Official Ethnic Labels and Non-Agricultural Work in Guizhou (China)

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Abstract

Using the 2009 data of the China Health and Nutrition Survey from Guizhou province, this paper analyzes whether an official ethnic label can be linked to a lower probability of non-agricultural employment. Results suggest that the Buyi and the Miao are less likely to work in non-agricultural fields than are Han (the majority group); the Tujia are more likely to work in non-agricultural fields than are Han. The predicted probability of non-agricultural employment for the Miao is lower than that of Han at almost all educational and age levels. Alongside the official ethnic label, more years of education and younger age appear to be most crucial for working in non-agricultural employment.

Keywords: ethnic labels, labor discrimination, economic anthropology
JEL: Z1, J7, J1

1 Introduction

Although contemporary China has a booming economy with enormous job diversity and increasing wages in several sectors, many people in China's least developed areas such as in multi-ethnic Guizhou, which is the poorest province in China, still depend on subsistence agriculture. At the beginning of 2011, the annual per capita disposable income of China's rural households was only approximately 5,153 CNY, while the average disposable urban household income was roughly 17,175 CNY (CHINA LABOR BULLETIN, 2011). Among those people living from subsistence agriculture in Guizhou are many people who fall into one of the 56 ethnic groups identified by the 1954 Ethnic Classification (minzu shibie) Project initiated by the Chinese Communist Party after 1949.[1] Ethnic minorities make up approximately 37 per cent of Guizhou's population; more than half of the area in the province is dedicated to autonomous areas (see the White Papers of the Chinese government at CHINA.ORG.CN, 2005). Understanding whether ethnic labels are linked to a lower probability of non-agricultural employment

[1] See MACKERRAS (2003: 183-193) for brief descriptions of each of China's 55 officially classified ethnic minorities. See HARRELL (1995) for a discussion of the civilization project.

in Guizhou is the focus of this paper: are Guizhou's ethnic minorities less likely than the Han majority to work in non-agricultural employment? Although non-agricultural and agricultural work are comprised of several sub-sectors, this paper just focuses on the broad comparison of non-agricultural and agricultural work which is a particularly crucial division because working in agriculture is linked to an agricultural *hukou* (KUANG and LIU, 2012); an agricultural *hukou* is linked to fewer job opportunities, lower wages, and a lower socioeconomic status. Answering the question is essential from a policy perspective because the results might be useful for better understanding social disparities among the officially classified ethnic groups; it appears that when ethnic minorities are disadvantaged in accessing non-agricultural employment, there is an increased risk of ethnic uprisings and social unrest (e.g., HILLMAN (2008) and KUPFER (2011) for Tibet Autonomous Region (TAR); BECQUELIN (2000), GILLEY (2001), HOPPER and WEBBER (2009) for Xinjiang Autonomous Region (XUAR)).

Answering the question is particularly important because it seems that most of Guizhou's workers consider agriculture inferior work: working in agriculture is seen by many people in the province as a constraint rather than as a choice (CASTRO CAMPOS, 2013). The first major objection to work in agriculture is related to the low status of peasants in Chinese society. A second major objection to agriculture is that long exposure to strong sun during fieldwork darkens the skin; in Chinese society it seems that skin darkened by the sun is generally seen as an inferior characteristic of farmers, while being white and tall is the beauty norm. For example, on the marriage market in Miao communities, good characteristics of a potential partner are a "fleshy body" and a "clean and fair skin", while inferior characteristics are a skinny body and dark skin, associated with hard physical labor in the sun and to poverty (SCHEIN, 2000: 241). Even in the remotest areas of China, urban workers are seen as superior over peasantry and mental tasks over manual labor (SCHEIN, 2000, based on POTTER, 1983). A researcher familiar with the topic informed me that in Dong communities in south-eastern Guizhou, no one would actually freely choose to be a farmer if other occupations were available (CASTRO CAMPOS, 2013: 68). It appears that, given the current social environment, in many parts of Guizhou, working in subsistence agriculture negatively influences many aspects of people's lives; however, the cost of trying to better integrate ethnic minorities into the non-agricultural labor market results in assimilation into the majority culture, an issue which should not be overlooked.

The Chinese government does not put restrictions on ethnic minorities working in non-agricultural employment; instead, being classified as one of the 55 ethnic minorities bestows preferences in family planning, in education, in employment, in business development, and in political representation (SAUTMAN, 1997: 3). In January 2008 the Employment Promotion Law (中华人民共和国就业促进法) came into force; this law forbids discrimination against ethnic minorities (ROSS et al., 2007). The Chinese government has also taken several measures to develop autonomous areas. According to the White Papers of the Chinese government, of the 55 ethnic minorities in China, 44 have their own designated autonomous areas; the population of ethnic minorities practicing regional autonomy accounts for 71 per cent of the total ethnic minority population, and the area where such regional autonomy is practiced accounts for 64 per cent of the physical territory of China (CHINA.ORG.CN, 2005).

Previous studies, however, reveal that there are ethnic differences in occupational outcomes; it is extremely important that the analysis of occupational differences carefully distinguishes between ethnic groups, occupational segments, regions and time; this analysis also has to take other individual characteristics (e.g., education, age, and gender) into account. There is a need for continuous analysis of occupational outcomes from a local perspective and for frequently updated research findings.

As most of the available labor market studies consider ethnic minorities as a single category and do not consider ethnic minorities separately from each other, it remains to be answered whether or not employment outcomes actually vary among ethnic minorities and whether or not there have been changes over time. In previous studies, considering the 1997, 2000, and 2004 waves of the China Health and Nutrition Survey (CHNS), it appeared that there are almost no occupational differences between Han, the Tujia, and the Buyi; however, the Miao have a higher probability of working in agriculture than do Han (CASTRO CAMPOS, 2013). In this paper I extend the analysis. Using the 2009 data of the CHNS from Guizhou, I apply binary logit models to empirically examine whether the Buyi, the Miao, and the Tujia are less likely to work in non-agricultural sectors than are Han. Since the logit model is non-linear, I visualize marginal effects at representative age and educational levels for each ethnic group considered.

Although a huge diversity (e.g., cultural characteristics, language, history, identity, etc.) is lurking between and within ethnic labels, the available quantitative data do not account for these differences. Han is used as a benchmark purely for being the majority. Yet it is fruitful to account for the linkage between official ethnic labels and non-agricultural employment due to the immense social, cultural, and political significance. I envisage that this paper could be an attempt to bring together economics and anthropology. The quantitative results of this paper draw attention to the most crucial issues which can then be analyzed by anthropologists through rigorous qualitative enquiries.

