***In 2020, China is expected to become the world’s number one economy in terms of GDP. How realistic a prediction is this?***

  It is a commonly held belief among many economists that by 2020, China will have overtaken the U.S. as the world's largest economy, in terms of its GDP. While there can be no argument that China's growth has been astronomical since the beginning of the reform period in 1978, there is some debate as to when, or indeed if, China will regain its place as the planet's number one economy.  The first area of contention is the method used to measure a country's economic output. Different measures produce different predictions for the timing of the crossover: "...China's economy will exceed that of the U.S., in purchasing power parity terms, in less than ten years. Per capita, the point in time when China catches up with the U.S. is much further into the future, thirty to forty years from now, although the coastal areas...with a population exceeding that of the U.S., may catch up in as little as two decades." (Holz, 2008 p19) One could also use the nominal total GDP of the economy, (China: $5,878,257 million, U.S.A.: $14,526,550 million in 2010, from which China's widely-reported overtaking of Japan as the world's second largest economy was calculated in 2011 (Moore, 2011). The focus of this investigation, however, will not be the exact date on which China will overtake the U.S. in terms of its GDP, howsoever it be measured, but whether the notion of China doing so is within the next 10 to 20 years is realistic.

 So, will the growth we have seen over the past 30 years (above 9% annually for the last 3 decades (Lin, 2012 p16) continue at its current pace and remain sustainable, or is China's economy at risk of collapse at any time, as some experts believe? (Lin, 2012, p9) Furthermore, what are the challenges and barriers to growth facing China's economy in the next decade, and can they be overcome? These questions will be addressed in the present paper.

**Structural Change**

  On the one hand, there is much evidence to suggest that China's growth is indeed sustainable, and its economy is on track to usurp the U.S. as the largest economy in the world. In a very simplistic model, economic growth is determined by three main factors: "the increase of various production factors, especially capital;... the upgrading of industrial structure from low-value-added industry to high-value-added industry; and...technological innovation." (Lin, Cai, and Li, 2008 p13) China fits all three of these criteria, hence the consistently high level of growth it has experienced. The pre-reform strategy of developing heavy industry gave China the capital, industrial and human capital base from which to move into light industry and manufacturing, which makes up 75% of the overall secondary sector (Naughton, 2007 p156), and with further reforms and development, we will see more workers move from low-added-value sectors to high-added-value production sectors (Lin, Cai and Li, 2008 p15), increasing economic growth further. This is perhaps most eloquently explained by Naughton (2007, p149):

 "Productivity increases because existing jobs are upgraded and, equally as important, because workers leave existing jobs in the traditional sector and move into modern sectors, where productivity and the potential for future growth are higher. Thus the long-term growth of output is inevitably associated with important structural changes."

  Therefore, the structural change in sectoral employment since 1978 has seen China move from an inefficient agricultural economy to a thriving centre of industry and manufacturing. This has coincided with the worldwide structural shift caused by globalisation, which is reducing barriers to international trade, allowing China to capitalise on its new-found advantage in light industry and manufacturing, particularly after China's accession to the WTO in 2001: "Globalization changes some of the patterns of structural change. As China emerges as a favored site for certain types of manufacturing worldwide, and as it clusters certain stages of Asia-wide manufacturing networks, it clearly can continue to expand its manufacturing sector for a longer period than if it were not so integrated into world industry." (Naughton (2007, p156) As the economy develops further, we can expect to see a continuation of this sectoral employment movement, further increasing China's productivity as workers move up the value-added chain.

**Investment and Technology**

 This structural change, however, is dependent on adequate investment, which is one of the most important factors in driving China's (or any economy's) continued growth. Since reform began, capital investment has made up around 40% of China's GDP (Lin, Cai and Li, 2008 p15). This leads to an increase in productivity and efficiency, and creates an incentive to gradually move up the value-added chain. While this has not all been down to domestic investment (FDI is about 4% of GDP over the past decade (Naughton, 2007 p145), as China has run a considerable trade surplus for many years, it does not rely on FDI to fund its domestic investment initiatives. Furthermore, it would be prudent for China to reduce its dependence of FDI further, as the probability of continued export-led growth from FDI activity and that of FIEs is likely to reduce. (Whalley and Xin, 2006 p20).

