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**Will China's economy continue growing,
or it will start shrinking in the years to
come?**

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ABSTRACT

Since China started its economic reforms back in 1978, developing from a closed and communist country, to the world second largest economy and the first trading nation in the world. In spite of its large growth, China is currently facing severe challenges that are questioning its ability to continue its growth trend and eventually becoming the first economy worldwide, surpassing the United States (US). This thesis aims to analyse whether China is eligible for further growth, or otherwise if its growth path is already over. In order to verify whether China will continue growing or not, China is compared with certain developed economies with the objective of understanding at which position is China nowadays. The results show that China is on the right track, but it is still far behind from world powers in terms of living standards.

Keywords: China, economic reforms, China's economic growth, productivity, innovation, China's future growth, determinants of economic growth.

RESUMEN

Desde que China empezó las reformas económicas en 1978, ha pasado de ser un país cerrado y comunista, a la segunda economía más grande y la primera nación comercial del mundo. A pesar de su gran crecimiento, China actualmente enfrenta desafíos severos que cuestionan su capacidad de continuar su tendencia de crecimiento y eventualmente convertirse en la primera economía mundial, superando a los Estados Unidos (EE. UU). Esta tesis tiene como objetivo analizar si China continuará su tendencia de crecimiento, o si su crecimiento ya ha llegado a su fin. Para verificar si China continuará creciendo o no, China será comparada con otras economías desarrolladas con el objetivo de comprender en qué posición se encuentra China en comparación con ellas. Los resultados muestran que China está en el camino correcto, sin embargo, todavía está muy por detrás de las potencias mundiales en términos de niveles de vida.

Palabras clave: China, reformas económicas de China, productividad, innovación, crecimiento futuro de China, determinantes del crecimiento económico.

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ABBREVIATIONS

ADB	Asian Development Bank
BRI	Belt and Road Initiative
CCP	Chinese Communist Party
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GERD	Gross Domestic Expenditure on Research and Development
GFCF	Gross Fixed Capital Formation
GNI	Gross National Income
ILO	International Labor Organization
ISDP	Institute for Security and Development Policy
MLP	Medium-and Long Term Development Program
NCMS	New Cooperative Medical Scheme
OECD	Organization for Economic Co-operation and Development
PBC	People's Bank of China
PRC	People's Republic of China
R&D	Research and Development
SARS	Severe Acute Respiratory Syndrome
SASAC	State-Owned Assets Supervision and Administration Commission
SEZs	Special Economic Zones
SOEs	State-Owned Enterprises
TVEs	Township and Village Enterprises
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States
VAT	Value-added tax
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

INTRODUCTION

The Chinese economy has seen unprecedented growth since the start of the economic reforms carried out by Deng Xiaoping back in 1978. China has experimented a remarkable development, going from a closed and very poor economy to achieving the level of second-largest economy just after the United States. Its GDP has grown on average almost 10% a year since the initiation of the reforms (World Bank, 2020). Besides, according to the 2019's list of Fortune Global 500¹ companies, 119 Chinese companies were included in the list, 3 of them being on the top-ten ranking (Forbes, 2020).

While it is true that China has seen sustainable growth during a large period of time, it is also true that the country is facing some challenges that questions its ability to achieve further growth rates. These challenges include the problem of aging population, the ongoing US-China trade war, and the recent outbreak of COVID19. China's growth path is already slowing down, but it is still one of the fastest-growing economies in the world nowadays.

This thesis has the objective of determining whether China is eligible for further growth, or if otherwise the economy will shrink in the years to come and never surpass the United States and become the first leading economy. The hypothesis is that since China has grown for many years more than any economy in the world, it will continue its growth tendency until surpassing advanced economies in terms of living standards in the short-term. First of all, there will be a theoretical analysis of China from the Mao period in 1949 until the present moment, going through the economic reforms carried out during the Deng Xiaoping era and ending in today's ruling administration headed by Xi Jinping. After explaining China's sustainable growth, there will be a macroeconomic analysis of China compared to some mature economies that are identified as relevant for the analysis. The hypothesis would be accepted if after analysing the data we can conclude that China will surpass developed economies in terms of living standards in the near future. Conversely, the hypothesis would be rejected if there is evidence that China will not continue its growing path and surpass those economies because its economy is still very immature when compared to leading economies in the world.

This paper is structured in five parts. Chapter one highlights the most important features of the Mao's period, going from 1949 until 1978. Chapter two explains the economic reforms carried out by Deng Xiaoping from 1978 and the path China followed after the entrance to the World Trade Organization (WTO). Chapter three explains the methodology that will be followed in order to test the hypothesis. Chapter four presents the analysis and the results. Finally, conclusions are presented in chapter five.

¹ Annual ranking of the world 500 largest companies in terms of revenue.

I. CHINA BEFORE 1978: background overview

In order to understand China's growth, we need to go back to when China was one of the world's poorest countries and a fully agricultural country, with GNI per capital being one of the lowest in the world.

The People's Republic of China (PRC) was established in 1949. Mao Zedong became the chairman of the People's Republic of China (PRC) and the Chinese Communist country. In the first years of the PRC, Mao implemented an ambitious first five-year plans from 1953 to 1957 based on the Soviet Model and focusing on capital intensive factories (producing metals, machinery and chemicals). China's new leaders started to develop a massive industrial complex through direct government control as the lack of large heavy industries was perceived as the main cause of a country's backwardness (Lin, 2011).

The new government had three clear objectives; change the socio-political order, accelerate economic growth, and improve China's geopolitical standing and restore its national dignity (Maddison, 2007). In order to achieve these objectives, the new regime carried out a series of measures that will be explained in the following pages.

First of all, in order to achieve the rapid industrialization, after 1949 the People's Republic of China (PRC) started the "Big Push Strategy", protecting priority industries by giving them a monopoly and subsidizing them through price distortions. The government controlled all the resources in the economy and used this control investing resources into the construction of new factories, being 80% directed to heavy industry. The investments rate grew up to 26% of GDP in 1954 (Naughton, 2007), and this factor enabled the country to establish modern advanced industries in a short period of time. China's aim was to overtake Britain in ten years and the United States in fifteen years in terms of industrial power (Lin, 2011). Between 1952 and 1978 industrial output grew at an average annual rate of 11.5%, while agriculture's share declined from 51% to 28% (Naughton, 2007). The Chinese economy was getting good results and the Big Push industrialization seemed to be working as expected.

To implement the Big Push strategy, the regime phased in a planned economic system, often referred as "command economy" inspired by the Soviet Union of Stalin. The Chinese System implied that "the government, rather than the free market, determines what goods should be produced, how much should be produced, and the price at which the goods are offered for sale" (Chappelow, 2020). Practically, it meant that the government controlled and owned all the factories in the country and that company managers did not have the power to decide the company's business and development schedule. Specific decisions were implemented through the so-called "Material balance planning". There were output plans for producers and supply plans that transferred

resources among producers. The objective of this system was to control all interdependent needs of the economy. An example of this took place in the countryside, where by 1953 the Chinese government created a monopoly over key agricultural products. They established procurements quotas that farmers needed to meet, and they were paid at low fixed prices. These low fixed prices policy, signified huge profits for the government (Naughton, 2007). The command economy is what made the Big Push industrialization work, as it gave the fiscal capacity to mobilize resources.

State-owned enterprises (SOEs) played a relevant role during this period, they were directly controlled by the government, as 95% of their profits were forwarded to the state (Brandt; Ma & Rawski, 2016). Government-controlled firms were extremely profitable and their main source of revenue, because the state was the one controlling the amount of output and the prices at which they were sold. State-owned enterprises (SOEs) were highly hierarchical, had little authority and they were usually inefficient. The inefficiencies came from lack of incentives by the workforce, as their only function was to meet government's pre-established quotas. Thereby, this meant that all profits were handed to the government and there was a lack of performance measures. Furthermore, as workers enjoyed job security and they could not be fired, they had no incentive to work harder (Maddison 2007).

The results of the command economy and the Big Push Industrialization had different economic outcomes, leading to a period of economic instability and making the growth path unstable.

Firstly, as the state was in charge of the allocation of resources, they ended up being misallocated and the incentives were distorted. Production units were too large due to the large amount of labour force that China had. Consequently, economic efficiency was low, particularly in agriculture (Maddison, 2007).

At that moment, the key features of the command economy had been created, and almost five million workers had been incorporated into state-owned enterprises (SOEs). People started to criticize the system, denouncing Stalin, and stating that all socialist countries should create their own path to build socialism (Naughton, 2007). Economic liberalism became a trend and consequently Mao began the "Hundred Flowers" campaign in 1956 under the slogan of "let a hundred flowers bloom, and a hundred schools of thought contend". He invited intellectuals to critique and reform the Chinese Communist Party (CCP), calling for open political discussion and for the implementation of a more moderate and market oriented system that does not resemble the Soviet model. However, the results were not as expected. Mao felt threatened by the criticism against the regime and ended the campaign with the persecution of half a million intellectuals in 1957 and 1958 (Bol & Kirby, 2019).

After the “Hundred Flowers” campaign, Mao introduced the Great Leap Forward in 1958, which was even more dramatic. The aim of this plan was to convert China from an agrarian country towards an industrial economy. A set of measures were implemented in order to reach the objective and address China’s industrial and agricultural problems. Firstly, they focused on increasing agricultural production, transforming family farms into large-scale communes. The communes were multipurpose organizations which had the objective of managing all economic and social activities, including providing social services and developing rural small-scale industries. Furthermore, control over economic decision-making was decentralized (Naughton, 2007).

The outcomes of these reforms were at first very good, as autumn harvest in 1958 surpassed those of previous years and output of steel increased. Chinese leaders were pleased with the outcomes they obtained, and made a mistaken decision that would lead to lethal results. On the one hand, they reduced labour and land available for agriculture and for food production. On the other hand, they increased the grain quota, consequently, farmers had to deliver more output to the government. In order to meet with these impositions from the government, farmers were pushed to work overtime in in order to meet government procurement. Food shortages and low human energy started to become evident, making communes less and less efficient (Naughton, 2007).

From 1959 to 1961, the inefficiency of the communes triggered the worst famine in world history. It resulted in deaths of between 30 and 55 million Chinese citizens, mainly farmers (Bol & Kirby, 2019). As a consequence, private plots were returned to farmers and the communal system was broken up after three years of deaths and destruction. A new set of policies was implemented and control over the economy was centralized again.