This paper contributes to the literature on China's ethnic minorities in several ways. First, it represents an attempt to investigate and to visualize the likelihood of working in non-agricultural employment for three major ethnic minorities in comparison to

Han; it focuses on the crucial difference between working in agricultural or in non-agricultural employment that is linked to differences in job opportunities, in wages, and in socioeconomic status. Second, the results obtained from the binary logit models provide a basis for additional qualitative inquiries. Finally, the results allow me to argue that different policy measures might be needed depending on the ethnic group considered. The most crucial task at the moment is to investigate the persistent employment disadvantage of Guizhou's Miao people and to find methods to improve the employment outcomes of the less educated and of the elderly among the working-age population.

The paper proceeds as follows. The next section discusses ethnic differences in occupational outcomes in China. The third section discusses ethnic differences in educational attainments among China's ethnic groups. The fourth section outlines theoretical and empirical concepts that are used for analyzing differences in occupational outcomes. The fifth section describes the data. The sixth section provides estimation results. In the last section I draw conclusions.

2 Evidence of Ethnic Differences in Occupational Outcomes

The communist government implemented the Ethnic Classification (minzu shibie) Project at the beginning of the 1950s to get an account of the remarkable ethnic diversity in their territory. In this process official ethnic labels were constructed. Any analysis that deals with the official ethnic labels has, therefore, to be treated with caution because the official ethnic labels are indeed labels and not equal to what is generally understood as ethnicity. Today there are officially 55 ethnic minorities who make up roughly 104.49 million people (eight per cent of the Chinese population). This section highlights heterogeneous findings of occupational outcomes of some of these officially classified ethnic minorities.

The latest knowledge available for the Buyi, the Miao, and the Tujia suggest that there are almost no occupational differences between Han, the Tujia, and the Buyi; however, the Miao have a higher probability of working in agriculture than do Han (CASTRO CAMPOS, 2013). Secondary occupations alongside agriculture are important for all three ethnic minorities. A study comparing the years 1988 and 1995 finds that ethnic minorities in Guizhou and Yunnan are in a somewhat better economic situation than are the average Han due to increasing tourism and border trade (GUSTAFSSON and LI, 2003). Since the beginning of the 1990s Guizhou's local and provincial governments have used tourism as a means for reducing poverty in the most deprived areas of the province; the government opened roughly 648 ethnic minority villages for tourism leading to increased income levels for many villagers (DONALDSON, 2007). The participating villages promote *nongjiale* (农家乐) which Donaldson translates as "joyous village life" tourism that offers tourists a genuine back to basics experience (DONALDSON 2007, 343); however, this outcome is not observable for all ethnic minorities and not in all areas in Guizhou (see HARRELL, 1990, 1995; MCKHANN, 1995). Indeed there is a touristic infrastructure focusing on ethnic minority culture, festivals, handicrafts, and embroidery in the province, but for many people classified as Miao, Buyi, or Tujia, tourism is often only a side-line activity during festivals and holiday seasons. It seems that in most cases tourism provides only an additional source of income but is not the main source of income for many ethnic minorities (CASTRO CAMPOS, 2013). This is also the case for some ethnic minorities in Yunnan. For example the Sani from the counties Lunan and Luliang in Yunnan province sell embroidery (e.g., "beautiful bags" in the center of Kunming and in the region of the stone forest) (HARRELL, 1995: 65). Many other of Yunnan's ethnic minorities are mainly working in agriculture and pastoralism complemented by "specialized work in trades such as mule-skinning, carpentry, basket-making, and coppersmithing" (MCKHANN, 1995: 51). Other ethnic groups in the same area, including the Han majority, the Bai, the Lisu, the Pumi, the Tibetan, the Hui, and the Yi, work in similar fields (MCKHANN, 1995: 51). A usual Nuosu family in Yunnan also primarily engages in subsistence agriculture with limited income from other sources (HARRELL, 1990: 529).

In the north-western XUAR many jobs are given to Han rather than to Uyghurs (HOPPER and WEBBER, 2009; GILLEY, 2001; BECQUELIN, 2000). In XUAR there is evidence that agriculture is the main income source of ethnic minorities, while their participation in all other employment sectors is very low (HANNUM and XIE, 1998). The following two citations illustrate the labor market situation of Uyghurs in XUAR. James Millward from Georgetown University in Washington, D.C., says that "Uighurs are simply not hired by Chinese firms. At job fairs, 'Uighurs need not apply' signs are standard" (GILLEY, 2001: 2). In an article published in The Economist it was even reported that: "Look, says a young Uighur in Urumqi, I am a strong man, and well-educated. But Chinese firms won't give me a job. Yet go down to the railway station and you can see all the Chinese who've just arrived. They'll get jobs. It's a policy, to swamp us" (THE ECONOMIST, 2000). In XUAR science and technology positions are, however, filled by Uzbeks and Tartars and not by Uyghurs because Uzbeks and Tartars make up a high percentage of the well-educated urban population (GLADNEY, 2004).

In TAR, Tibetans face a similar situation to that of Uyghurs in XUAR. There are masses of Han-Chinese job seekers pouring into TAR, often better educated and with better Mandarin skills than their Tibetan counterparts (KUPFER, 2011). While Tibetans mainly work in the countryside or as animal breeders, Han mainly work in the administration and the service sectors; moreover, the private sector, where salaries are highest, is owned and controlled by Han (KUPFER, 2011). Young Tibetans from Lhasa report that they receive less than a third of Han wages for the same work (KUPFER, 2011). Tibetans are disadvantaged compared to better educated migrants from other provinces, even in the tourism industry, which is mainly devoted to Tibetan culture (HILLMAN, 2008).

In contrast, Koreans in Northeast China, who have more years of schooling than the national average, most benefitted from increasing trade between China and South Korea (GLADNEY, 2004: 21). Another story can be observed for the Hui. They are the largest Muslim group in China, generally speak Mandarin or local dialects and reside throughout the country. While on average more than 80 per cent of each ethnic minority group in XUAR works in agriculture and husbandry, for the Hui this percentage is 61 per cent (GLADNEY, 2004). In urban Hui communities, for example in Oxen Street in Beijing, they often have restaurants and work in niche markets (GLADNEY, 2004: 167). Because of "their traditional occupations as small merchants, restaurateurs, butchers, and jewellery craftsmen," the Hui are considered the "Jews of China" (PILLSBURY, 1973, cited in GLADNEY, 2004: 167-68) and in many places have a higher distribution in small private businesses and industry than Han (GLADNEY, 2004: 286). Also in Fujian the Hui were able to improve their economic situation, particularly through governmental support and their entrepreneurial skills (GLADNEY, 2004). In Shaanxi, Gansu, and Ningxia the Hui received lower quality land in comparison to Han and were, hence, forced to develop their entrepreneurial skills (GLADNEY, 2004: 292-93). In contrast the Hui are discriminated against in state employment in Lanzhou (Gansu) (ZANG, 2008).