  Growth is dependent on technological advancement, and this is where China holds somewhat of a paradoxical advantage: that of 'backwardness.' Technological research is expensive, and there is no guarantee that successful research will possess any kind of commercial value. China can buy technology from developed countries, at a much lower cost than performing its own domestic Research and Development. "...the cost of introduction is no more than 30 percent of the original R&D cost. So, taking into account the cost of all the failed experiments, it would be less than 1 percent of the R&D cost." (Lin, 2012 p14) A lack of technological advancement would mean a lack of industrial structure upgrading (Lin, Cai and Li, 2008 p13), leading inexorably to economic stagnation. The fact that China has invested heavily in capital and technology stands it in good stead to maintain its current level of growth going forward. Furthermore, as Lin, Cai and Li describe (2008, p18), the fact that the central and western regions of China lag far behind the eastern, coastal regions in terms of development, actually presents an opportunity to increase growth yet more, as the potential for growth in these regions far out weighs that in the already-developed east. As the cost of transferring technology within a single economy is much lower than cross-border transfers, the barriers to growth are lower in these relatively undeveloped areas.

  Another form of investment that is absolutely necessary to fuel economic growth, and one that is somewhat removed from market forces and more a tool of government policy is that of infrastructure investment. Without adequate transport, communications, education and power supplies an economy simply will not grow. The level of infrastructure investment needed to sustain rapid growth is believed, by some development theorists, to be around 6% of GDP (Naughton, 2007 p345) and China has been at that level for the best part of two decades: "after 1993 investment in...physical infrastructure jumped to around 6% of GDP, and after 1998 infrastructure investment took another jump to a level around 8% of GDP. This is quite a substantial investment effort in comparative terms." (Naughton, 2007 p345) Again, this supports the notion that China's growth is indeed sustainable at its current rate, and so is on course to overtake the U.S. by 2020. An example of China's infrastructure investment efforts is the expansion of the Beijing Subway System, with total investment of more than RMB 300 billion to build 10 new lines, and more than double the total track length in 2010 by 2015.

The notion that increased education drives economic growth is an important one, particularly if an economy is relying on technological innovation to increase its output. Without a highly educated workforce, these innovations will be impossible to make domestically, and even if they were purchased from abroad, the workers would lack the skill-sets and technical knowledge necessary to successfully derive the full economic benefit from the new technology. China, however, has developed a relatively high level of education, with 6 million university graduates in 2009 ([www.universityworldnews.com/article.php?story=20090409203634912](http://www.universityworldnews.com/article.php?story=20090409203634912)), and although this statistic is subject to the same urban-rural inequality issues as the rest of the economy (to be discussed below), the overall outlook is that the standard of education in China is likely to keep up with the demand for skilled labour.

**Economic Development Comparisons**

 An interesting tool to predict China's economic health in years to come would be to analyse current government policy. The most recent Five Year Plan, covering 2011-2015 gives us an idea of how the government intend on pre-empting potential issues and challenges. [Spence's analysis (2011)](http://www.thenextconvergence.com/op-eds/18-op-eds/213-changing-chinas-growth-path) points to a gradual decrease in reliance on export-led growth, by increasing domestic consumption. This is vital in order to maintain GDP growth as western economies look to reduce their trade deficits. This shift was predicted by Whalley and Xin (2006), who suggested that a decline in FDI-related activity would leave a gap which only greater domestic consumption could fill. Perhaps one will be able to divine the future of the Chinese economy by looking at traditional development theory and the experiences of other economies further on in the process than China.

  According to Naughton (2007, p140) we can expect China to follow the patterns of structural change already experienced by earlier-developing East Asian nations, for example Japan, Taiwan and Korea. Holz (2008, p2) argues that "China's economic growth pattern matches standard growth patterns identified by theories of development and trade. These are structural change, catching up, and factor price equalisation." This would indicate a further decade or so of rapid growth, which will then begin to slow as labour force growth decreases, along with rural-to-urban movements. This is not to say that China's economic development is guaranteed to follow the same path, but it is fair to make this prediction based on the evidence of strong capital investment, combined with inherent advantages such as the huge supply, and therefore relatively low cost of, labour, and the economies of scale derived from such a large domestic market.

