Equipping Immigrants:

Migration Flows and Capital Movements

Fabian Lange (corresponding author)

Yale University

Douglas Gollin

Williams College

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Authors' addresses: Fabian Lange, Department of Economics, Yale University, 37 Hillhouse Ave., New Haven, CT 06520 USA; e-mail: **fabian[dot]lange[at]yale[dot]edu**; Douglas Gollin, Department of Economics, Williams College, Morey House, 121 Southworth St., Williamstown, MA 01267 USA; e-mail: **douglas[dot]gollin[at]williams[dot]edu**. Portions of this paper were written while Gollin was on leave at the Economic Growth Center, Yale University, and Gollin gratefully acknowledges the support of the Growth Center.

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ABSTRACT

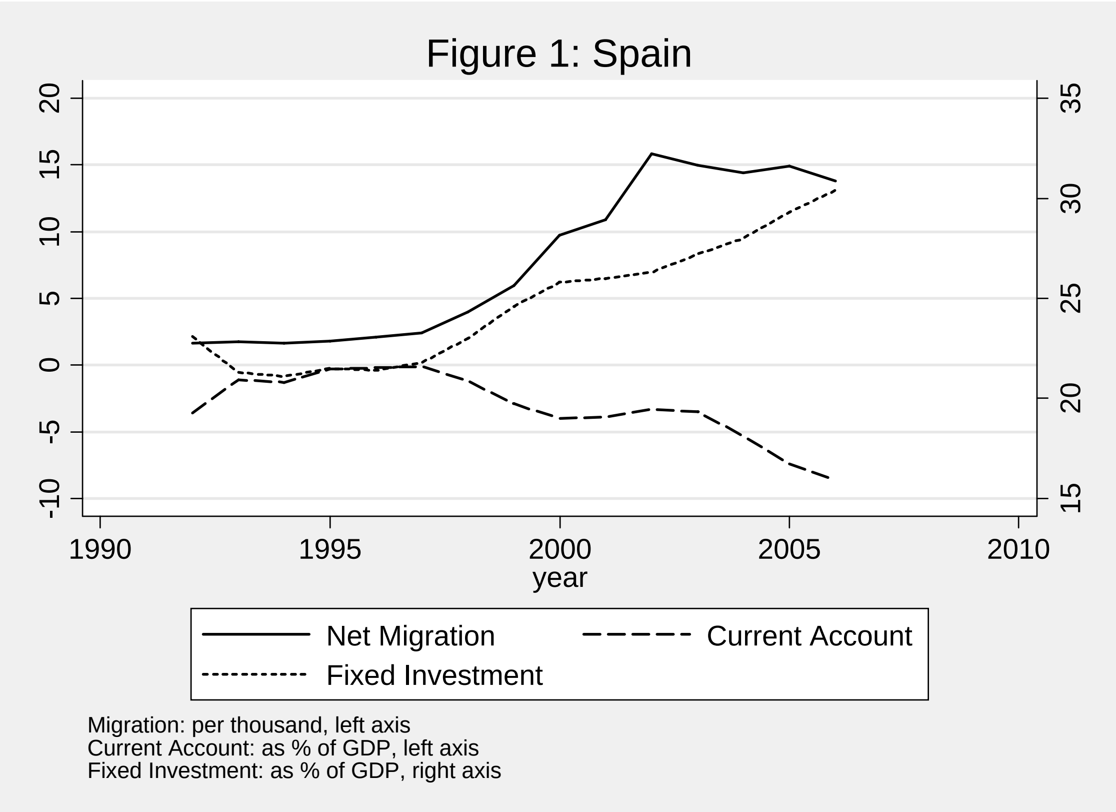
The large current account and capital account imbalances among OECD countries continue to attract attention among policy makers and researchers. This paper explores the extent to which migration-related capital flows can explain the movements and magnitudes of current and capital account imbalances in OECD countries. Migrants must be equipped with machines, and the resulting demands for capital are likely, all else being equal, to generate cross-border flows of capital. We analyze the empirical predictions of a simple model with endogenous capital and labor flows. This model allows for exogenous variation in the supply of capital and labor as well as in local production conditions. Empirically, we find that the observed correlation in investment rates, capital and labor flows are roughly consistent with a model in which capital is elastically supplied at a constant world interest rate, but where the supply of migrants to local economies varies exogenously. We then examine how much the increase in net migration rates contributed to the increase in the US current account deficit since 1960. Between 1960 and 2000, the US current account declined by about 4% of annual GDP. The increase in migration contributed about 1% of GDP to this decline.