This section has shown that the labor market situation of China's ethnic minorities is very complex; moreover, because of the usage of ethnic labels and occupational categories the meanings of individual agents engaging with the social structure cannot be reflected by many studies. As non-agricultural employment is often closely linked to educational attainment, ethnic differences in educational attainment will be discussed in the next section.

3 Evidence of Ethnic Differences in Educational Attainment

Educational attainment is one major employment criterion. Those individuals with more years of education have generally higher chances to work in better paying positions. Although the average education level of 14 ethnic minorities, including the Korean, Manchu, Mongolian, and Kazak groups, is higher than the national average (CHINA.ORG.CN, 2005), there are still 41 ethnic minorities with below-average levels. Differences in educational attainment between ethnic groups find their origin in various factors: school availability, quality and costs, Mandarin language skills, religion, gender, and opportunity costs of households.

First, access to education for ethnic minorities is often constrained due to their remote rural location and their higher levels of poverty (GUSTAFSSON and SAI, 2008). Second, higher-level and higher-quality schools are often situated in cities and are, thus, more difficult for pupils from remote areas to reach. Third, higher educational achievements are closely linked to a fluent command of Mandarin because Mandarin is the main language of instruction in China. Ethnic minorities, who mainly speak their own languages at home, often have weaker Mandarin language skills than do Han. Fourth, school fees are a barrier to access to education for poorer households among which ethnic minorities in Southern and Western China are often found (see GUSTAFSSON and SAI, 2006, 2008). Some girls of the Hui minority of Lijiashang in Ningxia Hui Autonomous Region report that in their families only boys attend school after elementary schooling because of high tuition fees (KOLONKO, 2005).

In addition to this lower access to education, some ethnic minorities face higher opportunity costs of education than do Han. For example, as already stressed, statistically Tibetans and Uyghurs are less likely to work in off-farm jobs (see HILLMAN, 2008; GILLEY, 2001). Returns on higher education, thus, may be valued as too low by ethnic minority parents, which keep them from investing further in their children's education (e.g., BELLÉR-HANN, 1997: 107, for the Uyghur). Ethnic minorities, who often work in subsistence agriculture in remote areas, benefit from the child's assistance on the farm. Sending the child to school means losing a helping hand in doing household chores; this implies a lower household income in the short run; hence, expectations that further education will not provide higher income negatively influence how long a child goes to school. Overall returns on education appear lower in rural areas, though some authors argue that the aggregate rates of returns on education have increased over time (see DE BRAUW and ROZELLE, 2007; ZHANG et al., 2002). It seems that private returns on education may be very low for some individuals based on the fact that some employers still use non-market factors (e.g., *guanxi*, which means through connections) for assigning jobs, rather than give the position to the most skilled and qualified worker (see DE BRAUW and ROZELLE, 2007).

Another issue for some ethnic minorities is the syllabus in state schooling. Muslims are often unhappy about the strong focus on Mandarin and mathematics rather than content related to Islam, such as the Quran, Arabic, and Persian (GLADNEY, 2004: 278). Men and women, moreover, traditionally do not pray and study together, so that orthodox Muslims refuse to have their children educated in Chinese state schools where girls and boys are learning together (GLADNEY, 2004: 286). Regarding the comparatively high drop-out rates among Muslim girls, the author emphasizes that "until Chinese educational policy recognizes 'cultural levels' that are based on other knowledge traditions and languages, many more conservative Muslims might continue to resist sending their children – especially their daughters – to state schools" (GLADNEY, 2004: 281).

Many ethnic minorities are often affected by most of these factors which limit access to schooling and employment. The Chinese government has implemented preferential policies for ethnic minorities to overcome these inequalities (see SAUTMAN, 1997); however, it appears that there are still ethnic differences in education and employment in China (see WANG and HANNUM, 2012, for a summary). The next section discusses theories and empirical approaches to analyze occupational differences among ethnic groups.

4 Occupational "Choice" or Occupational "Outcome"

I envisage that to better understand differences in occupations among ethnic groups, an economic analysis of occupational differences (as put forth in this paper) should be combined with ethnographic fieldwork (in future studies as outlined in the conclusions) conducted by anthropologists because the usage of ethnic labels and occupational categories does not allow conclusions to be drawn about the employment structure in consideration of people's needs, culture, history, current situation, etc. Beyond statistics, one must analyze and consider local actions by ethnic groups to preserve their culture while attempting to better their economic conditions (studying for example how economic changes are 'indigenized' locally), yet an economic analysis as put forth in this paper draws attention to particular issues in the occupational structure of ethnic groups that can be overlooked by anthropologists who usually focus on some cases in detail; therefore, it would be very fruitful to combine both research approaches. In this section I introduce occupational 'choice' models and their application for analyzing occupational differences among ethnic groups in Guizhou. The issues that seem to be particularly important for further qualitative analysis will be outlined in the conclusion.

The economic literature suggests using occupational choice models to analyze occupational differences (see BOSKIN, 1974; SCHMIDT and STRAUSS, 1975, who are the pioneers of occupational choice modelling). Many authors use the term "occupational choice" when analyzing occupational differences. I believe caution should be exercised when using the term choice-based as the word "choice" includes an "act or the possibility of choosing" (ONLINE-CAMBRIDGE DICTIONARY, 2011). Most individuals actually take whatever job is available to them, whether or not they like it. The following citation illustrates this point: "Although the *hukou* system is no longer used to prevent rural-to-urban mobility, Chinese society can still be divided into an agricultural segment and a non-agricultural one. This division remains crucial in determining people's opportunities" (KUANG and LIU, 2012: 1). The term "occupational outcome" rather than "occupational choice" better reflects these circumstances. It indicates that not all individuals have the option to choose their preferred occupations.

Researchers have to make at least three decisions when applying occupational "choice" models: 1) which set of occupations to use as dependent variable, 2) which explanatory variables to use, and 3) which particular model setting to apply. All three decisions depend on available data, theoretical considerations, and statistical testing results.

4.1 Dependent Variable, Set of Occupations

The dependent variable (left-hand side variable) is a discrete, usually unordered variable which includes the set of available occupations. Given the wide range of available occupations, several ways of categorizing different job types exist. Table 1 gives some examples of frequently used approaches. I differentiate between agricultural and non-agricultural jobs because of the huge social, cultural, and political issues that lurk behind these two occupational labels. Working in agriculture is linked to an agricultural *hukou* that is linked to fewer job opportunities, lower wages, and a lower socioeconomic status (see KUANG and LIU, 2012). As shown in the introduction, it appears that working in agriculture or in non-agricultural jobs determines individuals' chances in many aspects of life in contemporary Chinese society.