**Barriers to Growth**

 However, while there is much evidence to suggest China's growth will continue, one can be sure that it is not a forgone conclusion, and the road to becoming the world's largest economy is strewn with pitfalls and dangers. Firstly, external influences may yet determine the future of the Chinese economy. For example, should the global economic crisis continue to deepen, and the Eurozone collapse, China could potentially lose a great deal of export revenue, by which much of its growth has been led. Furthermore, conflicts with Taiwan, or with Western powers over issues such as North Korea or China's increasing influence in Africa could undermine international trade.

 "Northeast Asia has been relatively peaceful for the past forty years. The post-Cold War era, however, will bring new security challenges to the Asia-Pacific region. Perhaps the most serious of these challenges involves China's expected emergence as a major economic power in the near future…China’s recent economic growth signals a change in East Asia’s distribution of power and draws renewed attention to Chinese foreign policy." (Denny, 1994 p149).

The threat of China is felt by the traditional world superpowers, and recent accusations of 'cyberterrorism' levelled at China both the West's nervousness, and possibly China's increasing confidence in its military capabilities. China’s domestic characteristics of forcible policing and suppression of opposition make it comparatively likely to use force to achieve its political goals. (Denny. 1994 pp149-150). However, while China remains such an important trade partner for the Western powers, it is difficult to see a conflict being settled through violence and war, however economic sanctions are a possibility. These would obviously hinder economic growth in China.

**Demographics and inequality**

 Perhaps China's biggest challenge comes from its own demography. The one-child policy of the 1970's was, at the time, a controversial yet effective method of managing population growth in China. In 2017, according to Kyang (2010), "(China's) economically-active population is expected to peak at 990 million." As long as the economy can continue to provide the employment, this could be an advantage in the medium-term. However, looking further forward, improved healthcare means that people will live longer than before, and due to the one-child policy a whole generation of only children will be left with two parents, and possibly four grandparents to care for, with no siblings to help share the burden. As Kyang concludes, the economy would then enter a stage where growth slows. Again, one can see this phenomenon already occurring in Japan, where hugely increased life expectancy has led to a prolonged period of economic stagnation.

  Another demographical challenge is the continued restriction on movement of labour maintained by the government's refusal to completely abolish the legacies of the 'hukou' system, namely the household registration system which imposes restrictions on the migration of rural workers. Abolition of these policies would see greater efficiency in the economy, and also help to reduce the level of inequality between rural and urban areas: "...The government should...encourage labor movement from agriculture to rural enterprises, urban industry and service sectors as labor productivity in these sectors continues to be much higher than in the agriculture sector." (Fan, Zhang and Robinson, 2003 p374) Indeed, the urban/rural divide is further complicated by sub-divisions thereof (Wang, 2011): the rural labour market can be split broadly into agricultural and non-agricultural, while the urban market is divided by formal and informal sectors, a consequence of the hukou system of registration, and both productivity and wage levels vary dramatically between each group. Zhao (1999, cited in Wang, 2011) calculates that a rural agricultural labourer would benefit from a 13.0% increase in household income by moving into the non-agricultural sector, and a 49.1% increase by migrating to the urban sector. Lin argues that this continued inequality could have implications beyond the economy, leading to social disharmony and civil unrest due to the lack of public provision in rural areas, such as schools, medical care and sanitation. "As Confucius once said: "Inequity is worse than scarcity.""(Lin, 2012 p17). The government's fear of civil unrest and other social consequences of unbalanced and rapid urbanisation could go some way to explaining their refusal to lift restrictions on migration and intersectoral movement (Spence, 2011). However, according to [Xinhua News Agency (2011)'s report on China's 12th Five Year Plan](http://news.xinhuanet.com/english2010/china/2011-03/05/c_13762230.htm), a key target is to increase the urbanisation rate to 51.5%, up 4 percentage points from the previous target. Whether or not they intend to use structural reform to guide this process is unclear, but it does represent a step in what many economists believe to be the right direction to maintain rapid economic growth.