1. Introduction

Economists who study how production inputs flow across borders tend to be divided into two groups: those that study the flows of capital and machinery and those that study human migrations. There are of course good reasons to study capital flows and human migrations separately. The discussion of exchange rate mechanisms and trading regimes does not usually benefit in either clarity or insight if its scope is widened to include the determinants of human migrations. In turn, whether a country has a fixed or freely floating exchange rate is probably less relevant for determining human migrations than are immigration policies and local labor market conditions.

Nevertheless, capital and labor flows are conceptually linked through the production function. Both capital flows and labor migrations represent movements of production inputs, and both capital flows and labor migrations are jointly affected by changing production conditions. In addition, the productivity of capital is at least partially determined by the labor supply in a location; thus migrations can cause capital flows. Conversely, the supply of capital determines the productivity of labor and exogenous increases in capital can raise the incentives to migrate.

In this paper, we argue that the link between migrations and capital flows (and therefore trade balances) is quantitatively important. Neglecting this link, researchers will omit an empirically highly relevant factor that helps explain observed movements of labor and capital across countries and over time. The recent experience of Spain illustrates this point. Figure 1 shows how the share of investment in GDP, the current account deficit and the migration rate in Spain evolved since the early 1990s. Since the mid 1990s, fixed investment and the current account deficit rose at the same time that net migration rates climbed to unprecedented levels. A researcher who ignores the interactions between capital and labor flows will omit a crucial component of the recent Spanish experience.



The Spanish experience suggests that capital flows and migrations may be linked in an important way. It is not clear, however, to what extent we can generalize from the experience of this particular country to a more general relationship between capital and labor flows.

In this paper, we ask to what extent the link between capital and labor flows is a general property of open economies. Specifically, we pose the question in the context of a simple overlapping generations model of capital flows and migrations.[1] We allow for

[1] Our analysis is closely related to Hatton and Williamson (1996) who have analyzed capital needs in the face of demographic changes in a conceptual framework that has many of the same components as

three sources of variation: local production conditions and the supplies of both labor and capital vary exogenously over time. All three sources of variation in this model induce a positive correlation between capital flows and migration rates. We use a calibrated version of this model to represent a small open economy facing an elastic supply of capital at the world interest rate. For such an economy, an exogenous increase in the net migration rate by 1 percentage point will raise investment rates and reduce current account balances by about 2.5% of GDP .

Our OLG economy is built around a simple, parsimonious set of standard assumptions. For this reason the basic forces at play in the model are extremely transparent. Furthermore, the predictions of the model will likely be similar to those generated by more complex and comprehensive representations of the economy.[2]

Using the model, we explore the impact of exogenous variation in migration rates on (endogenously determined) investment rates and capital flows. In fact, we can calculate the regression coefficients that would result from regressions of the fixed investment rate and capital flows on migration rates. These regression coefficients are unambiguously positive, but their magnitude depends on the amount of exogenous variation in the supply of labor and capital, as well as TFP. The relative variation from

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does our model. Hatton and Williamson (1996) have focused on variation in labor supply induced by variation in fertility and the demographic transition and found that demographic variation contributes significantly to the observed patterns in international capital flows and investment rates.

We instead focus on migration rates primarily because of empirical reasons. In Spain as in other developed countries, the short-run changes in the size of the population induced by changing migration rates are much larger than those induced by variations in fertility rates or mortality. Surges in migration rates can lead population sizes to increase rapidly and therefore lend themselves to empirically investigate the impact of demographic changes on capital needs and consequently the current account balance.

[2] An example of a more complex economy build to reproduce the conditions of the Spanish economy is (Izquierdo, Jimeno, and Riojas 2007). Their representation of the Spanish economy is meant to reproduce a variety of features of the Spanish economy but delivers a relationship between the current account balance and migration flows that is very similar to the one generated by our simpler model economy.

these sources, together with the elasticities of supply of labor and capital, determine the magnitude of the regression coefficients.

In general, if the exogenous variation in the supply of capital is large, then the model predicts that the regression coefficient will be higher than the theoretical causal impact of migrations on capital investments and capital flows. By contrast, if more exogenous variation comes from changes in labor supply, then the predicted regression coefficients will be smaller than the causal impact of migration on capital investments. If shocks to TFP provide the main source of variation, then the elasticities of supply for capital and migrant labor will determine the coefficient. If capital is supplied more elastically than migrant labor, then the estimated regression coefficient will be higher than the causal effect of migrations on investment rates; if capital is supplied less elastically, the opposite result obtains.

After we analyzed what our simply OLG economy implies for the predicted regression coefficients, we then consider how capital flows and migration rates are empirically related. For this purpose, we examine a panel of OECD countries over the time period 1970-2004. Our estimates are consistent with the predictions of the simple OLG model. We find that capital flows and investment rates are positively related in our panel of countries, and this finding is quite robust. Quantitatively, we estimate regression coefficients that are close to or slightly smaller than the causal impact of migration predicted by the calibrated model.