Table 1. Categorization of occupations

Social status JONES and MCMILLAN (2001); LE and MILLER (2001)
Holland's six occupational types LARSON, ROTTINGHAUS and BORGEN (2002); PORTER and UMBACH (2006); ROSENBLOOM, ASH, DUPONT and CODER (2008)
Skilled, semi-skilled, unskilled DARDEN (2005)
Good jobs and bad jobs JUNANKAR and MAHUTEAU (2005); MAHUTEAU and JUNANKAR (2008)
White-collar and blue-collar occupations BJERK (2007); HAM, JUNANKAR and WELLS (2009)
Menial, blue-collar, craft, white-collar and professional SCHMIDT and STRAUSS (1975)
Agriculture; professional and managerial; clerical, sales, service; manufacturing and transportation HANNUM and XIE (1998)
Labor market participation states in agriculture: labor services off-farm "selling", on-farm labor "hiring", simultaneously "selling" and "hiring", do not participate on either side "autarky" BROSIG, GLAUBEN, HERZFELD, ROZELLE and WANG (2007)
Non-state sector, state-sector, redistributive agencies ZANG (2008)

Source: author, extension of HAM et al. (2009)

The categorization of the dependent variable usually considers the actual occupations of people, without information on how occupations were chosen or on other occupations considered in this decision-making process. For example a person living in rural Guizhou may consider a much smaller list of job possibilities than an individual living in the center of Beijing. Some authors long ago pointed out the difficulty of answering the question of whether or not individuals really rank occupations based on their preferences and expectations (BLAU et al., 1956). Available statistical data (revealed preference data) do not reveal whether a farmer chose to be a farmer because it was his/her exclusive choice, whether s/he chose to be a farmer out of a set of available agricultural positions, whether s/he also considered a completely different set of occupations, or whether s/he was constrained in the labor market. Researchers can use choice experiments for analyzing decision-making processes to obtain stated preference data, which are more meaningful for analyzing decision-making processes than revealed preference data, yet it is more difficult and costly to obtain these data.

4.2 Independent Variables

In competitive labor markets differences in job preferences and human capital affect labor market participation rates and the distribution of occupations and wages. The competitive theory of group differences underlies the hypothesis that "group differences in wages, occupations, and employment patterns are the consequence of preference and skill differences rather than discrimination" (ALTONJI and BLANK, 1999: 3164).

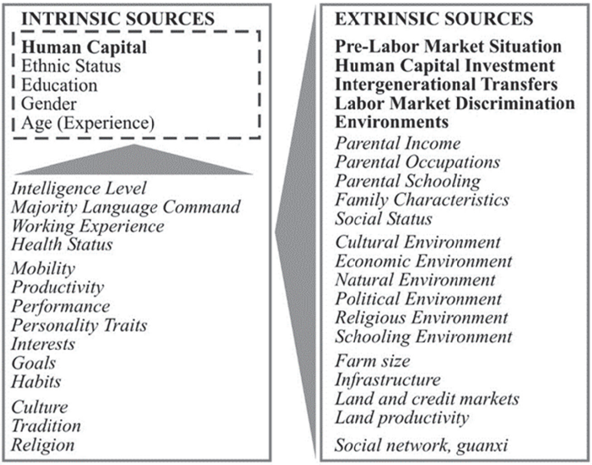
Job preferences of young people evolve depending on their interests, goals, skills, abilities, and temperament when they are growing up (GOTTFREDSON, 1981). Evolution of different job preferences is, moreover, closely related to differences in child-rearing practices, educational systems, comparative advantages, and human capital (ALTONJI and BLANK, 1999). Parents strongly influence the job preferences of their children. For example parents who are convinced that their daughter will face discrimination in the job market attempt to form her preferences for more traditional functions to prevent her from future discrimination in the labor market (ALTONJI and BLANK, 1999). This may also hold true for racial or ethnic minorities who are discriminated against in the labor market.

Skill differences are linked to differences in comparative advantages, human capital accumulations, and preferences. Theories in economics of the family suggest that comparative advantages evolve out of biological differences (e.g., child bearing and physical strength) between women and men (ALTONJI and BLANK, 1999). While more than three decades ago women had a comparative advantage in home production and men in the labor market, particularly for those tasks which require physical strength, in the US the increasing importance of interpersonal and cognitive skills resulted in a more and more similar occupational structure between the genders (ALTONJI and BLANK, 1999). Closely linked to different comparative advantages are differences in human capital accumulations before entry into the labor market. Evidence from the US suggests that skill differences between ethnic and racial groups are strongly influenced by family backgrounds, neighborhoods, and school quality. Many researchers find that in the US African Americans and Hispanics accumulate lower human capital before entering the labor market than do Whites because ethnic minorities often are poorer, grow up in impoverished neighborhoods, and receive lower quality schooling (ALTONJI and BLANK, 1999). These factors have negative implications for labor force participation rates as well as for occupational and wage distributions for the disadvantaged groups. Educational production is a function of child characteristics (including "innate ability"), household characteristics, school and teacher characteristics (quality), and costs related to schooling, where school and teacher characteristics (quality) and costs related to schooling are both linked to education policies and local community characteristics (LIST and RASUL, 2011: 140, based on GLEWWE and KREMER, 2006). Opportunity costs of schooling and expected returns on schooling are, moreover, closely linked to the aforementioned factors (ALTONJI and BLANK, 1999).

In the occupational "choice" literature researchers commonly use 1) racial, ethnic, or national status, 2) gender, 3) education, and 4) age as the main independent variables for analyzing different occupational outcomes (see ZANG, 2008; HANNUM and XIE, 1998; SCHMIDT and STRAUSS, 1975). Additional variables are included depending on the research focus and on statistical significance. Interaction terms among the variables or square values of the variables are, moreover, included to capture nonlinear effects.

SCHMIDT and STRAUSS, for example, use race, gender, educational attainment (school years), and labor market experience (age minus years of schooling minus five) (SCHMIDT and STRAUSS, 1975). HANNUM and XIE use nationality, gender, age, education (illiterate, junior high school, and senior high school), and residence status (HANNUM and XIE, 1998). ZANG uses age, male, marital status, native, CCP membership, education (illiterate and semiliterate, primary school, junior high, senior high), era of labor force entry (1949-59, 1960-79, 1980-89), father CCP, father state worker, father professional, and Hui status (ZANG, 2008). These factors are, however, not always the sole cause of differences in occupational outcomes; there are many interlinked causes seldom observed in secondary datasets. Figure 1 depicts several variables, which can directly or indirectly be linked to these three factors. I divide sources for occupational differences into intrinsic and extrinsic sources, which are interrelated with each other. While intrinsic sources are based on important and basic characteristics of a person, extrinsic sources come from outside and are not directly linked to a person's characteristics. Each of these single factors, however, has underlying theoretical approaches and disciplines, yet because of data constraints and complexity, I cannot cover all of the factors in the analysis; therefore, an important conclusion that can be drawn is that an occupational "choice" study is very useful to provide directions to further qualitative inquiries in order to provide accurate policy recommendations.

