THE DEREGULATION OF PEOPLE FLOWS IN CHINA: DID THE STRUCTURE OF MIGRATION CHANGE?*

by

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Abstract

Since the late 1970s, China's government has gradually eased restrictions on internal migration. The easing of restrictions, along with rapid growth of the Chinese economy, the forces of globalization, and substantial increases in foreign direct investment and local construction spending, have greatly stimulated internal migration. The recent availability of Chinese migration data for three different periods – 1985-90, 1995-2000 and 2000-05 – allows us to pose two fundamental questions: (1) How well does a traditional modified gravity model of migration account for variations in interprovincial migration within and across periods; and (2) as economic reforms in China have deepened, has the structure of migration changed? We estimate different versions of a modified gravity model of interprovincial migration and make two contributions. First, we evaluate the robustness of the model within and across periods. Second, we analyze the influences of provincial differences in fixed asset investment and foreign direct investment on migration, variables never considered in earlier research. Data from the National Census and China Statistical Press are used. Across models and periods, the strongest determinants of migration are distance, provincial differences in climate, past migration flows and provincial differences in per capita incomes. The most important determinants of migration today are distance, the risk of unemployment in the source province, climatic differences, having friends, family and other connections from your home province already residing in the destination province, the location of the destination province and provincial differences in foreign direct investment. The evidence also indicates that higher relative FDI in the destination attracts migrants, but higher construction spending appears to *deter* them. As more data on the Chinese case become available, further research is necessary to address model specification, simultaneity and data measurement issues.

I. INTRODUCTION

For researchers studying internal migration in transition economies, China is a tremendously valuable natural experiment. Since the 1980s, there has been a gradual easing of restrictions on internal migration in China.[1] During the same period, several broad comprehensive market reforms[2], globalization and large infusions of foreign direct investment all created considerable prosperity in China, but also contributed to significant interregional income inequality. Consequently, China has experienced a surge in internal migration since the 1980s. Based on the 1% population sample survey of 1987, it is

[1] For those not familiar with the migration-related policy changes in China, between 1949 and 1978 migration within China was very strictly controlled by the government's *hukou* system, a household registration system that was designed to directly regulate population redistribution, as well as to provide the government with a mechanism for gathering population statistics and to identify personal status. Under the hukou system, households had to register with the government, the government assigned persons jobs and rationed living necessities in urban areas. If a person wanted to move, approval had to be obtained from his/her local government. Consequently, intra- and interprovincial migration were rare, except for situations involving "planned" migration from the Eastern parts of the country to the much less-populated Western areas during the Cultural Revolution period of the 1960s and 1970s. Since 1978, when the government initiated the *Comprehensive Economic Reform* (CER) program, the hukou system has been incrementally dismantled. The first step towards dismantling came with the introduction of identity cards in the late 1980s, which allowed persons to travel around China without showing an official "permission" letter from his/her local government. The next step was the abolition of grain rationing coupons in the early 1990s; these coupons were the means by which people obtained food rations and they could only be used in the place of residence. With the abolition of the coupons, individuals were free to obtain food where they wished. A third step occurred in 2001, when residency in small towns and townships was open to all rural workers who were legally employed and had a place to live. At roughly the same time, medium-sized cities and some provincial capitals eliminated ceilings on the number of rural workers who could apply for permanent residence status. Some very large cities such as Shanghai and Beijing concurrently eased restrictions on the in-migration of rural workers.

[2] The first reform was the decollectivization of agriculture (also known as the inception of the *household responsibility system*) in rural areas. The most important aspect of this reform is that it freed workers to choose how they wanted to allocate their labor supplies. This encouraged many workers to leave the agricultural sector and seek employment in other sectors, most notably enterprises in urban areas. The second consisted of a set of market-oriented reforms in the urban areas during the late 1980s. The government, in an effort to attract foreign direct investment, created favorable provisions, e.g. tax concessions and attractive terms for leasing land, to many coastal cities so they could establish economic development areas and high technology development zones. In the 1990s, the government gave special tax and regulatory treatment to certain areas (called "special economic zones"), which generated large amounts of FDI in those areas. These economic reforms had the effect of creating large real income differentials between the Eastern provinces and the rest of China, encouraging Eastward migration.

estimated that over 30 million Chinese relocated either within or between provinces during 1982-87. Using data from the 2000 Chinese Census, researchers have estimated that intra- and interprovincial migration during 1995-2000 totaled over 144 million persons, or about 12% of average provincial population during that period. According to the 2005 Census, the level of migration during 2000-05 is estimated to have risen even further, to nearly 161 million persons. Much of the surge in migration since the mid 1990s has involved rural residents moving to urban areas, particularly the metropolitan coastal cities and Beijing. In addition, the government's Xibu Da Kaifa ("Go West") policy, enacted in 1999, has encouraged Westward migration.

Prior to 1987, research on internal migration in China was severely hampered because national level data on internal migration were generally non-existent. The first national survey that included questions about migration was the 1987 1% population survey and 1990 was the first year in which the government collected data on migration in the population census. The 1990 census asked questions about both inter- and intra-provincial migration for the period 1985-90 and the 2000 (2005) census included questions about migration during 1995-2000 (2000-05). There have also been a number of household surveys in very specific areas of the country, which have included questions about migration.

As a result of these relatively new data on migration patterns, a small and mostly empirical literature focusing on the determinants of internal migration in China has begun to emerge. This literature consists of a handful of studies utilizing micro-data obtained from special household surveys (see, for example, Liang (2001), Liang and White (1996,1997), Zhao (1997,1999a, 1999b, 2002, 2003), Liang, Chen and Gu (2002)) and a

few studies utilizing province-level aggregate data provided by the central government (see, for example, Lin, Wang and Zhao (2004), Poncet (2006) and Bao, Hou and Shi (2006)). The primary objective of these studies has been to ascertain to what extent an individual's propensity to migrate (or the strength of aggregate migration flows) are driven by regional differences in labor markets.

