may be observed to be a part of all three layers, as China is producing and exporting in all technological spheres, ranging from low-technological goods to high-technology goods, e.g. soybeans and telecommunication. China may be perceived as a norm-breaker compared to the other developing nations, which may be due to China's

growing political and economic clout in the international community and have risen from being a rule-follower to a rule-shaper, which may be observed in e.g. the BRICS coalition's mode of cooperation, the Belt and Road Initiative and in global climate change mitigation.

Another sphere that China has been observed to challenge in the US in, is the AI development sphere, where China officially has stated that they seek to be the leading nation. The "Made in China 2025" strategic development is supported by China's ambitions of becoming the leading nation in what may be categorised as a potential influencer of a nations domestic sphere and the international community, due to the capabilities of e.g. the AI sector of Machine Learning, which already is being implemented in the military sphere(The U.S. Army Special Operations Command 2018).

Hannah Bryce and Jacob Parakilas have argued that AI have limitless potential impacts on the dynamics of international politics, which is due to the military capabilities that AI have brought about and will bring about(Cummings et al. 2018, 43). This means that the international community will be impacted by the rise of AI, which in interplay with China's ambitions of becoming the leading nation in development of AI may be interpreted as the hegemony of the US and the contemporary world order is being directly challenged by especially China. The competition of China and the US regarding technological advancement may be perceived to be interpreted as a zero-sum game that is being treated as an "*either or*" situation, where only one can be the winner. This notion of an "*either or*" situation may have established greater competition between the US and China, as the US may observe China's technological development in interplay with China's increasing role in the international community and China's global presence, as a direct attack on the established world order.

It may be deduced that the world economy is unstable due to the China-US trade-war, which has been deduced to constitute a period of mutual deterrence with economic means, and to have been brought about by the rise of China as an economic and scientific powerhouse. Additionally, it may

be observed that that due to China's focus on technological development in the domestic sphere its high-technology exports have risen to top 1, in which it may be interpreted one the one hand that the US is losing customers to China and thereby losing economic growth, which is being overtaken by the biggest competitor to the US-led liberal world order. Not only as a nation but also as a symbol of ideology, where Socialism with "Chinese characteristics" and its state-led capitalism is threatening the traditional capitalist mode of production as the superior- and proven mode of production. On the other hand, it may be interpreted that the world order is transitioning from a unipolar hegemonic system to a multilateral hegemonic system, where the developing nations are playing an active part in shaping the future for the world, and not following the US' agenda.

The function of the US vis-à-vis the function of China

Not following the US' agenda, due to an alternative system to function and develop in, may have stablished a situation where both China and the US have gained new roles and functions. It may be observed that China is the top 1 manufacturer and exporter, positions that used to be the US', which means that China have gained a new position as the world's leading export-nation. This position means that China has increased its capabilities to potential influence other nations in the international community, as the nations may be influenced by the trade relations they have with China. The hegemonic status quo has been perceived to be unstable in current time, where the US is restricting the liberal world economy, as their political stance is that the other nations of the international community has been freeriding and not contributing to the collective good of the world by letting the US play its part as the hegemon. The US' behaviour in the international may be interpreted to be unpredictable in the Trump era, where disruption may be perceived to be more in focus than improvement of international relations.

This instability has been observed qua the conflict of the China-US trade-war that started out as a conflict of singular economic deterrence, but emerged into a conflict of mutual economic

deterrence, which caused instability in the world economy. The dynamics of the world order has been observed to be transitioning into a multipolar world order based in the structural essence of the established liberal framework for trade, where the developing nations are contributing to the international debates and agreements more than ever, where a decrease in the US' hegemony and an increasing political clout of China may be interpreted. China has integrated into the Western-based international system, and has now begun to influence the roles of nations, alongside an establishment of an economic system to function and develop in for the nations of the international community, which coalited with the US' initiation of a conflict that may be observed to be bilateral, which has been interpreted as a causal connection between technological- and economic development in interplay with the disruption of traditional (Western) international relations and the unipolar world order. The theoretical framework of Power Transition Theory has provided insight in the current relations between China, the US and the international community, where it has been deduced that the international system is undergoing a period of a power struggle between China and the US, that theoretically may be categorised as a period of mutual economic deterrence, which earlier in history has emerged into a military war, and has been interpreted as an economic cold-war situation.

