THE EFFECTS OF REDISTRIBUTIVE POLICIES ON EDUCATION AND MIGRATION

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Abstract

U.S. immigration data suggest that the education (skill) level of new immigrants depend on the immigrant's country of origin. I investigate how differences in redistributive policies (i.e., the progressiveness of income taxes) affect the flow and composition of migrants. I develop a dynamic general equilibrium model where migration and education are endogenous to explore the quantitative implications of different redistributive policies on migrant flows. The model predicts an inflow of unskilled Mexicans similar to what is observed in U.S. immigration data. Observed differences in redistributive policies alone account for approximately 54% of total migrant flows between the U.S. and Mexico.

JEL Classification: Taxation and Redistributive Effects (H2), Education (I2), International Migration (F22)

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1 Introduction

U.S. immigration data suggest that the education level of new immigrants depend on the immigrant's country of origin. U.S. immigrants from Latin American countries are often unskilled, while immigrants from Canada and Western European countries are typically high skilled.

There seems to be no consensus in the literature concerning the primary determinants of migration and why countries supply different 'types' (skill levels) of migrants. Borjas (1987) provides empirical evidence that shows differences in the payoffs to skill across countries (i.e., income distribution) dictate the supply of migrants. Rotte and Vogler (1998) argue the level of growth and development in source countries influences who has the largest incentive to migrate. Urrutia (1998) conjectures that moving costs, which are heterogeneous across source countries, affect the composition of migrants. According to Greenwood et al. (1999), the existence of social programs in source countries alters the composition of migrants into the U.S.

Similar to Borjas (1987), differences in payoffs to skill across countries affect individuals' migration decisions in this paper. For example, U.S. immigrants from countries where the payoffs to skill are high (so that income distributions are more unequal), are often low skilled, relative to their home country skill distribution. Unlike Borjas (1987), payoffs to skill are endogenous in this paper, and they differ across countries because of heterogeneous redistributive policies (i.e., the progressiveness of income taxes) and relative factor productivities. Hence, differences in redistributive policies and factor productivities influence migration.

For this analysis, I focus on migration between the U.S. and Mexico. Mexico sends more immigrants to the U.S. than any other country. Mexican immigrants constitute 28% of all legal U.S. immigrants and approximately 35% of all legal and illegal U.S. immigrants.[2]

This paper attempts to quantify the effects of redistributive policies on the flow of migrants between the U.S. and Mexico. To do this, migration must be endogenous. Few studies have endogenized migration in a dynamic general equilibrium framework; examples include Galor (1986), Djajic (1989), Glomm (1992), Wong (1997), and Urrutia (1998). I construct an open economy model where physical capital is perfectly mobile. The two countries differ with respect to redistributive policies, production technologies (and hence relative factor productivities), and education costs. The analysis is done in an overlapping generations framework where agents live for two periods. During their first period of life, agents choose how much capital to save and whether or not to invest in education. When agents are old, they make their migration decisions. If an agent migrates, he or she must pay education-dependent migration costs.

I assume that firms in both countries require skilled labor, unskilled labor, and physical capital to produce a single consumption good. The production technology in each country exhibits capital-skill complementarity, similar to the one used in Stokey (1996), Krusell, Ohanian, Rios-Rull, and Violante (2000), and Blankenau and Ingram (2000). With this production specification, the skill premium in each country (the ratio of the skilled wage to the unskilled wage) depends on the stock of physical capital. I parameterize the model to match certain features of the U.S. and Mexican economy between 1980 and 1999. Tax policies are consistent with those observed in the data: the U.S. income tax system is quite progressive

[2] These estimates are based on data from the U.S. Immigration and Naturalization Service, as reported in the 1997 Statistical Yearbook.

whereas in Mexico, very few people pay income taxes. The average marginal tax rate is much lower in Mexico than in the U.S. The skill premium and capital share are higher in the U.S. than in Mexico. Also, there are fewer skilled workers (i.e., workers with a college degree) in Mexico than in the U.S.

Using the stylized model, I compute the steady state flow and composition of migrants between the U.S. and Mexico. The model predicts that 5.12 million unskilled and skilled Mexicans migrate to the U.S. over a twenty-year period. No Americans migrate to Mexico in equilibrium. Of the 5.12 million Mexicans that move to the U.S., 88% are unskilled. These figures compare favorably to the observed flows of Mexican workers between 1980 and 1999. Approximately 6.71 million Mexicans migrated to the U.S. during this period (of which 3 million entered illegally). Of these, approximately 2.3% were skilled (i.e., have a college degree).[3]

Using the results of the stylized model as the 'benchmark', I explore the quantitative implications of different redistributive policies on the flow of migrants. If the U.S. were to impose a flat income taxation policy (instead of a progressive policy), the inflow of Mexican migrants would fall by 18%. Alternatively, if Mexico imposed progressive income taxes rather than flat taxes, the flow of migrants into the U.S. declines by 2%.

Next, I eliminate taxes and transfers in the model and compare the equilibrium flow of migrants to the results of the benchmark economy. I find that the observed differences in redistributive policies alone account for approximately 54% of total migrant flows between the U.S. and Mexico.

[3] This number is obtained using data from the Mexican Migration Project at the University of Pennsylvania. The data set includes legal and illegal migrants and spans the period between 1987 and 1997.

Finally, I measure the sensitivity of migrant flows to changes in migration costs (which serve as a proxy for barriers to entry). The results suggest that workers substitute between investing in education and migrating; the degree of substitution depends on the relative magnitude of education and moving costs. When migration costs are reduced by 20%, the flow of unskilled Mexicans into the U.S. is three times larger than in the benchmark economy. However, an increase in migration costs (of the same magnitude) has a much smaller effect on migrant flows, 15% fewer Mexicans migrate to the U.S.

The paper is organized as follows. Section 2 describes the model and the equilibrium conditions. In Section 3, the details of the parameterization are provided. Section 4 contains the results of the benchmark economy and four quantitative experiments. Section 5 concludes.

2 The Model

2.1 Agent's Problem

Consider a two-country world. Each country is populated by two-period lived overlapping generations of agents. There is a continuum of agents in each country. The measure of each generation of agents from country *j* is Ω_j. Population is constant.

Agents are endowed with one unit of time each period, which they inelastically supply to the firm. When young, an agent chooses consumption, savings, and whether or not to invest in education. All young agents supply immobile, unskilled labor in their country of origin. If an agent invests in education (i.e., pays the cost of education), the agent supplies skilled labor when old. If not, the agent continues to supply unskilled labor. When old, the agent chooses consumption and a country in which to reside.

The utility an agent receives depends on her education and migration decisions. There are no borrowing/lending restrictions in the model so the agent compares the present value of lifetime income of four alternatives: (1) remain unskilled and stay in their home country, (2) remain unskilled and migrate to the foreign country; (3) invest in education and stay in their home country, and (4) invest in education and migrate to the foreign country. I restrict my attention to steady states in this paper.

