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**A Comparison of Reform-Era Labor Force Participation
Rates of China's Ethnic Minorities and Han Majority**

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A Comparison of Reform-Era Labor Force Participation Rates of China's Ethnic Minorities and Han Majority

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Abstract:

Previous research suggests that minorities are not faring well in China's transition—both income and occupational attainment gaps are widening. We are particularly interested in whether the differences in majority and minority economic outcomes are the result of ethnicity *per se*, or whether they are artifacts of local economic conditions. In this paper, we employ data from the three most recent population censuses of China to explore differences in the labor force participation rates of a number of China's important ethnic groups. We estimate urban labor force participation rates using probit regressions controlling for sex, marital status, educational attainment, age, ethnicity, and location. We also account for the geographic concentration of particular ethnic minorities and compare the participation rates of different ethnic groups within geographic regions that represent the areas of principal residence for each minority. We concentrate on seven important minority groups: Hui, Koreans, Manchu, Mongolians, Uyghurs, Yi and Zhuang. We find that location has limited explanatory power in explaining differences in the probability of labor force participation between these important Chinese ethnic minorities and the majority Han.

Key words: China, ethnic minorities, labor force participation, economic reform, population censuses

JEL codes: J1, J2, J7, O1, O5, P2

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“All nationalities in the People’s Republic of China are equal... Discrimination against and oppression of any nationality are prohibited...” (Article 4 of the Constitution of the People’s Republic of China)

1. Introduction

In the late 1970s the Chinese leadership, motivated by economic stagnation, low productivity, and disguised unemployment in both rural and urban sectors, embarked on a program of economic reform which initiated a process of gradual transition to a market economy and resulted in two decades of remarkable change. At the macroeconomic level improvements in income and welfare were rapid and sustained—real per capita GDP increased more than fivefold from 1978 till 2000 (NBS, Table 3-4, p.58) and hundreds of millions were lifted out of absolute poverty. The benefits of reform, however, have been distributed unevenly -- inequality has risen rapidly in recent years. The eastern seaboard provinces developed at a much faster rate than the interior and western provinces (Chen and Fleisher 1996, Fleisher and Chen 1997, Gustafsson and Li 1998, Lee 2000). The urban/rural income gap widened. The gender wage gap also increased (Maurer-Fazio, Rawski, and Zhang, Maurer-Fazio and Hughes). We are interested in the question of how China’s different ethnic groups have fared in the reforms.

According to the 2000 Census, the 106.43 million ethnic minority people in China constituted only 8.47 % of the Chinese population (Table 1). When we use the terms ethnic minority, national minority or minority people here we are referring to the 55 national minorities that, with the Han majority, make up the 56 ethnic groups officially recognized by the Chinese central government.

According to the Information Office of the State Council, minority groups are identified on the basis of past and current conditions, scientific principles, and the wishes of a given ethnic group regardless of the sizes of its inhabited areas or population. (p.9). The Chinese government initially used a set of four characteristics—common territory, language, economy, and culture -- developed by Joseph Stalin to identify its national minority groups (Smith, p.273). However, members of an ethnic minority group often do not fulfill all four of these characteristics and in practice the Chinese government has allowed group members to claim ethnic minority status based on ancestry. Smith reports, “The government has ruled that anyone with at least one minority parent or grandparent can be reclassified as a minority person” (p.278). Hoddie reports

that 24 million more people identified themselves as ethnic minorities in the 1990 census than in the 1982 census. He further claims that fertility trends were such that an increase of only 10 million was expected. He argues that government policy increased the benefits to minority identification and thus provided an incentive for change in ethnic identity.¹

The government's preferential policies include an exemption from, or easing of, the restrictions of the government's family planning program, as well as preferential treatment in school admissions, hiring and promotion, the financing and taxation of businesses and the provision of infrastructure (Sautman, p.86). Whether and how these policies are implemented is a key issue. Gilley reports that in Xinjiang, the benefits of the central government's western development campaign accrue in large part to the area's Han population and that Han firms simply do not hire Uygur workers.

Mackerras (p.1) points out that China's national minorities are considerably more important than their share of the population might suggest. The majority of China's minority people reside in areas designated as autonomous ethnic minority regions, regions that occupy 63.9 % of China's total land area (NMAC, p.545), much of it in sensitive border areas. Minority nationalities are concentrated mainly in Northwestern and Southwestern China as well as the Northeast. The autonomous regions established for minority peoples house 75% of their population (Information Office, p.15). These include five provincial-level regions (Inner Mongolia, Xinjiang, Tibet, Guangxi, and Ningxia) 76 prefectures and 699 counties (NMAC, p.532). The ethnic autonomous regions themselves account for disproportionate shares of various resources and raw materials.²

Although overall economic indicators indicate an improved standard of living in ethnic minority regions, it appears that the improvements have not always kept pace with developments in the national economy. Measured average annual employment wages and rural per capita income both rose at slower rates in ethnic minority autonomous areas than in the nation as a whole.³ Figures reported in Mackerras (p.66) claim both a reduction in the number of officially

¹ Table 1 (below) reveals extreme increases in Manchu and Tujia populations between the 1982 and 1990 censuses.

² For example, the ethnic autonomous areas account for 15.4 % of China's cultivated land, 75% of its grasslands, 21.8 % of its forest area, 24.5 % of its freshwater area, 65.9 % of its hydropower resources as well as 37.1% of its coal, 24.4% of its iron ore and 40.7% of its phosphate ore (NMAC, Table 1-3, p. 544).

³ The average annual employment wage in ethnic minority autonomous areas rose in the period 1982-2000 from 845 to 7802 yuan while the "average annual wage of staff and workers" nationwide rose from 792 to 9371 yuan over the same period. Similarly, per capita rural net income in ethnic minority regions rose over the period 1980-2000 from

impoverished ethnic minority people from 45 million to 14 million in the period from 1994 to 1999 and a recognition that minority peoples still make up 36.5 % of those remaining in absolute poverty as of 2000.

A great deal of the recent scholarship on China's minorities such as Stevan Harrell's work on the Yi and Dru Gladney's work on the Hui has tended to concentrate on one minority at a time, though some authors, such as Colin Mackerras, have focused on the minorities as a whole. In any event, socioeconomic treatises on China's ethnic groups are rare. One notable exception is the work of Gustafsson and Li who make an important contribution to the economic literature about China's minority nationalities. They employ survey data from 19 provinces in 1988 and 1995 to assess the differences in rural income between the Han majority and ethnic minorities (grouped together). They find that the per capita income gap of 19.2% in the earlier period grew to 35.9% in the latter period. When they decompose the income differential into differences due to endowments and treatment they find that the vast majority of the differential is due to differences in endowments and that minority incomes are lower than Han incomes largely due to location. Gustafsson and Li note that China's minorities are clustered in provinces with low per capital GDP and that they tend to dwell in mountainous areas and areas officially designated as poor.⁴

Hannum and Xie focus on an array of minorities in a single province. They employ census data to examine the effects of market reform on differences in occupational attainment of Xinjiang's (mainly Turkic) minorities in comparison to the Han. Hannum and Xie find that the ethnic gap in occupational attainment between the Han and the minorities widened between the 1982 and 1990 censuses. They attribute the rising gap to an increased gap in educational attainment between the Han and the minorities and a strengthening of the relationship between educational attainment and higher-status occupations.

The papers of Gustafsson and Li and Hannum and Xie suggest that minorities are not faring well in China's transition—both income and occupational attainment gaps are widening. The former paper suggests that geography is a very important contributing factor in explaining differences in majority minority incomes. The latter suggests important ethnic differences in labor market outcomes even after carefully controlling for location. We are particularly

76 to 1626 yuan while national figures indicate an increase in per capita net rural income from 191 to 2253 yuan. (NSB 1993, 2003 and SEAC).

⁴ Unfortunately Gustafsson and Li's survey data do not include observations from Tibet or Xinjiang.

interested in whether the differences in majority and minority economic outcomes are the result of minority status *per se*, or whether they are an artifact of local economic conditions in the minority areas. There is little published data to help shed light on questions about the economic well being of China's minority peoples.⁵

2. Research Strategy

By employing newly available individual data from the 1982, 1990, and 2000 Population Censuses of China we are able to surmount some of the previous data scarcity problems. Unfortunately, the population censuses do not report income. In our larger research project we therefore concentrate on available measures of economic status--labor force participation, educational attainment, and unemployment and occupational attainment. We utilize the census data to compare the economic status of each minority to that of other minorities and to that of the majority Han. By using data that span the reform period we are able to observe how these measures of economic status change over the course of the reforms. In this paper, we focus our analysis on just one of these measures-- labor force participation-- and examine the interactions of ethnicity and geography.

In the next section we discuss our theoretical predictions about how the reforms might influence labor force participation rates. We follow with descriptive statistics revealing how the labor force participation rates of China's largest 19 ethnic groups have changed over the course of the reforms based on the three most recent population censuses. We then estimate urban labor force participation rates using probit regressions controlling for sex, marital status, educational attainment, age, ethnicity, and location. These regressions allow us to determine if the participation rates of particular ethnic groups differ from that of the Han majority and whether there are any discernible trends in such differences over time.⁶

⁵ This difficulty existed despite the publication of hundreds of pages of statistical tables in the annual publications, *China's Yearbook of Ethnic Works* and its predecessor, *China's Ethnic Statistical Yearbook*. These yearbooks display many tables and hundreds of series of interest, yet the unit of observation is an autonomous area (whether at provincial, prefectural, or county levels), not the ethnic groups. This organization poses a problem, as Han often comprise a significant proportion of the population in the autonomous regions. For example in 2002, the minority population of the Inner Mongolian Autonomous Region constituted only 20.9 % of its total population. Comparable figures for Guangxi Zhuang and the Ningxia Hui Autonomous Regions are 38.4 % and 35.4%, respectively. Tibet and Xinjiang Uygur Autonomous Regions are notable exceptions with the minority populations constituting 96.7 and 60.1 % of their populations, respectively (NBS and SEAC, Table 2-8, p.564).

⁶ China's economic reforms allowed managers much more leeway in determining the composition of their workforces and in rewarding productivity than in the pre-reform period. The reduction in government involvement

While the probit regressions using national samples allow us to control for location, it is more useful to account for the geographic concentration of a particular ethnic minority by subdividing the data by geographic region. For example, if we find (as we do) in the 2000 national sample that ethnic Koreans have much lower labor force participation rates in urban areas than the Han, the question still remains as to whether this lower rate is due to ethnic differences or to the fact that the vast majority of China's Koreans live in the rust belt of China's three Northeastern provinces: Jilin, Liaoning, and Heilongjiang. A better way to separate out the effects of geography and ethnicity is to create a subset of observations of people who reside in these three provinces and then compare the labor force participation rates of the Koreans to those of the Han and other major ethnic groups living in this region.

We concentrate on seven important minority groups: Hui, Koreans, Manchu, Mongolians, Uygurs, Yi and Zhuang. These seven were chosen for their numerical importance (the Zhuang), their concentration in politically sensitive areas (the Mongolians and Uygurs), and variation in their socioeconomic conditions and geographic locations (Hui, Koreans, Manchu, and Yi).⁷ To isolate the effects on minorities of regional economic conditions, we split the sample into subgroups of one or more provinces according to areas of principal residence for each minority group. For example, to compare the labor force participation of Uygurs to that of other ethnic groups living in the same area, we use census data for the Xinjiang Autonomous Region only. To address the same question for the Zhuang, we use data for Guangxi, Guangdong, and Yunnan, where a large majority of Zhuang reside. The provinces of principal residence associated with the seven minority groups at the center of our analysis are listed in the table below:

Minority Group	Provinces of Principal Residence
Hui	Ningxia, Gansu, Henan, Xinjiang, Qinghai, Yunnan, Hebei, Shandong
Korean	Jilin, Heilongjiang, Liaoning

in the labor market also allowed managers more freedom to engage in discriminatory practices. If the state was effectively protecting minorities from labor market discrimination in the pre-reform period, it is quite possible that, in the reform period, we observe increased discrimination against minorities.

⁷ We were also particularly interested in the Tibetans. We do not include our analysis of urban Tibetans' labor force participation rates here since the 1990 census sample we received does not include any observations from the major cities of the Tibetan Autonomous Region.

Manchu	Liaoning, Hebei, Heilongjiang, Jilin, Inner Mongolia, Beijing
Mongolians	Inner Mongolia, Liaoning, Jilin, Hebei, Xinjiang, Heilongjiang
Uygur	Xinjiang
Yi	Yunnan, Sichuan, Guizhou
Zhuang	Guangxi, Yunnan, Guangdong

3. Labor Force Participation Rates

Economic growth and concomitant wage increases should lead to increases in labor force participation rates as the opportunity cost of not working rises. Thus, one of our theoretical expectations is to see higher levels of labor force participation for both men and women between 1982 and 2000, as the gains from such participation increase.