The development of AI and the implementation of these high-technological developments in the governmental sphere has been observed to disrupt the traditional perspective of national security, which from a realist perspective means that the US' sovereign goal, survival of the nation, is being threatened by China's rise as a technological- and economic powerhouse. It may not be verified whether the US has initiated a trade-war with China on the premises of China's technological- and economic development or the US has initiated the trade-war due to the officially stated arguments of intellectual property theft and an increasing negative trade balance with China, but it has been deduced that a causal connection between the rise of China as a scientific-, technological- and economic powerhouse, the decline of the US' overall capabilities, and the changing roles in the international

community. Thereby, it has been deduced that US is utilising its hegemonic position to establish restrictive international trade, due to the plan of strengthening its domestic economy and slowing down China's economic development, as well as attempting to decrease China's reputation in the international community. Lastly, the function of the US has been interpreted to be the world's hegemon, which power is decreasing due to the development of China, and the innovations that China has brought about.

Conclusion

The causal connection between AI and world order may be observed through several variables, that have been analysed and interpreted through utilisation of Hegemonic Stability Theory and Power Transition Theory, which have provided insights of the contemporary era, the China-US power struggle and the significance of both technological and economic development for a nations position in the international community. It has been interpreted that China is either overtaking or is challenging the US in economic- and technological development, though being behind in nominal economic capabilities and economic capabilities per capita. Furthermore, China has overtaken the US as the leading exporter of high-technological goods, which has been interpreted in relation to the NATO report on China's and Huawei's technology(Kaska, Beckvard, and Minárik 2019), which has been deduced as a disruptive force to the established world order, not the structural essence of the liberal world order, but the nations' roles and the leadership. The economic world order and the monetary structures have been observed and interpreted to be challenged by the multilateral development banks of the developing nations, in which it has been deduced that the multilateral development banks of AIIB and NDB have established an potential alternative economic system which offers an alternative economic development- and cooperation model to the traditional value-based development- and cooperation model of the Bretton Woods world order; the IMF and the World Bank.

The analysis has been construed by data from World Bank's comparison database, the 2019 World Intellectual Property Organisations 2019 report on AI and several scholars' interpretations of China, the US, AI and world order. Furthermore, the analysis has focused on the variables of; Nominal GDP, GDP with the applied measurement tool Purchase Power Parity (PPP), nominal GDP per capita, GDP with PPP per capita, nominal share of world's GDP, PPP share of world's GDP, Research & Development as % of nominal GDP, Patents in AI, High-technology exports, Researchers in research and development, Scientific and technical journal articles published, and High-technology exports. The examination of the mentioned variables has brought about insight of the US' and China's domestic growth, where it has been deduced that the US' gap to China is decreasing and that China has overtaken the US in the technological sphere, in a quantitative perspective. China is producing more than the US, both goods for consumption and university degrees in the natural science and engineering sphere and is exporting its high-technological products in a higher degree than the US. China has been observed to have had an exponential and variating growth in most of its domestic sphere, while the US has been observed to have had an unstable growth, where overall market share has decreased. The reaction of the US in relation to the rise of China, has been deduced to be comparable with Krasner and Gilpin's argument of a hegemon's behaviour when faced with challenges, and with power transition theory's argument of a hegemon's utilisation of deterrence in conflicts and the challengers counterreaction, where it has been deduced that the current world order may be categorised to be undergoing a power transition period of mutual economic deterrence, thus establishing a power transition period where the unipolar world order may be transitioning into a world order based on equality and multilateral cooperation of both developing- and developed nations in the international community.

