



LUND UNIVERSITY

School of Economics and Management

**Master program in International
Economics with a Focus on China**

**Income Differences between Minorities and Han Chinese:
Discrimination or structural problems?**

Stefanie Oedekoven
gch14soe@student.lu.se

Abstract: When looking at the Chinese society, it becomes visible that it is made up of over 56 ethnicities, of which 55 form minority groups. Data shows that members of these ethnic minorities have a lower income than individuals belonging to the majority and this gap doesn't seem to be closing. The aim of this thesis is to investigate what causes the income inequalities and if it is a problem of discrimination or structural problems like geographical endowments. By analyzing data from the CHIP 2007, the question of this cause should be answered. In conducting regression analyses the impact of different factors on income can be reviewed and considered. The results show that geographical conditions and matters of decentralization play a much bigger role than the ethnicity itself and the minority status. A case study looking at a development project initiated by the World Bank shows that by building infrastructure and access to tourism, remote villages in South China have a chance to preserve their natural and cultural heritage while profiting from an increase in tourism. It provides a practical example for the implications from the previous empirical analysis. Finally, the paper gives some important implications about income inequalities in China, namely that they are caused not by discrimination itself according to the findings but due to spatial characteristics.

Key words: minorities, discrimination, income inequality, endowments, CHIP 2007, Southern China, World Bank, geography

EKHM51

Master thesis (15 credits ECTS)

June 2015

Supervisor: Christer Gunnarsson

Examiner: Anders Nilsson

Word Count: 15 904

Acknowledgements

I want to thank my supervisor Christer Gunnarsson for the help he has provided me throughout the course of my thesis, his ideas and encouragement to pursue this topic further. I also want to thank Ms. Li from the World Bank to help me acquire more valuable information about the work and the project that the World Bank is supporting in South China.

Additionally, I want to thank my amazing parents and all relatives who constantly support me in my studies and my travelling. Last but not least I want to mention all the people in China that I met on my journey and who gave me some advice and help on how to deal with this topic and what to expect.

Table of Contents

1	Introduction	1
1.1	Background	1
1.2	Aim and Objectives.....	3
1.3	Research Purpose	4
1.4	Research Limitations.....	5
1.5	Outline of the Thesis	6
2	Theoretical Review	6
2.1	Discrimination in economic literature	6
2.1.1	Discrimination due to immigrant status, ethnicity and race	7
2.1.2	Discrimination due to gender or sexual orientation.....	7
2.1.3	Inequalities resulting from geographical characteristics	8
2.2	Discrimination of minorities in China.....	8
2.3	Other aspects of discrimination and income inequalities	10
2.3.1	A legal approach to discrimination	10
2.3.2	Discrimination in education	10
2.3.3	Discrimination and decentralization.....	11
2.3.4	General and medical approaches to discrimination	11
3	Data and Methodology	12
3.1	Research Approach	12
3.2	Hypotheses and expected effects	13
3.3	Variables and descriptive statistics	15
3.3.1	Income as a dependent variable.....	16
3.3.2	Minority status as most important measure for discrimination	16
3.3.3	Spatial characteristics as a determinant of income differences	18
3.3.4	Discrimination in education and its effect on income	19
3.3.5	Decentralization, health status and resulting inequalities.....	20
3.4	Other important control variables	20
3.4.1	Health characteristics of individuals	20
3.4.2	General characteristics of individuals	21
3.4.3	Work characteristics.....	21
3.4.4	Living characteristics	21
4	Analysis and Discussion	22
4.1	Results of the regression analysis	23
4.1.1	The effect of ethnicity on income.....	23
4.1.2	Geography and its effect on discrimination ethnical income inequality.....	23
4.1.3	Discrimination in education	24
4.1.4	The effect of decentralization on income differences.....	24
4.1.5	The return to height and weight	25
4.2	The impact of the different factors on income inequality	26

5	Minorities in South China: A case study	28
5.1	The situation of minorities in Guangxi, Guizhou and Yunnan provinces	28
5.2	Project implementation and development	30
5.2.1	Problems leading to restructuring of the Project	32
5.2.2	Project benefits for Minorities	33
6	Conclusion	35
	References	37
	Online sources	39
	Appendix A	41
	Appendix B	44

List of Tables

Table 1: Educational levels of Chinese ethnicities.....	20
Table 2: Results of the regression analyses.....	26
Table 3: Detailed description of variable Ethnicity	41
Table 4: Detailed description of variable Geography	41
Table 5: Detailed description of variable Education	41
Table 6: Detailed description of variable decentralization.....	42
Table 7: Overview of all variables used in the analysis	42
Table 8: Model tests for normality and heteroskedasticity	42
Table 9: VIF of regression models.....	43
Table 10: Latest results of the Guizhou development project.....	44
Table 11: Contract details of Guizhou development project.....	45
Table 12: Project ratings	45

List of Figures

Figure 1: Geographical distributions of Chinese minorities	2
Figure 2: Annual percentage growth of income gap between Han Chinese and minorities	3
Figure 3: Mean yearly income across Chinese ethnicities	17
Figure 4: Division of income in China.....	19
Figure 5: Map of cities included in World Bank project.....	30
Figure 6: Current and target number of direct project beneficiaries	31
Figure 7: Various project goals concerning minorities and their current status.....	34
Figure 8: Typical distribution of residuals to inverse normal	43

1 Introduction

“The Constitution provides that all nationalities in the People's Republic of China are equal. The state protects the lawful rights and interests of the minority nationalities and upholds and develops the relationship of equality, unity and mutual assistance among all of China's nationalities. Discrimination against and oppression of any nationality are prohibited, and any acts that undermine the unity and create splits among the nationalities are also prohibited. The Constitution clearly stipulates that in striving for unity among all its nationalities, China opposes great-nation chauvinism, especially great-Han chauvinism, as well as local nationalism” (Chinese Government 1991). These big words were issued by the Chinese government in 1991, only 13 years after the start of the reform and openness process.

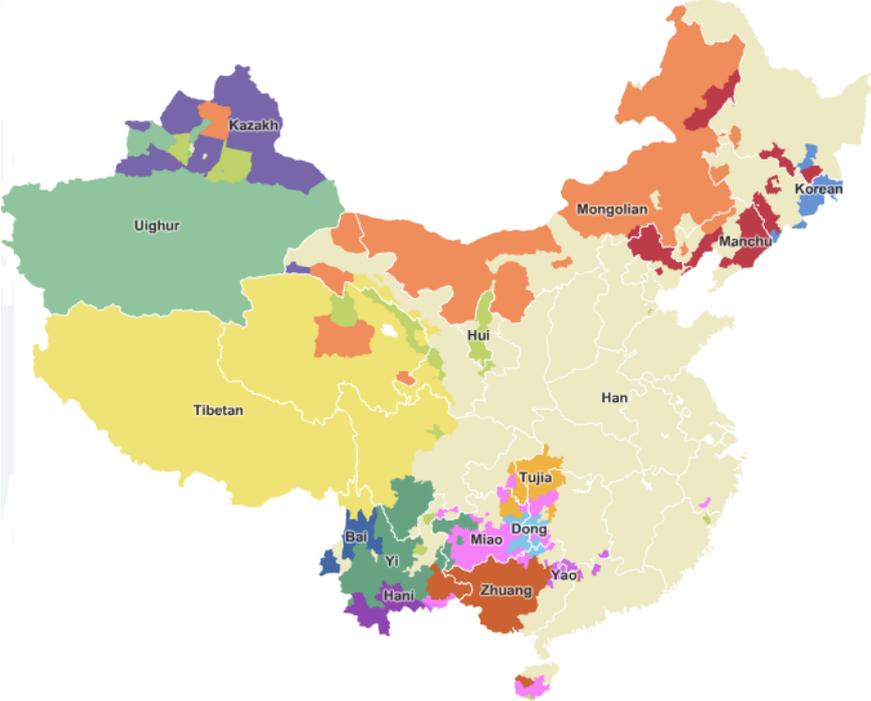
Since then, China has tried to constantly heighten and adjust its image to the outside and the West, thriving to get international acknowledgement and access to markets. Today China is the second biggest economy when it comes to total GDP per capita (United Nations 2015) and has managed to export its goods into the whole world. However, it still seems like some of the statements that were made above might not apply to China. An example for this is constituted by the Ürümqi riots from 2009, in which Uyghurs from the Xinjiang province clashed with the police after protests against ethnically motivated killings of Uyghurs (Wong & Ansfield 2009). This example depicts a reality of treatment of minorities in China, which does not exactly correspond to the one that was proposed in the statement from eighteen years before. The day to day reality of belonging to a minority affects approximately 9 % of the Chinese population, which is why drawing attention to the topic is so important. Having a closer look at the minorities, this thesis will try to address the issue of discrimination of minorities to see if there is a general problem in China

1.1 Background

China in total has 56 national ethnicities, wherefrom 55 are minorities and the Han make up the majority. In total, these minorities only make up 8.4% of the total population in 2011, which leaves them already in a weaker position vis-à-vis their Han-Chinese counterparts. Figure 1 shows a map depicting the most important regions and cities where minority groups

are located in China, the biggest of them being Western China (Xinjiang), and South-West China (Tibet and Guangxi/Yunnan). In this context, minorities can be defined in the

Figure 1: Geographical distributions of Chinese minorities

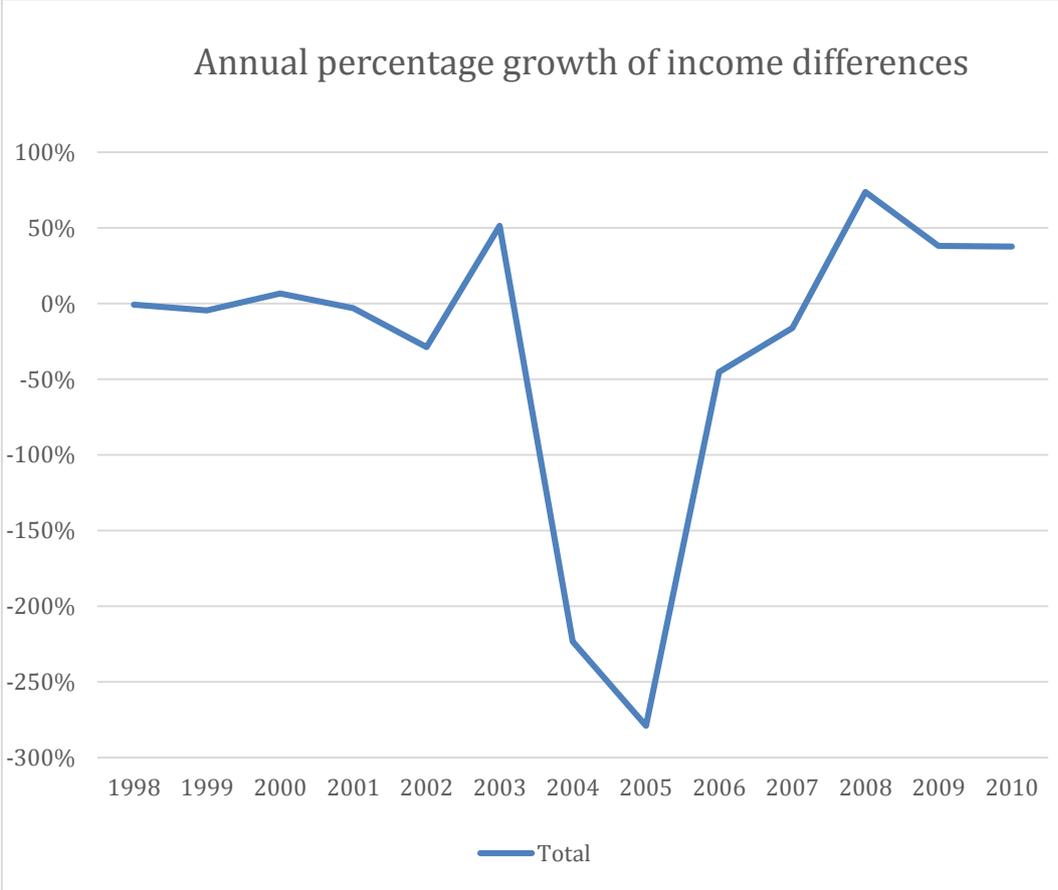


Source: <http://www.whydev.org/literacy-in-development-chinas-ethnic-minorities-part-2-2/>

following way: A minority group is “a group of people sharing ethnic, religious, linguistic or cultural characteristics, who are also a numerical minority in the overall population of a certain state or territory” (Human Rights in China 2007). Looking at the Provincial Statistical Yearbook (China Data Center 2015), minority workers earn significantly less than their Han-Chinese co-workers. This leads to the question, why there is such an income gap between the different nationalities, although the party leadership claims that they should all be treated equally. Figure 2 shows the income difference between Han and the minorities in percentage annual growth for the years 1998 to 2010 in Yunnan, revealing that the gap is rather widening and not closing. Possible reasons for this could lie in discrimination but also in structural or geographical problems. Discrimination means “treating a person or particular group of people differently, especially in a worse way from the way in which you treat other people, because of their skin color, sex, sexuality, etc.” (Cambridge Dictionary Online 2015). The other differences, mainly concerning geography and institutions, are not so easy to measure. Discrimination has quite a long history in China, dating back to the beginnings of the Communist rule. In 1950, the communist party invaded Tibet in a most violent way. Captured in the movie “Seven years in Tibet” from 1997 starring Brad Pitt, this event is described as

cruel and horrifying event in the history of Tibetans. Combined with the knowledge about more recent events like the Uyghur riots in 2009, this poses the question about how much discrimination is indeed present and affects the minority groups.