After the failures of the Great Leap Forward, Mao left Beijing and even though he retained his chairmanship of the Party and its military commission, Liu Shaoqi took over control over the government.

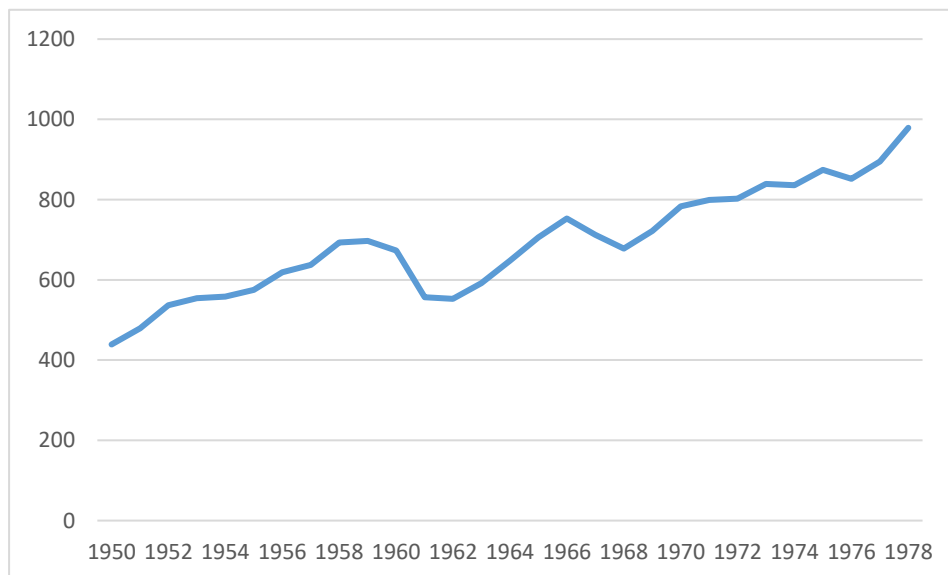
It was not until 1966 that Mao returned to initiate the Cultural Revolution, a mass movement that went from 1966 to Mao’s death in 1976. The objective was to produce a new generation of young revolutionaries (Red Guards) that would revive the revolutionary spirit, and eliminate Mao’s rivals both inside and outside the Chinese Communist Party (CCP). The Communist leaders, including Deng Xiaoping, were subject to criticism and dismissal. By late 1967, the movement became increasingly violent and unmanageable. The end of the Cultural Revolution was declared in 1969, but the movement did not truly end until Mao’s death, in 1976. The outcomes were not important from an economic standpoint as agriculture was only slightly affected and

industrial output did not decline in great measure. The policies established before the Cultural Revolution were again set in 1969 (Naughton, 2007).

In conclusion, even though during this period the Great Leap Forward and the Cultural Revolution took place, there was an acceleration in the pace of growth. Angus Maddison states that average GDP growth in the Mao period was approximately 4.4% (Maddison, 2006), and that GDP rose three-fold and per capita income by 80% (Maddison, 2007). Besides, GDP per capita doubled during this period of time (see figure 1).

Nevertheless, China was still isolated from the rest of the world and resources were allocated by the government, hence there were inefficiencies in the production process. The share of world trade fell and the country was cut off from foreign investment.

Figure 1. GDP per capita from 1950 to 1978 (in 1990 US\$).



Source: Own elaboration with data from Angus Maddison, The World Economy: Historical Statistics, p. 562, Table 5c (2006).

Mao Zedong died in 1976 and two years later, with the rise to power of Deng Xiaoping, the new era for China started. Even though China grew in Mao's era, it was not until the rise in power of Deng Xiaoping that the country achieved dynamic growth.

II. CHINA'S ECONOMIC GROWTH SINCE 1978

In 1978, China started the transition process from planned economy to market economy and opened up its economy to the world. China's growth can be attributed to Deng Xiaoping, who is known as the "architect of modern China".

After Mao's period, Chinese people were living in conditions of extreme poverty, with a per capita income of US\$200 (World Bank, 2020). As mentioned in the last chapter, China started building up capital intensive modern industries as the lack of these industries was seen as the major cause for a country's backwardness. However, these measures were proved wrong as in 1978 China was still a very poor country. That is why liberalization from excessive state intervention, marketization and privatization became a trend in the 1980s and 1990s.

In the following pages, it will be analysed China's economic growth starting with Deng Xiaoping's reforms in 1978. The period will be divided into two phases. The first one goes from 1978 to 1993 and is gradual, dual-track approach, and focused on rural areas. They wanted to make the economy grow establishing a gradual process which would make the planned economy progressively lose its importance within the system. The second phase goes from 1993 to 2003 approximately and consists on the set up of an institutional framework and regulatory changes (Naughton, 2007).

1. First phase of reforms (1978-1993)

China's approach to economic transition was different from other socialist economies who wanted to make it to a modern market economy as soon as possible. China's reform leaders believed that they had to gradually implement changes. They thought that fully eliminating price distortions and abolishing completely state intervention at once was not viable, as this would have led to the collapse of the economy (Lin, 2011). This is the reason why China adopted a gradual and dual-track approach in this first transition phase of the economy.

The dual-track approach signified decentralizing power from the hands of planners to local individuals but at the same time protecting core interests. They created the "reform without losers" as even though only some sectors of the economy were better off with the measures applied, none of them were worse off (Naughton, 2007).

Reforms first succeeded in rural areas, as policy-makers realized that there was no need for all rural areas to be integrated into the planned system. The government pursued this dual-track system by improving incentives and productivity. Until that moment, government had established procurement quotas that farmers needed to meet, which

made them operate under the pressure of satisfying procurement targets. These targets had been kept high while the prices the government paid for the goods were low. From that moment onwards, the state decided to reduce procurement targets while raising by 50 percent procurement prices. Furthermore, another improvement was that after delivering the quota obligations to the government, farmers were allowed to set the prices and sell the surplus output to the free markets, this way they earned an additional income (Maddison, 2007). This stimulated production and efficiency and at the same time increased wealth. Rural incomes increased rapidly and reformers started to introduce dual-track reforms in other areas of the economy (Naughton, 2007).

State-owned enterprises (SOEs) had problems of low efficiency back then. In the planned economy era, this low efficiency was not important because they had no competition due to the fact that all the economy was government-controlled. Nevertheless, with the opening up of the economy to the world, these low efficiencies became more and more relevant. For this reason, reforms on state-owned enterprises (SOEs) took place during the years of the early reforms. The monopoly over industry was relaxed and even though some of them persisted in some sectors, others allowed the entrance of non-state companies from 1979 (Brandt; Ma & Rawski, 2016). New entrants who were not operating under the plan system, began to occupy market niches which were overlooked by the plan. For instance, township and village enterprises (TVEs) took prominence at that time in rural areas, which were not incorporated into the state plans but instead they met unmet market needs, creating new competition for state-owned enterprises (SOEs) (Naughton, 2007). Therefore, competition increased among firms in the public sector as now they had to secure their place in the market. This led to more productive and competitive firms. Nonetheless, non-state sector grew in greatest measures than the state sector. Output share in state-owned enterprises (SOEs) was reduced from 80% to 49% between 1978 and 1995 (Brandt; Ma & Rawski, 2016).

To make the dual-track system work they started using contracts to stabilize some priority pieces of the system while freeing up other ones. The government established contracts with every state-owned enterprise (SOE). Most SOEs still had to meet procurement quotas, but they had available capacity to produce market goods, thus these firms started to be introduced in the market processes. Instead of having a regular tax system, the government set a tax system for every particular enterprise based on its performance, hence each of them negotiated their revenue-retention rate with the state (Naughton, 2007).

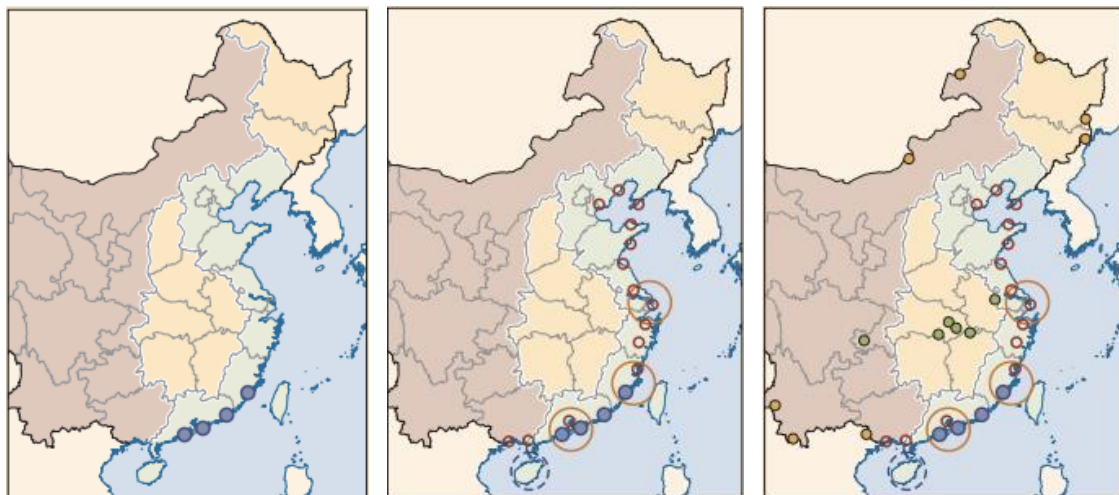
China's initial reforms also included opening up to the global economy as back in 1978 China had no foreign debt and almost no foreign direct investment (FDI). This was achieved through the establishment of special economic zones (SEZs) in south-eastern coastal China. Special economic zones (SEZs) are free-trade areas where the Chinese

government facilitates industrial activity through low wages compared with international standards and granted tax holidays in new enterprises, meaning that either their taxes are reduced or eliminated during a period of time (Maddison, 2007).

In 1980, the first four economic zones were set up in small cities in strategic places in China: Shenzhen, Zhuhai, Shantou and Xiamen. The objective for their implementation was, on the one hand, to test the new policies and new institutions of a market-oriented economy, as they did not want to open their entire economy at once (Zeng, 2010). On the other hand, with their implementation they intended to foster transfer of technology from other countries and strengthen China's exports (Maddison, 2007).