China, however, has long had very high labor force participation rates by international standards, especially for women. Our own results, based on the 1982 census data suggest that the LFPR for Chinese men and women were 86 and 71 percent, respectively, in 1982, that is, very early in the reform period. In contrast, the LFPR for U.S. men and women in the same year were 77 and 53 percent, respectively (Szafran, Table 1, p.33).⁸ Thus, economic growth may not draw significant numbers of new workers into the labor force, as not too many adults were outside the labor force in the pre-reform period. Given the amount of inefficiency in the use of labor and other resources during the socialist period, output could increase simply through more efficient use of the existing labor force.

Labor force participation for certain groups could actually fall as a result of three phenomena. As incomes rose during the 1990s, especially in the urban regions, women may have withdrawn from the labor force to concentrate their efforts in home production. Where spouses' earning power is sufficiently high, families may feel able to meet their income goals with only one income, freeing women from the need to work outside the home.⁹

⁸ LFPR rates for men and women in Japan in 1990 were 78 and 51 percent, respectively. Similarly, the figures for South Korea in 1991 were 75 and 47 percent. In 1990 Germany had LFPR rates of 61 and 39 percent for men and women while France had rates of 50 and 37 percent for men and women in 1991. In 1990 Britain had LFPR for men and women of 73 and 52 percent while those in the U.S in 1991 were 72 and 56 percent for men and women. (ILO Yearbook of Labor Statistics 1992).

⁹ An increase in the spouse's income is seen as an increase in a woman's non-wage income. Such increases generate a pure income effect, reducing the woman's equilibrium hours of work and increasing the likelihood of labor force exit.

Second, as the labor force is defined as those 15 years of age and older, labor force participation among younger workers may fall if these individuals choose to stay in school longer. Given the decentralization of wage-setting and observed increases in returns to education (Maurer-Fazio 1999, Zhang et. al forthcoming), the increased benefits to educational investments for young people could lead to a reduction in the labor force participation of the young.

Finally, and importantly for the focus of this paper, with a relaxation of the protections afforded workers in the socialist period, managers may have begun to indulge prejudices against particular ethnic groups by refusing to hire or quickly firing members of these groups. If such practices are widespread, members of disadvantaged groups could become ‘discouraged workers’ and withdraw from the labor force. In the following section, we describe the data we utilize to test these hypotheses.

4. Data Description

The data employed in this project are drawn from the three most recent population censuses of China. Our analysis is based on one percent micro data samples of the 1982 and 1990 censuses and a 0.095 percent micro data sample of the 2000 census.¹⁰ Since we focus on labor issues, we further sample our data to include only those age 15 and above.

Ethnicity is reported directly on the census questionnaires. Since no new ethnic minority groups have been officially recognized since the Jino in 1979, the number of ethnic groups is consistent across all 3 censuses. In the work that follows, statistics are calculated for each of the 56 recognized ethnic groups but to keep tables to manageable size we report individual results only for the 19 groups with populations exceeding one million members (as of the 1990 and 2000 censuses).

Individuals are considered to be in the labor force if they had a job on the day of the census or if they were unemployed and looking for work at that time. We equate those classified as “waiting for work” in the earlier censuses as seeking employment and thus part of the labor force.

The definitions used in each of the three censuses to classify individuals as urban or rural vary. We employ two different methods of defining individuals as residing in urban or rural areas

¹⁰ 1982 and 1990 samples were obtained from the Data User Services of China Population Information and Research Center.

in our data. In the 1982 and 1990 samples we base our definition of rural and urban on the administrative codes that reveal where an individual resides. The first two digits of this code indicate province, the third and fourth digits indicate prefecture, and the fifth and sixth digits indicate whether the location is considered as an urban “district” or county. For the 1982 and 1990 censuses we use the administrative codes to classify individuals dwelling in counties as rural and those in districts as urban. This procedure yields a figure of 25.25 percent urban for the entire population in 1990 slightly under the figure of 26.41 percent urban reported in official statistics based on the 1990 census.¹¹ The data released in the 0.095 percent sample of the 2000 census contain only the first four digits of the administrative code, precluding use of the same categorization scheme. In any event, the 2000 census uses a much newer and more sophisticated set of criteria to define urban areas (Chan and Hu, p. 54).¹² The 2000 sample reports individuals as residing in “city”, “town”, or “rural” areas. We aggregate those in cities and towns into an urban category constituting 36.9 percent of the population, all others are classified as rural.¹³

The educational attainment categories in the 1982 data vary somewhat from those in the two later censuses. The 1982 categorization of illiterate and semi-literate, primary, junior middle school, senior middle school, some college and college graduate was amended in the later censuses to also include technical middle school and junior college. We thus aggregate the different types of senior middle schools and all types of post-secondary education into just two categories and thus impose consistency in our educational classification scheme.

5. Results and Discussion

5.1 Results Based on Analysis of Descriptive Statistics

Labor force participation rates for each of China’s largest ethnic groups are presented in Table 2. Figure 1 tracks how these rates change from 1982 to 2000 for the Han and the seven ethnic minority groups focused on in this paper: the Hui, Koreans, Manchus, Mongolians, Uygurs, Yi and Zhuang. We see that on a national basis, Chinese labor force participation changed little between 1982 and 2000. From 78.70 percent in 1982, the overall LFPR rose

¹¹ NBS, China Population Statistics Yearbook, Table 4-6, p.352

¹² These criteria are based on the population density and whether the area is a seat of local government or is contiguous to an area where the government is located.

¹³ We recognize that these definitions of urban and rural are not consistent over time. They are, however, the best that we can do with our existing data sources.

slightly in 1990 before falling to 76.90 percent in 2000 (Table 2). The total population figures of course mimic the trend for the majority Han population. Minority labor force participation rates differ from those of the Han, however. Of note, the LFPR of the Yi, Zhuang, and Uygurs, is consistently higher than that of the Han. In 2000, the Han LFPR was 76.57, compared to 88.29 for the Yi, 82.94 for the Zhuang and 79.10 for Uygurs (Figure 1 and Table 2).

Only a few minorities exhibited significant swings in LFPR over the period. The Manchu LFPR rose from 69.40 percent in 1982 to 74.02 percent in 1990 and then leveled off. This rather steep increase in the Manchu LFPR occurred over the period in which many individuals with Manchu ancestry began to identify as such (See Table 1.) The Koreans show a very precipitous decline in LFPR: from 1982 to 2000, the Korean LFPR fell from 72.84 percent to 62.16 percent, the lowest LFPR of any Chinese ethnic group. The vast majority of Koreans living in the Northeast, an area known as China's rustbelt and one hit hard by the decline of inefficient State-run enterprises. It is possible that the economic difficulties had a similar effect on the Han living in the same provinces.¹⁴ We explore this possibility using multivariate analysis below.

Figure 2 and Table 3a present labor force participation (LFP) rates for urban members of the same ethnic groups. While between 1982 and 1990 LFP rates remained more or less constant (76.22 and 75.48%, respectively), there is a very marked decline in nation-wide urban LFP rates between 1990 and 2000 to 67.67%. Figure 2 reveals remarkable consistency in this pattern across the Han, Hui, Korean, Manchu, Uygur, Yi and Zhuang ethnic groups. (Interestingly, rural labor force participation patterns are also consistent but very different from urban ones. Figure 3 and Table 3b reveal an increase in rural LFP between 1990 and 2000.)

An interesting question is whether the decline in urban LFP between 1990 and 2000, which affected every group, was due to the income effect (higher income leading to lower LFP) or discouraged workers (unemployed individuals who stop searching for work). While the limited set of variables included in the census data precludes the derivation of a definitive answer, examining the LFPR of urban females is often suggestive of the strength of the income effect. In other parts of the world it is often the case that as the incomes of urban males rise, there is less need for spouses to work outside the home, as families satisfy their needs with single incomes. So, one possible manifestation of the income effect would be a sharp decline in the

¹⁴ We wish to thank Xiao-Yuan Dong for bringing the location effect to our attention.

LFPR of urban females while that of urban males stays constant or rises. Such a difference could be evidence of married urban females reducing their commitment to market work in order to devote more time to home production.

Figures 4 and 5 and Tables 4a and 4b show the LFPR for urban males and females by ethnic group for 1982, 1990, and 2000. There are sharp drops between 1990 and 2000 in both male and female urban LFPR for all ethnic groups, albeit the decline is sharper for women than for men. These results are consistent with a manifestation of the income effect. However they could also indicate that urban women become discouraged workers and exit the labor force more readily than urban men. We know that women are laid off disproportionately (Maurer Fazio, forthcoming, and Maurer-Fazio, Rawski, and Zhang) and expect this factor to contribute to the discouraged worker effect. It is interesting to note that the decline in the LFP of Koreans is more marked than for other groups. The extent of this decline in Korean LFP is surprising given that the education levels of the Koreans far exceed those of any other ethnic group.¹⁵ This phenomenon once again raises the question of how much of what we observe for each ethnic group is attributable to ethnicity and how much is due to geographic location—a question we try to address in the following section.

5.2 Results of Probit Regressions based on National Data

We ran a series of probit regressions for urban residents on a labor force participation binary dependent variable. For ease of exposition, the results for all probit models are presented as changes in the probability of labor force participation, and *not* the probit regression coefficient. For binary variables, the table entries represent the discrete change in probability as the binary independent variable is toggled from zero to one. For continuous variables such as age, the table entries are the change in the probability of labor force participation resulting from a one unit change in the independent variable. All probabilities are calculated at the sample mean. Table 5 presents descriptive statistics for the variables included in our analyses.

5.2.1. Basic Probit Regressions

Table 6 contains the results from a probit regression containing only educational level, and basic demographics such as age, marital status, and sex. The results indicate substantial changes in the determinants of labor force participation between 1982 and 2000. Men move

¹⁵ See Maurer-Fazio, Hughes, and Zhang (2004).

from 13 percentage points more likely than women to be in the labor force in 1982 to almost 24 percent points more likely in 2000.

Our basic results also show a marked decline in the difference in labor force participation between married and unmarried individuals. In 1982, married individuals were almost 37 percent more likely to be in the labor force than the unmarried. By 2000, this difference in the probability of participation had dropped to only seven percent. Given the overall decline in labor force participation over the period, this result is perhaps due to the rate of married individuals, especially women, falling to a level of labor force participation closer to that of single individuals.

The effects of education on the probability of labor force participation are both interesting and puzzling. In 1982, all of the table entries for the educational binary variables are negative and highly significant, indicating that all of these groups are less likely to be in the labor force than junior middle school graduates, the omitted category. The probability of labor force participation is not terribly different from the omitted category for primary and senior middle school graduates. The largest, and most puzzling difference, is for postsecondary graduates, the category representing the most highly educated Chinese. Member of this group are 22 percentage points less likely to be in the labor force relative to the omitted category. Such relatively low labor force participation rates for college graduates is contrary to basic human capital theory, which predicts higher labor force participation to recoup the investment in additional education. We hypothesize that this result for postsecondary graduates may indicate residual effects of the repression of the educated during the Cultural Revolution. While the worst of the Cultural Revolution had ended a decade earlier, perhaps older college graduates did not return to the labor force either out of fear of further repression, or simply that they were supported by other family members.

After mostly shrinking between 1982 and 1990, these anomalous results almost completely reversed by 2000. Educational categories other than postsecondary are now somewhat more likely to be in the labor force than junior middle school graduates. The probability that a postsecondary graduate is in the labor force is now not significantly different from the omitted category. Except for the anomalous results for postsecondary education, the results for 2000 are more consistent with basic human capital theory.

5.2.2. Basic Probit Regressions Augmented with Ethnicity and Location

To examine the effect of ethnicity on labor force participation, we added 18 binary variables to the basic regression representing the largest ethnic minority groups, plus a 19th variable indicating membership in one of the smaller remaining ethnic minorities. We used the majority Han as the omitted category, so all results for ethnicity should be interpreted as relative to the Han. The results of these regressions are presented in Table 7.

We control for local economic conditions by adding binary variables for each of the Chinese provinces. We use Jiangsu province as the reference category.¹⁶

Addition of the ethnicity variables has little or no effect on the size, sign or significance any of the basic variables in the regression. This is most likely due to the fact that over 80 percent of the sample in any given year is made up of majority Han. As the table entries for the basic variables reflect the experience of the Han, controlling for ethnic minority membership has little influence on these results.