Figure 2: Annual percentage growth of income gap between Han Chinese and minorities



Source: China Data Center 2015: Yunnan Statistical Yearbooks 1997-2011

1.2 Aim and Objectives

The aim of this this thesis is to explore which factors affect the income differences between ethnic minorities and the Han majority. Using a dataset that captures characteristics of individuals in urban and rural China (CHIP 2007) (CIID 2012-2015) a closer look will be taken at the factors discrimination and geography. Discrimination also includes structural inequalities like education. The analysis attempts to show which effect is more important, the

one of discrimination or if geographical position plays a bigger and more significant role in income differences. Furthermore, the paper seeks to dig deeper into the problems of the Southern Chinese minorities situated in Guangxi, Yunnan and Guizhou. Most of the 55 minority groups are situated there, and research most often only focusses on Xinjiang and Tibet. By including this case study, the empirical results gain more importance and by adding a more practical dimension, the importance and objectives of this paper should become clearer. Finally, another objective is to take a more empirical and historical approach to a question that is usually seen as more theoretical topic in social sciences because it can be quite difficult to find adequate data and methods for a quantitative analysis. The question that should be answered in this thesis is the following: Is discrimination against ethnic minorities a problem in the Chinese society and in how far does it affect the income of individuals?

1.3 Research Purpose

The main purpose of the research is to try to find the main factors that influence the income inequality between minorities and the majority in rural China. Considering the rising tensions in the past few years, this paper will try to find possible causes and thus derive implications for politics and further research. This thesis also aims to give a more general understanding of discrimination against minorities and to explore the current status of research in this field of study from different perspectives. The empirical analysis combined with an extended case study can not only provide quantitative results and implications but also an insight into real-life problems of people living in China and in how far they are affected by these problems. These implications were found by trying to identify the causes of income inequalities in the historical context of China's development towards the unified, economically strong nation that it is today. Combined with previous work, implications for further clashes and tensions might be given in case the policy makers don't make a turn in their politics and try to tackle the issues that contribute to keeping the different ethnicities at different income levels and create a social divide.

1.4 Research Limitations

When working with the CHIP 2007 dataset, certain limitations affect the results of the analysis and may distort the results. Although the dataset captures income in some variables, there is not one measure that just generally captures all sources of income for all the individuals. Data on income is only provided in around 10 000 of the 30 000 observations. The same holds for the percentage of ethnic minorities reflected in the final dataset, making up only 2% of all individuals observed. Graphs and figures on income and education of the different ethnicities show deviations from what can be expected after considering the theoretical background and remain unexplained. A separate dataset only including members of ethnic minorities and factors for education, living conditions, etc. would be desirable in the context of this thesis. The same holds for additional measures and variables that would allow for a more focused and more detailed empirical analysis where aspects like firm ownership or a more fine definition of geography could be considered. Due to the lack of such studies, a longitudinal view on a certain cohort of Han and minority Chinese is not possible, so the effects of time can only be measured in a cross-sectional dataset. External conditions, like China's extreme growth or other transformations that shaped the country in this time might have an influence on the general wage levels of rural workers, which are more likely to belong to ethnic minorities. Unfortunately, the rural and urban questionnaires in the datasets differ from year to year, so perfect comparability is not provided. Given these restrictions, the results of the empirical analysis must be considered carefully and be backed up in future research.

Another limitation is the low number of observations included in the final dataset and the regression analyses, which might also cause the low R^2 . Unexplained tendencies in the data on income and education can already be noticed in the descriptive statistics and surely influence the empirical results. Although these are alternated by the measures and aims of the World Bank development project in Guizhou, implications and explanations are to be handled with care. The World Bank project is much focused and regional, comparatively small in terms of financial volume and duration. It must also be considered that different interest groups involved in the investments may have incentives that distort original intentions of the project.

1.5 Outline of the Thesis

After this introduction, chapter 2 will deal with an analysis of previously conducted studies and works that focus on this topic, as well as a thorough analysis of the methods and theories used. This section will provide a deeper insight into the topic and clarify, in how far this thesis represents an important contribution to the current status of research. Part 3, the core of the paper, will provide an in-depth analysis of the specific methods that will be used to analyze the data as well as the data itself. This section of the thesis introduces the reader to the theory and empirical work behind the analysis. Section 4 presents the results of section 3, interpreting them and discussing these according to the theoretical background and the hypotheses that were defined before. Section 5 will introduce the specific problems and challenges that Southern minorities face, by looking at a World Bank project that is being conducted in this area. Section 6 concludes the paper and will give an outlook on implications and further research that can be done in this field

2 Theoretical Review

2.1 Discrimination in economic literature

The topic of discrimination in general has been discussed a lot in previous research, especially when it comes to incomes, wages and job opportunities. In general, the literature on discrimination can be divided into three different areas: discrimination due to a certain status or character feature such as immigrant status, ethnicity and race. These separate people into different groups because of their looks or cultural backgrounds and some of these groups might be discriminated, especially in a working environment. Another dimension of discrimination is due to gender or sexual orientation, where of course it can be differentiated between groups, but these compromise women and men of all sorts of cultural backgrounds and looks, just separated by their sex. The third dimension includes all kind of spatial characteristics and geographical conditions, which again affects mainly people of a special cultural background or race. In this thesis I will only separate these three areas of discrimination since it is a very complex topic and definitions are often unclear.

2.1.1 Discrimination due to immigrant status, ethnicity and race

While some studies focus on only immigrant status, ethnicity or race there are also some that freely combine these terms in one work. Dealing with the situation of immigrants in Germany, Canada or Spain these studies focus on either differences in income between immigrants and natives or perceived discrimination in housing and interest rates, to only name a few (Dill & Jirjahn 2014, Diaz-Serrano & Raya 2014, Fong & Jeong & Hoe et al. 2015). A very famous case that was often mentioned in research are the Afro-Americans in Southern USA, as shown in a study by Thomas, Herring and Horton (1994). It shows that there is an income gap over the period of 50 years, although it is not clear if this can only be attributed to discrimination. All of these use cross-sectional survey or panel data to analyze how far immigrant status or ethnicity influences income or, respectively, interest rates. In all cases does the independent variable “Immigrant” stand for the factor of discrimination and this gives a good example of how minority status can later be included in the regression as a determinant of the degree of discrimination. Their findings confirm mostly, that in the areas of housing, interest rates and earning there seems to be indeed a form of discrimination that turns out to be significant in the models. This is an indicator of how important it is to have a look at the Chinese ethnical minorities, especially since there are so many of them.

2.1.2 Discrimination due to gender or sexual orientation

As it seems from the literature, gender inequality and discrimination between men and women or hetero and homosexuals is a problem all over the world. Represented are not only very remote and in the West usually overlooked regions like Macedonia, Bangladesh and South Korea (Petreski & Blazeyski & Petreski. 2014, Ahmed & McGillivray 2015, Patterson & Walcutt 2014) but also the typical examples of rich developed countries like Germany and the United States (Humpert 2014, Stanberry & Aven 2013). Although all of these studies focus on different dimensions of work and area of interest, they all work on the premise of still existing income differences in these countries. In the case of Germany, Humpert (2014) analyses data between 1992 and 2004 from East and West Germany to see in how far segregation between sexes has increased or persisted. While it had gone down in the West, it persists in the Eastern part of Germany. The author uses different indexes to measure segregation and presents its development over time. In contrast to this time-analysis and segregation based approach, Stanberry and Aven (2013) analyses the income differences with a standard empirical regression, taking income as the dependent and gender as independent variables. Both authors

find that gender plays a significant role in income differences, and this gives another indicator of what might be important in the empirical part of this thesis.

2.1.3 Inequalities resulting from geographical characteristics

Focusing on geographical or infrastructural causes of inequalities does not seem to be a topic equally attractive to researchers in economics as are gender or ethnic-related theories. A reason for this might be that it is hard to build a theory on the exact causalities and importance of geographical and spatial characteristics. Nonetheless, there are some studies available that try to find out in how far geography plays a role in observed inequality. An article by Roy (2014) tries to analyze the causes of differences in revenue per square mile in modern day India by conducting a regression analysis. His findings confirm that geographical endowments were crucial to the later development of the regions in India. The main reason for this might, according to the author, be that due to the differences in starting conditions the regions could make better or worse use of the globalization in the nineteenth century. In another study, Joassart-Marcelli (2009) tries to provide evidence that spatial characteristics play an important role in the determination of income of Latin American immigrants in Southern California. After conducting various regression analyses, the author comes to the conclusion that although personal characteristics do play a role, spatial factors seem to be more important and make a bigger difference. He thus emphasizes the important role of geography and location in an American context.

2.2 Discrimination of minorities in China

Besides the articles on discrimination in different countries and due to different features, there are also some empirical works focusing only on income inequalities and differences between ethnic minorities and Han-Chinese. One of these was published in 2013 by Shi and Sai (2013). The authors examine the Ningxia Hui Autonomous Region to see how far ethnicity affects wages, determinants of income and income inequality. The separation into the three aspects is what distinguishes the work from previous research. Using data from a survey conducted in 2007 by the National Bureau of Statistics of 800 urban households, the authors derive formulas to determine the income inequalities. Conducting regressions, they find surprising result: Minority status has, according to their research, a positive effect on income.

The authors assume that this is due to preferential policies of the central government towards minorities. Still, there is an income gap between Han and Hui, which the authors explain with a different return to education and different wages in enterprises explained different ownership structures. This research provides valuable information for this thesis: First, the assumption that ethnic status has a significant effect on income in an urban setting. Secondly, it gives indications as to what kind of variables might be of interest and how they influence the results.

Another paper that is of special interest for this thesis was written in 2009 by Gustafsson and Sai (2009) and is often cited as an important reference in other articles. Contrary to the work mentioned before, Gustafsson and Sai focus on the fact that minorities in rural areas are more likely to be poor and that poverty is more persistent. In their analysis, the authors rely on the CHIP 2002 dataset, which is similar to the one used in this thesis. They analyze household income between 2000 and 2002, conducting regressions based on a sample that they extracted from the total data. The authors furthermore focus on poverty differences between minorities and majorities and the duration of poverty. Conclusions are that the differences in poverty are clearly spatial and not due to ethnicity, although minority households are more likely to enter into poverty in the first place. Based on this empirical analysis, the question if it is really only spatial characteristics that matters becomes more important. Therefore, this thesis will focus mainly on what is more important and how the factors influence each other: minority status or spatial characteristics.

The latest publication working with the CHIP dataset from 2007 is a book by Li (2013), where the author compares the data to the one of the survey conducted in 2002 to discover trends in inequality in China. Their analyses cover main aspects, from inequality in education to the rural-urban spread and inequality for migrant workers. In total they show that inequality tendencies are still rising in China and may present one of the biggest challenges to the society. A very interesting finding is the income inequality in rural areas, which plays a role in the analysis conducted in this thesis. They find that the inequality remained stable but did not vanish, and that wages in general rose rapidly. They attribute the stability mainly to rising wages for migrant workers and higher outputs in agriculture (Li 2013, pp.223-226). Their use of the CHIP data in regression analyses makes their models a good starting point for the model design in this thesis.

2.3 Other aspects of discrimination and income inequalities

2.3.1 A legal approach to discrimination

Discrimination against a certain group of people is not a new topic. It has not only been discussed and analyzed by policy makers, but also by researchers all over the world. Mostly, these studies are conducted in the fields of political and social science. In the case of China, discrimination against minorities is also a big topic. Looking at it from a legal point of view, Sautman (1999) explored the developments in law concerning ethnic minorities and their representation in government. Sautman points out that there is indeed a body of ethnic laws that minorities profit from, contrary to what is often suggested in the Western media. However, he also highlights the weaknesses of the law including a trend that leads to a huge gap between Han Chinese and minorities. He suggests that economic reforms and laws should seek to spur growth in minority areas to overcome this trend of increasing inequalities. This, again, highlights what could be seen in the data before: That the gap between minorities and the majority is increasing. The author also claims that “the state now promotes a Han-centered `racial` nationalism that alienates minority people.” (Sautman 1999 p.286). So, from the view of a social scientist, there is definitely a problem with discrimination against minorities in China.

