THE IMPLICATIONS OF CHINA'S ECONOMIC GROWTH FOR THE OIL SECTOR

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Abstract:

China, the most populated state on the planet, has experienced a spectacular economic growth after 1978, with a mean annual growth rate of GDP of about 10%. Thus, China has become the second largest world economic power. Economic development has entailed significant social-economic changes, increasing life expectancy and urbanization degree. At the same time, the power demand (oil included) has grown considerably and not before long, China has become the largest energy consumer and the second oil consumer in the world. But, being unable to ensure its increasing demands from internal sources, starting with 1993, China has become a net importer of oil. A good indicator for oil consumption increase is the big number of vehicles that drive along the China's roads. As the driving force of the economy, the meeting of energy demands is one of the main priorities of every state, but the access to resources may become increasingly difficult if they start to dwindle, while the technological progress lags behind.

Keywords*: China's economic growth, increase of oil consumption, competition for oil*

China's economic growth

After a long period of stagnation, between 1860 and 1949, followed by a moderate growth during the interval 1949-1978 (*Mao Zedong* period), China has seen a spectacular economic boom following the reforms initiated by *Deng Xiaoping*, which focused on the opening to the foreign trade and on investment attraction (*Thomas, 2007; World Bank, 2012*). China, the most populated state of the planet (1.3 billion people), has become in 2010 the second largest economic power in the world, outgrowing Japan, and by 2020 it is also deemed to outgrow the United States (*Table 1*).

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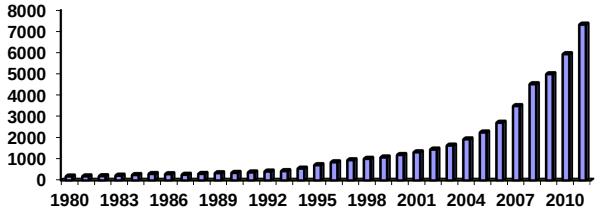


Fig. 1 China's Gross Domestic Product (billion dollars) (Source: World Bank)

According to the *World Bank*, China's GDP has increased from 189 billion dollars in 1980, to 7318 billion dollars (11347 billion dollars at the purchasing power parity) in 2011 (*fig. 1*). As far as the GDP per inhabitant is concerned, the increase was equally substantial, from 193 US dollars in 1980, to 5445 dollars (8466 dollars at purchasing power parity) in 2011. The mean annual growth rate of GDP during the interval 1980-2011 was about 10%.

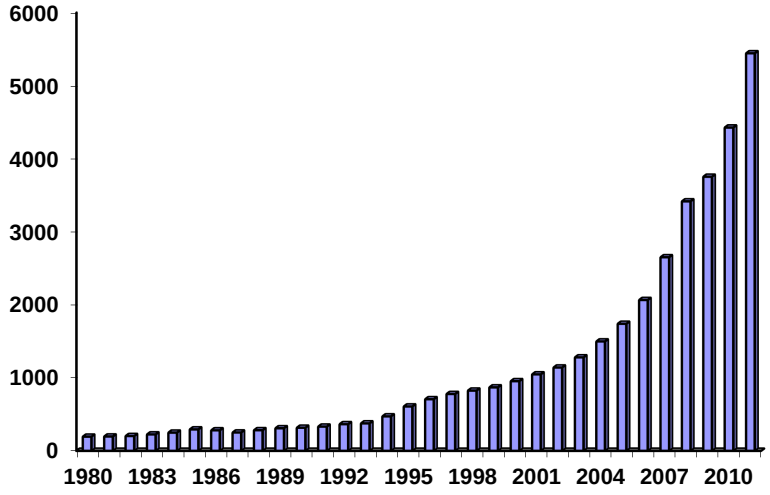


Fig. 2 China's GDP per capita(dollars) (Source: World Bank)

Table 1 Estimation of GDP increase (at purchasing power parity**)** (billion dollars)

