



LUND UNIVERSITY

School of Economics and Management

Master programme in International Economics with a focus on China

The rebalancing of China's economy

Does the rebalancing to a higher reliance on household consumption correlate with economic growth and how can the transition be achieved?

A quantitative research

Michael Waldschmidt

gic13mwa@student.lu.se

EKHM51

Master thesis, (15 credits ECTS)

June 2014

Supervisor: Christer Gunnarson

Examiner: Carl Benedikt Frey

Abstract

The last decades China was highly relying on export led growth, which drove the economy to enormous GDP growth rates. Due to the financial crisis in 2007/2008, its trade partners were losing the ability to import as much as before and China's GDP growth started to decline. The reason for that is the neglect of the domestic consumption rate of private households. This paper examines the correlation between a higher reliance on household consumption and economic growth. Furthermore, it is analysing quantitatively how the rebalancing can be achieved. The two different models were testing the important changes of the wage level, the education system and the financial system and its correlation with the household consumption rate.

The results show that it is highly recommended to rebalance the economy to a higher reliance on the household consumption rate. The regressions show that a further focus on exports would lead to a decline of GDP growth. With a change to a focus on capital intense production, a better education system will develop, which will eventually lead to higher wages and with it the increase in the household consumption rate.

Keywords: Rebalancing China's economy, household consumption, export led growth strategy, quantitative research, GDP growth rate

Table of Contents

1.	Introduction	5
2.	Chinas developing model and export led growth strategy	7
3.	Previous research	10
3.1	Economic growth strategies	10
3.2	The case of China	11
3.3	The rebalancing from an export led growth model to a higher reliance on Household consumption	16
4.	Methodology and data	20
4.1	Hypotheses	20
4.2	Unspecified models	21
4.3	Methodology	21
4.4	Data	23
4.4.1	Data description	23
4.4.2	Data Testing	23
4.4.2.1	Model 1	24
4.4.2.2	Model 2	25
4.5	Specified econometric model	25
4.6	Variable definition	26
4.6.1	Dependent variables	26
4.6.2	Independent variables	26
4.6.2.1	Model 1	26
4.6.2.1	Model 2	27
4.6.3	Control variables	27
4.7	Limitations	28
5.	Empirical Results	29
5.1	Export led and consumption led growth	29
5.2	Influence factors on Household Consumption	31
6.	Discussion	33
6.1	Household consumption increase as an answer for growth decline	33
6.2	How can the rebalancing achieved?	36
6.3	Further research and alternative strategy	38
7.	Conclusion	39

Acronyms

GDP	–	Gross Domestic Product
HC	–	Household consumption
IMF	–	International Monetary Fund
OLS	–	Ordinary Least Squares
PH	–	Private Households
PPP	–	Purchasing power parity
SOE	–	State owned enterprise
VIF	–	variance inflation factor
WTO	–	World Trade Organisation

List of Tables

Graph 1: Global GDP growth

Table 1: Regression Model 1: 1979 – 2007

Table 2: Regression Model 1: 2008 - 2012

Table 3: Regression Model 2

Table 4: VIF Test Model 1: 1979 - 2007

Table 5: VIF Test Model 1: 2008 - 2012

Table 6: VIF Test Model 2

Table 7: BPT Model 1: 1979 - 2007

Table 8: BPT Model 1: 2008 - 2012

Table 9: BPT Model 2

Table 10: Correlation Consumption divided into rural and urban

Table 11: Correlation Model 1: 1979 - 2007

Table 12: Correlation Model 1: 2008 - 2012

Table 13: Correlation Model 2

List of Equations

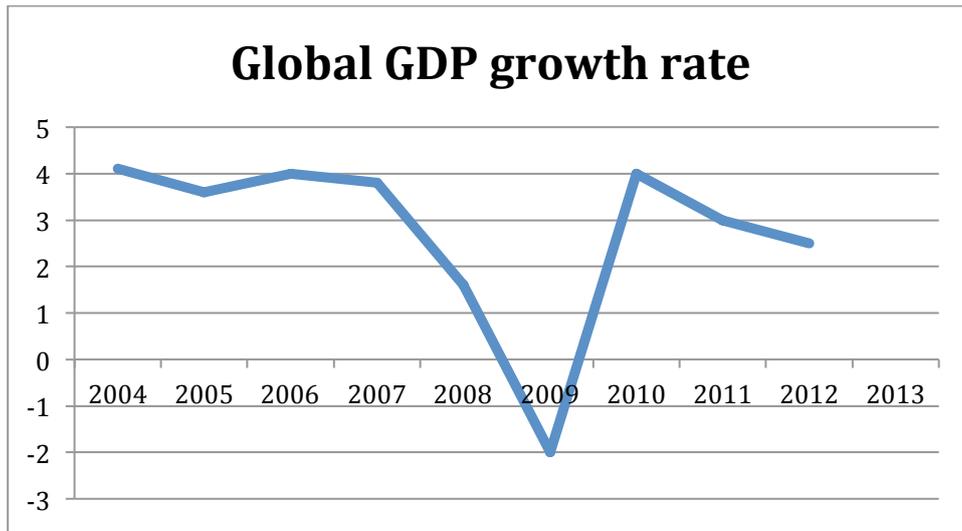
Equitation 1: OLS-Regression

Equitation 2: Skedasticity

1. Introduction

In 1949 China established the People's Republic of China and the country went through unusual and turbulent process of development to achieve their today's economic position in the world. The country was passing through a revolution, socialism and the Maoist-radicalism before it started reforming its economy. Since 1979 the country has shown miraculous changes in their economy, which caused phenomenal performance of their economic growth due to the implementing different reforms, policies and institutions. Starting in the 1980's, the country has been expanding its integration in the world economy due to its enormous increase in international trade and the reliance on labour-intensive production (Naughton, 2007). Due to an average annual growth rate of 10% until 2005 (Rawski, 2001), more than half a billion people got lifted out of poverty (World Bank, 2012).

Chinas' Gross Domestic Product (GDP) in 2012 accounted for \$US 8.228 trillion and was ranked the second biggest economy in the world (World Bank, 2014.A). The enormous increase of the country's GDP is referable to the strong reliance on export led growth, which can be reflected in their export-surplus in 2008 that accounted for approximately 7.9% (Zhu and Kotz, 2010). In the last years the export growth rate of China has declined, which has raised the question, if this strategy is leading the country in the right direction. A major concern in China is the low domestic consumption level of the population. In comparison to other countries in East and South Asia, in which the household consumption rates account for 50% of GDP, China only has a rate of 15-20%. Through a decline in the world economic GDP growth rate, which is shown in the graph 1, it could lead to a further decline of Chinas economic growth rate in the future (Dollar, 2013). The financial crisis in 2007-2008 had an enormous impact on total GDP and its growth rates. In 2009 the global growth rate was approximately 5.8% lower than in 2007. The numbers have improved by 2010 where the growth rate rose to be around 4% annually. After this year the growth declined by 1,5 % until today (Dullien, Kotte, Marquez and Priewe, 2010). With this economic environment China was not able to rely any longer on their export led growth strategy. However, the string focus on exports by the Chinese government made it difficult to develop a consumption market. Due to missing institutions and policies, such as property rights, incentives of the population were missing, which could have led to alternative types of economic activities and the will of participating in the domestic economy (Acemoglu, Johnson and Robinson, 2001; Dollar, 2013).



Graph 1: Global GDP growth (annual %), (World Bank, 2014.C)

The purpose of this paper was to analyse an alternative to the export led growth strategy of China. It has tested if the rebalancing to a higher reliance of the household consumption would lead to a more assured economic growth. The analysis is based on an OLS Regression with the usage of panel data. The areas that have to be adjusted in China's economy have been discussed and presented. The research is inspired by Lardy (2013) and Dollar (2013), who are discussing changes, which are including different areas in the economy. The main focus is addressing changes implications of the education system and higher wages and its pressure on the domestic economy. Also the "Hukou System", which is about the migration of the rural population to urban areas, is hindering the development of a stable household consumption rate. Furthermore, the impact of changes in the financial system will as well be taken into account.

2. Chinas development model and export led strategy

The following Chapter gives a broad overview of the Chinese development model since the establishment of the People's Republic of China in 1949. Moreover, it gives a summary of the country's export led growth strategy, policies and institutions that are accused for causing the low household consumption rate.

Due to a high reluctance of the foreign powers in the west and their negative attitude towards communist governments, China developed a closed-door strategy. Therefore, there were no barriers for the People's Republic of China, which was founded in 1949 to adopt socialist institutions and policies. Since 1953 the country was following the Soviet five-year plan model, which could be seen as the starting point of Chinas rapid growth model. The country was still very poor but the good management of their human capital and the development of the education system induced the economy to grow. Until 1979 the economy has been under the total control of the government and was focusing on a maximization model of their investments into a heavy industry based on labour-intensive production (Naughton, 2007).

No market economy, no property rights and the lack of other institutions are considered to be the main factors that have triggered the need for economic change back in 1978. Ironically the political structure was the one that has helped the economic structure of China to become what it is today (Naughton, 2007). Now the introduction of the 10-year plans started, which involved heavy investments in infrastructure, such as railroad and new harbours that were much needed if to push the exports even further. The economic growth accelerated and the miracle of China began. Enormous growth rates not comparable with any other developing country have been achieved (World Bank, 1993). These growth rates were based on a copy of the Japanese post-war strategy, which was using its low cost exports to boom the economy. Also other South East Asian countries like Thailand, Vietnam, Taiwan, Malaysia and Singapore were following this idea. The low wages of these countries, due to missing institutions and policies in combination with the undervalued currency, made it very cheap for western countries to trade with Asia, which made the export to become the major indicator of Chinas growth and hindered a development of a decent household consumption rate (Heinberg, 2011).

The West was suggesting many countries to change their highly government controlled planned economy to a free markets that would enhance the growth rate even further. As a result many Eastern European countries have followed the advice and changed their economic model overnight but due to missing institutional framework and the lack of policies, their economic growth did not improve but on the contrary has declined (Naughton, 1994). On the contrary China used a different strategy to manage the transition, which is called the step-by-step approach (Jefferson and Rawski, 1994). This approach included two different parts: first phase from 1980 until 1992, so called the “Market Approach” followed by the second phase the “Property Approach” (Lau, 2000).