2.3.2 Discrimination in education

In a very recently published study, Yang, Wang & Zhang (2015) analyze educational differences between minority students and Han students. In a survey, they examine the outcomes in standardized tests of both groups and find that students belonging to an ethnic minority score significantly lower. Furthermore, they find that the biggest cause of difference between Mandarin-speaking minority students and their Han-Chinese counterparts is the family background. The attitude of teachers might also play a role in the achievement gap. These quantitative results prove to be of high value for our analysis, since education was measured in the dataset used. Educational discrimination will, together with ethnic identity represent the main indicators of discrimination in the analysis.

Another article, this time focusing on bilingual education, was published in 1997 by J. Lin (1997). In a qualitative approach, the author describes the background of discrimination against minorities and bilingual education. In the 1980s, the Chinese government slowly

started to promote and encourage minority culture and the original languages spoken in this sometimes very remote areas. Problems that persist until today have to do with a lack of understanding for the importance of minority language education. Due to low implementation rates in secondary school and university as well as standardized textbooks and procedures in China, those languages are slowly dying out. Bilingual schools have trouble getting access to enough books, and most curricular focus only on assimilation with the Han-Chinese culture and language, somehow jeopardizing the concept of bilingual education. Both of the studies referred to in this section show that there is obviously a problem of discrimination in education, a factor that will later be incorporated into the quantitative analysis.

2.3.3 Discrimination and decentralization

Since the founding of the PRC (People's Republic of China) in 1949, the central government has continuously shifted more and more responsibilities and power to the local entities. Expenditures that have to be stemmed by the local governments include health care, education and culture. To be able to afford this, Provinces and central government have developed a complex system of sharing various tax revenues, in which the Provinces are allowed to keep almost all taxes from businesses and everything that comes from real estate and house property (Herd & Wang 2013). With continuous economic growth and development, more and more responsibilities fall onto the local offices and less on the central government (Gruber 2013). Emily Yee (2001) has examined the effects that decentralization has had on health care in various provinces. To measure decentralization, she utilizes several measures including bureaucratic distance, but the most effective one with the highest effects on health care seems to be the ratio of local to central expenditure, a measure that when higher suggests a higher degree of decentralization. The same method will be used in this paper to account for decentralization. Although Yee's results remain inconclusive on the exact effects that decentralization had on health care, the findings still suggest that there could be an influence and since health status may influence income, it is worth accounting for decentralization in the context of the analysis in this thesis.

2.3.4 General and medical approaches to discrimination

A very good general and recent overview of the situation of ethnic minorities in China is provided by Myers, Xiaoyan and Cruz (2013), who make an attempt to look at different dimensions of life as a minority such as education, economic situation and what measures were taken by the Chinese government to improve the situation of minorities. The authors

confirm that there is still a huge gap between minorities and the majority, not only in income but also in the degree of industrialization. Conclusions of the study are that more research needs to be done to understand the situation of minorities, the problems they face and in how far China's transformation can help overcome the gaps between minorities and Han. Another social scientist who very early did research about minorities in China is Wu (1990), who looked at the cultural identity and development of the Bai minority, the second largest ethnic minority in Yunnan. He concludes that there are discrepancies in the way that the members of this cultural group act in everyday life, which is very similar to the Han-Chinese, and the way they are treated in official politics, where they are only defined by their official minority status. He describes this from conducting fieldwork and surveys in Yunnan province, the region that is also of interest in the context of this thesis.

Another very interesting, quantitative approach was taken by Juliet Elu and Price (2013). Instead of looking at differences in income directly or general living conditions the authors focus on a medical perspective. By assuming that body height has an impact on future earnings, they examine how far being a minority influences the return to height in the labor market. The authors conclude that a difference in access to health capital during the childhood was the main reason for the unequal returns to height in income. Conclusions are that there is an ethnically-based access to health capital in China, a form of discrimination that plays a significant role in future earnings.

In total, this chapter reflected on some previous work that was done in the field of research on minorities and China, income inequality and what factors cause this gap. Some articles focus on very specific areas, like medicine and law, some are more general and the two articles mentioned last are very close to what this thesis will be about and represent a starting point and give some guidance on model design and possible outcomes.

3 Data and Methodology

3.1 Research Approach

Looking at the papers on discrimination of minorities mentioned above, a similar approach is used in this thesis. By analyzing data from the Chinese Household Income Survey (CHIP 2007), conclusions will be drawn on what causes the income inequality still between Han and

minorities. The dataset from 2007 is one of the latest ones conducted and available online. Several different regressions will be done to determine the impact of different factors on income, including discrimination due to minority status. With this analysis conclusions on the hypotheses formulated in section 3.2 can be made. Using income as a dependent variable, discrimination in form of minority status and education, as well as geography, decentralization and body height and weight, will be the most important independent variables. Other control variables include gender, communist party membership and education. The survey includes two different datasets, one on rural and one on urban area. Through this distinction it is possible to also draw conclusions on how much rural and urban areas differ and what role dynamics and spatial factors may play. The decision to work with the rural dataset from 2007 is made based on the previous research, which covered the ones from 1988, 1995 and 2002. Since members of ethnic minority groups are most often residents in rural areas, the dataset contains a higher percentage of individuals belonging to these groups. According to my knowledge, there is no work that directly covers econometric analyses of the CHIP 2007 data except for the book from 2013, where Li et al. compare the data from CHIP 2007 to the one of CHIP 2002 to see if the inequalities are rising in China, as described above (Li 2013). The authors also use all the datasets to see how the gender wage-gap has developed over time and conduct regressions to underline their findings, but they do not use the dataset directly to conduct analyses similar to the ones of Gustafsson and Sai (2009) and the focus for Li (2013) is more on the topic of migration than income.

3.2 Hypotheses and expected effects

To test if discrimination is really the driving factor in income inequalities between ethnic minorities and the majority population, various regressions will be done to assess the exact impact of the factor ethnicity on rural population income. To do this analysis, a special dataset will be analyzed that takes into account national ethnicity and income. Making the purposes of the research more exact, the following hypotheses will be formulated:

H1: Belonging to a national minority has a negative effect on total income.

This hypothesis addresses specifically the issue of discrimination, taking the effect of belonging to a national minority as the numeral negative influence of discrimination. In the examples described above, it becomes obvious that if discrimination exist, it will have a

negative effect on total income because of prejudice and probably worse access to education and jobs. Previous literature suggests the same direction of the effect. Measuring discrimination per se is difficult, and is not represented in most datasets.

H2: Disadvantages in geographic characteristics has a negative effect on income

Disadvantageous geographic conditions may affect the earning possibilities of a certain group of people significantly. It could thus be that more remote areas suffer disadvantages, because the infrastructure is not so good and economic reforms were only implemented long after the East coast had developed into an international business zone. In their famous article from 2001, Acemoglu, Johnson & Robinson (2001) suggest that although geography might not have a direct effect on income differences at a certain point of time it could have had a negative effect on the quality of institutions. This could be the case in China, where the remote and unfavorable geographic position left some regions behind in the rapid rise of a market economy and its respective institutions in China.

H3: Discrimination in education leads to a lower income for minorities.

Hypothesis 3 is more general, with a focus on education and not discrimination itself. By taking education into account, a more exact differentiation between discrimination due to minority status itself and discrimination in education can be made. As seen before, there are problems in both bilingual and regular education for minority students. Not only do the teachers lack knowledge about their languages and patience, but also the money for books and other schooling tools is lacking. If this hypothesis is confirmed, it could give implications for government whether higher investments in education could help to overcome the gap caused by differences in educational endowments.

H4: A higher degree of decentralization has a positive effect on total income.

To explain why this is the case, one has to look at previous literature and theory about fiscal decentralization in various countries. "Fiscal decentralization can be defined as the process of transferring budgetary authority from central government to elected subnational governments in order to grant them power to make decisions regarding taxes and expenses." (Bahl 2008 p. 3). Generally, it is said for China that the decentralization has led to a higher degree of competition between the provinces and officials, who strive to give better reports to Beijing in terms of economic growth and job creation. This was shown by other scholars, for

example Lin and Liu (2000). Through empirical analysis they find that fiscal decentralization has indeed made a big contribution to economic growth and rural development, as well as resource allocation efficiency. In the case of health care, the conclusions were inconclusive but pointed towards a positive relationship (Yee 2001).

The fifth hypothesis concerns another factor that might influence income differences, if not directly then at least through the quality of institutions.

H5: Medical conditions and discrimination in form of worse access to health care have a negative effect on income through lower returns on height.

This thesis was derived from the paper by Elu and Price (2013). The claim that minorities have, through worse access to health care in their youth, lower returns to height in income was confirmed by their analysis. This relationship could be confirmed or rejected in this analysis using different data with information about current height and weight of individuals.

After testing these more general theories, the last hypothesis will refer to a combination of the effects:

H6: Discrimination in form of minority status and education has a stronger and more significant impact on total income than geography and decentralization and this impact remains the same when taking the other factors into account.

With this hypothesis, the purpose is to test how strong the effect of discrimination on income for minorities really is. This will show how far political and economic programs can tackle this issue to reduce the wage gap and resolve issues that concern discrimination of minorities in China.

3.3 Variables and descriptive statistics

According to the hypotheses formulated above, empirical models were designed to test if the assumptions made before do hold or not. In accordance with previous research, important factors that could influence income differences were used and incorporated into the regression analysis. In this analysis, the cross-sectional data from the Chinese Household Income Project was used (CHIP 2007) in which the characteristics of rural and urban households were collected in surveys. The data covers 6 different provinces, distributed across North China,

South Central China, East China and Southwest China and individuals of every age. A closer look at the variables used in the empirical analysis will help to better understand the data and its characteristics.

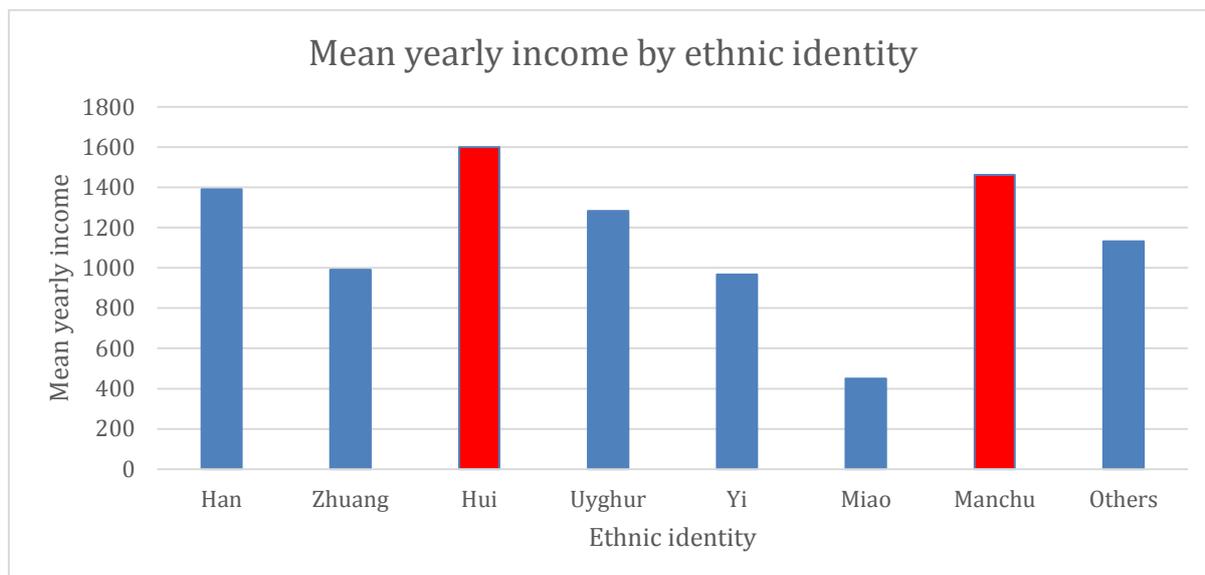
3.3.1 Income as a dependent variable

Since the aim of this thesis is to investigate income differences between minorities and non-minorities, it is a sensible choice to have income as a dependent variable and measure the effects of different independent variables on it. The best measure of income in this dataset comes from a variable asking about the wage that the individual earns in their current occupation. Although only a little more than 10 000 observations are available for this measure, it is the best proxy for what is to be measured in the dependent variable. To account for outliers and missing values, the logarithm of income will later be used in the regression. In total, the income ranges from a value of 0 RMB to 100 000 in this dataset. Unfortunately, in comparison to the CHIP 2002, it does not provide income from the years before so that an analysis of the development in poverty, as done by Gustafsson and Sai (2009) is not possible. Only the Figure shown before (Figure 2) can give an indication of income development, although the data is not on a longitudinal base.

