LUND UNIVERSITY
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Master programme in International Economics with a Focus on China

The impacts of globalization on Chinese intra-provincial income inequality.

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Abstract: China continuously increases its globalization involvement, while in the same time rising income inequality levels can be observed. Income inequality with its wide spread of potential harms such as higher criminal rate, negative economic growth impact and political instability is an issue politicians should be well aware of. International studies show significant relationships between globalization and income inequality. We also know about this connection in Chinese inter-provincial income. However, provinces differ greatly, both in terms of income inequality as well as in their international activities. So far the impact on intra-provincial income inequality remained unclear, while they are tremendously important. This study used provincial panel data and based a principal component analysis on it. I found that economic globalization is associated with a negative impact on intra-provincial income inequality in China. Additionally, social globalization in the form of international communication has a positive impact on it.

Key words: China, intra-provincial, inequality, globalization, panel data, principal component analysis

NEKN01

Master thesis (15 credits ECTS)

June 2017

Supervisor: Prof. Sonja Opper

Examiner: Fill out after the seminar

Word Count: 11,144

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1. Introduction

1.1 Research question

Recent political events in the Western World such as the 'America First' policy movement of President Trump or the Brexit in Europe are some signs of protectionism, which occurs in order to overcome some problems that people blame globalization for. China starts to take a stronger position in defending the path of globalization and open economies around the world, while trying to take a leading role together with the OECD countries in the West. Western critics argue that globalization is a main driver of increasing income inequality and base their protectionist, anti globalization ideas on those. Since China is becoming more and more involved in the global economic and political puzzles, it is crucial to know how globalization affects the Chinese income inequality and if criticizer may be able to base protectionist ideas also on globalization based impacts. The effects of globalization and inequality are also crucial for the Chinese government since personal well being as well as income inequality are some of the main factors affecting social peace and stability. This has a further impact since economic development is significantly influenced by existing social and political peace. Several studies have been dealing with the effect of globalization on income inequality all around the globe, so that it is a rather well researched topic. However, most studies deal with inequality data of whole countries and neglect various differences that exist within countries, especially in giant states such as China. When empirical and academic papers analysed regional differences for China than they did this in the field of regional inequality. They compared the different regions as a whole. Another way is to compare data within the province, in order to find an overall picture of globalization and inequality on a provincial Chinese level. Income inequality in China has continued to rise in the period of its market reforms and as globalization seems to play a big role in it elsewhere in the world, it is crucial to understand if these effects hold within China. It is critical for Chinese decision makers, especially the politicians to understand the full impact of globalization on intra-provincial equality gaps, since those are most likely to disturb social peace. People care first about themselves, than neighbours and only than about places far away. Huge income differences in close areas can cause drug problems to rise, increase criminal actions and create mental health issues to the poorer. However, we do not understand the exact impact of globalization on Chinese intra-provincial income inequality yet. Therefore, this empirical paper has the attention to close this knowledge gap by answering the following question: '*Do different globalization stages and international involvements of the Chinese provinces affect intra-provinical income inequality?'.* This answers will help politicians to find an answer to the ever rising income inequality threat in China. It should help them to detect the driving forces and to develop re-balancing instruments.

1.2 Methodology overview

This paper analysis the effects of globalization on income inequality on a Chinese provincial level in order to take the extreme differences of the different regions in a satisfactory way into account. Inequality is measured in a multiplication factor of the income of the lowest quintile of the society compared to the one of the highest quintile, while globalization is represented by six different variables that were all chosen based on the variable choice of the KOF globalization index (Dreher & Gaston 2008). First all variables are used in a Chinese provincial panel data regression in order to see which ones have an impact and if those results are significant. The main empirical results are than based on a principal component analysis in order to adequately represent globalization. Based on the principal component analysis, three new components were conducted that included variable data of the previous variables. Settled on the included variables the three new components, '*Economic globalization, International communication and Various measures of globalization'*, were created and used in a further provincial panel data regression on which the primary empirical results rely.

1.3 Limitations

This study faces a handful of limitations that are mainly due to an unavailability of reliable data. One of those shortcomings is that the empirical results are pretty much limited to the urban society since the availability of rural income data was fairly small. Only for one third of the provinces there was at least some data for rural income available. The overall number of observations is so little that neither the insignificant results were surprising, nor that the empirical outcomes can not explain a lot. One needs to interpret the rural results extremely careful and is well advised to be sceptical. There are more shortcomings based on data limitations that could potentially, to some extend be overcome by a native Chinese speaker. This is due to the original Chinese statistical yearbooks as a data source, which were only published in Chinese, with some extensions since 2001/2002. The data set of this empirical paper was therefore conducted on translations from the University of Michigan and goes as far back in time as English translations were available, knowing that there might be more data in original Chinese language available. A potential major impact is caused by the non availability of labour union membership data. Considering their significant impact on income inequality in other regions of the globe this is a sure limitation. However, it seems to be that labour unions have played a smaller role in Chinese wage setting. Non the less would labour union data be likely to improve the quality of the empiric results. A last shortcoming is missing alternative data that could be used for any kind of robustness checks, so that the empiric results are reliable but they need to be viewed sceptical.

1.4 Outline

The rest of the paper is structure as follows. *Section 2* covers the theoretical background, with an empiric relevance statement and theory on which the hypothesises are based on. In *Section 3* the data and methodology is described. This includes a detailed description how the data was conducted, a more precise data limitations part, a variable description and a methodology explanation. This leads to the empirical models. The empiric results are presented in *Section 4*, while *Section 5* concludes with a short summary of the main results, their impact and potential future improvements of this study.

2 Theoretical background

2.1 Relevance of the research

China has seen significant increases in its income inequality both in urban as well as in rural areas. The effect occurs in the same time as China started to engage into international economic engagements. The slow but continuously opening of its borders and regulations for international activities goes in line with its income inequality increase. Empiric research shows that economic globalization is internationally a significant factor in terms of income inequality (Jaumotte et al. 2013). However, globalization should not only be narrowed down to economic terms, but includes also changes from cultural, political and social points of view. Social globalization also increases income inequality in OECD countries (Dreher and Gaston 2008), while the effects on China are not known yet. So far it is known that globalization is positively correlated with regional inequality between the Chinese provinces and that it has been rising over time (Wan et al. 2007). In general the field of regional inequality, in other words provincial average differences are rather well researched and understood. However, it is not known what effect the Chinese integration into the world causes on the income inequality within the Chinese provinces. It is the objective of this paper to narrow this lack of knowledge in order to see the impacts that the society in China faces. It is crucial for Chinese politicians to understand local differences since those would be likely to cause tensions within cities and provinces, that have the potential to spread. Possible negative outcomes of an equality gap in closed areas are a reduced life expectancy, low educational qualifications, high crime rates and high rates of mental health problems (Wilkinson & Pickett 2009). Studies about political stability show that China is together with Russia at a specific risk of political instability based on inequality that occurred during the market reforms (White et al. 2017). Furthermore, income inequality also negatively affects economic growth as well as productivity growth rates (Mo 2000). In order to prevent and solve those occurring problems it is important to understand the driving forces behind the increasing intra-provincial income inequality, to counterbalance with

political or economic instruments. The focus of this paper is to find the influence of globalization on intra-provincial income inequality and answer: '*Do different globalization stages and international involvements of the Chinese provinces affect intra-provinical income inequality?'*, since we know that it has a significant impact elsewhere.