Thucydides argued that Sparta initiated a war with Athens after Sparta had observed the rise of Athens, which is being utilised in the current debate of the potential power struggle between China

and the US, where the battlefield is liberal world economy and the war is taking place in international economic sphere where the "artillery" is trade tariffs. China have throughout the last 40 years developed from a nation of low overall capabilities, thereby low power, to a powerhouse in both the economic- and technological sphere, and alongside its increasing commitment in the international community, the growing international political power of China has caught the attention of scholars of International Relations. China's and the US' economic and technological development has been examined throughout the analysis in relation to the notions of Hegemonic Stability Theory and Power Transition Theory, notions of world order dynamics by scholars of international relations, and cases and critical junctions related to the US-China power struggle and the behaviour of the US and China in the international community. The examination of the data and the variables established through the framework of Webb and Krasner(Webb and Krasner 1989), in relation to AI, has brought about an understanding of the China-US trade war based in a conflict of mutual economic deterrence. The conflict of mutual economic deterrence has been interpreted to have been brought about by the economic and technological development of China, the US' revised approach to the international community and financing of the collective good, and the potential growing influence of China. The hegemonic stability of the current era has been observed to have become instable, in which Krasner and Gilpin's argument of hegemonic behaviour may be observed, as well as Kugler and Organski's arguments and framework of conflicts and peace in the international system.

The research question of this thesis has been based on the assumption; China's technological and economic advancement have interrupted the status quo and the stability of the US' hegemony, which causal connection has been examined throughout the analysis. The assumption paved the way for the research question "Does the US-China trade war constitute a hegemonic power transition?", which may be answered: The US-China trade-war may be perceived as a power struggle between the hegemon and a challenging nation, which have caused the hegemon to decrease liberalisation in the

world economy. This decrease of liberalisation in the world economy have been deduced to be based on the economic and technological development of China and the potential of China's power, especially in the sphere of AI, which caused the US to impose economic deterrence, establishing a situation of stable unilateral deterrence, which China reacted to by imposing its own economic deterrence, thus establishing a situation of mutual economic deterrence "war". Thereby, it may be concluded that the current world order is unstable and is experiencing a transition period, according to the utilised theories of this thesis and the development of China and the US' domestic sphere and their behaviour in the international community.

List of references

Abrams, Abigail. 2017. ‘French President Emmanuel Macron Trolls Trump: “Make Our Planet Great Again”’. *Time*, 6 2017. http://time.com/4802549/emmanuel-macron-trolls-donald-trump-paris-climate-agreement/.

Akita, Hiroyuki. 2018. ‘US-China Trade War Is Battle for Tech Hegemony in Disguise’. *Nikkei Asian Review* (blog). 8 2018. https://asia.nikkei.com/Spotlight/Comment/US-China-trade-war-is-battle-for-tech-hegemony-in-disguise.

Allison, Graham. 2017. ‘The Thucydides Trap’. *Foreign Policy* (blog). 6 2017. https://foreignpolicy.com/2017/06/09/the-thucydides-trap/.

Bahrisch, O. F., and Jin-Suk Kim. 2011. ‘Hegemonic Power and Technology Advancement’. In *Grid and Distributed Computing*, edited by Tai-hoon Kim, Hojjat Adeli, Hyun-seob Cho, Osvaldo Gervasi, Stephen S. Yau, Byeong-Ho Kang, and Javier García Villalba, 562–72. Communications in Computer and Information Science. Springer Berlin Heidelberg.

BBC News. 2018a. ‘EU Tariffs on US Goods Come into Force’. *BBC News*, 6 2018, sec. Business. https://www.bbc.com/news/business-44567636.

———. 2018b. ‘China’s ZTE “Poses Risk to UK Security”’, 16 April 2018, sec. Technology. https://www.bbc.com/news/technology-43784990.

———. 2018c. ‘Australia Bans Huawei and ZTE 5G Networks’, 23 August 2018, sec. Technology. https://www.bbc.com/news/technology-45281495.

———. 2018d. ‘China “Will Not Seek to Dominate”’, 18 December 2018, sec. China. https://www.bbc.com/news/world-asia-china-46601175.

Bond, Patrick. 2018. ‘BRICS in Africa: “You Are Either at the Table or on the Menu”’. *AIDC | Alternative Information & Development Centre* (blog). 24 June 2018. http://aidc.org.za/brics-africa-either-table-menu/.

Brütsch, Christian, and Mihaela Papa. 2013. ‘Deconstructing the BRICS: Bargaining Coalition, Imagined Community, or Geopolitical Fad?’ *The Chinese Journal of International Politics* 6 (3): 299–327. https://doi.org/10.1093/cjip/pot009.

Bryman, Alan. 2012. *Social Research Methods*. 4th ed. Oxford; New York: Oxford University Press.