3.3.2 Minority status as most important measure for discrimination

As mentioned before, measuring discrimination is not easy. Discrimination can come in many forms, and is not purely reflected in income differences. Nonetheless, it is possible to take minority status as a measure for discrimination if at the same time controlling for other characteristics like gender, age and education. Unfortunately, the dataset is very biased towards the majority Han-Chinese. Only around two percent of the individuals are members of a national minority. The dataset does not only include minority status, but also which ethnic minority the individual belongs to. This makes it possible to see if there are significant differences between the different minority groups and how far they are affected by discrimination in income.

Figure 3: Mean yearly income across Chinese ethnicities



Source: CIID CHIP 2007

Figure 3 shows the mean income across the majority and the different minority groups as they are represented in the rural dataset of the CHIP 2007. As can be seen, the Han-Chinese earn higher wages than most other ethnic groups in China. However, a very surprising observation is that Hui and Manchu individuals seem to earn even more than the Han. The Manchus live in North-East China and have a long tradition of culture and independent development. The last Chinese dynasty, the Qing dynasty, was founded by Manchurian fighters and lasted from 1644 to 1911, almost 300 years. During this time, the Manchu culture assimilated more and more with the Han Chinese traditions and customs, which is the reason why most traditional languages are not spoken anymore in the Manchu regions that include mainly Liaoning, Hebei and Heilongjiang in North China. A reason for the unusually high mean income in this minority group could be that the government heavily subsidized the minorities in these regions at the time of the survey, a point that was already made by Shi and Sai (2013) who find that from time to time the government initiates huge subsidies in order to deal with social tensions. Another reason could be that the mean income of the individuals included in the final dataset have an above-average mean income and do not necessarily represent the average income of the whole Manchu minority group.

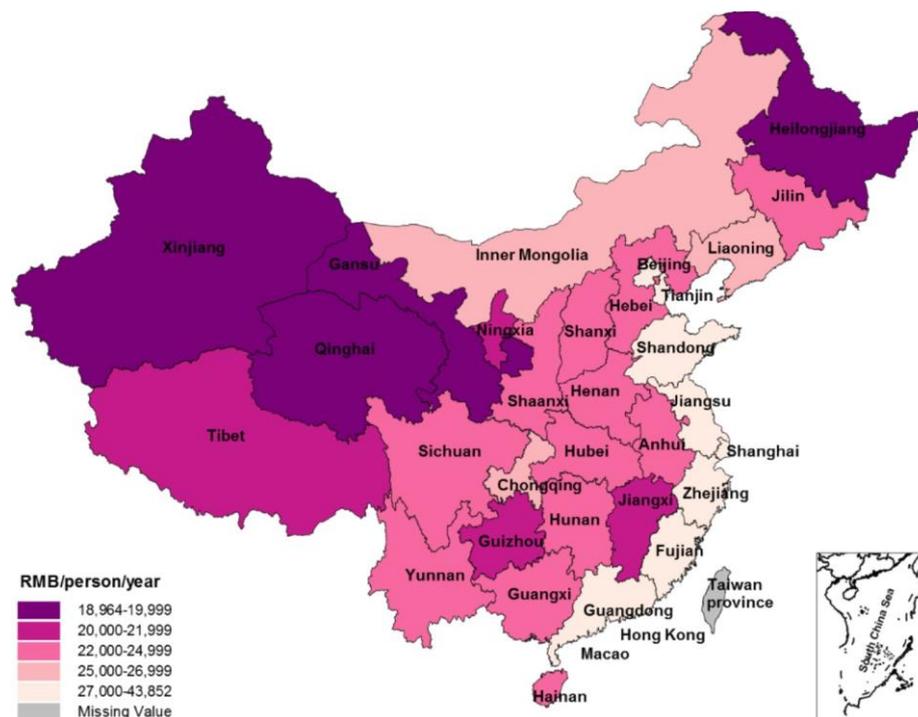
The Hui, on the other hand, are one of the biggest minority groups in Southern-Central China and belong mostly to the Muslim religion. Their language and culture though are very similar to the Han-Chinese and they are distributed all over China. The same reasons that were mentioned above could also be the reason why the Hui seem to have the highest mean income

of all groups. It will be interesting to see if this distribution will later influence the regression outcomes and if the effect is significant. Naturally, according to the assumptions from the beginning, minority status should always have a negative effect on income. However, Gustafsson and Sai (2009) have already observed a positive relationship between minority status and income. If their theory also holds for data from five years later, the problems or possible causes for this surprising results might still be the same. The results of the empirical analysis will show if this is the case.

3.3.3 Spatial characteristics as a determinant of income differences

In the theoretical analysis of previous research, it was discovered that previous work actually names spatial characteristics as a main determinant for income differences and not ethnicity (Gustafsson & Sai 2009). To account for this, the data on spatial distribution was first sorted by provinces and then separated into different geographic and economic regions of China. These are North China, Northeast China, East China, South Central China, Southwest China and Northwest China. In this dataset, only 4 of the 6 regions are represented. Economically, these regions differ immensely. Most academic papers only differ between coastal and central regions, without having a closer look at a detailed division (Démurger & Sachs & Woo et al. 2002, Cai & Wang & Du 2002). Generally speaking, Western provinces face less favorable geographical endowments such as less arable land and no access to the coast. The Northwest region is very arid, whereas the Southwest suffers from insufficient energy (Sun 2013). Very interesting is the case of South Central China, where the establishment of the Special Economic Zones in Guangdong and Fujian happened quite early in the process of reforms and opening up. It is expected that geography and regional variation will have a significant effect on the income and resulting inequalities. Figure 4 shows the differences in incomes in the provinces of China and supports the separation into 6 different economic regions.

Figure 4: Division of income in China



Source:

<http://www.unicef.cn/en/index.php?m=content&c=index&a=show&catid=197&id=817>

3.3.4 Discrimination in education and its effect on income

As mentioned before, education is also an area in which discrimination can take place and thus affect future income. The variable education is represented by several measures in the dataset, including the categorization into education categories (primary school, university etc.). This is one of the best way to measure education since it tells the researcher more about the abilities and accomplishments of an individual than the pure number of years of education. Looking at Figure 3 it becomes clear that for all groups except the Yi and Hui minorities Junior Middle School is the education degree that was achieved by most individuals. Surprisingly, members of the Hui minority seem to have a very low educational status but in Figure 3 they represented the group with the highest mean income. For the Manchu minority, on the other hand, results are more consistent. It will be very interesting to see how this rather confusing relationship will turn out later in the empirical analysis.

Table 1: Educational levels of Chinese ethnicities

	Han	Zhuang	Hui	Uyghur	Yi	Miao	Manchu	Others
Never been to school	8%	17%	40%	11%	0%	0%	11%	2%
Elementary school	27%	28%	40%	44%	60%	43%	22%	36%
Junior middle school	48%	39%	0%	44%	40%	57%	48%	43%
Senior middle school	11%	17%	20%	0%	0%	0%	12%	11%
Specialized secondary school	4%	0%	0%	0%	0%	0%	4%	4%
Polytechnic college	2%	0%	0%	0%	0%	0%	4%	2%
Undergraduate (Bachelor's Degree)	0%	0%	0%	0%	0%	0%	1%	2%
Postgraduate(Master's Degree)	0%	0%	0%	0%	0%	0%	0%	0%

Source: CIID: CHIP 2007

3.3.5 Decentralization, health status and resulting inequalities

In Section 2.3.3 the study by Emily Yee (2001) about decentralization and its effects on health care was examined. Although the conclusions remain unclear, different regions could differ in the quality of health care due to different degrees of decentralization. To account for these factors, a measure for decentralization will be included in the analysis, together with other variables measuring the health of an individual. Decentralization can be measured in various different ways, in this analysis the so-called “percent fiscal decentralization” (Yee 2001). It is the ratio between expenditures of local government divided by total government expenditures (local and central). Health status, on the other hand, will be captured by the variables body height and body weight.

3.4 Other important control variables

3.4.1 Health characteristics of individuals

In the course of the analysis, not only weight and height will be considered as factors that can influence income, but also if individuals have severe physical disabilities or access to insurance. Both of these could make an individual unable to work, but still be included in the people who supposedly earn income through other sources and this could falsify the results from the effects that discrimination might have. Physical disability and insurance will therefore, as height and weight, be included in the analysis. In the survey, people were asked directly if they have a physical disability and access to insurance, so these factors can be considered.

3.4.2 General characteristics of individuals

In the context of the dataset, more general characteristics of individuals are also provided: age, gender, communist party membership, relation to head of household and marital status. To exclude the possibility that minorities may differ systematically from Han-Chinese because they have a lower life expectation or tend to be marry less or more often due to their culture and traditions, these characteristics are controlled for in the regressions. Because the relation between income and age is usually not a linear one, age of an individual is squared in the analysis and people under the age of 16 are excluded, since they are unlikely to be employed or unemployed and thus earn any kind of income (see Joassart-Macelli 2009). All other characteristics will be represented by their categories as originally captured in the dataset.

3.4.3 Work characteristics

Not only is it important to know if individuals were employed or not at the time of the survey, but it is also interesting to see what kind of occupation they had and what kind of industry this job was located in. All three measures are represented in the dataset and included in the final analysis, using the original categories that the data was coded in. When transforming the variable industry into economic sectors, it becomes clear that most individuals work in the secondary and tertiary sector, not so many in the primary sector including agriculture and mining. Splitting it up according to the different ethnicities, the picture looks different: In some minority groups, usually the ones that are numerically better represented in the dataset, a higher percentage works in the primary sector where wages are usually lower and work conditions worse.

3.4.4 Living characteristics

The factors that are specified “living characteristics” evolve mainly around the hukou and thus the working and living possibilities of individuals. As might be known to the reader, the hukou system was introduced in the 1950s just after the rise of the Communist party. The goal was to have control over population movement and mobility, in order to keep urbanization at a rational scale and for better control in genera (Cheng & Selden 1994). This lead to a less flexible labor force and the system is still working today, so that many people from the countryside have to stay there or work as so-called “migrant workers” in the city without access to the benefits of the hukou (welfare, health insurance etc.).

In this chapter, the dataset and general descriptive statistics were shown to introduce the reader to the data that will be used in the empirical analysis, of which the results will be shown in the next section. Generally the data provides information on income, ethnicity and spatial characteristics and thus fulfills requirements for an analysis of the impact of discrimination on income. As the statistics have shown, there are some differences between minorities and the majority. Results of the regression analysis will show in how far these differences are significant and how big their impact on income inequalities is. All the characteristics of the variables included in the analysis are shown in detail in Appendix A.

4 Analysis and Discussion

In this chapter, the data that was described above will be empirically analyzed. Using a standard log-linear OLS regression, the impact of different characteristics and factors on income will be analyzed. Looking back at the hypotheses that were formulated in the beginning, four different models were designed to test if the predicted relationships do hold or not. The general model looks as follows:

$Y(\log \text{ income}) = f(\text{minority, geography, education, education} * \text{minority, decentralization, physical disability, medical insurance, body height, age square, gender, marital status, relation to head of household, employment status, occupation, industry, status of hukou (urban/rural), migration for work,})$

Model 1 will only include ethnicity and minority status, thus measuring the full effect of discrimination without spatial characteristics but considering the effects of education. Model 2 will then include geography to see what difference it makes in terms of results and implications of the Model. Model 3 takes into account the degree of decentralization and in how far the general development in a region influences income. Model 4, eventually, takes the height and weight of a person into account, as well as all the other measures, to give a full picture of what exactly causes the income inequalities.

4.1 Results of the regression analysis

4.1.1 The effect of ethnicity on income

Table 2 shows the results of the regression analysis, in which all four models were tested. It can be seen that for all minorities, except the Uyghur, the coefficients are negative and thus stipulate the negative relationship between minority status and income that was assumed before. Reasons for this deviation might be that the riots in Xinjinag province have received a lot of attention in Western media, which is why the Chinese government could try to stimulate more equality by subsidizing this region heavily. Other incentives for trying to promote especially this region are that China's East-West discrepancy has always existed and tried to be overcome already by Mao in the Great Leap Forward between 1958 and 1961. When comparing the empirical results for each ethnical group to the mean income that was shown in Figure 3, it becomes clear that there must be some weakness in the data. Earlier it was assumed that when belonging to the Hui or Manchu minority, mean incomes are higher due to some political or cultural factors. In the analysis, however, the Hui are not even represented and for the Manchu the coefficient is negative. This contradiction is assumed to exist mainly due to missing or incorrect data, not faults in the logical assumptions. No certain assumptions can thus be made about the effect of ethnicity on income, but the negative direction of most coefficients could probably be confirmed with a more thorough analysis of a better dataset. Looking back at section 2.2, a study by Shi and Sai (2013) was mentioned, a study where similar analyses were conducted. The conclusion that minority status has a positive effect on income cannot be confirmed in the context of this thesis, the results point rather in the opposite direction. Since they are not significant though, no concrete statement can be made about the impact that minority status has on income. Finally, the empirics show that in this analysis H1 cannot be rejected or confirmed.