The value function for an agent from country A represents the best choice of these four options. Her value function, V_A, must satisfy:

$$V_A = \max\{V_A{}^{u,A}, V_A{}^{u,B}, V_A{}^{s,A}, V_A{}^{s,B}\} \tag{1}$$

where $V_A{}^{i,j}$ is the value of being from country A, having skill i, and living in country j. These values depend on the wage rates, $w^{i,j}$, tax rates, $t^{i,j}$, the gross return on capital less depreciation, R^w, per capita government transfers, $x^{i,j}$, education costs, e_A, and migration costs, $g_A{}^i$. I define $\tilde{w}^{i,j}$ as the labor income of an agent of skill *i* in country *j* net of taxes and transfers, $\tilde{w}^{i,j} = w^{i,j}(1-t^{i,j}) + x^{i,j}$. Physical capital is perfectly mobile so that the return on capital is the same across countries.

Consider an agent from country A who remains unskilled and stays in country A. Her value function must satisfy:

$$V_A{}^{u,A} = \max_{\{cy_A{}^{u,A}, k_A{}^{u,A}, co_A{}^{u,A}\}} \left\{\log(cy_A{}^{u,A}) + b\log(co_A{}^{u,A})\right\} \tag{2}$$

subject to her budget constraints:

$$cy_A{}^{u,A} + k_A{}^{u,A} = \tilde{w}^{u,A}; \tag{3}$$

$$co_A{}^{u,A} = \tilde{w}^{u,A} + R^w k_A{}^{u,A}. \tag{4}$$

The agent chooses consumption when young, $cy_A^{i,j}$, physical capital, $k_A^{i,j}$, and consumption when old, $co_A^{i,j}$. Her allocations depend on her skill level i and country of residence j. When young, she supplies unskilled labor to the firm in her home country (country A) and saves capital. Since she does not invest in education, she continues to supply unskilled labor in country A during her old period of life. Hence, she earns $\tilde{w}^{u,A}$ in both periods of her life. (Recall the analysis is restricted to steady states.) When old, she also earns rental income from her capital. The agent's utility when old is discounted at the rate b.

If an agent from country A remains unskilled but migrates to country B, her value function must be:

$$V_A^{u,B} = \max_{\{cy_A^{u,B}, k_A^{u,B}, co_A^{u,B}\}} \left\{ \log(cy_A^{u,B}) + b \log(co_A^{u,B}) \right\} \tag{5}$$

subject to her budget constraints:

$$cy_A^{u,B} + k_A^{u,B} = \tilde{w}^{u,A}; \tag{6}$$

$$co_A^{u,B} + g_A^{u,} = \tilde{w}^{u,B} + R^w k_A^{u,B}. \tag{7}$$

Again, she supplies unskilled labor in country A when young. Since she moves to country B when old, she earns the unskilled wages in country B (net of taxes and transfers). However, she must pay the migration cost (g_A^u), which depends on her skill level and country of origin. Migration costs are fixed, measured in terms of the consumption good. They include traveling expenses and cost of finding a job.[4]

If an agent from country A invests in education and stays in country A, her value function must be:

[4] Migration costs could also serve as a proxy for barriers to entry. That is, the imposition of stricter immigration policy or tightening of border controls could be interpreted as an increase in moving costs.

$$V_A^{s,A} = \max_{\{cy_A^{s,A}, k_A^{s,A}, co_A^{s,A}\}} \left\{ \log(cy_A^{s,A}) + b \log(co_A^{s,A}) \right\} \quad (8)$$

subject to her budget constraints:

$$cy_A^{s,A} + k_A^{s,A} + e_A = \tilde{w}^{u,A}; \quad (9)$$

$$co_A^{s,A} = \tilde{w}^{s,A} + R^w k_A^{s,A}. \quad (10)$$

In this case, the agent invests in education so she pays the education cost, e_A, during her young period of life. The education cost is measured in terms of the single consumption good, and depends on the agent's country of origin. Since she invests in education, she earns the skilled wages in her home country (country A) during her old period of life.

Finally, if an agent from country A invests in education and migrates to country B, her value function must be:

$$V_A^{s,B} = \max_{\{cy_A^{s,B}, k_A^{s,B}, co_A^{s,B}\}} \left\{ \log(cy_A^{s,B}) + b \log(co_A^{s,B}) \right\} \quad (11)$$

subject to her budget constraints:

$$cy_A^{s,B} + k_A^{s,B} + e_A = \tilde{w}^{u,A}; \quad (12)$$

$$co_A^{s,B} + g_A^{s} = \tilde{w}^{s,B} + R^w k_A^{s,B}. \quad (13)$$

In this case, the agent must pay the education cost, e_A, and the migration cost, g_A^s, both of which depend on her country of origin. However, she earns the skilled wages in the foreign country, country B, when old.

Similarly, the value function of an agent from country B represents the choice between the same four options. Her value function, V_B, must satisfy:

$$V_B = \max\{V_B^{u,A}, V_B^{u,B}, V_B^{s,A}, V_B^{s,B}\}. \quad (14)$$

The definitions of $V_B^{i,j}$ for $i = \{u, s\}$, $j = \{A, B\}$ follow the framework described above.

2.2 Firm's Problem

The production technology in each country depends on three inputs: unskilled labor, skilled labor, and physical capital. Similar to Stokey (1996), Krusell, Ohanian, Rios-Rull, and Violante (KORV 2000), and Blankenau and Ingram (2000), I assume production of the single good exhibits capital-skill complementarity. For specific parameters, the elasticity of substitution between physical capital and skilled labor is lower than the elasticity of substitution between physical capital or skilled labor and unskilled labor. There are two key features of this constant elasticity of substitution (CES) production specification. It distinguishes between unskilled and skilled labor, and the skill premium (ratio of skilled wage to unskilled wage) depends on the stock of physical capital. Both of these aspects are important in models of migration where endogenous skill premia differ across countries.[5] The constant returns to scale production function in country j is:

$$F_j(S_j, U_j, K_j) = Z_j \left[m_j U_j^{s} + (1 - m_j)(w_j K_j^{r} + (1 - w_j) S_j^{s})^{\frac{s}{r}} \right]^{\frac{1}{s}} \qquad (15)$$

where S_j, U_j, K_j are the aggregate amounts of skilled labor, unskilled labor, and physical capital in country j, respectively. Skilled agents from country A are perfect substitutes for skilled agents from country B. Similarly, unskilled agents from country A are perfect substitutes for unskilled agents from country B. The parameter Z_j represents the country-specific technology level.

[5] See Stokey (1996) for a more thorough discussion of these issues.

With this specification of the production function, the elasticity of substitution between physical capital (or skilled labor) and unskilled labor is $s_{ku} = s_{su} = \frac{1}{1-s}$ and the elasticity of substitution between physical capital and skilled labor is $s_{sk} = \frac{1}{1-s} + \frac{1}{f_{sk}}\left(\frac{1}{1-r} - \frac{1}{1-s}\right)$ where f_{sk} is the combined share of aggregate capital and skilled labor in production.[6] It is assumed that the elasticities of substitution are the same across countries.