Chinese Mission to the United Nations and Other International Organizations in Vienna. 2018. ‘China Will Further Promote Multilateralism’. 9 2018.

https://www.fmprc.gov.cn/mfa_eng/wjb_663304/zwjg_665342/zwbd_665378/t1594121.shtml.

Christensen, Steen Fryba, and Xing Li, eds. 2016. *Emerging Powers, Emerging Markets, Emerging Societies: Global Responses*. International Political Economy Series. Houndmills, Basingstoke, Hampshire; New York: Palgrave Macmillan.

Cummings, M. L, Heather M Roff, Kenneth Cukier, Jacob Parakilas, Hannah Bryce, and Royal Institute of International Affairs. 2018. *Artificial Intelligence and International Affairs: Disruption Anticipated*. https://www.chathamhouse.org/sites/default/files/publications/research/2018-06-14-artificial-intelligence-international-affairs-cummings-roff-cukier-parakilas-bryce.pdf.

Dove, Jonathan. 2016. 'The AIIB and the NDB: The End of Multilateralism or a New Beginning?' *The Diplomat*, 26 April 2016. https://thediplomat.com/2016/04/the-aiib-and-the-ndb-the-end-of-multilateralism-or-a-new-beginning/.

Economy, Elizabeth C. 2018. 'China's Strategy in Djibouti: Mixing Commercial and Military Interests'. *Council on Foreign Relations* (blog). Winter 2018. https://www.cfr.org/blog/chinas-strategy-djibouti-mixing-commercial-and-military-interests.

European Foundation for South Asian Studies (EFSAS). 2017. 'The "New Great Game": China's Debt-Trap Diplomacy'. *European Foundation for South Asian Studies (EFSAS)*, October. https://www.academia.edu/37303178/The_New_Great_Game_China_s_Debt-Trap_Diplomacy.

Gilpin, Robert, and Jean M. Gilpin. 1987. *The Political Economy of International Relations*. Princeton, N.J: Princeton University Press.

Gong, Jiong. 2018. 'The Economic Thucydides Trap between China and the US'. *Turkish Policy Quarterly*. http://turkishpolicy.com/article/925/the-economic-thucydides-trap-between-china-and-the-us.

Guerrero, Dorothy-Grace. 2013. 'The Rise of China and BRICs: A Multipolar World in the Making?' *Focus on the Global South* (blog). Autumn 2013. https://focusweb.org/the-rise-of-china-and-brics-a-multipolar-world-in-the-making/.

Gutner, Tamar, and Stewart M. Patrick. 2018. 'AIIB: Is the Chinese-Led Development Bank a Role Model?' Council on Foreign Relations. 6 2018. https://www.cfr.org/blog/aiib-chinese-led-development-bank-role-model.

Hass, Ryan, and Zach Balin. 2019. ‘US-China Relations in the Age of Artificial Intelligence’. Brookings. https://www.brookings.edu/research/us-china-relations-in-the-age-of-artificial-intelligence/.

Huawei Cyber Security Evaluations Centre (HCSEC). 2018. ‘Huawei Cyber Security Evaluation Centre Oversight Board: Annual Report 2018’. UK Cabinet Office and National security and intelligence. https://www.gov.uk/government/publications/huawei-cyber-security-evaluation-centre-oversight-board-annual-report-2018.

Johnson, Keith, and Groll. 2019. ‘The Improbable Rise of Huawei’. *Foreign Policy* (blog). Winter 2019. https://foreignpolicy.com/2019/04/03/the-improbable-rise-of-huawei-5g-global-network-china/.

Kaska, Kadri, Henrik Beckvard, and Tomáš Minárik. 2019. ‘Huawei, 5G and China as a Security Threat’. Talinn: NATO Cooperative Cyber Defence Centre of Excellence (CCDCOE).

Kim, Tai-hoon, Hojjat Adeli, Hyun-seob Cho, Osvaldo Gervasi, Byeong-Ho Kang, Javier García Villalba, and Stephen S Yau. 2011. *Grid and Distributed Computing: International Conference, GDC 2011, Held as Part of the Future Generation Information Technology Conference, FGIT 2011, Jeju Island, Korea, December 8-10, 2011. Proceedings*. Berlin, Heidelberg: Springer-Verlag GmbH Berlin Heidelberg.