Several of the ethnic minorities show large, statistically significant differences with the Han in the probability of labor force participation. For example, the Dong and Mongolians are 24 and 3 percentage points lower, respectively, in the probability of labor force participation in 1982 than the Han. Conversely, the Yi and the Miao are 10 and 7 percentage points higher in the probability of labor force participation in 1982 than the Han. These differences from the Han participation either shrank or became statistically indistinguishable by 2000. Other ethnic minorities, notably the Hui, Tibetans, Uygurs and Koreans saw their probability of labor force participation worsen by 2000 relative to the Han majority. This relative decrease in labor force participation by these and other ethnic minorities could represent workers discouraged by an emergence of ethnic discrimination following economic reform. Conversely, since these three groups are concentrated in very few provinces, this relative decline in labor force participation could also be an artifact of local economic conditions. We examine this possibility in the next section.

¹⁶ In the 1990 census, Hainan province was listed separately from Guangdong province for the first time. In the 2000 census, Chongqing *shi* was listed separately from Sichuan province for the first time. Thus, Sichuan and Guangdong provinces are delineated differently over the course of the three censuses.

5.3 Probit Regression Results for Specific Ethnic Minorities based on Regions of Principal Residence

5.3.1 Hui

Probit results for the Hui minority (in areas of principal residence) are presented in Table 8. The Hui are geographically more dispersed than any of the other large minorities --19% of the Hui reside in Ningxia, 12% in Gansu, 10% in Henan, 8% in Qinghai, 7% in Yunnan, 5% in Hebei, 5% in Shandong....¹⁷ Perhaps as a result, the probit results for the Hui strongly resemble those of the national data. Each of the marginal changes on the human capital and sex variables are very close to those based on the national samples for each of the census years.

The pattern varies somewhat for the ethnicity variables, as the probits based on the samples geographically restricted to the areas of principal residence of the Hui yield somewhat different results from those based on the national data. In the national data, the Hui had a tiny, 0.2 percentage points, but statistically significantly smaller probability of being in the labor force in 1990 relative to the Han. This disadvantage grows to almost 5 percentage point by 2000. In the probits restricted to those provinces with large concentrations of Hui, the 1990 results are reversed. These results show the Hui enjoying a 3-percentage-point higher probability of labor force participation in 1990. However, by 2000, the results based on the restricted sample parallel those based on national data and the Hui have an approximately 5-percentage-point deficit in labor force participation relative to the Han. These results suggest that when we focus our analysis on the geographic areas of concentration for the Hui, we observe a fairly substantial change, the Hui were more likely to be in the labor force than their Han neighbors in 1990 but less likely in 2000.

5.3.2 Koreans

The vast majority of ethnic Koreans in China live in China's Northeast—60% in Jilin, 20% in Heilongjiang and 13% in Liaoning.¹⁸ We thus create sub-samples of each of our census data sets consisting only of residents of these three provinces to compare the labor force participation rates of Koreans in China's Northeast to those of other ethnic groups who live in the same geographic areas.

¹⁷ Table 1-2, NBS and SEAC, Volume 1, pp. 4-27.

¹⁸ Table 1-2, NBS and SEAC, Volume 1, pp. 4-27.

We first note that the patterns of labor force participation of the residents of China's Northeast are different in many ways from the national patterns discussed above. (See Table 9.) Men in this region are even more likely than women to be in the labor force than for the country as whole. The differential in men's participation rates over women's in this region starts at 18% in 1982 and increases to 28% in 2000. In 1982, married individuals residing in the Northeast were only slightly more likely (2 percentage points) to be in the labor force than single individuals – a much smaller differential than that found in the national data. By 2000, the marriage differential had increased to 8 percentage points and was in line with the national differential.

The effects of education on the labor force participation of the residents of the Northeast mimic the national results in sign, but not in magnitude. Illiterates in the Northeast were about 50 percentage points less likely than junior middle school graduates to be in the labor force in 1982, a figure almost twice the national figure. Similarly, those with only primary school education were 25 percentage points less likely to be in the labor force, again twice the national figure. The Northeast figures for senior middle and postsecondary education were in line with national figures in 1982. By 2000, when each level of education increased the probability of being in the labor force (relative to junior middle school) at the national level, in the Northeast residents with all levels of education different from junior middle school were still significantly less likely to be in the labor force, although the differentials shrank substantially from those of 1982.

Focusing now on the effects of ethnicity on labor force participation in the Northeast (Table 9), we see there is no discernable effect of being Korean in 1982 and 1990 but that in 2000, ethnic Koreans are 6% less likely to participate in the labor market than the Han. In 2000, the Koreans are the only major ethnic group in the Northeast to have labor force participation rates that are distinguishable from the Han.

It is interesting to note that the change in the labor force participation rate differentials for Mongolians in these 3 provinces moves in just the opposite direction from that of the Koreans. Mongolians have significantly lower participation rates than the Han in 1982 and 1990 but by 2000 their participation rates increases to the point that they are indistinguishable from the Han.

5.3.3 Manchus

The Manchus are geographically distributed over six of China's northern and northeastern provinces— 50% in Liaoning, 20% in Hebei, 10% in Heilongjiang, 9% in Jilin, 5% in Inner Mongolia, and 2% in Beijing.¹⁹ The results discussed below are based on sub-samples of our census data sets that consist of urban residents of these six provinces.

The patterns of labor force participation for the urbanites of these six provinces follow the directional trends of the national data. (See Table 10.) The differentials in rates of labor force participation for men in comparison to women start high at 19% in 1982 and then increase further to 28% in 2000. In 1982, the differential in labor force participation between married and unmarried individuals is much lower than in the national data. Whereas this differential rises only slightly in the national data by 2000, in these six provinces the differential more than doubles, making married individuals 10 percentage points more likely to be in the labor force than unmarried people.

Those with postsecondary educations are 37% less likely to participate in the labor force than those with junior middle school educations in 1982 and approximately 2% more likely in 2000. Overall, education levels have less of an effect in encouraging labor force participation in these six provinces than in the nation as a whole.

Within our sub-sample of six provinces there are marked provincial effects. Urban residents of Heilongjiang, Jilin, and Inner Mongolia are significantly less likely to participate in the labor force than residents of Liaoning in 1982 and 1990. Similarly, residents of Beijing and Hebei are more likely to participate in the labor force than those of Liaoning in 1982 and 1990. By 2000, there are no statistically significant provincial effects on labor force participation.

Overall, there are few discernable differences in the labor force participation of particular ethnic group in these provinces. In Table 10 we see that the Manchus were approximately 1.5% less likely than the Han who reside in the same areas to participate in the labor force in 1990 only. In other years, the labor force participation rates of the Han and Manchu are statistically indistinguishable.

¹⁹ Table 1-2, NBS and SEAC, Volume 1, pp. 4-27.

5.3.4 Mongolians

China's ethnic Mongolians reside mainly in Inner Mongolia (69%), Liaoning (12%), Jilin (3%), Hebei (3%), Xinjiang (3%), and Heilongjiang (2%).²⁰ The probit results based on data for these areas are presented in Table 11. The male-female differential is larger for residents of these provinces than that of the nation as a whole for each of the census years. Conversely, the married-unmarried differential for residents of these provinces is smaller than that of the country as whole in 1982 and 1990 but somewhat larger in 2000.

The results for education are very different in the Mongolian home provinces compared to national data. Illiterates and primary school graduates are much less likely to be in the labor force compared to junior middle school graduates in these provinces compared to national data for all census years. Notably, postsecondary graduates in these provinces are much more likely to be in the labor force in 1990 and 2000 compared to the national figures. In 1990, postsecondary graduates were 3 percentage points more likely to be in the labor force (relative to junior middle graduates) compared to 21 percentage points less likely in the national data. The gap narrows substantially in 2000, with individuals in these provinces retaining their 3 percentage point advantage compared to no significant difference for the national figures.

The ethnicity variables behaved similarly in the national and the Mongolian home province tables. Only in the 1982 census were the Mongolians shown to be 6 percentage points less likely than the Han to be in the labor force in the Mongolian home provinces, (compared to a 3-percentage-point differential in the national data). This result could reflect a tendency for Mongolians to do better outside their home provinces in that year. For 1990 and 2000, there is no major difference in LFPR of the Mongolians and Han in either the Mongolian areas of principal residence or the nation as a whole.

5.3.5 Uygurs

China's Uygur population is heavily concentrated in Xinjiang (99%).²¹ We therefore restrict our sub-sample to Xinjiang and compare patterns of labor force participation across ethnic groups within that region. In comparing the labor force patterns of Xinjiang residents to the national data, we observe that the male-female differential is already quite high in 1982—19% and yet rises to 27% by 2000. (See Table 12.) The differential in participation rates for

²⁰ Table 1-2, NBS and SEAC, Volume 1, pp. 4-27.

²¹ Table 1-2, NBS and SEAC, Volume 1, pp. 4-27.

married in comparison to unmarried individuals follows national patterns, especially in 1990 and 2000.

In 1990 and 2000, the effects on labor force participation in Xinjiang are more consistent with the predictions of human capital theory than are the national figures. Those with postsecondary training are 7% more likely to be in the labor force than junior middle school graduates in 1990. This differential rises to over 15% in 2000. Recall that the national data showed a disadvantage to postsecondary education relative to junior middle school in 1990, and no differential in 2000.

Looking at the ethnicity results in Table 12 we find some quite remarkable changes across the census years. In 1982 the labor force participation rate of the Uygurs was indistinguishable from that of the Han, while by 1990, the Uygurs were 9% more likely than the Han to be in the labor force. In a complete reversal, by 2000 the Han were 9% more likely than the Uygurs to be in the labor force. The labor force participation rates of the Kazaks and the Hui were indistinguishable from that of the Han in 2000.

5.3.6 Yi

The Yi reside predominantly in the three southwestern provinces of Yunnan (61%), Sichuan (27%) and Guizhou (11%).²² There are some differences in the patterns of labor force participation of the urban residents of these provinces from those of the national data. (See Table 13.) First, the differential in male-female participation rates stays fairly constant at 9-10% over the 1982 to 1990 period and then rises very sharply to 24 percent by 2000. Second, there is no clear pattern of change in the differential of participation rates for the married in comparison to the unmarried. The differential starts at 11% in 1982, rises to 16% in 1990 and then drops slightly to 14% in 2000. The effects of postsecondary education on labor force participation follow the national trends—those with some college experience are 31% less likely to be in the labor force in 1982 than those with junior middle school educations. By 2000 there is no discernable difference in the labor force participation rates of these groups.

Examining the ethnicity results in Table 13, we see that in 1982 and 1990 the Yi living in these 3 southwestern provinces were 6-7% more likely to be in the labor force than the Han but equally likely in 2000. By 2000, we see the Bai and the Bouyei, respectively, are 10-14% more

²² Table 1-2, NBS and SEAC, Volume 1, pp. 4-27.

likely to be in the labor force than the Han while the Hui and Dong are 12-17% less likely, respectively.

5.3.7 Zhuang

The Zhuang, the largest of China's ethnic minorities in terms of population, reside in the south of China. The majority of the Zhuang live in Guangxi (88%), Yunnan (7%) and Guangdong (4%).²³ The urban residents of these three provinces have labor force participation patterns that diverge substantially from national trends. In 2000, married individuals were less likely to be in the labor force than their unmarried counterparts (See Table 14). This is the geographic area where we observe this result. The increase in the male-female differential is more muted in these provinces than in the nation as a whole, starting out at 9% in 1982 and rising to 19% by 2000.

The Zhuang are 4% more likely to be in the labor force than the Han in 1990 and 2000. By 2000, the Bai of this region are 9% more likely to be in the labor force than the Han, while the Yi's labor force participation rate is indiscernible from the Han.

6. Concluding Comments

If geography and local conditions, rather than ethnicity, are responsible for the differences in labor force participation between ethnic groups observed in the national data, such differences should narrow or disappear when geographic location is properly controlled. We controlled for geographical differences by restricting the sample for each ethnic group under study to those provinces where most members of that group reside.

While our geographically restricted regressions reveal sizable differences from the national results in terms of the effects of the human capital, sex and marriage variables on labor force participation, we cannot conclude that the apparent ethnic differentials in labor force participation are primarily the result of regional variation and local conditions. For example, the marginal change in labor force participation attributable to being Korean is about the same in the national and Northeastern data. The gap between Korean and Han labor force participation is basically the same in the Northeast as elsewhere. However, for two of the ethnic groups considered in this paper, the Yi and the Zhuang, controlling for location did result in a narrowing of the gap (in two of the three censuses, 1990 and 2000) between their participation rates and

²³ Table 1-2, NBS and SEAC, Volume 1, pp. 4-27.

those of the Han. In other words, the participation rates of the Yi and the Zhuang look a lot more like those of their Han neighbors than those of the Han across the entire country.

For some groups, like the Hui in the 1990 census, the probability of labor force participation was higher relative to the Han in the home provinces than in the national data, suggesting that Hui outside the home provinces face some disadvantage relative to the Han. By the 2000 census, this situation reversed, with the Hui in their home provinces showing a lower probability of labor force participation than the Han in the same areas. We observe a similar result for the Uygurs in the 1990 census.

