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**POPULATION MIGRATION AND LABOR MARKET SEGMENTATION:
EMPIRICAL EVIDENCE FROM XINJIANG, NORTHWEST CHINA**

By

Anthony J. Howell

A THESIS

**Submitted to
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ABSTRACT

POPULATION MIGRATION AND LABOR MARKET SEGMENTATION: EMPIRICAL EVIDENCE FROM THE XINJIANG, NORTHWEST CHINA.

By

Anthony J. Howell

Population migration and emerging labor market segmentation are two phenomena that are dramatically shaping the spatial, economic, and social relationships in Chinese cities. While considerable bodies of research have been published with respect to each phenomenon, few studies have focused on the relationship linking migration and market segmentation (Li, 1997). In fact, there has been no previous research linking the two phenomena together using Urumqi, the capital city of the Xinjiang, China as a case study. In order to better understand the linkages between migration and labor market segmentation and income disparities within labor market sectors, this thesis utilizes field survey data collected by the author in Urumqi in 2008.

The major findings from this paper show that minority Uighur migrants and non-migrants obtain lower wages compared to majority Han migrants and non-migrants. Furthermore, after employing cluster analysis, Urumqi's service economy is found to consist of three labor market segments, which are identified as the primary-independent-sector, primary-subordinate sector, and the secondary sector. The results from the discriminant analysis reveal that migrant status and ethnicity have the highest contribution effect in placing respondents into one of the three labor market segments listed above. This research concludes that migrant-status, as well as ethnicity, reinforce labor market segmentation in Urumqi's service sector.

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DEDICATION

This work is dedicated to my loving parents who have been instrumental in the completion of this thesis through their unconditional love and support. You are loved and appreciated.

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First and foremost I want to acknowledge my family. In particular, my parents, as it is through their love and unconditional support that has inspired me to reflect the love and care that I received growing up to help others in need and to be service-oriented.

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GLOSSARY

CASS - Chinese Academy of Social Sciences

CCP - Chinese Communist Party

DA - Discriminate analysis

ETR - East Turkestan Republic

GDP - Gross domestic product

GMD – Guomindang (the Nationalist Party)

PCA - Principal component analysis

PI - Primary-independent

PS - Primary-subordinate

PRC – People’s Republic of China

SLM - Segmented labor market

SOE - State-owned enterprises

XPS - Xinjiang provincial statistical yearbook

XUAR - Xinjiang Uighur Autonomous Region

1. INTRODUCTION

Since the first economic reforms were enacted in 1978, China has been in the process of transition from a centrally planned economy towards a market oriented one, resulting in enhanced labor mobility and the emergence of labor markets (Xu, 2006). Population migration and emerging labor market segmentation are two phenomena that are dramatically reshaping the spatial, economic, and social relationships in Chinese cities. While considerable bodies of research have been published with respect to each phenomenon, few studies have focused on the relationship linking migration and market segmentation (Li, 1997). In fact, to this author's knowledge there has been no previous research linking the two phenomena together using Urumqi, the capital city of the Xinjiang Uighur Autonomous Region (XUAR), China as a case study. In order to better understand the linkages between migration and labor market segmentation and income disparities within labor market sectors, the author utilizes a household-level field survey collected by the author in Urumqi, Xinjiang in 2008.

Labor market segmentation is important to understand since segmented markets are a major cause of economic inefficiency. For example, excluding a certain group of people from specific labor markets leads to wasteful utilization of human resources, and incurs a reduction in the flexibility of the labor market to handle economic change (Xu, 2006). Migration is important to understand in the context of studying Segmented Labor Market (SLM) theory, since research has shown that rural-urban migration plays an important role in reinforcing segmentation of the labor markets (Gordon, 1995; Li, 1999; Fan, 2002; and Fan, 2003).

1.1 Research Questions

The major research questions of this paper are: (1) to what extent do descriptive statistics provide support for a new urban wage structure emerging in Urumqi's service sector; and (2) to what extent does labor market segmentation exist in Urumqi's service sector?

A key hypothesis of this paper is that in the case of Urumqi, Han natives and Han intra- and inter- provincial migrants are all given preference in the labor market over both Uighur urban Hukou holders and Uighur migrants. This differs from the social and occupational stratification seen in other Chinese provinces where urban natives are given job preference over temporary migrants. Under the key hypothesis, Han migrants, including temporary migrants, are given preference over Uighur urban natives in Urumqi's service sector. Therefore my paper recognizes a new urban labor hierarchy forming in Urumqi based on nationality¹ and migration, as follows: (1) Han migrants; (2) Han natives; (3) Uighur migrants; and finally (4) Uighur natives. In addition, I hypothesize that migration reinforces labor market segmentation in Xinjiang as migrants with similar characteristics are channeled into similar job types.

1.2 Methods

To obtain the research objectives outlined above, employee-level survey data collected in Urumqi are used to: (1) provide descriptive statistics that explain migration

¹ For the purposes of this research, nationality and ethnicity are used interchangeably to distinguish the majority Han Chinese from minority groups in China, such as the Uighur and Hui. 'Nationality' stems from the Chinese word 'minzu,' which is used to denote different nationalities or ethnic groups within China. See chapter 3 in Gladney (2004) for a more in-depth discourse on China's approach to classify minority groups.

characteristics and reveal labor earnings for all respondents. Using average monthly wages respondents are disaggregated by migrant status, nationality and gender; and (2) determine whether labor markets exist in Urumqi. This includes running principal component analysis (PCA) and cluster analysis. Discriminate analysis (DA) is also employed in order to assess whether labor market segments identified by the cluster analysis are statistically significant from each other, as well as to determine which variables are most influential in placing respondents into the labor market segments.

For the purpose of this research, labor-market segments are defined operationally as clusters of jobs associated with certain combinations of occupation, industry and respondent characteristics. The primary-independent (PI) segment is characterized as free from elaborate rules and procedures and places a premium on creativity and problem solving. Jobs in the PI segment are high paying, offer prestige, and provide workers high chance of internal advancement. Employment usually requires college education. The primary-subordinate (PS) segment consists of relatively high paying jobs and offer fringe benefits. However, jobs follow a routine, task-oriented schedule and require more direct supervision compared to the PI sector. The secondary segment consists of low-paying jobs with few benefits, little opportunity for job advancement, and generally work long hours in poor or unsafe working conditions. The jobs in this sector are unskilled, highly unstable, and require little formal education (Fichtenbaum et. al., 1994).

1.2.1 Research Problem

In the case of Xinjiang, researching wage inequality and migration issues is considerably more complicated, relative to other regions in China, due mainly to the

presence of the ethnic variable, as well as the Chinese Politburo's sensitivity toward the region. The presence of the ethnic variable disqualifies research findings elsewhere in China that do not control for minority populations. Due to the Chinese government's sensitivity towards Xinjiang, it is nearly impossible to obtain substantial economic data on the region.

At present, there are only three major sources for minority data, each with its own drawback: population censuses, ethnic statistical yearbooks, and household surveys undertaken by the Chinese Academic of Social Sciences (CASS). Population censuses do not give minority socioeconomic data and the 2000 census does not give data on literacy or educational attainment by nationality. Ethnic statistical yearbooks are infrequent and fail to capture the whole poor minority population as sampling is done in autonomous areas only. This is problematic because in 1998, 55% of minorities in China lived outside these areas and therefore may not be impacted by preferential policies implemented by autonomous administrations. Household surveys taken by the Chinese Academy of Social Sciences (CASS) in 1988 and 1995 use a narrow definition of income and do not estimate the rent value of housing (Bhalia and Qiu, 2006).

The current CASS data on Xinjiang fail to disaggregate migration data along nationality types, which is problematic since migration patterns include Han-dominated inter-provincial migration as well as minority and Han intra-provincial migration. Data are needed to delineate such migrant groups, based on nationality type, in order to recognize to what extent push/pull factors, destination desirability, and reception in destination areas, may be significantly different for different nationality groups and migrant types.

Although not explicitly explored in this paper, there is an undeniable link that underscores the importance of this research. The interrelated factors of economic hardship, discrimination, and inequality, combined with Chinese policy and Xinjiang's political structure are major drivers of minority-led separatist movements (Bovingdon, 2004). Thus choosing to study labor market segmentation and income disparities in Xinjiang is particularly timely and imperative considering unintended consequences of market reforms are already being seen in other places in China and the world, e.g. market discrimination, occupation stratification and a rising gap in social and income inequality (Wu, 2004). If these unintended consequences of market reforms that exist in Xinjiang are allowed to intensify, they may lead to future surges in protests and acts of terror against the communist state.

1.2.2 Site of Study

The survey site for this research is Urumqi, the capital city of Xinjiang Province, located in Northwest China. Xinjiang is China's largest province, making up 1/6 of the total land (Milward, 1998). The author of this research was drawn to Xinjiang mainly due to the uniqueness of the region in terms of its presence of Muslim minorities, ethnic conflict and contestation of space, geopolitical significance and abundance of natural resources.

While Xinjiang is inhabited by various ethnic groups that have added to the rich cultural and historical dynamics of the region, e.g. Kazahks, Krgyz, and Tajiks, the Uighur people are the primary focus of this research because they are the major victims of discrimination and human rights violations (Amnesty International, 1999). The

Uighur people are of Turkish descent and claim to have ancestral ties to the indigenous peoples of the Tarim Basin. Uighurs' ancestral claims to the land equate to the fact that the Chinese government is operating as a colonialist state that is occupying the Uighur motherland. In the eyes of Uighurs, their claim to ancestral ties to the land justifies their right for self-rule and has in a large way fueled the Uighur resistance movement (Dillon, 2004). There are over eight million Uighur minorities currently living in Xinjiang, accounting for approximately 45% of the population. As a result of their large population and history of rebellion, Uighurs have been often been viewed as a legitimate threat to the Chinese rule in the region (Moneyhon, 2004).

Xinjiang is arguably one of China's most restive regions and has had a long history of dissent. Recently, Xinjiang has gone through rapid economic development due to its substantial oil and gas deposits and geopolitical significance. Despite an abundance of natural resources and high per capita GDP, Xinjiang is rife with regional disparities, growing income inequality between Han and ethnic minorities, and simmering ethnic discontent (Hannum and Xie, 1998; Pannell and Schmidt, 2006). A further analysis of Xinjiang's history and present minority issues are further discussed in the proceeding chapter.

Studying income inequality and migration patterns is deeply important Xinjiang in order to reduce the level of ethnic discontent in the region. This is due, in part, to the perception by Uighur that Han migrants are taking the good jobs and making life more difficult for Uighur, in terms of social mobility, discrimination, and earnings capacity (Pannell and Schmidt, 2006). To what extent and on what significance level such inequality exists, what drives and sustains Han migration to Xinjiang, particularly from

provinces like Gansu, and how that might affect the labor market outcomes in Xinjiang are research questions that are crucial to current debates in the policy arena.

In Xinjiang, migration has impacted labor market outcomes in two key ways: (1) relative to other parts of China, the Chinese government has encouraged massive flows of Han migrants to the region, particularly during the 1950s and 1960s and during the 10th 5-year plan (2001-2005) (Pannell and Schmidt, 2006). The last state-orchestrated mass migration of Han “volunteers” occurred in 1964. After that, the majority of in-migrants to Xinjiang were either out of work or looking for a better way of life (Toops, 2004); (2) Han migrants traditionally have been and still are given priority over minorities in obtaining urban employment, which has led to significant inequality between Han and non-Han peoples (Su et. al., 2001; Gladney, 2004; Wiemer, 2004; Pannell and Schmidt, 2006).

The outcome of these two inter-related points leads to a new urban stratification arising in Xinjiang that differs from the Eastern coastal cities. In the East, local urban Hukou holders, including permanent migrants and natives, are given preference over temporary migrants, whereas the incorporation of nationality type as a variable may disrupt that order, with Han migrants given preference over minority urban natives and migrants. For the purposes of this research, Han migrants are further divided into two categories: inter-provincial migrants and intra-provincial migrants. It is important to distinguish between the two groups because the intra-provincial Han migrants tend to be children of inter-provincial migrants and therefore represent a first generation of Xinjiang-born Han Chinese. It is important to determine whether significant differences

in earnings exist between the two different Han migrant groups to serve as a proxy as an indicator for Han migrant social mobility.

The city of Urumqi was chosen because it has the most mature labor market in Xinjiang, has the highest percentage of non-agricultural work, and has also experienced a recent boom in the service economy (Pannell and Schmidt, 2006). More than 70% of Urumqi's workforce is non-agricultural labor. This percentage is considerably higher compared to the province as a whole, where only 30% of the work is non-agriculture. Approximately 55-65% of Urumqi's urban workforce is employed in the service sector².

In addition, Urumqi's service sector was selected as a case study because it employs large populations of both Uighur and Han migrants. Previous research contends that minorities in Xinjiang are highly underrepresented in technical, administrative and professional jobs (Hannum and Xie, 1998). However, the sectoral shift model indicates that minorities are representative in Xinjiang's service economy and thus provide adequate representation of both Uighur and Han (Pannell and Schmidt, 2006).

According to the 2005 Xinjiang Provincial Statistics, 2,081,834 people live in Urumqi (XPS, 2005). Urumqi's demographics are comprised mostly of Han and Uighur nationalities, as well as some Hui, Kazak, Tajik, and other Chinese minority groups. While Uighur represents the provincial majority in Xinjiang at 45%, Han is the majority nationality group in Urumqi. There are 1,567,562 Han in Urumqi, compared to only 266,342 Uighur. Of the migrants currently living in Urumqi, there are approximately 774,336 people whose household registration is registered in a province other than Xinjiang, which indicates the number of official inter-provincial migrants currently

² See Figure 1 in Appendix B to view the breakdown of employment categories (XPS, 2005).

residing in Xinjiang; however, the number of actual migrants is much higher when informal migrants are included in the count. The three provinces that contribute the most in-coming migrants to Xinjiang are Sichuan, Henan, and Gansu Province.³

Urumqi is divided into 7 districts, 4 of which are included in the survey sample.⁴ The four districts included in the sample are: Tianshan, Shayibake, Xinshi, and Shuimoguo. The last two districts are more recently developed as a result of urban expansion, whereas Tianshan and Shayibake make up the city core.

1.2.3 Field Research

In order to fill in the gaps left by current official data on minorities, primary data was collected by the author in Urumqi in summer 2008. The data disaggregates respondents by nationality and migratory status. The survey questionnaire includes questions related to earnings (monthly income), personal endowment characteristics (gender, age, marriage, number of children, and education), mobility characteristics (place of origin, number of places lived, length of stay, household registration status), occupation characteristics (type of employment, type of firm, and secondary employment), and social capital characteristics (how did you find employment, where did your father work, and how many languages do you speak).⁵

Before carrying out the survey in Urumqi, two Uighur students at the University of Michigan were interviewed. They provided advice on how to frame questions in a culturally appropriate manner, which helped reduce respondent bias and subsequently

³ See Figure 2 in Appendix C to view migration flows by province (XPS, 2005).

⁴ See Figure 3 in appendix D for a location map of Urumqi's urban districts

⁵ See Table 11 in Appendix A to view the survey instrument.

increased the consistency of the data findings. The sample frame consists of all working individuals employed in Urumqi's labor market. In order to obtain a large sample size for both Han and Uighur, a stratified sampling method was adopted. Only urban employees who were employed in Urumqi's service economy were sampled. Respondents were typically employed in visible, commercial and low scale retail and wholesale jobs, including informal work. Oversampling Urumqi's retail and wholesale industry introduces additional bias that hinders the survey results from being representative across Urumqi's service sector.