The bottom-up reform in China from the beginning on formed the core features of the countries’ transition. During the first period from 1980 until 1992, the government mainly focused on autonomy decentralization, which has introduced different responsibility systems. Since no property rights were enforced, the population had only little incentives to perform well in their jobs. The first change in the direction of property rights was implemented in 1980, which changed the collective farming to a “Household Responsibility System”. As a result the farmers were from now on allowed to keep their products and revenues, which led to an increase of the annual growth of agricultural outputs by 7.6% annually. However, the new law did not influence the right of property for these farmers. Families that were allocated to a certain amount of land, which size differed by the number of family members, were allowed to use the ground, but only on a base of a 15-year contract in the beginning, which increased up to 30-years after a couple of years (Lin, 1988). However, around 80% of families were still living in rural areas, which made it the biggest industry sector in China (Perkins, 1984). The next step was the reshaping of company laws, which started in 1986 with the “Management Responsibility System”. From now on Chinese companies were allowed to manage their output-levels, their production processes and their market prices. Through these new regulations companies were able to develop more efficient production approaches, which resulted in higher capacities and a reduction of transaction costs. The next improvement was the possibility to be able to compete on a market, which forced the companies to have a higher focus on development and research of their products. In combination with the responsibility system the enterprises were now allowed to use foreign expertise to improve their market positioning. The major difference of the business environment in China to the Western-style model was the remaining large influence of the government. The government was still able to refuse certain business models of newly

developed companies, especially business proposals, which were focusing on trade with foreign countries, employment or financial management (Jefferson and Rawski, 1994). Due to this power China was still entirely focusing on an export led growth strategy and neglected the importance of the domestic consumption (Dollar, 2013)

In the second period from 1992 on that is called the “Property Approach”, the government decided to implement major changes in property rights and established a financial market with a domestic stock market. In 1994 the government introduced policy banks to support the implementation of institutions and policies (Jefferson and Rawski, 1994). Institutions are necessary for an economy to develop because they are the informal and formal rules, which define the actions of the population and with it set up transaction and production costs. Furthermore, they give the population the possibility to be an active member on the market (North, 1991). These institutions, as for example property rights, which is the most important one, were therefore introduced in 2007 (North, 1991; Greif, 2004). From now on China was able to call itself a transition economy (Jefferson and Rawski, 1994).

North (1991) described property rights as the most important implementation by China since the transition started, because they are needed to create a stable market that brings us to today’s problem. With the delayed introduction of property rights, incentives were held back for the population to gain higher living standards, which was harming and still is harming the household consumption rate in China. Since the country was always focusing on export led growth it is now facing a major decline in its economic growth rates. The reason for that is the decline of the average global GDP. Now one of the possibilities to secure Chinas growth is to increase the household consumption rate (Dollar, 2013). Therefore, the question of this paper is; does the rebalancing to a higher reliance on household consumption have a direct influence on economic growth and how can this transition be achieved?

3. Previous research

In the following chapter the ideas of different authors on how the export led growth model could be seen as a reason for Chinas economic decline will be discussed. Furthermore, different changes that could lead to a higher household consumption rate will be presented.

3.1 Economic growth strategy

The belief that trading between countries is the key to economic growth could be seen by looking at the following facts, where firstly, 30 % of produced products and services are traded in-between different countries and secondly, the biggest economies in the world are as well the nations that promote export the most (Krugman, Obstfeld and Melitz, 2012). The three biggest exporters that form the most important economies and show an enormous export surplus are China, the United States of America and Germany (World Bank, 2014). Therefore, it appears that if to increase the economic growth countries should consider trade and with it a surplus of exporting goods and services (Krugman, Obstfeld and Melitz 2012).

Irwin Douglass (2005) has pointed out that trade between countries had already become a major indicator for economic stability in the 19th century. During the Napoleonic wars a major tool of nations was to prevent opponent nations to trade whereas France tried to encourage other European countries not to trade with Britain, while Britain imposed blockades against France. Therefore Britain started raiding American cargo ships to maintain their supply of goods that were needed in the country. President Jefferson declared a trade blockade between them and hoped that their opponents would suffer more than America itself. Unfortunately, the outcome was a higher decline of economic growth in America than in Great Britain and the two nations started a war fourteen months later.

The Ricardian Model simply explains that countries that trade are in favour to maintain or increase their economic growth, which supports Chinas idea of relying only on exports (Krugman, Obstfeld and Melitz, 2012). David Dollar and Arrt Kraay (2004) are pointing out that trade leads to on the one hand to benefits for some developing countries that are catching up with industrialised countries, but on the other the rest of the developing world are even falling further behind than they already are. The reason for that is the better positioning of rich countries that can make poor countries depend on them, which gives them the opportunity to exploit the poor countries. The Ricardian model however, accurately shows

that everybody has the possibility to gain from trade and that it eventually will lead to global welfare (Krugman, Obstfeld and Melitz, 2012). Bela Balassa (1963) used data from the post-World War II period and compared the trade relations between Britain and America. Confirming the argument of Irwin Douglass (2005) above, that both countries were dependent on trade, he shows that even countries with enormous differences in their size of economy can both benefit from trade. The British labour productivity was much lower in most of the economic sectors than in America, which gave America the overall advantage. Nevertheless, the amount of exports in both nations accounted for almost the same amount during that period.

A comparative advantage is the key element of Ricardian model that assures that both trading partners will benefit from exchange of goods (Krugman, Obstfeld and Melitz, 2012). To have the ability of producing a product or service with lower marginal- and opportunity costs than the competitors' gives the country an advantage to trade their product. It has however been argued that the rich country is most likely to have a competitive advantage in every sector in comparison to poor developing countries because the distribution of income is not included in the model (Dornbusch, Fischer, Samuelson, 1977). Nevertheless, it is proven that even if a country has a higher efficiency in an overall production of every good in comparison to another country, both parties still gain by exchanging goods, as long as the relative efficiency of the different sectors are divergent (Krugman, Obstfeld and Melitz, 2012).

3.2 The case of China

In the case of China its comparative advantage has shaped China's success in exporting goods (Rodrik, 2006). The low labour cost in developing countries, which by some economists is seen as a problem for trading with rich western countries, is especially in the case of China, the reason for the efficient gain in economic growth and wealth. Even during the financial crisis of 2008 China's focus on labour intensive production enabled the country to grow with enormous speed and pushed it to one of the leading economies in the world. The enormous current account surplus of China has not only an impact on the exchange rates of the two trade partners but it also affects the world interest rate and the global relative price level of traded commodities and with it the current account deficit of other global economies. (Bhattarai and Mallick, 2013).

The Chinese strategy of using low labour costs as a comparative advantage to achieve a trade surplus is effecting not only the Chinese future it also affects the whole world. With the joining of the World Trade Organisation (WTO) the country is participating in flattening the world. Thomas Friedman (2007) explains this phenomenon with a “technology-fuelled” global environment in which all governments and companies are adapting each other’s development stages. This would minimize the different comparative advantages to zero. The low labour costs of the Chinese economy are an example of that. These low costs are forcing other developing countries to decrease their production expenditures as well to be able to compete with China. Due to this problem these countries are often even forced to reallocate their entire production to China itself. Money that could be used for investing in higher technology or education has to be used to cover costs to be able to have a competitive cheap selling price (Davies and Vadlamannati, 2011). Mexico was the last country that said yes to the Chinese joining of the WTO, because it would harm the Mexican job market and the export relationship with the United States. Anita Chan (2003) is defining China as the bottom in the “race to the bottom” of the global economy. China is not only lowering the ability of other countries to compete with others, it also lowers the labour standards of every country.

During the early 1980’s Chinas economy started integrating intensely its participation on the global market. The annual growth rates of international trade accounted for approximately 17.5%. Due to the change of an entirely labour intensive production in classical sectors like foot wear and apparel goods to a production more based on the skill level, China managed to increase their trade ratio to almost double in 10 years up to 35% between 1993 and 1994 (Lardy, 2002). In 1996 more than 50% of Chinas exporting products were based on processing operations resulting from imported parts and components (Lemoine and Ünal-Kesenci, 2002). Every economy generates or exploits new technologies and knowledge until a certain level and China used that knowledge for its impressive growth, which is mainly attributed to their trading of technology intense manufacturing. Amighini (2005) describes that the catching up of more sophisticated and high-tech products would help countries to increase their growth rates. So far China showed that the reliance on export led growth can lead to enormous growth rates with up to 14.2% (World Bank, 2014.B). However, other countries that are not as developed and focusing on the similar product sectors were suffering through Chinas entering of different market sectors, because they were not able to compete with its export led growth strategy.

The government of China is focusing on a substitution strategy of their exporting products, which does not only harm developing countries, it harms the developed west as well. An example of that is the substitution of solar-panels, which harmed especially Germany and other European countries, which were not able to compete anymore with the Chinese production of that product. The reason for that is the following of the “anti-dumping” clause, which forbids the substitution by the government to lower selling prices. To protect the companies in this sector, these countries were forced to implement trade barriers, which were harming China as well (Chaffin, 2013). These actions can be referred to the Prisoner’s Dilemma, in which two competitors harm each other instead of cooperating with each other, which would lead both parties to a better position (Rapoport and Chammah, 1970).

The export growth strategy of China, is not only harming other countries, it is harming itself as well. The rising wages in the last years indicate that China is close to reaching the “Lewis turning point” (Zhang, Yang and Wang, 2011). Due to the support of unlimited cheap labour from the agricultural sector, the growth of the modern sector is possible. The low living standards in the rural areas of China, which still account for 50% of the population, is the reason why they can pay as low wages as they do. However, through different administrative changes enhanced by the government, like the one child policy, the structure of Chinas population is changing and is reducing the cheap labour surplus (Bloom and Finlay, 2009). The reserve of employment surplus in 2013 accounted for approximately 150 million people, but will fall to 30 million by the year 2020, which will eventually lead to the crossing of the “Lewis turning point”. If this point is reached the current strategy of China to use cheap labour to be competitive on the export market will no longer be of value and will force China to change its strategy (Das and N’Diaye, 2013).

Due to the enormous growth rates of China the average income of the population increased, which indicates an overall higher wealth of the country. Due to the decrease of cheap labour, the population is forced to develop and improve their skills and knowledge to be competitive on the domestic market. This will lead to a higher need for education and push China in the position where it will have to start focusing on high technology products, which cannot be managed by using unskilled workers (Lou and Zhu, 2008). To continue the export led growth model the government has to invest in education, to base the export not on labour intensive production anymore, but rather focus on more advanced and sophisticated production (Rodrik, 2006). Furthermore, that switch to a more technology based production will lead to

a higher pressure on other developing countries, especially in Asia to focus more on education as well. Due to the occurring increase of income averages in these countries, it will lead to a higher wealth level in the world (Lou and Zhu, 2008). Through this change developed parts of the world, such as Europe and America, are forced as well to apply changes concerning their expenditures in education and infrastructure development. China has already started catching up with the education. In the Pisa Test results, including mathematics, reading and science, Shanghai has been placed number 1 in the world ranking (OECD, 2013).