Among the studies that have utilized province-level aggregate data on migration flows, the general finding has been that flows were responsive to regional differences in income and unemployment rates during the 1980s and 1990s, controlling for other factors, but the responsiveness of migration to changes in those rates was generally greater during the 1990s.[3] These studies also found that migration flows are inversely related and very sensitive to distance between origin and destination (Lin, Wang and Zhao (2004), Poncet (2006), Bao, Hou and Shi (2006)) and domestic trade barriers (Poncet (2006)), positively related to the destination population's level of educational attainment[4] (Lin, Wang and Zhao (2004)) and responsive to regional differences in climate (Lin, Wang and Zhao (2004)), the agricultural industry's share of provincial employment (Bao, Hou and Shi (2006)) and the share of the destination province's population consisting of persons belonging to minority groups (Bao, Hou and Shi (2006)). All these earlier results suggest that as Chinese economic reforms deepened in

[3] For example, Lin, Wang and Zhao (2004), using 1990 and 2000 Census data on interprovincial migrant flows, found that after controlling for distance, relative educational attainment, relative unemployment rates, the relative degree of urbanization and climatic differences, migration did not respond to income differences during 1985-90, but was relatively sensitive to those differences during 1995-2000. Poncet (2006), utilizing both Chinese Census data from 1990 and 2000 and 1995 National Population Survey data, found that migration was responsive to regional income differences during the 1980s and 1990s, but the responsiveness was greater in the later period. Both studies attribute the greater sensitivity of interprovincial migration to spatial differences in income to the following reason: During the later period, there was a significant reduction in migration barriers. Both studies measured income as mean per capita income in each province, obtained from the National Bureau of Statistics. In contrast, however, Bao, Hou and Shi (2006), using data on per capita GDP to proxy provincial income per capita, found that during the 1990s there was actually no relationship between income and interprovincial migration flows.

[4] Only for the 1990s, however.

the 1990s, the structure of internal migration may have changed considerably, a topic which deserves much further investigation.

In earlier work (Bao, et al (forthcoming)), we estimated a traditional internal migration model, extended to include controls for provincial investments and assorted provincial socio-economic indicators. Studying the 1985-90 and 1995-2000 periods, we expanded our understanding of Chinese internal migration by establishing that: (1) past migration substantially influences current migration in China; and (2) greater levels of foreign direct investment (FDI) in the destination province stimulate in-migration, particularly during the later period. While not the focal point of that study, we found that when the two migration periods were compared the structure of migration appears to have changed between the two decades. In this study, we focus on the nature of the changing structure of migration in China between the 1980s and the 2000s. We utilize three waves of Census data to study migration patterns between 1985-90, 1995-2000 and 2000-05. The fundamental question posed in this paper is: As the economic reforms in China deepened, did the structure of province-to-province migration change? We estimate several versions of the modified gravity model of internal migration, due originally to Greenwood (1969, 1997), to see whether: (i) the kinds of factors influencing migration patterns during 1985-2005 changed over time; and (ii) the sensitivity of migration to its determinants changed over time.

As with our previous study, this study emphasizes the influence of migrant networks in the destination province and provincial fixed asset and foreign direct investments on province-to-province migration rates. Literature beginning with Bartel (1989) argues that new immigrants tend to move to places where similar immigrants already reside, i.e.

where there is a well-established "migrant network (enclave)." The presence of friends, family and other contacts already at the destination tends to lower the psychic and information costs generated by migration. Zhao (2003) examined the influence of pre-existing migrant communities on Chinese internal migration using micro-level household survey data from a very specific location in rural China and found that experienced migrants have a positive and significant effect on subsequent migration, although return migrants apparently have no effect. One of the goals of our study is to ascertain whether Zhao's results are generalizable to all of China through a study utilizing aggregate data on province-to-province migration flows.

We distinguish between domestic fixed asset investment (which consists primarily of residential and commercial construction spending) and foreign direct investment (FDI). Between the 1980s and 1990s, there have been substantial increases in both types of investment spending in most of the provinces. According to the China Statistical Press, mean annual per capita FDI in each province soared from US$3.14 during 1985-90 to US$71.40 during 2000-2005. Much of this increase went to specific areas in the country designated by the government to receive special treatment with respect to economic development. According to the same source, mean annual fixed asset investment per capita in each province rose from 89 Yuan during 1985-90 to over 700 Yuan during 2000-05. We hypothesize that higher investment spending in a province could induce "demand-pull" migration; greater spending on infrastructure, for example, will increase the demand for labor, including migrant labor. Liang and White (1997) tested for the effects of province-level foreign investment on the likelihood of an individual migrating from the province using data taken from a 10% random sample of the China 2/1,000

Fertility and Birth Control Survey, and found no evidence of such effects. We contend that any effects of FDI or domestic fixed asset investment spending on migration decisions are much more likely to be observed in aggregate data, as opposed to micro-data sets obtained from household surveys in very small parts of the country. One goal of this study is to examine the relationship between aggregate migration flows and both types of investment.

We also consider the possible influences of industry and ethnic mixes, the degree of urbanization in the province, and regional biases in migration patterns. We hypothesize that the extent of emigration will be influenced by the dominance of manufacturing in the destination province relative to the origin province, as well as the dominance of the minority population (which was also examined by Bao, Hou and Shi (2006)).

The remainder of this paper is organized as follows. In the next section, we discuss various versions of the modified gravity model that will be estimated, followed by a discussion of our data set and empirical results. Concluding remarks are provided in the final section.

II. APPLICATIONS OF THE MODIFIED GRAVITY MODEL

We estimate several versions of the traditional modified gravity model of internal migration, applied here to the case of interprovincial migration in a developing country experiencing comprehensive market reforms.[5] Unique to this version is the inclusion of provincial investment and migrant network controls and various other controls for a province's economic, political and social characteristics. The dependent variable is the log of the gross interprovincial emigration rate ($\log(M_{ij})$), calculated as the volume of

[5] See Greenwood (1969, 1997)

emigration from province i to province j divided by total interprovincial migration from province i. We estimate different permutations of the following equation:

$$(1)\ \log M_{ij} = \alpha_0 + \alpha_1 \log D_{ij} + \alpha_2 \log NETWORK + \alpha_3 \log FDI_{ji} + \alpha_4 \log FAI_{ji} + \alpha_5 (\log FDI_{ji})(\log FAI_{ji}) + \alpha_6 \log Y_{ji} + \alpha_7 \log E_i + \alpha_8 \log E_j + \alpha_9 \log U_i + \alpha_{10} \log U_j + \alpha_{11} \log MANEMP_{ji} + \alpha_{12} \log URBAN_{ji} + \alpha_{13} \log MINORITY_{ji} + \alpha_{14} WARM_{ji} + \varepsilon_{ij},$$

where:

D_{ij} = railway distance (in kilometers) between the capital city of province i and that of province j;

NETWORK = the size of the migrant community residing in province j that previously migrated from province i, measured as the ratio of past migration flows to population;