Prior to the start of surveying, approximately 30 survey sites were selected by looking at an urban district map. Sites were as evenly distributed as possible across each district. Survey sites included several large, medium, and small commercial markets that span across 4 different urban districts. To the greatest extent possible, respondents were selected on a random basis by selecting every 10th store location on-site to survey.

Respondents were marked as either employee, employer, or self-employed; whoever was available at that time was surveyed. There was approximately a 60% refusal rate, in which case we would then walk to the next store until we found a willing participant. In total, a sample size of 595 was obtained. To carry out the survey questionnaires, two groups of university students from Xinjiang University were employed to conduct interviews in designated urban commercial areas in Urumqi. Each member of the two groups received on-site training. They were told how to introduce themselves and the survey and they were briefed on the research project. Each day, the author accompanied one of the two groups; every other day the author alternated which group to shadow. At least one of the members in each group contained one student that

can speak Uighur and Mandarin. The surveys were administered in Mandarin, with each survey taking approximately 20 minutes to complete.

1.2.4 Major Findings

Before carrying out descriptive statistics, respondents were broken into five sub-groups: Han-natives, Han inter-provincial migrants, Han-intra-provincial migrants, Uighur natives, and Uighur migrants. The major findings from the descriptive analyses show that Uighur migrants and non-migrants obtain lower wages compared to Han migrants and non-migrants. Women within every nationality-migrant status sub-group were all found to earn less money on average than their male counterpart.

From the cluster analysis, three labor market segments were detected, which were identified as the PI sector, PS sector, and the secondary sector. After running the DA, the variables that have the most impact on placing respondents into one of the labor market segments are found to be migrant status and Uighur, showing that migrant status and nationality play an important role in reinforcing labor market segmentation in Urumqi's service sector.

1.2.5 Limitation of Research Approach and Methods

The field research used to inform this research offers a rare look at employee-level information on urban workers employed in the service sector in Urumqi. While this research attempts to supplement the lack of data from the highly contested region of Xinjiang, the survey design is not without considerable drawbacks that need to be addressed here. First, the survey results are not generalizable beyond Urumqi's service sector. This survey offers no insight into other sectors of the economy. In fact,

considerable bias is also introduced within the service sector because the majority of respondents were low-skill employees, 95% of the respondents were employed in retail, transportation, or service work. Only 5% of respondents were employed in a high-skill professional or technical job. Respondents employed in a high-skill position include professors, police officers, lawyers, and doctors.

Another limitation on the survey data stems from issues of respondent classifications. For example, there was no direct question that asked respondents whether they were employed in formal or informal work. While most workplaces were obviously one or the other, there were quite a few respondents that could have been either. We took each respondent case by case and visually inspected the workplace to help determine whether a respondent was formally or informally employed. Another classification problem existed with the college students who were responsible for carrying out the survey questionnaire. Some of them would mark a respondent as only one employee type, e.g. self-employed or employer, even if a respondent was in fact both self-employed and an employer. So the results on this variable are not completely accurate. Also, when it came to asking sensitive questions, such as how many taxes are paid per month and monthly earnings, some respondents would not want to answer, however the surveyors would mark down an answer anyways for fear of handing in an incomplete survey. When this fact was discovered, we reiterated the importance of leaving unanswered questions blank; however, this point was not emphasized until well within the second week of surveying.

Of the 596 respondents surveyed, only 94 were Uighur minorities. Unfortunately, we did not receive permission to interview Uighur until late in the collecting process and

did not have sufficient time to collect more survey data on Uighur. For various reasons, the majority of Uighur minorities were also only surveyed in two different locations.

Despite these important limiting factors, the biggest problem with the dataset is that it relies purely on quantitative data. While hard economic data is lacking in the region, greater attempts should have been made to systematically incorporate open-ended questions for respondents, particularly for Uighur minorities and Han inter-provincial migrants. The neglecting of qualitative data was, in part, due to the short amount of time allotted in the field, only three weeks. However, it is imperative that future research in this region adopt a mixed-method approach so that qualitative information can be used to fill in any gaps left by quantitative analyses.

Many of the quantitative methods applied to the dataset were not adequate enough to provide the results in this paper. For example, although ordinary least squares regression was used in an attempt to determine wage disparities for nationality and migratory status, many of the variables collected in the survey data were binary. As a result, the assumptions of ordinary least squares regression were not satisfied. Therefore, findings from the linear regression model were not valid. With respect to another methodological issue, the results from the DA are included in this research, however, are suspect. This is because the same variables used in the PCA were also used in the DA and the results are thus tautological. Despite this fact, the results from the DA still lend evidence that indicates which variables played an important role in placing respondents into one of the segments found using cluster analysis.

1.6 Organization

The organization of this thesis is as follows. Chapter two examines labor market segmentation theory and migration, as well as establishes a link between the two phenomena. The beginning of chapter two first offers a general framework of the institutional changes and sectoral shifts that have transpired in China. This offers insight into explaining many of the changes that have occurred within Xinjiang, particularly the surges in Han inter-provincial migration to Xinjiang. Chapter two also offers a brief analysis of Xinjiang's recent historical, social, and economic dynamics that continue to impact the present day challenges facing the region, e.g. regional disparities, ethnic fragmentation, labor market segmentation, and rising income inequality.

Chapter three lays out the research design and restates the major objectives of the paper. A specific list of hypotheses is also provided. Chapter three also includes the methods sections and reports the major findings of the descriptive statistics and quantitative analyses. In this chapter, descriptive statistics are provided for each of the five nationality-migrant status groups created for comparisons. These sub-groups are: Uighur natives, Uighur migrants, Han natives, Han intra-provincial migrants, and Han inter-provincial migrants. Descriptive statistics are used as the basis for revealing the urban wage structure that exists in the service sector of Urumqi. PCA and cluster analysis are employed in order to detect segments in the labor market and place respondents into their corresponding segment. DA is later used to determine whether segments are statistically significant from each other and to identify which variables are most important in determining which segment respondents are placed.

Chapter four sums up the major findings from the empirical analyses, tie in several policy implications, and offer a conclusion that re-states the relationship between population migration and labor market segmentation.

2. LITERATURE REVIEW AND STUDY AREA

Before using the dataset collected in Urumqi to test for labor market segmentation in Urumqi's service sector, the proceeding section will provide a brief synthesis of the current literature on segmented labor market (SLM) theory, as well as to posit SLM's central hypotheses. Although most of the SLM literature has been developed and applied in a western context, more recently, Chinese scholars have applied and modified SLM theory to better fit the case of China. Distinct from Western scholars, Chinese research has placed a greater emphasis on the roles of institutional forces than traditional SLM theory (Solinger, 1999; Zang, 2002; Fan, 2003), whereas Western scholars have focused on minority outcomes in the developed nations (Reich et. al., 1973; Hayter and Barnes, 1992; McLafferty and Preston, 1992; Hiebert, 1999; Bauder, 2001; Constant and Massey, 2005; Hudson, 2007; Gordon, 2008). First, a brief explanation of the occupational structural changes in the Chinese labor market will be provided in order to better understand emerging labor market segmentation in Xinjiang.

2.1 Occupational Structural Change and Sectoral Labor Shifts

Since the economic reforms in 1978, and particularly since the 1990s China has pursued a course of development described as an emerging "socialist market economy" or "capitalism with Chinese characteristics" (Hsing, 1998). The market transition debate has arisen to explain how economic reforms have benefited private firms at the expense of the redistributive economies in China (Zang, 2002). Economic reforms combined with streams of rural-urban migrants have led to pervasive changes in the urban labor market. The resulting increase in labor mobility at regional and interregional levels has not

produced a wage convergence, rather a multi-tiered labor market (Fan, 2002; Xu et. al., 2006).

The structural change framework, advocated by Syrquin and Chenery (1989), examines how a nation's output economy changes over time (Pannell and Schmidt, 2006). The sectoral labor shift model, as applied to industrialized nations, is outlined by the following phases: 1) Agricultural productivity increases and the industrial sector attract surplus rural labor; 2) industrial output reaches its peak, coupled with technological advancements, which reduces demand for industrial laborers; 3) a tertiary sector emerges to absorb excess industrial labor supply (Pannell and Schmidt, 2006).

With regards to the newly emerging structures of change within China, economic reforms have led to: 1) decreased role of the state in job provision. Specifically, the state sector no longer assigns jobs to graduating students, rather young adults are now encouraged to seek employment in the labor markets; 2) the state sector has experienced substantial decline in terms of labor employment and productive output; and 3) non-state sectors, such as collective enterprises, private firms, and joint ventures, play a more predominate role in society (Li, 1997); and 4) returns to political capital have declined, while returns to human capital have increased (Zang, 2002).

Adverse effects associated with structural changes, induced by neoliberal economic reforms, have varied in scale and scope. For example, despite official unemployment rates listed as low 3.1% in 2001, several prominent Chinese scholars have estimated unemployment rates to be 7.5% in 1997 or even as high as 10.4% in 1998 (Wu, 2004). Fan (2003), gives a detailed account into the nature of gendered labor market segmentation that has emerged from rural-urban migration. Her research shows that as a

result of socio-cultural traditions and social networks, male and female migrants are channeled into distinct sectors of the labor market. Young women are selected for factory work, while men are recruited into hard labor, such as construction. Furthermore, middle-aged women are often discriminated against on the basis of their age due to employers' association between youth and productivity (Fan, 2003). There has been little effort by local governments to prevent labor market discrimination based on age and gender. If left unmitigated the rural-urban migration flows will continue to reinforce socio-cultural traditions and increase the gaps between labor market sectors.

In addition, Zang (2002) examines how economic reforms have led to structural changes in the social stratification hierarchy. Permanent migrants are at the top, followed by urban non-migrants, and finally temporary migrants at the bottom (Fan, 2002; Zang, 2002). In addition to rural migrants, other marginal groups have emerged in Chinese cities: 1) laid-off SOE employees who are unable to find a new job; 2) people who have never entered into the work-unit system, e.g. disabled and the widowed elderly; and 3) those who retired before reforms brought about new forms of in-kind welfare guarantees (Wu, 2004).

To varying extents the aforementioned economic reform impacts can be seen throughout China. However, Deng Xiaoping's uneven development strategy has fostered economic development along the eastern coastal provinces at the expense of China's interior provinces. Therefore, research findings from Eastern provinces on emerging labor markets, as well as market segmentation and income determination, can not necessarily be generalized in places like Xinjiang. The sectoral shift model for Urumqi indicates that minorities and inter-provincial migrants are representative in the service

economy, but are underrepresented in other sectors of the economy. In this case the service sector represents industries such as insurance, government, tourism, banking, retail, education, and social services. As a result, the collection of field data for this project focused primarily on Urumqi's service sector in order to ensure that both Uighur and Han inter-provincial migrants were adequately represented in the sample. Given the different political and institutional frameworks within Xinjiang, this research project will help contribute to sub-national regional models with regards to labor market segmentation, thus enabling local economic geographies to be established and compared to other regions within China, as well as abroad (Pannell and Schmidt, 2006).

2.2 Segmented Labor Market Theory

Generally speaking, Western scholars have used SLM theory to explain how minorities, women, and the working class become economically marginalized in society (Bauder, 2001). Because of the combined result of emerging labor markets and increased rates of migration, with a strong minority presence, studying labor market segmentation in Urumqi is both timely and imperative in order to identify potential inequality and discrimination issues in the labor market. This thesis will determine to what extent Uighur minorities are discriminated against in wages and occupational concentration.

According to Leontaridi (1998) there are several key tenets central to segmentation theory: 1) the labor market consists of a few clearly identifiable segments; 2) mobility barriers exist and prevent individuals from obtaining jobs in other segments; 3) each segment is subject to a different set of employment and wage setting mechanisms; and 4) neo-classical theory for returns on human capital is not applicable

for the lower segment of the labor market (Leontaridi, 1998; Zang, 2002). In his research in developing countries, Fields (2008) concludes that labor market segmentation exists if one of both of the following conditions exist: (1) jobs for individuals with the same skill level differ in terms of wages of other characteristics; and (2) access to good jobs is limited in that people who want better jobs are unable to obtain them (Fields, 2008).

In general, conventional SLM theory focuses on supply-side factors, which include workers' personal endowments (education and work experience), constraints (language), and preferences (working environment) (Xu, 2006). Contrary to neo-classical labor economists who posit that wage differentials are primarily the result of differences in acquired human capital, SLM theorists argue that market segmentation is the result of institutional rules that differ across labor market segments and have thus replaced the market processes of supply and demand (Leontaridi, 1998). SLM theory often describes a dual labor market; all jobs fall into one of two separate sectors, e.g. primary and secondary. The primary, sector represents good jobs in the labor market, which are marked by high negotiated wages, fringe benefits, and high employment security; whereas the secondary sector represents bad jobs, marked by low skill requirement, low wage rates, and little or no access to career advancement opportunities (Zang, 2002).

2.3 Minority Placement in the Labor Market

Vulnerable groups, such as minorities and women, become trapped in the lower segment of the labor market due to mobility barriers, e.g. place of residence, poor work histories, and discrimination, which reduces inter-sectoral job transfers while

occupational stratification increases (Bauder, 2008; Gordon, 2008). Discrimination theory was developed in order to explain why minorities tend to be concentrated in lower segments of society. Discrimination theory asks why employers “choose not to employ some minority workers (such as immigrants and women) in certain jobs where these workers could have the same value of marginal product as the other workers” (Constant and Massey, 2005). Essentially discrimination theory posits that even after controlling for human capital factors, minority workers will earn less money than members of the majority and are less likely to be hired for employment (Becker, 1957).

In the United States and other industrialized countries, many researchers have found support for discrimination theory and labor market segmentation theory. Many experts conclude that minority groups are overrepresented in the secondary sector, face wage and other forms of discrimination, and are often times unable to achieve inter-sectoral mobility (Reich et. al., 1973; Hayter and Barnes, 1992; McLafferty and Preston, 1992; Hiebert, 1999; Bauder, 2001; Constant and Massey, 2005; Hudson, 2007; Gordon, 2008).

In the United States, Hudson (2007) found that Hispanics of both sexes, Black and Native American men, were all at an increased risk of being employed in the secondary sector compared to Whites. Furthermore, a substantial proportion of blacks were found to remain in the secondary sector over the course of their working life (Hudson, 2007). In Canada’s three largest metropolitan areas, female groups and minorities, particularly immigrants, were all found to be overrepresented in poorly paid, vulnerable jobs (Hiebert, 1999). In addition to discrimination practices, McLafferty and Preston (1992) find that labor market segmentation is deepened due to job mismatching.

Job mismatching includes a spatial component where minorities, including women, have a lack of access to the location of primary sector jobs; therefore they are forced into low paying, 'bad jobs' in the secondary sector. Even in non-industrialized countries, minorities have been found to be overrepresented in the secondary sector. Telles (1993) analyses shows that women in Brazil tend to be concentrated in "unprotected work and paid domestic service...Black and mixed-race workers earn less than whites, and they are overly represented in informal sector employment" (Telles, 1993).