4.1.2 Geography and its effect on discrimination ethnical income inequality

Very interesting results are achieved when including the factor geography into the regression. The coefficients for all regions are, compared to the East, positive and highly significant in Model 1 when not taking decentralization into account. This would mean that, compared to someone in Eastern China, an individual living in the Southwest earns 16.8 % more. This finding is surprising because it suggests that people in the less developed regions of China earn higher incomes than the ones populating the richer and highly developed Eastern

coastline. Previous literature has often pointed out that geography is one of the most important factors that influence unequal developments in different countries. It is, however, highly debated how this relationship works. An article by Sachs (2003) deals exactly with this problem: does geography affect economic development through institutions or in a direct way? Sachs suggests that geography can have direct effects on the economy and income levels. By controlling for quality of institutions in countries with a high rate of Malaria infections, they extract the effect that geographical conditions have on income through disease persistence and infection rates (Sachs 2003). In China, malaria is not a big problem and thus Sachs's results cannot be compared directly to the Chinese case.

Nonetheless, other diseases like HIV affect a large part of the minority population, especially in the South (Luo & Duan & Duan 2013). This does not provide an explanation for the results in Model 2, but is consistent with what we find in Models 3 and 4. The relationship between geographical endowments and decentralization seems to be very strong and changes the results for both measures. Suddenly, the relationship between geography and income is in accordance with what we would suspect from previous works. The region in which geography has the highest negative impact on income would be the North of China, where the endowments are not favorable for agriculture in the rural areas that the dataset focuses on. Considering Model 3 and Model 4, H4 thus cannot be rejected.

4.1.3 Discrimination in education

When looking at the results for the variable education, nothing much can be said about its effect on income because none of the coefficients are significant. Although discrimination in education might exist in China, it doesn't show in this dataset. The directions of the coefficients are also not logically comprehensible. According to the results, a person who finished a polytechnic college earns less than someone with no education. These confusing findings can, here again, be attributed to the quality of the dataset. Previous analyses in different contexts have shown that education has a significant positive effect on income and accounts for most of the income inequalities (Muller 2002, De Gregorio & Lee 2003). In the context of this dataset, the variable education is quasi vacant and it cannot be determined whether H3 is confirmed or rejected.

4.1.4 The effect of decentralization on income differences

The final Model 4 includes a measure for decentralization in the analysis to see if this might be the reason for income differences. Most surprisingly, this measure proves to be highly

significant and provides consistent results in the analysis. It also changes the direction of the coefficients for geography, which proves that these two have a high influence on each other. The issue of decentralization was, as explored in section 2.3.3, not tackled in many previous studies. Therefore it is even more important to have a closer look at the coefficients in this thesis and their possible implications. When comparing it to the very centralized regions more decentralization by trend leads to higher incomes, most so for regions that fall into the category “centralized”. An exception from the trend is the category “slightly decentralized”, where the coefficient suddenly turns negative. This could be explained by special characteristics of the income data which, as seen before, is not very precise and does not necessarily represent the average income in the different ethnic groups.

Most papers described before could not significantly prove that there is indeed a positive relationship between decentralization and income levels, although it is commonly assumed in economic research. In this thesis, the empirics point towards a strong positive relationship that is statistically significant. Explanations for this are that more autonomous governments face a harder budget constraint so that expenditures must be directed into the most profitable projects. Usually these projects yield high profits and lead to higher income for workers, which in turn leads to a higher income level in general. H4 can thus not be rejected and decentralization indeed seems to have a positive effect on income.

4.1.5 The return to height and weight

When including height and weight into the regression, the results for all other indicators do not change and thus prove to be robust. Taking the effect of height and weight for itself, the impact on income seem to be very small. A person that is one centimeter taller would thus earn 0.17 % more. This is realistic, since one centimeter does not make a big difference. Nonetheless it shows that, at least in this analysis, the return to height income is only very small and insignificant taking all other factors into account. More interesting is the return to weight, which is positive and significant on a 5 % level. A person that weights more could therefore have a higher income than a lighter individual. The measure of weight might in this thesis better represent the effect that better health care has on income, assuming that a person with better health are usually heavier and maybe also taller than someone in bad health. This association rests on the theory that children have a lower birth weight when the mothers have less access to health care and a lower health status (Kramer 1987). The theory should be further developed and pursued in future research. In this analysis, H5 can neither be confirmed nor rejected, since the results are not statistically significant.

4.2 The impact of the different factors on income inequality

After taking various factors into account in different models, conclusions on the significance and influence of the measures can be made. The aim of the thesis and analysis was to show, how and if discrimination persists in China and what influence it has on income differences between minorities and the Han-Chinese. Next to the status as ethnic minority, representing discrimination, geographical conditions, a measure for decentralization and personal features like weight and height were taken into account. Working with the CHIP 2007 dataset, the results show that discrimination seems to be rather insignificant when it comes to the determination of income and income inequalities. Spatial factors appear to be much more important, a fact that is not too surprising considering previous research. The finding that differentiates this thesis most from previous studies is the influence that decentralization has on income and income inequalities. All coefficients are significant and robust, indicating that there is a strong relationship between decentralization and income, at least when using the measure of “percent fiscal decentralization”. In regions that are mainly self-reliant and governed autonomously, income levels seem to be higher and this could also affect the size of the income gap between the minorities and the majority living in these very decentralized provinces. H6, which aimed at determining the importance of discrimination in this analysis, must be rejected since geography and decentralization are much more significant than ethnical status.

Table 2: Results of the regression analyses

VARIABLES	Model 1 lnincome	Model 2 lnincome	Model 3 lnincome	Model 4 lnincome
Ethnicity				
Han	(ref)	(ref)	(ref)	(ref)
Zhuang	-0.382 (0.939)	-0.549 (0.931)	-0.507 (0.926)	-0.450 (0.925)
Uyghur	0.0463 (0.856)	0.120 (0.848)	0.103 (0.844)	0.127 (0.842)
Yi	-1.083 (0.939)	-1.313 (0.931)	-1.313 (0.925)	-1.254 (0.924)
Miao	-1.708 (1.206)	-1.694 (1.195)	-1.880 (1.188)	-1.942 (1.187)
Manchu	-0.188 (0.397)	-0.0249 (0.396)	-0.0548 (0.393)	-0.0583 (0.393)
Others	-0.253 (0.745)	-0.225 (0.738)	-0.262 (0.734)	-0.231 (0.733)

Geography				
East China		(ref)	(ref)	(ref)
North China		0.260*** (0.0406)	-0.236*** (0.0439)	-0.246*** (0.0439)
South Central China		0.149*** (0.0158)	-0.0453* (0.0264)	-0.0408 (0.0264)
Southwest China		0.168*** (0.0203)	-0.139*** (0.0438)	-0.139*** (0.0438)
Education				
Never been to school	(ref)	(ref)	(ref)	(ref)
Elementary School	0.713 (1.218)	0.918 (1.207)	0.871 (1.200)	0.793 (1.199)
Junior Middle School	0.292 (0.765)	0.441 (0.759)	0.466 (0.754)	0.437 (0.753)
Senior Middle School	0.456 (0.922)	0.495 (0.914)	0.526 (0.909)	0.497 (0.907)
Specialized Secondary School	0.271 (0.508)	0.318 (0.503)	0.345 (0.500)	0.331 (0.500)
Polytechnic college	-0.00232 (0.398)	-0.0178 (0.394)	-0.0108 (0.392)	-0.0379 (0.391)
Undergraduate (Bachelor)	1.255* (0.678)	1.251* (0.672)	1.268* (0.668)	1.270* (0.667)
Postgraduate (Master)	0.564 (0.394)	0.677* (0.390)	0.641* (0.388)	0.621 (0.388)
Decentralization				
Very centralized				(ref)
Less centralized			0.0688*** (0.0235)	0.0598** (0.0237)
Centralized			0.144*** (0.0367)	0.134*** (0.0368)
Slightly decentralized			-0.163*** (0.0270)	-0.180*** (0.0275)
More decentralized			0.0828** (0.0361)	0.0846** (0.0361)
Decentralized			0.0674* (0.0361)	0.0537 (0.0362)
Most decentralized			0.0969*** (0.0350)	0.0989*** -0.034
Height				0.00174 (0.00132)
Weight				0.00262** (0.00106)
Health factors (physical disability, insurance)	Incl.	Incl.	Incl.	Incl.
Personal characteristics (age squared, gender, marital status, realtion to head of HH)	Incl.	Incl.	Incl.	Incl.
Work characteristics (work status, occupation, industry)	Incl.	Incl.	Incl.	Incl.
Living characteristics (Hukou status, migration for work)	Incl.	Incl.	Incl.	Incl.
Constant	6.875*** (0.111)	6.967*** (0.110)	6.910*** (0.113)	6.467*** (0.236)
Observations	6,844	6,844	6,844	6,843
R-squared	0.157	0.173	0.183	0.185

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: CIID: CHIP 2007

In this chapter, the results of various regressions were shown and explained in the context of the theories and previous research presented before. The results show that some of the hypotheses must be rejected and some could be confirmed. The total effects of different variables on income were shown and in how far they may contribute to the income inequalities between minorities and the majority. The analysis showed that obviously the pure effect of discrimination does not cause a major part of the income gap. Discrimination in education, on the other hand, might play a role and should be considered by politics as an area where improvements can help to close the gap. Spatial characteristics, as it seems, do also play a big role. This, too, is an area that politic measures can tackle and try to improve. Model tests for heteroskedasticity and normality can be found in Appendix A.

5 Minorities in South China: A case study

Following the empirical part of this paper, the practical example of a development project in Southern China can be used to see if the implied relationships do hold and the focus of the project can help to see the significance of different factors when it comes to raising incomes. Matching the rural setting of the dataset, the project was conducted in rural areas of Guizhou province and focused mainly on ethnic minorities and on raising their incomes. Fortunately it is possible to follow the measures and results of the development project step by step thus revealing how measures that were undertaken can influence the outcome variable, in this case income. The case study will highlight the findings of the regression and show which practical implications can be derived from the empirical results.

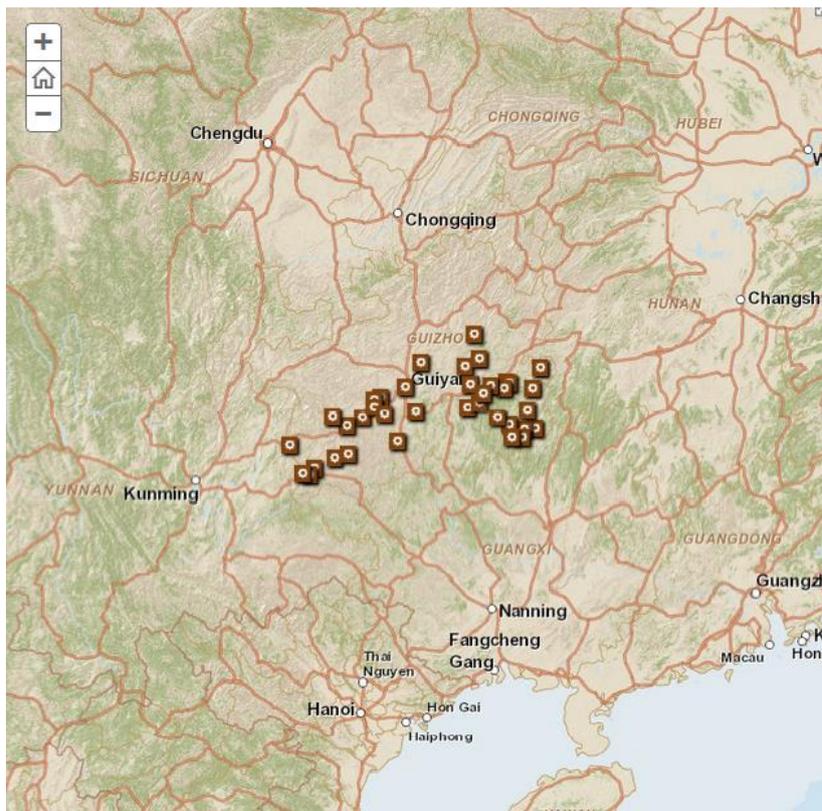
5.1 The situation of minorities in Guangxi, Guizhou and Yunnan provinces

Launched in 2009, the World Bank designed a Project called “Guizhou Cultural and Natural Heritage Protection and Development” in which, as the name suggests, traditional culture and handcrafts of minorities in Guizhou are tried to be conserved and revived (World Bank 2015). The total project has an estimated cost of USD 90.000.000 and will supposedly be running until 2017, thus having been in place for eight years. It comes with a whole series of loans and

projects implemented in this area, the latest in December 2014 with a volume of \$ 100.000.000. In these eight years, the work of the World Bank wants to achieve a generation of more non-farm income, protect cultural heritage and promote a better management of natural resources. The problem that the project operators face is simple: How can rural poverty be reduced and how can the local cultural heritage be preserved? Figure 5 shows a map with the locations that the project is active in. Most of these cities are very small and lack the necessary infrastructure to sustain and protect their cultural heritage or increase their incomes and general wellbeing. In most of these cities, a huge proportion of the population consists of minority group members, for example the Miao in Kaili City who are especially well-known for their festivals and love for dancing and singing. A lot of the traditional handcrafts like a special batik technique have been exported worldwide. Another group that is represented in most of the cities that the project operates in are the Dong people, who are also known for their traditional singing and the clothing. Traditions like handcrafts including weaving and papermaking are being supported by the World Bank through preserving traditional sites and improving infrastructure in the villages.