Irma Adelman (1984) argues that trade is needed to accomplish the task of economic growth. However, it has to be distinguished between two different models. On one hand a model that is intensively relying on exports but with decent domestic market consumption. And on the other hand a model in which exports are the only source of growth, which will lead to a decreasing unemployment rate because the demand is much higher when the trade market is not only the domestic market but rather the entire world. China has used that export led growth strategy and achieved enormous growth rates (Naughton, 2007).

The downside of a strategy, which is of an export- and investment driven, is keeping the consumption in China very low, because the prices are kept relatively high in comparison to salaries. The high savings that occur through the strategy are flowing into cooperation's and the government that invests heavily in infrastructure instead of increasing the domestic consumption. Chinas' trade surplus is causing problems with low prices for international trade partners and through the price inflation major problems on the domestic market. An undervalued currency is the reason for the inflation, which is dangerous endeavour for the population, in which only a small percentage can afford basic needs. China from the outside looks like a very good example for economy growth, but Chinas' success was so far based on the suffering of the consumption of the population (Heinberg, 2011). However the main success of western parts of the world like the U.S. or Europe was based on their household consumption (Barro and Sala-I-Martin, 1990). The Chinese government is aware of problems that came along with adopting the Japanese growth model and implemented various policies to encourage the domestic consumption rate. With the current focus of China, the rest of the world has to gain economic power again to be able to import more Chinese products or China will face an even further decline in their growth rate (Heinberg, 2011).

According to David Dollar (2013), the Chinese leaders considered the need of rebalancing the economy and use more domestic consumption instead of mainly relying on exports. The Chinese external-surplus as a share of GDP has fallen immensely in the last years and indicates a strategy change. It would involve a decrease of relying on international demand and instead an increase in the household consumption in China. Dollar is comparing China with its East Asian neighbours, Japan, Taiwan and South Korea and their similar real PPP (purchasing power party) and GDP in their early development stages. However, China demonstrates a major difference in its early stage development. The average household consumption of the analysed Asian countries ranged between 60 - 70% of GDP, which declined to around 50% when they reached Chinas present situation. So, at the beginning the growth models in other Asian countries relied to a larger extend on a growing domestic market. China's domestic consumption in comparison accounted for 15 - 20% less than their neighbours (Dollar, 2013). This strategy made China to the powerhouse and increased its influence to a major global player. Now China is able to compete with other strong economies like Germany or the United States and created various challenges and opportunities for these countries (Bergsten, Freeman, Lardy and Mitchell, 2008). Since 2008 the world's economic strength was constantly much lower in comparison to previous years. Between 1948 and 2007 the average GDP growth rates accounted for 2.99% until 4.28%. In 2008 it dropped to -2%, recovered until 2010 through the different capital support, but it is now declining yearly (World Bank, 2014.C). In 2012, Chinas growth rate decreased to 7.5%, which is the lowest rate since 2004 and the reason for it is the world economic crisis (World Bank, 2014.A). Since China is relying on the international demand it is recommended that China has to rebalance their economy to a higher focus on household consumption to maintain their economic growth (Dollar, 2013).

Due to a change away from the focus on labour intensive to a more capital intense production, China should be able to work against the problem of the global economic decline. Due to a skilled labour force that is needed to produce higher advanced technology, the wages and currency in China has increased, which made exports from China more expensive. The decline of Chinas cost-comparative advantage to sell products overseas, makes exports less profitable and gives manufactures the intension to sell their products on the domestic market. However, the rising wages in China indicate that domestic savings will be reduced, which will lower the investment ratio. If China is loosing its ability to use domestic savings to improve its trade position, for instance with subsidies, foreign countries will lower down

their FDI (Foreign direct investments), which will harm China even further and can only be saved with a higher domestic consumption (Frangos, 2013). Furthermore, a higher income level is positively correlated with the domestic consumption, which will support the rebalancing of an economy (Caroll and Summers, 1991). To achieve a higher wage level, which will occur due the production of more advanced products, the education level in China has to be improved. Richard R. Nelson and Edmund S. Phelps (1966) discuss the correlation between education and economic growth. According to their models, if the rate of return to education is increasing, the economy is increasing its technological progress. Furthermore, technological innovation is one of the major indicators that lead to economic growth, due a higher growth level in employment and income (Mowery and Rosenberg, 1995). Due to a positive correlation between income and consumption, the household consumption rate can be increased, which is supporting Dollars suggestions to rebalance Chinas economy (Jappelli and Pistaferri, 2010).

3.3 The rebalancing from an export led growth model to a higher reliance on household consumption

To achieve a rebalancing of Chinas economy towards a higher reliance on household consumption with higher incomes away from export led growth, the country has to reform institutional features. In comparison to its neighbours China had a very low household consumption rate. The difference between these two groups is the starting point of their economic growth. China directly started with focusing on exports with a various amount of investments in that field, while its neighbours started with a high domestic consumption and increased their export step by step. The current characteristics of policies and institutions in China are promoting exports and are discouraging household income and consumption (Dollar, 2013).

The key changes are addressing the “Hukou System”, which is limiting the migration of the rural population to urban areas (Dollar, 2013). The entire population in China is registered to a certain location, which is normally the place of birth. To change this location is very difficult and it infers with abilities like buying a house or the registration of a vehicle (Cheng and Selden, 1994). In 2012, approximately 38% were registered to be urban residence, but 52% were actually living there (Dollar, 2013). If a whole family would move to a urban city, they would loose their right of their land in the rural countryside, which gets allocated to

every Chinese citizen, since the Household responsibility system was introduced in 1981 (Lin, 1988). Often parents left their children behind, to live with their grandparents on the countryside to not lose that right (Cheng and Selden, 1994). The holding back of the population to migrate to the coastal cities, is causing a very low household income in comparison to other Asian countries. Furthermore, the saving rates of Chinese households are very high in comparison to others. (Wang and Wen, 2010). The distortion of the labour market through the “Hukou System” is lowering down the household consumption ratio, due to lower payments of migrant workers, which is below their marginal products (Dollar, 2013).

Furthermore, Dollar (2013) is focusing on another key institutional feature, which involves the large size of the state-sector. Before the reforms in China started the government literally owned all companies. Through the reforms, the privatization of small firms has started and opened up the incentives for private investments. Between 2004 and 2012, 41% of all fixed investments were allocated to state owned enterprises (SOE), which is much higher than in other Asian countries. SOE’s are operating in a few heavy industry sectors including oil or minerals and is very concentrated in the service sector such as finance telecommunication or air travel. These companies are competing against each other on the domestic market and against international companies. However, the competition between private companies is narrowed down to a limit and due to the enormous size variations to SOE’s and their government support, it is almost impossible to compete with them as well. The State owned sector receives a higher amount of profits, but almost no part of it is flowing back to the government that they could invest in to the public service sector. Almost all profits are re-invested into the company and less than 1% was paid as dividends to the government (IMF, 2011). Dollar (2013) says that one of the main reasons for the very low household consumption is caused by the fact that no income of capital is flowing back to the public.

The structure of the financial system in China is another influence factor for the domestic consumption of households (Dollar, 2013). The control of the government over interest rates is the reason for a repression of the financial system. A financial-repression is defined as a very-low or negative real return on deposits, which is the case for Chinese households. It is measured with the nominal interest rate of deposits in comparison to the price inflation of consumer goods (Reinhart, Krikgaard and Sbrancia, 2011). The result can be seen as tax and reduces existing credits. This tax is transferred from the households (savers), to the credit takers, which in China mainly are government controlled companies (Reinhart and Sbrancia,

2011). Households have high saving rates in banks with return-rate of almost 0%. This money is often lent with very low interest rates to SOE's and this indirect for household tax can be seen as a subsidy for investment for these companies (Dollar, 2013). The consequences are the miss allocation of capital and an over-investment in the government sector, which results an under-investment in the private sector. A liberalization of the banking system so that interest rates are calculated by the market situation could lead to a higher consumption rate of households in China (Lardy, 2013). Furthermore, the transition to a capital free market through a deregulation of the financial system and the implementation of the "rule of law", would encourage the private market and would lead to a important transformation that is needed to gain long term economic growth (Greenwood, 2001).

Lardy and Borst (2013) are also addressing the critical situation of the financial market and the very low rates on deposits. To overcome the repression in China and to lower down the very high investment rates the two authors argue that the increase of the borrow/lending rate of money would help China to adapt to the current global situation and would help rebalancing the market. Due to higher rates of deposit the consumption rate will be promoted. Therefore, it would directly interfere with the income level of households. Furthermore, the saving rates will be decreased and would enhance the population to consume more. If the interest rates to receive loans will increase, less capital-intensive development would occur, which lead to a higher will rate of job creation and with it to a higher income level.

Besides interest rates the current account surplus in combination with more market based currency in China would lead to an appreciation of the market. The idea of export led economy is based on a very large current account to increase the absorption of the domestic consumption (Claessens, Evenett, Hoekman, 2010). The lowering would have two effects on the rebalancing to a higher reliance of household consumption. The appreciation of the currency would reduce costs for imports and increase them for exports that would lead to a higher growth rate of imports and would cut down Chinas current account. The results for the domestic market would lower the profitability of the export led production and would transfer the investments to the service sector (Lardy, 2013). The higher living standards are enhancing opportunities to improve the security of households, which is promoting the willingness to consume (Ellis, 1997). Furthermore, a more flexible Chinese currency would mean less interference on the foreign-exchange-market and would lead to a perk for liberalizing the interest rates. Since 1994, the renminbi (Chinese currency) has been fixed to

the US-dollar, the value of which was increasing at the beginning. As a result this has led to a balancing of China's high productivity to the average of its trade partners. However, the value of the US-dollar started decreasing in 2001, which induced an undervaluation of the currency and resulted in an enormous increase of China's trade surplus (Makin, 2007). The renminbi is reaching more or less its equilibrium, but a detaching of the dollar would lower the export surplus even further and would force the production sectors to focus on the domestic market (Lardy, 2013).

In combination with the last mentioned policy changes, the reward system to motivate local governments has to be changed. To achieve the five-year macro planning of the government local officials were evaluated after the period to motivate them and the most successful one will receive a promotion. However, they were only evaluated on the basis of their realized growth level (Jin, Qian and Weingast, 2005). The achievement of a high growth rate is correlating with high investments, which is supported by cheap credits of banks. Since the government is in power to allocate the residence of citizens, local governments are able to bring the low cost rural population to their cities and employ them to achieve an even higher growth rate. The investments of local government enterprises are mainly flowing into infrastructure to attract foreign direct investments and to attract companies with a pleasant production base. They of course promote employment but investments into environmental protection and social services, like health care, would do the same and on top it would be beneficial for the population. Without the incentives system of government that is just based on the growth level and investments that attracts FDI, investments could be used to create jobs sufficiently, to enhance the household consumption (Dollar, 2013).