For a few groups, e.g. the Mongolians in 1982 and the Manchus in 1990, labor force participation differentials with the Han are lower in the home provinces than elsewhere. In both cases these results are due to lower labor force participation rates by these ethnic groups in their home provinces rather than as a result of higher than typical labor force participation by the Han.

If we looked only at the descriptive statistics based on national data, it appears that the Yi and Zhuang are more likely to be in the labor force than the Han. Are these results robust or do they disappear after controlling for location and other factors? In the descriptive statistics, the urban Yi in 1982 and 1990 are 10% more likely than the Han to be in the labor force and 5% more likely in 2000. In the probit regressions that control for human capital, sex, age, and location (both those based on national data and those based on areas of principal residence) the Yi continue to participate in the labor force at rates at least 6% above those of the Han in 1982 and 1990. However, by 2000 their rates of participations become indistinguishable from the Han. In contrast, the effect of being Zhuang appears to be robust—the Zhuang remain 4% more likely than the Han to be in the labor force in both 1990 and 2000.

Thus, we find that geography has limited explanatory power in explaining differences in the probability of labor force participation between the larger Chinese ethnic minorities and the majority Han. For some groups in some years, location explains some of the differences in labor force participation. But geography does not explain the largest disparities such as those between the Han and Koreans. We find ourselves unable to make any generalizations about the causal factors underlying the significant differences in labor force participation rates of particular ethnic groups in China.

Table 1: Population of China's Major Ethnic Groups* in Five Censuses

Nationality	1953	1964	1982	1990	2000
Total	577,856,141	691,220,104	1,003,913,927	1,130,510,638	1,242,612,226
Han	542,824,056	651,296,368	936,674,944	1,039,187,548	1,137,386,112
Mongolian	1,451,035	1,965,766	3,411,367	4,802,407	5,813,947
Hui	3,530,498	4,473,147	7,228,398	8,612,001	9,816,805
Tibetan	2,753,081	2,501,174	3,847,875	4,593,072	5,416,021
Uygur	3,610,462	3,996,311	5,963,491	7,207,024	8,399,393
Miao	2,490,874	2,782,088	5,021,175	7,383,622	8,940,116
Yi	3,227,750	3,380,960	5,453,564	6,578,524	7,762,272
Zhuang	6,864,585	8,386,140	13,383,086	15,555,820	16,178,811
Bouyei	1,237,714	1,348,055	2,119,345	2,548,294	2,971,460
Korean	1,111,275	1,339,569	1,765,204	1,923,361	1,923,842
Manchu	2,399,228	2,695,675	4,304,981	9,846,776	10,682,262
Dong	712,802	836,123	1,426,400	2,508,624	2,960,293
Yao	665,933	857,265	1,411,967	2,137,033	2,637,421
Bai	567,119	706,623	1,132,224	1,598,052	1,858,063
Tujia	0	524,755	2,836,814	5,725,049	8,028,133
Hani	481,220	628,727	1,058,806	1,254,800	1,439,673
Kazak	509,375	491,637	907,546	1,110,758	1,250,458
Dai	478,966	535,389	839,496	1,025,402	1,158,989
Li	360,950	438,813	887,107	1,112,498	1,247,814
All Others	2,579,218	2,035,519	4,240,137	5,799,973	6,740,341

* All ethnic groups with population greater than 1 million in 2000.

Source: Table 1-1, NBS and SEAC, Vol.1, pp. 2-3.

**Table 2: Labor Force Participation Rates
for Each Ethnic Group**

Ethnic Group	1982	1990	2000
Han	78.54	78.65	76.57
Zhuang	82.75	81.05	82.94
Manchu	69.40	74.02	74.22
Hui	79.92	78.57	74.32
Uyгур	82.81	79.31	79.10
Miao	86.66	82.84	84.81
Tujia	83.58	83.01	81.80
Yi	88.56	86.70	88.29
Mongolian	67.71	71.50	75.26
Tibetan	84.02	80.48	80.64
Yao	85.09	84.08	87.80
Bouyei	83.90	83.92	83.90
Dong	84.45	82.87	83.02
Korean	72.84	73.51	62.16
Bai	82.54	78.91	81.97
Hani	84.88	86.17	87.37
Li	81.74	82.37	83.81
Dai	86.17	82.54	84.70
Kazak	63.02	77.30	67.82
Others	76.81	82.06	85.29
Total (all 56)	78.70	78.77	76.90

Data Sources for Table 2: 1% Micro samples of the Population Censuses of China for the years 1982 and 1990, and 0.095% Micro sample of the Population Census of China 2000.

Table 3a: Urban LFPR for Each Ethnic Group

Ethnic Group	1982	1990	2000
Han	77.80	75.68	66.00
Zhuang	80.55	80.68	71.48
Manchu	75.04	71.38	61.53
Hui	77.46	74.71	61.55
Uygur	69.36	70.85	56.27
Miao	85.91	80.30	68.78
Tujia	69.27	79.97	69.43
Yi	86.72	85.23	70.63
Mongolian	70.79	76.45	61.93
Tibetan	71.45	39.42	52.69
Yao	71.11	68.79	74.19
Bouyei	82.30	79.63	75.42
Dong	66.18	78.26	64.12
Korean	75.27	73.54	55.40
Bai	78.90	76.77	72.50
Hani	66.67	68.97	62.07
Li	44.44	79.37	69.70
Dai	77.14	63.83	78.38
Kazak	66.46	66.00	58.06
Others	69.68	63.85	65.34
Total (all 56)	76.22	75.48	67.67

Table 3b: Rural LFPR for Each Ethnic Group

Ethnic Group	1982	1990	2000
Han	78.69	79.75	80.38
Zhuang	82.84	81.08	84.10
Manchu	67.79	74.90	77.90
Hui	80.94	81.28	80.72
Uygur	84.25	81.47	82.46
Miao	86.69	83.10	85.90
Tujia	83.72	83.53	82.93
Yi	88.67	86.86	89.17
Mongolian	67.38	69.94	77.94
Tibetan	84.32	80.74	82.04
Yao	85.24	84.28	88.52
Bouyei	84.01	84.62	84.74
Dong	84.59	83.15	84.34
Korean	72.00	73.48	68.73
Bai	82.89	79.72	82.94
Hani	84.99	86.23	88.10
Li	81.81	82.46	85.80
Dai	86.23	82.72	85.01
Kazak	62.90	79.39	68.55
Others	82.76	83.94	86.41
Total (all 56)	78.88	79.87	80.64

Table 4a: Female Urban LFPR for Each Ethnic Group

Ethnic Group	1982	1990	2000
Han	70.53	68.88	57.79
Zhuang	75.31	78.25	65.45
Manchu	65.25	59.91	52.83
Hui	70.49	69.44	51.65
Uygur	56.27	60.64	50.73
Miao	84.71	79.92	66.09
Tujia	69.89	79.40	63.44
Yi	83.41	84.84	67.26
Mongolian	63.61	70.06	55.15
Tibetan	62.31	55.71	59.21
Yao	84.09	68.55	70.27
Bouyei	80.43	76.87	64.44
Dong	47.62	70.91	61.36
Korean	70.56	66.11	48.15
Bai	78.28	77.78	67.92
Hani	55.17	80.00	69.23
Li		69.77	69.57
Dai	80.00	64.71	72.00
Kazak	56.58	55.33	51.52
Others	59.54	51.36	53.39
Total (all 56)	70.49	68.91	57.71

Table 4b: Male Urban LFPR for Each Ethnic Group

Ethnic Group	1982	1990	2000
Han	84.48	81.98	74.16
Zhuang	85.44	83.34	77.67
Manchu	83.07	81.30	70.33
Hui	84.57	79.88	71.48
Uygur	81.02	80.99	60.82
Miao	86.96	80.65	71.08
Tujia	68.60	80.46	75.00
Yi	89.72	85.59	73.38
Mongolian	77.25	82.98	69.73
Tibetan	79.66	31.16	47.25
Yao	58.70	68.97	76.79
Bouyei	83.85	81.93	86.52
Dong	74.47	82.58	65.52
Korean	80.31	81.29	63.37
Bai	79.35	75.67	76.12
Hani		44.44	56.25
Li	57.14	87.38	69.81
Dai	75.00	61.54	91.67
Kazak	75.61	76.67	65.52
Others	78.55	73.71	75.94
Total (all 56)	84.43	81.92	74.00

Data Sources for each of Tables 3a-4b: 1% Micro samples of the Population Censuses of China for the years 1982 and 1990, and 0.095% Micro sample of the Population Census of China 2000.

Table 5: Descriptive Statistics, National Samples

	1982		1990		2000	
	Urban	Rural	Urban	Rural	Urban	Rural
Labor Force Participation Rate	0.78	0.79	0.76	0.8	0.66	0.81
Male	0.52	0.51	0.52	0.51	0.51	0.51
Married	0.63	0.64	0.68	0.67	0.71	0.74
Mean Age	36.2	36.5	36.8	36.6	38.6	40
Education Level:						
Illiterate	0.18	0.38	0.14	0.24	0.06	0.14
Primary School	0.25	0.32	0.26	0.38	0.16	0.35
Junior Middle School	0.32	0.22	0.35	0.29	0.27	0.09
Senior Middle School	0.21	0.08	0.19	0.08	0.37	0.4
Postsecondary	0.04	0.003	0.06	0.006	0.14	0.02
Nationality (share):						
Han	0.960	0.935	0.960	0.917	0.958	0.900
Mongolian	0.002	0.003	0.003	0.004	0.003	0.005
Hui	0.012	0.006	0.011	0.006	0.01	0.007
Tibetan	0.0005	0.004	<.00001	0.005	0.0007	0.005
Uygur	0.003	0.006	0.004	0.006	0.003	0.008
Miao	0.001	0.005	0.002	0.008	0.002	0.008
Yi	0.002	0.005	0.002	0.005	0.001	0.008
Zhuang	0.003	0.014	0.004	0.015	0.005	0.02
Bouyi	0.001	0.002	0.001	0.002	0.0008	0.003
Korean	0.003	0.002	0.003	0.001	0.003	0.001
Manchu	0.006	0.004	0.007	0.008	0.008	0.009
Dong	0.0001	0.002	0.001	0.003	0.0006	0.003
Yao	0.0001	0.001	0.0001	0.003	0.0004	0.003
Bai	0.0006	0.001	0.001	0.001	0.0005	0.002
Tujia	0.0001	0.003	0.004	0.008	0.002	0.008
Hani	0.00003	0.001	0.00001	0.001	0.0001	0.001
Kazak	0.0001	0.001	0.0002	0.0005	0.0003	0.001
Dai	0.00004	0.001	0.00002	0.0008	0.0002	0.001
Li	<.00001	<.00001	0.00009	0.001	0.0004	0.001
Other Nationalities	0.00007	0.004	0.001	0.005	0.001	0.007

Table 5 continued on next page.

Table 5 (Continued): Descriptive Statistics, National Samples

Anhui	0.032	0.05	0.049	0.056	0.028	0.052
Beijing	0.043	0.005	0.025	0.005	0.035	0.005
Chongqing	*	*	*	*	0.022	0.023
Fujian	0.022	0.025	0.028	0.026	0.025	0.027
Guangdong	0.049	0.061	0.047	0.049	0.101	0.056
Gunagxi	0.017	0.038	0.022	0.037	0.021	0.038
Gansu	0.013	0.02	0.02	0.019	0.014	0.022
Guizhou	0.016	0.025	0.018	0.025	0.014	0.031
Hebei	0.042	0.058	0.038	0.05	0.04	0.062
Hubei	0.038	0.05	0.07	0.036	0.054	0.04
Heilongjiang	0.056	0.027	0.059	0.022	0.043	0.025
Henan	0.046	0.079	0.037	0.079	0.046	0.083
Hunan	0.036	0.058	0.073	0.11	0.034	0.054
Hainan	**	**	0.0008	0.007	0.005	0.006
Jilin	0.037	0.02	0.032	0.018	0.032	0.019
Jiangsu	0.051	0.067	0.039	0.066	0.062	0.061
Jiangxi	0.026	0.032	0.042	0.031	0.018	0.031
Liaoning	0.085	0.029	0.059	0.028	0.067	0.028
Inner Mongolia	0.021	0.018	0.028	0.018	0.02	0.02
Ningxi	0.004	0.003	0.003	0.003	0.004	0.004
Qinghai	0.004	0.003	0.003	0.005	0.003	0.004
Sichuan	0.078	0.102	0.062	0.099	0.042	0.07
Shandong	0.059	0.08	0.062	0.069	0.077	0.078
Shanghai	0.051	0.008	0.036	0.006	0.047	0.005
Shanxi	0.028	0.025	0.026	0.023	0.024	0.027
Shaanxi	0.027	0.029	0.028	0.026	0.023	0.03
Tianjin	0.038	0.003	0.026	0.004	0.019	0.005
Xinjiang	0.016	0.011	0.017	0.01	0.016	0.015
Tibet	0.001	0.002	<0.001	0.002	0.0007	0.002
Yunnan	0.016	0.032	0.018	0.032	0.016	0.039
Zhejiang	0.048	0.04	0.032	0.039	0.047	0.038
Number of Observations	214,891	1,117,021	478,284	1,350,881	228,861	673,115

* Prior to 1997, Chongqing was part of Sichuan Province

** Prior to 1984, Hainan Island was part of Guangdong Province

Data Sources:

20% Random samples of the 1% Micro samples of the Population Censuses of China for 1982 and 1990

0.095% Micro sample of the Population Census of China 2000.