Firms in country j maximize:

$$\max_{\{S_j, U_j, K_j\}} \left\{F_j(S_j, U_j, K_j) - w^{u,j}U_j - w^{s,j}S_j - rK_j\right\} \tag{16}$$

where F_j is defined above for $j = \{A, B\}$. Recall that wages paid to agents depend on their education decisions; also, the rental rate on physical capital, r, is the same across countries due to perfect capital mobility.

The firm's maximization problem yields the following first-order conditions:

$$w^{u,j} = Z_j m_j Y_j^{1-s} U_j^{s-1}; \tag{17}$$

$$w^{s,j} = Z_j(1-m_j)(1-w_j)Y_j^{1-s}\Pi_j^{\frac{s-r}{r}} S_j^{r-1}; \tag{18}$$

$$r = Z_j(1-m_j)w_j Y_j^{1-s}\Pi_j^{\frac{s-r}{r}} K_j^{r-1}; \tag{19}$$

where $\Pi_j = [w_j K_j^r + (1-w_j)S_j^r]$ and $Y_j = [m_j U_j^s + (1-m_j)\Pi_j^{\frac{s}{r}}]^{\frac{1}{s}}$.

2.3 Equilibrium

In equilibrium, for an interior solution, an agent from country j must be indifferent to the four alternatives. Hence,

6 See Sato (1967) for details on the elasticities of substitution.

$$V_j^{u,A} = V_j^{u,B} = V_j^{s,A} = V_j^{s,B}. \quad (20)$$

In this analysis, I do not rule out the possibilities of corner solutions. In fact, some agents will never have an incentive to migrate in equilibrium due to the parameterization, so their no-arbitrage conditions will not bind. (See Section 4 for details.)

In each country, all agents are ex-ante identical, so we can consider a representative agent that makes education and migration decisions. The equilibrium proportions are determined as if agents randomize over these decisions.[7] I define the fraction of agents from country *j* that remain unskilled as y_j. For $y_j \in (0,1)$, agents from country j are indifferent to investing in education and remaining unskilled. That is, $V_j^{u,j} = V_j^{s,j}$.

I define l_j^i as the fraction of agents from country *j* of skill *i* that move to country A.[8] For an interior solution, agents must receive the same value of living in both countries so there will be no incentive to migrate. This constitutes the no-arbitrage condition that makes the agent indifferent to migrating. If $l_j^i = 0$, the agent strictly prefers to live in country B; hence $V_j^{i,A} < V_j^{i,B}$. Alternatively, if $l_j^i = 1$, the agent strictly prefers to live in country A; hence, $V_j^{i,A} > V_j^{i,B}$.

In the steady state, the total stock of unskilled labor in each country consists of three components: labor supplied by the young unskilled natives, labor supplied by the old unskilled natives, and labor supplied by the old unskilled migrants. A crucial feature of this model is that all young agents supply unskilled, immobile labor. At any point in time, young agents constitute

[7] See the appendix (Section 7) for an alternative, but equivalent, description of the agent's problem.

[8] l_A^i can be interpreted as the fraction of agents from country A that stay in country A. Similarly, $1 - l_B^i$ can be interpreted as the fraction of agents from country B that stay in their home country.

half of the population in each country. Thus, the lower bound on the stock of unskilled labor country *j* is Ω_j. This assumption keeps one factor of production (unskilled labor) fixed each period. Formally, the steady state quantities of unskilled labor in countries A and B are:

$$U_A = \Omega_A + \Omega_A l_A^u y_A + \Omega_B l_B^u y_B ; \tag{21}$$

$$U_B = \Omega_B + \Omega_A (1 - l_A^u) y_A + \Omega_B (1 - l_B^u) y_B ; \tag{22}$$

where Ω_j is the measure of agents from country j, l_j^i is the fraction of each type of agent that moves to country A, $(1 - l_j^i)$ is the fraction of each type of agent that moves to country B, and y_j is the fraction of unskilled agents from country *j*.

Skilled labor in each country includes the labor supplied by old skilled natives and old skilled migrants:

$$S_A = \Omega_A l_A^s (1 - y_A) + \Omega_B l_B^s (1 - y_B) ; \tag{23}$$

$$S_B = \Omega_A (1 - l_A^s)(1 - y_A) + \Omega_B (1 - l_B^s)(1 - y_B) . \tag{24}$$

In the extreme case, 50% of the country B's population could move to country A in a given period. However, the upper bound on the percentage of country B's workers that move to country A relative to the country A's labor force is Ω_B / Ω_A (the lower bound of country A's population is Ω_A and the upper bound of country B's labor force moving to country A is Ω_B).

Physical capital depreciates at the rate d. Firms pay the rental rate, *r*, and agents earn $R^w = r + (1 - d)$. Aggregate physical capital is the amount of capital held by each type of agent multiplied by the measure of each type. Formally, the aggregate capital stock in the world is defined as:

$$K_W \equiv K_A + K_B \tag{25}$$

where

$$K_w = \sum_{j=A}^{B} \Omega_j \{ y_j l_j^{u} k_j^{u,A} + y_j (1 - l_j^{u}) k_j^{u,B} + (1 - y_j) l_j^{s} k_j^{s,A} + (1 - y_j)(1 - l_j^{s}) k_j^{s,B} \} . \qquad (26)$$

Equating the marginal products of capital across countries provides a direct relationship between K_A and K_B. Using this relationship and the market clearing condition for aggregate capital stock, we can pin down K_A and K_B in equilibrium.

Each country's government must balance their budget each period. That is, the revenue generated from income taxes must exactly offset the amount each government spends in transfers. Hence, total transfers in each country must be:

$$X_j = S_j w^{s,j} t^{s,j} + U_j w^{u,j} t^{u,j} \qquad (27)$$

and per capita transfers for each type of agent are:

$$x^{u,j} = \frac{e_j X_j}{U_j + S_j} \qquad (28)$$

$$x^{s,j} = \frac{(1 - e_j) X_j}{U_j + S_j} \qquad (29)$$

in country j. I adjust which type of agents in each country receive the bulk of the transfers through the parameter, e_j. An even distribution of transfers across the population in each country is where $e_j = 0.5 \ \forall j$.

A competitive equilibrium in this economy is a set of allocations $\{y_j, l_j^{i}, cy_j^{i,j}, co_j^{i,j}, k_j^{i,j}\}$, capital stocks $\{K_j\}$, and prices $\{w^{i,j}, R^{w}, x^{i,j}\}$, $\forall i = \{u, s\}$, $\forall j = \{A, B\}$, such that: i) Taking prices and policies as given, each agent j solves her optimization problem; ii) Taking prices and policies as given, firms choose labor and capital to maximize profits; iii) Labor markets clear in each country; iv) The world capital market clears; v) Each country's government balances its budget.