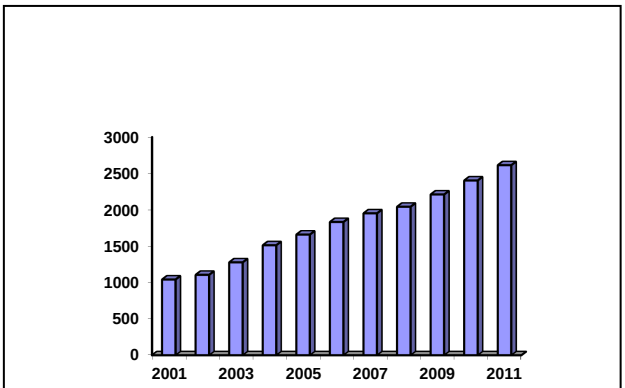
No.	***State***	***GDP 2011***	***No.***	***State***	***GDP 2017***	***No.***	***State***	***GDP 2050***
1.	USA	15094	1.	China	20198	1.	China	59475
2.	China	11347	2.	USA	19745	2.	India	43180
3.	India	4530	3.	India	7042	3.	USA	37876
4.	Japan	4381	4.	Japan	5305	4.	Brazil	9762
5.	Germany	3221	5.	Germany	3692	5.	Japan	7664
6.	Russia	3031	6.	Russia	3296	6.	Russia	7559
7.	Brazil	2304	7.	Brazil	3146	7.	Mexico	6682
8.	France	2302	8.	Great Britain	2810	8.	Indonesia	6205
9.	Great Britain	2287	9.	Franța	2612	9.	Germany	5707
10.	Italy	1979	10.	Mexic	2253	10.	Great Britain	5628

Source: World Bank (for the data of 2011), IMF (for the estimation of 2017) and PricewaterhouseCoopers (for the estimation of 2050)*;*

Energy consumption growth

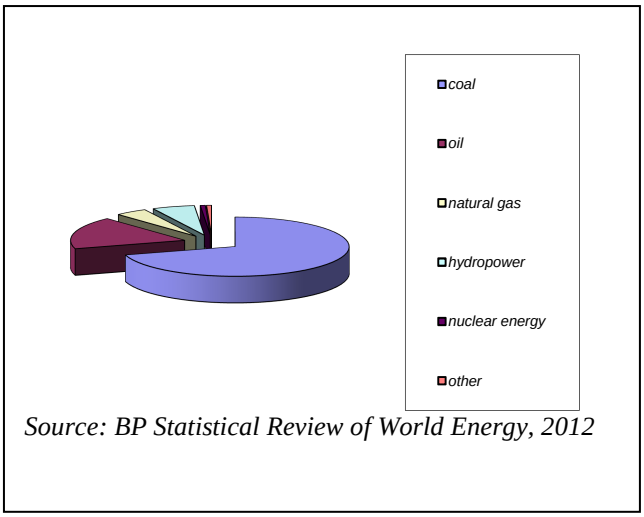
The rapid development of the last decades has brought about essential changes in all spheres of social-economic life. Thus, according to the China Statistical Yearbook (2012), during the interval 1982-2010, the population grew from one billion to 1.3 billion people, life expectancy increased from 67.7 to 73.8 years, urbanization degree from 20.0% to 49.7%, while the illiteracy rate diminished from 22.8% to 4.1%.

This social-economic dynamics has created an increasing pressure on energy consumption, the demand becoming higher and higher, especially in the fields of industry and transportation (fig. 3). Thus, in 2009, according to *International Energy Agency*, China became the largest energy consumer in the world. In 2011, China consumed 21.3% of the world energy. Today, China is considered to consume 49.4% of the world's coal production, 11.4% of the oil production, 4% of the natural gas production, 19.8% of the generated hydropower, 3.3% of the power produced in the nuclear stations and 9% of the energy coming from renewable sources (*BP Statistical Review of World Energy, 2012*). Over the interval 2001-2011, the mean annual growth rate of energy consumption was 9.7%.



Source: BP Statistical Review of World Energy, 2012

Fig. 3 China's energy consumption (million tons of oil equivalent)



Source: BP Statistical Review of World Energy, 2012

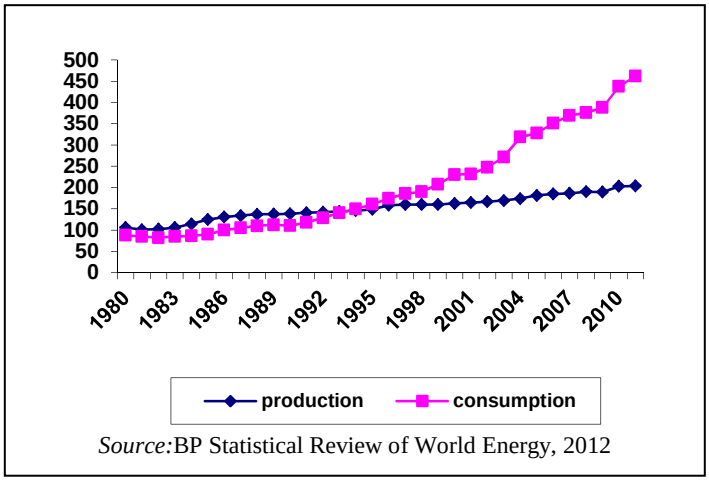
Fig. 4 Structure of China's energy consumption in 2011 (%)

At present, due to its large coalfields, lying mainly in the northern part of the country, China covers about 70.4% of its energy demand. The rest of the energy is supplied by oil (17.7%), hydropower (6%), natural gas (4.5%), nuclear energy (0.7%) and other sources (0.7%) (*fig. 4*). Because of the high coal production (2.7 billion tons, i.e. 45% of the world coal yield), the oil share in China's energy consumption is significantly lower in comparison with the global scale situation, which is 33.1% (*BP Statistical Review of World Energy, 2012*).