The special economic zones (SEZs) attracted foreign investment and created a linkage with the outside world. They made FDI to increase dramatically during those years and signalled the start of China's opening to the world trade. To prove it in numbers, while from 1980 to 1984 China's national average annual GDP growth was 10%, Shenzhen growth rate was on average 58%, Zhuhai 32%, Xiamen 13% and finally Shantou, 9%. They realized that special economic zones (SEZs) stimulated in great measure the country's development, and consequently in the following years free-trade areas rolled out nationwide (Zeng, 2015). In 1984, 14 new coastal cities opened their doors to receive foreign investment in China as a consequence of the success of the first four SEZs. In 1988, Hainan province as a whole was established as the fifth special economic zone (SEZ). The Pearl River Delta, the Yangtze River Delta, and the Xiamen, Zhangzhou and Quanzhou (Fujian province) Delta also opened up to the outside world from 1988. In the 1990s, 11 border cities and six ports along the Yangtze River opened their doors to the world as well (World Bank, World Development Report, 2009) (see figure 2). Special Economic Zones (SEZs) stimulated in great measure the country's development, bringing new technologies into China and adopting modern management practices (Zeng, 2015).

Figure 2. China's special economic zones (SEZs).



- 4 first special economic zones (1980)
- 14 coastal cities (1984)
- 3 deltas (1985)
- Province of Hainan (1988)
- 6 ports of Yangtze (1992)
- 11 border cities (1992)

Source: World Development Report (2009), The World Bank.

The initial reforms above-mentioned were extremely successful for the country and they led to a series of outcomes for the Chinese economy. During the period of gradual reforms, there were high saving and investment rates in order to give rural and urban households more resources and incentives. This made economic growth to keep going, as the state was investing more money and on the other hand household savings increased. The state continued to use some kind of plan to certain priority sectors but at the same time they let the entrance of new firms in non-crucial sectors of the economy. Therefore, the state and the plan itself became less important in the economy and non-state firms began to adopt prominence (Naughton, 2007).

Even though the starting of the economic reforms was a growth period for the Chinese economy, there was an important political crisis caused by social discontent due to several reasons. Firstly, inflation during this period started to grow as a consequence of non-state corporations who could set their own prices in the market. Secondly, people started to be more and more aware about the corruption within the party, as party leaders and their families were getting more benefits and privileges than the rest of the population. Finally, citizens felt that a political and an economic change were needed, increasing their discontent even more (Naughton, 2007).

The above mentioned reasons plus reformist leader Hu Yaobang's death², made students to gather in Tiananmen square in 1989. In fact, this discontent led to months of peaceful protests in Beijing's main square calling for political and economic reforms. Zhao Ziyang, a subordinate of Deng Xiaoping who was in charge of the day-to-day policy-making, was not willing to ask the policy forces to clear the square and stop the protests. Nevertheless, conservative leaders ordered the military forces to enter and clear the square in June 1989. It ended up in a massacre and many influential reformists in the government were exiled. Reforms were still very popular because they made the economy better off, therefore after the interlude they were re-established. Inflation was stabilized and conservatives, who had won support during the Tiananmen crisis, lost their support again (Naughton, 2007).

In 1992, Deng stated: "Development is the only hard truth". He took his famous Southern Tour, visiting Shenzhen and other special economic zones (SEZs) that he had initiated a decade earlier. From that point onwards, government's commitment to economic reform was restored and in the 14th Congress of the Communist Party they endorsed a "socialist market economy" (Naughton, 2007).

2. Second phase of reforms (1993-2003)

In 1993, the second phase of economic reforms started, even though Deng Xiaoping was not in charge of the reforms anymore. Zhu Rongji was the dominant voice and policy-making responsible in this second set of reforms (Naughton, 2007). In the following pages of this research, the focus will be on the changes and outcomes that characterized this second period. First of all, it will be explained the ending of the dual-track system and recentralization strategy caused by the fiscal crisis that the country was going through. Then, the emphasis will be on the additional measures that the government implemented and the reforms of state-owned enterprises (SOEs). Finally, the focus will be on the entry to the World Trade Organization (WTO) and its implications to the economy.

To start with, during the second set of reforms, the dual-track system which had been one of the main features of the initial reforms was phased-out. Material-based planning was abolished and contracts established during the first set of reforms between the government and individual enterprises were either eliminated or reformulated. The government started a recentralization process opposed to the decentralization strategy they had been performing during the first period of reforms, when government

² Hu Yaobang was the general secretary of the Chinese Communist Party (CCP) and an important reformist leader. He was followed by lots of students, encouraging them to call for political reforms. He resigned from his position because of the tensions he had with Deng Xiaoping and with other leaders who were more conservative. He died shortly after in April 1989 (Chai, 2011).

decreased procurements targets while increasing procurement prices they paid for the outputs. As a consequence of the policies implemented, by 1993 China was facing a fiscal crisis and, in turn, government budgetary revenues had decreased since the reforms started in 1978. To overcome the fiscal crisis, in 1994 the government started fiscal reforms, replacing the traditional revenue system to a modern tax system. The modern tax system applied from 1994 allowed enterprises to compete in equal conditions. They implemented a 17% value-added tax (VAT) in 1994 and additional business taxes. These were uniformly applied to all economic actors, instead of adapted to every particular firm. These changes in fiscal reform eventually met its objectives of stabilizing and increasing budgetary revenues, boosting in 1994 the share of revenue collected. The fiscal system restructuring was accompanied with new macroeconomic policies, including less cheap credit to state-owned enterprises (SOEs), making them responsible for their own profits and losses (Naughton, 2007).

In hand with fiscal reforms, new rules were introduced which affected in an equal manner all economic actors. The banking system experienced restructuring in the 1990s, represented by the active role that the central bank started to have. Even though the People's Bank of China (PBC) was established as a central bank in 1983, it was not until then that it started implementing monetary policy (Naughton, 2007).

During this period, state-owned enterprises (SOEs) also undertook several reforms. Government privatized and closed many small and non-essential SOEs which caused 75,000 SOEs to disappear and between 15 and 20 million workers to be laid off. The state-owned enterprises (SOEs) that maintained their activity were the ones in key industries for the economy (Brandt, Ma & Rawski, 2016). Consequently, this second period had a clear group of "losers"; the workers of SOEs that were dismissed. This is the reason why this second period of economic reforms is known to be a "reform with losers", opposed to the "reform without losers" that characterized the first years of reforms (Naughton, 2007).

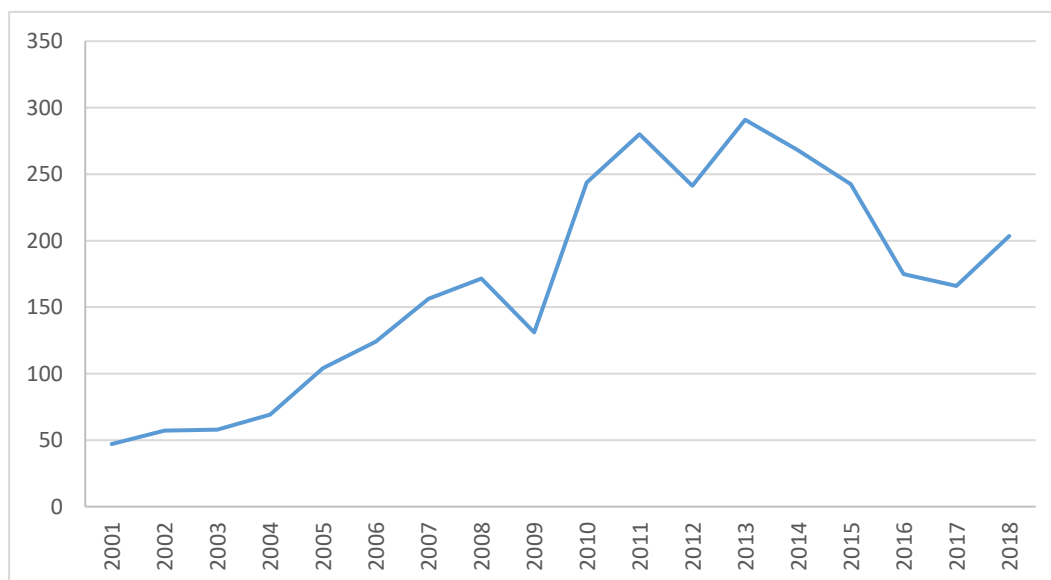
In line with the reforms in state-owned enterprises (SOEs), in 1993 the Company Law came into force. For the first time in mainland China, the organization and activity of business entities was regulated. It provided a uniform legal framework for all SOEs, which would be converted from traditional enterprises into the legal form of corporations, more in line with market economy. New enterprises were expected to be established pursuing the new law and existing enterprises had to be reorganized under the law. The aim of the establishment of this law was to clearly define property rights, increase managerial autonomy, strengthen managerial incentives and improve monitoring (Lin & Zhu, 2001).

In 2001, with the accession to the World Trade Organization (WTO), the major breakthrough in China’s reforms and opening-up strategy took place. The WTO is the global trade rule-setting institution which promotes more free trade because all of its members have to comply to certain principles. The objective of the entrance of China to the World Trade Organization (WTO) was a strategic decision to push forward the country’s reforms as well as for gaining new trading partners. As former president Hu Jintao stated in the tenth anniversary of China’s accession to the WTO, “China’s accession to the WTO is a milestone in China’s reforms and opening-up, bringing us into a new era to further open up” (World Trade Organization, 2011).

The entrance to the World Trade Organization (WTO) resulted in the reduction of tariffs which in turn caused competition to increase, leading to higher incentives for domestic firms to be competitive and innovative, as domestic private companies and foreign companies started to compete in the Chinese market (World Trade Organization, 2011). As foreign firms started entering the country and started doing closer business with Chinese firms, knowledge was transferred and Chinese firms adopted international standards and advanced business practices (Brandt, Ma & Rawski, 2016).

The “go-global” strategy represented by the accession to WTO resulted in an upward Foreign Direct investment (FDI) trend since 2001, as more foreign investors were willing to do business and invest in China (see figure 3).

Figure 3. China Foreign Direct Investment (FDI) inflows 2001-2018 (BoP, current US\$ billion).