This paper uses various sub-questions to answer the main research question. Existing empirical research was particularly focused of globalization effects on income inequality that occur from an economic point of view. The economic integration of the world is probably the concept most referred to in terms of globalization and of special interest for politicians and other decision makers. This is due to that it is relatively seen easier to be controlled, than for example cultural, religious or behavioural influences. Economic globalization can be easier guided via trade agreements, trade barriers, regulations and infrastructure, so that a potential influence of economic globalization on income inequality can be used to find solutions in closing the equality gap. Accordingly, the sub-question: *'Does economic globalization has an impact on income inequality in the Chinese provinces?'*, occurs.

A further key component in the international economic integration is trade, which has significantly increased, in terms of volumes in recent decades. Trade plays such an important role in economic globalization that it is worth to view its impacts separated from others. There are opposing empiric results on the role of trade on income inequality which makes it crucial to answer its impact on a Chinese intra-provincial level. This is important in order to clearly understand its influence on income inequality and how it may be used as an instrument to regulate income inequality. Therefore, this paper will answer the sub-question: *'Does international trade influences income inequality within the Chinese provinces?'*.

Besides international trade, Foreign Direct Investment (FDI) is a significant part of economic globalization. It plays a crucial role in modern economies as it provides financial resources as well as potential knowledge spillovers (Lee 2006). Previous international empirical research shows that FDI has a positive correlation with income inequality (Clark et al. 2011, Choi 2006 & Figini 2011), so that the sub-question occurs whether these results hold within the Chinese provinces. *'Does FDI has a positive impact on income inequality within the Chinese provinces?'*.

Globalization does not only occur in the form of economic activities and integration but also in cultural, social and behavioural influences from elsewhere. Those new influences may have an impact on income inequality in China, since social globalization seems to have a negative impact on income inequality in the OECD countries (Dreher and Gaston 2008). In order for cultural spreads etc. it is important that they can be communicated, which is a crucial intermediate step, so that the sub-question: *'Does international communication affects income inequality in the Chinese provinces?'*, will deal with it.

2.2 Definitions

The terms of globalization and income inequality are substantial for this research. As key concepts they will therefore be both defined and introduced in a way this paper used them and how others have used them.

Income inequality can be measured in various different ways such as by the GINI coefficient which is by the World Bank explained as: *'The Gini index measures the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality '.* The Gini coefficient is a widely spread and commonly used measurement for income inequality. This paper however does not use the GINI coefficient since it is not given by the data of the Chinese statistical yearbooks. The analysis works instead with the factor by which the income of the highest society quintile exceeds the one of the lowest quintile. This is an easy but reliable way to compare the income distribution between the richest and the poorest people in China and an adequate way to measure income inequality.

There are plenty of definitions of globalization, where some authors focus on economic globalization only, while others keep it in a broader sense. This paper works with the definition of Al-Rodhan and Stoudmann (2006) who choose a more generalized definition including a broad field of activities: *'Globalization is a process that encompasses the causes, course, and consequences of transnational and transcultural integration of human and non-human activities.'*

2.3 Chinese historic inequality overview

Based on political goals of income equality, as it is promised by Socialist parties, there was for a long period no reliable income data for China. The best available data gives average incomes on provincial level. This causes regional inequality to be the adequate way of dealing with less recent data on income inequality development in the People's republic of China (Fan et al. 2009, Kanbur & Zhang 1999 & Jian et al. 1996). Globalization has played for a long time a relatively small role due to the isolation policies followed by the Chinese government (Wei & Wu 2001). A long term study by Jian, Sachs & Warner (1996) running from 1952 to 1993 shows that regional inequality can be split into several time frames, leading to a handful of potential political causations. From 1952 until 1965, during the post civil war and Great leap forward period no big convergence or general effects can be seen. After the failed policy and a mass starvation with approximately 45 million deaths, an increase in regional inequality occurred between 1965 and 1978. The causation lies in the socialist

investments favour towards the more developed and already partly industrialized regions. These investments were based and financed by the costs of the more agricultural and mostly poorer provinces, leading to an increase in regional inequality. Followed by the death of Mao Zedong, the de-collectivization and the introduction of the household responsibility system, a significant productivity increase in the agricultural sector between 1978 and 1990 occurred. The expanding agricultural production caused a reduction effect on regional inequality. Based on these positive economic experiences the Chinese Communist party allowed for open coastal cities and the attraction of foreign capital and knowledge. Due to the faster growth of the coastal provinces regional inequality increased again. Besides the occurring inland-coastal inequality changes, inequality shifts between urban and rural areas were observed (Kanbur & Zhang 1999).

One could argue that the opening of China to trade was as a quasi natural experiment, as the reduction of political import and trade barriers affected the Chinese cities differently. This was due to other factors, such as geographic ones, that played a significant role (Wei & Wu 2001). Those geographic as well as other factors, such as whether the city is a special economic zone or not, provided different trade openness levels. Cities with higher trade GDP ratios can be regarded as the ones having a greater trade openness. Trade openness was than compared to rural-urban inequality levels, showing that trade openness reduced rural-urban inequality significantly between 1988 and 1993. The observed rural-urban inequality levels are therefore not significantly affected by trade, but were however caused by higher investment rates in urban areas (Wei & Wu 2001). Based on economic growth and success the Chinese policies are largely in favour and biased towards an opening of the economy. This is including trade which impacted the economic growth of different regions tremendously differently. The Eastern region along the Chinese coastline are arguably the provinces that benefited the most from trade based economic growth, given their geographic advantage with the easier access to international markets due to their seaports. The different economic development speed accordingly caused significant regional inequality increases (Wan et al. 2007), while the trade effects within regions or cities seemed to reduce inequality (Wei & Wu 2001).

2.4 Economic globalization

Besides other factors such as the reduction of tariffs and other trade barriers, the introduction of further trade agreement and international standards such as the ISO shipping containers are significant globalization changes. The relative amount of trade and FDI to GDP are quite straightforward ways to measure economic globalization. Both measures vary in the different Chinese provinces, while for instance trade agreements are a national task.

There are international discussion whether economic globalization causes a race to the bottom or to the top, with its potential influences on income inequality. Page (1997) argues that the world faces a race to the bottom, due to the competition of countries to attract businesses. Therefore, countries lower tax and need to reduce their social benefits and social security levels in order to balance their budgets. In the same time this competition has the potential to influence job security regulations and laws. On the other hand there are arguments in favour of a race to the top with the occurring of new markets and an increased distribution path. These new markets may request higher production numbers and an increasing demand, causing more employment. This is consequently leading to higher salaries. Some countries such as Germany currently face low unemployment rates due to the success of their export sector (Dauth et al 2017). However, Germanies income inequality has not significantly declined in the last years, while it has been rising priorly to the job boom.

Furthermore, the international competition of countries to favour export conditions uses to some extend currency depreciations. Those affect the in general lower wages of import competing sector salaries more, than those of the export sector (Galbraith 2017). Therefore, inequality would be expected to rise.