2.4 Welfare

In this paper, I run a series of quantitative experiments. For each experiment, I calculate a measure of equivalent variation. More specifically, I determine how much consumption agents must give up or gain in each period of their life to make them indifferent between the benchmark economy (which is explained in Section 4) and the proposed experiment. That is, what is Δ_j, such that

$$\log(cy_j(1+\Delta_j)) + b\log(co_j(1+\Delta_j)) = \log(cy_j^*) + b\log(co_j^*) \tag{30}$$

where cy_j is the steady state consumption allocation when young in the benchmark case and cy_j^* is the steady state consumption allocation when young in the proposed experiment for each individual (co_j and co_j^* are the corresponding steady state consumption allocations when old). Thus, the proportional increment/decrement in benchmark consumption for each individual is Δ_j,

$$\Delta_j = \exp\left(\frac{V_j^* - V_j}{1+b}\right) - 1, \tag{31}$$

where V_j^* is welfare in the proposed experiment and V_j is welfare in the benchmark economy.

3 Parameterization

I use the model outlined in Section 2 to analyze migration between the U.S. and Mexico. I specify the discount factor, b, institutions $\{t^{u,j}, t^{s,j}, e_j\}$, and technologies

$\{d, s, r, \Omega_j, Z_j, m_j, w_j, e_j, g_j^i\}$ for $j = \{US, M\}$. A subset of these parameters, $\{m_j, w_j, e_j\}$ are calibrated so that the model's steady state matches certain stylized facts; the rest are set directly using U.S. and Mexican data from 1980 to 1999.

The size of the each country's economy is set to reflect the relative size of the labor force, Ω_j, based on data from the World Bank.[9] The number of workers in Mexico is normalized to 1, so that the size of the U.S. labor force is set to 3.7 workers.

I define 'skilled' agents as those having at least a college degree. I use the 1996 edition of International Tax Summaries to set income tax rates corresponding to the appropriate income tax bracket for unskilled and skilled workers. The average unskilled worker in the U.S. earned $19,040 in labor income during 1995 (in 1995 dollars), according to the 1996 CPS data set.[10] This income level places the average unskilled worker in the U.S. in the lower tax bracket, facing an income tax of 15%. Skilled workers in the U.S. earned $40,318 per year (using the 1996 CPS), which places them in the 28% tax bracket. The tax rates for the U.S. are set to reflect these numbers.[11]

Individual income data for Mexico are more difficult to obtain. The OECD Mexican Survey states that, in 1994, the average income tax rate in the U.S. was 2.56 times larger than the average income tax rate in Mexico. I calculate the average tax rate paid by people in the U.S. to be 18% (using the fraction of skilled agents and the appropriate tax rates from above); thus, the average tax rate in Mexico is set at 7%. According to the 1996 edition of International Tax Summaries, income taxes in Mexico are relatively flat. Hence, I assume unskilled and skilled agents pay the same income tax rate of 7%.

[9] Source: World Development Indicators 1998 CD-ROM.
[10] I calculated average wage and salary income for men and women at least 16 years old who worked at least one hour per week during the previous year.

The proportion of transfers that are redistributed to unskilled workers in the U.S. is set according to 1996 CPS data. I calculate the percentage of government transfers that are given to unskilled workers in the data set. Government transfers include social security, survivor's income, supplemental social security, public assistance, unemployment compensation, worker's compensation, and veteran payments. Approximately 78% of these transfers are distributed to workers without a college degree in the U.S. I use the same fraction for Mexico since data are not available.[12] Thus, $e_j = 0.78$.

Migration costs for Mexicans are set using data from the Mexican Migration Project at the University of Pennsylvania. The data set contains detailed information about Mexican migrants' (legal and illegal) most recent trip to the U.S.[13] It includes how much Mexicans paid to migrate to the U.S., the income they earned while in the U.S., and the duration of their trip. For unskilled Mexicans (those without a college degree), I find that 28% of their U.S. income was spent on migration costs, while skilled Mexicans spent 13% of their U.S. income on migration costs.[14] The parameters for migration costs, g_M^i, are set to reflect these numbers.

In equilibrium, I find that Americans do not migrate to Mexico when their migration costs are zero; thus, they will not migrate to Mexico for positive migration costs. Therefore, I do not need to specify moving costs for Americans.

I assume that a model period represents 20 years. Hence, the discount factor, b, is set at

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[11] U.S. income tax rates remained relatively constant between 1980 and 1999. Thus, I use 1995 data since the Mexican tax and wage data are from 1995.

[12] This number could vary across countries, but government transfers constitute a small part of income. In tests for robustness, small changes in e do not affect results significantly.

[13] Source: The Population Center at the University of Pennsylvania, www.pop.upenn.edu.

[14] This data set spans the decade between 1987 and 1997. Approximately 1600 observations contained all of the information needed to calculate moving costs as a percentage of U.S. income.

0.36 and depreciation of physical capital, d, is set to 0.88. These correspond to an annual discount factor of 0.95 and depreciation rate of 0.10.

On the production side of the economy, I rely on previous studies to set the parameters for the elasticities of substitution (s, r). Most estimates for the elasticities of substitution between skilled labor (or capital) and unskilled labor are very close. Estimates range from 1.41 (Katz and Murphy (1992)), to 1.5 (Johnson (1997)), and 1.67 (KORV (2000)). Following Blankenau and Ingram (2000) and Ben-Gad (2000), I set $s_{ku} = s_{su} = 1.5$, implying $s = 0.33$.

Estimates on the elasticity of substitution between physical capital and skilled labor tend to vary, depending on the definitions of capital and skilled labor and the data used. Estimates range from 0.67 (KORV (2000)), to -0.29 (Fallon and Layard (1975)), and -0.91 (Denny and Fuss (1975)). I set $s_{sk} = 0.28$, so that $r = -0.3$ (where $f_{sk} = 0.6$). The elasticities of substitution are assumed to be the same across countries.

The technology factor, Z_j, is set according to GDP per worker (in international prices) using the Penn World Tables. On average, the U.S. has been twice as productive as Mexico over the last two decades. For the U.S., I normalize Z_{US} to 10 so the technology factor in Mexico is set to 5.0.

The other six parameters of the model (m_j, w_j, e_j) for $j = \{US, M\}$ are calibrated in equilibrium so the model replicates six facts. These facts are illustrated in Table I.

Using 1996 CPS data, I find that 24% of U.S. workers have a college degree. I calculate the skill premium in the U.S. (the ratio of skilled wages to unskilled wages) to be 2.11. The capital share in the U.S. is set to 0.40, which is consistent with most estimates. Using data from a 1995 employment survey published by INEGI (the national statistics office of Mexico, Instituto Nacional de Estadistica Geographia e Informatica), approximately 9% of the labor force reported having an education level of a 'superior professional,' which is equivalent to a college degree in the U.S. The average daily wage of a college-educated Mexican was 4.8 times the national daily minimum wage. An unskilled Mexican earned 1.64 times the national daily minimum wage. Hence, the skill premium in Mexico in 1995 is 2.92. According to Stokey (1994), it is difficult to obtain a direct measure of capital's share to income in Mexico. In her calibration, she gets a capital share of 0.16, but states that this is too small.[15] Hence, I set the capital share to 0.25.

Using the figures from Table I, I calculate the education cost in the U.S. to be 0.058 units of consumption, which represents 5.07% of unskilled labor income in the U.S. (Recall the cost of education reflects the cost of obtaining a college degree.) This is equivalent to $965 in 1995 dollars each year for 20 years (since a model period represents 20 years), or $19,306. For Mexico, education costs must be 0.096 units of consumption to replicate the fact that 9% of the labor force invests in education. This cost constitutes approximately 17.6% of unskilled labor income in Mexico. The two production parameters (m_j, w_j) are (0.24, 0.56) for the U.S. and (0.34, 0.54) for Mexico so that the model replicates the skill premium and capital share in each country.