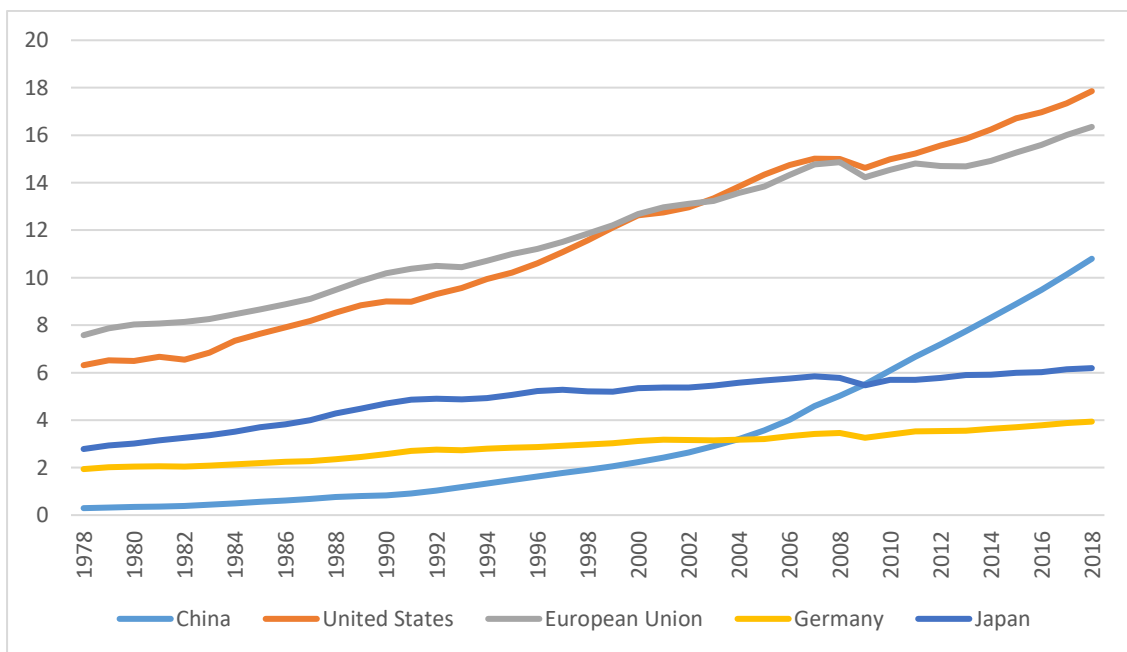


Source: own elaboration with data from the World Bank Open Data.

In conclusion, during the second phase of reforms, growth kept the rising trend that had started the initial reforms, foreseeing the potential of China and a small part of what the country would become in the near future.

The reforms that started Deng Xiaoping in 1978, made China grow in an unprecedented way. From 1993 until 2003, as a consequence of successful policies implemented during those years, per capita income rose by 6.6%, which was the fastest growth when compared with any other Asian country, and four times as fast as the world average. Even though China's GDP in 2003 only accounted for the 17% of that of the United States and 23% that of Japan, the prospects are that the country will eventually catch up the first largest economy (Maddison, 2007) (see figure 4).

Figure 4. GDP 1978-2018 in trillion dollars (constant 2010 US\$).



Source: *Own elaboration with data from the World Bank Open Data.*

III. CHINA'S GROWTH AFTER THE ACCESSION TO THE WORLD TRADE ORGANIZATION (WTO).

By the end of the 1990s, after the reforms carried out since 1978, Chinese policymakers had achieved a series of remarkable outcomes for the Chinese economy. They had moved from a command economy towards a market economy and they have entered the World Trade Organization (WTO), opening the country to the world trade (Naughton, 2011).

Even though China's market-oriented reforms had led to unprecedented economic growth, increased productivity and performance, and raised living standards, by 2003 it was evident that there was a serious problem of education, health-care, social security, increasing inequality and rising unemployment rates within society. China had at its disposal increasing budgetary revenues, as a consequence of the reforms carried out during the years of the fiscal crisis in China. Therefore, policy-makers had more resources to invest into the economy. The administration ruling China back then, the Hu Jintao- Wen Jiabao administration, took advantage of the revenues and shifted the economic development policy to emphasizing new policy priorities apart from economic reforms. Market reforms lose priority at this stage and government took a more active role in promoting growth (Naughton, 2018).

In 2003, with the Severe Acute Respiratory Syndrome (SARS) outbreak, Chinese policymakers faced the fact that a health-care system was urgently necessary, as there were no institutions established to administer the outbreak. SARS faded away, but new leaders were conscious that public institutions were deteriorated and that they needed renewal. At this point, the new leaders shifted the reforms to three important areas: reduce the urban-rural gap, reform the public sector and reforms on the industrial and technological policy (Naughton, 2018).

First of all, they wanted to shift the emphasis to social policy, starting by rural institutions and reducing the urban-rural gap. Chinese society at that point was much better off but also more unequal. Inequality had increased steadily within rural and urban areas, as reforms accelerated urban economic growth. Gini coefficient³ was 0.49 in 2009, when it started the downward trend (Naughton, 2018). To address the problem of inequality, they reduced and eventually abolished agricultural taxes, which increased agricultural incomes by about 5%. Furthermore, the country was suffering a health-care problem, as by 2003, 96% of China's rural households did not have health insurance. They created the New Cooperative Medical Scheme (NCMS). The NCMS was a programme heavily subsidized by the government in order to provide affordable health

³ The Gini coefficient is used to measure inequality. A value of 0 represents perfect equality, and a value of 1 represents perfect inequality.

insurance in case of diseases or injuries. It was targeted mainly to rural areas. The actual level of insurance was modest, however both government and household contribution grew rapidly and fast in the following years. Finally, in order to address the problem of lack of education among society, especially in rural areas, they implemented universal elementary education nationwide (Naughton, 2011).

The second area that they were willing to reform was state-owned enterprises (SOEs). The State Asset Supervision and Administration Commission (SASAC) was set up as the main regulator of non-financial state-owned enterprises (SOEs) on behalf of the state, making the beginning of state-sector stabilization and a turning point in the process of economic reforms. SASAC held ownership of in total 196 SOEs, typically large, capital-intensive firms. The aim of the establishment of SASAC was ensuring that firms under its supervision were competitive and profitable while allowing the restructuring and privatization of other smaller firms. Its establishment marked a slowdown in the privatization process ongoing since 1978 (Naughton, 2015).

Finally, the last area that the government wanted to prioritize was the industrial and technology policy. The Hu Jintao- Wen Jiabao administration, supported national industry in order to face increased international competition caused by the entrance to the World Trade Organization (WTO). In 2005, the Medium-and Long-Term Development Program (MLP) for science and technology development was set up. It was directly managed by the government and it stressed the importance of technological innovation with the goal of converting China into an innovative country. They focused their efforts on different areas. First of all, they invested in strategic emerging industries with greatest potential to a future impact. Moreover, they invested in engineering research projects, commonly called “mega projects”⁴, which had to be started by 2009. Finally, they started a strategy called “Indigenous innovation”, with the objective of promoting technological innovation nationwide (Naughton, 2011).

These policies, though, were not implemented directly, as by 2008 a financial crisis hit the global economy. China reacted quickly to the crisis, implementing top-down policies, that as mentioned before, implies that there was an inclination towards government control. The government boosted domestic spending, which in turn resulted in increasing domestic demand and higher rates of economic growth during the years of the crisis. The government injection of resources to face the financial crisis pushed fixed investment up to 45%, keeping this rate until 2014. Therefore, the growth rate actually accelerated during the Hu Jintao administration (Naughton, 2011). In fact, from 2005 to 2010, GDP growth increased on average 11.2% annually (see figure 5). Apart from the

⁴ The Medium-and Long-Term Development Program (MLP) for science and technology designed 16 “Mega Projects”, including water-pollution control and treatment, major new drug initiative, three undisclosed military projects, among others (Naughton, 2011).

increased government credits during the crisis, we can identify three additional reasons for the growth rates that China had during these 5-year period. First of all, the reforms carried out by Zhu Rongji in the 1990s during the fiscal crisis, which included reducing subsidies to inefficient state-owned enterprises (SOEs) and cutting back the state sector, lead to higher growth rates in the Hu Jintao administration. The second reason for the growth since 2005 was the entry to the World Trade Organization (WTO) in 2001, which was crucial to the increase in China's exports worldwide. The entry to the WTO also led to imports not only of goods, but also of new ways to produce cheaper and efficiently. China began importing parts and components, cut costs and was able to trade in new international and domestic markets. Thirdly, there was an urban housing boom caused by the privatization of urban housing, that resulted in investments on housing, which lead to rising prices and investment demand, increasing growth in construction and heavy industries. During this period, migration from rural to urban areas increased, summing up to 11 million per year during the 5-year period. It was not until 2010, that growth started to decrease reaching growth rates similar to those before the crisis. China gain the title of world's second-largest economy during 2010, surpassing Japan (Naughton, 2018).

Often, the years of the Hu Jintao- Wen Jiabao administration are seen as the "lost decade" because even though they implemented social policies such as spending on education and medical care, they did not implement any new market-oriented reforms different from the ones already implemented during the previous administration (Naughton, 2014). The administration achieved great outcomes, nevertheless also left some unresolved and deferred problems that would need to be addressed by the future ruling administration. The challenges included, first of all, problems of high debt caused by the high rates of investments that were carried out during the global financial crisis. As mentioned before, the financial crisis was overcome thanks to the huge amount of domestic investment. As a follower economy, China used to destine its investments on copying business models, technologies and infrastructures from advanced economies. This investment directly resulted in growth. Nevertheless, that was no longer true during the years of the financial crisis, as the fundamental infrastructure framework China was copying from developed economies was almost completed. Therefore, spending during the years of the financial crisis was often allocated to useless projects, creating a huge amount of debts that needed to be repaid. Another challenge that they encountered were the changes in labour markets. The last decades, governments could hire workers that migrated from rural to urban areas, offering low wages. Nonetheless, by 2012 real wages of migrant workers had increased substantially, specifically 10.8% annually. Thus, employers had to pay higher wages, proclaiming the end of the "cheap China" era. Even so, wages in China were still low when compared with Western standards. Furthermore, an additional challenge was the aging population, leading to a higher dependency ratio. Finally, the last challenge was the vast dissimilarities between the inland and coastal

areas in terms of population and wealth, mainly due to the open-door policy, which favoured coastal regions. The above mentioned challenges, translate into the start of a period of slower growth for China. In these cases, other economies such as Korea or Japan that had been in China's situation years before, when their high-growth phases ended, they changed their economic reforms towards a focus on high-technology and more sophisticated sectors, investing in innovation in order to achieve it. According to reformers, market-oriented reforms are necessary at this stage in order to address these challenges (Naughton, 2014).