Kindleberger, Charles P. 1981. ‘Dominance and Leadership in the International Economy: Exploitation, Public Goods, and Free Rides’. *International Studies Quarterly* 25 (2): 242–54. https://doi.org/10.2307/2600355.

Kjeldtoft, Sebastian Stryhn, and Cecilie Markussen. 2019. ‘TDC dropper Huawei: Ericsson skal levere 5G til Danmark’. Politiken. 18 March 2019. https://politiken.dk/viden/Tech/art7092396/Ericsson-skal-levere-5G-til-Danmark.

Klare, Michael T. 2005. ‘Revving Up the China Threat’, 6 October 2005. https://www.thenation.com/article/revving-china-threat/.

Krasner, Stephen D. 1976. ‘State Power and the Structure of International Trade’. *World Politics* 28 (3): 317–47. https://doi.org/10.2307/2009974.

Kugler, Jacek J., and A. F. K. Organski. 2011. ‘CHAPTER 7 The Power Transition: A Retrospective and Prospective Evaluation’. In.

Lee, Kai-Fu. 2018. *AI Superpowers: China, Silicon Valley, and the New World Order*. Boston: Houghton Mifflin Harcourt.

Lee, Timothy B. 2018. ‘New Law Bans US Gov’t from Buying Tech from Chinese Giants ZTE and Huawei’. Ars Technica. 14 August 2018. https://arstechnica.com/tech-policy/2018/08/trump-signs-bill-banning-feds-from-using-huawei-zte-technology/.

Lewis, James Andrew. 2018. ‘Technological Competition and China’. Center for Strategic & International Studies. https://www.csis.org/analysis/technological-competition-and-china.

Li, Anthony H. F. 2016. ‘Hopes of Limiting Global Warming?. China and the Paris Agreement on Climate Change’. *China Perspectives* 2016 (2016/1): 49–54.

Li, Xing. 2016. ‘Conceptualising the Dialectics of China’s Presence in Africa’. In *Emerging Powers in Africa*, 77–106. International Political Economy Series. Palgrave Macmillan. https://doi.org/10.1007/978-3-319-40736-4_5.

———. 2017. ‘BRICS and the Existing World Order: Interdependent Hegemony’. *Asia Dialogue* (blog). 12 september 2017. http://theasiadialogue.com/2017/09/12/brics-emerging-powers-the-existing-world-order-interdependent-hegemony/.

Lieberthal, Kenneth G. 2009. ‘Climate Change and China’s Global Responsibilities’. *Brookings* (blog). 12 2009. https://www.brookings.edu/blog/up-front/2009/12/23/climate-change-and-chinas-global-responsibilities/.

Lipton, Gabe. 2018. ‘The Elusive “Better Deal” With China’. *The Atlantic*, 14 August 2018. https://www.theatlantic.com/international/archive/2018/08/china-trump-trade-united-states/567526/.

Ministry of Foreign Affairs of The People’s Republic of China. 2017. ‘Foreign Ministry Spokesperson Geng Shuang’s Regular Press Conference on July 12, 2017’. Ministry of Foreign Affairs of The People’s Republic of China. 7 2017. https://www.fmprc.gov.cn/mfa_eng/xwfw_665399/s2510_665401/t1477422.shtml.

Mittelman, James H. 1983. ‘World Order Studies and International Political Economy’. *Alternatives* 9 (3): 325–49. https://doi.org/10.1177/030437548300900303.

Mollman, Steve. 2018. ‘Apple Was Just Overtaken by Huawei in Global Smartphone Sales’. Quartz. 8 2018. https://qz.com/1345496/apple-was-just-overtaken-by-huawei-in-global-smartphone-sales/.

Morris, Anne. 2019. ‘Ericsson Ousts Huawei as TDC’s 5G Vendor in Denmark’. SDxCentral. Autumn 2019. https://www.sdxcentral.com/articles/news/ericsson-ousts-huawei-as-tdcs-5g-vendor-in-denmark/2019/03/.

Nabers, Dirk. 2010. ‘Power, Leadership, and Hegemony in International Politics: The Case of East Asia’. *Review of International Studies* 36 (04): 931–49.