Additionally to the theoretical in-balance towards an expected positive correlation of economic globalization and income inequality, previous academic work has also observed these relationship (Dreher & Gaston 2008). Therefore, hypothesis *H1* expects that: *'Economic globalization has a positive correlation with income inequality in China'.*

2.5 International trade effects on income inequality

As a key feature of economic globalization, trade effects could have a significant impact on income inequality both from a theoretical as well as from a true occurring point of view. Based on trade theory assumptions, in a model with heterogeneous firms that differ in their productivity levels, companies sort themselves based on their productivity levels. The least productive group of companies leaves the market, followed by firms that serve only the domestic market. More productive firms than engage into export while only the most productive firms enter foreign markets with FDI (Helpman et al. 2003). Based on the productivity level of the different firms, the wage is settled for their employees, in which the most productive firms are willed to pay for the most qualified and motivated staff. Data suggests that all wages tend to rise, while the ones of employees in firms engaged to foreign business tend to exceed those who work for domestic firms (Verhoogen 2008). Therefore, the inequality gap is according to the model of heterogeneous firms with different productivity levels, expected to widen. This theoretical model seems to be proven by empirical evidence from Mexico's manufacturing industry. The paper shows that the theoretical assumption

that only the most productive companies within an industry tend to be engaged in exports holds. Those companies produce goods with a higher quality standard and are therefore able to pay significantly higher wages than others. Consequently, these companies can choose their employees out of a greater candidate pool, attracting people who's motivation exceeds the one of others. Additionally, their staff tends to be better qualified, which is also related to the wages that exceed competitive levels. The mix of qualified and highly motivated employees combined with the assets and features of the extremely competitive plants tend to start a circle that leads to further export increases, followed by further wage increases etc. On the other hand are the less productive firms as well as the less qualified and potentially less motivated workforce, who actually also benefit from wage increases based on the countries international engagements into export. However, the rising wages paid by the exporting companies exceed the additional salaries of the others, so that an overall increase of within industry wage inequality can be observed (Verhoogen 2008).

Nevertheless, one can also find trade theory explaining exact opposite outcomes. Using the Stolper-Samuelson-Effect in a two by two world, the developed country would export the goods of its advantage, in this case the skilled worker intensive one. On the other hand is the developing country that will put its focus on the good demanding unskilled labour. Therefore, the developing country will with trade increases import more skilled goods, while financing this with 'unskilled' products. One important assumption is that factors can only move within sectors within the economy, but not across borders. Consequently, the wages of the 'skilled' product workers in the developing country decrease while the ones of unskilled workers increase, accordingly with the factor demand (Goldberg & Pavcnik 2004). This effect would cause a reduction in inequality. The theory changes in the case of tariffs and other trade barriers in which the sector with the highest tariff cuts would benefit the most. Applying this theory to China, it would lead to an assumption of lower income inequality, due to its heavy engagement into relatively unskilled worker demanding goods and export.

The fact that theoretical frameworks for both cases of positive as well as negative impacts of trade on income inequality exist is also backed up by research results. General empirical results of the impact of trade on inequality are quite indecisive. Some academic research shows that trade significantly widens the income inequality gap (Beyer et al 1999 & Janeba 2000), while others show minor impacts, but mention other reasons as the main driving forces behind inequality increases (Galiani & Sanguinetti 2003 & Lawerence 2008). Meschi and Vivarelli (2009) narrow the increasing inequality effect down to trade of developing economies with developed ones. Richardson (1995) found no significant effect between trade and inequality, while Jaumotte, Lall and Papagorgiou (2013) as well as Wei and Wu (2001) present evidence for negative influence of trade. Overall the academic evidence as well as the theoretical expectations remains highly unclear

so that it is hard to make predictions on the true effects of trade on income inequality. Therefore, the question of: *'Does international trade influences income inequality within the Chinese provinces?'*, will be left open with no hypothesis.

2.6 FDI and its effect on income inequality

Besides trade, FDI is another key component closely related to economic globalization with a potential impact on income inequality. FDI is internationally often associated with, financial globalization, and connected to positive effects on growth via knowledge spillovers and technological upgrades (Lee 2006). This form of financial globalization might potentially effect inequality in three possible ways as present by Basu and Guariglia (2007) in their paper on FDI effects on inequality in developing countries.

First and quite optimistic is the potential path that poor rural people become entrepreneurs at some point in the future which is only possible to occur if their agricultural productivity as well as their available human capital in the beginning is high, so that they can catch up with the richer and engage into other sectors of the economy besides their traditional agricultural one. This inequality reducing path is assumed to be optimistic by the authors and the short term effects of FDI would remain unclear, while the poor would benefit from FDI in the long term if they are able to engage into other sectors.

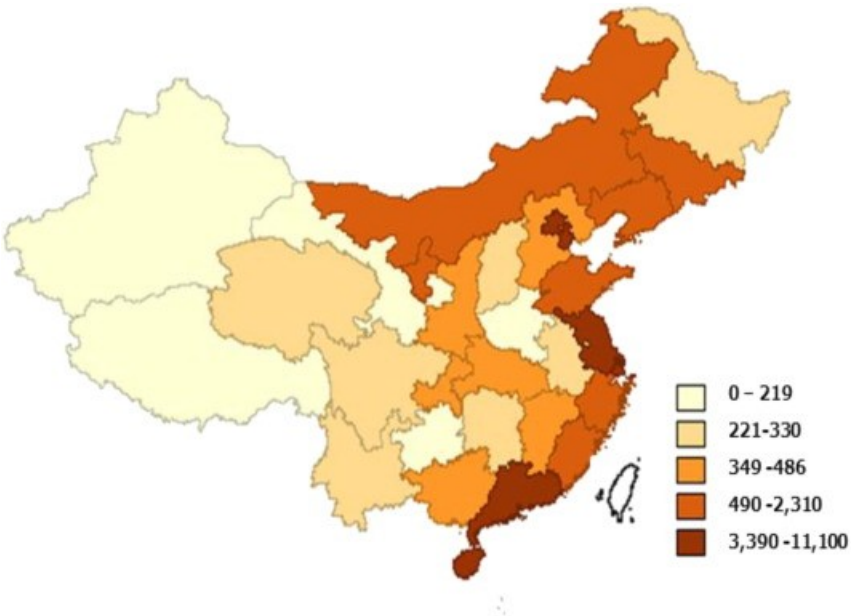
In scenario two, the poor population share has income levels below the saturation level, so that they remain isolated from the modernized sectors of the wealthier parts of the society. They would be stuck in the so called poverty trap, while the rich grow their income share with the help of FDI and spillover effects.