FDI_{ji} = the ratio of real foreign direct investment per capita in province j to real foreign direct investment per capita in province i;

FAI_{ji} = the ratio of real domestic fixed asset investment per capita in province j to real domestic fixed asset investment per capita in province i;

Y_{ji} = the ratio of real per capita income in province j to real per capita income in province i;

E_i, E_j = the level of educational attainment in province i and j, respectively;

U_i, U_j = unemployment rates during the week preceding the implementation of the census in province i and j, respectively;

$MANEMP_{ji}$ = ratio of the share of province j's employment in the manufacturing sector to the share of province i's employment in the manufacturing sector;

$URBAN_{ji}$ = ratio of the urban share of province j's population to the urban share of province i's population;

$MINORITY_{ji}$ = ratio of province j's minority population share to province i's minority population share

$WARM_{ji}$ = the ratio of mean yearly temperature in the capital city of province j to mean yearly temperature in the capital city of province i;

ε_{ij} = random error term.

Railway distance and the migration rate are hypothesized to be inversely related; the greater is distance, the greater will be the direct costs of migration (train or bus fare, food and lodging expenses en route and upon arrival, for example) and the indirect costs of migration (for example, lost income due to down time between employment in the origin and employment in the destination, as well as the psychic costs of migration).

We hypothesize that the migration rate from province i to province j will be positively related to the NETWORK variable. The greater is the proportionate size of the migrant community already in the destination, *ceteris paribus* the lower will be the costs of migrating because there will tend to be more information flowing back to the origin about employment and business opportunities, housing, schools, recreational opportunities, etc. Furthermore, there will be lower psychic costs of migration because a larger migrant community in the destination will tend to be a greater source of comfort, security and familiarity for those contemplating migration.

We hypothesize that the migration rate could be positively or negatively related to either type of investment spending in the destination relative to the origin. On the one hand, an exogenous increase in investment in the destination would be expected to generate higher demand for labor and there will thus be "demand-pull" migration to the province. Conversely, higher investment in the origin will reduce the incentive to migrate from there, all other things equal, due to more attractive labor market opportunities at home. According to this argument, therefore, α_3 and α_4 will be positive.[6] On the other

[6] There is some question as to whether investment is exogenous to migration, and an argument can be made for two-way causality between migration and investment; Higher investment in a province draws in more migrants, but greater migration stimulates investment owing to greater demand for housing and infrastructure. Due to lack of data on the determinants of investment, we do not pursue a simultaneous equations approach to the estimation of migration and investment, but we do discuss this as an avenue for future research in the concluding section.

hand, one could argue for a negative sign on these two coefficients for several reasons. First, if greater investment in the origin province is focused on infrastructure spending, specifically roads, highways and public transportation, then the costs of moving out of the province will be reduced, which could encourage out-migration and encourage immigration to the destination province.[7] A second possibility is that provinces that are targeted for relatively high levels of investment spending could be provinces that have the greatest need for infrastructure spending, i.e. are the most undeveloped and backward. In those provinces, there could be a greater propensity to migrate out (or a lower propensity to migrate in). In other words, relatively high-investment provinces could be those that have particular characteristics that discourage immigration and encourage emigration.[8]

Our empirical specification above includes an interaction term between the two types of investment, which accounts for the possibility that greater hiring of migrant labor by foreign-financed (domestic-financed) firms may lead to less supply of migrant labor to domestic-financed (foreign-financed) firms. For example, suppose increased FDI results in greater construction spending in the destination province, stimulating in-migration. However, construction firms financed by FDI compete with internally-financed firms for the same pool of imported labor. Consequently, increased demand for migrant labor by foreign-financed firms may induce less supply of migrant labor to those firms when there is a higher level of fixed asset investment. By the same reasoning, the drop in out-

[7] We thank Jiang Shiqing for making this point.
[8] We thank Amita Shah for making this point. This argument is actually an econometric one, as opposed to a theoretical one, for it relates to omitted variables bias. If the province has characteristics that encourage emigration or discourage immigration and they are not accounted for in the empirical specification, then negative estimated investment coefficients could reflect the effects of these omitted characteristics on emigration rates.

migration due to higher FDI in the origin could be less the higher is domestic fixed asset investment. The result is that $\alpha_5 < 0$. Note also that when this interaction term is included, the marginal effect of FDI on migration is $\alpha_3 + \alpha_5 \log(FAI)$ and the marginal effect of fixed asset investment is $\alpha_4 + \alpha_5 \log(FDI)$.

The ratio of the share of the destination province's employment in manufacturing to the same share in the origin province is included as a control for industry mix. The relationship between the relative dominance of manufacturing employment in the destination province and immigration is expected to be positive. Manufacturing jobs are generally higher-skilled and higher-paying compared to, for example, jobs in the agricultural sector. Therefore, provinces with relatively larger manufacturing labor markets should attract relatively more migrants, all other things equal, especially from provinces that have large agricultural sectors.

The ratio of the destination to origin urban population shares is a control for population density. Provinces that are relatively more urbanized have different amenities, different types of jobs available, different standards of living, etc., that, all other things equal, will influence migration flows. For example, the proportion of skilled positions in more urban provinces is typically higher, which may encourage more immigration because such positions tend to be more attractive to prospective migrants.

Following Bao, Hou and Shi (2006, pp. 335), we include a control for the relative proportion of the destination's population that is minority.[9] We include this variable for several reasons and postulate that its effect on migration could be positive or negative.

[9] The proportion of a province's population that is minority was computed in the following way:

$$\%\ \text{of minority} = \left(\frac{\text{total population - Han population}}{\text{total population}}\right) x100.$$

First, this variable may proxy general political conditions in the province, e.g. provinces with larger minority population shares may have more political divisiveness than other provinces, which may influence migration patterns. Second, there are several economic reasons why the minority population share may influence migration. As Bao, Hou and Shi (2006) point out, provinces with relatively large minority population shares tend to lack many basic service industries, hence entrepreneurial migrants seeking to start service businesses may find these provinces profitable places to establish businesses. On the other hand, professionals seeking salaried positions may be less interested in migrating to provinces with higher minority shares because they may perceive such provinces to have more limited high-skill employment opportunities.