Office of the United States Trade Representative. 2018. ‘OFFICE OF THE UNITED STATES TRADE REPRESENTATIVE Docket Number USTR-2018-0026 Request for Comments Concerning Proposed Modification of Action Pursuant to Section 301: China’s Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation’. gss.mof.gov.cn/zhengwuxinxi/zhengcefabu/201808/t20180803_2980950.html.

———. 2019. ‘Statement By U.S. Trade Representative Robert Lighthizer on Section 301 Action’. 5 2019. /about-us/policy-offices/press-office/press-releases/2019/may/statement-us-trade-representative.

Osborn, Kris. 2018. ‘The U.S. Military Is Worried About China’s Moves in Africa’. Text. The National Interest. 15 August 2018. https://nationalinterest.org/blog/buzz/us-military-worried-about-chinas-moves-africa-28872.

Pang, Zhongying. 2018. *China and the Struggle over the Future of International Order*. Vol. 1. Oxford University Press. https://doi.org/10.1093/oso/9780198828945.003.0013.

Pepermans, Astrid. 2018. ‘China’s 16+1 and Belt and Road Initiative in Central and Eastern Europe: Economic and Political Influence at a Cheap Price’. *Journal of Contemporary Central and Eastern Europe* 26 (2–3): 181–203. https://doi.org/10.1080/25739638.2018.1515862.

Pilling, David. 2017. ‘Chinese Investment in Africa: Beijing’s Testing Ground’. Financial Times. 13 June 2017. https://www.ft.com/content/0f534aa4-4549-11e7-8519-9f94ee97d996.

Raymond, Nate. 2018. ‘China’s Sinovel Fined in U.S. Trade Secrets Theft Case’. *Reuters*, 8 July 2018. https://www.reuters.com/article/us-sinovel-wind-gro-usa-court-idUSKBN1JW2RI.

Seel, Norbert M., ed. 2012. ‘Moore’s Law’. In *Encyclopaedia of the Sciences of Learning*, 2332–2332. Boston, MA: Springer US. https://doi.org/10.1007/978-1-4419-1428-6_2276.

Statement by President Trump on the Paris Climate Accord. 2017. ‘Statement by President Trump on the Paris Climate Accord’. The White House. 6 2017. https://www.whitehouse.gov/briefings-statements/statement-president-trump-paris-climate-accord/.

Tao, Liu, and Wing Thye Wing. 2018. ‘Understanding the U.S.-China Trade War’. *China Economic Journal* 11 (3): 319–40. https://doi.org/10.1080/17538963.2018.1516256.

The U.S. Army Special Operations Command. 2018. ‘Army Artificial Intelligence and Machine Learning Initiatives’. Www.Army.Mil. 10 2018. http://www.army.mil/standto/2018-10-31.

The World Bank, International Comparison Program database. 2018. ‘GDP China (Current US$) | Data’. The World Bank Data. 11 2018. https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2017&locations=CN&start=1978.

———. 2019a. ‘Exports of Goods and Services (% of GDP) | Data’. Winter 2019. https://data.worldbank.org/indicator/NE.EXP.GNFS.ZS?end=2017&locations=CN-US&start=2001.

———. 2019b. ‘Exports of Goods and Services (Current US$) | Data’. Winter 2019. https://data.worldbank.org/indicator/NE.EXP.GNFS.CD?end=2017&locations=CN-US&start=2001.

———. 2019c. ‘Foreign Direct Investment, Net Outflows (BoP, Current US$) | Data’. Winter 2019. https://data.worldbank.org/indicator/BM.KLT.DINV.CD.WD?end=2017&locations=CN-US-DE-GB-JP&start=2001&year_high_desc=true.

———. 2019d. ‘GDP per Capita (Current US$) | Data’. 03 2019. https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?end=2017&locations=CN-US-1W&start=2001.

———. 2019e. ‘GDP per Capita, PPP (Current International $) | Data’. 03 2019. https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?end=2017&locations=CN-US-1W&start=2001.

———. 2019f. ‘High-Technology Exports (Current US$) | Data’. 2019. https://data.worldbank.org/indicator/TX.VAL.TECH.CD?end=2017&locations=1W-US-CN&start=2001&year_high_desc=true.