Therefore, by 2010 the so-called "growth miracle"⁵ was over, and a new episode for further growth began, which can be referred as the transition to the "new normal", referring to a period of slower growth but of more quality (Naughton, 2018).

The next ruling administration, headed by Xi Jinping, without a doubt inherited an economy that needed further steps in order to continue its growth path. There was a need of shifting the economic approach to market-oriented reforms again instead of government-driven reforms. In 2013, when the Xi Jinping- Li Keqiang administration rose to power during the Third Plenum, they called for a more relaxed role of the government where the market plays a decisive role on resource allocation. Also, they called for promoting growth while ensuring environmental protection, as China's air pollution is among the worst in the world. They indeed have the challenge to make the economy keep growing at a time when sustaining a fast rate of growth is increasingly challenging (Men & Tsang, 2016).

During his mandate, Xi Jinping promptly introduced the concept of "China Dream" to label the ambitions he had about the country and the steps he wanted to follow in order to pursue them. To be more specific, the Xi's "China Dream" means the achievement of a more moderate growth, a prosperous society and eventually a superpower. At the beginning of his legislature, he aimed at doubling the size of the GDP by 2022 both on a national and per capita basis. China is building his path to the "new normal" for sustainable growth and development. They want to constitute a country governed by law in order to ensure long-term stability, in other words, they want to govern the country according to the constitution. Since the beginning of their leadership, they have initiated an anti-corruption campaign in order to create a better political environment, impacting a huge number of Chinese officials. The aim of the anti-corruption campaign was to restore the party's reputation nationwide (Men & Tsang, 2016).

Besides, the Xi Jinping administration also started a movement towards nationalism. They wanted to revive elements of traditional Chinese Culture as well as relying on socialist core values. According to Xi Jinping, a country's core values are what make a

⁵ A "growth miracle" is a period of rapid, sustained growth for 20 years or more (Naughton, 2018).

society bound together, that is why he thinks of a socialist China but with Chinese characteristics (Men & Tsang, 2016).

At the same time, his reforms have moved towards a more opening-up strategy, which might seem a contradiction with the movements towards nationalism just mentioned. This is exemplified by the Belt and Road Initiative (BRI). The Belt and Road Initiative (BRI) can be understood as “a mode of win-win practical cooperation which offers development benefits for both China and its BRI partner countries” (Lim & Cibulka, 2019). The project is aimed to fund infrastructure projects across the globe, therefore China’s partner countries are better off in the sense that they get money to start their economic development and on the other hand, China is better off as it expands the country’s infrastructure connections abroad (Naughton, 2018). The BRI is a very ambitious project, reflected by its expanding geographical scope. Today, the BRI is expanded throughout the world, connecting China with Europa, Africa, Asia and Oceania in 2017, and being expanded in 2018 finally covering also Latin America and the Caribbean, and also the Arctic (Lim & Cibulka, 2019).

Nevertheless, as China increases its influences in the global economy and increasingly becomes a dominant leader, some challenges arise.

First of all, the country, since it entered the World Trade Organization (WTO) has seek cooperation and beneficial ties with partners around the world. This fact has led to some economies to feel threaten by the Chinese economy. This is the case of the United States, the leading economy nowadays. Their relationship has always been complex, with competition and beneficial interests (Men & Tsang, 2016). When Donald Trump, the current president of the United States (US), rose to power back in 2016, the US was running a large trade deficit with China, which became a political issue in Trump’s presidential campaign as he promised to reduce this trade deficit. He claimed that the trade deficit was due to unfair competition caused by unfair Chinese trading practices and intellectual property theft. The US started imposing tariffs on goods imported from China, and China in turn responded imposing tariffs to US goods. Consequently, entrepreneurs now invest less in export factories and consumers buy less goods from the other country. Both countries continued to impose tariffs to each other’s products until mid-December 2019, when the phase-one trade deal took place, which was formally signed on 15 January 2020 by Donald Trump and China’s Vice-Premier Liu He. They agreed to reduce some of their tariffs and that further negotiations would take place in the months to follow in order to address major issues such as Chinese government subsidies in state-owned enterprises (SOEs), which Trump labels as unfair. The ongoing trade war has brought an uncertainty situation as well as many implications in the world trade, as both China and the US are two of the main players (South China Morning Post, 2020). Due to the trade tensions, the People’s Republic of China (PRC)

growth slowed from 6.7% in 2018 to 6.1% in 2019. China's exports to the United States (US) went down by 21.3% in 2019 and China's imports from the US dropped by 12.9% (Asian Development Bank, 2020). Furthermore, investment in the manufacturing sector has decelerated, as investors have less confidence because of trade tensions and higher tariffs imposed between the PRC and the US (World Bank, 2020).

Just as tensions between China and the US seemed to relax, the coronavirus (COVID-19) outbreak hit the economy worldwide, emerging in China but rapidly extending across the world. Its rapid spread has made it become the worst pandemic in the century. The economies specially affected by the outbreak are China and then shifting its epicentre to the United States and Europe. The outbreak has disrupted people's lives and interrupted economic activities around the globe. Its evolution is still uncertain, but the forecasts are that growth will severely decrease in 2020. Specifically, forecasts are that growth in the People's Republic of China (PRC) will slow to 2.3% in 2020 while in 2021 it will upgrade to 7.3% (Asian Development Bank, 2020). In fact, the consequences of the COVID-19 have been already noticeable in the first quarter of 2020, as GDP has contracted at -6.8% compared to the same quarter in 2019 (Statista, 2020).

Apart from the challenges above mentioned, there is an even greater challenge that China needs to address. According to the World Bank, out of 101 middle-income countries in the 1960s, only 13 became high-income countries by 2008. These were regions such as Korea, Japan and Hong Kong SAR, which have successfully bypassed the trap and entered high-income standards (Larson, Loayza & Woolcock, 2016). The vast majority, once reaching this middle-income status, have been caught in the so-called "middle-income trap". The "middle income trap" is an increasingly popular concept used to discuss the phenomena of growth slowdowns of developing economies when they achieve a certain level of Gross National Income (GNI) per capita, as higher wages push production costs up. Even if they continue to grow, their living standards get no close to those in high-income countries. It is thought that this usually happens because these countries trapped in the middle struggle to compete with, on the one hand, low-income newcomers where labour costs are still low, and high-incomes economies which enjoy high-quality knowledge and high levels of innovation (Pruchnik & Zowczak, 2017). All the countries that have surpassed the so-called "middle-income trap", have followed a pattern: cheap labour, basic technology catch-up and reallocation of labour from low-productivity sectors to export-driven sectors and high-productivity sectors. Nevertheless, once reaching high level of productivity, middle-income countries must find drivers of productivity, innovation and competitiveness to foster and stabilize growth (Larson, Loayza & Woolcock, 2016). According to the Asian Development Bank Outlook (2020), middle-income countries that eventually achieve high-income status, invest three times more on R&D than those trapped in the middle-income trap. Besides, they apply four times more for patent applications (Asian Development Bank, 2020).

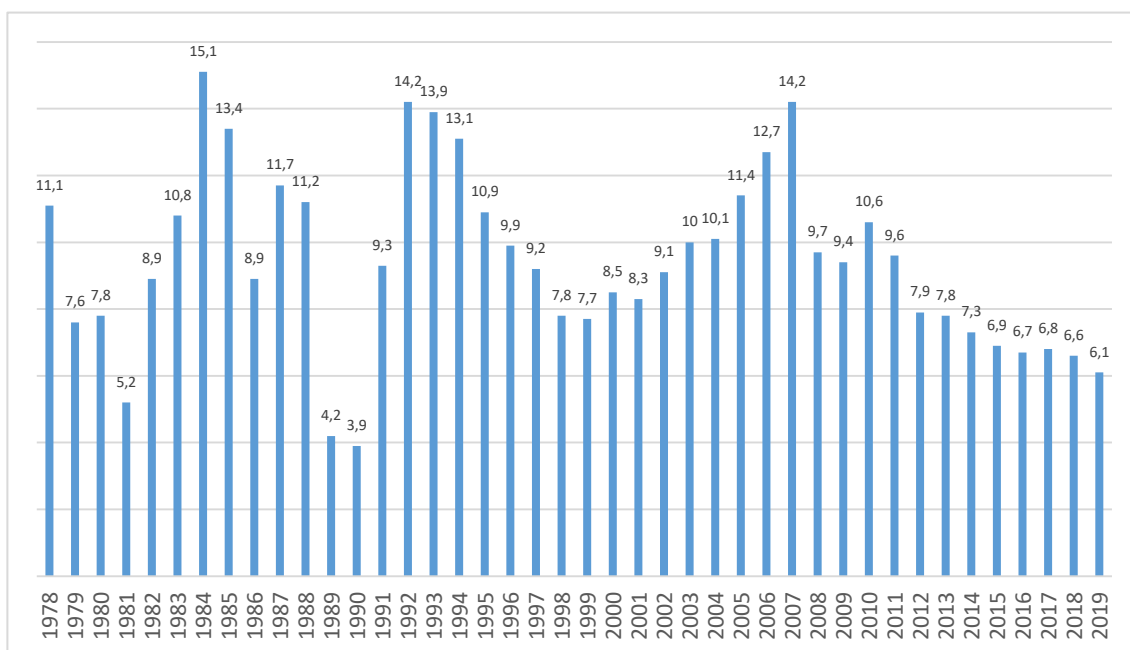
It is still unclear whether China will be able to overcome the trap or not, what is clear is that China has the potential to do it. Nevertheless, the recent slowdown in the growth in China since 2010, has opened a debate about whether the economy might become trapped in the so-called middle-income trap, or if it will achieve the level of high-income economy. To overcome the trap, the People's Republic of China (PRC) has to rely on innovation. Until the moment, China has been a rapid follower to other countries' innovation, being the "Made in China" a proof of that, referring to cheap-quality products made in the country. China has been the world's factory for decades now, achieving substantial growth focusing on imitation-driven economy rather than on an innovation-driven. The Asian Development Bank (ADB) identifies five drivers of innovation. First of all, education. A well-educated society has more capabilities and skills to innovate. Secondly, entrepreneurship. The government needs to design policies that help entrepreneurs, thus increasing the probabilities for them to innovate. The third and four drivers would be high-quality institutions and robust financial systems, which provides entrepreneurs confidence when assuming risks and experiment with new ideas. Finally, big cities are also drivers in order to foster innovation, as they facilitate knowledge spill over (Asian Development Bank, 2020).