To summarize, all of the model parameters are displayed in Table II. The parameters denoted by (*) are calibrated in equilibrium using the process described above.

4 Results

4.1 Benchmark

[15] The capital-output ratio in Mexico is approximately 2.4 and real interest rates are around 28% (using data from the Penn World Tables and the Inter-American Development Bank). These figures imply a capital share of 0.67, which seems extraordinarily high. Thus, I use a figure that is closer to Stokey's result. In tests of robustness, the overall conclusions of the experiments do not change for small changes in Mexico's capital share.

I compute the steady state for the model detailed in Section 2 using the parameters from Section 3; this is the benchmark case. In equilibrium, Americans (unskilled or skilled) do not migrate to Mexico. They strictly prefer to live in the U.S., $V_{US}^{i,US} > V_{US}^{i,M}$. Thus, $l_{US}^{i} = 1$, $\forall i = \{u, s\}$. However, unskilled and skilled Mexicans migrate to the U.S., $l_{M}^{i} \in (0,1)$, $\forall i = \{u, s\}$.

Table III presents the steady state flow of Mexican migrants to the U.S. for the benchmark economy. Approximately 4.52 million unskilled Mexicans move to the U.S. in equilibrium (over a twenty-year period). This constitutes 3.29% of the U.S. labor force and 14.76% of the Mexican labor force. Alternatively, 600,000 skilled Mexicans migrate to the U.S. (which constitutes 0.44% of the U.S. labor force and 1.96% of the Mexican labor force). (Recall that the upper bound on the percentage of the Mexican population that could move to the U.S. is 50%, while the upper bound on the percentage of Mexican workers that moves to the U.S. relative to the U.S. labor force is 27%.)

The model predicts an inflow of Mexican migrants that is slightly lower than what the data suggests: approximately 6.71 million unskilled and skilled Mexicans legally and illegally entered the U.S. between 1980 and 1999, based on data from the U.S. Immigration and Naturalization Service. (During this period, 3.71 million Mexicans entered the U.S. legally and approximately 3 million Mexicans entered illegally.) The model predicts that only 5.12 million Mexicans migrate to the U.S.

In the model, more unskilled Mexicans migrate to the U.S. than skilled Mexicans. Using data from the Mexican Migration Project (the same data used to set migration costs), approximately 97.7% of illegal and legal Mexican immigrants are unskilled (i.e., do not have a college degree). The model predicts that 88% of all Mexican immigrants are unskilled.

There are a few possibilities as to why the model under-predicts migrant flows. The most obvious answer relies on distinguishing between legal and illegal immigrants. If I compare the results of the model with the observed flow of *legal* Mexican immigrants, the model over-predicts immigrant flows. Since I abstract from immigration policy in this model, I compare the predicted results to the estimated flow of legal and illegal immigrants observed in the data.

Another possible reason as to why the model under-predicts migrant flows is that the data used to set moving costs include costs that are specific to illegal immigrants. For example, illegal Mexican immigrants often hire 'coyotes' for help in crossing the U.S.-Mexico border. In the data set, the amount paid to 'coyotes' is included in moving costs. However, this cost does not exist for legal migrants. Thus, the estimates for moving costs most likely overstate migration costs for legal immigrants, causing the model to under-predict migrant flows.

As Table IV suggests, the model does not capture the flow of Americans to Mexico. The INS estimates that approximately 55,000 Americans migrate to Mexico each year (1.1 million total emigrants over 20 years). In the model, no Americans migrate to Mexico. It has been documented that many of the Americans who migrate to Mexico each year are originally from Mexico. Hence, they are classified as return migrants. This model does not allow for return migration. A richer model with return migration may be able to produce the flow of workers from the U.S. to Mexico.

Table V presents some of the other features of the benchmark economy. Recall that the model is calibrated to match the skill premium and the fraction of the labor force that is skilled. However, Table V illustrates that the stock of physical capital is much larger in the U.S. than in Mexico. This happens because of the technology specifications: physical capital is used more intensively in production in the U.S. $(w_{US} > w_M)$. Also, skilled labor is more abundant in the

U.S. than in Mexico, creating a larger demand for capital in the U.S. (due to the capital-skill complementarity).

Figure i (in the Appendix) presents the consumption profiles for Mexicans and Americans. It shows that Mexicans consume much less than Americans. Americans earn more wage income than Mexicans do when young (unskilled wages are twice as high in the U.S. as in Mexico). Also, the cost of education is relatively low in the U.S. These factors force Mexicans to save less than Americans, increasing the gap in consumption between Mexicans and Americans during their old period of life.

4.2 Revenue-Neutral Flat Tax in the U.S.

The main goal of this paper to examine the role redistributive policies play in affecting the flow and composition of migrants. In the benchmark economy, the U.S. had a progressive income tax policy: unskilled taxes were 15% and skilled taxes were 28%. Mexico had a flat tax policy (a tax rate of 7% for all workers). Now, I examine the effects of changing the U.S. tax policy to that of a flat income taxation scheme. The flat income tax is set so that tax revenue in the U.S. is the same as in the benchmark economy.

Again, in equilibrium, no Americans migrate to Mexico. Table VI presents the equilibrium flow of Mexican migrants into the U.S. when a flat tax system is imposed in the U.S. Compared to the benchmark economy, fewer unskilled and skilled Mexicans migrate to the U.S. For unskilled Mexicans, the increase in the unskilled tax rate in the U.S. (from 15% to 21%) reduces the incentive to migrate. Alternatively, lower tax rates for skilled workers in the U.S. (from 28% to 21%) influence more Americans to invest in education (the returns to education are higher). This causes U.S. skilled wages to decrease, which reduces the gains to migration for skilled Mexicans. Therefore, a flat tax policy reduces the total flow of Mexican migrants into the U.S. by 18% (from 5.12 million in the benchmark to 4.17 million).

In Table VII, I compare other features of this economy to those in the benchmark economy. More Americans invest in education with flat taxes (there is a 3% increase in the fraction of skilled workers in the U.S.). In Mexico, fewer workers invest in education. Since the elasticity of substitution between physical capital and skilled labor is relatively low (0.28), an increase in the stock of skilled labor increases the demand for capital. Hence, the capital stock in the U.S. increases slightly, while the capital stock in Mexico decreases compared to the benchmark economy.

Flat taxes in the U.S. cause the skill premium to fall significantly. Fewer unskilled Mexicans enter the U.S. labor force so that unskilled wages are higher in the U.S. This, coupled with the fact that skilled wages in the U.S. fall because of the increase in the stock of skilled labor, causes the U.S. skill premium to fall by 14%.

All agents in this economy experience losses in consumption compared to the benchmark economy. Flat taxes in the U.S. increase the average income tax rate paid by Americans (from 18% to 21%), decreasing their consumption by 1.0% relative to the benchmark. Since fewer Mexicans migrate to the U.S., their consumption falls slightly.