The geographical focus of the project is not only due to an easier implementation and economies of scale that can be achieved by smaller distances but also due to the geographical differences that were discussed before and that divide China into six different parts. This part, the Southern part, is an area that didn't profit much from the reform and openness process. Only a few big cities managed to keep up with the new developments, most rural areas remained isolated and incomes remained low. This is reflected in the negative coefficient that makes people in Southern China earn 13.9 % less than those living on the Eastern coastline. Due to this fact, these geographically disadvantaged areas are much more likely to receive international help from which ethnic minorities can profit a lot. Guizhou, the focus of the project, is also one of the most centralized provinces when it comes to expenditures. This puts it in a worse condition compared to regions that are less centralized and more self-reliant, since the relationship between decentralization and income seems to be a positive one. It obviously needs institutions like the World Bank to promote development in especially these places, where the communist party fails to direct expenditures towards where they are obviously most needed. The fact that in this case the World Bank focuses on the development of infrastructure and the first main goal was an increase in income for the native inhabitants highlights the regression results and their implications. The location of the project shows also that geography and decentralization can go hand in hand when it comes to determining which regions need help.

Figure 5: Map of cities included in World Bank project



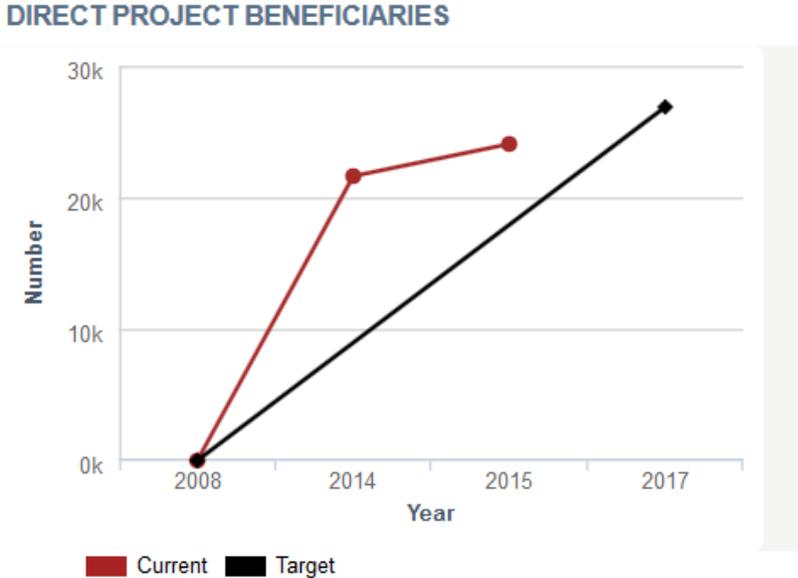
Source: World Bank 2015b

5.2 Project implementation and development

Thanks to a large body of reports on the project development, it is possible to see in how far goals and measures had to be adjusted over the years and how successful the project was so far. The original goals and objectives formulated before the start of the project in 2008 included mainly the increase of tourism in the region. For this, local infrastructure and more opportunities for increases in income should be generated especially in minority villages. In total, a growth in sustainable tourism was to be achieved while conserving the natural and cultural heritage (Wang 2007 AB3066 World Bank. 2007). A particularity about the project is that it focuses highly on community-based development, including the native people into the process and respecting their moral and cultural values (WB Project office of Guizhou Province 2008). When looking at the results, there are certain indicators that show how much the community has become involved in the project. Until March 2015, community members contributed around RMB 2.000.000 to the project, the goal is set at RMB 2.633.000. This community involvement could be seen to contribute to the decentralization aspect in a sense

that part of the expenditures don't come from the central authorities but from the people in the region. The positive effects of this should show in the project results. Another measure is the number of direct beneficiaries in the project. Figure 6 shows that the target of 26.900 is not reached yet, but the development is clearly positive. The same holds for the number of women who take part in consulting activities, and the number of conservation goal brochures distributed in the cities already exceeds the target, that was met in 2014. Community involvement seems to be working great in the process (World Bank 2015a).

Figure 6: Current and target number of direct project beneficiaries



Source: World Bank 2015a

After a series of environmental assessments and other pre-work, the first procurement plan was published in 2010. Some of the project measures are to be financed by the community, others by State-owned Enterprises (SOE) and most of them by non-competitive bids (NCB) (World Bank 2010). In the implementation and results reports it becomes obvious how far the goals that have been set can really be met and what problems the officers and implementers face in the course of the project. In March 2011, most goals had not advanced yet, with the comment that the project implementation had just started. This was 2 years after the official start, and obviously most tasks involved quite a complex body of contracts, organization and communication that might have influenced the speed in which the measures could really be implemented and established. Another reason for this could be the remote position of most villages and difficult accessibility of resources such as skilled workers and other materials (Wang 2011). The next reports dates to December 2012 and here the results show that the

project is slowly starting to take off and some goals seem to have been reached almost half way. However, the reports also talk of some major difficulties including contracts, delays in the start of work, ownership issues that have to be dealt with and also the assessment of the contribution of the project to the people's income per capita. Generally, it was one of the main goals to increase per capita income in most villages, but since the whole region is growing constantly and effects of the project might only show in the long run, it is hard to try to define the exact value added in per capita income (Brhane M. 2012). Despite this fact the World Bank still assumed that improving infrastructure in these regions and working towards a higher autonomy and local involvement in spending, incomes would rise and be more sustainable. These are exactly the implications that the previous empirical analyses has shown, and the World Bank project can thus serve as a role model on which kind of practical implications the analysis provides to governments and other institutions.

5.2.1 Problems leading to restructuring of the Project

Jumping to November 2013, the reports start to show more concrete results and most projects, especially in infrastructure, have started the stage of construction and some are nearly finished. Due to still being unfinished, there was no increase in the number of tourists until that point of time. In this report, for the first time, the implementers start talking of a restructuring because the problem remains that changes or increases in income cannot be linked to the project itself and thus it is hard to see the direct effects on income (Brhane M. 2013). This finally resulted in a restructuring paper in June 2014, stating that the original objective to raise incomes was not feasible due to measurement problems and income differences were not directly attributable to the project measures. The new main objective, that was formulated, was to focus on infrastructure, increased tourism and the protection of cultural and natural heritage. This change also involved a redistribution of financial means towards goods and block grants. Although the targets for reconstruction of traditional houses and demonstration sites were lowered there is still a main focus in finances and resources on ethnical minority culture protection. The report also states that almost all of the infrastructure projects should be finished by 2014 and thus a huge progress in sanitation and accessibility has been made (World Bank 2014). Coming to the latest report in April 2015, the restructuring and refocussing seems to have had positive effects, mainly on infrastructure and tourist development. Next to the building of roads and sanitary facilities, the preserving of traditional houses and number of direct beneficiaries has also increased. By distinctively

naming minorities as one group that should get most benefits out of the project, the World Bank has taken a big step towards improvement of quality of life for minorities (0000A8056; 0000A8056 2015).

5.2.2 Project benefits for Minorities

The strong focus on minorities in this project support the observation which this thesis relies on, namely that there are income inequalities between minorities and the Han Chinese. Since most of the project beneficiaries are minority group members, the project is an ideal way to show in how far changes in the degree of decentralization or a reduction of geographical disadvantages can change the incomes. The project focuses on community involvement to encourage less dependency on the central party and on trying to overcome the disadvantages of an unfavorable geographical position by supporting infrastructure. This way the project is a backup for the empirical results finding that geography and decentralization seem to have the deepest impact on income, especially relating to the gap between minorities and Han-Chinese. The graphs in Figure 7 show the results at beginning of 2015, in this case only taking the indicators that are important in the context of minorities and their living conditions. The respective graphs show, how far the targets set have been reached by March 31st 2015. When it comes to the number of traditional houses that were renovated, it is obvious that after a steep rise between 2009 and 2013 the works stagnated and didn't advance as fast as in the beginning. This could be due to problems with financing and contract problems with the builders. The second graph, showing the percentage of direct project beneficiaries that belong to an ethnic minority, is particularly interesting in this thesis. Since the target is set at about 73%, one of the project's main focus is obviously to especially help the rural minorities living in Guizhou and the villages that were being reconstructed. Fortunately this target seems to have been almost reached by now, which is a good sign and will hopefully help the minorities living in these regions overcome their disadvantages and save their cultural heritage. The last graph also shows surprisingly good results when it comes to access to sanitation facilities, where the number is steadily increasing and very close to the target. Since this affects mostly people living in more remote areas, the number of minority members who benefit from it must make a high percentage of the almost 25.000 people with improved access (World Bank 2015a).

Figure 7: Various project goals concerning minorities and their current status



Source: World Bank 2015a

In total, this case study has shown how far geographical and infrastructural problems affect minorities and their standard of living, but also what can be done to solve these problems and provide the people with a better quality of life. This project, although revised and constantly controlled and adjusted, helps people to preserve their cultural heritage and benefits especially minorities. The results show that many people could be helped and that projects like this could be a way to decrease the income gap between ethnicities. The case study shows that there are already projects focusing on the importance of overcoming geographical disadvantages and of promoting local involvement in expenditures, thereby promoting local decentralization, as hinted by the empirical analysis. Project details concerning overall results, financials and ratings can be found in Appendix B.

6 Conclusion

The main aim of this thesis was to examine whether discrimination of minorities is a big problem in China today and if it has a significant effect on income. As the analyses have shown, this is not the case, and the findings were rather surprising. It still doesn't mean that discrimination isn't a problem in the society and the topic should definitely be further examined but it is not so relevant when it comes to income and income inequalities. The most influential factors seem to be geography and decentralization, showing that living in geographical disadvantageous regions can have a significant negative effect on income to almost the same degree as a high level of centralization and dependence on the central government. By being able to give the example of a project that focuses on exactly these two measures by promoting infrastructure and local involvement in expenditure, the results of the empirical analysis could be highlighted and the importance of their implications could be shown.

Objectives of the research included to construct a model in which discrimination could be weighed against spatial characteristics and personal characteristics of individuals. To define in what ways discrimination can occur and how this is represented in the dataset available was definitely one of the main objectives of this paper. It was also important to stress that there is a big ethnic variety in China and that development projects with the right focus can help to actively raise the incomes in these regions by concentrating the efforts on geographical and decentralization-related issues.

Implications of this research include the finding that geographical and other spatial characteristics such as decentralization play a big role in China's income distribution and differences in development. Government programs and other institutional help for poorer regions should thus specifically focus on improving infrastructure and giving more remotely living people access to income sources and help them improve their living conditions, as does the World Bank project. The case study offers a good example since it shows the effectiveness of working with local people and indigenous infrastructure as well as cultural heritage that can be preserved and used as a source of income when improving the conditions that have the highest and most significant impact on income and possible income inequalities. If the government becomes aware that social tensions could be avoided by offering such

opportunities and narrowing the income gap between minorities and the Han-Chinese, the whole society could become more equal and balanced.

In future research, hopefully even more in economics, minorities and income differences between those and the majority population should definitely be explored further. This could underline the importance of the findings of this thesis and in how far they can be used in the design of development programs to overcome income inequalities. Especially in the Chinese case there is not a huge body of literature dealing with the issues addressed in this thesis. Southern-Chinese minorities don't get enough attention, also in social sciences, and more research could help figuring out better designed programs to achieve the goal of equality for minorities. By focusing on the right geographical regions and in trying to foster financial autonomy a rise in income could be achieved as shown in the example of Guizhou. Additionally, other sources that might cause income inequality might be discovered, which could in turn help institutions to elaborate on their policies and social programs.