Figure 1. Sources for occupational differences



Source: CASTRO CAMPOS (2013:67)

4.3 Model Setting

The theoretical approach of choice models suggests that individuals choose the job which brings them the greatest utility. Recently five new models have contributed to the theoretical rigor of occupational choice literature. BROWN et al. (2008) develop a model to untangle supply and demand in occupational choice. ASTEBRO et al. (2008) develop an occupational choice model which focuses on self-employment. JACOBS (2007) develops a static occupational choice model for developing countries. DROST (2002) incorporates both dynamics in occupational choices and the risk of unemployment. KIMURA and YASUI (2006) develop an overlapping generation's model, combining occupational and fertility choices.

The standard approach of choice theory assumes that an individual (i) acts as *homo oeconomicus* in his/her job decision. This means that i knows the occupations (j) available in his/her choice set ($C(q) \in C$); i evaluates each occupation $j \in C(i)$ on the basis of its characteristics (X_j); i associates a level of satisfaction to each occupation;

i compares the occupations based on the perceived level of satisfaction and chooses the most attractive occupation given environmental constraints. Econometricians are, however, unable to observe the entire decision-making process and, hence, treat satisfaction levels as random utility. Given the imperfect information, utility is divided into an explained and an unexplained part. To analyze occupational outcomes, it is common practice to use a random utility function, such as

$$U_{ij} = V_{ij} + \varepsilon_{ij}, \qquad (1)$$

where V_{ij} is the observable part and expressed by the explanatory variables and ε_{ij} is the random part and unspecified in the observed part of the random utility function. It is crucial to notice that the various multinomial discrete choice models depend on assumptions made on distributions and variations (among j and/or i) of the error component.

The rationality assumption in occupational choice theory is regarded as very unrealistic by many authors. The existence of bounded rationality, which includes limitations in information, time, and cognitive abilities in decision making, is seen as more realistic by some researchers (e.g., GIGERENZER and SELTEN, 2001). While these so-called occupational "choice" models assume underlying random utility functions to capture job decisions, vocational psychologists assume that individuals constantly change their potential occupations without an underlying utility function. GOTTFREDSON's theory of circumscription and compromise provides an insight into the processes of how vocational choices are developed from birth to adolescence (GOTTFREDSON, 1981). The author assumes that with increasing age young people adapt their social space of potential occupations depending on their interests, goals, skills, abilities, and temperament.

Researchers are, nevertheless, often limited to the usage of occupational "choice" theory which follows the logic of utility maximization and can be directly linked to mathematical modelling of decision making. Random utility functions are, thus, widely understood to measure occupational "choices" without consideration for actual decision-making processes. Researchers are, however, uncertain about which job alternative brings the greatest utility to individuals; thus, researchers compute probabilities. The decision about which discrete choice model one can apply depends on whether or not the available data satisfy the assumptions made on distributions and on variations of the error component of the underlying model specifications (e.g., TRAIN, 2009; GREENE, 2008; HENSHER et al., 2005).

I apply binary logit models to empirically examine whether the Buyi, the Miao, and the Tujia are less likely to work in non-agricultural employment than are Han. I use the official ethnic labels because the available secondary data do not provide more information on the meanings of these labels for the individuals. Since the logit model is non-linear, I visualize marginal effects at representative age and educational levels for the three ethnic minorities considered. I assume that the independent variables (ethnic status, education, age, gender, marital status, and residential controls) given in vector x have an influence on the probability of working in non-agricultural employment (1) or agriculture (0), so that the probability of working in non-agricultural employment (*Y=1*) is

$$\Pr ob(Y = 1 \mid \mathrm{x}) = \frac{e^{x'\beta}}{1 + e^{x'\beta}} = \Lambda(x'\beta)\,, \tag{2}$$

where $\Lambda(\cdot)$ denotes the logistic cumulative distribution function (GREENE, 2008: 773); *e* denotes the exponential function; β denotes the parameter vector of the independent variables. In the econometric application I use the "logit" command implemented in Stata 12.

In the logit model the marginal effects are calculated as

$$\frac{\partial E[y \mid \mathrm{x}]}{\partial\, \mathrm{x}} = \Lambda x'\beta[1 - \Lambda(x'\beta)]\beta \tag{3}$$

(GREENE, 2008: 775). I calculate average marginal effects with the "margins" command of Stata 12. The "margins" command uses the delta method to compute marginal effects (see GREENE, 2008: 68-70). For each observation the "margins" command computes the marginal effect with respect to an explanatory factor, averaged over the estimation sample; for dummy variables the "margins" command calculates a discrete change from the base level (*Y=0*) (see KARACA-MANDIC et al., 2012). For visualizing marginal effects, I use the "marginsplot" command (see WILLIAMS, 2012).

4.4 Data

The database underlying this analysis is drawn from survey data conducted by the China Health and Nutrition Survey (CHNS).[2] The complete survey covers more than 4,400 households with a total of 26,000 individuals in nine provinces. This study uses data from 24 communities in Guizhou. The CHNS uses a weighted sampling scheme to randomly select four counties in each province (one low income, two middle income, and one high income) and selects the provincial capital and lower income cities when it was possible. The CHNS randomly selects villages and townships within the counties, urban and suburban neighborhoods within the cities.

[2] The CHNS is available in the public domain https://www.cpc.unc.edu/projects/china.

I use individual data from 2009. Previous research has used data from 1997, 2000, and 2004 for analyzing similar research questions (CASTRO CAMPOS, 2013); hence this paper focuses only on the most recent data. The sample covers 598 individuals. The dependent variable considers individuals' primary occupations (variable B4 from the CHNS) which is self-reported and contains 13 main categories with several subgroups in the original questionnaires. I focus on agricultural and non-agricultural work because of the huge significance of these two categories. Individuals working in agriculture can easily be identified as any individual who is a farmer, a fisherman, or a hunter belongs to category (5). All individuals who are working in other occupations except category (5) can be classified as working in the non-agricultural sector. In Guizhou agriculture is mainly accomplished with traditional methods, although in some areas gas-powered plows are now used (see CASTRO CAMPOS, 2013: chapter 3). The major reason that traditional methods are still being used in Guizhou is that the mountainous terrain of the province makes it impossible to employ modern technologies to do the work more efficiently (see SCHEIN, 2000: 161-62). Non-agricultural employment is mainly in the construction and in the service sectors (see CASTRO CAMPOS, 2013: chapter 3).