———. 2019g. ‘PPP Conversion Factor, GDP (LCU per International $) | Data’. Winter 2019. https://data.worldbank.org/indicator/PA.NUS.PPP?end=2017&locations=CN-US-DE-GB&start=2001.

———. 2019h. ‘Science & Technology | Data’. 03 2019. https://data.worldbank.org/topic/science-and-technology?locations=US-CN.

———. 2019i. ‘Imports of Goods and Services (Current US$) | Data’. April 2019. https://data.worldbank.org/indicator/NE.IMP.GNFS.CD?year_high_desc=true.

———. 2019j. ‘Manufacturing, Value Added (Current US$) | Data’. April 2019. https://data.worldbank.org/indicator/nv.ind.manf.cd?end=2016&start=1960&year_high_desc=true.

———. 2019k. ‘Research and Development Expenditure (% of GDP) | Data’. April 2019. https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?locations=CN-US-JP-DE-GB&most_recent_value_desc=true.

———. 2019l. ‘Researchers in R&D (per Million People) | Data’. April 2019. https://data.worldbank.org/indicator/SP.POP.SCIE.RD.P6?end=2017&locations=1W-US-CN&start=2001&year_high_desc=false.

———. 2019m. ‘Scientific and Technical Journal Articles | Data’. April 2019. https://data.worldbank.org/indicator/IP.JRN.ARTC.SC?locations=CN-US-JP-DE-GB&most_recent_value_desc=true.

US Census Bureau Foreign Trade Division. 2019a. ‘Foreign Trade: Data’. Winter 2019. https://www.census.gov/foreign-trade/statistics/highlights/annual.html.

———. 2019b. ‘Foreign Trade: Data, China’. US Census Bureau Foreign Trade Division. Winter 2019. https://www.census.gov/foreign-trade/balance/c5700.html.

———. 2019c. ‘Foreign Trade: Data, European Union’. US Census Bureau Foreign Trade Division. Winter 2019. https://www.census.gov/foreign-trade/balance/c0003.html.

U.S. DEPARTMENT OF DEFENSE. 2018. ‘Summary of the 2018 National Defense Strategy of The United States of America, Sharpening the American Military’s Competitive Edge’. Department of Defense of The United States of America. https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf.

Veugelers, Reinhilde. 2017. ‘The Challenge of China’s Rise as a Science and Technology Powerhouse’. 21154. Policy Contributions. Bruegel. https://ideas.repec.org/p/bre/polcon/21154.html.

Wallerstein, Immanuel. 2000. *The Essential Wallerstein*. New York, NY: New Press.

Ward, Alex. 2017. ‘French President Emmanuel Macron Responds to Trump: “Make Our Planet Great Again”’. Vox. 6 2017. https://www.vox.com/world/2017/6/1/15727140/emmanuel-macron-trump-paris-agreement-make-our-planet-great-again.

Watts, Jonathan Watts, and Kate Connolly. 2017. ‘World Leaders React after Trump Rejects Paris Climate Deal’. *The Guardian*, 6 2017, sec. Environment. https://www.theguardian.com/environment/2017/jun/01/trump-withdraw-paris-climate-deal-world-leaders-react.

Webb, Michael C., and Stephen D. Krasner. 1989. ‘Hegemonic Stability Theory: An Empirical Assessment’. *Review of International Studies* 15 (02): 183. https://doi.org/10.1017/S0260210500112999.

West, Darrell M., and John R. Allen. 2018. ‘How Artificial Intelligence Is Transforming the World’. Brookings. https://www.brookings.edu/research/how-artificial-intelligence-is-transforming-the-world/.

World Intellectual Property Organisation. 2019. ‘WIPO TECHNOLOGY TRENDS 2019 - ARTIFICIAL INTELLIGENCE.’ S.l.: WORLD INTELLECTUAL PROPER.

Xi Jinping. 2017. ‘President Xi’s Speech to Davos in Full’. World Economic Forum. Spring 2017. https://www.weforum.org/agenda/2017/01/full-text-of-xi-jinping-keynote-at-the-world-economic-forum/.

Xinhua. 2018. ‘China Rejects U.S. Accusations on Technology Transfer as Baseless at WTO - Xinhua | English.News.Cn’. *Xinhua*, 5 2018. http://www.xinhuanet.com/english/2018-05/29/c_137213238.htm.