We hypothesize that migration rates will be positively related to real relative income in the destination (Y_{ji}), since the returns to migrating will be higher the greater is the real relative return to supplying one's labor services in the destination. The migration rate is hypothesized to be positively related to the level of educational attainment in the destination (E_j) because the existence of a better educated labor force there usually means a distribution of higher quality employment opportunities. However, using the same type of argument, greater educational attainment in the origin (a higher value of E_i) is hypothesized to be inversely related to the migration rate. A higher relative unemployment rate in the destination (U_j) is expected to discourage migration, but a higher unemployment rate in the origin (U_i) is expected to encourage migration. Relative mean yearly temperature in the destination (T_{ji}) is included as a control for provincial differences in amenities. It is presumed that migrants prefer warmer provinces, all other things equal, hence migration rates to relatively warmer provinces should be higher.

III. DESCRIPTION OF DATA

For our study of migration patterns prior to 2000, we extend the data set used by Lin, Wang and Zhao (2004) in their study of interprovincial migration in China.[10] The entire data set consists of 2,345 observations at the province level spanning three periods of migration – 1985-90 (790 observations), 1995-2000 (765 observations and 2000-05 (790 observations) -- over 29 provinces.[11] Each of the 29 provinces was a prospective destination and a point of origin for migration flows. Because of the log-linear functional form for equation (1), the data set does not include any observations for which the emigration rate, as well as the relative size of the migrant community, are zero.

Different versions of equation (1) were estimated separately for each sub-sample. First, for each period of migration the same equation used by Lin, Wang and Zhao (2004) was estimated. The explanatory variables in that equation include distance, the two education variables, the two unemployment rate variables, the urban share variable and the ratio of temperatures variable. We wanted to replicate Lin, Wang and Zhao's estimation for each of the periods so we could compare our results, particularly for the most recent period (which they did not study), with their results for the 1980s and 1990s. Second, we estimated the same equation used by Greenwood (1969), which is Lin, Wang and Zhao's equation plus a migrant network variable.[12] No data were available for size of the migrant network during the 1980s, so we could not estimate the Greenwood equation

[10] Note that we replaced Lin, Wang and Zhao's (2004) calculations of the dependent variable with our own calculations. The reason is that there are some inaccuracies in the series used by Lin, Wang and Zhao, which they acknowledged in communications with us.

[11] As with Lin, Wang and Zhao (2004), we exclude Tibet because of missing observations and treat Chongqing as part of Sichuan.

[12] Lin, Wang and Zhao (2004) reference Greenwood's (1969) specification in their study, reporting their version as "…similar to the one estimated in Greenwood (1969, model 1.1 of table 1)." The two equations differ only in that Greenwood's specification includes the number of persons born in state i and living in state j (his study was of internal migration in the USA). We divide this variable through by destination population, a procedure not used by Greenwood.

for the 1980s sub-sample. Our third equation is equation (1), which is essentially Greenwood's specification plus the other variables we hypothesize to be important determinants of interprovincial migration – real FDI and fixed asset investments per capita, provincial manufacturing and minority population shares, and geographic controls.

Tables 1 - 3 show summary statistics for all variables used in our regressions for each of the three migration periods. Starting from the top of each table, we describe each variable, the data source from which the variable is drawn and the trends apparent in the data between the two periods:

(i) Gross interprovincial migration rate. This is the number of persons migrating from province i to province j divided by the number of persons migrating from province i. These numbers are calculated from 1% of the 1990 population census, 0.95% of the 2000 population census[13] and 1% of the 2005 population census, with all three sets of numbers published by the China Statistical Press. In the 1990 (2000, 2005) census, respondents were asked to report on migration activities during 1985-90 (1995-2000, 2000-05). Consequently, migration rates during each decade were calculated for the second half of each decade only. The mean volume of migration at the provincial level surged from over 365,000 persons during 1985-90 to nearly 1,500,000 during 1995-2000 and nearly

[13] As pointed out by Lin, Wang and Zhao, there is a small difference between the 1990 and 2000 censuses with respect to how migration is defined. If a person is observed to change residence *and* to change their household registration (a situation called *hukou* migration), then this movement as classified as "migration" in both censuses. If, however, the person is observed to change residence without changing registration (the case of *non-hukou* migration), then the movement is classified as "migration" only if the migrant has been away from the place of registration for a minimum period of time. In the 2000 census, this period is 6 months, but in the 1990 census it is one year. To account for this change in classification between the two periods, the migration numbers in both periods were standardized by discounting the 2000 numbers by a small amount, approximately 5%. For further details, see Lin, Wang and Zhao (2004, page 593).

1,650,000 during 2000-05.[14] The surge can generally be attributed to market reforms, deregulation of the hukou system and rising prosperity across the country. Note that mean provincial population rose by 9.44% between 1990 and 2000 and by 5.86% between 2000 and 2005. For the first two periods, Sichuan province experienced the highest volume of interprovincial emigration (approximately 1,457,000 persons during 1985-90 and 4,375,000 during 1995-2000), while Ningxia province had the lowest (approximately 54,500 persons during 1985-90 and 94,750 during 1995-2000). For the 1985-90 period, the highest migration rate was 79.34% (Guangxi to Guangdong) and the lowest was 0.02% (a tie between Jiangxi to Qinghai and Jiangxi to Ningxia). During 1995-2000, the highest reported migration rate was 87.32% (also Guangxi to Guangdong) and the lowest was 0.14% (Jiangxi to Qinghai). For 2000-05, the highest immigration rate was experienced by 36.53% (Guangdong) and the lowest was 0.19% (Qinghai); The highest emigration rate was 20.54% (Gansu) and the lowest was 0% (Xinjiang);

(ii) The size of the migrant network originally from province i that resides in province j as a percentage of destination population (NETWORK). An ideal measure of the size of a migrant network is the relative stock of previous migrants residing in the destination province at the time the migration decision is made. Unfortunately, unlike data sets in the USA and many European countries, such a stock measure is not available in Chinese data sets. Therefore, we had to measure the size of the migrant community using data on *past* migrant flows. There are no data on interprovincial migrant flows prior to 1985, so our regression analyses for the 1985-90 period could not include a control for migrant

[14] There are likely to be discrepancies in the calculations of these numbers between the two decades, for the reasons discussed in the preceding footnote.

network effects. However, in our regression analyses for the 1995-2000 and 2000-05 sub-samples, relative migrant flows during 1985-95 were used to proxy the relative size of the migrant network during each of these two migration periods. For the 1995-2000 period, we calculated the proportionate size of the community of migrant from province i residing in province j as of 2000 by taking the ratio of total migration flows from i to j during 1985-95 to j's population in 2000. For the 2000-05 period, our calculation involved taking the ratio of total migration flows from i to j during 1985-95 to j's population in 2005. The assumption underlying these calculations is that the stock of previous migrants is proportional to the size of the previous flow of migrants. While not an ideal measure, we are confident that data on flows over a longer (10-year) period should be relatively accurate. Using this approach, the average size of the migrant community in each province during 1995-2000 and 2000-05 was approximately 25,000 persons;