The selection of explanatory variables relies mainly on previous work on occupational "choice" analysis (e.g., ZANG, 2008; HANNUM and XIE, 1998; SCHMIDT and STRAUSS, 1975) and on theoretical work examining occupational outcome analysis (CASTRO CAMPOS, 2013). In the economic literature the core factors which influence the probability of working in non-agricultural employment are ethnic status, education, gender, age, and geographic location. Ethnic status is self-reported (variable nationality in the CHNS); I use dummy variables for the ethnic groups (Han – base, Miao, Buyi, and Tujia) in the analysis because the sample considered includes observations for these groups only. Han is used as a benchmark purely because it is the majority group. I do this despite the fact that Han is also just an ethnic label and as diverse as the ethnic labels used for categorizing ethnic minorities. Years of education are calculated on the basis of variable A11, which gives information about how many years of formal education the respondent has completed in a regular school. Gender is represented by the variable AA2a, where 1 stands for male and 2 for female. I use the dummy form and name the gender variable male, which is 1 when the respondent is male and 0 when the respondent is female. Age in years is calculated based on the year of observation (wave) and the western date of birth (AA3a) of the respondent. Age is restricted to 15-65 years. With the variable age I also capture an individual's experience. I do not use an additional variable for experience, which is usually (age minus years of education minus 5), because of the high degree of collinearity between age and experience. To control for geographic location, I use four county dummies (variable T3) and a rural dummy (variable T2). A dummy variable for married or unmarried (variable A8) is also included in the regression; it serves to capture differences in family characteristics. For other possible variables such as parental occupation and parental education, there are not enough available observations; other variables such as CCP membership are not available in the CHNS. The independent variables are, thus, ethnic status (Han - base, Miao, Buyi, and Tujia), education (years), age (years), male (0/1), married (0/1), counties (county1 – base, county2, county3, county4), and rural (0/1). Descriptive statistics of all independent variables are presented in Table 2.

As the random selection of individuals is not based on the ethnic composition of the provinces, I control for selection bias in the empirical analysis by calculating robust standard errors based on 24 community clusters (DEATON, 1997: 73-8). With this control I make the assumption that error terms are correlated within the communities; therefore, the unobserved utility of individuals living in the same community is assumed to be correlated.

Table 2. Descriptive statistics by ethnicity 2009

Variables	Han	Miao	Buyi	Tujia	Sample
Independent variables					
Education mean (SD)	7.9 (5)	6.6 (4.5)	5.8 (4.1)	7.3 (5)	7 (4.7)
Male, %	55.6	47.5	51.2	58.1	55.6
Age mean (SD)	43.5 (10.8)	47.8 (11.7)	46.8 (12.2)	45.6 (12.2)	45.5 (11.7)
Married, %	82.4	90.8	91.6	77.4	86.1
Rural, %	69.2	31.7	90.4	100	70.7
County 1, %	40	17.5	27.1	0	27.8
County 2, %	7.6	78.3	0	100	29.3
County 3, %	12	4.2	72.9	0	26.1
County 4, %	40.4	0	0	0	16.9
Dependent variable					
Agriculture (N, %)	134 (53.6)	83 (69.2)	136 (81.9)	27 (43.5)	380 (63.6)
Non-agriculture (N, %)	116 (46.4)	37 (30.8)	30 (18.1)	35 (56.5)	218 (36.4)
N	250	120	166	62	598

Source: author's calculation based on CHNS sample

5 Non-Agricultural Employment and its Determinants

To find out whether ethnic minorities are less likely to work in non-agricultural employment, first I test several different model settings and compare the outcomes with likelihood-ratio tests, AIC and BIC criteria. Second, I use AIC/BIC criteria to choose the best model among the models considered. Third, since the logit model is non-linear, I visualize marginal effects at representative educational and age levels for each ethnic group considered.

The first model shown in Table 3 includes all explanatory variables; however, this is not the optimal model setting. Based on AIC/BIC criteria the county dummies, the male dummy, and the married dummy have no explanatory power in the model; therefore, I excluded them from the successive model settings (see models 1, 2, and 3 in Table 3) until I found the best model setting with the lowest AIC/BIC criteria (model 4).

Table 3. Logit coefficients (non-agriculture (1), agriculture (0)) 2009

	Model 1	Model 2	Model 3	Model 4
Buyi (0/1) [a]	-1.007	-0.879*	-0.908**	-0.919**
	(0.669)	(0.461)	(0.452)	(0.454)
Miao (0/1) [a]	-2.190*	-2.008**	-2.019**	-2.033**
	(1.190)	(0.822)	(0.835)	(0.829)
Tujia (0/1) [a]	1.829*	1.639**	1.651**	1.653**
	(0.967)	(0.721)	(0.724)	(0.720)
Education (years)	0.357***	0.355***	0.353***	0.356***
	(0.051)	(0.051)	(0.051)	(0.050)
Male (0/1)	0.149	0.136	0.166	
	(0.215)	(0.220)	(0.227)	
Age (years)	-0.024*	-0.026*	-0.029**	-0.029**
	(0.014)	(0.014)	(0.014)	(0.014)
Married (0/1)	-0.219	-0.249		
	(0.356)	(0.363)		
Rural (0/1)	-3.305***	-2.892***	-2.880***	-2.876***
	(0.971)	(0.882)	(0.884)	(0.882)
County 1 (0/1) [b]	-0.533			
	(0.889)			
County 2 (0/1) [b]	-0.272			
	(1.245)			
County 3 (0/1) [b]	0.190			
	(0.934)			
Constant	0.716	0.356	0.279	0.359
	(1.417)	(1.216)	(1.214)	(1.181)
Log ps. Likelihood	-211.3829	-212.6405	-212.8702	-213.0816
Wald chi2	121.29	100.02	101.55	102.25
df	12	9	8	7
AIC	446.7658	443.281	441.7404	440.1631
BIC	499.4889	482.8234	476.8891	470.9183
Pseudo R^2	0.4611	0.4579	0.4574	0.4568
Observations	598	598	598	598

[a] The reference group for Buyi, Miao, and Tujia is Han.
[b] The reference group for counties is county 4.
Figures in parentheses are robust standard errors adjusted to 24 community clusters.
*p<0.1, **p<0.05, ***p<0.01.
Source: author’s calculation based on CHNS sample

The results show that there is no observable gender difference in the likelihood of working in non-agricultural employment. Whether or not a person is married has also no effect on the likelihood of working in non-agricultural employment. The four counties of residence have also no effect on the likelihood of working in non-agricultural employment. This can possibly be explained by the huge infrastructural investments that took place in many areas in Guizhou during the last decade; except from very remote areas, most of the cities, townships, and villages are well connected.

The estimation results suggest that there are statistically significant ethnic, educational, age, and rural effects: The Tujia are more likely to work in non-agricultural employment than are Han. In contrast the Buyi and the Miao are less likely to work in non-agricultural employment than are Han. More years of education increases the likelihood of working in non-agricultural employment. In contrast, older age decreases the likelihood of working in non-agricultural employment. It also matters whether a person lives in a rural or in an urban area; being a rural resident decreases the likelihood of working in non-agricultural employment.