Table 6
Probability of Labor Force Participation, Marginal Changes
By Human Capital, Sex, and Ethnicity
(Urban Dwellers, Age 15 and Older)

	1982	1990	2000
Male	.128***	.175***	.237***
Married	.367***	.128***	.071***
Illiterate	-.203***	-.074***	.087***
Primary School	-.065***	-.019***	.023***
Senior Middle	-.036***	-.042***	.049***
Postsecondary	-.222***	-.211***	.001
Age	-.01***	.058***	.086***
Age squared	.9e-05***	-.001***	-.001***
Number of obs.	214891	478284	228861
Obs. P	.7765861	.7551936	.6588715
Pred. P	.8175574	.7997201	.6517794

Entries are the change in the probability that an individual is in the labor force when the binary variable toggles from zero to one, evaluated at the sample mean

Entries for age and age squared are the marginal change in the probability that an individual is in the labor force resulting from a one unit change, evaluated at the sample mean.

Asterisks indicate the significance of the underlying probit coefficient.

*** indicates significance at the one percent level or better;

** indicates significance at the five percent level;

* indicates significance at the ten percent level.

Data Sources:

20% Random samples of the 1% Micro samples of the Population Censuses of China for 1982 and 1990

0.095% Micro sample of the Population Census of China 2000.

Table 7
Probability of Labor Force Participation, Marginal Changes
By Human Capital, Sex, Ethnicity and Province
(Urban Dwellers, Age 15 and Older)

	1982		1990		2000	
Human Capital and Sex						
Male	0.146	***	0.172	***	0.239	***
Married	0.070	***	0.130	***	0.075	***
Illiterate	-0.261	***	-0.092	***	0.072	***
Primary School	-0.125	***	-0.028	***	0.004	***
Senior Middle	-0.052	***	-0.040	***	0.044	***
Postsecondary	-0.348	***	-0.213	***	0.004	
Age	-0.051	***	0.059	***	0.087	***
Age squared	0.000		-0.001	***	0.001	***
Ethnicity						
Mongolian	-0.034	**	0.027	***	0.001	
Hui	-0.001		-0.002	***	-0.046	***
Tibetan	-0.017				-0.251	***
Uygur	0.003		0.048	***	-0.089	***
Miao	0.067	**	0.064	***	0.021	
Yi	0.098	***	0.072	***	0.026	***
Zhuang	-0.004		0.049	***	0.047	***
Bouyi	0.039		0.025		0.138	***
Korean	-0.004		0.025		-0.057	***
Manchu	-0.005		-0.009		-0.190	
Dong	-0.242	*	-0.024		-0.068	
Yao	-0.007		-0.230	***	0.034	
Bai	0.001		-0.035	*	0.065	
Tujia	-0.336		0.042	***	0.005	
Hani			0.069		-0.052	
Kazak	-0.071		0.019		-0.097	
Dai	0.036		-0.067		0.104	
Li			-0.078		0.005	
Other Nationalities	-0.045		-0.064	***	-0.002	

Table 7 continued on next page.

Table 7 Continued

Province	B		D		F	
Anhui	0.014	**	0.027	***	-0.047	***
Beijing	-0.022	**	-0.027	***	-0.063	***
Chongqing					-0.004	
Fujian	-0.041	***	-0.116	***	-0.004	
Guangdong	0.016	***	-0.069	***	0.053	***
Guangxi	-0.002		0.036	***	-0.037	***
Gansu	-0.018		-0.042	***	-0.065	***
Guizhou	0.035	***	0.034	***	-0.079	***
Hebei	-0.038	***	-0.026	***	-0.078	***
Hubei	-0.013		0.032	***	-0.057	***
Heilongjiang	-0.139	***	-0.161	***	-0.181	***
Henan	0.019	***	-0.005		-0.038	***
Hunan	-0.013	***	-0.011	***	-0.072	***
Hainan			-0.017		-0.024	
Jilin	-0.144	***	-0.086	***	-0.167	***
Jiangxi	-0.039	***			-0.103	***
Liaoning	-0.059	***	-0.065	***	-0.090	***
Inner Mongolia	-0.081	***	-0.109	***	-0.127	***
Ningxi	-0.083	***	-0.094	***	-0.010	
Qinghai	-0.082	***	-0.070	***	-0.133	***
Sichuan	0.028	***	0.022	***	-0.042	***
Shandong	0.005		0.021	***	-0.017	***
Shanghai	-0.075	***	-0.012	**	-0.069	***
Shanxi	-0.056	***	-0.075	***	-0.125	***
Shaanxi	-0.013		-0.060	***	-0.109	***
Tianjin	-0.025	**	-0.067	***	-0.121	***
Xinjiang	-0.095	***	-0.146	***	-0.099	***
Tibet	-0.046	***			0.077	
Yunnan	0.032	***	0.049	***	-0.042	***
Zhejiang	0.065	***	0.035	***	0.023	***
Number of obs.	214773		478284		228861	
Obs. P	0.777		0.755		0.659	
Pred. P	0.828		0.804		0.654	

Entries are the change in the probability that an individual is in the labor force when the binary variable toggles from zero to one, evaluated at the sample mean. Entries for age and age squared are the marginal change in the probability that an individual is in the labor force resulting from a one unit change, evaluated at the sample mean.

Asterisks indicate the significance of the underlying probit coefficient.

*** indicates significance at the one percent level or better;

** indicates significance at the five percent level;

* indicates significance at the ten percent level.

Data Sources:

20% Random samples of the 1% Micro samples of the Population Censuses of China for 1982 and 1990

0.095% Micro sample of the Population Census of China 2000.

**Table 8: Hui Relative to Others in Same Geographic Areas
Probability of Labor Force Participation, Marginal Changes
By Human Capital, Sex, Ethnicity and Province
Urban Dwellers, Age 15 and Older
Ningxia, Gansu, Henan, Qinghai, Yunnan, Hebei, and Shandong Only**

	1982	1990	2000
Human Capital and Sex			
Male	0.131***	0.132***	0.228***
Married	0.089***	0.152***	0.096***
Illiterate	-0.238***	-0.043***	0.070***
Primary School	-0.082***	-0.007***	0.020***
Senior Middle	-0.060***	-0.075***	0.066***
Postsecondary	-0.330***	-0.205***	0.023***
Age	0.041***	0.050***	0.088***
Age squared	-0.001***	-0.001***	-0.001***
Ethnicity			
Mongolian	0.050	0.103***	-0.037
Hui	0.007	0.030***	-0.051***
Tibetan	-0.081	-0.506***	-0.186**
Uygur	-0.361	-0.017	
Miao	0.091***	0.072***	0.239**
Yi	0.090***	0.083***	0.047
Zhuang	0.068**	-0.131***	-0.331***
Bouyi	-0.139	0.029	
Korean	0.037	0.112**	-0.054
Manchu	0.020	-0.017**	-0.047
Dong		-0.490***	-0.221
Yao		-0.461**	
Bai	0.006	0.000	0.106**
Tujia	-0.210	0.058	0.120
Hani	0.021	0.065	0.078
Kazak	-0.008		
Dai	-0.062	-0.073	0.136
Li			-0.479
Other Nationalities	-0.208***	-0.222***	-0.145*
Province			
Gansu	0.035***	0.041***	-0.055**
Hebei	0.018***	0.054***	-0.067***
Henan	0.062***	0.074***	-0.027**
Qinghai	-0.011	0.030***	-0.125***
Shandong	0.048***	0.092***	-0.008
Yunnan	0.072***	0.102***	-0.032
Number of Observations	199932	433341	45687
Observed Probability	0.797	0.772	0.668
Predicted Probability	0.849	0.823	0.672

Entries are the change in the probability that an individual is in the labor force when the binary variable toggles from zero to one, evaluated at the sample mean
 Entries for age and age squared are the marginal change in the probability that an individual is in the labor force resulting from a one unit change, evaluated at the sample mean.
 Asterisks indicate the significance of the underlying probit coefficient.

*** indicates significance at the one percent level or better;

** indicates significance at the five percent level;

* indicates significance at the ten percent level.

Data Sources:

20% Random samples of the 1% Micro samples of the Population Censuses of China for 1982 and 1990

0.095% Micro sample of the Population Census of China 2000.

**Table 9: Koreans Relative to Others in Same Geographic Areas
Probability of Labor Force Participation, Marginal Changes
By Human Capital, Sex, Ethnicity and Province
Urban Dwellers, Age 15 and Older
Jilin, Heilongjiang, and Liaoning Provinces Only**

	1982	1990	2000
Human Capital and Sex			
Male	0.212***	0.262***	0.282***
Married	0.017***	0.121***	0.083***
Illiterate	-0.498***	-0.273***	-0.114***
Primary School	-0.253***	-0.111	-0.088***
Senior Middle	-0.041***	0.001	-0.028***
Postsecondary	-0.382***	0.013***	0.016
Age	0.065***	0.068***	0.101***
Age squared	-0.001***	-0.001***	-0.001***
Ethnicity			
Mongolian	-0.059***	-0.033**	-0.064
Hui	-0.004	-0.023**	-0.049
Tibetan	0.016		
Uygur			-0.177
Miao		0.150	-0.211
Yi		-0.234	
Zhuang	-0.248	-0.079	-0.040
Bouyi			0.041
Korean	0.002	-0.004	-0.059***
Manchu	-0.008	-0.023***	-0.004
Dong	-0.331	-0.318**	
Tujia		0.014	-0.012
Dai		-0.097	
Other Nationalities	-0.079***	-0.045**	0.166**
Province			
Heilongjiang	0.004	-0.075***	-0.009
Liaoning	0.066***	0.009***	0.083
Number of Observations	192853	359074	32483
Observed Probability	0.740	0.719	0.607
Predicted Probability	0.787	0.754	0.562

Entries are the change in the probability that an individual is in the labor force when the binary variable toggles from zero to one, evaluated at the sample mean

Entries for age and age squared are the marginal change in the probability that an individual is in the labor force resulting from a one unit change, evaluated at the sample mean.

Asterisks indicate the significance of the underlying probit coefficient.

*** indicates significance at the one percent level or better;

** indicates significance at the five percent level;

* indicates significance at the ten percent level.

Data Sources:

20% Random samples of the 1% Micro samples of the Population Censuses of China for 1982 and 1990

0.095% Micro sample of the Population Census of China 2000.

**Table 10: Manchus Relative to Others in Same Geographic Areas
Probability of Labor Force Participation, Marginal Changes
By Human Capital, Sex, Ethnicity and Province
Urban Dwellers, Age 15 and Older
Liaoning, Hebei, Heilongjiang, Jilin, Inner Mongolia, and Beijing Only**

	1982	1990	2000
Human Capital and Sex			
Male	0.192***	0.239***	0.275***
Married	0.039***	0.112***	0.097***
Illiterate	-0.476***	-0.232***	-0.078***
Primary School	-0.232***	-0.105***	-0.078***
Senior Middle	-0.038***	-0.013***	-0.014**
Postsecondary	-0.367***	-0.013***	0.015*
Age	0.060***	0.067***	0.105***
Age squared	-0.001***	-0.001***	-0.001***
Ethnicity			
Mongolian	-0.060***	0.028***	-0.020
Hui	0.001	0.044***	-0.045**
Tibetan	-0.652***	-0.225	
Uygur	-0.369**	0.044	0.197
Miao		0.131*	-0.135
Yi		-0.123	0.054
Zhuang	-0.193**	-0.009	-0.229*
Bouyi	-0.059		-0.280
Korean	0.001	0.000	-0.071***
Manchu	-0.004	-0.015***	-0.016
Dong	-0.432	-0.034	-0.423*
Yao	-0.156	-0.587**	
Bai	-0.152	-0.247	
Tujia		-0.009	0.023
Kazak	-0.071		-0.142
Dai		-0.199	
Li			-0.413
Other Nationalities	-0.084***	-0.063***	0.086
Province			
Beijing	0.026***	0.005***	0.019
Hebei	0.026***	0.055***	0.015
Heilongjiang	-0.062***	-0.082***	-0.095
Jilin	-0.067***	-0.009***	-0.083
Inner Mongolia	-0.002	-0.038***	-0.035
Liaoning			
Number of Observations	305843	576931	54109
Observed Probability	0.756	0.730	0.618
Predicted Probability	0.810	0.770	0.579

Entries are the change in the probability that an individual is in the labor force when the binary variable toggles from zero to one, evaluated at the sample mean. Entries for age and age squared are the marginal change in the probability that an individual is in the labor force resulting from a one unit change, evaluated at the sample mean.