(iii) Real annual FDI per capita in the province. FDI data were obtained from the China Statistical Press. For each period, we used mean annual real FDI per capita during 1980-84 when regressing 1985-90 migration flows, 1990-94 mean annual real FDI per capita when regressing 1995-2000 migration flows and 2005 mean real FDI per capita when regressing 2000-05 migration flows. We lagged investment spending because we reasoned that it typically takes time for migration to respond to changes in spending on investment projects.[15] We adjusted the investment series for cost of living differences between the two decades, as well as across provinces within each decade, using national

[15] Note that this lagging procedure was not performed for 2000-05 due to missing observations for various provinces during 1995-2000.

government measures of provincial CPI and calculating both series at 1985 price levels. For most of the provinces, FDI numbers were available for each year, but for some there were missing years. For several provinces, no investment data were available for 1980-84, so we used the earliest year available as a proxy for that period. Therefore, our coefficient estimates for the early period may be influenced by measurement error in parts of the investment series. Note that the FDI series is in USA dollars, whereas the fixed asset investment series is in Yuan.

Comparing Tables 1-3, there was a dramatic increase in FDI between the three periods, reflecting a surge in interest by international investors in the Chinese economy during the 1990s. In both periods, the places receiving the highest levels of FDI on a per-person basis tended to be the main cities in China. During 1980-84, Beijing received the most FDI ($35.02 per capita), followed by Shanghai and Guangdong province. In contrast, Shandong received nearly zero FDI during 1980-84, followed by Gansu and Anhui provinces. During 1990-94, however, it was Shanghai that was the largest recipient of FDI ($50.53 per capita), whereas Qinghai province had the lowest ($0.38 per capita). In 2005, the largest recipient of FDI was again Shangai ($371.01 per capita and the lowest was Gansu ($0.70 per capita);

(iv) Domestic real annual fixed investment per capita. These numbers were calculated using the same methods as for real FDI per capita and with numbers obtained from China Statistical Press. China experienced a dramatic increase in fixed asset investment between the two decades, reflecting a boom in residential and commercial construction. However, there is great disparity across provinces with respect to the level of construction spending.

During 1980-84, Shanghai experienced the highest level of fixed investment (686.75 Yuan per capita), whereas Guangxi province experienced the lowest (57.65 Yuan per capita). During 1990-1994 Beijing experienced the highest level (approximately 1,900 Yuan per capita), whereas Guizhou experienced the lowest (approximately 160 Yuan per capita). In 2005, Shangai saw the largest level of fixed asset investment (1,901 yuan per capita), whereas Guizhou had the lowest (250 yuan per capita);

(v) The manufacturing sector's share of provincial employment.. These data were obtained from the China Statistical Yearbooks. Technically, manufacturing is classified as the "Secondary" industry in China and it includes construction as one of the components. Note that there is considerable variation in the dominance of the manufacturing sector across China. During 1980-85, Shanghai had the highest manufacturing sector share (approximately two-thirds of its GDP), whereas the lowest share was in Hainan (20.56%). During 1995-2000, Heilongjiang province had the highest manufacturing share (approximately 55%), whereas the lowest was in Hainan province (just under 21%). In 2005, Shandong had the largest manufacturing share (51.68%) and Hainan had the lowest (17.46%). Higher (lower) shares of output attributable to manufacturing result in higher (lower) shares of provincial manfucaturing employment

(vi) The share of the province's population that is minority. This is the percentage of population that is not Han. Because data on Han population shares for 1990 are not available, we used the 2000 data to proxy minority population shares for the first two migration periods. For the most recent migration period, we used information on Han

population shares from the 2005 census. One can see that the minority population share varied widely across provinces in both 2000 and 2005.

(vi) Mean real per capita income. Note that income data for the earlier period are for 1989 (deflated to 1985 levels), whereas for the later period are for 1999 (deflated to 1995 levels). For the 2000-05 period, per capita income data are not available, so we used instead per capita real GDP (obtained from China Statistical Press);

(vii) Mean level of educational attainment. For the first two periods, educational attainment was measured as mean years of schooling completed, whereas during the most recent period we used the percentage of population enrolled in colleges and universities.

Data on the remaining variables are from Lin, Wang and Zhao; please refer to their paper for details on data sources and measurement of these variables.

IV. COEFFICIENT ESTIMATES

Tables 4-6 show OLS coefficient estimates for the different versions of equation (1). Across the various specifications and periods, it is clear that the structure of migration in China has changed substantially over the last quarter century. To organize our discussion of the results, we will compare the results across the three empirical specifications separately for each period.

Estimates of the Lin, Wang and Zhao Model

Comparing the three periods, the most robust results are for distance between the origin and destination, income differences between origin and destination and temperature differences. The elasticity of the migration rate with respect to distance is slightly over 1, implying that a 1% increase in physical distance between the two provinces reduces the emigration rate by a little over 1%. This confirms the hypothesis that migration costs are an important determinant of people flows between provinces. Income differences affect migration rates, but the sensitivity of the emigration rate to the origin/destination gap appears to decline over time. During 1985-90, we estimate that a 1% increase in the ratio of destination to origin income raises the emigration rate by approximately 0.7%, however that estimated effect is nearly halved by 2000-05. Why do the returns to factor supply influence migration less in the later period? It could be that since so much migration already had taken place prior to 2000, the marginal returns to migration may have been reduced substantially. This, coupled with compensating differentials (increased cost of living, excess demand for quality housing, greater competition for jobs among migrant workers) may have caused migration to be a less attractive activity during the first 5 years of the millennium compared to the 1990s. The impact of climate differences on migration is found to rise substantially over time, suggesting that amenities were more important in later periods than earlier periods.

Some other results are noteworthy. Educational attainment in the origin appears to have no effect on migration, while education in the destination exerts a large impact in the first two periods (the effect is larger in the middle period), while it has no effect in the latest period. Education is found to have no role at all during the 2000-05 period. Furthermore, the effects of the unemployment rate in origin are nil in 1985-90, but

positive and rising in the subsequent two period. The unemployment rate in the destination matters for the first two periods, but not for the third period. Thus, the effects of provincial differences in educational attainment on migration are mixed.