When vulnerable groups such as minorities and women become trapped in the lower segment of the market, differing wage setting mechanisms between the primary and secondary sectors are created. In the secondary sector, wages are based on supply and demand; however, the primary sector's wages are insulated from supply and demand forces. The differing wage mechanisms are created, in part, by the segmentation gap between primary and secondary sectors, where excess labor supply outside the primary sector is unable to move across occupational strata and the concentration of labor supply becomes trapped in the lower sector. The effect of this segmentation gap, therefore, works to keep the primary sector's labor supply low and also keeps wages artificially low in the secondary sector (Leontaridi, 1998). Hence, some researchers argue that different sets of wage earning mechanisms exist for both the primary and secondary sectors. While human capital variables, such as education and work experience, are useful for explaining wage variations in the primary sector, they do not explain wage variation in the secondary sector (Zang, 2002).

There is not so much a debate on whether labor market segmentation exists; rather the real problem occurs when trying to delineate segments. Due to truncation bias, which

occurs as a distortion of results due to the omission of values that fall outside a given range, sectors cannot be *a priori* defined by wage earnings or occupational types (Leontaridi, 1998). Other alternative classification systems must be implemented in order to reduce such biases as much as possible. An interesting statistical procedure has been the use of hierarchical clustering, which organizes occupational types into separate groups according to *a priori* selection of variables. While this procedure is not without its bias, interesting results have been found by other researchers and hence a similar process is carried out in chapter three (Drago, 1992, Anderson et. al., 1987).

2.4 Migration's role in reinforcing labor market segmentation

Much of the labor market segmentation research in post-reform China, as well as in other third world countries, has focused on the rural migrants who were unable to obtain formal work in the city and consequently were forced into the informal sector, which is characterized by labor-intensive production, unskilled labor, low productivity and income, and poor job security (Fan, 2002). According to Fan (2003) labor market segmentation in China stems from employers' desire to minimize costs and maximize efficiency, which promotes strict regulations and compartmentalization of skills and results in peasant migrants being funneled into a "narrow selection of gender-segregated jobs" (Fan, 2003).

Other researchers recognize the impact institutional factors, such as the household-registration system, have in creating labor market segmentation, via migration. State policies, urban bureaucracies, and urban rationing regimes influence the likelihood of migration as well as the type of life migrants will face upon entering the city without

an official urban Hukou (Solinger, 1999; Xu, 2006). Social networks (guanxi) are another factor that influences labor market segmentation in China, which many migrants depend on for knowledge of urban employment opportunities (Fan, 2003). These social networks promote labor segmentation as it reinforces the already existing cultural and institutional forces that facilitate market segmentation in the first place.

Most of the current migration theory literature on China is based on capitalist market economies in advanced industrialized countries, which fail to fully recognize the role of institutions and labor market processes, which are of particular importance in the case of understanding migration in China (Fan, 2002). The Chinese Central Party Committee (CCP) reform policy focused on urban development much at the expense of the agricultural sector and in particular, rural peasants. By 1993, cities had been receiving the largest shares of investment (China Statistical Yearbook, 1995). With over a quarter century of biased urban policy, China's urban areas have developed at a much greater pace than in rural areas. Ultimately a large rural-urban divide has been created and a sharp increase in economic disparity has continued to rise between urban and rural areas. Due to the high inequality between rural and urban areas, rural peasants have become increasingly attracted to migrating to urban areas in search of a better life (U.N Population Estimates and Projections, 2000). Fan (2003) quotes, "migrant work is the best, perhaps the only, option to make ends meet, and is widely perceived to be the key to improving a peasant household's wellbeing" (Fan, 2003). Unfortunately, the massive flows of migrants (91% of which are unskilled labor) create unstable conditions in the cities, and many migrants are unable to find housing or jobs (People's Daily, 2004).

Of particular interest for the scope of this research is the relationship between labor migrants and labor market segmentation. The enactment of the 'Reform and Open Policy' in 1978, gave way for a new philosophy of development in China, which called on industrialization and urbanization to jump start China's economic progression. At the same time, the central government's monopoly over migration controls slowly began to unravel and economic dynamics emerging in China began to have a greater influence on individuals' choice to migrate (Liang and White, 1996). The dual outcome of the reforms brought about the emergence of the labor market, while simultaneously enabling massive flows of rural peasants to migrate to cities. Due to certain policy restrictions still enforced regarding migration controls, the majority of migrants has entered into cities without receiving official permission from the government, and thus is considered informal, or illegal, migrants. The informal, rural-urban group of migrants is collectively referred to as blindly migrating people (*mong liu*) and peasants who come to city for work (*nong min gong*). Both terms denote an illegal status for rural-urban migrants (UN-Habitat, 2003).

Due to their illegal status in cities, migrant populations face assimilation barriers and are subjected to discrimination in terms of employment and public goods. Limitations that exist in the labor market included migrants being restricted from over 36 white-collar occupations, such as accountants and administrators (Wing-Shing, 2002). Such institutional barriers hinder many migrants from assimilating into the city. Consequently migrants are often marginalized from other urban residents, thus creating a dualistic city comprised of first and second class citizens. Migrants from rural areas are channeled into jobs that pay extremely low wages, subject to harsh working

environments that increase risk to personal safety, and are offered little chance of promotion or wage raises. Examples of jobs include: factories, transportation, service or illegal sector, or self employed peddler, cobbler, or repairman (UN-Habitat, 2003). Because of the institutional (i.e. Hukou system) and other social barriers that have remained intact, political and economic institutions still control urban permanent residence and entitlements (Fan, 2002). Migrants without Urban Hukou therefore are more easily funneled into specific sectors of the labor market, which in turn reinforces labor market segmentation.

In addition to government policy, employers in labor markets play a large role in channeling migrants into different segments of the market. Western scholars have emphasized the role of employers in deepening labor market segmentation (Peck, 1996; Gordon, 2008). Employee applicants' production potentials are not readily known to the employer and their work performance depends on a combination of factors such as incentives and personal perceptions; therefore employers are likely to rely on judgments regarding applicant's personal responsibility, commitment, and development potential. Ultimately, employers must rely on stereotypes to a large degree in deciding whether or not to hire an applicant. Stereotypes are based on such indicators as age, gender, marital status, ethnicity, and work history. Historical evidence shows that disadvantaged groups, such as ethnic minorities, find it difficult to be hired into "good" jobs (Zang, 2002; Gordon, 2008). According to Peck (1996), the 'social nature of labor,' is a social phenomenon in which employer stereotypes are constructed outside the market and affect employment relationships to the point of contributing to labor market segmentation (Peck, 1996).

Research in places outside of Xinjiang has found that rural-urban migration has acted to reinforce the segment gap within China's labor markets (Gordon, 1995; Li, 1999; Fan, 2002; and Fan, 2003). This fact leads us to question what role migration plays in deepening the segmented gaps within the labor market in Xinjiang, particularly for employers who give preference to Han inter-provincial migrants over local and migrant minorities (Hannum and Xie, 1998).

2.5 Studying a Contested Region: Xinjiang Minorities Considered

Studying labor market segmentation and income disparities in Urumqi is both timely and imperative considering that negative consequences of emerging labor market segmentation have resulted in other Chinese provinces, especially rising inequality (Wu, 2004). Because Uighur minorities are likely to be the most discriminated against, labor market segmentation and subsequent income inequality present a serious risk for fueling ethnic discontent in the future, which may eventually turn into further Uighur-led uprisings against the state. Thus, this research presents a first step to provide hard economic data that reveals the extent to which segmentation and wage disparity exists in Urumqi's service sector.

In order to obtain a sense of appreciation for this research, it is important to provide an introduction to the critical contested region of Xinjiang, briefly highlighting: (1) the historical context of how Xinjiang was brought under Chinese rule; (2) Xinjiang's economic role for China's national plan of sustainable development; and (3) several key issues that fuel minority discontent at present.

The region that is at present officially called the Xinjiang Uighur Autonomous Region (XUAR) has an incredibly long, complicated, and controversial history.⁶ Depending on the source of information, how and when Xinjiang was subjugated under Chinese rule is disputable. For the purposes of this paper, only Xinjiang's recent history starting from the Qing Dynasty (1644-1911) will be included in the summary.

2.5.1 Xinjiang under Qing Rule, 1644-1911

In 1759, Xinjiang was officially brought under Qing rule. The main motivation for this Qing expansionism was not necessarily to annex a new province; rather the region was intended to serve as a buffer zone to protect the Chinese people from nomadic threats from Central Asia (Perdue 2005). The Qing government implemented a local system of rule, which relied on a military settlement and local tribal elders called begs to avoid local Muslim resistance (Milward, 1998). The Qing dynasty initially adopted a non-interference policy with local Muslim customs and laws. While few policies of assimilation were forced upon the indigenous minority groups at this particular point in time, the region experienced sporadic uprisings against the Qing Empire, which shows the initial local opposition to Chinese rule over the region (Milward and Perdue, 2004). For example, in 1765 a small rebellion in Ush occurred. However, this rebellion was quickly quelled by Qing forces. The significance of this uprising stems in the power to alter future policies, which after the uprising the local government put into effect policies that segregated Han from the Muslim population. This separation, combined with

⁶ See Figure 4 in Appendix E for a location map of Xinjiang.

favorable economic policies towards Muslim locals led to relative stability and peace until the 1820's (Milward 1998; Perdue, 2005).

In the 1820's, the Kokand Khanate threatened the Qing rule in the region through the use of militant rebellions. Although the Qing were able to defeat the uprisings, they ended up acceding to trade demands made by the Kokand forces, which has been called "China's First Unequal Treaty" (Milward and Perdue, 2004). The Kokand invasion inspired Qing government to change policy in order to secure Xinjiang. The new policies orchestrated large-scale Han-migration into the region. The goals of this policy change were two-fold: first, Han migrants would elevate Xinjiang to be economically sufficient; second, Xinjiang would be populated by Qing loyalists (Milward, 1998).

However, Han migration to Xinjiang only exacerbated tension between Muslim groups and the new Han migrants. In addition to local factors in Xinjiang, the costs associated with fighting the Opium Wars and the Taiping rebellion made it impossible for Beijing to financially support Xinjiang. As a result, cumbersome taxes were levied on the local population in order to raise revenue for the region. The accumulation of ethnic tension and new tax burdens created strong anti-Qing resentment among Muslim groups, which provided the necessary support for a successful uprising against Qing rule. In 1862, an uprising led by Yaquub Beg took control of the southwestern region and established an independent Kashgar state. The region remained independent until Yaquub's death in 1877. In 1884, Xinjiang was made into a province and established a full bureaucratic system of government similar to all other Chinese provinces (Milward and Turson, 2004).

2.5.2 Xinjiang During the Chinese Republican Era, 1911-1949

In 1911, both Han and Muslim groups strongly opposed Qing rule of the region, and successfully ousted the government leaders from the region. As the last Qing governor, Yuan Da Hua, was forced out of the region, he appointed Yang Zengxin as the new governor. From this point until 1944, Xinjiang was ruled by three consecutive quasi-dictators, Yang Zengxin, Jin Shuren, and Sheng Shicai, all of whom more or less served the national government (Millward and Tursun, 2004). Yang consolidated power by giving opposition leaders political positions. Yang allowed Muslim minorities to hold lower positions of power and also refrained from implementing any policies that forced Muslim assimilation (Forbes, 1996). Yang's successor, Jin Shuren enacted unpopular minority and economic policies that resulted in a rebellion by Muslim minorities. This rebellion in 1933 turned into a short lived period of independence, in which the first East Turkestan Republic (ETR) was established. However, Sheng Shicai quickly regained control over the lost territory and firmly established his rule with the help and financial support of the Soviet Republic (Milward and Turson, 2004).

By 1944, the economy had downturned and Shicai had severed his relationship with the Soviets. Sheng was eventually removed from power and the GMD took over power. The GMD adopted antagonistic policies towards minorities, which included removing all Muslim minorities from political power and enacting large taxes. A rebellion led by the ETR forces resulted near the city of Yining, called the "Lli Rebellion." From 1944-1949, the East Turkestan Republic was established and ruled the north areas of Xinjiang (McMillen, 1979). However, at the end of the Chinese civil war in 1949, the Chinese army marched into the region and reports say they, "peacefully

liberated” Xinjiang (Shichor, 2004). Thus in 1949, Xinjiang was annexed into the People’s Republic of China, where it has remained ever since.

2.5.3 Xinjiang in the Mao Era, 1949-1978

Beijing undertook a slow reform process to socialism in Xinjiang. Minority collectives were enacted, but the day-to-day lives of minorities were relatively unchanged. In 1955, Xinjiang was turned into an autonomous region that was based on the largest ethnic population represented by the “autonomous” region. This led to Kazak Autonomous Prefectures, Uighur Autonomous Prefectures, and Krygyz Autonomous Prefectures. This system of autonomous areas successfully prevented different minority groups from uniting (McMillen, 1979). Minority complaints about the system arose, particularly due to the fact that true autonomy was not given to the region and that Han government officials did not learn the local languages. As a result of these “local nationalist” complaints, numerous minority nationals belonging to the Chinese Communist Party, who held government positions, were removed from their positions (Ibid., 1979).

During the 1960’s policies allowed minorities to use their own local languages and mandated that local customs were to be respected by the Han Chinese. However, political discussions also ensued on how to remove Islam influence in Xinjiang (Ibid, 1979). During the Cultural Revolution in China, various forces including the Xinjiang Red Guards and Xinjiang CCP elements committed various abuses against minorities including defacing minority art and public beatings of suspected local national separatists (Milward, 1998). Ethnic tensions continued to simmer throughout the 1970s.

2.5.4 Xinjiang since the Reforms, 1978-Present

When Deng Xiaopeng took over the PRC, Xinjiang along with the rest of China witnessed an opening up of its borders to the outside world. Trade began to increase, especially with Pakistan, and new policies enacted in Xinjiang provided greater freedoms to the Muslim communities (Haider, 2005). During the 1980's, personal freedoms continued to expand and the government allowed Uighur language to return to Arabic text and encouraged the use of minority texts for educational purposes (Benson, 2004). However, after Tiananmen Square in 1989, many of the liberties granted during the 1980's were retracted and a clamp was placed on Muslim minorities' right to express their culture (Fuller and Lipman, 2004).

Since then, various acts of protest have been carried out against the Chinese rule in the region, which have for the most part been led by Muslim Uighur people. The newly gained independence of the Central Asian states in 1991, e.g. Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan, further fueled Uighurs' aspirations of an independent Uighur state, called Uighurstan (Milward, 1998). Over the course of the 1990s, thousands of violent actions were carried out against the Chinese government in an attempt to ward off the Chinese imperialists. In 1999, the chairman of Xinjiang, Abulahat Abdurixit, claimed that "since the 1990s, if you count explosions, assassinations and other terrorist activities, it comes to a few thousand incidents" (Becquelin, 2000). In 1996, China carried out a "Strike Hard" campaign which focused on 'solving major crimes, capturing fugitives, and crushing gangs,' and the targets were terrorism, robbery, murder, organized crime, and the manufacture of and trafficking of drugs (Dillon, 2004). However, in 1997, the year Deng Xiaoping died, three large bus

bombings occurred in Urumqi and one in Beijing. These bombings marked the high point in the Uighur resistance movement against the Chinese rule over the region (Moneyhon, 2003). While there had been a sense of cohesion among the Uighur resistance, there were also sharp divisions within the Uighurs, which prevented any large scale united front to prevail against the Chinese state. As Moneyhon (2003) writes, “The Uighurs are divided by religious conflicts, territorial loyalties, linguistic discrepancies, commoner-elite alienation, and competing political loyalties.”