Asterisks indicate the significance of the underlying probit coefficient.

*** indicates significance at the one percent level or better;

** indicates significance at the five percent level;

* indicates significance at the ten percent level.

Data Sources:

**Table 11: Mongolians Relative to Others in the Same Geographic Areas
Probability of Labor Force Participation, Marginal Changes
By Human Capital, Sex, Ethnicity and Province
Urban Dwellers, Age 15 and Older
Inner Mongolia, Liaoning, Jilin, Hebei, Xinjiang, and Heilongjiang Only**

	1982	1990	2000
Human Capital and Sex			
Male	0.204***	0.246***	0.280***
Married	0.038***	0.111***	0.088***
Illiterate	-0.445***	-0.223***	-0.101***
Primary School	-0.219***	-0.098***	-0.073***
Senior Middle	-0.052***	-0.013***	-0.017***
Postsecondary	-0.363***	0.030***	0.033***
Age	0.060***	0.067***	0.105***
Age squared	-0.001***	-0.001***	-0.001***
Ethnicity			
Mongolian	-0.063***	0.026***	-0.009
Hui	0.011	0.041***	-0.027
Tibetan	0.016	0.131	-0.058
Uygur	0.022***	0.075***	-0.092***
Miao		0.093	-0.321*
Yi		-0.149	-0.140
Zhuang	-0.184**	0.005	-0.123
Bouyi	-0.366*		0.052
Korean	0.007	0.000	-0.062***
Manchu	-0.007	-0.014***	-0.008
Dong	-0.334	-0.209	-0.337
Yao		-0.221	
Bai	-0.146		
Tujia	-0.101	-0.031	0.022
Dai		-0.021	-0.130*
Kazak	-0.076**	-0.102**	
Other	-0.085***	-0.039***	0.083
Province			
Hebei	0.029***	0.089***	0.050***
Heilongjiang	-0.060***	-0.044***	-0.058***
Jilin	-0.064***	0.028***	-0.048***
Liaoning	0.004	0.037***	0.035***
Xinjiang	-0.020***	-0.040***	0.022
Number of Observations	277961	558426	49715
Observed Probability	0.752	0.727	0.617
Predicted Probability	0.802	0.765	0.581

Entries are the change in the probability that an individual is in the labor force when the binary variable toggles from zero to one, evaluated at the sample mean.

Entries for age and age squared are the marginal change in the probability that an individual is in the labor force resulting from a one unit change, evaluated at the sample mean.

Asterisks indicate the significance of the underlying probit coefficient.

*** indicates significance at the one percent level or better;

** indicates significance at the five percent level;

* indicates significance at the ten percent level.

Data Sources:

20% Random samples of the 1% Micro samples of the Population Censuses of China for 1982 and 1990

0.095% Micro sample of the Population Census of China 2000.

**Table 12: Uygurs Relative to Others in Same Geographic Areas
Probability of Labor Force Participation, Marginal Changes
By Human Capital, Sex, Ethnicity and Province
Urban Dwellers, Age 15 and Older, Xinjiang Only**

	1982	1990	2000
Human Capital and Sex			
Male	0.194***	0.236***	0.271***
Married	0.119***	0.134***	0.076**
Illiterate	-0.224***	-0.212***	-0.170***
Primary School	-0.126***	-0.098***	-0.067**
Senior Middle	-0.083***	0.008	-0.007
Postsecondary	-0.252***	0.073***	0.154***
Age	0.060***	0.088***	0.112***
Age squared	-0.001***	-0.001***	-0.002***
Ethnicity			
Mongolian	-0.162	-0.037	0.097
Hui	0.026	-0.010	0.011
Tibetan		0.161	
Uygur	-0.006	0.089***	-0.089***
Miao		-0.061	
Yi			-0.379
Zhuang	-0.225*	-0.024	
Manchu		0.058	0.157
Dong	-0.311		
Bai	-0.083		
Tujia	-0.059	-0.085	
Hani			
Kazak	-0.080**	-0.019	-0.127
Other Nationalities	-0.059	-0.007	0.068
Number of Observations	17211	40832	3656
Observed Probability	0.744	0.694	0.635
Predicted Probability	0.786	0.728	0.620

Entries are the change in the probability that an individual is in the labor force when the binary variable toggles from zero to one, evaluated at the sample mean

Entries for age and age squared are the marginal change in the probability that an individual is in the labor force resulting from a one unit change, evaluated at the sample mean.

Asterisks indicate the significance of the underlying probit coefficient.

*** indicates significance at the one percent level or better;

** indicates significance at the five percent level;

* indicates significance at the ten percent level.

Data Sources:

20% Random samples of the 1% Micro samples of the Population Censuses of China for 1982 and 1990
0.095% Micro sample of the Population Census of China 2000.

**Table 13: Yi Relative to Others in Same Geographic Areas
Probability of Labor Force Participation, Marginal Changes
By Human Capital, Sex, Ethnicity and Province
(Urban Dwellers, Age 15 and Older)
Yunnan, Sichuan and Guizhou Provinces Only**

	1982	1990	2000
Human Capital and Sex			
Male	0.086***	0.096***	0.237***
Married	0.109***	0.158***	0.136***
Illiterate	-0.058***	0.071***	0.157***
Primary School	-0.028***	0.057***	0.058***
Senior Middle	-0.102***	-0.058***	0.048***
Postsecondary	-0.313***	-0.228***	-0.018
Age	0.038***	0.052***	0.079***
Age squared	-0.001***	-0.001***	-0.001***
Ethnicity			
Mongolian	-0.027	-0.114*	-0.130
Hui	-0.008	-0.030**	-0.124**
Tibetan	-0.324**	-0.344***	-0.314
Uygur			
Miao	0.064***	0.051***	0.019
Yi	0.063***	0.065***	0.035
Zhuang	0.023	-0.143***	-0.210*
Bouyi	0.015	0.030***	0.144***
Korean	-0.380	-0.097	
Manchu	-0.016	-0.091**	-0.098
Dong	-0.229***	0.041***	-0.167***
Yao		-0.326***	
Bai	0.011	-0.014*	0.099**
Tujia		-0.096***	-0.069
Hani	-0.0003	-0.074	0.056
Kazak			
Dai	-0.026	-0.136*	0.133
Li	-0.310	0.096**	-0.185
Other Nationalities	-0.026	-0.094***	-0.097*
Province			
Guizhou		-0.025***	-0.035***
Sichuan	-0.003	-0.020***	-0.003
Number of Observations	117127	235735	16353
Observed Probability	0.809	0.780	0.657
Predicted Probability	0.867	0.840	0.657

Entries are the change in the probability that an individual is in the labor force when the binary variable toggles from zero to one, evaluated at the sample mean. Entries for age and age squared are the marginal change in the probability that an individual is in the labor force resulting from a one unit change, evaluated at the sample mean.

Asterisks indicate the significance of the underlying probit coefficient.

*** indicates significance at the one percent level or better;

** indicates significance at the five percent level;

* indicates significance at the ten percent level.

Data Sources:

20% Random samples of the 1% Micro samples of the Population Censuses of China for 1982 and 1990
0.095% Micro sample of the Population Census of China 2000.

**Table 14: Zhuang Relative to Others in Same Geographic Areas
Probability of Labor Force Participation, Marginal Changes
By Human Capital, Sex, Ethnicity and Province
Urban Dwellers, Age 15 and Older
Guangxi, Yunnan, and Guangdong Provinces Only**

	1982	1990	2000
Human Capital and Sex			
Male	0.087***	0.134***	0.194***
Married	0.057***	0.113***	-0.057***
Illiterate	-0.145***	-0.027***	0.037**
Primary School	-0.057***	0.017***	0.037***
Senior Middle	-0.043***	-0.040***	0.097***
Postsecondary	-0.308***	-0.412***	0.009
Age	0.050***	0.067***	0.074***
Age squared	-0.001***	-0.001***	-0.001***
Ethnicity			
Mongolian	-0.087	-0.047	0.094
Hui	0.001	-0.046***	-0.129***
Tibetan		-0.036	
Uygur			
Miao	0.060**	0.089***	0.152***
Yi	0.081***	0.092***	0.048
Zhuang	0.011	.044***	0.039**
Bouyi	-0.037	-0.105	
Korean		0.154	-0.121
Manchu	0.063	-0.021	-0.217***
Dong	-0.293**	-0.077	0.185**
Yao	-0.091	0.006	0.091*
Bai	0.010	-0.003	0.092**
Tujia		0.071	0.103
Hani	0.006	0.014	0.078
Kazak			
Dai	-0.049	-0.081	0.118*
Li	-0.426**	-0.165	-0.167
Other Nationalities	-0.216***	-0.075**	-0.018
Province			
Guangdong	0.011***	-0.074***	0.075***
Yunnan	0.023***	0.014***	0.000
Guangxi			
Number of Observations	87679	206381	31375
Observed Probability	0.800	0.745	0.723
Predicted Probability	0.850	0.802	0.735

Entries are the change in the probability that an individual is in the labor force when the binary variable toggles from zero to one, evaluated at the sample mean. Entries for age and age squared are the marginal change in the probability that an individual is in the labor force resulting from a one unit change, evaluated at the sample mean.

Asterisks indicate the significance of the underlying probit coefficient.

*** indicates significance at the one percent level or better;

** indicates significance at the five percent level;

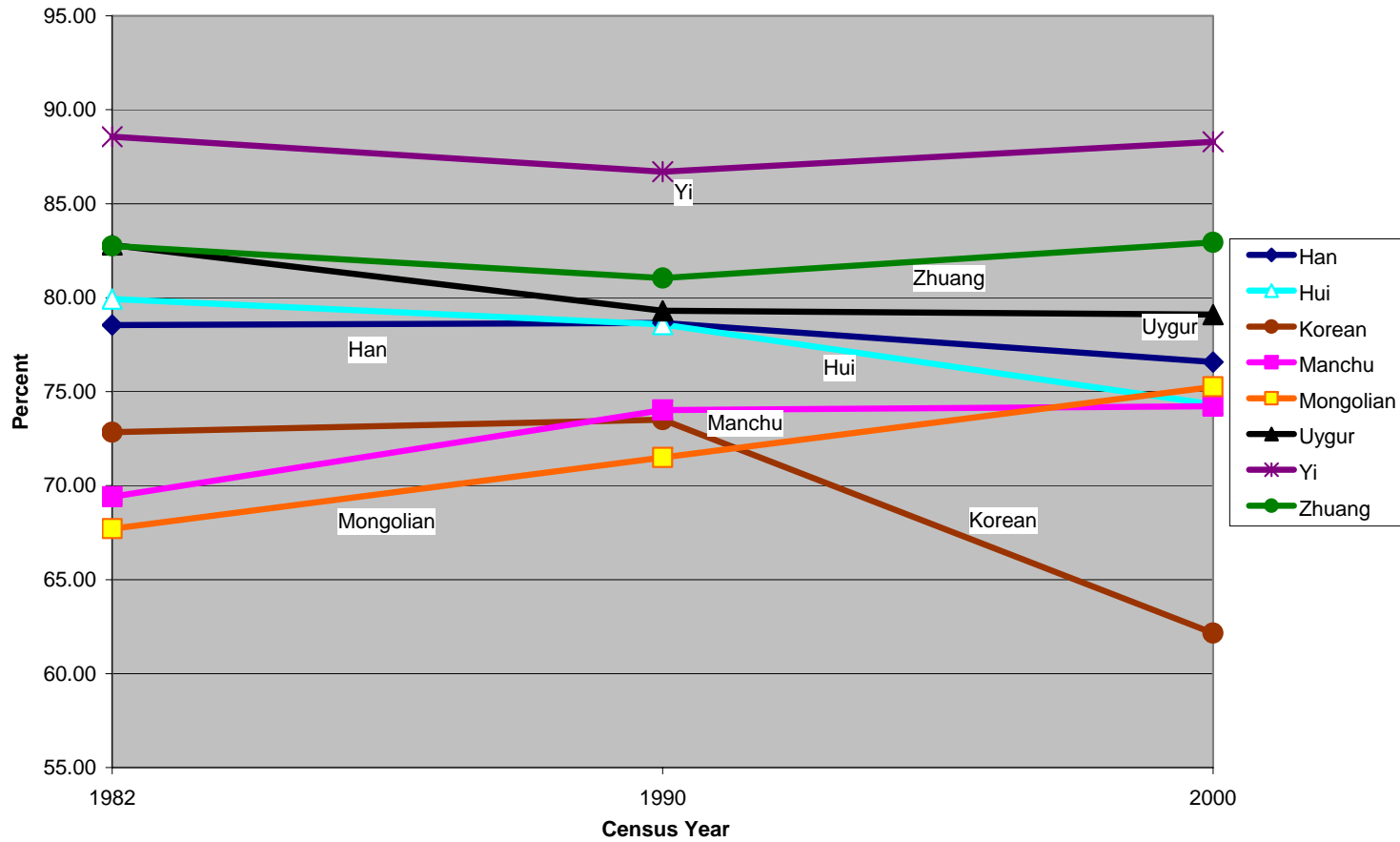
* indicates significance at the ten percent level.