In order to foster innovation, the government launched the "Made in China 2025" project in 2015. The "Made in China 2025" is a 10-year strategy to make China become a leader in high-tech industries as next generation IT, robotics, aerospace equipment, medical devices, among others. Apart from the above-mentioned, it also focuses on green economy, and material efficient production, with investment directed to new energy vehicles (European Commission, 2019). The plan has five main focus areas: prioritize the development of innovation capacity, upgrade the quality of goods, develop a sustainable economy, optimize the industrial structure and finally promote talent (Gómez, ICEX, 2016). The "Made in China 2025" is actually the first stage of a longer plan, which consists of three phases. The first one is the just-mentioned "Made in China 2025", which aims to upgrade parts of the Chinese economy and develop competent enterprises to compete with Western countries. The three phases are to be ended by 2049, when the People's Republic of China (PRC) celebrates its century. By then, China wants to have become a top-innovation driven economy (European Commission, 2019). This initiative is key for the transition from middle-income economy to achieve the level of developed economy. If they succeed, China would reposition itself from a low-cost manufacturer to a direct competitor to nations like South Korea, Japan and Germany. Therefore, China throughout this plan wants to replace foreign firms as suppliers of high-tech equipment and components and thus reduce its reliance on foreign technologies (Institute for Security and Development Policy (ISDP), 2018). To do so, the country relies on R&D. The state has committed to help national enterprises which invest in R&D through tax deductions, low-cost credit to support small and medium high-tech

enterprises, preference in government procurement for high-tech firms, lower corporate income tax rate for enterprises that qualify for high-technology, among others. So the government is implementing policies with the objective of easing R&D and in turn increasing innovation (Naughton, 2018). China’s “Made in China 2025” initiative, leaves foreign firms in an inferior position when doing business in China, as for example in some sectors they are forced to enter the country through joint ventures with Chinese firms and therefore they need to transfer technology into China. As mentioned above, the government helps national enterprises granting tax benefits and low-cost credits, which also puts foreign firms at a disadvantage position as they cannot enjoy these benefits (European Commission, 2019).

In short, China’s has seen unprecedented growth during the last 40 years, since the reforms started back in 1978. The economy’s GDP has grown in average 9.5% every year for more than 40 years and 850 million people have come out of poverty. Even though lately the path is slowing, in 2019 GDP in China accounted for about 6.1% (see figure 5), which is still higher than the world average. In 2017 China had a per capita GNI of \$7,310, entering the upper middle-income level according to the World Bank standards. In addition, it is now one of the major players in international trade, with exports summing up to \$2.5 trillion and imports \$2.1 trillion in 2018 (World Trade Organization, 2019).

Figure 5. China GDP growth (annual %) from 1978 to 2019.



Source: own elaboration with data from OECD national accounts data and the World Bank.

As seen throughout this chapter, the PRC’s growth is cooling down and still has many challenges ahead in order to surpass advanced economies in terms of living standards.

Nevertheless, the government knows the path that the country needs to follow and is already implementing policies with the objective of further increasing its growth rates.

III. METHODOLOGY

In today's globalized world, with growing economies and increasing competition among countries, it is a fact that China has grown more than any economy today. As explained in the previous chapter, China has seen unprecedented growth since the start of economic reforms carried out by Deng Xiaoping in 1978. It is now the second largest economy in the world after the United States and is already a major player in world trade.

The study of growth has not always been as relevant as it is now for economists. Before the 1980s, economists used to focus mainly on short-term fluctuations, rather than on long-term growth. After the 1980s, economists started being interested again in the determinants of economic growth, as researchers identified that in the long-run, long-term growth is very important to determine a country's performance (Steveninck, Van Windt & Oosterbaan, 2000).

In order to determine the economic growth of a particular country, we can use the GDP, which as economist Gregory Mankiw states is "the market value of all final goods and services produced within a country in a given period of time" (Mankiw, 2016, p.476). We can also use the GDP per capita, which is a measure to determine a country's standards of living. GDP per capita is composed by productivity and the rate of employment. Therefore, in order to increase GDP per capita, an economy can increase one of these two. On the one hand, a country can increase productivity, which is the efficiency of production, in other words, the relationship between GDP and the total number of employees in a country (see formula 1). On the other hand, a country can increase the rate of employment, which is the percentage of people that has an occupation within a country, that is to say, the relationship between all the employees in a country and the population as a whole (see formula 2). In fact, the GDP per capita corresponds to the product of the two measurements above-mentioned; the rate of employment and the productivity of each employee (see formula 3) (Myro, 2019).

Formula 1. Productivity

$$\text{Productivity} = \frac{\text{GDP}}{\text{number of employees}}$$

Formula 2. Rate of employment

$$\text{Rate of employment} = \frac{\text{number of employees}}{\text{population}}$$

Formula 3. GDP per capita.

$$\text{GDP per capita} = \frac{\text{GDP}}{\text{population}} = \frac{\text{GDP}}{\text{number of employees}} * \frac{\text{number of employees}}{\text{population}}$$

Source: own elaboration

Nevertheless, there are some limits on the increase of the rate of employment. The limits we can identify are demographic, social and cultural, which are out of the control of the country. Besides, as mentioned earlier in chapter II, China has a problem of aging population, represented by the reduction on working-age population since the early 2010s. Thereby, this leaves productivity as the key source to increase economic growth, as it is something that every country can control and boost, and since the contribution of labour to economic growth will be limited (OECD, 2020). This is the reason why the analysis will be centred mainly on productivity as a driver of growth, rather than on the rate of employment.

The purpose of the upcoming analysis is to test the hypothesis that China will further increase its living standards until surpassing the ones of current developed economies. To test this hypothesis, this paper proposes to collect evidence and make a macroeconomic analysis of China compared to other growing economies in the world, which are identified as relevant for the analysis. First of all, the United States (US), as it is the largest economy nowadays and it serves as a point of reference for the analysis. The second country with which China will be compared is Germany, as it is the fastest growing economy in the European Union. Then Japan, which was the first growing economy in Asia before China took its place, and finally the European Union, as a reference for taking into account the growth in all European countries as a whole. The analysis will cover a 4-year period, going from 2014 to 2018, as it is the last period when we have reliable data to analyse.

First the analysis will explain the China's GDP per capita along the period analysed, then the focus will be on the rate of employment, briefly explaining its situation compared to the other countries, and finally on the determinants of productivity, taking the other countries as a point of reference. After that, future prospects with regards to GDP per capita will be presented. Comparing these advanced economies with China, it would be possible to forecast whether China is eligible for further growth or otherwise if the period of economic growth is already over.

IV. ANALYSIS

The objective of this chapter is to check whether China is on track to further growth regarding living standards, applying the methodology explained in the last chapter. In order to test the hypothesis, the chapter will first analyse the GDP per capita and then focus on productivity, that as mentioned before, is the key factor for the growth of a country. After the analysis, a summary of the results will be presented.

When comparing the GDP per capita of China with other countries, we can see the evolution of China's living standards with respect to other economies within the analysed period of time. It is true that China is still far in terms of this measure from the other mature economies analysed (see table 1). Even so, China has had a very remarkable progress on its GDP per capita along the years, and therefore there has been a remarkable upgrade on the country's living standards. To put it into numbers, from 2014 to 2018, China's cumulative growth rate in terms of GDP per capita has been 6.16%⁶, with contrast with the United States, that has been 1.80%. In turn, we can position Germany's growth to 1.44%. With these comparisons, we can conclude that even though China is still far from a GDP per capita equalizing or surpassing those of developed countries, China is already growing at a path comparably higher.

Table 1. GDP per capita (US dollars at constant prices 2015 in thousands).

	2014	2015	2016	2017	2018
China	7,4	7,8	8,3	8,8	9,4
United States	55,3	56,5	57,1	58,1	59,4
Germany	40,6	41,1	41,8	42,6	43,0
Japan	33,8	34,3	34,6	35,3	35,7
European Union (EU28)	31,6	32,3	32,9	33,6	34,2

Source: own elaboration with data from UNCTAD Statistics and ILO Statistics.

As explained in the last chapter, GDP per capita can be computed by multiplying productivity by the rate of employment. Consequently, to increase a country's living standards, we can increase one of them or both.

China is the country with the highest population in the world, in 2018 it was 1,43 billion people (UNCTAD, 2020), which means that they have a large workforce. The population growth in China, though, decreased as a consequence of the establishment of the one-

⁶ GDP per capita cumulative annual growth rate(PRC)= $\left[\left(\frac{9.4}{7.4}\right)^{\frac{1}{4}} - 1\right] * 100 = 6.16\%$

child policy⁷ in 1980, ending in 2015. This led to short-term outcomes that were good for the economy, as population in China was young and therefore had a low dependency rate. The government of the PRC has always focused their efforts on exploiting the advantage they had with regards to labour force, boosting the creation of labour-intensive industries. Nevertheless, as a consequence of the one-child policy, China is already facing a problem of shrinking and aging population, which has a direct impact on the rate of employment, because working population is decreasing and will further decrease in the years to come. Besides, China is experiencing a problem of rising wages caused by labour shortages, meaning that the country has no longer the labour-cost advantage that they used to have over other countries with higher wages. So China cannot rely on cheap labour to drive economic growth anymore (Li & Purdy, 2013). Even that, China's employment rate is still the highest among the five analysed countries (see table 2).

Table 2. Rate of employment (%).

	2014	2015	2016	2017	2018
China	54.8	54.6	54,4	54.1	53.8
United States	46.5	46.9	47.4	47.9	48.2
Germany	49.7	49.7	50.1	50.4	50.8
Japan	50.1	50.4	51.0	51.6	52.7
European Union (EU28)	43.5	43.9	44.4	45.0	45.5

Source: own elaboration with data from UNCTAD Statistics and ILO Statistics.