Estimates of the Greenwood Model

The most important result from our replication of Greenwood's model is the very strong evidence of a "migrant network" effect. Comparing the estimated coefficient on past migration flows between the two later periods, we find two striking results. First, the hypothesized effect is confirmed at the 1% significance level, implying that a growing migrant community stimulates further migration. Second, migration is considerably more sensitive to the size of the migrant community in the later period. The coefficient for 1995-2000 predicts that a 1% increase in the size of the destination province's community of migrants hailing from the origin province will, all other things equal, result in the rate of migration being higher by approximately 0.03%. However, the estimated response jumps to approximately 0.36% during 2000-05.

It is important to interpret the estimated coefficient on the migrant network measure in conjunction with the estimated coefficient on railway distance. Observe that the distance coefficient is considerably less negative when the migrant network variable is included. We contend that distance and the size of the migrant network are linked by the costs of migration; greater distance tends to increase costs, whereas a larger migrant community in the destination tends to reduce them. We concur with Lin, Wang and Zhao (pp. 596) that the reason their distance coefficient was less negative in the later period is because, and we quote them, "…it is also possible that the psychic costs of migration are declining

due to the expansion of migrant networks in destinations so that long-distance migration is less intimidating." Lin, Wang and Zhao's results for the distance variable between periods likely reflect the growth in the size of the migrant network in the later period, but also omitted variables bias. The distance variable in their regressions is likely capturing the effects on the migration rate of an omitted migrant network variable. Furthermore, the reason our distance coefficient in the later period regression was much more negative when a migrant network control was excluded is because that coefficient reflects omitted variables bias. All this underscores the importance of including a control for past migration when studying the determinants of internal migration. Note also that when the migrant network variable is added to Lin, Wang and Zhao's (2004) equation, the effect of income differences are almost the same for the 1995-2000 subsample, but declines substantially for the later period. However, most of the other estimated coefficients are relatively robust. Finally, note the significant increase in the adjusted R-squared when the migrant network variable is added, confirming the very strong influence of migrant networks on the volume of migration activity.

Estimates of the Extended Model

The extended model provides the most complete picture of what influences migration rates during a particular period the extent to which the relationship between migration rates and their determinants have changed across periods in China. We focus on two issues in this subsection. First, we evaluate results for the new variables in the extended model -- investment spending, industry mix, and the province's ethnic make-up. Second,

we compare estimates of the extended model across time periods for insights into the changing structure of migration.

Tables 4-6 show estimated coefficients on the investment variables and their interactions, while Table 7 shows estimates of the complete marginal effect of investment (the OLS estimate of $(\alpha_3 + \alpha_5 \log(FAI))$ for the marginal effect of FDI and the estimate of $(\alpha_4 + \alpha_5 \log(FDI))$ for fixed asset investment). According to Table 4, neither form of investment appears to have had any effect on migration rates during the 1985-90. However, during the latter two periods, we find strong evidence of an inverse relationship between relative fixed asset investment in the destination and immigration rates, but a positive relationship between relative FDI in the destination and immigration rates. Estimates of extended model II yield that the investment interaction is positive and significant; For both periods, when relative investment type A in the destination is larger, the marginal effect of investment type B on immigration rates is larger. This would indicate complementarity, not substitutability, between both types of investment.

It is important to account for the investment interaction when evaluating the marginal effect of investment on migration. This is the value of the estimates provided in Table 7. Table 7 confirms that neither type of investment had any influence on migration during the first period. However, during 1995-2000 (2000-05) a 1% increase in the destination to origin FAI ratio induced a 0.76% (1.38%) reduction in the immigration rate and a 1% increase in the destination to origin FDI ratio induced an increase in immigration of 0.08% (nearly 15%).

There are several explanations for the negative coefficient on FAI. First, note that much of this investment is spending on infrastructure which connects the Western

provinces to coastal markets, including the labor markets. The upgraded and expanded infrastructure in a province has the effect of lowering the cost of moving out, particularly for poorer rural-to-urban migrants. While on the one hand, higher construction spending is likely to pull in more migrants and deter more from leaving, this effect of reduced migration costs may dominate. The second is that there may be two-way causality between fixed asset investment and migration; higher construction spending pulls in more migrants, but greater immigration to a province will increase the demand for housing and thus stimulate construction. We are reasonably confident, however, that we have avoided such simultaneity for the first two periods because investment spending is lagged. Note also that the effects of FAI on immigration are lower, but the effects of FDI are higher, in the later period.

The effects of industry mix, measured by the manufacturing employment share, on migration rates changes dramatically across the three periods. During the 1980s, all other things equal, destinations with relatively larger manufacturing industries attracted fewer immigrants; there was no relationship between industry and immigration during the 1990s; during the 2000s, provinces where manufacturing was more dominant attracted more immigrants. These results suggest that the prospect of employment in manufacturing is only attractive to migrants when the barriers to migration are relatively low. The same sorts of results apply to the effects of provincial ethnic diversity on immigration. During the 1980s and 1990s, there was less migration to provinces with proportionately larger minority populations; however in the latest period more ethnically diverse provinces attracted *more* migrants, confirming the Bao et al. (2006) hypothesis.

V. CONCLUSIONS AND IMPLICATIONS FOR FURTHER RESEARCH

Comparing our results across the three periods and over the various empirical specifications, we find 7 important trends:

(i) The sensitivity of migration to distance fell substantially, particularly between the 1980s and 1990s;

(ii) Migration appears to be much less sensitive to income differences in the latest period, compared to the earliest period;

(iii) Educational differences have no effect in the latest period; the social externalities generated by a well educated population appear to have dissipated completely by the new millennium;

(iv) Migration is much more responsive to home labor market conditions in the later two periods; unemployment rates in the destination matter across all periods, but somewhat less so in the latest period;

(v) Urbanization appears to have its greatest impact in the latest period;

(vi) The effect of amenities on migration has been rising over time; migrants are more sensitive to temperature differences now than before;

Thus, deregulation of migration appears to have had a wide variety of effects on migration in China. When barriers to migration have been lowered over time, certain variables appear to become more important (home labor market conditions, urban population share and climatic differences), while others become less important (income differences, distance and educational differences) to the migration decision. It is interesting to note that the most fundamental determinants of migration, which would be found in any basic modified gravity model – spatial income and human capital differences and migration costs (proxied by

distance) matter less the easier it is to migrate. Migrants respond to the perceived net returns to migration and these returns are measured in different ways, e.g. increased income, a more favorable climate, an improved standard of living that comes with moving to a large city, the cultural benefits that come with moving to a better educated, more diversely populated province, etc. Deregulation appears to have the effect of reducing returns to migration at some margins, while increasing returns at other margins. Why this is so is clearly a subject for future research.