In addition to the internal divides within the Uighur resistance movement, the Chinese government responded with massive troop buildup and effectively militarized the region, which all but crushed the resistance movement. After 9/11, the Chinese government brought the “War on Terror” to the region and claimed that the East Turkestan Islamic Movement, a Uighur Resistance group, had links to Al Qaeda (Dillon, 2004). In 2002, the Chinese government deployed 40,000 People’s Liberation Army troops into the region. In addition to the troop buildup, the “War on Terror” enabled the Chinese government considerable flexibility in the way they handled their “Uighur terrorist” problem. Human rights groups, e.g. Amnesty International and Human Rights Watch, have reported on various human rights violation including torture of political suspects, lack of fair and transparent political trials, and various executions of political prisoners (Amnesty International, 1999).

Part of the reason why China has carried out such repressive acts of violence and policies of assimilation in Xinjiang stem from two major underlying reasons: The Chinese fear of a domino effect and the presence of natural resources. With regard to the former, the Chinese government fears that the new found independence of Central Asia

will spill over into China's borders and provide the impetus for substantiated claims and rights to independence not only in Xinjiang, but also in Tibet, Inner Mongolia, and Taiwan (Moneyhon, 2004). Besides China's fear of an ensuing 'domino effect', it is Xinjiang's abundance of natural resources, in particular large deposits of oil, which have led the Chinese government to solidify their hold on the region at any cost.

Xinjiang plays a significant geopolitical and economic role for the protection and supply of natural resources that are extracted from Xinjiang and transported to East China. In 2000, Xinjiang produced 11.3% of China's crude oil and 13% of its natural gas. From 2000-2005, natural gas output doubled and by 2004 oilfields in the Junggar and Tarim Basins were producing a combined total of 15 million metric tons annually. Xinjiang has the highest per capita GDP of all non-coastal provinces, and has the only positive net migration rate in the western interior (Wiemer, 2004; Pannell and Schmidt, 2006).

Since the 1990's the CCP has paid particular attention to border cities in Xinjiang and in 1992, Yining, Bole, and Tacheng, along with Urumqi, were given the status of Open Economic Zones with rights for direct border trade. By promoting cross-border trade with Central Asia, the CCP has effectively helped to raise per capita GDP in border cities, thus reducing overall inequality in Xinjiang. In addition, during the 10th 5-year plan (2001-2005), the "Go-west" campaign led to improvements in infrastructure, e.g. the railroad from Korla via Aksu to Kashgar was expanded, as well as building modern transcontinental highways, railroads, and telecommunications lines in order to revive the old Silk road (Pannell and Schmidt, 2006).

Uighurs makes up approximately 45% of the population in Xinjiang and is the majority group in the region. Distinct from most other ethnically homogeneous places in China, inter-provincial Han migrants that migrate to Xinjiang represent a minority group who bring with them an onslaught of cultural customs alien and sometimes adverse to Xinjiang minority culture and customs. During the 1990s a number of Uighur-led uprisings were organized against the Chinese Communist Party and demands for independence from Beijing were made (Gladney, 2004). This last point is particularly important because the current literature describes Uighur as facing the hardest challenges to obtaining employment in urban and rural areas, compared to other minorities such as Hui, due to discriminatory hiring practices (Pannell and Schmidt, 2006; Gladney, 2004). To better understand these social ailments and sources of social instability the remainder of this section underscores the sources of ethnic fragmentation within Xinjiang.

2.6 Sources of Minority Discontent in Xinjiang

There are many local dynamics in Xinjiang that produce discontent and fragmentation along social, ethnic, and gender divides. The following is not a comprehensive analysis of the causes of conflict that have erupted in Xinjiang, particularly in the 1990s. Only a few relative major factors will be discussed in this section- education, occupation stratification, and migration trends- as they pertain to influencing labor market outcomes in Urumqi.

2.6.1 Minority Education Attainment

A major source of social unrest is the issue of education for minorities. Many Western scholars and others, argue that minority marginalization is increasing as a result

of failed policies that attempt to improve education graduation rates for minorities.

Despite preferential policies for minority educational advancement, some data shows that the effects of such policies have had little impact on the larger amount of mass minorities.

Only secondary schools had a steady increase from 1979-1998 (Bhalia and Qiu, 2006).

Furthermore, enrollment rates for minorities in primary school were also stagnant over all autonomous regions.

These results are seen as a consequence of two factors: first, since the 1980s, the emphasis from non-formal schooling began to shift to formal schooling, which placed disadvantaged minority students in competition with Han children. The Mandarin language is an obvious barrier to success for most minority students. Second, market privatizations of school institutions have created special tuition fees, which exclude many poor minority students (Bhalia and Qiu, 2006).

When comparing the ratios of education levels using the 2005 Xinjiang Provincial Statistics yearbook, Uighur have a higher proportion of uneducated compared to Han.⁷ Han are almost 3.5 times more likely than Uighur to have at least some college.

2.6.2 Occupational Stratification

As a result of Han migration to Xinjiang, there has been growing ethnic tensions because Han are perceived by minority groups to be obtaining good jobs compared to local minority groups, especially Uighur (Su et. al. 2001). The occupational stratification in Xinjiang has in a large part been shaped by context-specific factors, including physical geography, urban/rural divisions, and ethnic fragmentation. Most of the development in

⁷ See Figure 5 in Appendix F to view education level by nationality for Xinjiang Province

Xinjiang during the past four decades has occurred in the Northern Jungar basin, which has created large regional disparities between the more developed northern counties and the Uighur-dominated southern counties. With regards to ethnic fragmentation, minorities, particularly Uighur, have typically been excluded from the industrial job market and the energy service sector. Many of the minorities who have migrated to the more developed north, e.g. Urumqi, have been concentrated in low paying service jobs, including petty vendors and informal sector employment. Consequently, increasing inequalities between Han and Uighur groups have arisen (Pannell and Schmidt, 2006).

When controlling for educational differences between Han and minorities, Han were found to be over-represented in technical, governmental, and administrative jobs (Su et. al., 2001). This has led to increased occupational stratification for minorities, particularly Uighur, who possess few economic opportunities outside of agriculture and services. As seen from 1990 to 1995, 55.3% of employed minorities work in agriculture compared to only 21.3% for Han. Only 22.3% of minorities worked in industry compared to 45.7% for Han (Su et. al., 2001). These statistics show that minorities are 2.5 times more likely than Han to work in agriculture, while Han are more than 2 times more likely to be employed in industry.

Other empirical research on occupational stratification in Xinjiang corroborates that minorities are less likely than Han to be employed in non-agricultural sectors. Hannum and Xie (1998) reveals that in 1982 minorities represented 52.8% of the labor force compared with 53.8% in 1990. During this time period, minorities were found to be overrepresented in agricultural work: 69.4% in 1982 and 76.7% in 1990. In comparison, minorities were underrepresented in all other occupational categories.

Although underrepresented, from 1982-1990, the share of minorities engaged in agricultural work underwent a significant sectoral shift (primary to tertiary) sector in urban areas, particularly industries of growth include retail, transportation, and the restaurant business. This sectoral shift was driven due to the vast economic development and investments into urban infrastructure, combined with minorities desire to improve their quality of life by moving to the city. As a result, minority representation among service workers increased from 25.8% in 1982 to 41.2% in 1990 (Hannum and Xie, 1998).

2.6.3 Migration patterns in Xinjiang: 1949 – present

Since the founding of the People's Republic of China in 1949, the first major government-supported program that facilitated flows of Han migrants to Xinjiang occurred in the late 1950s and early 1960s following the fallout between China and the former Soviet Union. This program, in effect, represented a systematic effort by the state to increase the proportion of ethnic Chinese in the region. Han migration peaked in the period from 1960-1964, representing 8.65% of the total inter-provincial flows in China, second only to Heilongjiang. Migration to Xinjiang began to decline in the early 1970s (Liang and White, 1996). From 1985-1995, Xinjiang received the fourth highest net migration rate among all other provinces, behind Beijing, Shanghai, and Guangdong (Su et al., 2001). For example, inter-provincial immigrants numbered 345,365 in 1990 and increased to 1 million by 1995, 95% of which were Han (Bhalia and Qiu, 2006). Also part of the 10th 5-year plan (2001-2005) was the state facilitation of migration of Han into the region in order to bring additional skills to the labor force (Pannell and Schmidt,

2006). Consequently, Han migrants often obtain government, administrative, and managerial jobs, which have led many Uighur and other minorities to view Han migrants as taking their “good” jobs (Su et. al., 2001). Hence, Han immigration is a major driver of minority discontent.

Migration policy enacted from 1949-1985, in part, explains some of the present day spatial inequality within Xinjiang, because Han migrants were directed by the state into places that were not occupied by Uighur (Liang and White, 1996, Zang 2002). From 1957-1967, 2 million Han migrants settled into Xinjiang, most of whom had very little contact with the Uighur. The new Han settlements often emerged as transportation arteries, which fostered faster economic development, compared to non-Han migrant settlement areas (Zang, 2002). The impact of segregating migrants from local minority groups has led to greater inequality between minority concentrated areas and Han concentrated areas within Xinjiang.

As a result of the large spatial inequality, Xinjiang Uighur peasants’ income averaged 732 Yuan in 1993, compared to Xinjiang Han peasants who earned an average income of 2,680 Yuan. This rate of inequality is stated by minority scholars, “to create an ethnic psychological imbalance that can emerge as an unfavorable factor for unity and stability” (Sautman, 1999). Furthermore, Sautman (1999) also shows that GDP in minority counties declined from nearly 26% of the provincial total in 1987 to about 18% in 1994. This trend is also reflective of other areas as well. Xinjiang rural net annual per capita income in 1994 for minorities was 76.6% of national average and fell to 74% in 1998. Such spatial inequality between Uighur and Han counties have led to discontent among Uighur, as well as acted as a factor for Uighur peasants to migrate to urban areas.

3. ANALYTICAL FRAMEWORK AND EMPIRICAL ANALYSES

The analyses in this paper are geared towards explaining population migration and identifying wage labor discrimination in Urumqi's service sector by carrying out a set of descriptive statistics and advanced quantitative methods.

The major research questions of this paper are: (1) To what extent do descriptive statistics methods provide support for a new urban wage structure emerging in Urumqi's service sector, using average monthly wages by migrant status nationality and gender divides? (2) What are the wage differentials for respondents in different industries, according to nationality, migrants' status, and gender? (3) To what extent does labor market segmentation exist in Urumqi, in terms of nationality, gender, and household registration status (i.e. migrant or not)? The answer to these questions will help develop economic policies that will effectively protect vulnerable groups from being further marginalized in the labor market. This is essential to reducing ethnic conflict and diminishing the chance of ethnic uprising in the future.

The questions stated above provide the foundation for stating the following three objectives:

Objective (1): Provide descriptive information for labor migrants and identify the emerging urban wage structure in Urumqi's service sector using average monthly wages, by migrant status, nationality, and gender

Objective (2): Test whether labor market segmentation exists in Urumqi. This includes running PCA, cluster analysis, and DA;

A full set of corresponding hypotheses for each objective are listed as follows:

Objective (1) Hypotheses: Descriptive Statistics

1.1 Han earn more average monthly wages than Uighur

1.2 Within each nationality group, natives earn more average monthly wages than migrants

1.3 Between Han and Uighur nationalities, Han migrants earn more average monthly wages than Uighur natives.

1.4 For each hypothesis listed above, females earn less average monthly wages than their male counterparts.

Objective (2) Hypotheses: Cluster analysis and DA

2.1 Two segments exist in Urumqi, primary and secondary

2.2 'Migrant status type,' 'nationality,' and 'gender' play the greatest role in discriminating respondents into their corresponding sector.

3.1 Migrant Respondent Characteristics

Descriptive analyses of migrant characteristics and patterns are presented in this section. In total, 412 migrants are included, 325 of which are Han, 75 are Uighur, and 12 are Hui. Of the 412 migrants that were surveyed, 209 are male and 203 are female.⁸ A migrant is defined as anyone not born in Urumqi. Unfortunately, the distinction between permanent migrants with urban Hukou and short-term migrants with no urban Hukou is not demarcated. However, to serve as a proxy for permanent migration versus short-term migration, the duration of migration period is broken down into 3 categories, short-term (less than 1 year), mid-term (1-3 years), and long-term (more than 3 years). Furthermore, the distinction between contracted migrant with urban Hukou and informal migrant with no urban Hukou are not distinguished either. However, from Table 2 in appendix G, more than 75% of Uighur and Han indicated that they obtained their job themselves or with the help of social networks. For this reason, plus the fact that 95% of respondents were

⁸ See Table 12 in Appendix G.

employed in low level jobs, e.g. sales, services, and transportation, we assume that the migrants collected in this dataset are non-contracted, voluntary migrants.

Next, in order to detect for heterogeneous patterns of migration, the migrants surveyed were further disaggregated by gender and nationality. This disaggregation is important in filling the gap left by census data, which treat migration as ethnically homogenous (Bhalia and Qiu, 2006). From the survey results, a majority of the respondents, regardless of gender or nationality, indicated that their primary reason for migrating to Urumqi was to find employment.

Researchers on Chinese migration often refer to social relationships (*guanxi*) as playing a pertinent role in providing critical information on job opportunities for peasants looking to migrate to the city. However, from the survey results, a majority of respondents from all 4 groups of migrants indicated that they themselves were responsible for obtaining their current employment.⁹ Only 24% of Uighur and 22% of Han migrants received help from a friend or relative to find employment; 25% of male and 26% of female migrants received help from a friend/family member. Either there was major survey bias for this question or *Guanxi* does not play an important role in the case of Urumqi. With regards to length of migration period, the largest response category for all 4 groups was 3 years or more, indicating that they have lived in Urumqi since before July, 2005. The majority of respondents have lived in Urumqi for 3 years or more; however, the average length of employment was only between 4 and 5 years. Male migrants were found to be almost 80% more likely than females to be an employer.

⁹ See Table 12 in Appendix G.

Furthermore, the 56% of women, which represents the largest response category, are employees; whereas the largest percentage of males, 48% is found to be in the self-employed category.

It is surprising that only 69% of Uighur migrants are fluent in Mandarin. This result suggests that Mandarin language attainment is not necessary for Uighurs to migrate to the city and to obtain employment; however, the quality of that employment and the wage earning potential will be analyzed later on in the paper. Due to the absence of qualitative interview data, a deeper exploration of these results is not possible. Instead, these results should serve as the basis for future exploratory questions to be asked for subsequent field research in Urumqi.

The distribution of employment provides some support to suggest that Uighur migrants experience greater occupational stratification relative to Han migrants in Urumqi's service sector. 77% of all Uighur surveyed were either in services or were food or cultural specialty vendors; whereas Han were more evenly distributed among the 8 job classifications.

When looking at education by nationality and gender the results are mixed. First, Uighur are more likely than Han to have no primary education, 10.8% for Uighur compared to only 3.4% for Han. Moreover, Han are almost 4 times more likely to attend technical school. Contrary to this trend is that Uighur are almost twice as more likely to attend college than Han migrants. Comparing males to women, the percentage of education attainment is fairly equal between the two groups, except at the higher education level. Surprisingly, 17% of female migrants attended technical school, compared to only 10% of male migrants; 10% of female migrants attended college,

compared to only 6% of male migrants. Although female migrants tend to be slightly more educated on average than male migrants, the average wage outcomes for female migrants are less than male migrants.

The average remittances sent home on a monthly basis provides a somewhat interesting result. Uighur send far less remittances relative to earnings back to their hometown compared to Han migrants. Further qualitative analysis into this result is needed to determine what cultural or social/economic factors exist that reduces the likelihood of Uighur migrants to send remittances back to their hometown. Although some of these findings fall outside the initial scope of this paper, they are nevertheless interesting information that may be useful in guiding future research endeavors in the region.