In order to offset the slowing labour force growth, the key point for China is to focus their efforts on productivity in order to maintain its growth path. Productivity is how efficiently resources (inputs) are used to produce output (Li & Purdy, 2013). The average productivity of a worker relies on three factors; physical capital, human capital, and finally technical progress (technology). Therefore, productivity tends to be higher when new ideas, procedures and methods are incorporated into the economy (Myro, 2019).

China's productivity growth is higher than the one achieved by many other countries in the world. To put it into numbers, while cumulative annual growth rate of productivity in China between 2014 and 2018 was 6.67%, the one in the US was 0.89%, and the one in the European Union (EU28) accounted for a 0,37%. Nevertheless, we have to bear in mind that China started the reforms back in 1978 with productivity being almost non-existent, and it is easier for a country to increase productivity when they come from low levels. The PRC's productivity is still far from that of mature economies, therefore, China

⁷ The "one-child policy" was announced in 1980, and banned families to have more than one child, providing penalties for those women who had two or more. It was enforced until 2015, when it was replaced for a softer policy (Naughton, 2018).

has still a lot of room for improvement and further push productivity up. In 2018, productivity in China was US\$17,400 in contrast to the United States, that was US\$123,200. It means that the productivity of US employees in 2018 was 7.08 times higher than that of Chinese employees (see table 3).

Table 3. Productivity (in thousand US dollars)

	2014	2015	2016	2017	2018
China	13,4	14,3	15,3	16,3	17,4
United States	118,9	120,4	120,4	121,3	123,2
Germany	81,7	82,6	83,4	84,5	84,7
Japan	67,5	68,0	67,8	68,4	67,6
European Union (EU28)	72,5	73,5	74,0	74,7	75,2

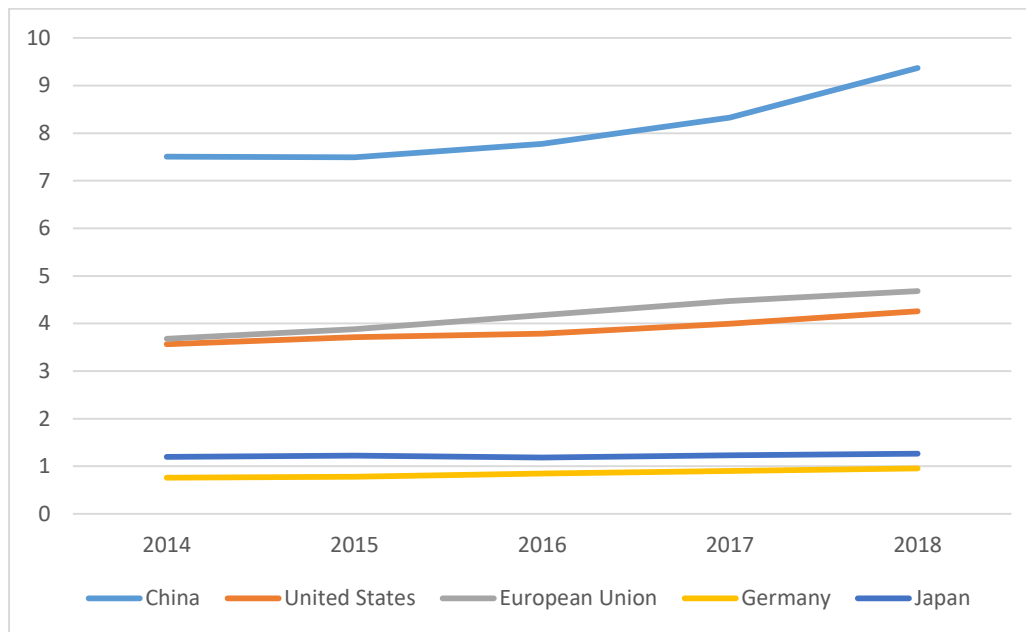
Source: own elaboration with data from UNCTAD Statistics and ILOSTAT database.

As suggested above, since China has no opportunity for increasing the rate of employment, as working population is already shrinking, it needs to increase productivity if it wants to continue its growth tendency. In order to do so, there is the need of increasing both physical and human capital, and also technology.

First of all, one of the basic pillars for increasing productivity is the increase in physical capital. This include infrastructure, machinery, transportation, telecommunication networks, among others. If the physical capital is higher, employees have better means which in turn increase the quantity and quality of the products (therefore productivity is increased). In order to identify how much governments and private entrepreneurs are spending in this sense, we can look into the Gross Fixed Capital Formation (GFCF), that corresponds to producer's investments in fixed assets. In other words, is the acquisition of assets that are needed for the production of additional output.

China is investing potentially more in this aspect when compared with the US, the European Union, Germany and Japan, as shown in the graphic below (see figure 6). As depicted in the graph, China is well above the other countries in terms of investment in infrastructure. In fact, it has played a major role in China's economic development, as China's development approach was based on an imitation-driven economy, which included copying infrastructures from developed countries in order to make the country grow rapidly. Infrastructure development has been a high priority issue since the start of the reforms for the Chinese government.

Figure 6. Gross fixed capital formation (GFCF) in million US dollars.



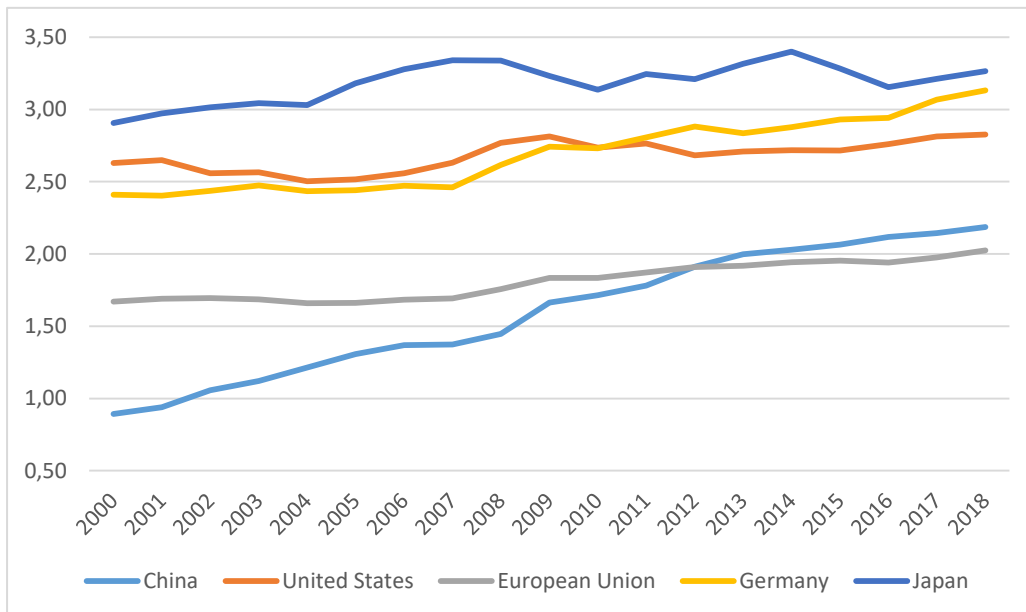
Source: own elaboration with data from OECD data, Main Science and Technology Indicators.

Having good infrastructures, facilitates the entrance of technology into the country, which is the next factor that will be analysed as it is of high importance to increase productivity. When countries start to develop, they can get new technologies and methodologies from other countries and adapt them into their economy, achieving a rapid growth within a short period of time. This is what happened in China, as during decades they have adapted technologies from other countries in order to make their economy grow. Nevertheless, as happened to other developing countries as well, once achieving a certain development level, the import of new technologies is not enough to keep the growing trend. At this point, China cannot rely on the import of knowledge to drive the economic growth, they have the need to innovate and create new ideas by themselves. This is why in the last years they have shifted their policies towards an innovation-driven economy, rather than imitation-driven approach. This can be represented by the high amount of R&D expenditure and the growing number of patents in the country, which are a sign of innovation.

Gross expenditure on R&D (GERD) is one of several indicators used in order to measure progress with regards to increasing innovation and is the indicator that will be used in this analysis. In 2017, the PRC (People's Republic of China) already accounted for 23% of the world's GERD. Besides, R&D grew from 2.03% of GDP in 2014 to 2.19% of GDP in 2018, representing an 8% increase, when compared to the US that grew from 2.72% to 2.83%, representing in turn an increase of the 3.9% (see figure 7) (OECD, 2020)

As shown in the graphic below, Chinese R&D expenditure is already higher than investment done by European Union (EU) firms as a whole. With regards to the United States, Japan and Germany, the PRC is fast catching-up their expenditure in R&D (see figure 7). China is already a competitor on high-technology sectors such as nuclear energy and new energy vehicles, being already the 50% share in the global market for new energy vehicles (European Commission, 2019).

Figure 7. R&D expenditure (% of GDP).



Source: Own elaboration with data from the OECD, Main Science and Technology Indicators.