Generally, if the U.S. were to impose a flat tax policy, the inflow of unskilled and skilled Mexicans falls significantly. This may be a partial explanation as to why more Mexicans do not migrate to Canada. Canada's tax policy enforces high marginal tax rates that are relatively flat across income levels. (According to my definition, an unskilled Canadian pays an income tax rate of 25%, while skilled Canadians pay 28% of their income to the government.)[16] For

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[16] Income data are from Statistics Canada: http:\\www.statcan.ca. Tax rates are taken from the 1996 edition of International Tax Summaries.

unskilled Mexican immigrants, large government transfers in Canada would not offset the higher tax rates. Mexicans are better off moving to the U.S. where skilled workers support unskilled workers through the progressive tax system.

4.3 Progressive Taxes in Mexico

Next, I consider the following question: if Mexico were to impose a progressive tax policy, would fewer unskilled Mexicans migrate to the U.S.? In 1997, Mexico imposed a new transfer system (called PROGRESA) where mothers are eligible to receive government subsidies if their children attend schools and meet certain health requirements. There has been some recent debate as to whether PROGRESA will reduce migration to the U.S.[17] Some suggest that when PROGRESA payments rise, fewer Mexicans migrate to the U.S. This is precisely the issue I explore in this experiment.

I assume that the U.S. has the same progressive tax policy as in the benchmark. However, I impose a redistributive tax policy in Mexico and examine how it affects the flow and skill composition of U.S. migrants. Unskilled Mexican workers still pay a 7% income tax, but now skilled workers in Mexico pay a 13% income tax (the ratio of the skilled tax rate to the unskilled tax rate is the same in both countries, but the marginal tax rate is lower than in the U.S.).[18]

The results indicate that the flow of Mexicans into the U.S. does not change significantly if Mexico were to change their tax policy to a progressive system. Table VIII shows that migrant flows between Mexico and the U.S. fall by 1.95%, relative to the benchmark economy. Fewer

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[17] Source: Migration News, Vol. 7, No. 11, November 2000. University of California-Davis.

[18] In the benchmark case, there is some redistribution in Mexico since the proportion of government transfers that go to unskilled workers, e_M, is 0.78. Since government transfers are very small in Mexico, changing e_M does not alter any of the results significantly. Thus, to accurately capture how tax policies affect migrant flows, I keep e_M constant through all of the experiments.

unskilled Mexicans move to the U.S. in equilibrium (3.3% less than in the benchmark), but more skilled Mexicans move to the U.S. (from 600,000 in the benchmark to 649,000). Because of the progressive tax policy in Mexico, unskilled workers receive larger government transfers than in the benchmark regime, thus reducing the incentive to migrate to the U.S. The higher income tax rates for skilled workers in Mexico cause a small increase in the flow of skilled Mexicans to the U.S.

While these figures are small relative to the U.S. population, they are quite significant with respect to the Mexican labor force. An outflow of 649,000 skilled Mexicans represents 2.11% of their entire labor force, but more importantly, it represents 30.2% of their skilled labor force. A large outflow of skilled Mexicans to the U.S., along with a decrease in the number of Mexican investing in education, cause skilled wages in Mexico to escalate. Unskilled wages (in Mexico) simultaneously fall due to less migration to the U.S.; hence, the skill premium increases by 8.62% (see Table IX). Thus, a policy aimed at reducing income inequality in Mexico (like PROGRESA) has exactly the opposite effect of increasing the skill premium when migration is a possibility. However, these results indicate that PROGRESA may slightly reduce the flow of unskilled Mexicans to the U.S.

Overall, the results of the first two experiments indicate that changes in U.S. tax policies affect the flow of migrants more than changes in Mexican tax policies do. If the U.S. imposed a flat income taxation policy (instead of a progressive policy), the results indicate that the inflow of Mexican migrants would fall by 18%. Alternatively, if Mexico imposed progressive taxes (rather than flat taxes), the flow of migrants into the U.S. declines only by 2%. Therefore, it seems that the redistributive nature of U.S. tax policy attracts unskilled Mexicans to the U.S.

Moreover, the installation of redistributive policies in Mexico (like PROGRESA) does not influence many unskilled migrants to stay in Mexico.

4.4 No Redistributive Policies

In this experiment, I eliminate taxes and transfers in the model to determine the fraction of migrant flows (between the U.S. and Mexico) that can be attributed to differences in redistributive policies.

The results in Table X suggest that without taxes and transfers, only 2.3 million Mexicans migrate to the U.S., compared to 5.12 million in the benchmark economy. Therefore, differences in redistributive policies alone account for approximately 54% of total migrant flows between the U.S. and Mexico.

Without generous redistributive programs, the U.S. becomes less attractive for unskilled Mexicans. One might expect to see a larger inflow of skilled Mexicans into the U.S. without taxation. However, when the U.S. goes from taxing skilled workers at 28% to no taxation, the payoffs to skill increase dramatically. More Americans invest in education (the fraction of skilled workers in the U.S. increases by 5.34%; see Table XI). The same effect takes place in Mexico, but to a smaller degree, since skilled tax rates go from only 7% to zero. Skilled wages in the U.S. fall more than in Mexico; hence, fewer skilled Mexicans migrate to the U.S. in equilibrium.

4.5 High/Low Barriers to Entry

Suppose the barriers to entry increase for Mexican immigrants, making it more costly for Mexicans to migrate to the U.S. Maybe the U.S. imposed stricter immigration policy or tightened border controls. By how much would migrant flows fall if moving costs increased by 20%?[19]

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[19] A 20% increase in moving costs is chosen arbitrarily.

When unskilled Mexicans face moving costs that constitute 32% of their potential U.S. income (compared with 28% in the benchmark economy), approximately 700,000 fewer unskilled Mexicans migrate to the U.S. (a 15% decline from the benchmark economy). Additionally, the inflow of skilled Mexicans to the U.S. falls by 44%. Overall, the flow of Mexican immigrants falls by 19% compared to the benchmark.

Now, suppose the U.S. loosened border controls so that moving costs fell by 20%. How many more Mexican immigrants would the U.S. expect to receive?

When moving costs constitute 23% of unskilled U.S. income and 10% of skilled U.S. income (compared with 28% and 13%, respectively), the inflow of unskilled Mexicans is more than three times as large as the benchmark (from 4.52 million to 15.1 million). However, the inflow of skilled Mexicans declines by 61%. It seems that the large reduction in the stock of unskilled labor in Mexico forces firms to substitute skilled labor for unskilled labor. The outflow of unskilled labor reduces the capital stock in Mexico (see Table XV). Since unskilled and skilled labor are more substitutable than capital and skilled labor (due to the technology specification), the demand for skilled labor increases in Mexico. An increase in skilled wages in Mexico reduces skilled Mexican's incentive to migrate.