We conclude that as economic reforms have deepened and restrictions on internal migration have eased in China, the structure of migration has changed considerably. Our results tell us that over the last quarter century, six factors have emerged as the most important determinants of interprovincial migration in China – distance, the risk of unemployment at home, climatic differences, having friends, family and other connections from your home province already residing in the destination province, where the migrant is going and, to a lesser extent, provincial differences in FDI spending. As more data on Chinese migration patterns become available, more research needs to be done to investigate further why these factors matter now, whereas factors that mattered earlier no longer matter.

Another important implication of the results above is that the traditional modified gravity model, which focuses on distance and spatial differences in earnings, simply does not do an effective job accounting for internal migration patterns in China. A priori, one would expect that as markets become more competitive and migration costs fall through technological advances, migration should become more sensitive to spatial differences in earnings and unemployment risks. We find that migration actually becomes less sensitive

to spatial differences in earnings in China. Furthermore, reversals of signs on coefficients and low levels of robustness across various empirical specifications suggest that more work is needed to articulate an empirical specification that is particularly compatible with the Chinese case. This will ultimately require an underlying formal theory that in particular considers the simultaneous determination of migration and investment spending. In addition, more complete data will be needed.

For internal migration researchers, however, China is and will continue to be a significant natural experiment in deregulation of migration, coinciding with national economic prosperity, market-oriented reforms, foreign direct investment and globalization. There is great need for future research on this subject, as interregional labor mobility will be a prime contributor to China's success in completing its transition to a market economy.

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TABLE 1
Summary Statistics for Provinces in 1985-90 sub-sample
(765 observations)

Variable	Mean	Standard Deviation	Maximum	Minimum
Province-to-province emigration rate (out of total emigration from the origin province)	3.7747%	6.9823%	79.336%	0.018047%
Real Mean Annual FDI Per Capita (Between 1980 and 1984)	$US 1.77	$US 6.57	$US 35.02	$US 0.01
Real Mean Annual Fixed Asset Investment Per Capita (Between 1980 and 1984)	205.65 Yuan	167.58 Yuan	686.75 Yuan	57.65 Yuan
Railway distance between capital cities of origin and destination provinces	1,630.76 Kilometers	1.87 Kilometers	6,313.21 Kilometers	137 Kilometers
Mean per capita income	507.82 Yuan	184.91 Yuan	1,084.53 Yuan	340.53 Yuan
Mean years of schooling	6.426	1.248	9.463	4.379
Unemployment rate	1.214%	0.767%	4.11%	0.28%
Manufacturing share of employment	24.41%	12.21%	9.47%	59.3%
Urban share of population	31.03%	16.17%	73.44%	14.87%
Mean yearly temperature	14.113 C	5.176 C	24.517 C	4.608 C
Minority population share	12.28%	16.06%	59.43%	0.31%

TABLE 2
Summary Statistics for Provinces in 1995-2000 sub-sample
(790 observations)

Variable	Mean	Standard Deviation	Maximum	Minimum
Province-to-province emigration rate (out of total emigration from the origin province)	3.5886%	7.2295%	87.317%	0.01436%
Number of persons in the destination's pre-existing migrant community	24,985	68,541	893,200	100
Real Mean Annual FDI Per Capita (Between 1980 and 1984)	$US 9.95	$US 14.07	$US 50.53	$US 0.38
Real Mean Annual Fixed Asset Investment Per Capita (Between 1980 and 1984)	563.55 Yuan	424.91 Yuan	1890.3 Yuan	160.31 Yuan
Railway distance between capital cities of origin and destination provinces	1,630.76 Kilometers	1.87 Kilometers	6,313.21 Kilometers	137 Kilometers
Manufacturing share of employment	22.78%	9.8622%	9.17%	49.25%
Urban share of population	40.20%	18.56%	90.67%	18.63%
Mean per capita income	1,062.61 Yuan	447.27 Yuan	2,451.51 Yuan	605.26 Yuan
Mean years of schooling	7.976	1.038	10.558	5.974
Unemployment rate	4.392%	2.445%	9.64%	1.36%
Mean yearly temperature	14.113 C	5.176 C	24.517 C	4.608 C
Minority population share	12.28%	16.06%	59.43%	0.31%

TABLE 3
Summary Statistics for Provinces in 2000-05 sub-sample
(790 observations)

Variable	Mean	Standard Deviation	Maximum	Minimum
Province-to-province emigration rate (out of total emigration from the origin province)	3.6551%	7.3871%	87.317%	0.01436%
Real Mean Annual FDI Per Capita (Between 2000 and 2005)	$US 71.40	$US 91.47	$US 8,367.40	$US 0.70
Real Mean Annual Fixed Asset Investment Per Capita (Between 1980 and 1984)	702.56 Yuan	419.15 Yuan	1,900.9 Yuan	249.81 Yuan
Railway distance between capital cities of origin and destination provinces	1,630.76 Kilometers	1.87 Kilometers	6,313.21 Kilometers	137 Kilometers
Manufacturing share of employment	22.78%	9.8622%	9.17%	49.25%
Mean real per capita GDP	15,817 Yuan	10.715 Yuan	49.570 Yuan	4,715.7 Yuan
Percentage of population enrolled in colleges and universities	2.507%	0.232%	2.955%	1.936%
Unemployment rate	1.039%	0.448%	1.971%	0.191%
Mean yearly temperature	14.27 C	5.24 C	25.1 C	4.70 C
Minority population share	12.83%	16.47%	60.13%	0.31%

TABLE 4
OLS RESULTS for 1985-90 SUBSAMPLE
Dependent Variable = Gross Interprovincial Migration Rate
(Standard Errors in Parentheses; ** denotes significant at 1%, * significant at 5%,)