  The inequality in China's economy can, in part, be explained as an unavoidable aspect of economic development, as illustrated by the Kuznets curve, whereby inequality increases to a point as an economy develops, but over time will start to reduce as resources become more equally distributed and poorer sectors of the economy start to benefit from increased social welfare derived from higher tax revenue on economic activity.

 There is also a school of thought that holds a slowdown in China's economic growth to also be simply a natural result of economic development, subject to the laws of diminishing returns. As capital accumulates, each additional unit contributes less to economic output. The gains from structural change will also become smaller, as resources become more efficiently allocated. (World Bank, 1998, p21). This would suggest that without intervention, the probable outcome would be a decline in GDP growth.

**Environmental Issues**

 Aside from structural constraints, China will also encounter other factors which may affect its growth path. One such factor is the issue of the environment and natural resources: "China's rapid growth has consumed massive energy and resources. In 2006, with 5.5% of the world's GDP, it consumed 9% of the world's oil, 23% of alumina, 28% of steel, 38% of coal and 48% of cement." (Lin, 2012, p17) While this level of raw materials consumption is necessary to fuel the rapid expansion of the economy, it cannot be sustainable. The Report by Ministry of Science and Technology (MOST) estimates that China’s total primary energy consumption will more than double between 2000 and 2020, with heavy reliance on coal. This will only make worse urban China's already very serious pollution problem and contribution to global warming. China has been the largest greenhouse gases emitter, ahead of the United States of America. In 2008, China contributed 22% of global emissions, followed by the US with 20% of emissions. (Nersesian, 2010).

   A World Bank study conducted in 1997 (cited in Naughton, 2007, p494) estimates the total cost of externalities from urban air pollution, including healthcare costs and lost work days from chronic bronchitis to be more than $20 billion per annum. The same study puts the economic cost of air and water pollution combined at $54 billion per year, roughly 8% of GDP. The video below demonstrates the human cost of the environmental degradation caused by China's rapid growth and industrialisation:

The Chinese government has recognized that the cost of energy resources and detrimental effects on the environment and society caused by an export-driven economy are too large to be sustainable. Simply relying on investment and export-led economic development has caused low overall input-output efficiency and low wages in China (Zhou, 2009).  Agenda 21 is a broad plan of action that addresses the issues of environment and development around the world, which was established by United Nations Conference on Environment, and Development (UNCED). Agenda 21, based on China's specific national conditions and paying attention to population, environment, and development, sets up a strategic goal of sustainable development that can promote coordinated development of economy, society, resources, and environment (China's Agenda 21.1992 ).

Furthermore, China enacted the Renewable Energy Law in 2006. The law, which promotes renewable energy development in all aspects, states that China gives priority to the utilization of renewable energy, and that the government will promote the establishment and development of markets for renewable energy by establishing quantitative targets and relevant policy measures. According to this law, the Chinese government’s national targets require that renewable energy contribute 10 percent of the total primary energy by 2010, and 15 percent by 2020 (Zhou, 2009). There may come a time, as China's economy moves further along the Environmental Kuznets Curve (similar to the Kuznets Curve illustrated above, but with environmental degradation substituted for inequality) when the Chinese government decide to sacrifice GDP growth in favour of environmental concurs, resulting in 'green' GDP growth, which may well be several percentage points lower than the current rate of growth (Holz, 2008, p21).

**Corruption**

 Opinion surveys of government ofﬁcials and ordinary citizens in recent years identify corruption as one of the top public concerns. Each year, researchers at the CCP’s Central Party School, which trains senior and mid-level ofﬁcials, survey between 100 and 120 ofﬁcials enrolled at the school. From 1999 to 2004, these ofﬁcials listed corruption as either the most serious or second most serious social problem. The State Council’s Development Research Center asked 4,586 business executives (87 percent of them in non-state ﬁrms) in late 2006 to rate their local ofﬁcials in terms of integrity. Almost one-quarter (23 percent) of the respondents said that their local ofﬁcials were “bad,” and 12 percent said they were “very bad.” (Pei, 2007)

According to the ‘ Corruption Perceptions Index 2011’, which was collected by Transparency International (TI), China is marked 3.6 and ranked 75th out of 182 countries and territories. (A country/territory’s score indicates the perceived level of public sector corruption on a scale of 0 - 10, where 0 means that a country is perceived as highly corrupt and 10 means that a country is perceived as very clean.)