Data Sources:

20% Random samples of the 1% Micro samples of the Population Censuses of China for 1982 and 1990

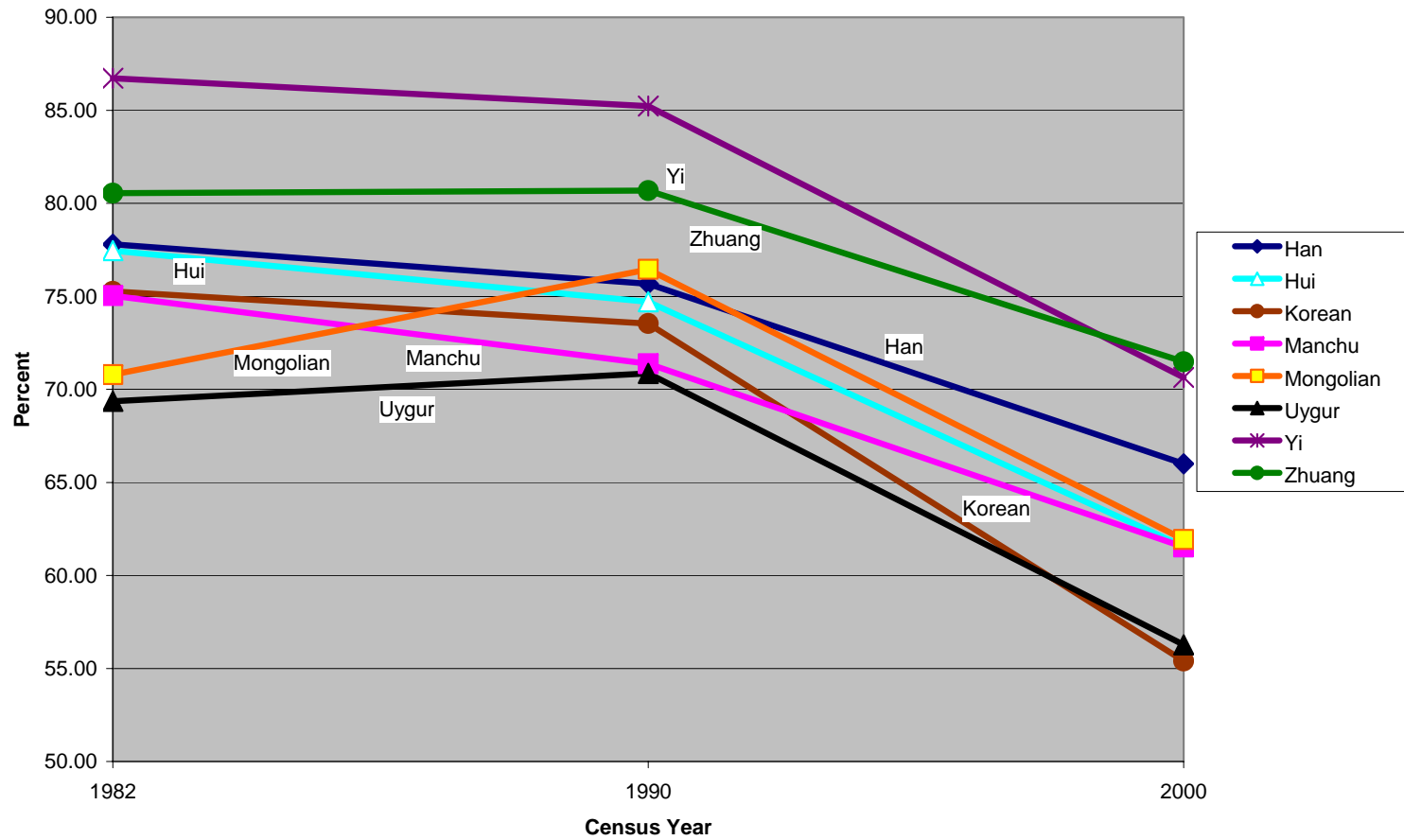
0.095% Micro sample of the Population Census of China 2000.

Figure 1: Labor Force Participation Rates by Ethnicity



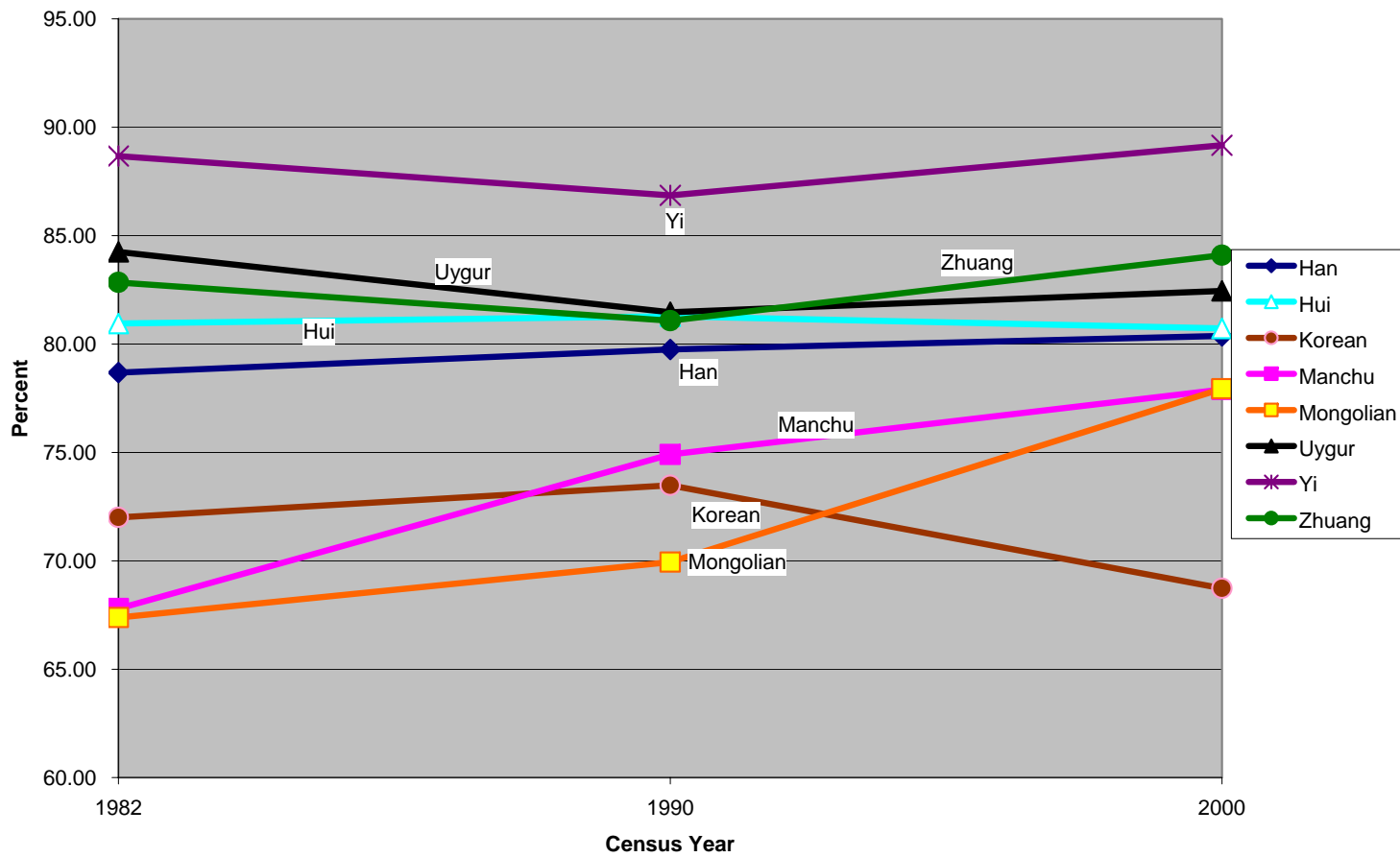
Data Source: 1% samples of 1982 and 1990 Population Censuses of China and 0.095% sample of 2000 Population Census of China

Figure 2: Urban Labor Force Participation Rates by Ethnicity



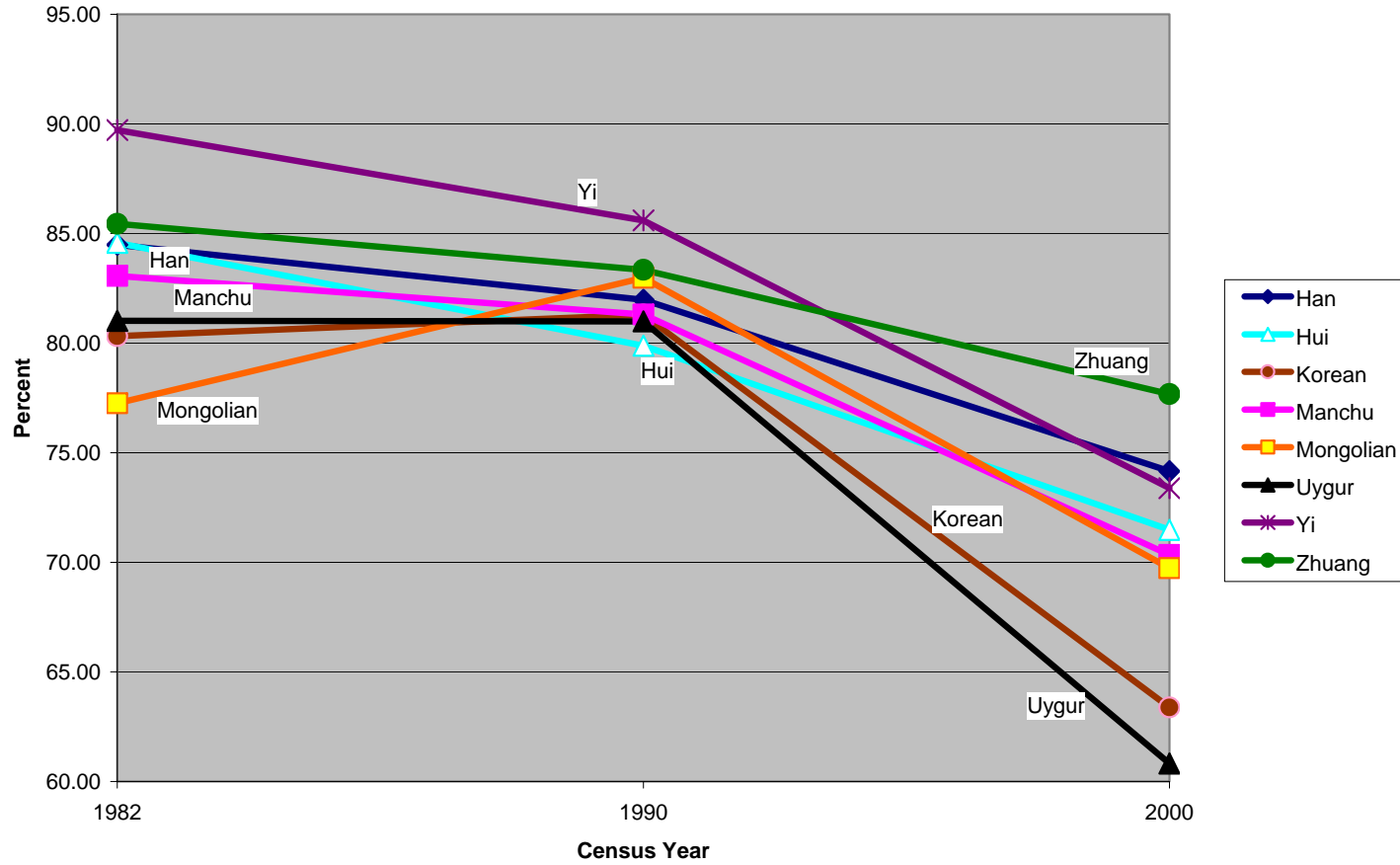
Data Source: 1% samples of 1982 and 1990 Population Censuses of China and 0.095% sample of 2000 Population Census of China