In a final quantitative exercise, we consider the US experience in the last half century. The evolution of the US current account balance has been widely discussed in the press and in policy circles, both nationally and globally. We ask how much of the observed increase in the current account balance over the last fifty years can plausibly be explained by the observed increase in migration rates during the same period. For this purpose we treat the observed increase in net migration rates as exogenous. We then simulate the counterfactual current account deficit that would have been observed if net migration rates had remained constant. We find that up to 25% of the increase in the current account deficit can be explained by the increase in migration rates.

Overall, we believe that this study further strengthens the case to consider demographic factors in the study of investment needs and current account balances.

2. Migrations and Capital Flows in Small Open Economies.

In this section, we propose an analytic framework to guide the empirical work. We begin by considering a world in which migrations are exogenous and capital flows freely across borders. A calibrated version of this model produces quantitative estimates of the causal effect of exogenous migrations on capital flows -- and consequently on current accounts.

We then endogenize migration flows and relax the assumption that capital flows freely across borders. We allow for three sources of variation in the model. There are exogenous shifters of both the supply of migrants and the supply of capital. In addition, we allow local production conditions (tfp) to vary exogenously across countries and time. Our qualitative finding is unambiguous. Regardless of how the model is parameterized, net immigration will be positively related to investment rates and capital flows.

However, how we parameterize the model does affect how large a regression coefficient we find when we regress investment rates or capital flows on immigration rates. We derive an analytic expression for the regression coefficient as a function of fundamental parameters, and we use this expression to discuss how the elasticity of investment rates with respect to immigration depends on the fundamentals of the model.

Population Dynamics

We consider a straightforward overlapping generations model in which individuals live for three periods of equal length: youth, middle age, and old age. Each cohort is indexed by its birth year, and in period t the cohorts born in t, $t-1$, and $t-2$ are alive simultaneously. As a notational convention, we will use the date subscripts to refer to the birth-cohort; the subscript j will index the country; and we will use superscripts to refer to the age of an individual. Variables for a child are superscripted with 0; the middle aged carry a superscript of 1, and the elderly have a superscript of 2. For example, $n_{t,j}^{0}$ represents the size of the cohort t and country j during youth, $n_{t,j}^{1}$ represents the size of this cohort during middle age and $n_{t,j}^{2}$ during old age.

In tracking the population dynamics of this economy, we allow for both fertility and migration. Between youth and middle-age an additional $m_{t,j} > -1$ migrants arrive for each individual of cohort t already in the country. Thus, $n_{t,j}^{1} = n_{t,j}^{0}\left(1+m_{t,j}\right)$.[3] Let the fertility rate be $f > 0$, such that each individual has $1+f$ children. We assume here that migrants are of working age when they arrive, and that they migrate before reproducing. For simplicity, we also assume that once they arrive in the destination country they adopt

[3] For simplicity, we assume that there is no mortality until the end of each individual's natural lifespan.

the same fertility as the resident population.[4] The growth rate of the middle age population is therefore:

$$\frac{n^1_{t+1,j}}{n^1_{t,j}} = \left(1 + f_{j,t}\right)\left(1 + m_{j,t+1}\right) \approx 1 + f_{j,t} + m_{j,t+1} > 0$$

The Life-Cycle of Income, Consumption and Savings

Individuals make economically relevant decisions about labor supply, consumption and savings during their middle age. At t, the middle aged (i.e. cohort $t - 1$) supply one unit of labor inelastically to the labor market and earn $w_{t,j}$. The old do not work. The middle aged allocate their income between own consumption, consumption for their children, and savings for old age. They provide $c^0_{t+1,j}$ units of consumption for each of their children, consume $c^1_{t,j}$ themselves, and save to provide $c^2_{t,j}$ units of consumption for old age.

Preferences over consumption in different generations are given by:

$$U\left(c_{t,j}{}^0, c_{t+1,j}{}^1, c_{t,j}{}^2\right) = \ln c_{t,j}{}^1 + \rho\left(f_{t,j}\right)\ln c_{t+1,j}{}^0 + \beta \ln c_{t,j}{}^2$$

Individuals are altruistic towards their children and therefore preferences are written over both own consumption in middle and old age and over the consumption of children. The altruistic weight function $\rho(f)$ on children's' consumption is positive and increasing. In addition, $\rho(0) = 0$.

[4]Considerable empirical evidence suggests that migrants often display fertility behavior that is partway between the prevalent patterns in their countries of origin and their countries of destination. For simplicity, we abstract from this pattern.

Individuals can borrow against their own income but not against their children's incomes.

(1) $$\left(1+f_{t,j}\right)c_{t+1,j}{}^{0}+c_{t,j}{}^{1}+\frac{1}{1+r_t}c_{t,j}{}^{2}=w_{t,j}$$

Initially, capital is mobile and the world interest rate r represents the cost of capital services.