Case three assumes that the income level for the poor is above the saturation level, creating some room for trade of agricultural goods for manufactured goods from the richer parts. Growth might occur in the short run but has its boundaries due to the agricultural base of the poorer incomes as well as to limited human capital availability. In the long run this path would also lead to an enclave economy unless the trade profits are used to improve human capital. Basu and Guariglia's (2007) show that FDI increases inequality. This is due to that FDI increases the possibilities of the skilled sectors, which leads to a relative decrease of the traditional agricultural economy share. One problem is that the poor have no access to financial capabilities in order to approach technological upgrades based on FDI. Missing human capabilities is another crucial factor, which occurs based on missing money for schooling, unless the political system of the country introduces free access or potential gains of scenario three are invested into the improvement of the poor's human capital. Those results seem to be approved by other studies such as a Latin America based one showing increasing impacts of FDI on inequality, while there is no reverse effect (Herzer et al. 2014). Further

international based empirical papers see similar effects of the positive influence of FDI on income inequality (Clark et al. 2011, Choi 2006 & Figini 2011).

Those international results seem to hold for China as well, where increasing inequality was caused by higher investment rates in urban areas (Wei & Wu 2001). China in general has the issue of FDI concentration at specific places, especially in the East of the country as illustrated in *Figure 1*. Those clusters of foreign investment which are highest in and around Shanghai with its neighbouring province of Jiangsu as well as in the bordering provinces of Hongkong, Guandong and Hainan. Another outstanding concentration occurred in Beijing. In the same time foreign investments reduces significantly towards the hinterland. Those intensified investments in certain areas lead to widening inequality gaps with the potential to threat the continuously high economic growth rates if not taken into account (Whalley & Xian 2010). The concentration of FDI as well as previous international and Chinese academic research results lead consequently to the hypothesis *H2: 'FDI has a positive correlation effect on income inequality in China'.*

Figure 1 Spatial distribution of FDI per capita, 1999–2010 (annual averages, 2005 US$).



Source: Wu & Heerink (2016)

2.7 Social globalization

Globalization does not only occur in the form of economic activities but also in the form of cultural and behavioural changes. The social globalization dimensions try to measure by how much different

groups and countries around the world are in contact with each other. It tries to reflect the possibilities of idea spillovers, creativity spread and the potential extended of knowledge (Dreher &Gaston 2008). Additionally it includes possible cultural similarities that might occur for example through a potential effect called 'The Americanization of movies', which is based on the domination of Hollywood in the international media business (Pells 2004). The impact of the social globalization dimension on income inequality is a rather difficult field, since there are barely straight forward data measurements such as FDI and trade for economic globalization.

The impact that social globalization takes, might come indirectly through the effects of technological changes (Jaumotte et al. 2013). Due to the spread of ideas and knowledge, international communication could influence the innovation process. This increased innovation process has the potential to drive further economic growth in which it seems to be that income growth rates of richer households extend the ones of poorer households during economic growth (Cingano 2014). This would cause the income inequality gap to widen.

Reduced communication costs, combined with in general improved communication technologies, lie the foundation of a reduction of bargaining power for workers (Page 1997). Workers with less skills compete not only with workers within their neighbour hood, with whom they might have formed trade unions, but the increasing communications possibilities make it easier to find alternative workers from elsewhere or to shift production, which could increase income inequality.

Dreher and Gaston (2008) have used a social globalization measure to research the impact of this dimension and found that social globalization tends to significantly increase income inequality in OECD countries, yet, to a smaller extend than economic globalization. However, those results seem to hold less in developing countries. A potential impact of social globalization fields is that it leads to de-unionisation in OECD countries (Dreher & Gaston 2008), which was not proven for developing countries and is therefore less likely to have an influence in China.

The distribution of ideas, plans and technology through communication and the spread of technology by this channels, influences income inequality elsewhere. Additionally, international communication has the potential to lower bargaining power of the lower working class. Based on this combination of factors the paper hypothesises that *H3: 'Globalization in the form of international communication has a positive impact on income inequality in China'.*

2.8 Hypothesises summary

Based on previous academic work as well as on empirically accepted and widespread economic theory this paper has conducted three hypothesises to test for, in order to answer the research

question: '*Do different globalization stages and international involvements of the Chinese provinces affect inequality differently?'*.

The theoretical in-balance towards an expected positive correlation of economic globalization and income inequality, as well as previous academic results lead to a positive correlation expectation in: *'Does economic globalization has an impact on income inequality in the Chinese provinces?'.* Therefore, hypothesis *H1* expects that: *'Economic globalization has a positive correlation with income inequality in China'.*

Due to the concept of trade, theoretical arguments for increasing- as well as for decreasing income inequality effects can be based on international trade. The additional fact of opponent academic results, leads to that this paper has no expectation about trade effects on income inequality. Therefore, the sub-question: *'Does economic globalization has an impact on income inequality in the Chinese provinces?',* will remain open and will be answered by the empirical analysis.

The cluster building of FDI in China and previous international as well as Chinese academic research lead to the expectation that the sub-question: *'Does FDI has a positive impact on income inequality within the Chinese provinces?'*, can not be denied. Therefore, it is hypothesised that *H2: 'FDI has a positive correlation effect on income inequality in China'.*

The impact of communication technology on the bargaining power as well as its improving effect in terms of international knowledge spread, both cause an expected income inequality increase. Therefore, it is expected that the sub-question: *'Does international communication effects income inequality in the Chinese provinces?',* will be answered with positive correlation findings, leading to hypothesis *H3: 'Globalization in the form of international communication has a positive impact on income inequality in China'*

3 Data & Methodology

3.1 Data source

All data that is used was obtained from China data online, which is a data collection of the University of Michigan. The used data is an English translated version of the Chinese Statistical yearbooks, since the original versions are mostly published in Chinese only. The data set contains data from all provincial level Statistical yearbooks. Data was obtained as far back in time as data was provided in English language, with a potential data history improvement for a Chinese speaker, since especially older Statistical yearbooks, have limited translations. In the case of data ambiguities, with different values for the same data point in different books, the most recent provided data was used. Based on previous research of potentially significant variables, I had

screened the Chinese Statistical yearbooks to find if the demanded data is available. Often I had to adjust and take variables that were as close as possible to the original demands, however I ensured that they were representing similar features in an adequate way and I will explain the decision more closely in the following section. Another common feature is that data is provided in different units and measurements so that easy calculations needed to be made in order to ensure similarity in the measurement units within the whole data set.

The final data set is limited to 25 out of the 31 Chinese provinces due to missing income data. Therefore, the provinces Tianjin, Jilin, Heilongjiang, Shandong, Hunan and Yunnan dropped out of the original data set.