This conclusion embraces all the sections discussed in this thesis and summarizes the main findings and implications. Reflecting on the research aims and objectives from the beginning can help to give conclusions on how successful the research was conducted and practical implications are a good guidepost for organizations that are interested in the situation of minorities and how far problems could be solved to work towards a more harmonious society.

References

- Acemoglu, D.; Johnson, S.; Robinson, J. (2001): *Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution*. Cambridge, MA: National Bureau of Economic Research.
- Ahmed, S.; McGillivray, M. (2015): Human Capital, Discrimination, and the Gender Wage Gap in Bangladesh. In: *World Development* 67, pp. 506–524.
- Bahl, R. (2008): The pillars of fiscal decentralization. Venezuela (CAF Working Paper No. 2008/07).
- Cai, F.; Wang, D.; Du, Y. (2002): Regional disparity and economic growth in China. In: *China Economic Review* 13 (2-3), pp. 197–212.
- Cheng, T.; Selden, M. (1994): The Origins and Social Consequences of China's Hukou System. In: *CQY* 139, pp. 644.
- Démurger, S.; Sachs, J.D.; Woo, W. T.; Bao, S.; Chang, G.; Mellinger, A. (2002): Geography, Economic Policy, and Regional Development in China*. In: *Asian Economic Papers* 1 (1), pp. 146–197.
- Deng, R.; Li, J.; Sringernyuan, L.; Zhang, K. (2007): Drug abuse, HIV/AIDS and stigmatisation in a Dai community in Yunnan, China. In: *Social science & medicine* (1982) 64 (8), pp. 1560–1571.
- Diaz-Serrano, L.; Raya, J. M. (2014): Mortgages, immigrants and discrimination: An analysis of the interest rates in Spain. In: *Regional Science and Urban Economics* 45, pp. 22–32.
- Dill, V.; Jirjahn U. (2014): Ethnic Residential Segregation and Immigrant's Perceptions of Discrimination in West Germany. In: *Urban Studies* 51 (16), S. 3330–3347.
- Elu, J. U.; Price, G. N. (2013): Does Ethnicity Matter for Access to Childhood and Adolescent Health Capital in China? Evidence from the Wage-Height Relationship in the 2006 China Health and Nutrition Survey. In: *Rev Black Polit Econ* 40 (3), pp. 315–339.
- Fong, E.; Jeong, J.; Hoe, A.; Tian, S. (2015): Earnings of Immigrant Entrepreneurs and Paid Workers in Canadian Gateway and Non-gateway Metropolises. In: *Popul Res Policy Rev* 34 (2), pp. 279–305.
- Gregorio, J. De; Lee, J.-W. (2002): Education and Income Inequality: New Evidence From Cross-Country Data. In: *Rev Income Wealth* 48 (3), pp. 395–416.
- Gustafsson, B.; Sai, D. (2009): Temporary and Persistent Poverty among Ethnic Minorities and the Majority in Rural China. In: *Review of Income and Wealth* 55, pp. 588–606.
- Herd, R.; Wang, X. (2013): OECD Economics Department Working Papers (1030).
- Humpert, S. (2014): Occupational sex segregation and working time: Regional evidence from Germany. In: *Panoeconomicus* 61 (3), pp. 317–329.
- Joassart-Marcelli, P. (2009): The Spatial Determinants Of Wage Inequality: Evidence From Recent Latina Immigrants In Southern California. In: *Feminist Economics* 15 (2), pp. 33–72.
- Kramer, M. S. (1987): Determinants of low birth weight: methodological assessment and meta-analysis. *Bulletin of the World Health Organization*, 65(5), pp. 663–737.
- Li, S. (2013): *Rising inequality in China. Challenges to a harmonious society*. Cambridge: Cambridge University Press.

- Lin, J. (1997): Policies and Practices of Bilingual Education for the Minorities in China. In: *Journal of Multilingual and Multicultural Development* 18 (3), pp. 193–205.
- Lin, J. Y.; Liu, Z. (2000): Fiscal Decentralization and Economic Growth in China. In: *ECON DEV CULT CHANGE* 49 (1), pp. 1–21.
- Liu, Shou; Wang, Q. X.; Nan, L.; Wu, C. L.; Wang, Z. F.; Bai, Z. Z. et al. (2013): The changing trends of HIV/AIDS in an ethnic minority region of China: modeling the epidemic in Liangshan prefecture, Sichuan Province. In: *Biomedical and environmental sciences : BES* 26 (7), pp. 562–570.
- Luo, X.; Duan, S.; Duan, Q.; Pu, Y.; Yang, Y.; Ding, Y. et al. (2013): Alcohol use and subsequent sex among HIV-infected patients in an ethnic minority area of Yunnan Province, China. In: *PloS one* 8 (4), e61660
- Muller, A. (2002): Education, income inequality, and mortality: a multiple regression analysis. In: *BMJ* 324 (7328)
- Myers, S. L.; Xiaoyan, G.; Cruz, B. C. (2013): Ethnic Minorities, Race, and Inequality in China: A New Perspective on Racial Dynamics. In: *Rev Black Polit Econ* 40 (3), pp. 231–244.
- Patterson, L.; Walcutt, B. (2014): Explanations for continued gender discrimination in South Korean workplaces. In: *Asia Pacific Business Review* 20 (1), S. 18–41.
- Petreski, M.; Blazeovski, N.M.; Petreski, B. (2014): Gender Wage Gap when Women are Highly Inactive: Evidence from Repeated Imputations with Macedonian Data. In: *J Labor Res* 35 (4), pp. 393–411.
- Roy, T. (2014): Geography or politics? Regional inequality in colonial India. In: *European Review of Economic History* 18 (3), S. 324–348.
- Sachs, J. (2003): *Institutions Don't Rule: Direct Effects of Geography on Per Capita Income*. Cambridge, MA: National Bureau of Economic Research.
- Sautman, B. (1999): Ethnic Law and Minority Rights in China: Progress and Constraints. In: *Law and Policy* 21 (3), pp. 283–314.
- Shi, L.; Sai, D. (2013): An Empirical Analysis of Income Inequality between a Minority and the Majority in Urban China: The Case of Ningxia Hui Autonomous Region. In: *Rev Black Polit Econ* 40 (3), pp. 341–355.
- Stanberry, K.; Aven, F. (2013): "Unequal Pay for Equal Work": Why Women Still Lag Behind After the 50th Anniversary of the U.S. Equal Pay Act. In: *Compensation & Benefits Review* 45 (4), pp. 193–199.
- Sun, Z. (2013): *Explaining Regional Disparities of China's Economic Growth: Geography, Policy and Infrastructure*. California: University of California, Berkeley.
- Thomas, M. E.; Herring, C.; Horton, H.D. (1994): Discrimination over the Life Course: A Synthetic Cohort Analysis of Earnings Differences between Black and White Males, 1940-1990. In: *Social Problems* 41 (4), pp. 608–628.
- Wu, D. Y.H. (1990): Chinese Minority Policy and the Meaning of Minority Culture: The Example of Bai in Yunnan, China. In: *Human Organization* 49 (1), pp. 1–13.
- Yang, Y.; Wang, H.; Zhang, L.; Sylvia, S.; Luo, R.; Shi, Y. et al. (2015): The Han-Minority Achievement Gap, Language, and Returns to Schools in Rural China. In: *Economic Development and Cultural Change* 63 (2), pp. 319–359.
- Yee, E. (2001): The Effects of Fiscal Decentralization on Health Care in China. In: *University Avenue Undergraduate Journal of Economics* 5 (1), Article 5

Zhang, K.-L.; Ma, S.-j.; Xia, D.-y.(2004): Epidemiology of HIV and sexually transmitted infections in China. In: *Sexual Health* 1 (1), pp. 39-46.

Online sources

Brhane, Meskerem. 2012. *China - CN-Guizhou Cultural and Natural Heritage Protection and Development : P091950 - Implementation Status Results Report : Sequence 04*. Washington, D.C. : World Bank Group.

<http://documents.worldbank.org/curated/en/2012/12/17052151/china-cn-guizhou-cultural-natural-heritage-protection-development-p091950-implementation-status-results-report-sequence-04>. (Accessed: 12.05.2015)

Brhane, Meskerem. 2013. *China - CN-Guizhou Cultural and Natural Heritage Protection and Development : P091950 - Implementation Status Results Report : Sequence 06*. Washington, D.C. : World Bank Group. Online:

<http://documents.worldbank.org/curated/en/2013/11/18545273/china-cn-guizhou-cultural-natural-heritage-protection-development-p091950-implementation-status-results-report-sequence-06>. (Accessed: 13.05.2015)

Cambridge Dictionary Online (2015): *Discrimination*. Online:

<http://dictionary.cambridge.org/de/worterbuch/britisch/discrimination>. (Accessed: 23.04.2015)

China Data Center (2015): Yearbook Database. Online:

<http://chinadataonline.org.ludwig.lub.lu.se/member/yearbooknew/yearbook/Ayblast.aspx>. (Accessed: 24.04.2015)

China Institute for Income Distribution (CIID) (2012-2015): The Longitudinal Survey on Rural Urban Migration in China, CHIP 2007/RUMiC 2008. Online:

<http://www.ciidbnu.org/chip/chips.asp?year=2007>. (Accessed: 24.04.2015)

Chinese Government (1991): *VII. Guarantee of the Rights of The Minority Nationality*.

Online: <http://www.china.org.cn/e-white/7/7-VII.htm>. (Accessed: 15.04.2015)

Gruber, J. (2013): China Prepares Big Bang Financial Reforms. Online:

<http://www.forbes.com/sites/jamesgruber/2013/09/26/china-financial-reforms/>. (Accessed 23.04.2015)

Human Rights in China (2007): *China: Minority Exclusion, Marginalization and Rising Tensions*. Minority Rights Group International [Ed.]. Online:

<http://www.minorityrights.org/download.php?id=29>. (Accessed 28.03.2015)

United Nations (2015): *GDP and its breakdown at current prices in US Dollar*. Online:

<http://unstats.un.org/unsd/snaama/dnllist.asp>. (Accessed: 15.04.2015)

Wang 2007 AB3066 World Bank. 2007. *China - Guizhou Cultural and Natural Heritage Protection and Development Project*. Washington, DC: World Bank. Online:

<http://documents.worldbank.org/curated/en/2007/06/7783213/china-guizhou-cultural-natural-heritage-protection-development-project>. (Accessed 23.04.2015)

Wang, S. 2011. *China - CN-Guizhou Cultural and Natural Heritage Protection and Development : P091950 - Implementation Status Results Report : Sequence 02*. Washington, D.C. : World Bank Group.

<http://documents.worldbank.org/curated/en/2011/03/13869131/china-cn-guizhou-cultural-natural-heritage-protection-development-p091950-implementation-status-results-report-sequence-02>. (Accessed: 12.05.2015).

WB Project office of Guizhou Province 2008 E1912v4 Guiyang Hydropower Investigation Design and Research Institute; China Hydropower Engineering Consultation Group Corporation. 2008. *Operation manual for community participation*. China. Online: <http://documents.worldbank.org/curated/en/2008/05/9559212/china-guizhou-cultural-natural-heritage-protection-development-project-environmental-assessment-vol-4-5-operation-manual-community-participation>. (Accessed: 01.05.2015)

Wong, E.; Ansfield, J. (2009): Chinese Presidents Visits Volatile Xinjiang. Online: http://www.nytimes.com/2009/08/26/world/asia/26china.html?_r=0. (Accessed: 15.04.2015)

World Bank. 2010. *China - Guizhou Cultural and Natural Heritage Protection and Development Project : procurement plan*. Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/2010/01/11601582/china-guizhou-cultural-natural-heritage-protection-development-project-procurement-plan>. (Accessed: 12.05.2015)

World Bank. 2014. *China - Guizhou Cultural and Natural Heritage Protection and Development Project : restructuring*. Washington, DC : World Bank Group. <http://documents.worldbank.org/curated/en/2014/06/19786802/china-guizhou-cultural-natural-heritage-protection-development-project-restructuring>. (Accessed: 13.05.2015)

World Bank (2015): *China-Guizhou Cultural and Natural Heritage Protection and Development Project*. Washington, DC : World Bank Group. Online: <http://www.worldbank.org/projects/P091950/cn-guizhou-cultural-natural-heritage-protection-development?lang=en>. (Accessed: 13.05.2015)

World Bank (2015a): *China-Guizhou Cultural and Natural Heritage Protection and Development Project. Project Results*. Online: <http://www.worldbank.org/projects/P091950/cn-guizhou-cultural-natural-heritage-protection-development?lang=en&tab=results>. (Accessed: 04.05.2015)