3.2 Labor Market Earnings Determination

Survey results show (Table 1) Uighur migrants earn almost 40% more than Uighur natives, while Han natives earn almost 57% higher incomes than Uighur natives. Han migrants, both intra- and inter-provincial, earn almost 54% and 36% more than Uighur migrants, respectively. In other Chinese provinces, because of the Hukou system, urban Hukou holders earn more money on average than temporary or informal migrants (Xu, 2006). However, in the service sector in Urumqi, this is not the case. Based on the survey results, Han migrants, both inter- and intra-provincial migrants, earn more money on average than Uighur natives, despite the fact that Uighur natives have urban Hukou and are legal employees.

Table 1: Average income earnings by migrant status, nationality, and gender.

	Total Avg. Wage (Yuan) (N)	Male avg. wage (Yuan) (N)	Female avg. wage (Yuan) (N)
Uighur natives	Y1076 (N=39)	Y1260 (N=20)	Y883 (N=19)
Uighur intra-provincial migrant	Y1503 (N=55)	Y1569 (N=32)	Y1459 (N=36)
Han natives	Y1685 (N=93)	Y1722 (N=48)	Y1645 (N=45)
Han intra-provincial migrant	Y1656 (N=58)	Y1801 (N=28)	Y1520 (N=30)
Han inter-provincial	Y1461 (N=251)	Y1715 (N=121)	Y1220 (N=130)

Gender reveals a much larger income inequality gap compared to the income inequality between Uighur and Han. Male migrants earn on average almost 33% more than female migrants. By disaggregating the average wages by gender, an urban stratification system is created that places male Han intra-provincial migrants at the top, earning 1,801 Yuan. The bottom three wage groups are male Uighur natives, followed by female Han inter-provincial migrants and female Uighur natives at the bottom. As can be seen, Uighur and female groups earn lower wages than their respective Han and male counterparts. The only exception is that female Uighur migrants earn more than female Han inter-provincial migrants.

As seen from the results provided above, reviewing of the average wages shows that both Han natives and Han migrants earn almost 58% and 41% more than Uighur natives, respectively. These results support the notion that Urumqi's urban wage structure for labor is constructed differently than in the East Coast, where temporary migrants earn

less money than natives. In Urumqi, Han natives are at the top, followed by Uighur migrants and then Han migrants. Uighur natives, however, are the bottom of the hierarchy, which suggest that nationality may play a deeper role in wage outcomes than migrant status.

3.3 Employment-Level Related Differentiation

In order to identify the earnings inequality by occupational status, all respondents have been classified into 4 employment types of occupation (Table 2) that are not entirely mutually exclusive. The two higher-social-strata occupations are SOE employees and employers who are in the private sector. Some of the respondents, who identified themselves as both self-employed and employers may fit better into Xu (2006) classification of household-enterprise owners. Although some respondents in the survey marked that they were both self-employed and an employer, because of a standardizing error with the survey, we had to treat these two categories as mutually exclusive. When running statistical procedures, if the respondent indicated both categories, we treated that respondent as an employer. Therefore, within the employer category there is an unknown percentage of respondents who are self-employed and an employer, and then an unknown percentage who are only an employer but not self-employed. This has possibly led to an underrepresentation of self-employed respondents and an over representation of employers in the private sector. Respondents that are employers experience management freedom and flexibility, yet are small and usually employ a maximum of 8 people.

Table 2: Average income earnings for occupational level by gender, migrant status, and nationality.

Respondent group	Employee Avg. Earnings (Yuan) (N)	Self-employed Avg. Earnings (Yuan) (N)	Employer Avg. Earnings (Yuan) (N)	SOE Employees Avg. Earnings (Yuan) (N)
All respondents	Y1369 (N=295)	Y1464 (N=177)	Y2156 (N=70)	Y1482 (N=62)
Male	Y1543 (N=135)	Y1555 (N=94)	Y2347 (N=45)	Y1351 (N=32)
Female	Y1222 (N=160)	Y1362 (N=83)	Y1814 (N=25)	Y1622 (N=30)
Migrant	Y1411 (N=191)	Y1444 (N=143)	Y2082 (N=47)	Y1709 (N=33)
Native	Y1292 (N=104)	Y1550 (N=34)	Y2308 (N=23)	Y1225 (N=29)
Han	Y1411 (N=206)	Y1457 (N=147)	Y2307 (N=54)	Y1469 (N=43)
Uighur	Y1237 (N=63)	Y1532 (N=21)	Y1459 (N=11)	Y1679 (N=12)
Hui	Y1410 (N=23)	Y1424 (N=9)	Y2307 (N=5)	Y1242 (N=7)

Respondents in the self-employed category are self-employed, but are the sole workers; they do not employ any other workers except on some occasions the spouse also worked with them. Self-employed may or may not be considered in the higher social strata, depending on the type of service/product provided, and whether the respondent is formal or informal. The respondents were not asked directly whether they were formal or informal, but if we were unable to see their certificate of employment, we marked the respondent as informal. Respondents in the employee category are those who are neither employers nor self-employed. Employees make up the lower-social-strata occupations and include retail, drivers, clerks, and bankers.

There is considerable inequality in average earnings among residents in the 4 different categories. As expected employers in the private sector receive the highest income of 2,156 Yuan per month, which is almost 58% higher than employees earn on average. After disaggregating the self-employment category into formal and informal employment, formal self-employed respondents earn the next highest average income, 1,871 Yuan per month. It is clear that informal work does not provide more income than any of the formal employment types. This finding supports the notion that informal work is not a preferred choice, rather a forced one for individuals who are unable to find work through the proper channels. Personal interviews that were conducted with several willing respondents who are employed in the informal sector also indicated that they could not find any formal work, so they were forced to find informal ways to earn money. Approximately 90% of the informal respondents were Han inter-provincial migrants, therefore a complete comparison of informal workers by nationality and migrant status is not possible.

When the respondents are disaggregated by gender, migrant status, and nationality, the earnings differentiation within and between occupation status types is even more revealing. Except for the SOE category, females earn considerably less than males. The largest income gap between male and female occurs in the employer category, where males earn almost 30% more than females. Natives earn almost 8% and 11% more than migrants in the self-employed and employer groups, respectively. This result highlights the importance of disaggregating wages by nationality type, because this result alone would indicate that natives do in fact earn more than migrants, similar to other provinces in China. Controlling for nationality therefore, is an important factor when

considering wage determination, especially for policy making. However, many national data sets, i.e. population census data, do not disaggregate average wages migration status by nationality (Bhalia and Qiu, 2006).

The role that state-owned enterprises play in wage determination is also worth mentioning here. While females and Uighur receive lower wages in almost all other job groups, the state sector actually pays them more. In the SOE's, women earn almost 21% more than males, and Uighur earn almost 15% more than Han. While the private employment in the labor market is the focus of this paper, it is interesting to note the important role that SOEs have in paying high wages to traditionally underrepresented groups such as females and Uighur.

In sum, when disaggregated according to gender and nationality, the employer category represents the largest offender in promoting wage disparities. Stronger monitoring of this group and implementation of fair wage laws should be enacted to protect women and minority groups. Surprisingly, the SOEs provide better protection for minorities and women compared to the developing labor markets in the service sector in Urumqi.

3.4 Occupation-Related Earnings Differentiation

All respondents have been classified (Table 3) into one of eight job types, according to industry type. Because respondents employed in the retail industry makes up 68% of the dataset, the retail industry is further broken into five sub-categories based on the product that is sold. Respondents in Retail-Food/beverages sell snack- items and beverages.

Respondents in Retail-Elect/apps. sell or repair electronics and/or home appliances.

Respondents in Retail-Clothes/acc. sell clothes and accessories.

Respondents in Retail-furn/home sell home furniture. Respondents in Retail-other sell other items such as cultural specialty foods or goods, such as knives or carpets.

Respondents in Transportation are either taxi or truck drivers. Respondents in Service are employed in service jobs, such as security guards, street cleaner, construction workers, restaurant server, barber, or receptionists. Respondents in Professional/technical are employed in white-collar jobs, such as professors, doctors, engineers, etc.

Respondents are broken up separately by nationality and gender (Table 3). Uighur clearly earn less money in every job type, except in the transportation and professional/technical categories. While these results are informative, they are not representative throughout the job types due to the small sample size for some of the indicators. For example, only one Uighur respondent worked in Retail-furn/home and only three worked in retail-elect/apps. However, for the other job types that have a sample size of at least 10 Uighur surveyed, Uighur earn substantially less than their Han counterpart.

Women earn less money than males in all 8 job types. Retail-home/furniture shows the largest wage gap, where males earn 88% more than females. Prof/Tech. show the smallest wage income gap between male and female, where males earn .08% more than females. Although Prof/Tech. have a small number of sampled respondents (n= 24), the average wage inequality appears to be more exacerbated in jobs that do not require high skill or educational level attainment.

Table 3: Average income earnings for job type by nationality and gender

Respondent group	Retail – Food/bev. Avg. Earnings (Yuan) (N)	Retail – elect/apps Avg. Earnings (Yuan) (N)	Retail- clothes/acc Avg. Earnings (Yuan) (N)	Retail- furn/home Avg. Earnings (Yuan) (N)
All respondents	Y1317 (N=111)	Y1720 (N=52)	Y1342 (N=58)	Y2144 (N=34)
Han	Y1378 (N=83)	Y1695 (N=42)	Y1481 (N=46)	Y2270 (N=30)
Uighur	Y1007 (N=20)	Y1200 (N=3)	Y781 (N=11)	Y1000 (N=1)
Hui	Y1639 (N=7)	Y2091 (N=7)	NA	Y1267 (N=3)
Male	Y1421 (N=61)	Y1847 (N=37)	Y1468 (N=14)	Y3079 (N=12)
Female	Y1,191 (N=50)	Y1406 (N=15)	Y1302 (N=44)	Y1635 (N=22)

Table 3 (continued)

Respondent group	Retail –Other Avg. Earnings (Yuan) (N)	Transportation Avg. Earnings (Yuan) (N)	Service Avg. Earnings (Yuan) (N)	Prof./technical Avg. Earnings (Yuan) (N)
All respondents	Y1346 (N=102)	Y2222 (N=26)	Y1326 (N=135)	Y2233 (N=24)
Han	Y1423 (N=81)	Y1915 (N=20)	Y1415 (N=89)	Y1762 (N=16)
Uighur	Y1008 (N=17)	Y3795 (N=4)	Y1121 (N=32)	Y3514 (N=7)
Hui	Y1225 (N=4)	Y2150 (N=2)	Y1204 (N=13)	Y800 (N=1)
Male	Y1421 (N=67)	Y1834 (N=2)	Y1353 (N=40)	Y1938 (N=3)
Female	Y1223 (N=71)	Y1890 (N=2)	Y1,207 (N=51)	Y2154 (N=13)

3.5 Detecting Labor Market Segmentation in Urumqi

In order to test whether labor market segmentation exists in Urumqi, a set of quantitative techniques must be employed in order to expose labor market segments captured in the dataset, group respondents into their appropriate sector, and then test whether sectors are statistically different from each other. Labor market segmentation theory is used to determine which variables should be included in the PCA¹⁰.

PCA is used to delineate trends within the dataset by creating statistically independent principal components (O'Sullivan and Unwin, 2003).

PCA is first employed in order to identify discrete labor market segments (Biles and Pigozzi, 2000). In addition, PCA is also used in order to reduce the data and essentially diminish the problem of multi-collinearity, which was found to exist among many of the variables collected in the survey (Rummel, 1967). Running PCA reduces multi-collinearity by orthogonolizing the dataset. The multiple score vectors that are produced were saved as a new variable and were inserted into the hierarchical cluster analysis to identify the number of discrete groupings in the dataset. K-means testing is next used to classify respondents into their corresponding cluster (Dragon, 1992, Anderson et. al., 1987). DA is used to determine whether the sectors are statistically different from each other as a whole, using Wilks' lambda F-test. In addition, DA will assess the relative importance of the independent variables' role in dictating which labor market sector a respondent will be placed (Klecka, 1980; Biles and Pigozzi, 2000).

¹⁰ See Table 13 in Appendix H for a listing of key variables, along with their definitions and sample means.

3.5.1 Predictions

To obtain an ideal demarcation among segments in society, an extensive list of key segment characteristics would focus on various aspects of workers, jobs and firms (Drago, 1992). However, such an extensive dataset does not exist, especially in the case of Urumqi. Therefore, select variables are pertaining to job and employment type and respondent characteristics are used in the PCA. Predictions are provided (Table 4) according to which labor market segment a variable is most likely to correspond with. A “+” denotes the characteristic should be most highly represented within the particular segment, a “-” indicates a negative predicted relationship, and a “0” indicates either an uncertain relationship or a projected intermediate ranking (Drago, 1992). Employees are expected to be most pronounced in secondary sector and least pronounced in the PI sector; a ranking that is reversed for both self-employed and employer. ‘Retail-food/bev.’ is expected to be lower in the PI sector and highest in the secondary sector, same as ‘retail-clothes,’ ‘retail-other,’ and ‘services.’ This is because respondents in these jobs sell common goods that are usually inexpensive, indicative of secondary sector jobs. Professional/technical jobs are expected to be highest in PI jobs and lowest in secondary jobs.

The remaining job types are difficult to predict, because some respondents may sell/repair high-priced or low-priced items, and therefore some may have good jobs, representative of the primary sector, and others may have bad jobs, representative of the secondary sector. Formal jobs, job tenure, education, Mandarin fluent, Han, and inter-provincial migrants are all expected to be highest in either of the primary sectors and lowest in the secondary sector. Gender, native, and intra-provincial migrants are expected

to be highest in secondary sector and lowest in the primary-independent. Wage impoverishment, which represents respondents who earn at least 50% less than the average wage of all respondents, is expected to be highest in the secondary sector and lowest in the PI sector. Wages are expected to be highest in the PI sector and lowest in the secondary sector.

Table 4: Hypothesized variables' relationship with the labor market segments

	Labor Market Segment		
	Primary Independent	Primary Subordinate	Secondary
Employee	-	0	+
Self-Employed	+	0	-
Employer	+	0	-
Retail	-	0	+
Transportation	0	0	0
Services	-	0	+
Prof/Tech	+	+	-
Formal	+	+	-
Job Tenure	+	+	-
Age	0	0	0
Gender	-	+	+
Education	+	+	-
Mandarin Fluent	+	+	-
Han	+	+	-
Uighur	+	+	-
Native	-	+	+
Intra-Prov.	-	+	+
Inter-Prov.	+	+	-

3.5.2 Principal Components Analysis

PCA is used to delineate trends within the dataset by creating statistically independent principal components (O'Sullivan and Unwin, 2003). PCA produces a score vector for each principal component extracted. The score vectors are then used in the cluster analysis in order to classify respondents into the group they most readily identify with.

Twenty-four variables, including industry, occupational, and human capital variables, are included in the PCA.¹¹ Varimax rotation is used in order to maximize the sum of the variances of the squared coefficients within each eigenvector, and the rotated axes remain orthogonal (Rummel, 1967). In effect, this will enable a more straightforward interpretation of the component loadings. A loading of .7 or greater is the threshold used to indicate whether a variable is highly correlated to its corresponding factor.