Overall, the literature review shows the importance of a switch to a higher reliance of household consumption to achieve long-term economic growth in China. My empirical analysis will test the above ideas as well as if the switch away from export led growth does actually cause economic growth.

4. Methodology and data

In the following chapter the method that is used to test the hypothesis will be discussed. The model will be described, which includes the definition of the depended, independent and control variables. Moreover, data management including categorization of variables and a summary of these will be presented.

4.1 Hypotheses

1. Due to the decline of the world economy, as discussed above, a rebalancing to higher reliance on household consumption is assumed to lead to an increase in economic growth.

2. An increase in Chinas exports is assumed to have a negative impact on the GDP growth rate after the financial crisis in 2008.

3. The increase in wages is assumed to lead to an increase in the household consumption rate.

4. The increase in the accessibility of loans for private companies and households is assumed to increase the willingness and opportunities to spend more on consumer goods, which will positively affect the household consumption rate.

4.2 Unspecified Model

These hypotheses will be tested upon the two following models. The first model will analyse the impact factors on GDP growth with the independent variable of the household consumption rate and exports. The second model will test the influence factors on the household consumption rate and including two independent variables; wage growth rate and received loans of private households.

Unspecified Model 1

$GDP\ growth = f (Household\ consumption / GDP, Wage\ growth, Education\ level, Exports / GDP, Growth\ in\ loans, Industry)$

Unspecified Model 2

$Household\ consumption / GDP = f (Wage\ growth, Growth\ in\ loans, Education\ level, Industry, Exports / GDP)$

4.3 Methodology

The two ideal methods to construct a study are divided into qualitative and quantitative. A qualitative research is used to answer questions, which are uncertain. It is often used in social science to define a problem or to develop a model to answer a problem. To study the outcome of a switch to household consumption focused strategy and its impact on economic growth in China, a quantitative method was used. The method uses numerical, empirical or statistical data to explain a certain phenomenon and to quantify the problem. It is based on statistical measurements to define people's attitudes, their behaviour and their performance, which can efficiently be transferred into charts and graphs (Bryman and Bell, 2011).

The selected topic has already been discussed by Dollar (2013) and Lardy (2013). However, the purpose of this research is to analyse the developed theories by using the quantitative research method. The analysis will be based on yearly numerical data conducted by the centre of Michigan University, which suits the quantitative research approach (All China Data Center, 2014).

The two main ways to conduct a quantitative research model are based on panel-data and cross-sectional data. Cross-sectional data is used to gather information in one certain time to analyse social conditions. However, panel-data includes figures to analyse the over time development of variables such as individuals, households, companies or governments. In this study the economic growth of China is analysed and therefore over panel-data is needed to analyse the yearly development of its economy (Wolldridge, 2010). From 1979 China managed to become the most rapidly growing economy in the world and will be therefore examined from that date on until the most recent statistical yearbooks¹ from China, including data until 2012 (Naughton, 2007). Furthermore, Macro economical statistics are used from 1979 – 2012.²

The empirical analysis was based on an Ordinary Least Squares (OLS) regression, which is used for estimations of parameters of linear equations. The parameters of the equations were defined by minimising the residual sum of squares. By squaring the residuals the impact of negative or positive values is eliminated. A normal model in an OLS regression looks as follows:

$$Y_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_n X_{ni} + \varepsilon_i \quad (1)$$

All regressions were run in Stata 12 a statistical program that analyses complex datasets. The coefficients of the regression will show their relationship to the dependent variable of the two models. Furthermore, the data was analysed on its consistency, multicollinearity and scedasticity, which is as well showing the relationship of the independent variables to each other (Burnham and Anderson, 2002).

¹ China Statistics Press 1980 – 2011, All China Center 2014, Michigan University

² China yearly Macro-Economics Statistics (National), All China Center 2014, Michigan University

4.4 Data

This section will describe and explain the data used in the models to answer the four hypotheses. In addition, the dataset will be summarized to get an overview about the development of the variables and the model. The outcome of the tests that were made to create a significant model is described as well.

4.4.1 Dataset description

The data used in this paper has been extracted from “China data online”³, which was conducted by the Chinese data center from the University of Michigan. The created dataset is based on the Chinese yearbooks from 1949 until 2012 as well as the national macro statistics provided by the China Marketing Research CO. According to Naughton (2007) the fundamental changes in China and the development of market with less communist integration started in 1979. Therefore, the dataset was minimized to the important years from 1979 until 2012, which gives 44 observations per variable (due to missing data, it was not manageable to integrate 2013). The final dataset included 34 different variables that were tested and suited for the two models used. Some of data was only available in total numbers, which led to the action of calculating growth rates of the specific areas that were needed to analyse the research question. To analyse the impact of the financial crisis on the development model of China, the dataset was modified for model 1. It was divided into two different sections. The first part was analysing China until the financial crisis in 2007 and the second part from 2008 until 2012.

4.4.2 Data testing

To create an expressive model several tests had to be done to receive significant outcomes of the hypotheses testing. The four main areas looked at were the general regression, the collinearity between the single variables, multicollinearity of the entire model and skedasticity. (The next two sections are only showing the tests of final model)

³ chinadataonline.org

4.4.2.1 Model 1

1979 - 2007

The first regression of Model 1 is including the years 1979 until 2007. It shows a high reliability of the X value to predict Y, which in this case is GDP growth. With a p-value 0.0073 the model has a very significant relationship between X and Y. R² gives an indicator for the number of variances of Y explained by X, which in this model is 37,19 %. In social science R² normally accounts for 20-40%, which leads to an acceptance on the model.

Model 1: 1979 - 2007	
Number of obs.	29
Prob>F	0.0073
R-squared	0.3719

Table 1: Regression Model 1 (extract)

Multicollinearity is tested by the Variance Inflation Factor (VIF), which tests the correlation of the all variables in the model. If the VIF is higher than 5 for one of the variables multicollinearity occurs, which means that the variable has already been explained by another one. Therefore the variable has to be dropped. In the case of Model 1 no multicollinearity appeared, which leads to assumption that all variables are explaining Y differently (Table 4).

To test the skedasticity the following formula can be used, which is analysing the scattering of the variances:

$$\begin{aligned}\text{var}(\hat{\beta}) &= \sum \left(\frac{x_i}{\sum x_i^2} \right)^2 \sigma^2 \\ \text{var}(\hat{\beta}) &= \frac{\sum x_i^2 \sigma^2}{(\sum x_i^2)^2} = \sigma^2 \frac{1}{\sum x_i^2}\end{aligned}\quad (2)$$

The so-called Breusch-Pagan LM test (BPT) shows if the null hypothesis could be rejected or not. In the case of Model 1 the p-value of the BPT is above 0.05, which indicates the result of homoscedasticity. That indicates that there is a consistent scatter of the used data and that the null hypothesis cannot be rejected (Table 7).

2008 -2012

The second time frame from 2008 until 2012, analysed with model 1 as well, is indicating a p-value of 0,3200, which is very high. As well the R² is very high, which accounts for 71,65 %. However, with the use of macro data a higher level can be accepted. Furthermore the timeframe is very small, which explain these high figures. As described in the previous section, the multicollinearity testing for this time frame shows as well a VIF around 5, which gives all variables an explanatory function (Table 5). Furthermore, the BPT indicates that homoscedastic occurs and that the null hypothesis can be rejected (Table 8).

Model 1: 2008 - 2012	
Number of obs.	5
Prob>F	0.3200
R-squared	0.7165

Table 2: Regression Model 1 (extract)

4.4.2.1 Model 2

Model 2 is analysing the entire timeframe from 1979 until 2012 and is accounting for a p-value of 0,0001, which shows a significant relationship between the X and Y variables. As explained above the use of macro data can lead to high R² outcomes, which in this case accounts for 70,16 %. The multicollinearity testing in Model 2 shows a VIF below 5, which indicates that all variables have an explanatory function (Table 6). The BPT indicates that homoscedastic occurs in Model 2 like it appeared in Model 1 (Table 9).

Model 2	
Number of obs.	34
Prob>F	0,0001
R-squared	0,7016

Table 3: Regression Model 2 (extract)

4.5 Specified econometric model

After the models are tested two specified models can be developed, which can give significant answers to the research question and the hypotheses.

Unspecified Model 1

$$GDP \text{ growth} = \alpha + \beta_i \text{ Household consumption / GDP} + \beta_i \text{ Exports / GDP} + \beta_i \text{ Wage growth} + \beta_i \text{ Education level} + \beta_i \text{ Growth in loans} + \beta_i \text{ Industry} + \varepsilon_i$$

Unspecified Model 2

$$\text{Household consumption / GDP} = \alpha + \beta_i \text{ Wage growth} + \beta_i \text{ Growth in loans} + \beta_i \text{ Education level} + \beta_i \text{ Industry} + \beta_i \text{ Total-Exports / GDP} + \varepsilon_i$$

4.6 Variable definition

The variables used in the regression are divided into dependent, independent and control variables. These will be described and their reason for choosing will be explained in the following chapter.

4.6.1 Dependent variables

The aim of this thesis is to analyse the influence factors of the rebalancing of an economy to higher consumption reliance therefore the economic growth has to be set as the depended variable in the first model. The Gross Domestic Product⁴ summarizes the total value of all commodities, which includes finished goods and services that are produced in one closed economy. Furthermore, it includes the total amount of private and public consumption, the government expenditures, investments and the total net-exports (Exports – Imports). The study covers the yearly GDP since 1979 until 2007 and from 2008 until 2012 (Karabell, 2014).

The second model used the total domestic consumption divided by total GDP as the dependent variable. This variable was used to measure the influence factors that have to be adjusted to achieve the rebalancing to a higher reliance to a household consumption.

4.6.2 Independent variables

The following chapters describe in a greater detail the four independent variables that were mainly used to test the stated hypotheses.

4.6.2.1 Model 1

In the Model 1 total household consumption divided by GDP was set as the independent variable to test weather it is interfering with the GDP growth or not. To test Dollars theory, that the “Hukou System” is inferring the economic development of China, the average household consumption was divided into the rural and urban population. However, because

⁴ GDP = Total consumption + government expenditures + investments + net-exports

of its high correlation of 98% and the multicollinearity of the entire model, it was summarized into total household consumption / GDP (Table 10).