China's oil production and consumption

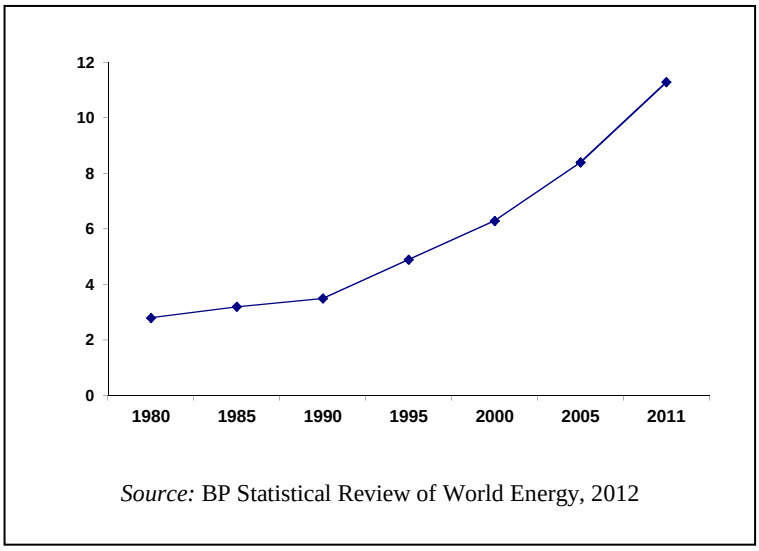
According to the *BP Statistical Review of World Energy* (2012), China's oil production has grown from 106 million tons (2.1 million barrels per day) in 1980 to 203.6 million tons (4.1 million barrels per day) in 2011, which means almost half as much (*fig. 5*). On the other hand, oil consumption increase during the same period was much more substantial, from 88 million tons (1.7 million barrels per day) to 461.8 million tons (9.7 million barrels per day). At present, China pumps 5.1% of the global production and consumes 11.4%. It is estimated that according to the present tendencies, in 2030 China's oil consumption will reach more than 16 million barrels per day, although the production will diminish (*International Energy Agency*, *2012*). Unable to keep up with the growing consumption needs of the population and economy, starting with 1993 China has become a net importer of crude oil.

The increase of oil consumption in China over the period 1980-2011 was very high in comparison with other developed states. Thus, during this time, Japan and Germany have seen a drop of oil consumption, while the United States has experienced a moderate growth. On a global scale, consumption increased by 1.1 billion tons (from 2.9 billion tons to 4 billion tons). If we refer only to the interval 2000-2011, the consumption growth rate was 100% in China, and only 15 % at global scale. As far as per capita consumption is concerned, in 2011, it was 2.6 tons in the United Stated and only 0.34 tons in China, i.e. nearly over seven times lower. If the states of the world would approach, even to a lesser extent, the per capita consumption of the developed countries, this would put a huge pressure on the world market and the oil price.



*Source:*BP Statistical Review of World Energy, 2012

Fig. 5 China's oil production and consumption (million tons)



Source: BP Statistical Review of World Energy, 2012

Fig. 6 China's share in the world oil consumption (%)

The increasing number of motor vehicles

A good example in what regards the increase of oil consumption is the growing number of Chinese registered motor vehicles. It is no wonder that this country has become the largest vehicle manufacturer in the world, with a production of more than 18.4 million items in 2011 (*OICA, 2012*). Over the period 1980-2010, the number of privately owned and public vehicles (cars, trucks, buses) travelling on public roads has increased from 1.8 million, of which 350000 passenger vehicles, to 78 million, of which 61.2 million passenger vehicles (China Statistical Yearbook, 2011). In the last decade, the number of new registered vehicles has risen from 3.3 million in 2002 to 15.2 million in 2010 (*Fig. 8*).

In 2030, China could get to possess between 247 million and 287 million vehicles (cars, trucks, buses), which, together with the motorcycles and rural vehicles, would consume between 354 million and 497 million tons of oil (*Wang et al., 2006*). By contrast, in 2005 the Chinese vehicles consumed only 108.6 million tons of oil, which accounted for a third of the national consumption.