**Statistics from ‘ Corruption Perceptions Index 2011’ By TI 2011.**

[**http://cpi.transparency.org/cpi2011/results/**](http://cpi.transparency.org/cpi2011/results/)

This statistics index draws on assessments and opinion surveys carried out by independent and reputable institutions. These surveys and assessments include questions related to the bribery of public officials, kickbacks in public procurement, embezzlement of public funds, and the effectiveness of public sector anti-corruption efforts. Perceptions are used because corruption is to a great extent a hidden activity that is difficult to measure, particularly as sources of private incomes become more diverse. Over time, perceptions have proved to be a reliable estimate of corruption. (Corruption Report, 2011)

Obviously, the score can reflect partly how serious the situation the Chinese government has to face. China suffers from widespread corruption and it still rings true today just as it did in the past. Such means of corruption may include backdoor deals graft, bribery, embezzlement, nepotism, patronage, and statistical falsification. Although the Chinese government does not provide aggregate data, frequent press reports indicate that this practice is present in many industries and sectors. From Pei’s article, the direct costs of corruption in 2003 could be as much as $86 billion—the indirect costs are incalculable. (Pei, 2007)

  Empirically speaking, corruption is closely linked to bureaucracy’s involvement in the economy, especially in a period of economic change. In China, bureaucracy remains entrenched in the economy, even after reform. The state sector controls the largest and essential industries such as energy, banking, communication and transportation. Meanwhile, the state also tried to promote privatization in a lower industry level, as a kind of reform. Such a hybrid economy provides the possibility for corruption because government involvement in supposedly privatised industries remains. Although the government has stepped up efforts to combat corruption and graft, there is still much to be done. Consequently, “ Corruption has not yet derailed China's economic rise, sparked a social revolution, or deterred Western investors.  But it would be foolish to conclude that the Chinese system has an infinite capacity to absorb the mounting costs of corruption,” Pei wrote.  “Eventually, growth will falter.”(Pei, 2007). Corruption will lower the rate of Chinese economic growth by increasing the managerial cost, social inequality and leading to much inefficiency.

**Conclusion**

  Having studied in-depth all of the factors affecting China's future growth path, it is fair to conclude that China does indeed have the potential to continue its recent history of dynamic growth for the next few decades, which, following current trends, would have it overtaking the U.S.'s position as the world's largest economy by 2030, possibly earlier (a conclusion echoed by Lin, 2012 p19). However, this prediction carries a caveat: in order for this to occur, the Chinese government must overcome a not-insignificant number of obstacles, encompassing both external pressures and intrinsic challenges currently exacerbated by internal policy. In particular, this refers to the structural barriers to a truly integrated labour force and continued intersectoral inequality imposed by the legacies of the hukou system; matters of international relations and security; environmental pressures; and costs associated with corruption and inefficient fiscal policy. The fact that the government at least recognises these issues leads one to believe that the necessary steps will be taken. The pace of reform will dictate how successfully China navigates these obstacles, but given its history of implementing reform, dealing with inflationary pressures and using huge structural upheaval to its advantage (simply compare the relative success of China's reform policies to those of the former Soviet states, including Russia), China has the experience, knowledge and desire to continue on its current path. This former 'Sleeping Dragon' is very much awake, and ready for the work that lies ahead.

**Bibliography**

Chen, Y., 1992, *China's Agenda 21*, [ONLINE] Available at <http://www.unescap.org/drpad/vc/conference/ex_cn_1_ca21.htm> [Accessed 3 December 2011]

Denny, R. 1994, *Hegemon on the Horizon? China's Threat to East Asian Security* Cambridge, MA: The MIT Press

DIE Country Working Group, 2008,*Efficiency in buildings: a contribution of China to mitigate climate change*, [ONLINE], Available at:

[http://www.die-gdi.de/CMS-Homepage/openwebcms3\_e.nsf/(ynDK\_contentByKey)/ENTR-7BDE2T?OpenDocument&nav=expand:Research%20and%20Consulting\Projects;active:Research%20and%20Consulting\Projects\ENTR-7BDE2T](https://online.manchester.ac.uk/webapps/Bb-wiki-BBLEARN/x) [Accessed 3 December 2011]

Fan, S., Zhang, X., and Robinson, S., 2003. *Structural Change and Economic Growth in China*. Review of Development Economics, 7(3): 360-377.