REGRESSOR	Lin, et al Model	Extended Model I	Extended Model II
Distance	-1.1525** (0.0695)	-1.1513** (0.069)	-1.1511** (0.0691)
Ratio of real mean per capita incomes	0.6904** (0.2095)	1.2836** (0.351)	1.2839** (0.3505)
Education level in origin	-0.4095 (0.3204)	-0.6189* (0.3666)	-0.6420* (0.3738)
Education level in destination	2.3514** (0.2854)	2.5667** (0.3345)	2.5434** (0.3419)
Unemployment rate in origin	-0.0451 (0.0097)	-0.0276 (0.1126)	-0.0262 (0.1126)
Unemployment rate in destination	-0.4786** (0.0867)	-0.4911** (0.1046)	-0.4901** (0.1048)
Ratio of urban population shares	-0.5121** (0.1914)	-0.4769** (0.1865)	-0.4766** (0.1865)
Ratio of yearly temperatures	0.1468 (0.09)	-0.2042 (0.1687)	-0.2045 (0.1688)
Ratio of manufacturing employment shares		-0.5655** (0.2492)	-0.5658** (0.2494)
Ratio of minority population shares		-0.0759** (0.0332)	-0.0758** (0.0332)
Ratio of real per capita fixed asset investments		-0.0984 (0.0823)	-0.0986 (0.0823)
Ratio of real per capita foreign direct investments		0.0205 (0.0203)	0.0205 (0.0204)
Investment interaction			0.0057 (0.0127)
Constant	5.3921** (0.9179)	5.3632** (0.9139)	5.4416** (0.9427)
Adjusted R-squared	0.4034	0.4068	0.4061
SSE	998.39	987.38	987.19
Sample size	765	765	765

TABLE 5
OLS RESULTS for 1995-2000 SUBSAMPLE
Dependent Variable = Gross Interprovincial Migration Rate
(Standard Errors in Parentheses; ** denotes significant at 1%, * significant at 5%)

REGRESSOR	Lin, et al Model	Greenwood Model	Extended Model I	Extended Model II
Distance	-1.0644** (0.0621)	-0.6203** (0.0634)	-0.3704** (0.0571)	-0.3759** (0.0570)
Ratio of real mean per capita incomes	0.4975** (0.137)	0.4957** (0.1192)	1.5806** (0.1545)	1.5792** (0.1694)
Education level in origin	0.3625 (0.4529)	-0.0244 (0.4073)	-0.5337 (0.3578)	-0.5881* (0.3602)
Education level in destination	3.5946** (0.4219)	3.3847** (0.3921)	3.6826** (0.3334)	3.6287** (0.3345)
Unemployment rate in origin	0.1807* (0.1111)	0.2890** (0.1014)	1.1626* (0.0898)	0.1554* (0.0902)
Unemployment rate in destination	-0.5586** (0.1123)	-0.5783** (0.1034)	-0.4269** (0.0819)	-0.4374** (0.083)
Ratio of urban population shares	-0.0458 (0.1254)	-0.3726** (0.1155)	0.0945 (0.1033)	0.0931 (0.1032)
Ratio of yearly temperatures	0.3821** (0.0792)	0.3670** (0.0769)	0.2224** (0.083)	0.2226** (0.0828)
Past migration flows (1985-95)		0.03465** 0.0257)	0.5297** (0.0256)	0.5273** (0.0255)
Ratio of manufacturing employment shares			-0.1659 (0.1069)	-0.1622 (0.1064)
Ratio of minority population shares			-0.0492** (0.0184)	-0.0485** (0.0183)
Ratio of real per capita fixed asset investments			-1.4141** (0.0823)	-1.4092** (0.0821)
Ratio of real per capita FDI			0.0597* (0.0364)	0.0586 (0.0366)
Investment interaction				0.0295** (0.0134)
Constant	0.4816 (1.398)	1.205 (1.249)	1.4826 (1.04)	1.7074 (1.048)
Adjusted R-squared	0.413	0.5352	0.6601	0.6616
SSE	905.53	716.19	520.96	518.08
Sample size	790	790	790	790

TABLE 6
OLS RESULTS for 2000-05 SUBSAMPLE
Dependent Variable = Gross Interprovincial Migration Rate
(Standard Errors in Parentheses; ** denotes significant at 1%, * significant at 5%,)

REGRESSOR	Lin, et al Model	Greenwood Model	Extended Model I	Extended Model II
Distance	-1.1710** (0.0686)	-0.7009** (0.0731)	-0.2997** (0.0543)	-0.288** (0.0582)
Ratio of real mean per capita incomes	0.3882** (0.0967)	0.22402** (0.0905)	0.2182** (0.1071)	0.2191** (0.1065)
Education level in origin	-0.0203 (0.2458)	0.1087 (0.2273)	0.0956 (0.179)	0.1430 (0.18)
Education level in destination	-0.0628 (0.2469)	-0.1479 (0.2343)	-0.0340 (0.1586)	0.0154 (0.1601)
Unemployment rate in origin	0.5740** (0.1412)	0.6312** (0.1325)	0.9495** (0.106)	0.9313** (0.1065)
Unemployment rate in destination	0.1038 (0.1436)	-0.0128 (0.1410)	-0.3339** (0.1045)	-0.3574** (0.106)
Ratio of urban population shares	0.2300 (0.1908)	0.0931 (0.1748)	0.8417** (0.1483)	0.8425** (0.1489)
Ratio of yearly temperatures	0.8421** (0.0855)	0.9507** (0.0776)	0.4997** (0.0680)	0.4983** (0.0676)
Past migration flows (1985-95)		0.3550** (0.0291)	0.6458** (0.0265)	0.646** (0.0263)
Ratio of manufacturing employment shares			0.2934** (0.1092)	0.2956** (0.1078)
Ratio of minority population shares			0.0836** (0.0193)	0.0838** (0.0192)
Ratio of real per capita fixed asset investments			-0.7887** (0.0372)	-0.7885** (0.0372)
Ratio of real per capita FDI			0.1164** (0.0272)	0.1159** (0.0273)
Investment interaction				0.0298** (0.0092)
Constant	8.2996** (0.8463)	7.8525** (0.8498)	5.6789** (0.5978)	5.348** (0.6146)
Adjusted R-squared	0.3839	0.4832	0.6861	0.6893
SSE	1204.8	1000.3	609.84	602.82
Sample size	790	790	790	790

TABLE 7
Estimated Marginal Effect of Investment on Emigration Rates
(Standard Errors in Parentheses; ** denotes significant at 1%, * significant at 5%)

	1985-90	1995-2000	2000-05
Marginal Effect of:			
Fixed asset investment	-0.9291 (0.8354)	-1.3798** (0.0822)	-0.7587** (0.0373)
Foreign direct investment	0.0262 (0.024)	0.0804*	0.1457** (0.0298)