The development of the export led growth strategy will be evaluated by the Exports/GDP from 1979 until 2012. Since Dollar (2013) reports that the senior Chinese leaders have already discussed how necessary it is to rebalance the economy away from export led growth towards a higher reliance on household consumption. The total exports growth rate is taken into account, to test if China already started rebalancing the economy and furthermore, how an increase in exports will affect the future growth.

4.6.2.2 Model 2

The total wage of the population, combining rural and urban, is set as the first independent variable in Model 2. As discussed in the literature review it is assumed that an increase in the wage level, which was very low in China due to their communist structure (Naughton, 2007), will have a positive effect on the household consumption rate (Jappelli and Pistaferri, 2010). However, it led to a high correlation between rural and urban wages, which consequently led to the need of combining them into one variable.

Lardy (2013) and Dollar (2013) have been discussing the theory of achieving the rebalancing of China's economy as a part of changing the financial system. The high investments of companies and high saving rates of private households are based on the very low rates on deposits and low possibility of receiving loans. Therefore, the growth rate of received loans was necessary to be taken into account.

4.6.3 Control variables

Variables such as education, the industry and Exports/GDP are being included in both of the models. Model one is using the two independent variables of model two, which are: wage growth and growth rate of received loans of private households. By including them it allowed us to test the direct interference with GDP growth.

The importance of a switch to a capital-intensive production to increase the wage level has been described by, for example, Frangos (2013). If to test their correlation the Cross Industrial Output has to be taken into consideration. The variable will be categorized into heavy and light industry whereas their total output value yearly that will allow us to see the correlation of the production strategy with wages, which could possibly interact with the wage level.

As mentioned above in the literature review, Richard R. Nelson and Edmund S. Phelps (1966) tested in their works that a higher level of education most definitely has an impact on economic growth. The percentage of the total population that is enrolled at a university divided into the yearly development is used to measure this phenomenon in Model 1. Model 2 is using three different categories of education to test their variance of impact on consumption that could assist in evaluating who has the biggest impact in the consumption rate. Furthermore, it will be tested if the level of education is correlating with the income level as described by Carroll and Summers (1991) in the literature review.

Furthermore, Model 1 includes the two independent variables of Model 2 as controls, which are the loans received of private household and the wage level. Therefore it can be analyzed if those factors are interfering not only with consumption rate but have a direct effect on Chinas GDP growth rate. In addition, Model 2 is using total export as a control variable, which is one of the independent variables of Model 1.

4.7 Limitations

There were many different things that exacerbated working on this project. The difficulties were mainly concerning the data collection for the model. The first problem when collecting the data was the language barrier. After a certain year, mainly mid 90's the yearbooks were entirely in Chinese and it was difficult to translate the data without having a Chinese background. Furthermore, the composition of different categories of the yearbooks made it impossible to gain a significant data. From year to year different factors were added or reduced, as for example, before 1979 there was no data available concerning the loans received by households: it was combined, with private companies and later even combined in total received loans. However, the data stopped being significant in the late 90's, which made

it impossible to include it in the model. Furthermore, the limitation of the small sample size from the financial crisis until 2012, which accounts only for 5 years, could have an influence on the accuracy and the outcome of the analysis. Above all, the project has been affected due to time limitation as only 10 weeks have been given for the entire project to be finalized and delivered.

5. Empirical Results

In this section of the chapter the empirical results are presented and are divided into the two parts of the research question. . Besides the outcome of the β_i - coefficients, which are describing their interference with the dependent variables, the correlation to each other was tested.

5.1 Export led and consumption led growth

The first section of this chapter is discussing the outcome of Model 1 which is addressing the main research question: Does the rebalancing to a higher reliance on household consumption have a direct influence on economic growth? Therefore, as described in the previous chapter, an econometric model with the dependent variable of GDP growth was developed. With this model the importance of exports and the household consumption in China was compared, to give a result for hypothesis 1 and 2. The first step included an analysis of the β_i -coefficients and their impact on GDP Growth. The coefficients show how much the dependent variable is expected to increase or decrease by an increase of the independent or control variable.

Model 1:

$GDP\ growth = \alpha + \beta_i\ Household\ consumption / GDP + \beta_i\ Exports / GDP + \beta_i\ Wage\ growth + \beta_i\ Education\ level + \beta_i\ Growth\ in\ loans + \beta_i\ Industry + \varepsilon_i$

1979 - 2007

The empirical results of Model 1 in the time frame before the financial crisis show the negative impact of the domestic household consumption on GDP growth. The β_i -coefficient accounts for $-0,0134$,

which shows that GDP growth is decreasing as the household consumption increases. The p-value of the variable is equal to 0,157, which should not

Dependent variable: GDP growth	Coef.	t	P>t
Consumption / GDP	-0,0134	-0,44	0,157
Total exports	0,00433	1,98	0,082
Total wage growth	13,5686	1,22	0,234
University enrolment ratio	0,7246	-0,64	0,532
Growth in loans	-0,0001	- 0,47	0,640
Heavy Industry	5,4056	1,84	0,079
Light Industry	1,2379	0,48	0,052

Table 1: Regression Model 1: 1979 - 2007 (extract)

be higher than 0,05 to indicate a very high significance level of the impact on the dependent variable. However, in the case of macro data it is still acceptable. Total exports, which is the second independent variable of Model 1 has a positive β_i -coefficients of 0,0043, that shows that the impact of the variable has a positive impact on GDP growth. The p-value accounts for 0,082, which as well is an acceptable value to test the hypothesis. Furthermore, the t-value is describing the importance of the variable, which in the case of total exports accounts for 1,98 and makes it the most valuable one in the model. The outcome of the control variables show that wages have the highest impact in GDP Growth and is followed by the increase of the industry outcomes. The education level as well has positive coefficient and results in a positive effect on GDP growth with increase. The growth in loans has almost no effect with a its negative coefficient of $-0,0001$.

The next step is to analyse the correlation between the independent variables to test how they are related to each other. Therefore, every variable is tested on its interference with each other and will be discussed in section 5.2.

	1	2	3	4	5	6	7	8
GDP Growth (1)	1,00							
Consumption / GDP (2)	0,16	1,00						
Total exports (3)	0,28	0,69	1,00					
Total wage growth (4)	0,37	-,24	-,13	1,00				
University enrolment ratio (5)	-,08	-,07	0,01	0,06	1,00			
Growth in loans (6)	0,20	-,02	-,05	0,61	-,04	1,00		
Heavy Industry (7)	0,55	0,24	0,34	0,40	-,03	0,36	1,00	
Light Industry (8)	0,48	0,17	0,29	0,31	-,12	0,19	0,51	1,00

Table 11: Correlation Model 1: 1979 - 2007

2008 - 2012

The β_i -coefficient of the dependent variable Consumption / GDP accounts for 0,2317, which shows that this variable has a positive impact on the household consumption. The p-value of 0,213 shows insignificance of the variable. Total exports have a β_i -coefficient of 0,0023, which shows a positive effect on the dependent variable. The p-value accounts for 0,278, which makes the variable significant. The remaining control variables are having positive β_i -coefficient, which shows that an increase of one of them leads to an increase of GDP. However, all variables of the model from 2008 until 2013 are insignificant, which is probably caused by the small sample size.

Dependent variable: GDP growth	Coef.	t	P>t
Consumption / GDP	0,0486	0,17	0,213
Total exports	0,0023	0,63	0,278
Total wage growth	2,8746	0,79	0,562
University enrolment ratio	0,0000	-0,53	0,724
Growth in loans	0,0003	0,31	0,489
Heavy Industry	10,8563	2,23	0,153
Light Industry	0,9281	1,20	0,279

Table 2: Regression Model 1: 2008 - 2012 (extract)

The next table displays the correlation of the different variables and their interfering with each other. Their interpretation will be discussed in section 5.2.

	1	2	3	4	5	6	7	8
GDP Growth (1)	1,00							
Consumption / GDP (2)	-,59	1,00						
Total exports (3)	-,47	0,67	1,00					
Total wage growth (4)	0,08	0,29	0,70	1,00				
University enrolment ratio (5)	0,59	0,67	-0,23	0,44	1,00			
Growth in loans (6)	0,20	-,64	-0,72	-,88	-0,1	1,00		
Heavy Industry (7)	0,69	-,51	-,10	0,53	0,79	-,22	1,00	
Light Industry (8)	0,19	0,21	-,38	0,38	0,43	-,53	0,69	1,00

Table 12: Correlation Model 1: 2008 - 2012

5.2 Influence factors on Household Consumption

This section is describing the outcome of the regression of Model 2, which is discussing the second part of the research question: How can the rebalancing of the economy be achieved? To answer this question the household consumption was set as the dependent variable. To test the hypotheses 3 and 4 the selected variables were chosen: wage growth rate and the total received number of loans by private households.

Model 2

$$\text{Household consumption ratio} = \alpha + \beta_1 \text{Total wage growth} + \beta_2 \text{Total received loans by Private households} + \beta_3 \text{Education level} + \beta_4 \text{Population growth} + \beta_5 \text{Industry} + \beta_6 \text{Exports} / \text{GDP} + \varepsilon_i$$

The β_i -coefficient of the total wage growth rate accounts for 2,5219, which shows that this variable has an enormous impact on the household consumption. The p-value of 0,0000 indicates an accurate significance. Growth of loans has a positive β_i -coefficient of 9,3106, which indicates that there is a very high relation of this variable to the Household consumption. The slightly to high p-value of 0,153, indicates still an acceptable

Dependent variable: Consumption / GDP	Coef.	t	P>t
Total wage growth	2,5219	28,90	0,000
Growth in loans	9,3106	0,04	0,153
Total exports	0,0004	6,19	0,000
University graduates	0,6995	0,46	0,648
High school graduates	1,9945	0,76	0,454
Elementary school graduates	12,4133	1,71	0,099
Heavy Industry	2,1131	0,64	0,530
Light Industry	0,3497	0,33	0,279

Table 3: Regression Model 2 (extract)

significance. The t-value of wages is the highest, which makes it the most important one in the model. All of the remaining control variables are having a positive β_i -coefficient, which indicates a positive relation to the depended variable.

The following correlation table displays how the different variables are interfering with each other and their interpretation will be discussed in section 5.2.

	1	2	3	4	5	6	7	8	9
HC growth (1)	1,00								
Total wage growth (2)	0,69	1,00							
Growth in loans (3)	-,07	-,07	1,00						
Total exports (4)	0,81	0,72	-,08	1,00					
University graduates (5)	-,13	0,12	-,02	-,08	1,00				
High school graduates (6)	-,18	0,19	-,08	-,14	0,00	1,00			
Elementary school graduates (7)	0,04	0,02	-,02	-,03	-,41	-,55	1,00		
Heavy Industry (8)	0,06	0,18	0,35	0,14	-,01	-,21	0,00	1,00	
Light Industry (9)	0,02	0,15	0,33	0,09	-,18	-,23	-,09	0,52	1,00

Table 13: Correlation Model 2

6. Discussion

In the following chapter the empirical results will be discussed and will be related to the research question of this paper.