3.2 Data limitation

A crucial fact one needs to take into account while dealing with Chinese official data is that it is potentially influenced in order to show that certain socialist government goals have been reached. Chinese officials provide plenty of statistics, especially when comparing it to other countries and considering that it is still a developing economy. The Chinese Statistical Yearbooks are a rich data source, however they have certain limitations that need to be taken into account while working with it or while reading empiric work that has used it. According to Holz (2013) there are several issues that occur for almost all economic empirical research while dealing with Chinese data. One is that definitions for several data, such as ownership changes over the years as well as that some statistics seem to be incomplete. Most statistical yearbooks provide data only from the after reform period starting from 1978 onwards, while the time frame differs significantly from the data field, the different provinces etc. Since the original Statistical Yearbooks were only published in Chinese with some extensions since 2001/2002, most international researchers need to work with translated work due to a lack of language knowledge. Original datasets in Chinese may provide more data, going back further in time but non of it is provided in English language. Furthermore, one can detect discrepancies in Chinese Statistical Yearbook, meaning that the same data point a few years back in time might take different values in different Chinese Statistical Yearbooks. The most common and probably most accurate way is to use the most recent data available since it had mostly shown to be the most reliable, that got corrected for errors or manipulations that had been made in the past. Especially while dealing with topics such as inequality, which are rather sensitive for a Socialist government, one needs to take potential data manipulations into account. It is important to be sceptically and it is smart to look for trends rather than trying to make precise analyses, dealing with the exact numbers. Next to potentially manipulated income data, which is used as a base for the inequality- calculations and measures, also data on employment levels have a relatively high likelihood to be manipulated in order to ensure social stability within the country. Low

unemployment benefits or social shames can also easily lead to situations in which unemployment workers do not register themselves, even thought that they are unemployed or underemployed according to international definitions, leading to potential errors in the available data. Additionally the policy of the 'iron rice bowl' during the late 1990's simply guaranteed life time employments for urban workers, leading to a system in which people work in the state sector, while being highly inefficient and unproductive but officially employed (Giles & Yoo 2007). This could be seen to some extend as a different way of unemployment benefits, since those people would not all be able to find jobs elsewhere, so that they continued working in State owned enterprises (SOE), which were allowed to make negative profits. Profits as such are not particularly the main goal of SOE's, but it is also their job to ensure a smooth transition of the economy towards a more market orientated system. SOE's are used to ensure a certain social stability and buy time to adjust the system, rather than facing dramatic overnight changes as they were observed in the former communist states of Eastern Europe, especially within the former Soviet Union (Sachs & Woo 1994). All of this should be taken into account while dealing with Chinese data, so that some factors that might play a significant role in other countries might play a less important role within an analysis about China. However, one should still control for this data as long as previous academic work would strongly suggest impacts, but the limitations need to be taken into account while interpreting the results.

3.3 Variables

Dependent variable: Income inequality

This study created an index to measure inequality which shows the multiplication factor of the income of the lowest income 20 percent towards the highest income 20 percent of each province in each year. A higher factor stands consequently for a higher inequality. The main comparison is done for urban inequality due to the richest available data. Furthermore, an analysis is also done on rural inequality comparisons but the available data is fairly limited which makes it hard to derive general results out of it.

Independent variables: Globalization measures

All globalization measures were chosen by taking the KOF index (Dreher 2006) as an example. The original variables of the KOF index were taken and compared to existing data within the Chinese Statistical yearbooks. According to existing data, several variables were carefully picked in order to represent globalization in this study, while others were neglected due to data limitations. One neglected example is the field of political globalization in which the original KOF index uses the number of embassies in countries, the memberships in international organizations, the participation

in U.N. security council missions and international treaties, however all of those fields are fields in which only sovereign states are involved. Since this study is conducted on a provincial level the field of political globalization needed to be neglected, since all provinces would face similar values, so that it is uninteresting to include these values.

Economic globalization

From the eight original variables that represented economic globalization in the KOF index, this paper chooses two, namely trade as a percentage of GDP and FDI as a percentage of GDP, to represent economic globalization. Trade rates represent international flows and connections in an adequate way, while FDI represents the international interest in the province and the involvement of the province in international economics. For both chosen 'flow' variables the Chinese Statistical yearbooks provides an adequate data set. The KOF index has a second field called 'restrictions' next to actual flows, however access to these data, such as 'Hidden import barriers' is fairly limited so that the two flow variables trade and FDI will represent economic globalization in this analysis. Both are rather straight forward and used in various globalization indexes (Kearney 2002, Heshmati 2003 & Dreher & Gaston 2008).

Social globalization

The KOF index classifies social globalization in three categories. The first covers personal contacts, the second includes data on information flows and the third measures cultural proximity. Personal contacts is meant to reflect the interaction between people from different places around the globe. Based on the KOF indexes variable choice and existing data the business volume of post and telecommunication relative to the provinces GDP was chosen to reflect the actual personal contact to people elsewhere than face to face contact. Additionally the number of international incoming tourists per citizen was taken in order to find a further approximation of potential international contact. Both variables could hypothetically be misleading in the case that e.g. international tourists would only be locked in their hotels with no contact to local people, but that cases are quite unlikely and both variables remain approximations which should give an adequate reflection of actual personal contact among international and local people. Furthermore, the amount of phones per person was chosen, representing information flows as well as the number of newspapers that were available in the province, relative to the population. Both variables have certain limitations such as that the information flow in the newspapers can be controlled, but the combination of the variables should give an adequate choice how likely it is that international information is spread. In the case of restricted information flows via newspapers, information flow via phones can still exists. Also does a greater variety of newspapers represent different focuses of spread information, including

different views and therefore different information possibilities. The information flow is meant to reflect the potential flow of ideas and images. The third dimension of Social globalization in the KOF index, 'cultural proximity' is fairly difficult to measure. Some suggestions such as the number of English songs or movies from Hollywood as suggest by some researchers are rather poor approximations, since they assume an international domination of US cultural goods, rather than reflecting a real globalization. Potentially the amount of international movies shown in cinemas or songs from foreign musicians might be a more adequate choice, however there is no available data, so that this analysis will focus on the first two sub fields of 'personal contacts' and 'information flows', while neglecting the 'cultural proximity' due to limited data as well as to limited academic reliability.

Control Variables

Various control variables play an important role in the analysis. Empiric work shows that one of the most crucial factors in terms of income inequality is education. Academic papers report that education in OECD countries matters in qualitative terms, e.g. the skill proficiency, as well as in quantitative terms such as the years of participation in education (Cingano 2014). These finding on education seems to have to a certain extend also a significant impact in China, since additional educations overcomes parts of the existing income gap between ethnic minorities and the majority of Han Chinese (Campos et al. 2016). Every additional year of education reduces the ethnically caused inequality by a significant percentage. These results are also likely to occur when generalized to the society as a whole, due to the effects of education on inequality elsewhere in the world. An equal distribution of education enrolments leads to less inequality (Gregorio & Lee 2002), therefore this paper controls for its effects. Additional education is expected to have a negative effect on income inequality. Therefore, the analysis is controlling for enrolment rates, relative to the population, in the different forms of the education, primary, secondary and higher education, in order to represent education.

Furthermore, unemployment rates might play a crucial role, since high unemployment is likely to generate higher income inequality (Mocan 1999). However, while talking about unemployment rates one always needs to consider that it is a sensitive topic with potential data manipulations in a way that favours political decision makers. Additionally, one needs to take into account that China has differently than the former Soviet Union used its State Owned Enterprises to keep unemployment rates low and to ensure social stability. State Owned Enterprises are to some extend used to control and ensure a relatively low unemployment rate, while lots of workers are unproductive in their work as well as potentially underemployed (Sachs & Woo 1994). Both of these factors might play a significant role, however they are not covered by the unemployment

rates.

A further controlling factor are the shares of the various sectors of the economy since the Kuznet curve assumes rising inequality with the developing of a secondary sector, followed by a decrease (Piketty & Saez 2003). The same might hold for the tertiary sector, however these effect is not empirically proven yet, since the process is currently occurring, but it is crucial to control for these possible effects in order to get reliable results.