Figure 3: Rural Labor Force Participation Rates by Ethnicity



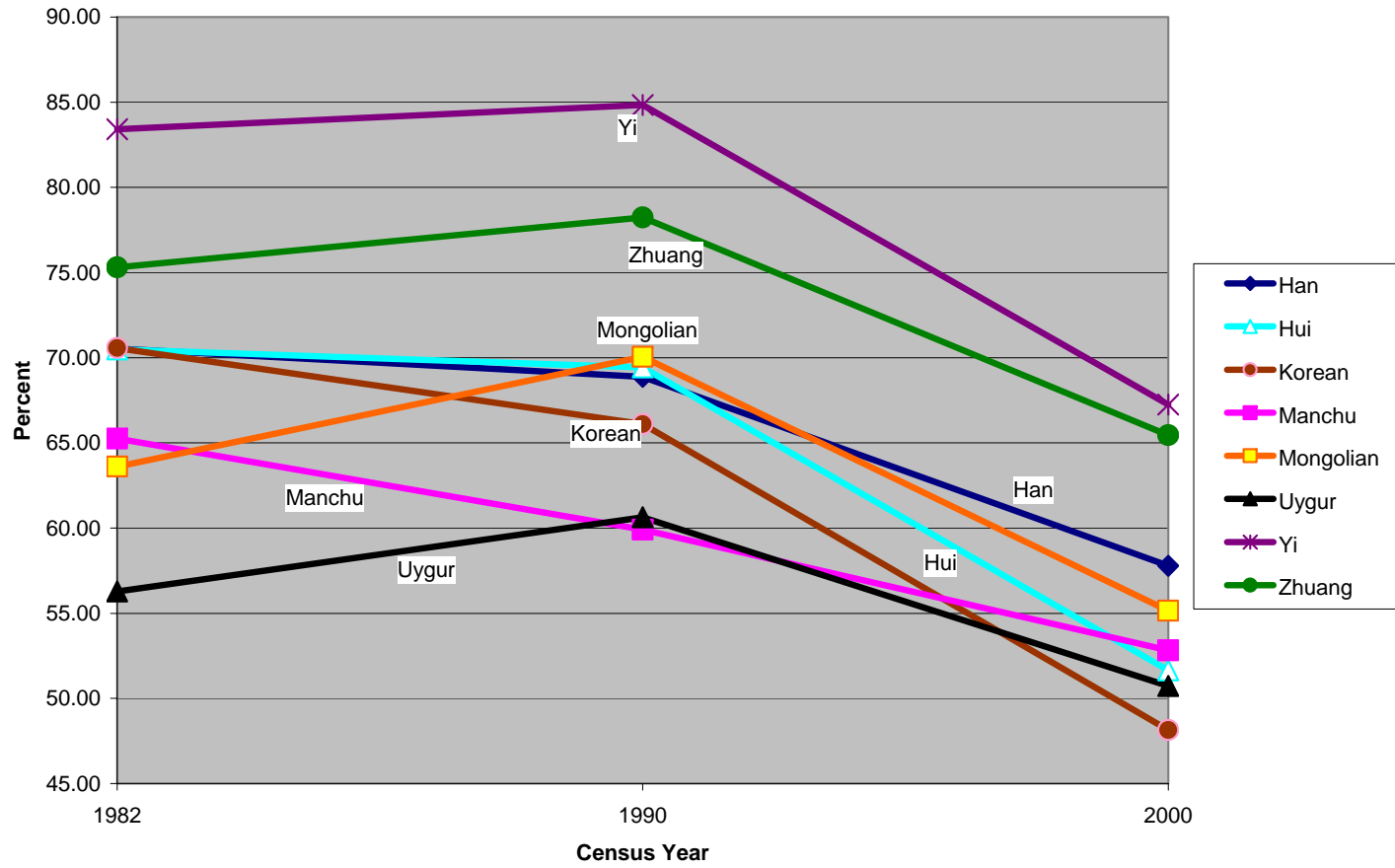
Data Source: 1% samples of 1982 and 1990 Population Censuses of China and 0.095% sample of 2000 Population Census of China

Figure 4: Urban Male Labor Force Participation Rates By Ethnicity



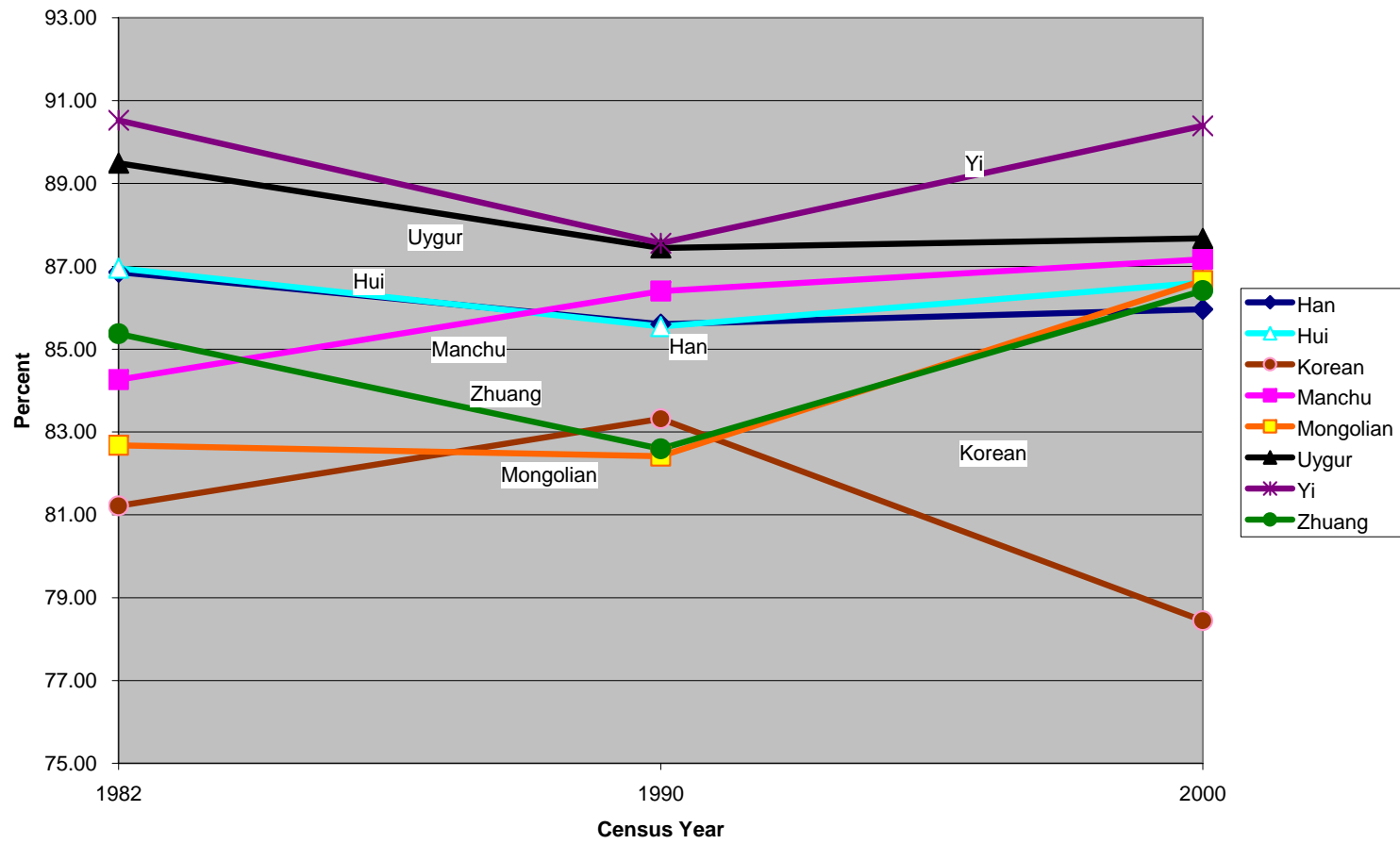
Data Source: 1% samples of 1982 and 1990 Population Censuses of China and 0.095% sample of 2000 Population Census of China

Figure 5: Urban Female Labor Force Participation Rates By Ethnicity



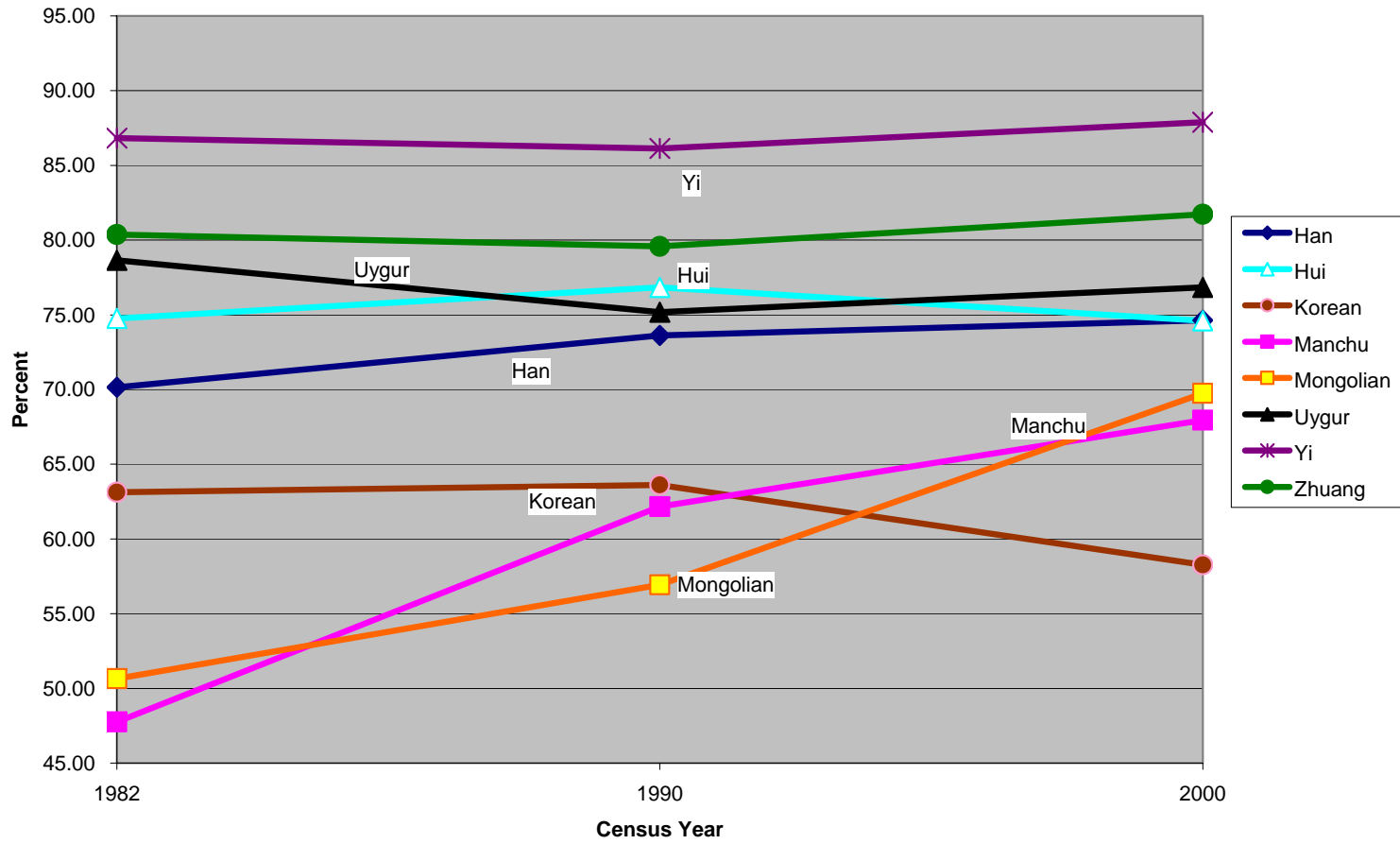
Data Source: 1% samples of 1982 and 1990 Population Censuses of China and 0.095% sample of 2000 Population Census of China

Figure 6: Rural Male Labor Force Participation Rates by Ethnicity



Data Source: 1% samples of 1982 and 1990 Population Censuses of China and 0.095% sample of 2000 Population Census of China

Figure 7: Rural Female Labor Force Participation Rates by Ethnicity



Data Source: 1% samples of 1982 and 1990 Population Censuses of China and 0.095% sample of 2000 Population Census of China

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