Holz, C. A., 2008, *China’s Economic Growth 1978–2025: What We Know Today About China’s Economic Growth Tomorrow*, World Development, 36(10): pp 1665-1691

International Monetary Fund. 2011. World Economic Outlook Database. [ONLINE] Available at: <http://www.imf.org/external/pubs/ft/weo/2011/02/weodata/index.aspx.> [Accessed 27 November 2011].

Kyang, K.-H., 2010. *Ageing population may yet halt China's rise*. [ONLINE] Available at: <http://english.chosun.com/site/data/html_dir/2010/01/25/2010012500748.html.> [Accessed 27 November 2011].

Lin, J.Y.F., Cai, F., and Li, Z., 2008. *The China Miracle*. 3rd ed. Hong Kong: The Chinese University Press

Lin, J.Y.F., 2012. *Demystifying the Chinese Economy*. 1st ed. Cambridge: Cambridge University Press

Moore, M.. (2011). *China Is The World's Second Largest Economy*. [ONLINE] Available at: <http://www.telegraph.co.uk/finance/economics/8322550/China-is-the-worlds-second-largest-economy.html.> [Accessed 3 December 2011].

Naughton, B., 2007. *The Chinese Economy: Transitions and Growth*. 10th ed. Cambridge, MA: MIT Press

Nersesian, R.L., 2010, *Energy for the 21st century. A comprehensive guide to conventional and alternative sources*. Second edition, M.E.Sharpe,Inc.

 Pei, M., 2007. *Corruption Threatens China’s Future*, Carnegie Endowment Policy Brief No. 55 [ONLINE] Available at: <http://www.carnegieendowment.org/2007/10/09/corruption-threatens-china-s-future/g4> [Accessed 3 December 2011]

Pei, M., 2007, Carnegie Endowment for International Policy [ONLINE] Available at: <http://news.bbc.co.uk/1/hi/world/asia-pacific/7039383.stm> [Accessed 2 December 2011]

Rennack, D., 2005, CRS Report for Congress. China: Economic Sanctions

Spence, M., 2011. Changing China's Growth Path. [ONLINE] Available at: <http://www.thenextconvergence.com/op-eds/18-op-eds/213-changing-chinas-growth-path.> [Accessed 27 November 2011].

Wang, X., and Piesse, J., 2010, *Inequality and the Urban-rural Divide in China: Effects of Regressive Taxation*, China and World Economy. 18(6): pp36- 55.

Wang, X., 2011, Lecture Notes L7: The Chinese Labour Market, *ECON30101, The Chinese Economy,* The University of Manchester, unpublished.

Wang, X., 2011, Lecture Notes L8: Growth Accounting and Growth Potential, *ECON30101, The Chinese Economy*, The University of Manchester, unpublished

Whalley, J., and Xin, X., 2006, *China's FDI and Non-FDI Economies and the Sustainability of Future High Chinese Growth*, NBER Working Paper No. 12249. [ONLINE] Available at: <http://papers.nber.org/papers/w12249> [Accessed 3 December 2011]

World Bank Staff, 1998. *China 2020: Development Challenges In The New Century*. (Volume 1). 1st ed. s.l.: World Bank Publications

 Xinhua News Agency. (2011). *Key Targets of China's 12th Five Year Plan*. [ONLINE] Available at: <http://news.xinhuanet.com/english2010/china/2011-03/05/c_13762230.htm.> [Accessed 3 December 2011].

Zhou, D., 2009, *The Process of Sustainable Energy Development in China*.  Web Commentary,[ONLINE] Available at http://carnegieendowment.org/2009/08/07/process-of-sustainable-energy-development-in-china/9rx [Accessed 3 December 2011]

Zhou, M. and Lin, J.. 2009. University World News. [ONLINE] Available at: <http://www.universityworldnews.com/article.php?story=20090409203634912.> [Accessed 29 November 2011].