World Bank (2015b): *China-Guizhou Cultural and Natural Heritage Protection and Development Project. Project Map*. Online: <http://www.worldbank.org/projects/P091950/cn-guizhou-cultural-natural-heritage-protection-development?lang=en>. (Accessed: 15.05.2015)

Appendix A

Descriptive statistics and Regression model tests

Table 3: Detailed description of variable Ethnicity

Ethnicity	Frequency	Percent	Cumulated
Han	31,406	98.79	98.79
Zhuang	18	0.06	98.85
Hui	8	0.03	98.87
Uyghur	10	0.03	98.91
Yi	7	0.02	98.93
Miao	12	0.04	98.97
Manchu	264	0.83	99.8
Others	65	0.2	100
Total	31,790	100	

Table 4: Detailed description of variable Geography

Geography	Frequency	Percent	Cumulated
East China	10,823	34.04	34.04
North China	1,826	5.74	39.79
South Central China	13,197	41.51	81.3
Southwest China	5,945	18.7	100
Total	31,791	100	

Table 5: Detailed description of variable Education

Education category	Frequency	Percent	Cumulated
Never been to school	1,955	7.98	7.98
Elementary school	6,732	27.47	35.45
Junior middle school	11,749	47.95	83.4
Senior middle school	2,620	10.69	94.09
Specialized secondary school	891	3.64	97.73
Polytechnic college	442	1.8	99.53
Undergraduate (Bachelor's Degree)	106	0.43	99.97
Postgraduate(Master's Degree)	8	0.03	100
Total	24,503	100	

Table 6: Detailed description of variable decentralization

Degree of decentralization	Frequency	Percent	Cumulated
Very centralized	1,782.00	5.61	5.61
Less centralized	9,535.00	29.99	35.6
Centralized	3,426.00	10.78	46.37
Slightly decentralized	4,089.00	12.86	59.24
More decentralized	4,163.00	13.09	72.33
Decentralized	3,714.00	11.68	84.01
Most decentralized	5,082.00	15.99	100
Total	31,791.00	100	

Table 7: Overview of all variables used in the analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
Income	10257	1382.650	1538.278	0	100000
Ethnicity	31790	1.069	0.642	1	8
Geography	31791	1.449	1.141	0	3
Education	24503	3.739	1.190	1	9
Decentralization	31791	2.968	1.962	0	6
Height	31775	157.077	21.369	13	198
Weight	31778	54.643	13.769	4	140
Physical disability	31765	1.058	0.288	1	3
Insurance	31767	1.412	1.499	1	24
Age	26883	41.270	16.279	16	75
Gender	31791	1.482	0.500	1	2
Marital status	31791	2.875	2.376	1	6
Relation to HoH	23791	2.722	2.419	1	15
Work status	31752	3.119	3.060	1	10
Occupation	10341	5.543	1.494	1	9
Industry	10295	6.567	4.756	1	20
Hukou status	31779	2.885	0.466	1	4
Migration for work	25264	1.679	0.467	1	2

Table 8: Model tests for normality and heteroskedasticity

Model tests	Model 1		Model 2		Model 3		Model 4	
	Chi2	P>Chi2	Chi2	P>Chi2	Chi2	P>Chi2	Chi2	P>Chi2
Skew/Kurt test for normality	5294.49	0.000	5399.48	0.000	5485.16	0.000	5502.73	0.000
Br.-Pe. Test for heterosk.	145.5	0.000	137.45	0.000	121.32	0.000	118.56	0.000

Figure 8: Typical distribution of residuals to inverse normal

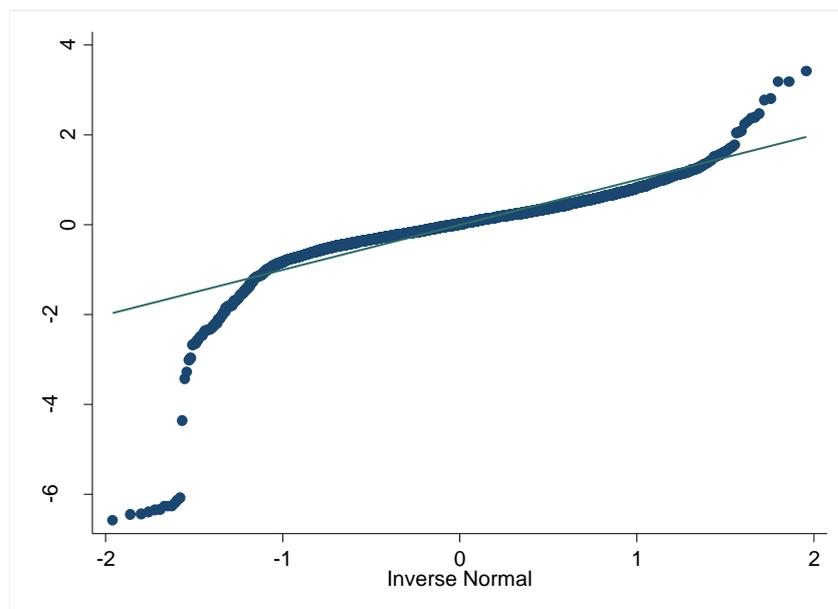


Table 9: VIF of regression models

Model 1			Model 2		Model 3		Model 4	
Variable	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
Ethnicity								
Zhuang	1	0.997	1	0.997	1	0.996	1	0.996
Uyghur	1.01	0.994	1.01	0.988	1.01	0.988	1.01	0.988
Yi	1.01	0.993	1.01	0.993	1.01	0.991	1.01	0.990
Miao	1.03	0.972	1.01	0.993	1.01	0.992	1.01	0.992
Manchu	1.01	0.986	1.18	0.848	1.18	0.848	1.18	0.848
Others	1.00	0.997	1.06	0.945	1.06	0.944	1.06	0.942
Geography								
North China			1.29	0.775	1.53	0.652	1.54	0.650
South Central China			1.43	0.701	4.04	0.247	4.08	0.245
Southwest China			1.35	0.742	6.36	0.157	6.38	0.157
Education								
Elementary School	10.08	0.099	10.11	0.099	10.17	0.098	10.18	0.098
Junior Middle School	20.43	0.049	20.49	0.049	20.61	0.049	20.63	0.048
Senior Middle School	9.85	0.101	9.88	0.101	9.94	0.101	9.95	0.100
Specialized Secondary School	7	0.143	7.01	0.143	7.07	0.141	7.08	0.141
Polytechnic college	4.21	0.238	4.21	0.237	4.24	0.236	4.25	0.236
Undergraduate (Bachelor)	1.89	0.530	1.89	0.529	1.9	0.527	1.9	0.526
Postgraduate (Master)	1.05	0.955	1.05	0.954	1.05	0.954	1.05	0.953
Decentralization								
Less centralized					2.74	0.366	2.78	0.359
Centralized					3.57	0.280	3.58	0.279
Slightly decentralized					1.48	0.678	1.53	0.654
More decentralized					3.32	0.301	3.33	0.300
Decentralized					3.62	0.276	3.65	0.274
Most decentralized					4.37	0.229	4.39	0.227
Weight							1.91	0.523
Height							1.76	0.570
Mean VIF	3.12		3.07		3.17		3.2	

Appendix B

Overview of World Bank Development Project finances and results

Table 10: Latest results of the Guizhou development project

	Baseline	Actual (Previous)	Actual (Current)	End Target
	31-Dec.-2008	13-Nov.-2014	31-Mar.-2015	30-Jun.-2017
Conservation goals submitted to planning authorities (Number)	0.00	18.00	18.00	18.00
People provided with access to "improved sanitation facilities" under the project	0.00	21,630.00	24,082.00	26,900.00
People provided with access to "improved sanitation facilities" - rural	0.00	21,630.00	24,082.00	26,900.00
Annual number of tourists visits to key project sites	5,020,000.00	2,472,000.00	3,530,000.00	4,360,000.00
Ehtnic minority percentage of direct prject beneficiaries	0.00	65.00	65.00	70.00
Direct project beneficiaries (number)	0.00	21,630.00	24,082.00	26,900.00
Femal beneficiaries (number and percentage)	0.00	12,000.00	50.00	40.00
Community contributions to project activities (RMB)	0.00	1,600,000.00	2,000,000.00	2,633,000.00
Participants in cosultation activities during project implementation	0.00	13,000.00	14,300.00	15,000.00
Participants in cosultation activities during project implementation-female	0.00	6,000.00	6,500.00	7,000.00
Number of traditional houses renovated	0.00	745.00	761.00	823.00
Improved access to and within project sites (kilometers)	0.00	52.90	52.90	68.50
Number of people trained for intangible heritage	0.00	60.00	210.00	250.00
Number of natural heritage sites with improved facilities	0.00	2.00	2.00	3.00
Number of tourists at the gateway town tourist information centers	0.00	0.00	0.00	1,500.00
Delivery of updated Toursm Master Plan (Yes/No)	N	Y	Y	Y
Delivery of Guidelines for Ethnic Minority Housing Rehabilitation (Yes/No)	N	Y	Y	Y
Number of conservation goal brochures distributed in villages	0.00	2,550.00	2,550.00	2,550.00

Source: 0000A8056 & 0000A8056 2015

Table 11: Contract details of Guizhou development project

Description	Procurement Method	Procurement Group	No Objection Date	Contract Signing Date	Amount (US\$)
Support For Community-based Development For Heritage Protection	Quality And Cost-Based Selection	Consultants	09.12.2010	10-Dec-2010	0
Support For Community-based Development For Heritage Protection	Quality And Cost-Based Selection	Consultants	09.12.2010	10-Dec-2010	0
2 Sets Of Vehicle , Type :stm7243ata	National Competitive Bidding	Goods and Works	01.07.2011	18-Aug-2011	75,762.96
3 Sets Of Off-road Vehicle 3.0l Gls Cfa2031h	National Competitive Bidding	Goods and Works	01.07.2011	18-Aug-2011	188,165.31
12 Seats Mini Bus Mb100	National Competitive Bidding	Goods and Works	01.07.2011	18-Aug-2011	39,583.44
Residential Houses And Ancient Buildings Rehabilitation And Construction	National Competitive Bidding	Goods and Works	21.08.2013	10-Sep-2013	3,386,768.00
Purchase A Business Car - Stm6521ata	National Competitive Bidding	Goods and Works	01.07.2011	18-Aug-2011	56,613.40
Miao Ethnic Minority Cultural Heritage Protection Works In Shidong	National Competitive Bidding	Goods and Works	02.08.2012	20-Sep-2012	1,138,603.00
Liping Zhaoxing Infrastructure Construction	National Competitive Bidding	Goods and Works	27.03.2014	15-Jan-2014	1,055,110.50
Huangping Jiuzhuo Ancient Town Heritage Protection Infrastructure	National Competitive Bidding	Goods and Works	27.08.2012	16-Oct-2012	1,872,689.20
Facilities Construction	National Competitive Bidding	Goods and Works	01.09.2012	01-Sep-2012	1,202,855.80
Ethnic Minority Culture Book Publication Through Shopping	Shopping	Goods and Works	11.10.2012	16-Oct-2012	58,547.08
Electronic Monotring Equipment For Shanbu River Cultural Heritaghe Protection Construciton	National Competitive Bidding	Goods and Works	08.03.2012	14-Mar-2012	393,483.12
Cultural Heritaghe Protection Construciton	National Competitive Bidding	Goods and Works	14.06.2012	02-Aug-2012	948,183.60
Cultural Heritage Protection	National Competitive Bidding	Goods and Works	14.06.2012	03-Aug-2012	772,182.90
Construction Of The Heritage Protection For Guanlin, National Geologic Park.	National Competitive Bidding	Goods and Works	26.11.2009	03-Dec-2009	736,781.50
Construction Of Parking Lot And Asociated Facilities	Shopping	Goods and Works	02.11.2011	30-Nov-2011	98,966.02
Construction In Kaili	National Competitive Bidding	Goods and Works	13.12.2011	03-Feb-2012	788,396.40
Construction For Xingyi Wanfenglin Road.	Shopping	Goods and Works	23.09.2011	02-Nov-2011	101,109.66
Construction For Public And Historical Buildings In Anshun	National Competitive Bidding	Goods and Works	21.08.2013	06-Oct-2013	3,038,275.00
Construction Contract For Foundation Treatment And Dam Works Of Ertanggou Reservoir	Intemational Competitive Bidding	Goods and Works	25.09.2012	28-Sep-2012	24,262,824.00
Bala River Miao Ethnic Minority Cultural Heritage Protection Works	National Competitive Bidding	Goods and Works	13.12.2011	10-Jan-2012	1,788,557.90

Table 12: Project ratings

	PREVIOUS RATINGS 11-29-2014	Current Ratings 04-15-2015
Progress towards achievement of PDO	Satisfactory	Satisfactory
Overall Implementation Progress	Satisfactory	Satisfactory
Overall Risk	Substantial	Substantial