To begin with, five components were chosen and the corresponding rotated component loadings were analyzed. This process was repeated until there were only two components produced by the PCA. When extracting 5, 4, and then 3 components, only the first two components explained more than 5% of the variation in the dataset. After an analysis of the component loadings, running PCA with only two components offered the best outcomes in terms of high loadings and interpretable factors. Loadings on employee, self-employed, and formal all have absolute value of .7 or higher. As such, Factor 1 is labeled employment type. The interpretation of this factor is that employees

¹¹ See Table 14 in Appendix J to view each variable's relationship to its respective component factor.

are at the negative end of the factor, while non-employees (i.e. self-employed and employer) are found at the positive end of the factor. For factor 2, only Han and Uighur have loadings of absolute value .7 or higher. As such, factor 2 is labeled nationality. Han are found to be at the positive end of the factor, while Uighur are found at the negative end. Factor 1 explains 13.5% of the total variance of the dataset, while Factor 2 explains 12.0% of the total variance of the dataset.

Overall, approximately 25% of the total variance is explained by the two factors, which is rather low. With 75% unexplained variation, it is possible that the dataset may not suffer from extreme problems of multi-collinearity, as originally thought.

Nevertheless, the score vectors are still used in the hierarchical clustering analysis to ensure that the problem of multi-collinearity is diminished to the greatest extent possible. The following section uses the scores produced by the PCA to group respondents into cluster groups.

3.5.3 Cluster Analysis

To determine how jobs are grouped in the labor market, cluster analysis is carried out (Anderson, et. al., 1987). Using the scores created from PCA in the last section, hierarchical cluster analysis, using Ward's minimum variance, is employed to determine how many distinct cluster groups are within the dataset. Hierarchical clustering is used to classify a set of observations that are similar to each other, while relatively different from other observation sets. The hierarchical clustering process starts with linking similar respondents into small clusters and then each small cluster is placed into larger groupings higher up in the hierarchy (O'Sullivan and Unwin, 2003). Using the cluster tree

produced from the cluster analysis, three groups are determined to be adequate to classify respondents.¹² Furthermore, labor market segmentation theory affirms that three segments exist in the labor market: PI, PS , and secondary. Therefore, for the rest of the analyses, this work will adopt this classification of labor market segments.

Using the scores from the PCA output, K-means cluster analysis is next used to classify respondents into 3 groups. When the clusters are mapped in component space, there is an obvious delineation by nationality and employment type.¹³ Each factor's cluster means (Table 5) are used to label clusters according to which sector in the labor market they most closely represent based on other labor market segmentation theory research. Cluster 1 contains 167 cases. Cluster 1's mean for factor 1 is -1.19, and mean for factor 2 is .522. Cluster 1, therefore, represents Han respondents who are not employees. Cluster 2 has a mean of .68 for factor 1 and a mean of .53 for factor 2. Cluster 2, therefore, represents Han respondents who are employees. Cluster 3 has a mean of .133 for factor 1 and a mean of -1.52 for factor 2. Cluster 3, therefore, represents Uighur respondents who are employees.

¹² See Figure 6 in Appendix S to view the cluster tree produced by the cluster analysis.

¹³ See Figure 7 in Appendix T to view groupings of the three clusters.

Table 5: Cluster means by factor

	Cluster 1 (Mean)	Cluster 2 (Mean)	Cluster 3 (Mean)
Factor 1: 'employment type'	-1.19	.68	.133
Factor 2: 'Nationality'	.522	.53	-1.52

Based on careful inspection of each cluster's mean values, Cluster 1 appears to most closely represent the PI sector; cluster 2 appears to most closely represent the PS sector; cluster 3 appears to most closely represent the secondary sector (Table 6). However, when comparing the means for variables within each group, cluster 2 has the highest wages compared to the other clusters and has the lowest proportion of respondents who are considered impoverished.¹⁴ Furthermore, cluster 2 has the highest average education level relative to the other cluster groups. These results are indicative of the PI sector. Cluster 3 on the other hand, has the highest proportion of respondents

¹⁴ A respondent is considered to be in poverty if their earnings are less than 50% of the average income of all respondents in the dataset.

Table 6: Variable means for each cluster

	Cluster 1	Cluster 2	Cluster 3
Formal	.70	.82	.82
Job Tenure	.13	.16	.15
Gender	.51	.48	.60
Mandarin Fluent	.94	.98	.78
Education	2.4	2.9	2.6
Native	.11	.33	.34
Intra-Prov.	.07	.20	.59
Inter-Prov.	.83	.47	.06
Avg. Wage	1,477	1,514	1,489
Nationality	1.1	1.1	2.1
W- Impoverish*	.20	.16	.27
Prof/Tech	.03	.05	.06

who are impoverished, the highest concentration of females and Uighur respondents, and the lowest average education level attainment. These results are indicative of the secondary sector. For most of the variable means, Cluster 1 falls in between cluster 2 and cluster 3 and hence most closely represents the PS sector.

3.5.4 Discriminate Analysis

Canonical DA is used in order to test whether the labor market segments created using PCA and clustering analysis are significantly different from one another. Canonical signifies that the dependent variable is a categorical variable, and therefore regular DA cannot be used. Moreover, canonical DA is used in order to see how well the model accurately predicts the observed categories of the dependent variable. Lastly, the canonical DA model is used to assess the relative importance of the independent variables in classifying the dependent variable, labor market sectors (Klecka, 1980). The dependent variable consists of three groups, PI, PS, and secondary, therefore two orthogonal functions will be listed in the output. The first function will provide the most overall discrimination among the three groups and the second function provides the second most overall discrimination among groups. Because the functions are independent, the functions' contribution to the discrimination among groups does not overlap (Starsoft, 2008).

The results show (Table 7) a large Wilks' lambda F-statistic at 10.25, which indicates that the DA model does a good job at discriminating among the three labor market segment groups. The canonical correlation on the first discriminate function is .658, meaning that 65.8% of the variation in the dependent variable is discriminated by the set of independents. The canonical correlation for the second discriminate function explains 34.9% of the remaining unexplained variation in the dependent variable. This overall high percentage shows that much of the variance in the discriminate scores can be attributed to group differences.

Table 7: Discriminate Analysis- Lambda test statistic

	Value	Approx. F-Value	p-value
Wilks' Lambda	.489	10.24	0.000
Canonical Correlations	Function 1 .658	Function 2 .349	

Standardized discriminate function coefficients are listed (Table 8) in order to interpret the unique contribution of each variable to the discriminate function. In the first discriminate function, native and inter-provincial migrant have the highest coefficients. This result indicates whether a person is born in Urumqi and whether a person has migrated from outside of Xinjiang province as having the highest contribution effect on discriminating respondents into one of the three segments. Surprisingly, education, gender, nor nationality plays a large role in the first discriminating function. This would suggest that a person's migrant status type is a more important discriminator in determining which sector an individual is likely to be placed. In the second discriminate function, Uighur has the highest coefficient, followed by native and interprovincial-migrant. This second discriminate function indicates that nationality does play a strong discriminating role in dictating in which sector an individual will find employment. The results from the second function also further reinforce the importance of migrant status in discriminating which sector of the economy respondents enter.

Table 8: Standardized Canonical Discriminate Functions

	1	2
Employee	.511	.474
Self-Employed	-.142	-.126
Employer	.783	.252
Retail.	-.286	-.127
Transportation	-.205	.081
Services	-.353	-.024
Professional/Technical	-.176	-.126
Formal	.049	-.063
Job Tenure	-.047	.107
Age	-.009	-.057
Gender	.027	-.083
Education	.177	-.057
Mandarin Fluent	.084	-.189
Han	.106	.400
Uighur	-.277	.975
Native	-1.518	.709
Migrant- (Intra-Prov.)	-0.603	.349
Migrant – (Inter-Prov.)	-1.441	.708

The classification matrix (Table 9) is used to assess the performance of the DA. The rows indicate the observed categories of the dependent variable and the columns indicate the predicted categories of the dependents. The classification matrix shows that the DA model does the best job at predicting occurrences in the secondary sector, a percentage of 81%. The PI sector shows a 66% correct prediction and the PS sector shows the least correct prediction of only 57%. It is not surprising to see PI and PS sectors have lower prediction scores relative to the secondary sector, as many jobs in these two sectors tend to share similar job characteristics, which make job classification difficult (Fichtenbaum et. al., 1994; Hudson, 2007).

Table 9: Canonical DA Classification Matrix

	Primary-independent (Cluster 1)	Primary-Subordinate (Cluster 2)	Secondary (Cluster 3)	% Correct
Primary-independent	107	47	9	66
Primary-Subordinate	77	147	34	57
Secondary	2	26	116	81
Total	186	220	159	65%

The findings from the DA provide support that labor migration reinforces labor market segmentation. Furthermore, the high loading on Uighur in the second discriminate function suggests the possibility of mobility barriers due to hiring practice discrimination, or the existence of guanxi or ethnicity-based job selection, as nationality type plays a larger role in placing respondents than any of the human capital variables

captured in the dataset, which include job tenure, education, and level of Mandarin fluency. Additional job mobility data is necessary to acquire in order to sufficiently conclude whether minorities voluntarily choose to stay within a certain sector, or are forced to stay in this sector.

4. CONCLUDING REMARKS

Using the findings described above, the following section will highlight which of the hypotheses stated in chapter three are supported and which of the hypotheses are rejected (Table 10).

Table 10: Hypotheses and Outcomes

List of Hypotheses	Outcome*
1.1 Han earn more average monthly wages than Uighur	+
1.2 Within each nationality group, migrants earn more average monthly wages than natives	*
1.3 Between Han and Uighur nationalities, Han migrants earn more average monthly wages than Uighur natives.	+
1.4 For each hypothesis listed above, females earn less average monthly wages than their male counterparts.	+
2.1 Two segments exist in Urumqi, primary and secondary	*
2.2 migrant status type, nationality, and gender play the greatest role in discriminating respondents into their corresponding sector.	*

Note: The '+' symbol indicates that the hypothesis under question is supported by the survey results; The '-' symbol indicates the opposite; '*' indicates the hypothesis is partially supported.

From the descriptive results, hypothesis 1.1 is confirmed. Han respondents earn more than their Uighur counterpart. Hypothesis 1.2 is partially correct, in that Uighur migrants earn more than Uighur natives; however, Han migrants are found to earn less than Han natives. From hypothesis 1.3, Han migrants earn more than Uighur natives.

Hypothesis 1.4 is also confirmed, as females within every nationality-migrant status subgroup earned fewer wages than their male counterpart.

Based on the descriptive statistics, the urban wage structure is as follows: Han natives, Han intra-provincial migrants, then Uighur intra-provincial migrants, followed by Han inter-provincial migrants and finally Uighur natives at the bottom. This finding supports the Uighur notion that Han migrants are taking away good jobs from the local Uighur population (Pannell and Schmidt, 2006). These results support that Uighur natives, who have urban Hukou, earn less money than Han migrant without urban Hukou. This fact differs from other Chinese provinces where natives earn more money on average than informal migrants. Specific regional policy measures, therefore, need to be implemented to protect Uighur Hukou holders against increasing wage inequality, particularly as the labor markets continues to develop in Urumqi. If protective measures are not enacted, hiring practice discrimination and wage inequality will likely increase, which may play a role in deepening minority discontent and possibly even cause protests and uprisings in the future.

The hypotheses for objective 2 were both found to be not completely supported by the results revealed from the cluster analysis in chapter three. Instead of two segments, hierarchical clustering produced three sectors. This result is not unusual considering dual-labor theorists have also produced results that include three sectors: two primary sectors and a secondary sector (Drago, 1992). The results from the DA are crucial in order to understand what variables are most responsible for reinforcing labor market segmentation. The DA provides support for two of the three hypothesized variables (migrant status type and nationality) that are most important in placing

respondents into one of the three sectors. However, the third hypothesized variable, gender, was not found to be among the most discriminating variables. This result shows that human capital factors do not play as strong a role in deepening labor market segmentation as migrant status and nationality. Furthermore, this finding provides support for the argument that migration reinforces labor market segmentation. The results from the DA suggest greater attention should be placed on Uighur natives and Han inter-provincial migrants, and particularly women within each group, because they are the ones that appear to be channeled into the secondary sector and are experiencing the greatest income inequality.

4.1 Conclusion

China's economic reform has led to many changes in China's urban labor market. This paper focuses on two major phenomena occurring in Xinjiang: labor migration and the creation of urban labor markets. This paper posits that there is a strong link between migration and urban labor markets and specifically provides support that migration reinforces labor market segmentation. In addition, Uighur natives and women were found to be most likely to earn the least amount of money and be placed into a secondary sector job.

Xinjiang was chosen as a case study for several distinguishing factors: (1) Xinjiang borders 8 other countries, Mongolia, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, Afghanistan, Pakistan, and India, and thus plays a critical geopolitical role in national security and foreign trade; (2) in 2000, Xinjiang produced 11.3 % of China's crude oil and 13% of its natural gas (Pannell and Schmidt, 2006). Hence, Xinjiang's

natural resource base is of crucial importance for China's overall economic growth and development; (3) Xinjiang has been the destination for mass flows of government sponsored Han migrants originating from Eastern provinces. From 1984-1994, Xinjiang received the fourth highest migrant reception rate, behind Beijing, Shanghai, and Guangdong (Liang and White, 1996); (4) the demographic population in Xinjiang is much more diverse compared to the Eastern provinces. 45% of the total population consists of the Uighur ethnic group, followed by Han Chinese who comprises a little less than 45% of the total population. The remaining 10-12% of the population consists of various ethnic groups, including Hui, Tajik, Kyrgyz, and Kazak (Toops, 2004); and lastly (5) during the 1990s, a rash of protests, separatist uprisings, and bombings broke out in Xinjiang as a result of minority discontent over claims of cultural genocide, growing inequality between Han and minorities, unfair policies, and lack of official autonomy (Bovingdon, 2004). For example, in 1997, at National Peoples' Congress (NPC) meetings, minority-area delegates demanded greater autonomy from central officials (Sautman, 1999). Specifically, minority leaders were quite discontented over the Law on Regional Autonomy (LRA) enacted in 1984. The law stated that "autonomous areas are empowered to adapt, modify, or supplement national laws according to local conditions" (Sautman, 1999). Many leaders in autonomous regions, including minorities, however, felt that little official power is given to autonomous regions, because all laws for the five autonomous regions must first be approved by the NPC before being enacted. Also, the provincial authorities must approve any law for the prefectures and the counties as well.

Some of the discontentment among minority leaders stems from the lack of respect offered by central government departments. Previous administrations in Beijing

have been unwilling to acknowledge the existence of ethnic discrimination. In 1987, Deng Xiaoping quoted, “since New China was founded in 1949, there had never been any ethnic discrimination in the country.” In 1998, CCP Chief Zhao Xiyang noted that racial discrimination was frequent in every other country, but not in China (Sautman, 1999). Despite 280 laws and regulations on minority preferential treatment created in 1979-1995, many minorities believe that the enacted policies have failed to: 1) increase ethnic regional autonomy; 2) offset growing inequality between Han and minority groups; and 3) reduce growing anti-minority bias among Han Chinese (Sautman, 1999).

The uniqueness of Xinjiang highlights the need for regional geographies of scale in order to examine the impact of China’s economic reform policies. Exploring China’s economic reforms at the national scale will produce crude over-generalizations that 1) lead to misspecification of social and economic relationships, particularly hiring practice discriminations and patterns of migration; and (2) fail to recognize local and regional anomalies that are imperative to understand in order to advocate informed, effective local policies aimed at alleviating social unrest seen in various places throughout China. The author hopes that the major findings from this paper will lead to local policies to be enacted that will protect local and migrant minorities in Xinjiang from becoming further excluded in the urban labor market. This will lead to greater social stability and harmony and ultimately reduce the threat of future uprisings in the region. Additional attention should be paid to females within both Han and Uighur nationality groups.