After presenting the empirical outcomes of the regression the next step is to analyse these results to address the main purpose of this paper, which is to answering the research question and test the hypotheses. Inspired by the ideas of Lardy (2013) and Dollar (2013), the research question reads as follows: Does the rebalancing to a higher reliance on household consumption correlate with economic growth in China and how can the transition be achieved? The four hypotheses that are addressing this problem are seperated into two sections. The first section is about the direct influence on GDP growth including the assumption that a higher reliance on household consumption has a postive effect on growth. Additionally it is assumed that an increase of Chinas export will lead to a decrease in growth. The second part is concerned with the question of how the rebalancing can be achieved and that the assumptions of a wage increase and a higher accessibility for PH to receive loans are the answer for the problem.

6.1 Household consumption increase as an answer for growth decline

The GDP growth since 1979 until 2012 was analysed and it can be seen that China is facing a major decline in its economic strength. In 2007 before the financial crisis hit the world, China had an annul growth rate of 14,2 % (Yearbook, 2008). Five years later in 2012, the growth rate declined to 7,7 % (China Data online, 2014). It is assumed that the low household consumption rate in the country is the reason for this. Linking the assumption back to the literature review, the Chinese government is aware of the problem and that the economy should be rebalanced away from the export led growth model (Dollar, 2013). From the outcome of the tests made on Model 1, it can be seen that the β_i -coefficient of the independent variable of the household consumption ratio has a negative effect on the growth level of Chinas economy until the financial crisis hit the world in 2008. With every increase of the household consumption rate by 1 point, the GDP growth rate was declining by 0,0134 points. However, an increase in exports was having a positive effect on GDP growth with a β_i -coefficient of 0,0043 (Table 1), which shows the good decision making of the Chinese government in this timeframe. However, in 2008 when the financial crisis began the

influence factors of these two variables changed. The total exports influence of GDP declined to a β_i -coefficient of 0,0023 and the household consumption β_i -coefficient increased to 0,0468. The reason for that was the weak economic situation of other countries in the world. The worlds GDP growth declined by 1,5 percent since the financial crisis in 2007, which leads to a growth rate of 2,5 % in 2012 (World Bank, 2014.C). Chinas economy declined even more than the average of the world. The reason for that is a much lower domestic consumption in comparison to the industrialized west or even its neighbours before 2008. When the crisis hit the world, the main trade partners of China did not have the resources anymore to import as much from the country as before. China`s main growth model is relying on exports, which helped the country to become what it is today. However, now an increase in exports is not having the same effect than 10 years ago and the domestic consumption is gaining importance (Table 1).

Besides the bad economic situation of the trade partners` major changes in the industry can be assumed to have an influence as well. The industry output of heavy and light production was compared in the regression. As stated in the theory China`s main exports were relying on labour intensive production (Naughton, 2007). Since the mid 1980`s that has changed and China started relying more on heavy industry and with it on a more capital intense production (China Data online, 2014). The higher reliance on that industry leads to a reduction of the comparative advantage, which is dependent on cheap labour. With higher production costs trade partners will trade less with China and consider other trade opportunities. However, the increasing reliance on capital-intense production is leading to an increase in GDP growth. With a β_i -coefficient of 5,4056 before the crisis and 10,8563 after the crisis it has a major impact. With bringing the second model into the picture the reason might be that this change is enhancing the household consumption in China and therefore has only an indirect impact on the growth level (Table 1). This argument will be discussed in greater details in the section 5.2.1.

The variable of wages from the Model 1 has a major impact on the GDP growth with a very high β_i -coefficient of 13,5686 from 1979 – 2007 and a β_i -coefficient of 2,8746 from 2008 - 2012. This can be referred back to general GDP formula, which includes the spending on consumer goods (Table 1 & 2). Therefore, wages only have an indirect influence on GDP and will be compared with the consumption rate in the next section. Furthermore, the ratio of

university graduates and the total amount of received loans were taken into account to test the impact of the financial -and the education system. As recommended by Lardy (2013) and Dollar (2013) changes in that area will lead to a higher growth rate in China. As the β_i -coefficient of the university graduates before and after the crisis are positive, the variable shows that an improving education system would help China to overcome the decline of the global economy. That can be linked to the assumption that a higher education leads to a higher wage growth, which would then have only an indirect influence on GDP, due to the higher amount of consumed goods through higher wages. The β_i -coefficient of the growth rate of loans only accounts for -0,0001 until 2007 and 0,0003 from 2008 on, which indicates that the change of the financial system is not needed to achieve higher growth rates (Table 1 & 2). However, it is not very clear if this variable has a direct influence on economic growth or rather on the household consumption. Since the literature review indicates that a change of the financial system leads to higher HC, the correlation between received loans and HC was tested. The two variables show a negative variance before and after the financial crisis, which is a sign that it is not as important as assumed (Table 11 & 12). However, to receive a valuable outcome this matter was also tested in Model 2 and will be discussed in the next section together with the influence of the reform of the education system.

Summarizing the outcome, before the financial crisis the focus on the household consumption rate would have had a negative effect on Chinas GDP growth, while the export led growth strategy was having a positive effect. After the crisis these factors changed the importance for the development of the country. Now it all comes down to a change away from their export led strategy and to an increase of the household consumption rate to handle the decline of economic growth. Exports still have a positive effect on growth, but not as big as an increase of HC. The next chapter is discussing how the rebalancing to a higher consumption rate could be accomplished.

6.2 How can the rebalancing be achieved?

After realising that an increase of the household consumption rate would lead to a higher GDP growth rate in China, it has to be analysed how the rebalancing away from an export led growth strategy could be achieved. As discussed in the previous section wages are playing an important role in this approach. The hypothesis made concerning this idea is that the increase in wages is leading to a rise in the HC rate. Moreover, the accessibility of loans for private households was tested as the part of the 2nd and 3rd hypothesis.

The average wage in China has increased by 60 times since 1979 and accounts for an average annual income of 16.238 Yuan in 2012 (China Data Online, 2014). Since the distribution of the population is now approximately 50/50 (Bloom and Finlay, 2009), both areas can be assumed to be equally important. With the analysis of the Model 2, it can be seen that the wages are having the second biggest impact on the HC. A β_i -coefficient of 2,52 means that with every increase of 1 point in the average wage growth, GDP would increase by 2,5 points. That can be simply explained by the fact that more income gives the population the ability to consume more. The missing property rights and the low wages were the reason for the low HC, because of missing incentives and the will to increase their living standards before the crisis. When wages can be increased and be combined with the property rights law in 2007 - the GDP growth rate can be stabilized and be even increased. The next step now is to analyse what the wage level in China is influenced by. Therefore the correlation between the independent variable of wage growth and the control variables of the model were tested.

Frangos (2013) describes the switch away to a more capital intense production to achieve the need of a higher education, which would lead to higher wages. As discussed in the previous section an increase in the output value of the heavy industry has a positive effect on GDP. This could be an indirect influence; therefore, it was tested on its correlation with the consumption rate and the wages growth. The β_i -coefficient of the heavy industry growth accounted for 5,4056 before 2008 and for 10,8563 from than on. That shows that since the crisis the change to a more capital intense production has a positive effect on GDP as it was predicted. The focus of the labour intense production has as well still a positive effect on GDP but not as intense (Table 1 & 2). It could also be explained by the positive correlation of that variable with wages in model 2 (Table 13). Furthermore, the three control variables of

the education level are supporting this assumption. Growth rates of both the high school graduates and university graduates are showing a positive correlation with an increase in wages (Table 13), which leads to the solution that a higher reliance on capital intense production in combination with a better education system and more university graduates will increase wages, which will increase the HC in China.

To test what has caused the low wages in China the impact on a further reliance on exports was taken into account. The β_i -coefficient (0,0004) of the export growth rate is showing that it has almost no impact on the HC (Table 3). However, the correlation of the education variables and exports are negative, which shows that a higher focus on exports have a bad impact on the education system (Table 13). These results display that due to a decline of export expenditures, the government would save capital to invest in the education system, which, as discussed above, would improve wages and with it the household consumption rate.

While modelling the final empirical model wages were divided into rural and urban areas because of their high inequality. The urban population earns three times as much as the rural one (China Data Online, 2014). Due to a high correlation (Table 10) of these two variables and the causing of multicollinearity, they were combined into the average wage. Nevertheless, the fixing of the inequality could be one of the solutions to increase the HC rate. Dollar (2013) is describing a change of the “Hukou System”, which would allow the migration from rural areas to urban areas. Since the wages are distributed very unequally, the allowance of immigration could on one hand lead to a solution to increasing wages or on the other hand, government investments could be used to increase living standards in rural areas and to substitute wages instead of substituting exports, which is not only harming China’s economy but the global economy as such.

The next interesting assumption of Lardy (2013) and Dollar (2013) was the change of the financial system. They were both indicating that a higher accessibility to loans for PH could lead to a higher consumption of the population. Therefore, the fourth hypothesis was designed, which supports this idea. The outcome of the regression presented a positive β_i -coefficient of 9,3106, which indicates that a higher amount of loans would increase the consumption rate (Table 3). This high coefficient shows an enormous impact on the consumption rate, which can be explained by the same argumentation as the one of higher wages. A loan is increasing the amount of capital that private households can use to consume

on the domestic market. Furthermore, the capital could be used to increase entrepreneurial activities, which is allowed since the introduction of the company law in 1994. Before that only a view percent of the population were employed in private owned companies. Today more than 80% of the population are working in the private sector (Naughton, 2007). This could also cause higher wages, which again would be correlating with a higher consumption. However, this was not tested in this paper.

6.3 Further research and alternative strategy

To get a new perspective on the problem different data could be gathered and possibly lead to a more detailed and more significant result. Since the data was collected by the Chinese statistic press it might somehow had an impact on the richness of the material. Therefore, if a neutral research company should be conducted to receive more accurate and unbiased results. So far Macro panel-data was used but to gain a more detailed overview about the HC in China the use of a cross sectional data might give different view to the problem.

Due to the outcome stated above a step further would be to analyse the entrepreneurial activity and it's interfering with the HC rate. As discussed in the last chapter the enormous increase of private companies might have a significant impact on the population when it comes to the incentives to consume more products. To support a local business might be more appealing rather than supporting big state owned enterprises. With the addition to this factor the results might lead to a different strategy how the economy might need to be rebalanced.