Another important control factor are the gender shares, since it seems to hold for the most provinces that there is a slightly higher share of male population, which can to some extent be explained by the one child policy and the family wishes for sons. A gender based wage gap exists which has a potential influence on inequality within the Chinese provinces (Blau 2016) and is therefore controlled for in the empirical analysis of this paper.

3.4 Summary statistic

Based on the variables and the principal component analysis explained in the methodology section the empirical analysis has the following descriptive statistic (Table 1). It can clearly be seen that there is significantly more data on Urban income inequality available than on rural income inequality, making the Urban results potentially more reliable. Furthermore, one can see that the maximum income multiplication factor of the poor income to the rich is more than three times the one of the urban counter part. This maximum amount seems to be fairly high. Additionally it can be reported that the mean rural income inequality is twice as high as the urban one.

Minimum relative FDI, international tourists and newspapers can partly be explained by the time China was closed to the rest of the world. However, zero seems to be too low even for those days, so that reporting issues can be assumed.

Table 1 Summary statistic

Variable	Observations	Mean	Std. Dev.	Min	Max
Urban income inequality	338	4.497454	1.084817	2.074102	8.252133
Rural income inequality	95	8.195377	29.70271	2.73488	29.33778
FDI	557	0.0040189	0.0046188	0	0.0402381
Trade	653	0.0509873	0.0755836	0.002674	0.3983291
Post & Tel.	616	0.035082	0.0284845	0	0.1264406
Phones	570	2.83806	16.32741	0.00013	177.2259
Int. Tourists	505	0.0312373	0.0481861	0	0.2598449
Newspapers	451	3.05e-06	3.66e-06	0	0.0000207
Various Glob. Factors	333	-1.94e-09	1.510852	-1.793065	5.881792
Econ. Glob.	333	-3.48e-09	1.198424	-1.354257	4.54143
Int. communication	333	-1.39e-09	1.056502	-0.7758017	8.36876

3.5 Models

Model 1

This paper starts with a panel data regression in which all of the different globalization variables are playing an individual role, in which general trends should be observed in order to provide a first impression and overview of the chosen data. Including this data leads to the first model:

M1) $Y1^{jt} = ß1 + ß2\,\Theta^{jt} + ß3\,\Phi^{jt} + ß4\,\Psi^{jt} + ß5\,\Omega^{jt} + ß6\,\Sigma^{jt} + ß7\,\Delta^{jt} + ß8\,\ddot{I}^{jt} + ß9\,\Gamma^{jt} + ß10\,\Pi^{jt} + ß11\,\Xi^{jt} + ß12\,\Lambda^{jt} + ß13\,M^{jt} + ß14\,N^{jt} + ß15\,P^{jt} + ß16\,X^{jt} + e$

^{j}	= Province ^{j}	^{t}	= Year ^{t}
$Y1^{jt}$	= Inequality index	Θ^{jt}	= FDI relative to GDP
Φ^{jt}	= Trade relative to GDP	Ψ^{jt}	= Post & Telecommunication relative to GDP
Ω^{jt}	= Phones per person	Σ^{jt}	= International tourists per person
Δ^{jt}	= Newspaper per person	$\ddot{I}^{jt}$	= Primary Education enrolment rates
Γ^{jt}	= Secondary Education enrolment rates	Π^{jt}	= Higher Education enrolment rates
Ξ^{jt}	= Unemployment	Λ^{jt}	= GDP primary sector
M^{jt}	= GDP secondary sector	N^{jt}	= GDP tertiary sector
P^{jt}	= Gender share: Male	X^{jt}	= Gender share: Female

Model 2 – Principal component analysis

Followed by model M1) the globalization variables are used in the following way. Based on the various different globalization influences and in order to overcome the scaling issues that occur while creating an index such as the original KOF index, a principal component analysis is chosen in order to provide reliable results. Based on the Eigenvalues (Appendix 1) and the explained variance (Appendix 1) the analysis uses three components (Appendix 2) consisting of various different influences. The created components can be described and named as 'Various Globalization Factors', 'Economic Globalization' and 'International communication'. Besides the Economic globalization the provided component differed from the original fields of the KOF index so that new descriptive names needed to be found that represent their data range. The Economic Globalization component consists of FDI and Trade and is rather straight forward and in line of previous descriptions. The component of International communication includes the Number of Phones per person as well as the Business volume of Post & Telecommunication relative to the GDP, so that it is basically representing the use of modern communication systems. Therefore International communication is an adequate description for a further interpretation. The first and most important component in terms of variance differences is however not as straight forward as the other two. Several different variables from all fields of globalization, namely: Trade in terms of GDP, Business volume of Post & Telecommunication relative to the GDP, the relative share of International Tourists per Citizen and the amount of Newspaper per people, play a role in this component, while not having a straight

red line, so that it is named: 'Various Globalization factors'. This leads to the following model:

M2) $Y1^{jt} = ß1 + ß2\ ⋔^{jt} + ß3\ ₽^{jt} + ß4\ ℭ^{jt} + ß5\ Ï^{jt} + ß6\ Γ^{jt} + ß7\ Π^{jt} + ß8\ Ξ^{jt} + ß9\ Λ^{jt} + ß10\ M^{jt} + ß11\ N^{jt} + ß12\ P^{jt} + ß13\ X^{jt} + e$

^{j}	= Province ^{j}	^{t}	= Year ^{t}
$Y1^{jt}$	= Inequality index	$⋔^{jt}$	= Various Globalization factors
$₽^{jt}$	= Economic Globalization	$ℭ^{jt}$	= International communication
$Ï^{jt}$	= Primary Education enrolment rates	$Γ^{jt}$	= Secondary Education enrolment rates
$Π^{jt}$	= Higher Education enrolment rates	$Ξ^{jt}$	= Unemployment
$Λ^{jt}$	= GDP primary sector	M^{jt}	= GDP secondary sector
N^{jt}	= GDP tertiary sector	P^{jt}	= Gender share: Male
X^{jt}	= Gender share: Female		

4 Results

4.1 Model 1- based on various globalization variables

Urban inequality – dependent variables

The panel data regression for urban inequality shows some results that are out of the theoretical expectation. FDI shows some highly significant, negative effects on urban inequality, while former academic research has suggest an opposite effect (Jaumotte et al. 2013, Te Velde & Morrissey 2004, & Herzer et al 2014). Therefore *H2: 'FDI has a positive correlation effect on income inequality in China',* is rejected. Potential explanations for these negative effects on income inequality can be found within theory. Assuming that foreign investments are made into the poorer sectors, causing their income levels to rise more than those of the richer, due to the investments. Figini and Görg (2011) argue that their negative results of FDI on inequality are caused by the inflowing FDI which firstly increases inequality in the moment that the new technology gets available. This holds especially for the availability in multinational enterprises, causing a gap between their workers and the rest. At a later stage Chinese firms would imitate the foreigners and advance their own technology, causing the gap to close again and to reach a lower income inequality point than before. This explanation of my empirical results is also in line with the economic history of China and its economic development. There are also other empirical analysises that suggest that FDI has significant negative effects on inequality in developing economies while the opposite is true for developed once (Figini & Görg 2011). Similar FDI effects can be found for other middle income countries besides China, such as Turkey and Mexico (Ucal et al. 2016).