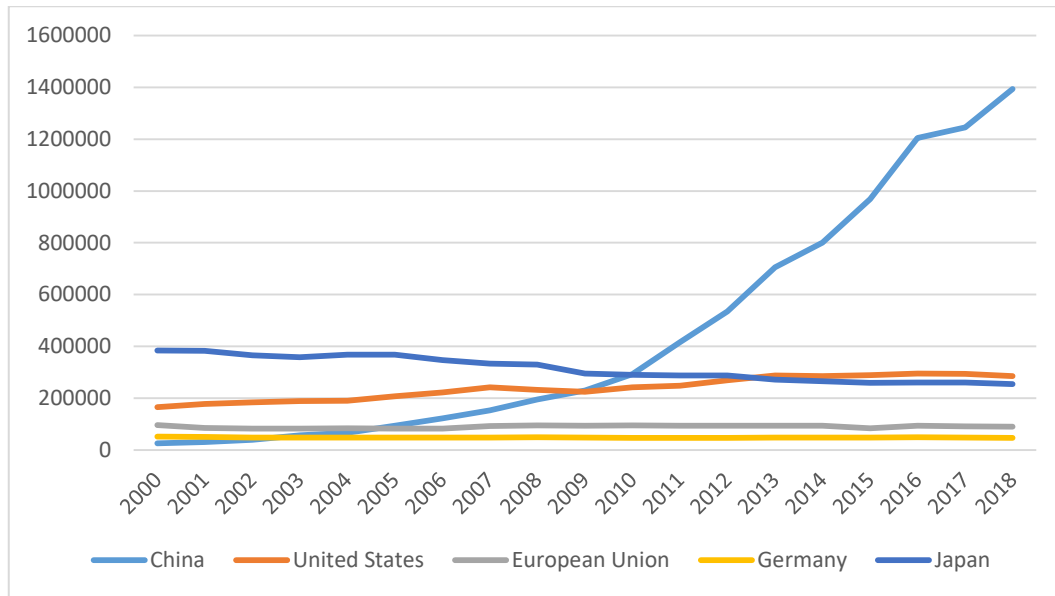
China started its increase in R&D expenditure with the entrance to the World Trade Organization (WTO) back in 2001. At this point, China further opened up its economy to the outside world, expanding the export sector, which played an important role in the rapid investment growth. Furthermore, when they initiated the “Made in China 2025” strategy in 2015, they also created incentives to push investments in R&D up, implementing policies in order to increase it and in turn increase innovation.

Nevertheless, the path of investment growth is expected to slow in the future, and in fact has already slowed. It is necessary to point out that even though rates of investment in China have increased more than in any of the other countries analysed, the reason is because when it entered the WTO, China had almost no rate of investment destined to R&D. Therefore, it is normal for the country to slow down the expenditure of R&D when it reaches similar levels of investment than other mature economies.

Another manner to measure innovation and growth is by the number of patents, as they are indicators of knowledge production. Since the entrance to the WTO in 2001, patents

applications have increased exponentially (see figure 8). In 2018, China received a total of 1,54 million patent applications (taking into account both residents and non-residents applications), which accounts for 46.4% of the global total. In terms of international patents applications, China already took the place of the US in 2019, becoming the first applicant for international patents (WIPO, 2019). Therefore, China’s achievements in this sense have been quite remarkable when compared with the other countries.

Figure 8. Patent applications by residents.



Source: own elaboration with data from the World Bank Data and the World Intellectual Property Organization (WIPO).

In order to take advantage of the new technologies and innovation that the country is generating, and also of the physical capital that the country is investing in, there is the need of a better prepared labour force, who are able to better absorb and implement the new technologies and innovation that is created within the country. Human capital places an important role in economic growth as countries with high levels of education are usually wealthier. Upgrading human capital helps expand the value-added economy. Besides, as explained before, China is facing a problem of aging population and of rising wages, which makes human capital of increasing importance. As defined by the OECD, human capital is the “knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being” (OECD, 2001, p.18). In short, it is a key factor for improving productivity.

Recent education reforms in China have focused on lowering the percentage of illiteracy. Data from the UNESCO shows that China’s literacy rate of adults of 15 years or older has increased along the economic reforms, going from 77.8% in 1990 to 96.4% in 2015 (UNESCO, p.42, 2013). In order to better understand the advances in human capital

among different countries, we can look into the years of schooling of each of them. As it is shown in table 4, China is the country with the lower mean of years of schooling. Chinese students on average spend 7.9 years at school, in contrast with European Union students that study on average 11.9 years, or the United States, leading the ranking, whose students spend 13.4 average years studying (see table 4). The reason for these differences is because, even though during the economic reforms the rural-urban gap was reduced, China still has huge differences between urban and rural areas. The government has universalised compulsory education nationwide, but further reforms are needed to be implemented in order to balance the rural-urban gap in terms of education quality. China also needs to address and upgrade its educational system, as it is currently based on theoretical concepts rather than on a practical approach. Even though theoretical knowledge is indeed important, Chinese workers are still lacking practical skills, which help increase innovation and creativity, that are key for China's future growth.

Table 4. Mean years of schooling (in years).

	2014	2015	2016	2017	2018
China	7.6	7.7	7.8	7.8	7.9
United States	13.3	13.3	13.4	13.4	13.4
Germany	14.0	14.1	14.1	14.1	14.1
Japan	12.5	12.5	12.7	12.8	12.8
European Union (EU28)	11.7	11.8	11.9	11.9	11.9

Source: own elaboration with data from the United Nations Development Report.

After having analysed the determinants of growth, and focusing on productivity as the main source of potential growth for China, a prediction of the future of the country's growth will be carried out. For this, the cumulative growth rate formula will be used, which is as follows.

Formula 4. Cumulative annual growth rate

$$\text{Cumulative annual growth rate (China)} = \left[\left(\frac{\text{Country 2 GDP}}{\text{China}} \right)^{\frac{1}{t}} - 1 \right] * 100$$

*t= time

Source: own elaboration

The above-mentioned formula will be used in order to calculate the years that would take for China to surpass the United States, Germany, and Japan in terms of GDP per capita, with the aim of understanding whether in the short term it is feasible for the PRC to reach their economic level. It is difficult to predict a potential growth rate for the next years, mainly because of the uncertainty situation that the world is living with regards

to the recent outbreak of the COVID19 pandemic. According to the World Economic Outlook released by the International Monetary Fund (IMF) in April 2020, the prospects are that Chinese economy will grow at a rate of 1.2% in 2020 as a consequence of the quarantines, lockdowns and social distancing that had made the global economy as a whole to slow down. For 2021, the projections are that China will grow at a rate of 9.2% as economy gets back to normal (IMF, 2020). The reality is, though, that future prospects are uncertain and difficult to predict, as we still do not know how the pandemic will affect the global economy. In the last years, China's growth rates have been set at around 6%, being 6.6% in 2018 and 6.1% in 2019 (see figure 5). In this analysis, a future growth of 6% will be assumed as the most likely average growth rate in the upcoming years and in line with the growth rates that China has experienced during the last years.

In the following table, the cumulative growth rate formula will be applied to compare China with the United States, Germany and Japan. Its aim is to compute how many years would take for China to surpass the three countries with the growth rate assumed.

Table 5. Years needed for China to surpass the United States, Germany and Japan in terms of GDP per capita.

	Growth rate	t= years
United States	6%	31.7
Germany	6%	26.15
Japan	6%	17.68

Source: own elaboration with data from the UNCTAD statistics.

According to the results, assuming a growth rate of 6% as the most likely scenario, China would pass the United States in more than 30 years, Germany in 26 years and Japan in almost 23 years. Thus, China will probably not equalize or achieve higher GDP per capita than US, Germany and Japan in the short/medium term.

In addition, to verify this issue from a different perspective, the formula will be applied to calculate at which rate would China have to grow to surpass the US, Germany and Japan by 2030, using 2018 as the base year.

Applying formula 4, the results show that for China to surpass the United States by 2030, it would need to grow by 16.6%⁸. In addition, in order to surpass Germany, the PRC would need to grow by 13.54%. Finally, to pass Japan it would need to grow by 11.79%. Such high growth rates are highly unlikely to happen even considering the growth rates

⁸ Cumulative annual growth rate (China, United States) = $\left[\left(\frac{59.4}{9.4} \right)^{\frac{1}{12}} - 1 \right] * 100 = 16.6\%$

that China has had during the economic reforms. Therefore, we can conclude that in the short term China will not surpass these countries with regards to living standards.

In this chapter, China has been analysed and compared to certain mature economies in order to better understand the position of the Chinese economy in relation to developed countries. As explained, even though GDP per capita has seen comparable higher growth rates in China along the years than that of the other countries analysed, China's living standards are far behind that of developed countries, as represented by the gap between China's GDP per capita and the one of the other countries. Afterward, the analysis has briefly explained the rate of employment in China, but then it was focused on productivity as the main driver for growth. Regarding the rate of employment, China has little room for improvement in this sense, as working population in China is decreasing and average wages are rising, therefore China in the future years will not be able to take advantage of its labour force, as it has done during the economic reforms. Thus, productivity is the key aspect for China to upgrade, as it is still very low when compared with the other countries. That is why the future of China relies on its ability to improve the efficiency of production of its workers, in other words, its ability to upgrade productivity. The analysis of the determinants of growth has been supported with some numerical forecasts and future prospects for the country. According to the results, China will not surpass any of the countries analysed in the short or medium-term in terms of GDP per capita, that is to say, their living standards will not surpass developed nations in the years to come. This results, lead us to the rejection of the hypothesis that China will surpass developed countries in the short-term in terms of GDP per capita.

V. CONCLUSIONS

As shown throughout this thesis, China has seen unprecedented growth since the start of the economic reforms back in 1978, when Deng Xiaoping developed a plan to shift the Chinese economy from an almost closed and command economy, towards a market economy. It is true that the outcomes China has achieved along the years have been noticeable, as the country has grown more than any other economy in the world.

Nevertheless, as demonstrated in the analysis carried out, China's economy is still far behind the mature economies analysed; United States, Germany, Japan and European Union (EU28). Analysing GDP and GDP per capita growth for China itself, we can mistakenly think that China will soon overtake advanced economies in terms of living standards, as its growth rates has been comparably higher than those of any other country in the world. Nevertheless, after deeply analysing and comparing the Chinese economy with other leading economies we can conclude that in fact, China is still far from catching-up developed economies, and that it needs further improvements in order to achieve its objective.

China is facing important challenges that are questioning China's ability to further grow. These include the problem of aging population that China is already facing as a consequence of the one-child policy initiated in 1980, the vast dissimilarities between inland and coastal areas in terms of population and wealth, the ongoing trade-war between the United States and China, and the recent outbreak of COVID19, which has hit the global economy. In the analysis it is mentioned that China needs to upgrade its productivity in order to keep its growth trend. China is already investing in that, represented by the high rates of expenditures in R&D that it is carrying out, which results in higher rates of innovation for the country, key for converting China in a developed economy.

The analysis leads us to the conclusion that China is still far from its objective, and that it will not equalize nor surpass developed countries in terms of living standards in the near future. China is currently facing severe challenges that need to overcome in order to keep its growing trend, and which makes the future of Chinese uncertain at this moment. In any case, the Chinese economy has de potential to further growth and to eventually having living standards in line with developed economies, but this will probably happen in the long-term, rather than in the short or medium term, and the country will have to rely on increasing its productivity to do so.

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