The average marginal effects are statistically significant for all three ethnic minorities (Table 4). The Buyi are 10.4 per cent less likely to work in non-agricultural employment than are Han.[3] The Miao are 19.9 per cent less likely to work in non-agricultural employment than are Han. In contrast, the Tujia are 20.4 per cent more likely to work in non-agricultural employment than are Han. I use adjusted predictions at representative values to investigate whether the marginal effects of ethnic status differ by education and age (see WILLIAMS, 2012).

The Figures 2, 4, and 6 show that, for all ethnic groups, the better educated someone is, the more likely that person is to work in non-agricultural employment. The Figures 3, 5, and 7 show that, for all ethnic groups, the older someone is, the less likely that person is to work in non-agricultural employment.

The bars given in the Figures show the 95 per cent confidence intervals for the adjusted predictions; the ethnic difference is not statistically significant, if the intervals of the two groups overlap or if the confidence intervals contain zero (see WILLIAMS, 2012). The intervals overlap in the cases of the Buyi and of the Tujia in comparison to Han (see Figures 2 and 3 for the Buyi; 6 and 7 for the Tujia). This means that, at every value of age and education, there are no statistically significant differences between the Tujia and Han and between the Buyi and Han; however, the difference between the predicted probability of working in non-agricultural employment for the Miao and Han differs by education and age. It is clear that the predicted probability of non-

3 The average marginal effects are based on the assumption that other effects are held constant; therefore, I do not state the *ceteris paribus* assumption for each marginal effect.

agricultural employment for the Miao and Han differs at years of education 3 to 13 (Figure 4). The Miao with 3 to 13 years of education have a statistically significant lower probability of working in non-agricultural employment than do Han with the same years of education. It is also apparent that the predicted probability of non-agricultural employment for the Miao and Han differs at ages 15 to 64. The Miao with ages 15 to 64 have a statistically significant lower probability of working in non-agricultural employment than do Han with the same ages.

Table 4. Average marginal effects after logit (non-agriculture (1), agriculture (0)) 2009

	Model 4
Buyi (0/1) [a]	-0.104**
	(0.053)
Miao (0/1) [a]	-0.199***
	(0.058)
Tujia (0/1) [a]	0.204**
	(0.09)
Education (years)	0.040***
	(0.004)
Age (years)	-0.003**
	(0.002)
Rural (0/1)	-0.374***
	(0.09)
Observations	598

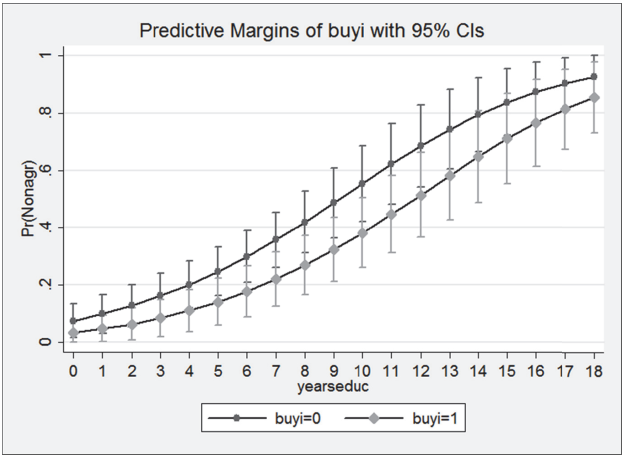
dy/dx for factor levels is the discrete change from the base level.
[a] The reference group for Buyi, Miao, and Tujia is Han.
Figures in parentheses are robust standard errors adjusted to 24 community clusters.
*p<0.1, **p<0.05, ***p<0.01.
Source: author's calculation based on CHNS sample

The average marginal effects also show that the other explanatory variables (education, age, and rural residence) are statistically significant (Table 4). An additional year of education from the average increases the probability of working in non-agricultural employment by four per cent. An additional year of age from the average decreases the probability of working in non-agricultural employment by 0.3 per cent. Living in rural rather than in urban areas decreases the probability of working in non-agricultural employment by 37.4 per cent.

The estimation results for the Miao are in line with previous findings, but the results for the Buyi and for the Tujia were previously not statistically significant (see CASTRO

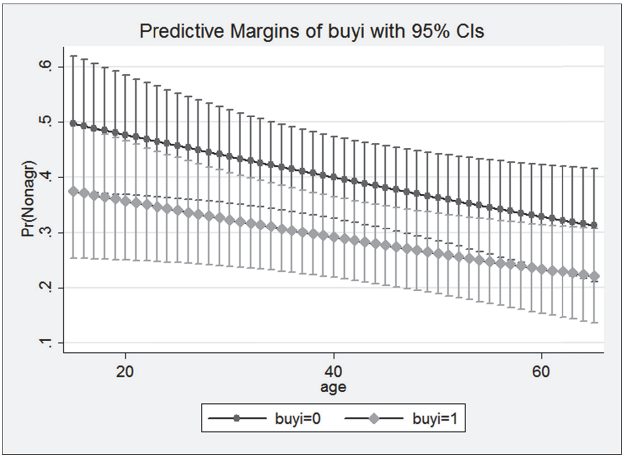
CAMPOS, 2013). The results for education, age, and marital status confirm previous findings, but the results for gender and county dummies are no longer statistically significant.

Figure 2. Predictive margins of Buyi at representative years of education 2009



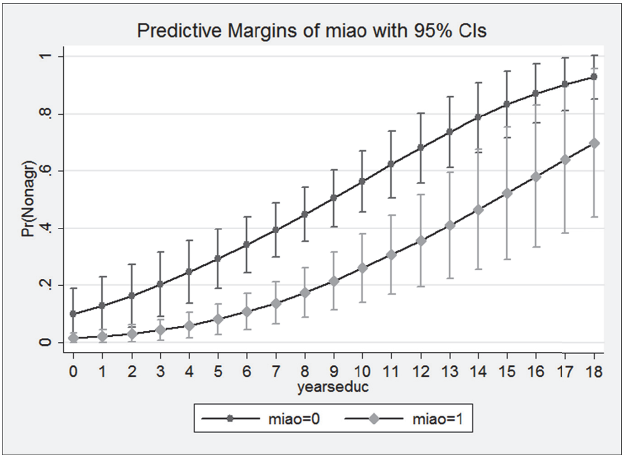
Source: author's calculation based on CHNS sample