Overall, the results indicate that individuals make trade-offs between migrating and investing in education; the degree of substitution depends on the relative magnitude of education and moving costs. For relatively low moving costs (i.e., 80% of the benchmark moving costs), migrating to the U.S. is cheaper than investing in education, causing a significant increase in the flow of Mexican migrants to the U.S. As moving costs increase, migration into the U.S. steadily declines as long as moving costs are lower than education costs. Once moving costs exceed education costs, fewer people migrate and more invest in education (see Table XIV).

5 Conclusion

In this paper, I explore the effects of redistributive policies on the flow and composition of migrants between the U.S. and Mexico. I develop a dynamic general equilibrium model where migration and education are endogenous and study the quantitative implications of different tax and transfer policies on the steady state migration.

The benchmark economy consists of tax policies that are consistent with those observed in the data. That is, the U.S. income tax system is quite progressive, whereas in Mexico, very few people pay income taxes. The average marginal tax rate is much lower in Mexico than in the U.S. The model predicts that 5.12 million unskilled and skilled Mexicans migrate to the U.S. over a twenty year period. No Americans migrate to Mexico in equilibrium. Of the 5.12 million Mexicans that move to the U.S., 88% are unskilled. These figures compare favorably to the observed flows of Mexican workers. Approximately 6.71 million Mexicans legally and illegally migrated to the U.S. between 1980 and 1999, most of whom were unskilled.

Next, I explore the quantitative implications of different redistributive policies on migrant flows. If the U.S. were to impose flat income taxes (instead of a progressive policy), the results indicate that the inflow of Mexican migrants would fall by 18%. Alternatively, if Mexico imposed progressive taxes rather than flat taxes (where the ratio of the skilled tax rate to the unskilled tax rate is the same as in the U.S.), the flow of migrants into the U.S. declines by 2%.

I eliminate taxes and transfers in the model and compare the equilibrium flow of migrants to the results of the benchmark economy. I find that the observed differences in redistributive policies alone account for approximately 54% of total migrant flows between the U.S. and Mexico.

Finally, I measure the sensitivity of migrant flows to changes in moving costs (which serve as a proxy for barriers to entry). The results suggest that workers substitute between investing in education and migrating; the degree of substitution depends on the relative magnitude of education and moving costs. When moving costs are reduced by 20%, the flow of unskilled Mexicans into the U.S. is three times larger than in the benchmark economy. However, an increase in moving costs (of the same magnitude) has a much smaller effect on migrant flows, falling by only 19% relative to the benchmark.

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7 Appendix

An Alternative Formulation of the Agent's Problem

The agent's maximization problem defined in Section 2 is equivalent to solving the following problem for an agent from country A of skill i migrating to country j:

$$\max_{\{cy_j^{i,j}, k_j^{i,j}, co_j^{i,j}, y_j, l_j^i\}} \begin{bmatrix} y_A\left\{u(cy_A^{u,j}) + b[l_A^u u(co_A^{u,A}) + (1-l_A^u) u(co_A^{u,B})]\right\} + \\ (1-y_A)\left\{u(cy_A^{s,j}) + b[l_A^s u(co_A^{s,A}) + (1-l_A^s) u(co_A^{s,B})]\right\} \end{bmatrix}$$

subject to the budget constraints:

$$cy_A^{u,j} + k_A^{u,j} = \tilde{w}^{u,A} \qquad cy_A^{s,j} + k_A^{s,j} + e_A = \tilde{w}^{u,A}$$

$$co_A^{u,A} = \tilde{w}^{u,A} + R^w k_A^{u,j} \qquad co_A^{s,A} = \tilde{w}^{s,A} + R^w k_A^{s,j}$$

$$co_A^{u,B} + g_A^u = \tilde{w}^{u,B} + R^w k_A^{u,j} \qquad co_A^{s,B} + g_A^s = \tilde{w}^{s,B} + R^w k_A^{s,j}$$

$$y_A, l_A^i \in [0,1]$$

where $\tilde{w}^{i,j} = w^{i,j}(1-t^{i,j}) + x^{i,j}$, $\forall i = \{u,s\}$, $\forall j = \{A,B\}$.

Following Rogerson (1988), agents hold lotteries over education to determine which agents supply skilled labor when old. That is, workers randomize the education decision. In equilibrium, an agent from country A will be indifferent to becoming educated and remaining unskilled. However, allocations (consumption, capital investment, and the decision to migrate) will be different for agents who become skilled than those who remain skilled. I define y_A as the probability that the allocation $\{cy_A^{u,j}, k_A^{u,j}, co_A^{u,j}, l_A^u\}$ is realized (the agent remains unskilled), whereas $1-y_A$ is the probability that the allocation $\{cy_A^{s,j}, k_A^{s,j}, co_A^{s,j}, l_A^s\}$ is realized (the agent becomes skilled). Individuals buy and sell commodities contingent upon the outcome of an individual specific lottery. Since there is a continuum of agents in each country, the representative agent in each country chooses the probability of becoming skilled and hence determines the equilibrium fraction of skilled agents.

Differentiating with respect to y_A yields:

$$u(cy_A^{u,j}) + b[l_A^u u(co_A^{u,A}) + (1 - l_A^u) u(co_A^{u,B})] =$$
$$u(cy_A^{s,j}) + b[l_A^s u(co_A^{s,A}) + (1 - l_A^s) u(co_A^{s,B})]$$

This makes an agent from country A indifferent to investing in education and remaining unskilled. For $y_A \in (0,1)$, this condition must hold with equality.

The migration decision is modeled similarly. Agents from country A play a lottery for migrating: they choose the probability of moving to country A, l_A^i. The probability of living in country A for a specific type of agent is equivalent to the fraction of that type living in country A.

Differentiating with respect to l_A^i yields:

$$u(co_A^{i,A}) = u(co_A^{i,B}) .$$

For an interior solution, agents must receive the same value of living in both countries so there is no incentive to migrate. This constitutes the no-arbitrage condition that makes the agent indifferent to migrating. If $l_A^i = 0$, the agent strictly prefers to live in country B (recall l_A^i is the probability of living in country A); hence $u(co_A^{i,A}) < u(co_A^{i,B})$). Alternatively, if $l_A^i = 1$, the agent strictly prefers to live in country A; hence, $u(co_A^{i,A}) > u(co_A^{i,B})$.

The standard intertemporal Euler equation holds for an agent of skill i from country A:

$$u'(cy_A^{i,j}) = bR^w \{ l_A^i u'(co_A^{i,A}) + (1 - l_A^i) u'(co_A^{i,B}) \} .$$

The same follows for agent from country B. To compute the steady state of the model, I solve the non-linear system of equations.