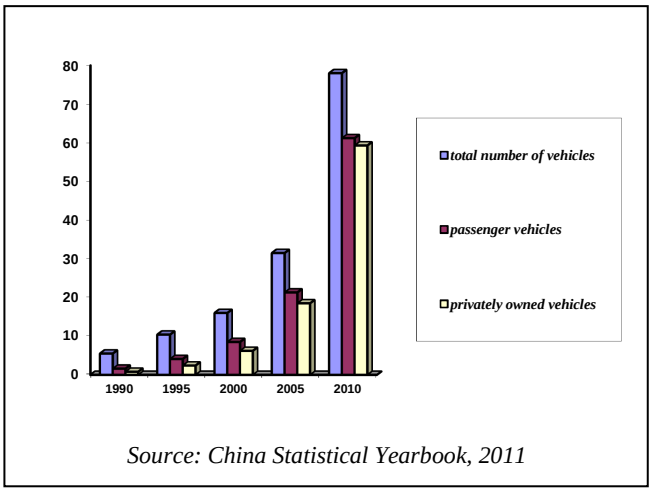


Fig. 7 The number of motor vehicles in China (million items)

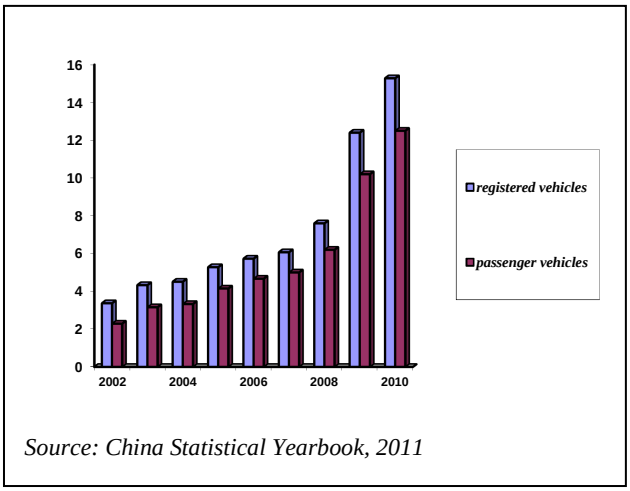


Fig. 8 New civil vehicles registrations (million items)

China's oil strategy

Being the driving force behind the economy, meeting the energy demand is undoubtedly one of the main concerns of the Chinese state. Any crisis in oil

supply, triggered by domestic or external factors, may lead to serious social-economic unbalances. In order to avoid such undesirable situations, China strives to implement a number of measures, as follows: the development of new oil fields, the involvement in international oil exploration and processing, the diversification of import sources and transportation routes, and the slackening of its dependence on the oil sources of the Middle East.

The identification of new domestic oil fields is a must, inasmuch as the large Chinese active fields, *Daqing*, to the northeast, with a production of 800 thousand barrels per day in 2011, and *Shengli*, in the Bohai Gulf, accounting for 547 thousand barrels per day, have already reached maturity, being in operation since the 1960s (*U.S. Energy Information Administration, 2012*). In the last few years, the Middle East, and especially Saudi Arabia, Iran and Oman, has been the major import source, followed by Africa, mainly Angola, which is the third African oil producer (*tab.2*). The slackening of the dependence from the Middle East, which by 2011 ensured 51% of the imported oil, is also motivated by the solid political and military influence of the United States in the region.

The orientation to Kazakhstan and Russia, which have become more and more important partners to China, has resulted in the implication in various oil projects, including pipelines construction. Thus, the first transnational oil pipeline, coming from Kazakhstan (Atasu-Alashankou/Xinjiang Uygur A.R.) became operational in 2006, while the first oil pipeline from Russia (Skovorodino-Mohe-Daqing) was put into use in early 2011. The Russian oil pipeline, which enters the Chinese territory near Mohe, is a branch of the ESPO pipeline (Eastern Siberia-Pacific Ocean), meant to transfer the Russian oil to the Asia-Pacific market.

Over the last years, the state-owned Chinese oil companies (CNPC, Sinopec) have been actively engaged in many regions of the world, and especially in Africa, Central America and Latin America. Within the context of world economic crisis and taking advantage of political and financial support, Chinese companies have become strong competitors of the large multinational oil companies. The substantial loans offered by some Chinese banks, as for instance the 10 billion dollars loan granted by China Development Bank to the Petrobras Company of Brazil in 2009, were crucial for the access of the Chinese companies to oil or infrastructure projects in Angola, Sudan, Venezuela, Brazil, Chad or Equatorial Guinea (*Christie et al, 2009*). In September 2008, Venezuela, one of the world's largest oil producers, signed a series of energy co-operation deals with China, that oil exports could rise threefold by 2012 to one million barrels per day (*BBC News, 25 September 2008*).