5. APPENDICES

Appendix A

Table 11: Employee-Level Survey Questionnaire

Descriptive Data
1. ID Number: 2. Day/ District 3. Self Employed: Y/N 4. Formal/Informal 5. SOE: Y/N 6: Low Skill: Y/N
Employment Indicators
1. What is the title of your current occupation? 2. How long have you worked at your current place of employment 3. How were you able to find your current job (i.e. walk-in, family member, friend, government)? 4. How many hours/day do you work 5. How many days/wk do you work 6. Did you work at your current job in 2005? Yes or No If yes do you make more, same, or less wages now? 7. Have you worked anywhere else? Yes or No If yes, what location did you work (i.e. what province, county, or prefecture) and what was your title? 8. Were you employed in the year 2000 (this job or another one)? Yes or No If yes, do you make more or less money now 9. Have you ever lost your job and became unemployed? Yes or No If you have ever lost your job please answer the next three questions a-c: a. why did you lose your job;

b. how long were you unemployed for; c

c. How did you find another job?

10. If you could find employment in another place would you? If so, ideally where would you like to work?

Descriptive Information

11. What year were you born in?

12. Are you male/female?

13. What is your highest attainment of Education?

14. Do you believe in a religion? Yes or No

If yes, what is it?

15. Can you speak Mandarin fluently? Y/N

16. Do you speak any other languages than your native language? Y/N

If Yes, please list:

17. Are you married?

18. Do you have a child?

19. What is your Nationality

20. Were you born in Urumqi? Y/N

If you were not born in Urumqi please answer the next 5 questions a-e:

a. what County/prefecture, province were you born:

b. Approximately what year did you migrate to Urumqi

c. Did you migrate with your father or mother?

d. What was the main reason you (or your parents) decided to migrate to Urumqi?

e. when you migrated did the government help you (or your parents) to find employment?

21. What does your father and mother do for a living?

22. Was either your mother or father born in Urumqi? Y/N

23. Was any of your grandparents born in Urumqi?

24. How long have you resided at your present location in Urumqi?

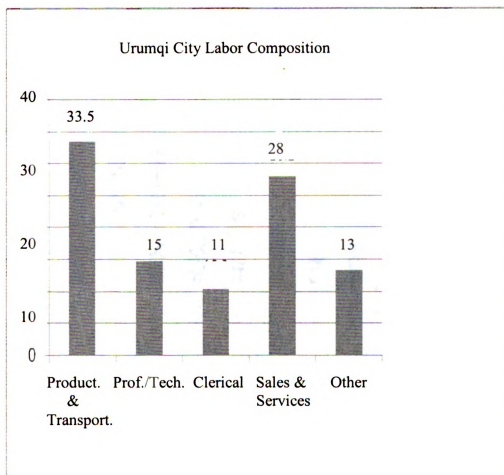
25. What district of Urumqi do you presently reside?

Economic Indicators:

26. How often do you eat at restaurant per week?
27. Do you have at least 1 friend who owns his/her own business? Y/N
28. Do you have at least 1 friend who has a professional job (i.e. Lawyer, Doctor, Professor)? Y/N
29. Do you own a car? Yes or No
30. Do you own a bicycle? Yes or No
31. Do you own or rent your apartment? Yes or No
32. Approximately how many square meters is the apartment you currently live in?
33. If you rent your apartment how much money do you pay for rent per month
34. How much money do you spend on food per day,
35. How much money do you spend on transportation per day, ?
36. How much money do you pay for taxes per month,
37. How much money do you spend on clothes per month
38. How much money do you currently earn per week?

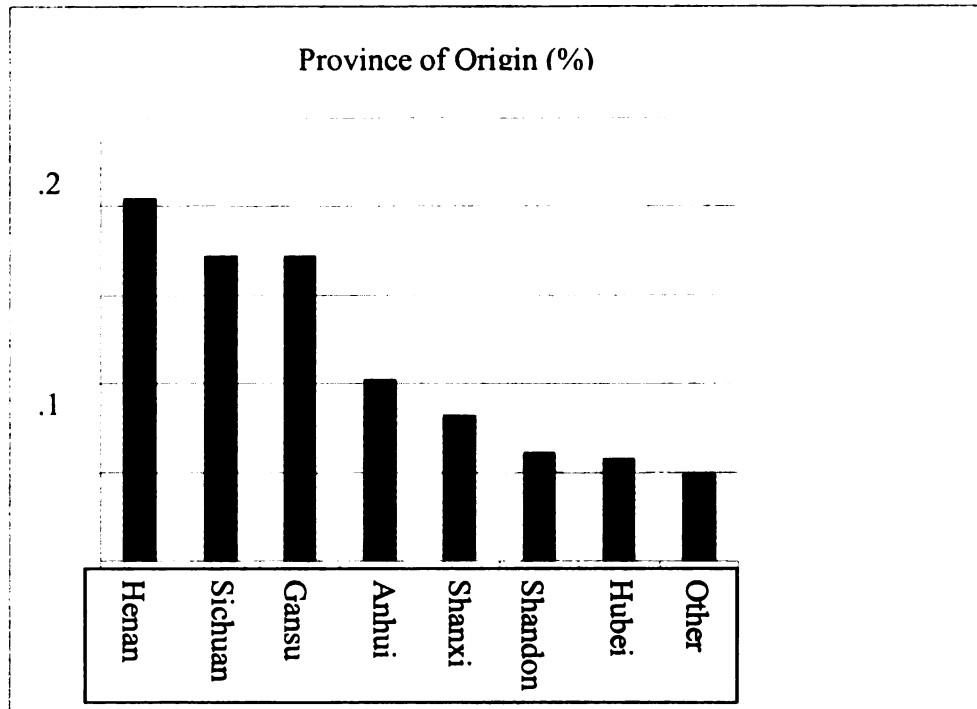
Appendix B

Figure 1: Composition of Workforce in Urumqi



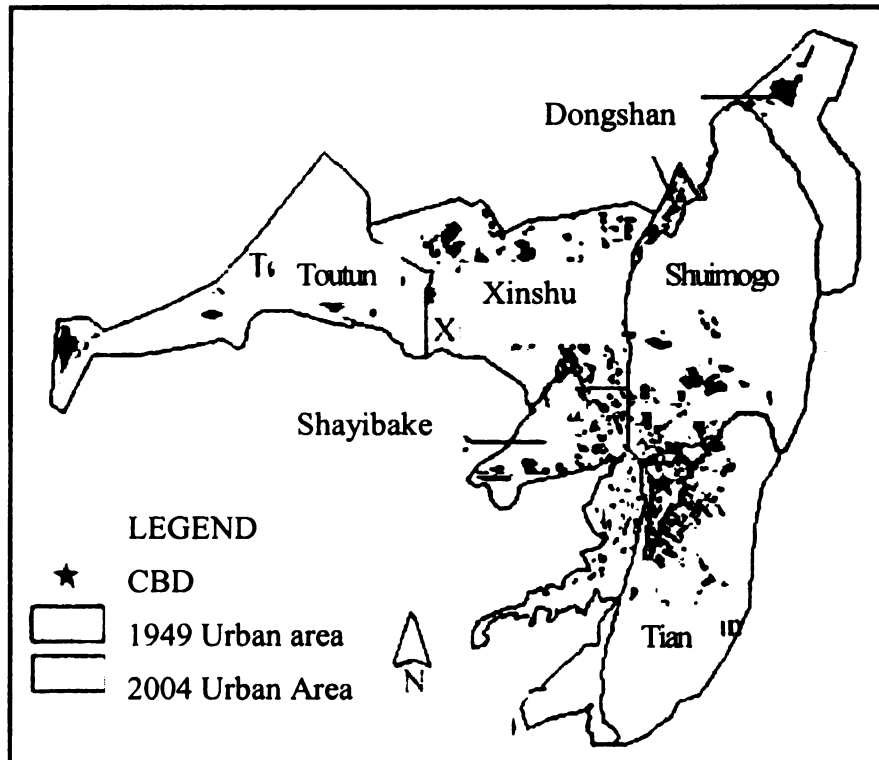
Appendix C

Figure 2: Migrant Origin (Province)



Appendix D

Figure 3: Location Map of Urumqi Urban Districts



Appendix E

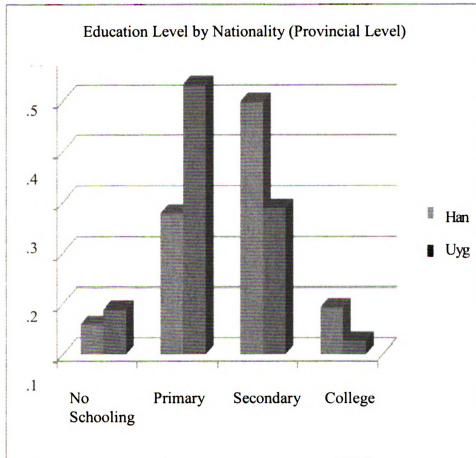
Figure 4: Location Map of Xinjiang Uighur Autonomous Region



Source: MapPoint

Appendix F

Figure 5: Education Level by Nationality for Xinjiang Province (ratio)



Appendix G

Table 12: Migration Reasons and Information (%)

	Uighur	Han	Hui	Women	Men
Reason for Migration	44	59	85	76	76
Employment	10	6	5	9	9
Go to School	16	14	5	12	11
Parents	30	21	5	3	4
Other					
Introduction to present employment	13	17	18	18	19
Friend	68	72	62	69	72
Self	11	5	8	8	6
Family	5	6	12	4	2
Government	3	0	0	1	1
Other					
Destination district					
Tianshan	62	23	39	34	30
Shayibake	35	26	31	26	27
Shuimo	1	38	8	30	32
Xinshi	2	13	22	10	11
Have held Previous Employment	26	59	58	53	53
Length of migration	28	11	48	15	16
Short-term (< 1 year)	19	13	15	13	15
Mid-term (1-3 years)	54	76	37	72	69
Long-term (3+ years)					
Employee type					
Employee	57	48	46	56	44
Self-Employed	37	46	40	40	48
Employer	15	12	14	9	16
Occupation Type					
Ret. Food/Bev	24	24	23	23	26

Ret. Elec/App	4	10	18	5	13
Ret. Clothes	7	10	0	17	4
Ret. Furn/Home	0	7	8	7	4
Ret. Other	15	18	10	24	11
Transportation	4	4	5	0	7
Services	38	21	33	19	30
Professional/Tech.	8	5	3	5	5
Employed in Formal Work	77	74	83	77	71
Employed in SOE	10	8	17	9	8
Education					
No schooling	11	3	3	4	5
Primary	20	18	15	19	18
Secondary	31	32	23	32	31
High School	20	23	28	18	28
Technical	4	16	23	17	10
College	14	8	8	10	8
Fluent in Mandarin	69	95	98	93	89
Government assistance	26	7	38	8	11
Father Occupation					
Farmer	59	74	50	70	77
Employee	6	5	8	7	4
Retired	n/a	6	19	5	6
Self-employed	24	3	13	10	3
Prof./tech.	10	12	10	8	10

Appendix H

Table 13: Variable Definitions and Sample Means

Variable	Definition	Mean
LWages_mo	Monthly wages of Yuan in natural logarithms	7.2
Nationality		
Han	1 for Han, 0 for others	.72
Uighur	1 for Uighur, 0 for others	.21
Other	1 for Other (Hui), 0 for others	.07
Migrant status	0 for Native, 1 for not native	.29
Gender	1 for Male, 0 for female	.52
Education		
No schooling	1 for no schooling, 0 for others	.04
Primary school	1 for primary school, 0 for others	.16
Secondary school	1 for secondary, 0 for others	.28
High school	1 for high school, 0 for others	.26
Technical school	1 for technical, 0 for others	.16
College	1 for college, 0 for others	.10
Age		
Age	Years	33
Age squared	Years squared	1193
Nationality-Education	(Interaction Term)	
Han-education		N/A
Uighur-Education		
Migrant-Education	(interaction Term)	
Migrant-Education		N/A
Native-Education		
Married	1 if married, 0 for others	.71
Children	1 if have children, 0 for others	.60
Employment Type		
Employee	1 if employee, 0 for others	.51
Self-Employed	1 if self-employed, 0 for others	.41
Employer	1 if employer, 0 for others	.14

Industry/Occupation Type	1 if in sell food/beverages, 0 for other	.21
Retail- Food/Bev.	1 if sell electronics/appliances, 0 for other	.09
Retail- Electronics/app.	1 if sell clothes/accessories, 0 for other	.11
Retail- clothes/acc.	1 if sell furniture/housing supplies, 0 for other	.06
Retail- furniture	1 if sell other things (cultural specialties), 0 if other	.18
Retail- Other	1 if taxi/truck driver, 0 if other	.05
Transportation- Service- Professional/Tech.	1 if in service job (security guard, street cleaner, construction, restaurant barber, receptionist), 0 if others	.25
	1 if professional or business, 0 if other	.04
Job Tenure	1 for 10 or more years of job tenure with current job, 0 for others	.15
District Type		
CBD		.67
Tianshan	1 if surveyed in Tianshan, 0 for others	.39
Sha	1 if surveyed in Sha, 0 for others	.28
Sprawl		.33
Shuimo	1 if surveyed in Shuimo, 0 for others	.23
Xinshi	1 if surveyed in Xinshi, 0 for others.	.10
Market Type		
Big Market	1 if surveyed in large marketplace, 0 for others	.29
Small Market	1 if survey in small market, 0 for others	.41
Alley	1 if surveyed in alleyway, 0 for others	.08
Restaurant	1 if surveyed in restaurant, 0 for others	.05
Other - school, hotel, bank, etc.	1 if surveyed in professional place (school, hotel, bank), 0 for others	.16