There are no significant results for trade on urban inequality which reflects the theoretical background, with different potential impact paths. It is also not surprising, based on previous academic work, with opposing findings. Trade should decrease inequality in developing economies

especially through agricultural benefits and the usage of relatively poor, potentially underemployed people, according to Heckscher-Ohlin theory. However, China is not entirely a developing economy and due to its sheer size and differences, one also needs to take effects into account that occur in more developed areas. Here the pressure on low wages could increase due to the international competition and the need to adapt to international price settings. However, the counter theory of Stolper-Samuelson would be that low skill salaries rise due to a specialization of China into this sector, causing a higher demand. It seems to be logical that the Chinese data shows insignificant results for trade, potentially based on effects of both theories.

The business volume of Post & Telecommunication services has a positive correlation effect on income inequality which can be explained by two potential causes. Firstly, does the business volume reflect international communication or communication in general. This is than expected to lower the bargaining power of individual workers, due to an information- and usage advantage of the employer (Page 1997). Secondly, is communication needed for the spread of knowledge and ideas which can cause technological changes, leading to increasing income inequality (Jaumotte et al. 2013).

Non of the other three variables phones per person, the relative amount of international tourist nor the amount of newspapers have a significant impact. This might be due to the fact that each of those variables alone are potentially representing little influences of globalization so that this analysis is followed by a principal component analysis in order to see combined factor effects.

Urban inequality – control variables

Primary education has a significant negative impact on inequality which is in line with expectations since primary education is expected to have also the biggest impact on poverty reduction. High enrolment rates support to close the gap of enrolment rates between the different education sectors. More equal distributed education leads to less income inequality around the globe (Gregorio & Lee 2002). The academic world has mostly agreed on that the effects decrease with every additional year of schooling, but that primary education plays the most crucial role. However, in this analysis secondary as well as higher education remain insignificant.

Unemployment remains also insignificant which is potentially to some extend explained by the fact that China did not really know unemployment, but rather under employment (Sachs & Woo 1994), which is not reported in the unemployment data. Furthermore, it is important to point out that the unemployment rate is a political sensitive topic so that one should also view its data rather sceptically. Therefore, the insignificant unemployment results come not totally unsurprisingly.

The different economic sectors and their share on the GDP have significantly positive correlation results on inequality with the secondary sector effects exceeding the ones of the tertiary.

The primary sector GDP share remains insignificant. Neither that those two sectors are positively significant, nor that the secondary effect is bigger than the tertiary effect, are surprisingly. It can well be explained by the inverted u-shaped Kuznet curve and the current stage of the Chinese economic development with a shift towards the industrial and service sectors. Especially the creation or better said, modernization of the industrial sectors to compete on international markets, require high investments and workers face the competition pressure, so that the results are in line with Kuznets economic theory.

The gender shares are not significant, which might be caused by the data limitation that the overall population share is used rather than only the workers gender. However, this was the best available data, but it can not reflect the potential gender effects that occur elsewhere (Blau 2016).

Table 2 Panel data regression results with globalization representing variables

VARIABLES	Urban income inequality	Rural income inequality
FDI	-88.86***	91.64
	(28.10)	(141.5)
Trade	4.364	-6.887
	(3.065)	(9.345)
Post & Telecommunication	5.561**	-0.413
	(2.327)	(8.432)
Phones	0.0706	0.182
	(0.455)	(1.112)
Int. Tourists	-0.225	-1.931
	(1.349)	(17.08)
Newspaper	-12,094	-179,080
	(15,684)	(192,330)
Primary Education	-18.78***	16.88
	(3.649)	(38.77)
Secondary Education	9.789	-123.7
	(7.506)	(89.53)
Higher Education	-13.29	-78.69
	(19.42)	(179.4)
Unemployment	56.21	1,522*
	(63.46)	(888.9)
GDP primary sector	-0.00644	0.486
	(0.0226)	(5.146)
GDP secondary sector	0.0810***	0.883
	(0.0210)	(5.179)
GDP tertiary sector	0.0441***	0.782
	(0.0115)	(5.168)
Gender share: Male	3.339	19.47
	(4.586)	(13.67)
Gender share: Female	3.257	18.84
	(4.710)	(13.35)
Constant	-331.1	-1,993
	(464.5)	(1,614)
Observations	202	74
Number of Provinces	21	13

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Rural inequality

There are no key variables with significant results for rural inequality. These results can most likely and to a big extend be explained by a fairly limited data set on income inequality in rural areas in the Chinese provinces. Only 13 out of 31 provinces had rural inequality data at all. So about one third and out of this provinces only 74 observations were available which is for sure too few. The

only significant variable is unemployment, however due to the data limitation one needs to be careful to derive general conclusions from it.

4.2 Model 2 - Results based on principal components

Urban income inequality – component variables

Economic globalization has a significant negative impact on income inequality within the Chinese provinces and is therefore not in line with the expectations that assumed a positive effect based on theory and previous research. Therefore, *H1*: *'Economic globalization has a positive correlation with income inequality in China',* is rejected. A potential explanation may be based on the growing economy which has potentially created income possibilities for previously underemployed worker. Arguments such as the ones of Page (1997) that international economic engagement lower the regulatory employment regulation and job securities, might be reverse to some extend in China. In line with the Chinese market liberalization, more and more income possibilities got liberalized in fields that had not allowed for income possibilities before. Therefore, the creation of a private sector in China based on international economic integration had the potential to create income possibilities especially for low skilled workers. The long specialization of low skilled manufacturing has risen the demand for workers in these sections and lead to potential income increases.

The results for international communication are in line with expectations and have a positive correlation effect on intra-provincial Chinese income inequality, causing that *H3: 'Globalization in the form of international communication has a positive impact on income inequality in China',* seems to hold. Several potential explanations can be pointed out. One possible explanation is the balance shift of bargaining power due to an advantage of information, based on communication towards other areas (Page 1997). Those weaker bargaining power is reflected in the positive correlation towards income inequality, since the poor unskilled worker positions are the easiest to be replaced or shifted elsewhere. Additionally, the spread of information, the communication of ideas and knowledge transfer is all based on international communication, which is proven to have a significant positive impact on income inequality (Jaumotte et al 2013). In addition, the information advantage may open better investment possibilities for the richer part of the society and their existing capital stock could therefore generate higher incomes.

The component that is based on various globalization representing variables has no significant results which might either be due to data limitations or simply based on little to no effects of globalization in general on income inequality in China.

Urban income inequality – control variables

The control variables keep exactly the same significance levels as in the previous regression that was only based on the individual variables rather than component based ones. The observed effects

show tiny neglect-able minor changes, so that the interpretation is rather straight forward and quite similar.

Primary education has still significant negative impact on inequality and is therefore in line with the expectations, while secondary as well as higher education remain insignificant. The results follow therefore the same path as in the first regression and can be explained by the additional income effects of additional schooling years that decrease with every extra year.