Table. 2 China's crude oil import sources

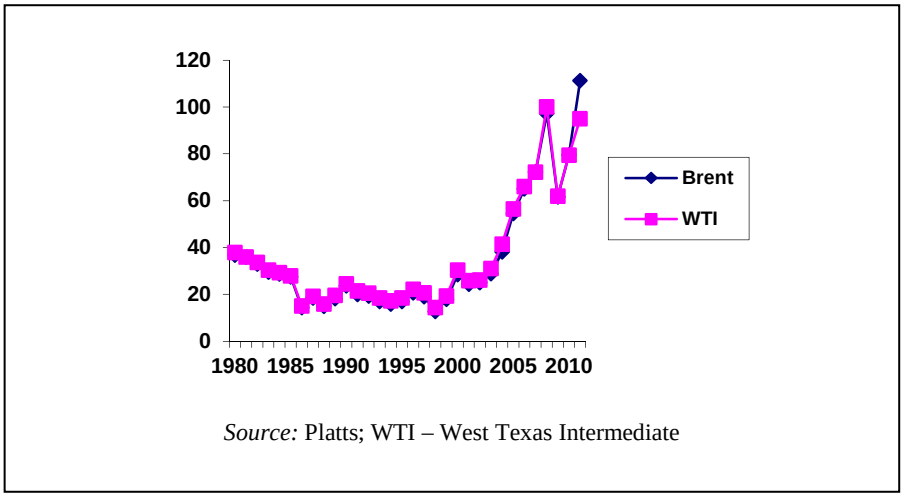
No.	1993	%	No.	2003	%	No.	2011	%
1.	Oman	26,1	1.	Saudi Arabia	16,6	1.	Saudi Arabia	19,7
2.	Indonesia	25,6	2.	Iran	13,6	2.	Angola	12,2
3.	Yemen	10,6	3.	Angola	11,1	3.	Iran	10,9
4.	Angola	7,8	4.	Oman	10,2	4.	Russia	7,7
5.	Papua New Guinea	5	5.	Sudan	6,9	5.	Oman	7,1
6.	Libya	4,5	6.	Russia	5,8	6.	Iraq	5,4
7.	UAE	3,6	7.	Vietnam	3,9	7.	Sudan	5,1
8.	Malaysia	3,3	8.	Congo Republic	3,7	8.	Venezuela	4,5
9.	Australia	2,6	9.	Indonesia	3,7	9.	Kazakhstan	4,4
10.	Singapore	2	10.	Malaysia	2,2	10.	Kuwait	3,7

Source: UN Comtrade/Christie et. al (for the data of 1993 and 2003) and EIA (2011*)*

Increasing competition for oil

From the energy point of view, the future geopolitical evolutions will depend to a large extent on two essential factors: the level of oil resources and the technological development in the field of energy. In the event that resources will not be able to meet the increasingly oil consumption needs and the technological development will not make consumption more efficient, we might expect a more aggressive competition in terms of the access to the world's oil resources. Judging by the current reserves and consumption rates, we can estimate that oil reserves will last for 54 years, of which 10.8 years in the United States and 9.9 years in China. The world trade in oil and oil products was 54.6 million barrels per day in 2011, which means an increase by 2% in comparison with 2010. China's share in this trade was 6.65 million barrels per day (5.08 million barrels of crude oil and 1.57 million barrels per day of oil products), i.e. an increase by 13% (*BP Statistical Review of World Energy, 2012*). In 2030, according to the *International Energy Agency*, China's dependence on foreign oil will be 80%.

In this context, crude oil prices may record large fluctuations, which may have negative effects on economy, public transportation and agriculture. How much will contribute China to oil prices increase is still debatable, however this is a fact.



Source: Platts; WTI – West Texas Intermediate

Fig. 9 Oil prices (dollars per barrel)

In conclusion, could be China's economic growth a subject of concern? This is a difficult question to answer. The fact is that China's social-economic dynamics of the last decades has induced significant changes at international level, including in the oil market. Also worrying is the fact that environmental protection in the context of the increasing consumption of fuels, both in the power plants and in the vehicles' engines, leads to an increase of CO_2emissions, which have a negative impact on climate change. Last but not least,, this economic growth is subject of concern for the large energy consumers and oil companies, both in terms of energy supply and its price. The emergence of this state as a major global competitor may be beneficial, boosting the interest for energy saving and for the development of new technologies.

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