Appendix J

Table 14: Principal Components Analysis Results

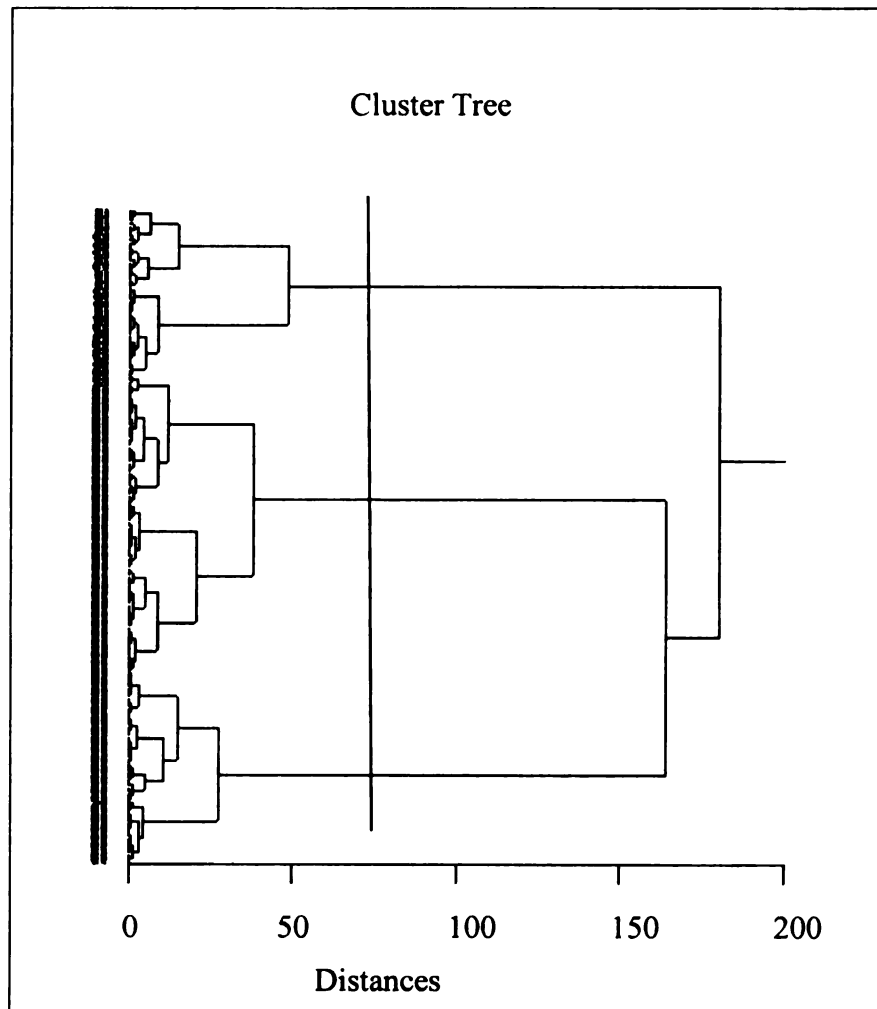
	Factor 1*	Factor 2
Employee	+ ***	-
Self-Employed	-.***	+
Employer	-	+
Retail-Food/Bev	-	-
Retail-Elect/App	+	+
Retail-Clothes	+	+
Retail-Furn/Home	+	+
Retail-Other	+	+
Transportation	+	-
Services	+	-
Professional/Tech.	+	+
Formal	+ ***	+
Job Tenure	-	-
Age	-	+
Gender	-	-
Education	+	+
Mandarin Fluent	+	+

Han	-	+ ***
Uighur	+	- ***
Nationality-other	+	-
Native	+	-
Migrant-Intra_Prov.	+	-
Migrant-Inter_Prov.	-	+
Wage_Pov	-	-
Tot. Var. Explained (%)	13.5	12.0

* '+' indicates the variable loads positive with the factor, '-' indicates the variable loads negatively with the factor,
 '***' indicates a variable loading with absolute value of at least .70.

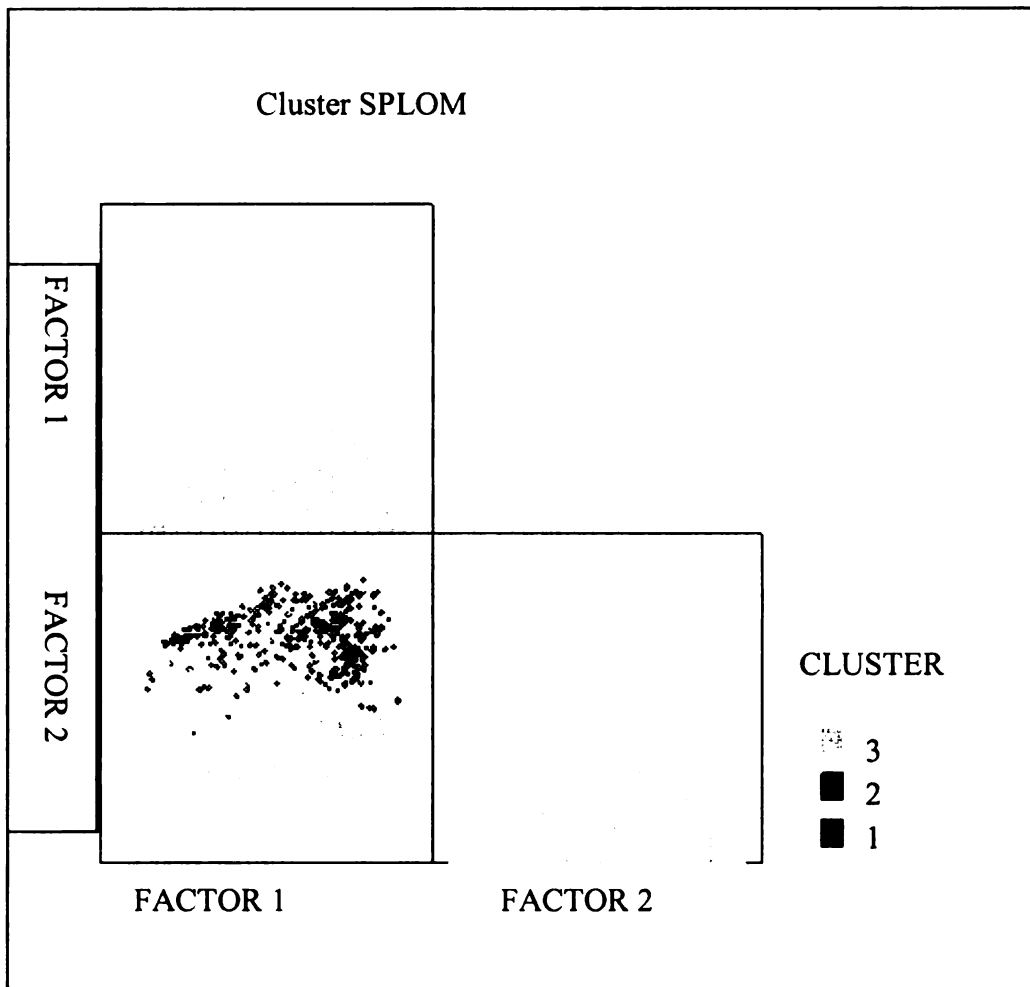
Appendix K

Figure 6: Cluster Tree Produced by Hierarchical Cluster Analysis



Appendix L

Figure 7: Scores Mapped in Factor Component Space by Cluster



6. BIBLIOGRAPHY

Amnesty International. "People's Republic of China: Gross Violations of Human Rights in the Xinjiang Uighur Autonomous Region." AI Index: ASA 17/18/99 (1999).

Anderson, Kathryn, John Butler, and Frank Sloan. "Labor Market Segmentation: A cluster analysis of job groups and barriers to entry." *Southern Economic Journal*, Vol. 53 (1987).

Bauder, Harald. "Culture in the labor market: segmentation theory and perspective of place." *Progress in Human Geography*, Vol. 25 (2001).

Becker, Gary. "The Economics of Discrimination." Chicago, University of Chicago Press (1957).

Becquelin, Nicolas. "Xinjiang in the Nineties." *China Journal*. Vol. 44 (2000).

Benson, Linda. "Education and Social Mobility among Minority Populations in Xinjiang", in Frederick Starr, ed., *Xinjiang: China's Muslim Borderland*, (Armonk, NY: 2004),

Bhalla, Qiu, and Shufang Qiu. "Poverty and Inequality among Chinese Minorities." New York: Routledge (2006).

Biles, James, and Bruce Pigozzi. "The Interaction of Economic Reforms, Socio-economic Structure and Agriculture in Mexico." *Growth and Change*, Vol. 31 (2000).

Bovingdon, Gardner. "Autonomy in Xinjiang: Han Nationalist Imperatives and Uighur Discontent." *Policy Studies* 11, East-West Center (2004).

Constant, Amelie and Douglas Massey. "Labor Market Segmentation and the Earnings of German Guest workers." *Journal Population Research and Policy Review*, Vol. 24 (2005).

Dillon, Michael. "Xinjiang: China's Muslim Far Northwest." London and New York: Routledge (2004).

Drago, R. "Divide and Conquer in Australia: a study of labor segmentation." *National Institute of Labor Studies Working Paper*, 121 (1992).

Fan, Cindy. "The Elite, the Natives, and the Outsiders: Migration and Labor Market Segmentation in Urban China." *Annals of the Association of American Geographers*, Vol. 92 (2002).

Fan, Cindy. "Rural-Urban Migration and gender Division of Labor in Transitional China." *International Journal of Urban and Regional Research*, Vol. 27 (2003).

Fichtenbaum, Rudy, and Kwabena Gyimah-Brempong and Olson Paulette. "New Evidence on the Labor Market Segmentation Hypothesis." *Review of Social Economy*, Vol. 52 (1994).

Fields, Gary. "Segmented Labor Market Models in Developing Countries." *Cornell University ILF school*, paper forthcoming Harold Kincaid and Don Ross, *The Oxford Handbook of the Philosophy of Economic Science*, Oxford University Press (2008).

Forbes, Andrew. "Warlords and Muslims in Chinese Central Asia: A Political History of Republican Sinkiang 1911-1949." New York (1996).

Graham E. Fuller and Jonathan N. Lipman, "Islam in Xinjiang", in Frederick Starr, ed., *Xinjiang: China's Muslim Borderland*, (Armonk, NY: 2004).

Gladney, Dru. "Dislocating China: Muslims, Minorities, and Other Subaltern Subjects." Chicago: University of Chicago P (2004).

Gordon, Ian. "Migration in a Segmented Labor Market." *Transactions of the Institute of British Geographers* Vol. 20 (2008).

Guo, Fei, Naran Bilik, and Robyn Iredale. "China's Minorities on the Move." New York: M.E. Sharpe, INC (2003).

Haider, Zaid. "Sino-Pakistan Relations and Xinjiang's Uyghurs: Politics, Trade, and Islam along the Karakoram Highway", *Asian Survey*, Vol. 45 (2005)

Hannum, Emily, and Xie Yu. "Ethnic Stratification in Northwest China: Occupational Differences between Han Chinese and National Minorities in Xinjiang, 1982-1990." *Demography*, Vol. 35 (1998).

Hayter, R and TJ Barnes. "Labour Market Segmentation, flexibility, and recession: A British Columbian case study." *Environment and Planning C* (1992).

Hiebert, Daniel. "Local Geographies of Labor Market Segmentation: Montreal, Toronto, and Vancouver." *Economic Geography*, Vol. 75 (1999).

Hsing, You-Tien. "Making Capitalism in China: The Taiwan Connection." Oxford University P (1998).

Kim, Hodong. "Holy War in China: the Muslim Rebellion and State in Chinese Central Asia, 1864-1877." Stanford (2004).

Klecka, William. "Discriminate Analysis." *Sage publications* (1980).

Leontaridi, Marianthi. "Segmented Labor Markets: Theory and Evidence." *Journal of Economic Surveys*, Vol. 12 (1998).

Li, Si-Ming. "Population Migration, Regional Economic Growth and Income Determination: A Comparative Study of Dongguan and Meizhuo, China." *Urban Studies*, Vol. 34 (1997).

Liang, Zai, and Michael White. "Internal Migration in China, 1950-1988." *Demography*, Vol. 33 (1996).

McLafferty, Sara and Valerie Preston. "Spatial Mismatch and Labor Market Segmentation for African-American and Latina Women." *Economic Geography*, Vol. 68 (1992).

McMillen, Donald. "Chinese Communist Power and Policy in Xinjiang, 1949-1977." Boulder, Colorado: Westview Press (1979).

Millward, James. "Beyond the Pass: Ethnicity and Economy in Chinese Central Asia." Stanford (1998).

Milward, James and Peter Perdue. "Political & Cultural History Through the Late 19th Century" in Frederick Starr, Ed *Xinjiang: China's Muslim Borderland. Studies of Central Asia and the Caucasus..* Armonk, NY: M.E. Sharpe (2004).

Milward, James and Nabijan Tursun. "Political History and Strategies of Control, 1884-1978" in. Frederick Starr, Ed *Xinjiang: China's Muslim Borderland. Studies of Central Asia and the Caucasus..* Armonk, NY: M.E. Sharpe (2004).

Moneyhon, Matthew. "Taming China's "Wild West": Ethnic Conflict in Xinjiang." *Peace, Conflict, and Development*, Vol. 6 (2004).

Oshima, Harry. "Economic Growth in Monsoon Asia: A Comparative Survey." Tokyo: University of Tokyo P (1987).

O'Sullivan, David, and David Unwin. "Geographic Information Analysis." John Wiley and (2003) Sons, Inc. (2003).

Pannell, Clifton and Phillipp Schmidt. "Structural Change and Regional Disparities in Xinjiang, China." *Eurasian Geography and Economics*, Vol. 47 (2006).

Peck, Jamie. "Work-place: the social regulation of labor markets." New York: Guilford P (1996).

Perdue, Peter. "China Marches West: The Qing Conquest of Central Eurasia." Cambridge, Massachusetts (2005).

People's Daily Online. "200 Million Peasant Workers to be Trained by 2010." [Beijing] (2004).

Reich, Michael, David Gordon, and Richard Edwards. "A Theory on Labor Market Segmentation." *American Economic Association*, Vol. 63 (1973)

Rummel, Rudolph. "Understanding Factor Analysis." *The Journal of Conflict Resolution*, Vol. 11 (1967).

Sautman, Barry. "Ethnic Law and Minority Rights in China: Progress and Constraints." *Law and Policy*, Vol. 21 (1999).

Shichor, Yitzhak. "The Great Wall of Steel: Military and Strategy in Xinjiang" in Frederick Starr, Ed. *Xinjiang: China's Muslim Borderland. Studies of Central Asia and the Caucasus*. Armonk, NY: M.E. Sharpe (2004).

Solinger, Dorothy. "Contesting Citizenship in urban China: Peasant Migrants, the State, and the Logic of the Market." University of California P (1999).

StarSoft, Inc. "Discriminate Function Analysis." Copyrighted 1984-2008.
<<http://www.statsoft.com/textbook/stdiscan.html>.>

Su, Wang, Naran Bilik, and Robyn Iredale. "Contemporary Minority Migration, Education and Ethnicity in China." Northampton, MA: Edward Elgar Limited (2001).

Syrquin, Moshe, and Hollis Chenery. "Patterns of Development, 1950-1983." Washington, DC: The World Bank (1989).

Telles, Edward. "Urban Labor Market Segmentation and Income in Brazil." *Economic Development and Cultural Change*, Vol. 41 (1993).

Toops, Stanley. "The Demography of Xinjiang" in Frederick Starr, Ed. *Xinjiang: China's Muslim Borderland. Studies of Central Asia and the Caucasus*. Armonk, NY: M.E. Sharpe (2004).

UN-Habitat. "Strategies to Combat Homelessness." *The United Nations Human Settlements Program*. Environmental Publications from UNEP and Key International Organizations (2000).

XPS, Xinjiang Provincial Statistics. *China Data Center*, University of Michigan (2005).

Xu, Wei. "Segmented local labor markets in post reform China: gender earnings inequality in the case of two towns in Zhejiang province." *Environment and Planning A*, Vol. 38 (2006).

Wiemer, Calla. "The Economy of Xinjiang" in *Xinjiang: China's Muslim Borderland. Studies of Central Asia and the Caucasus*. Frederick Starr, Ed. Armonk, NY: M.E. Sharpe (2004).

Wu, Fulong. "Urban Poverty and Marginalization under Market Transition: The Case of Chinese Cities." *International Journal of Urban and Regional Studies*, Vol. 28 (2004).

Wu, Zhengzhang. "China's Industrial Restructuring in the Twenty-First Century." Tokyo Club Foundation for Global Studies: Promoting studies of the global economy (2001).

Zang, Xiaowei. "Labor Market Segmentation and Income Inequality in Urban China." *The Sociological Quarterly*, Vol. 43 (2002).

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