7. Conclusion

The export led growth strategy of the Chinese government was for a long time the main accelerator for its economic growth. However, due to the financial crisis in 2007/08, the export declined, which led to an enormous drop in its growth rate. Because of countries' unsteady and unbalanced economic model of only focusing on exports, the country gained a high-speed economic growth and is now ranked as a middle income society. Nevertheless, this growth strategy has affected the household consumption rate in a negative way, which is now a major concern for many economists. With a further focus on exports China will face big turbulences in the future and therefore a rebalancing of economy is highly advised. The empirical results do not necessarily have the causal relationship, but they are the results of the regressions made in this paper.

To achieve the rebalancing of China's economy there should be a stronger reliance on the household consumption rate. The empirical results show that a further increase in exports only has a small impact on economic growth since 2008, while an increase in the domestic household consumption would probably lead to enormous GDP growth rates. To achieve the rebalancing fundamental policy changes have to be implemented by the government.

The biggest influence factor of the consumption rate is the income level of the population, which would lead to major increase in its growth rate. To achieve these higher wages the focus has to be set on capital-intensive production, which will include the need of a more educated workforce. If the government will support the population to receive a higher level of education as a result higher growth rates in the capital intense production will be achieved. This will furthermore lead to higher wages of the population, which will increase the household consumption rate. Due to higher wages costs of production and with it the cost of products will inevitably increase. This will probably cause the decline in the interest of trade partners to import from China, which will lead China's government to rethink the investment in the export strategy. Overall it will cause a higher amount of resources to be invested into the domestic market. Consumption-oriented investments can take place and with it the GDP growth rate will rise again.

Due to the high importance of the income level in China, certain changes in the “Hukou System” are advised to be reconsidered. With the much higher income level in urban areas the migration of rural population to urban areas should be allowed to give a higher number of people the chance to gain from the higher wages that are available in cities on the East Coast. If the government would focus on improving the living situation in rural areas, with creating the incentives of higher in wages, the population could be convinced to even stay in rural areas, which than as well would lead to a higher household consumption rate.

Furthermore, the assumed impact of the accessibility of loans for private households was expected to have a positive impact on the HC. The analysis shows that the impact is enormous, which is forcing the Chinese government to remodel the financial system and to allow more loans for private households, which will support the overcoming of losses due to the declining growth rates of exports.

7. Reference List

Acemoglu, D., Johnson, S. and Robinson, J. (2001), "*The Colonial Origins of Comparative Development: An Empirical Investigation*", The American Economic Review, Volume 91, No. 5, pp. 1369-1401

All China Data Center (2014), "*China Data Online*", online available at: <http://chinadataonline.org.ludwig.lub.lu.se/> (viewed 15. April 2014)

Amighini, Alessia (2005), "*China in the international fragmentation of production. Evidence from the ICT industry*", The European Journal of Comparative Economics, Volume 2, No. 2, pp. 203-219

Asteriou D. and Hall S. (2011), "*Applied Econometrics*", New York: Palgrave Macmillan, Second edition

Balassa, Bela (1963), "*An Empirical Demonstration of Classical Comparative Cost Theory*", Review of Economics and Statistics, Volume 45, pp. 231-238

Barro R. J. and Sala-I-Martin X. (1990), "*Public Finance in Models of Economic Growth*", Review of Economic Studies, Volume 59, No. 4, pp. 645-661

Bhattarai K. and Mallick, S. (2013), "*Impact of China's currency valuation and labour cost on the US in a trade and exchange rate model*", University of Hull, Business School

Bloom D. and Finlay J. (2009), "*Demographic change and Economic growth in Asia*", Asian Economic Policy Review, Volume 4, No. 1, pp. 45-64

Bryman A. and Bell E. (2011), "*Business Research Methods*", Oxford University Press, Third edition, pp. 150-153

Burnham K. and Anderson D. (2002), "*Model Selection and Multi Model Interference*", Fort Collins: Springer, Second edition

Caroll C. and Summers L. (1991), "*Consumption Growth parallels income growth: Some new evidence*", University of Chicago press, pp. 305 – 348

Chaffin, Joshua (2013), "*EU and China settle trade fight over solar panel's*", online available at: <http://www.ft.com/cms/s/0/4e468c26-f6ab-11e2-8620-00144feabdc0.html#axzz2lZoyZaeg>, financial times (viewed 12. Mai 2013)

Chan, Anita (2003), "*Globalization and China's "Race to the bottom" in labour standards*", Chinas Perspective (Online), Volume 46

Cheng T. and Selden M. (1994), *“The Origins and Social Consequences of China’s Hukou System”* The China Quarterly, No. 139, pp. 644-668

China Data online (2014), *“Yearly Macro-Economics Statistics”*, online available at: <http://chinadataonline.org.ludwig.lub.lu.se/member/macroy/> (viewed 1. Mai 2013)

Di, Yan (2006), *China’s Employment Policies and Strategies*, Chinese Academy of Labour and Social Security

Claessens S., Evenett S. and Hoekman B. (2010), *“Rebalancing the global economy”*, London, Centre of Economic Policy Research (CEPR)

Das, M. and N’Diaye, P. (2013), *Chronicle od a Decline Foretold: Has China Reached the Lewis Turning Point?*, Research Department and Asia Pacific Department , IMF Working paper (January 2013)

Davies R: and Vadlamannati (2001), *“A Race to the bottom in labour standards?”*, UCD School of Economics, WOkring Paper Series, UCD Center for Economic Research, Volume 11/23

Dollar, David (2013), *“China’s Rebalancing: Lessons from East Asian Economic History”*, Brookings Institution, John L. Thornton China Center, Working Paper Series, October 2013

Douglass, Irwin (2005), *“The Welfare Cost of Autarky: Evidence from the Jeffersonian Trade Embargo, 1807-1809”*, Review of International Economis, Volume 13, pp. 631-645

Dornbusch R., Fischer S. and Samuelson P. A. (1977), *“Comparative Advantage, Trade, and Payments in a Ricardian Model with a Continuum of Goods”*, The American Econmic Review, Volume 67, No. 5, pp.823-839)

Dullien S., Kotte D. J., Marquez A. and Priewe J. (2010), *“The financial and economic crisis of 2008-2009 and developing countries”*, New York and Geneva, United Nations

Ellis, Frank (1997), *“Household strategies and rural livelihood diversification”*, The Journal of Deveopment Studies, Volume 35, No. 1, pp. 1-38

Ethier, Wilfred (1982), *“Decreasing costs in International Trade and Frank Graham’s Argument for protection”*, Econometrica, Volume 50, No. 5, pp. 1243-1268

Frangos, Alex (2013), *“Behind China’s switch to high end esports”*, online available at: <http://online.wsj.com/news/articles/SB10001424127887324034804578345551411900878> (Accessed 14. April 2014)

Friedman, Thomas (2007), *"The World is Flat: A Brief history of the twenty-first Century"*, New York: Picardor/Farrar, Straus and Giroux

Greenwood, Jeremy (2001), *"The impact of China's WTO accession on capital freedom"*, Cato Journal, Volume 21, No. 1, pp. 91-100

Greif, Avner (2004), *"A Theory of Endogenous Institutional Change"*, American Political Science Review, Volume 98. No. 4, pp. 14-48

Heinberg, Richard (2011), *"The End of growth: Adapting to our new economic reality"*, Gabriola Island, New Society Publishers, pp. 311-315

IMF (2011), *"People's Republic of China"*, Sustainability Report 2011

Jappelli T. and Pistaferri, L. (2010), *"The Consumption response to income changes"*, Stanford University, Annual Review of Economics 2010

Jefferson, G. and Rawski, T. (1994), *"Enterprises Reform in Chinese Industry"*, Journal of Economic Perspectives, Volume 8, No. 2, pp. 47-70

Jin H., Qian Y. and Weingast B. (2005), *"Regional decentralization and fiscal incentives: Federalism, Chinese style"*, Journal of Public Economics, Volume 89, pp. 1719-1742

Karabell, Zachary (2014), *"The leading Indicators: A short history of the numbers that rule the world"*, New York: Simon & Schuster publisher, (11. February 2014)

Krugman, P., Obstfeld M. and Melitz M. (2012), *"International Economics: Theory & Policy"*, Boston: Pearson

Lau, Lawrence (2000), *"Reform without Losers: An Interpretation of China's Dual-Track Approach to Transition"*, Journal of Political Economy, Volume 108, No. 1, pp. 120-143

Lardy, Nicholas R. (2002), *"Integrating China into the World Economy"*, Brookings Institution Press, Washington D.C.

Lardy, Nicholas R. and Nicholas B. (2013), *"A Blueprint for rebalancing the Chinese economy"*, Peterson Institute for International Economics, Policy brief, No. PB13-02

Lemoine F. and Ünal-Kesenci D. (2002), *"China in the International Segmentation of production Process"*, CEPII Working paper No. 2

Lin, Justin Yifu (1988), *The Household Responsibility System in China's Agricultural Reform: A Theoretical and Empirical Study*, Economic Development and Cultural Change; Volume 36, No. 3, pp. S199 - S224

Lou, X. and Zhu, N. (2008), "*Rising income inequality in China: Race to the top*", The World Bank, East Asian and Pacific Region, Poverty Reduction and Economic Management Department, Working paper, No. 4700

Makin, Anthony J. (2007), "*Does China's huge external surplus imply an undervalued renminbi?*", *China & World Economy*, Volume 15, No. 3, pp. 89-102

Moverly D. and Rosenberg N. (1995), "*Technology and the Pursuit of Economic Growth*", University of Cambridge press, pp. 1-2

Naughton, Barry (1994), "*Growing Out of the Plan: Chinese Economic Reform*", Cambridge University Press 1994

Naughton, Barry (2007), "*The Chinese Economy*", London: The MIT Press

North, Douglass C, (1991) "*Institutions*", *Journal of Economic Perspectives*, Volume 5, No. 2, pp. 97-112.

Nelson R. and Phelps E. (1966), "*Investment in Humans, technology Diffusion and Economic Growth*", *The American Economic Review*, Volume 64, No.1/2, pp. 69-75

North, Douglas (1991), "*Institutions*", *Journal of Economic Perspectives*, Volume 5, No. 2, pp. 97-112

OECD (2013), "*PISA 2012 Results: What Students Know and Can Do (Volume I): Student Performance in Mathematics, Readings and Science*", OECD Publishing

Perkins, Dwight (1984), "*Rural Development in China*", Johns Hopkins University Press.