Figure 3. Predictive margins of Buyi at representative years of age 2009



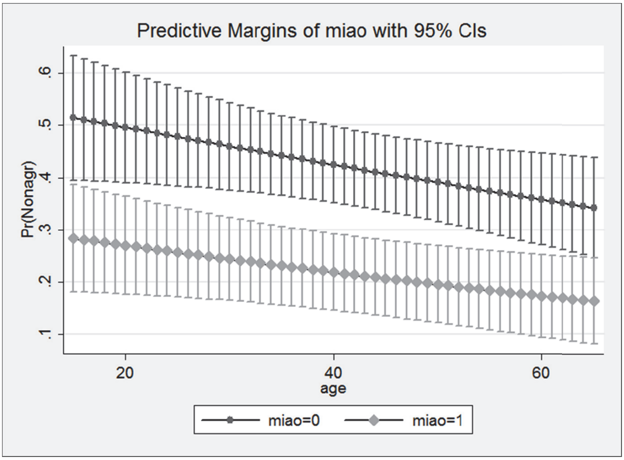
Source: author's calculation based on CHNS sample

Figure 4. Predictive margins of Miao at representative years of education 2009



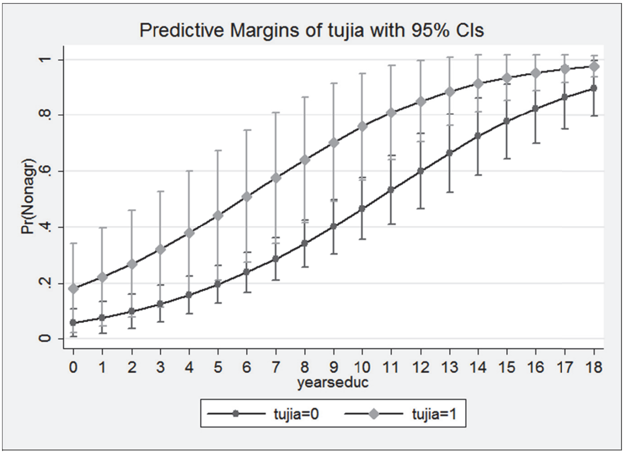
Source: author’s calculation based on CHNS sample

Figure 5. Predictive margins of Miao at representative years of age 2009



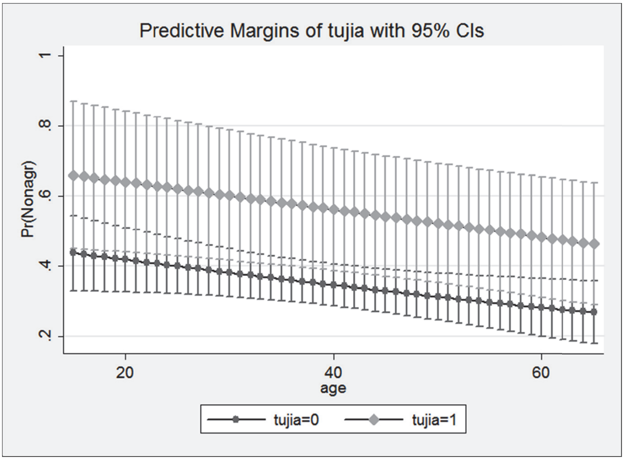
Source: author’s calculation based on CHNS sample

Figure 6. Predictive margins of Tujia at representative years of education 2009



Source: author's calculation based on CHNS sample

Figure 7. Predictive margins of Tujia at representative years of age 2009



Source: author's calculation based on CHNS sample

To sum up, ethnic labels play a decisive role in accessing non-agricultural employment in Guizhou. The symptoms and causes of this phenomenon have to be cautiously investigated with ethnographic fieldwork. Figure 1 summarizes crucial intrinsic and extrinsic sources that might all, to a smaller or larger degree, impact the independent variables considered; these sources affect the likelihood of working in non-agricultural employment and of having a higher socioeconomic status in contemporary China; however, the cost of trying to better integrate ethnic minorities into the non-agricultural labor market results in assimilation into the majority culture, an issue which should not be overlooked.

6 Conclusions

This paper provides evidence that ethnic labels are linked to a lower probability of non-agricultural employment in Guizhou. Using the responses of 598 individuals in 2009, I investigate the main factors that determine the likelihood of working in non-agricultural employment by estimating binary logit models and by visualizing adjusted predictions at representative values. It appears that both the Buyi and the Miao are less likely to work in non-agricultural employment than are Han. It seems, therefore, that these two ethnic minorities are at the bottom of the socioeconomic scale in Guizhou in comparison to the Tujia and Han because working in agriculture is linked to an agricultural *hukou* that comes with fewer job opportunities, lower wages, and a lower socioeconomic status (see KUANG and LIU, 2012). Although with increased education the likelihood of non-agricultural employment increases for all ethnic groups considered, the predicted probability of non-agricultural employment for the Miao is lower than that of Han at almost all educational levels. The likelihood of working in non-agricultural employment decreases with increasing age for all ethnic groups considered; however, the predicted probability of non-agricultural employment for the Miao is even lower than that of Han at almost all ages. Previous studies show similar results for the Miao; this indicates an urgent need for additional qualitative studies to investigate the symptoms and causes of the persistent employment disadvantage of Guizhou's Miao people. This paper focuses on the impact of an official ethnic label only instead of the impact of ethnicity as identity; the cultural and social variety that lurks behind the ethnic label "Miao" demands additional inquiries. That the Buyi are less likely to work in non-agricultural employment is a new phenomenon; in previous studies the results for the Buyi were statistically insignificant; therefore, the results for the Buyi demand additional inquiries as the results can also be related to sampling differences. The estimation results, moreover, reveal that the Tujia are more likely to work in non-agricultural employment than are Han. In view of labor market integration of ethnic minorities, this is a positive result, yet the cost of trying to better integrate ethnic minorities into the non-agricultural labor market results in assimilation into the majority culture, an issue which should be further investigated (see for example BROWN (2001) for an analysis of the Tujia in Hubei province). As the Tujia seem to be culturally similar to Han (MACKERRAS, 2003: 191), this effect might even be unnoticed in society; therefore, it might not be a primary governmental concern; however, as this paper focuses on the impact of an official ethnic label instead of the impact of ethnicity as identity, the research findings for the Buyi and the Tujia should also be complemented by rigorous qualitative inquiries.

Regarding the other explanatory variables, education is crucial for working in non-agricultural employment; education is also crucial for escaping poverty in China (e.g., GLAUBEN et al., 2012: 793). With increasing age people are, however, more likely to work in agriculture; this confirms previous findings. The county of residence and gender are no longer statistically significant; this is in contrast to previous findings. Whether a person is married or not has no statistically significant effect on the likelihood of working in non-agricultural employment in current and previous estimations.

To sum up, it could be argued that different policy measures are needed depending on the ethnic group considered. The most crucial task at the moment is to qualitatively investigate the persistent employment disadvantage of people that are officially classified as Miao in Guizhou. The elderly among the working-age population and the less educated should be targeted first in policy considerations. The migrant population and the unemployed who were not targeted in this paper require special consideration in future studies. I envisage that the economic inquiries laid out in this paper can be used as a basis for qualitative inquiries by anthropologists.

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