Unemployment remains as prior also insignificant, with the same potential explanation that China did not really know unemployment, but rather under employment (Sachs & Woo 1994), which is not reported in the unemployment data. The same holds for the sensitivity of the unemployment topic in an officially socialist state.

The different economic sectors and their share on the GDP have again significantly positive results on inequality with the secondary sector effects exceeding the ones of the tertiary, while the primary one is still insignificant. The unsurprising results can be explained by the inverted u-shaped Kuznet curve and the current stage on the Chinese economic development with a shift towards the industrial and service sectors.

Lastly the gender shares are not significant, which might again be explained by the data limitation since no worker gender shares are available but only the ones of the population as a whole.

Table 3 Regression results based on principal component variables

VARIABLES	Urban income inequality	Rural income inequality
Various Globalization Factors	0.0284	-0.852
	(0.104)	(0.776)
Economic Globalization	-0.214***	0.136
	(0.0551)	(0.518)
International communication	0.623***	-1.001
	(0.233)	(0.995)
Primary Education	-19.33***	15.68
	(3.263)	(32.87)
Secondary Education	10.36	-135.6
	(9.113)	(89.43)
Higher Education	10.67	-45.91
	(11.15)	(151.5)
Unemployment	50.59	1,582*
	(62.25)	(892.3)
GDP primary sector	-0.00849	0.816
	(0.0157)	(4.652)
GDP secondary sector	0.0685***	1.249
	(0.0158)	(4.695)
GDP tertiary sector	0.0459***	1.135
	(0.0126)	(4.684)
Gender share: Male	1.990	18.97
	(4.607)	(13.76)
Gender share: Female	1.897	18.40
	(4.749)	(13.33)
Constant	-195.0	-1,982
	(467.6)	(1,597)
Observations	202	74
Number of Provinces	21	13

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Rural income inequality

Rural income inequality results suffer from the same limitations as in the prior regression. There is only data for 13 out of 31 provinces and therefore it is hard to derive general conclusions. Besides that only the unemployment variable is significant, but the existing data is so thin that one can not derive reliable academic results from it. If one would derive conclusions than that there is little influence of globalization in rural income inequality, but this should be done extremely sceptical.

5 Conclusion

5.1 Summary

This paper has conducted two regressions in order to answer the question: '*Do different globalization stages and international involvements of the Chinese provinces affect intra-provinical income inequality?'*. For the overall answer four occurring sub-questions have been answered. The economic integration, economic globalization, of the Chinese into the international economy has created a negative impact on income inequality within Chinese provinces, which could be explained by a decrease of regulations. The liberalization of the market has therefore not only created an increased competition, but also new business fields and opportunities. The long specialization in goods demanding a high amount of unskilled work, has potentially driven its demand and therefore salaries up. It had therefore a significant negative influence on intra-provincial Chinese income inequality, since the unskilled benefited more from this step. The impact of trade remained insignificant, which could be potentially explained due to opposing effects that trade is causing. On the one hand trade increases the demand for low skilled labour due to Chinas specialization and also wages. On the other hand did China face more international competition, which might cause a negative effect, leading to an overall insignificant impact of trade on income inequality within Chinese provinces. That FDI reduces income inequality is potentially based on foreign technology that gets spread through a knowledge spillover. In theory this should increase the premium of workers in the foreign firms, however, successful imitation by Chinese can lead to a decrease of a prior existing income gap between firms that had and that did not have the technology. Lastly, international communication has a positive correlation with intra-provincial Chinese income inequality, which is potentially caused by a loss of bargaining power or a spread of knowledge and technology that benefits only the richer parts of the society. Another reason might be better investments due to additional information, which would cause the rich capital stock based income to increase.

Overall, one can conclude that globalization has a significant impact on Chinese intra-provincial income inequality. There are both negative as well as positive correlation findings that can be

related to globalization and it is the best to view these influences separated in order to derive the right conclusions.

5.2 Impact of the results

Income inequality has potential negative impacts on a society especially for the poor of it. Examples are a reduced life expectancy, lower educational qualifications, higher crime rates and higher rates of mental health problems. Furthermore, previous work has shown that China is together with Russia at a specific risk of political instability based on inequality that occurred during the market reforms. Economically, income inequality also negatively affects economic growth as well as productivity growth rates, so that Chinas political decision makers should be well aware of the potentially occurring problems. Based on this papers further steps should be taken in order to deepen our knowledge of the impact of globalization on Chinese intra-provinical income inequality. Only improved understanding will lead to political tools and instruments that will help to reduce the income inequality again, while harming overall growth as little as possible.

Economic globalization, which includes the impacts of FDI should lead to a first conclusion based on two facts. Both have a positive correlation with regional income inequality, so average incomes of the different provinces. In the same time they reduce the income inequality within regions, intra-provincial. Therefore, a potential way for the future is to continue to improve the infrastructure of the hinterland, since geography plays a significant role. A better connection to the worlds economy could potentially improve investments into areas away from the coast and lower regional inequality, while the reducing impact on Chinese intra-provinical income inequality could be kept.

More academic work is needed in order to develop ideas and instruments how the impact of international communication on intra-provinicial income inequality can be reduced. This paper has shown that it has a significant positive correlation, yet, the effect might occur through different paths. Research is needed to detect the exact reasons behind the positive correlation. One potential reason is the loss of bargaining by lower skilled workers, which could be counter-balanced by a strengthening of labour unions. However, the effect could also be based on investment profits of the rich or technology influences. Future research will need to find the exact reasons so that adequate advises can be conducted based on hard facts and without any speculations of reasons.

5.3 Limitations

All results of this paper are limited to urban income inequality, since the availability of rural income data is fairly limited. Only one third of the Chinese provinces had at least one number for rural income inequality, so that insignificant results are not really surprising and the academic outcome

needs to be viewed extremely careful due to the data limitation. Data limitation itself is one of the biggest shortcomings of this paper. Especially income and unemployment data are sensitive topics to a socialist government so that all results needed to be viewed sceptically. Those shortcomings leave room for further future research, starting with a similar analysis with extended data, which might be possible to conduct by a Chinese native speaker since translated data gets fairly limited at a certain point of time, differing from province to province. Alternative data besides the official one of the Chinese statistical yearbook would also be value adding, due to its possibilities to run robustness tests. A further big limitation considering their impact in other countries is the missing data on labour unions, which could improve the analysis significantly if data would be available.

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Appendix

Appendix 1

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp 1	2.42746	1.0186	0.4046	0.4046
Comp 2	1.140886	0.49312	0.2348	0.6394
Comp 3	0.959548	0.227818	0.1599	0.7993
Comp 4	0.731731	0.445175	0.1220	0.9213
Comp 5	0.286556	0.100714	0.0478	0.9690
Comp 6	0.185841		0.0310	1.0000

Appendix 2

Variable	Various Glob. Factors	Econ. Globalization	Communicative Globalization	Unexplained
FDI		0.7834		0.1726
Trade	0.3391	0.5603		0.1555
Post & Telecommunication	-0.3466		0.3339	0.4818
Phones			0.9317	0.0914
Int. Tourists	0.6043			0.1374
Newspapers	0.6219			0.1653