Rapoport, A. and Chammah A. (1970), *Prisoner's Dilemma*, University of Michigan, The University of Michigan Press

Rawski, Thomas (2001), "*What is happening to China's GDP statistics?*", Department of Economics, University of Pittsburgh, *China's Economic Review* 12 (2001), pp. 347-354

Reinhart C., Kirkegaard J. and Sbrancia M. (2011), "*Financial Repression Redux*" IMF Finance and Development, June 2011, pp. 22-26

Reinhart C. and Sbrancia M. (2011), "*The liquidity of government debt*", Cambridge: National Bureau of Economic research, NBER Working paper series

Rodrik, Dani (2006), "*What's so special about China's Exports?*", *China & World Economy*, Volume 13, Volume 5, pp. 1-19

Wooldridge, Jeffrey M. (2010), *“Econometric Analysis of Cross Section and Panel Data”*, Massachusetts Institute of Technology, second edition, pp. 124 - 202

World Bank (1993), *“The East Asian Miracle”*, Oxford: Oxford University Press, pp. 1-7

World Bank (2012), *“China 2030: Building a Modern”, Harmonious, and Creative High-Income Society*

World Bank (2014.A), *Data: China*: online available at: <http://data.worldbank.org/country/china> (Accessed 01. April 2014)

World Bank (2014.B), *Data: Export of goods and Services*: online available at: <http://data.worldbank.org/indicator/NE.EXP.GNFS.ZS/countries/DE-CN-US?display=graph> (Accessed 03. April 2014)

World Bank (2014.C), *Data: GDP Growth*: online available at: <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG/countries/1W?display=graph> (Accessed 14. April 2014)

Yearbook (2008), *“Chinese Yearbook 2008: National Accounts”*, China statistic press

Zhu, A and Kotz M. (2010), *“The Dependence of China’s Economic Growth on Export and Investment”*, Beijing: Tsinghua University, School of Marxism

Zhang, X., Yang, J. and Wang S. (2011), *“China has reached the Lewis turning point”*, China Economic Review, Volume 22, No. 4, pp. 542-554

7. List of Tables and Graphs

Graph 1: Global GDP growth rate, (World Bank, 2014.C)

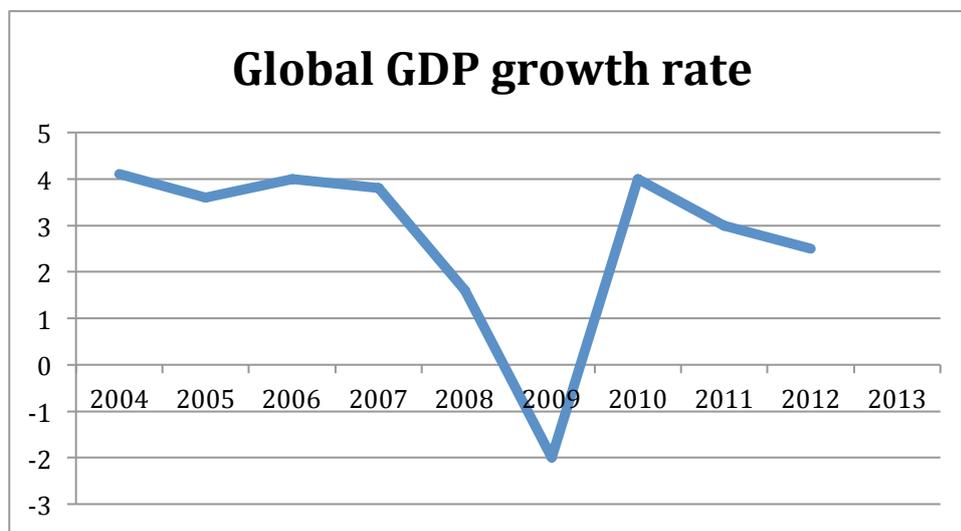


Table 1: Regression Model 1: 1979 – 2007

Model 1		Number of obs.	29
		Prob>F	0,0073
		R-squared	0,3719
Dependent variable: GDP growth	Coef.	t	P>t
Consumption / GDP	-0,0134	-0,44	0,157
Total exports	0,00433	1,98	0,082
Total wage growth	13,5686	1,22	0,234
University enrolment ratio	0,7246	-0,64	0,532
Growth in loans	-0,0001	- 0,47	0,640
Heavy Industry	5,4056	1,84	0,079
Light Industry	1,2379	0,48	0,052

Table 2: Regression Model 1: 2008 - 2012

Model 1		Number of obs.	5
		Prob>F	0,3200
		R-squared	0,7165
Dependent variable: GDP growth	Coef.	t	P>t
Household consumption growth ratio	0,0486	0,17	0,213
Total exports	0,0023	0,63	0,278
Total wage growth	2,8746	0,79	0,562
University enrolment ratio	0,0000	-0,53	0,724
Growth in loans	0,0003	0,31	0,489
Heavy Industry	10,8563	2,23	0,153
Light Industry	0,9281	1,20	0,279

Table 3: Regression Model 2

Model 2		Number of obs.	34
		Prob>F	0,0001
		R-squared	0,7016
Dependent variable: HC growth ratio	Coef.	t	P>t
Total wage growth	2,5219	28,90	0,000
Growth in loans	9,3106	0,04	0,153
Total exports	0,0004	6,19	0,000
University graduates	0,6995	0,46	0,648
High school graduates	1,9945	0,76	0,454
Elementary school graduates	12,4133	1,71	0,099
Heavy Industry	2,1131	0,64	0,530
Light Industry	0,3497	0,33	0,279

Table 4: VIF Model 1: 1979 - 2007

Variable	VIF	1/VIF
Consumption/GDP	5,13	0,2864
Total exports	4,78	0,3024
Wage growth	2,14	0,4675
Growth in loans	1,84	0,5434
Heavy Industry	1,53	0,6515
Light Industry	1,23	0,7913
University enrolment ratio	1,04	0,9595
Mean VIF	2,52	

Table 5: VIF Model 1: 2008 - 2012

Variable	VIF	1/VIF
Consumption/GDP	6,29	0,2179
Total exports	5,12	0,2518
Wage growth	5,08	0,2624
Growth in loans	4,52	0,3527
Heavy Industry	2,30	0,4159
Light Industry	1,98	0,7563
University enrolment ratio	1,17	0,9434
Mean VIF	3,78	

Table 6: VIF Model 2

Variable	VIF	1/VIF
Total exports	4,00	0,2912
Wage growth	1,98	0,5304
Growth in loans	1,92	0,5387
Heavy Industry	1,88	0,5752
High school graduates	1,52	0,6534
Elementary school graduates	1,39	0,7268
Light Industry	1,38	0,7392
University enrolment ratio	1,19	0,8957
Mean VIF	1,90	

Table 7: BPT Model 1: 1979 - 2007

H0: Constant variance Variables: fitted values of GDP growth	
Chi2(1)	0,10
Prob > chi2	0,7558

Table 8: BPT Model 1: 2008 - 2012

H0: Constant variance Variables: fitted values of GDP growth	
Chi2(1)	0,59
Prob > chi2	0,3927

Table 9: BPT Model 2

H0: Constant variance Variables: fitted values of HC growth ratio	
Chi2(1)	0,14
Prob > chi2	0,7095

Table 10: Correlation Model 1 including consumption divided into rural and urban

	1	2	3	4	5	6	7	8	9
GDP Growth (1)	1,00								
Consumption / GDP rural (2)	0,24	1,00							
Consumption / GDP urban (3)	0,18	0,98	1,00						
Total exports (4)	0,28	-,68	-,72	1,00					
Total wage growth (5)	0,37	-,15	-,15	-,13	1,00				
University enrolment ratio (6)	-,08	0,23	0,31	0,01	0,06	1,00			
Growth in loans (7)	0,20	-,09	-,12	-,05	0,61	-,04	1,00		
Heavy Industry (8)	0,55	0,07	0,09	0,34	0,40	-,03	0,36	1,00	
Light Industry (9)	0,48	0,07	0,12	0,29	0,31	-,12	0,19	0,51	1,00

Table 11: Correlation Model 1: 1979 - 2007

	1	2	3	4	5	6	7	8
GDP Growth (1)	1,00							
Consumption / GDP (2)	0,16	1,00						
Total exports (3)	0,28	0,69	1,00					
Total wage growth (4)	0,37	-,24	-,13	1,00				
University enrolment ratio (5)	-,08	-,07	0,01	0,06	1,00			
Growth in loans (6)	0,20	-,02	-,05	0,61	-,04	1,00		
Heavy Industry (7)	0,55	0,24	0,34	0,40	-,03	0,36	1,00	
Light Industry (8)	0,48	0,17	0,29	0,31	-,12	0,19	0,51	1,00

Table 12: Correlation Model 1: 2008 – 2012

	1	2	3	4	5	6	7	8
GDP Growth (1)	1,00							
Consumption / GDP (2)	-,59	1,00						
Total exports (3)	-,47	0,67	1,00					
Total wage growth (4)	0,08	0,29	0,70	1,00				
University enrolment ratio (5)	0,59	0,67	-,23	0,44	1,00			
Growth in loans (6)	0,20	-,64	-,72	-,88	-0,1	1,00		
Heavy Industry (7)	0,69	-,51	-,10	0,53	0,79	-,22	1,00	
Light Industry (8)	0,19	0,21	-,38	0,38	0,43	-,53	0,69	1,00

Table 13: Correlation Model 2

	1	2	3	4	5	6	7	8	9
HC growth (1)	1,00								
Total wage growth (2)	0,69	1,00							
Growth in loans (3)	-,07	-,07	1,00						
Total exports (4)	0,81	0,72	-,08	1,00					
University graduates (5)	-,13	0,12	-,02	-,08	1,00				
High school graduates (6)	-,18	0,19	-,08	-,14	0,00	1,00			
Elementary school graduates (7)	0,04	0,02	-,02	-,03	-,41	-,55	1,00		
Heavy Industry (8)	0,06	0,18	0,35	0,14	-,01	-,21	0,00	1,00	
Light Industry (9)	0,02	0,15	0,33	0,09	-,18	-,23	-,09	0,52	1,00

8. List of equations

Equitation 1: OLS-Regression, (Asteriou and Hall, 2011)

$$Y_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_n X_{ni} + \varepsilon_i$$

Equitation 2: Skedasticity, (Asteriou and Hall, 2011)

$$\text{var}(\hat{\beta}) = \sum \left(\frac{x_i}{\sum x_i^2} \right)^2 \sigma^2$$

$$\text{var}(\hat{\beta}) = \frac{\sum x_i^2 \sigma^2}{(\sum x_i^2)^2} = \sigma^2 \frac{1}{\sum x_i^2}$$