8 Tables

Data	U.S.	Mexico
Fraction of labor force with college degree	0.24	0.09
Skill premium	2.11	2.92
Capital share	0.40	0.25

Table I. Data for Calibration

Parameter	Description	U.S.	Mexico
Ω	Labor force	3.7	1.0
e	Cost of education	0.058*	0.096*
t^u	Unskilled tax rate	0.15	0.07
t^s	Skilled tax rate	0.28	0.07
e	Unskilled transfer proportion	0.78	0.78
g^u	Unskilled moving cost	---	0.57
g^s	Skilled moving cost	---	0.21
b	Discount factor	0.36	0.36
d	Depreciation rate	0.88	0.88
s	ES parameter (K/U & S/U)	0.33	0.33
r	ES parameter (K/S)	-0.3	-0.3
m	Unskilled labor parameter	0.24*	0.34*
w	Capital parameter	0.56*	0.54*
Z	Technology level	10.0	5.0

Table II. Parameters of the Model

	Unskilled	Skilled	Total
Migration from Mexico to the U.S., Data	-	-	6.71 M
Migration from Mexico to the U.S., Model	4.52 M	0.60 M	5.12 M
Mexican Migrants as % of U.S. Labor Force	3.29%	0.44%	3.73%
Mexican Migrants as % of Mex Labor Force	14.76%	1.96%	16.72%

Table III. Migration from Mexico to the U.S., Benchmark

	Unskilled	Skilled	Total
Migration from the U.S. to Mexico, Data	-	-	1.1 M
Migration from the U.S. to Mexico, Model	0	0	0

Table IV. Migration from the U.S. to Mexico, Benchmark

	U.S.	Mexico
Capital stock	0.3691	0.0188
Fraction of population that is skilled	0.24	0.09
Skill premium	2.11	2.92

Table V. Results for Benchmark (Levels)

	Unskilled	Skilled	Total
Migration from Mexico to the U.S., Benchmark	4.52 M	0.600 M	5.12 M
Migration from Mexico to the U.S., Experiment	3.73 M	0.437 M	4.167 M
Percent Change with Experiment	-17.4%	-27%	-18.5%
Mexican Migrants as % of U.S. Labor Force	2.74%	0.32%	3.06%
Mexican Migrants as % of Mex Labor Force	11.82%	1.38%	13.2%

Table VI. Migration from Mexico to the U.S., Flat Taxes in the U.S.

	U.S.	Mexico
Percent change in capital stock	0.69%	-1.66%
Percent change in fraction skilled	3.03%	-0.15%
Percent change in skill premium	-14.19%	0.35%
Percent change in consumption	-1.04%	-1.13%

Table VII. Results for Flat Taxes (Difference from Benchmark)

	Unskilled	Skilled	Total
Migration from Mexico to the U.S., Benchmark	4.52 M	0.600 M	5.12 M
Migration from Mexico to the U.S., Experiment	4.37 M	0.649 M	5.02 M
Percent Change with Experiment	-3.3%	8.4%	-1.95%
Mexican Migrants as % of U.S. Labor Force	3.18%	0.47%	3.65%
Mexican Migrants as % of Mex Labor Force	14.21%	2.11%	16.32%

Table VIII. Migration from Mexico to the U.S., Progressive Taxes in Mexico

	U.S.	Mexico
Percent change in capital stock	-0.28%	3.19%
Percent change in fraction skilled	-0.05%	-0.63%
Percent change in skill premium	0.22%	8.62%
Percent change in consumption	-0.10%	-0.51%

Table IX. Results for Progressive Taxes (Difference from Benchmark)

	Unskilled	Skilled	Total
Migration from Mexico to the U.S., Benchmark	4.52 M	0.600 M	5.12 M
Migration from Mexico to the U.S., Experiment	2.27 M	0.082 M	2.352 M
Percent Change with Experiment	-49%	-86%	-54%
Mexican Migrants as % of U.S. Labor Force	1.69%	0.06%	1.75%
Mexican Migrants as % of Mex Labor Force	6.81%	0.25%	7.05%

Table X. Migration from Mexico to the U.S., No Redistributive Policies

	U.S.	Mexico
Percent change in capital stock	-4.13%	-4.74%
Percent change in fraction skilled	5.34%	-0.6%
Percent change in skill premium	-24.3%	3.88%
Percent change in consumption	2.53%	-1.0%

Table XI. Results for No Redistributive Policies (Difference from Benchmark)

	Unskilled	Skilled	Total
Migration from Mexico to the U.S., Benchmark	4.52 M	0.600 M	5.12 M
Migration from Mexico to the U.S., Experiment	3.81 M	0.333 M	4.14 M
Percent Change with Experiment	-15%	-44%	-19%
Mexican Migrants as % of U.S. Labor Force	2.79%	0.24%	3.03%
Mexican Migrants as % of Mex Labor Force	12.03%	1.05%	13.08%

Table XII. Migration from Mexico to the U.S., High Barriers to Entry

	Unskilled	Skilled	Total
Migration from Mexico to the U.S., Benchmark	4.52 M	0.600 M	5.12 M
Migration from Mexico to the U.S., Experiment	15.10 M	0.231 M	15.33 M
Percent Change with Experiment	234%	-61%	199%
Mexican Migrants as % of U.S. Labor Force	10.22%	0.16%	10.38%
Mexican Migrants as % of Mex Labor Force	73.85%	1.13%	74.89%

Table XIII. Migration from Mexico to the U.S., Low Barriers to Entry

	U.S.	Mexico
Percent change in capital stock	15.0%	16.4%
Percent change in fraction skilled	3.71%	1.14%
Percent change in skill premium	-12.4%	-10.4%
Percent change in consumption	7.3%	2.4%

Table XIV. Results for High Barriers to Entry (Difference from Benchmark)

	U.S.	Mexico
Percent change in capital stock	-11.3%	-42.8%
Percent change in fraction skilled	-3.63%	-1.07%
Percent change in skill premium	14.6%	11.5%
Percent change in consumption	-7.8%	-2.3%

Table XV. Results for Low Barriers to Entry (Difference from Benchmark)

9 Figure

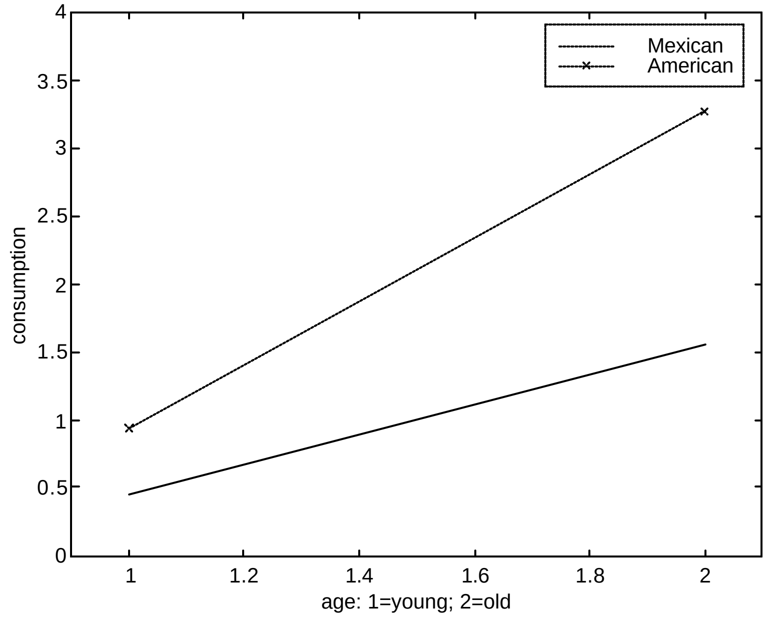

Figure i. Consumption Profile for Benchmark