We solve the first-order conditions together with the budget constraint to get consumption levels across generations:

$$c_{t+1,j}{}^{0}=w_{t,j}\frac{\rho\left(f_{t,j}\right)}{1+f_{t,j}}\frac{1}{1+\beta+\rho\left(f_{t,j}\right)}$$
$$c_{t,j}{}^{1}=w_{t,j}\frac{1}{1+\beta+\rho\left(f_{t,j}\right)}$$
$$c_{t,j}{}^{2}=w_{t,j}\frac{\left(1+r_t\right)\beta}{1+\beta+\rho\left(f_{t,j}\right)}$$

Production

The production technology is Cobb-Douglas:

(2) $$Y_{t,j}=A_{t,j}K_{t,j}{}^{\alpha}n_{t,j}{}^{1-\alpha}$$

Capital depreciates at rate δ and the law of motion of capital is therefore:

$$K_{t+1,j}=\left(1-\delta\right)K_{t,j}+I_{t,j}$$

Countries differ in five characteristics: the population size *n*, the technology parameter *A*, the growth rate of technology, $\tilde{a}_j$, and the parameters *m* and *f* which describe population growth due to migration and fertility, respectively. Let the distribution of countries with respect to these parameters be $G(n, A, \tilde{a}_j, m, f)$. The support of this distribution is $R^+ \times R^+ \times (-1, \infty) \times (-1, \infty) \times (-1, \infty)$. Small letters denote per-worker quantities.

Markets clear and labor and capital are paid their marginal products. Standard algebra allows us to solve for the ratio of capital to GDP, which will play an important role in determining the strength of the relation between investment and migration rates:

$$\frac{k_{t,j}}{y_{t,j}} = \frac{\alpha}{r_t}$$

National Accounting

We can now aggregate the individual level variables on savings and investments to obtain aggregate net savings (S-I). Standard accounting identities relate the aggregate net savings rate to the balance of payment (BoP) consisting of net factor payments to foreigners (B) and net exports NX :

$$S - I = B + NX$$

Gross investment equals the change in capital stock plus the replacement of depreciated capital. Equation (3) expresses investment as a ratio of GDP:

(3)
$$\begin{aligned}\frac{I_{t,j}}{n^1_{t,j}y_{t,j}} &= \frac{K_{t+1,j}-(1-\delta)K_{t,j}}{n^1_{t,j}y_{t,j}}\\ &= \frac{k_{t+1,j}}{k_{t,j}}\frac{k_{t,j}}{y_{t,j}}\frac{n^1_{t+1,j}}{n^1_{t,j}}-(1-\delta)\frac{k_{t,j}}{y_{t,j}}\\ &= \frac{\alpha}{r_t}\left(\frac{k_{t+1,j}}{k_{t,j}}\frac{n^1_{t+1,j}}{n^1_{t,j}}-(1-\delta)\right)\end{aligned}$$

Total savings equals labor income today, net of the consumption of children and the middle aged today. Consumption of the old is financed out of capital income:

(4)
$$\begin{aligned}\frac{S_{t,j}}{n^1_{t,j}y_{t,j}} &= \frac{w_{t,j}-c_{t,j}{}^1-\left(1+f_{t,j}\right)c^0{}_{t+1,j}}{y_{t,j}}\\ &= \frac{w_{t,j}-w_{t,j}\dfrac{1}{1+\beta+\rho\left(f_{t,j}\right)}-\left(1+f_{t,j}\right)w_{t,j}\dfrac{\rho\left(f_{t,j}\right)}{1+f_{t,j}}\dfrac{1}{1+\beta+\rho\left(f_{t,j}\right)}}{y_{t,j}}\\ &= (1-\alpha)\frac{\beta}{1+\beta+\rho\left(f_{t,j}\right)}\end{aligned}$$

Combining and simplifying delivers the following expression for excess savings (the capital account) as a ratio of GDP:

(5)
$$\frac{S_{t,j}-I_{t,j}}{n^1_{t,j}y_{t,j}} = \frac{(1-\alpha)\beta}{1+\beta+\rho\left(f_{t,j}\right)}-\frac{\alpha}{r_t}\left(\frac{k_{t+1,j}}{k_{t,j}}\left(1+f_{t,j}+m_{t+1,j}\right)-(1-\delta)\right)$$

We already imposed the condition that consumers' budget constraints must hold and that all of output is paid to the factors of production. Together these ensure that goods markets within the country clear.[5]

The problem simplifies further if we assume that the distribution G is constant over time and that therefore interest rates are constant. This delivers:

$$\text{(6)} \qquad \frac{S_{t,j}-I_{t,j}}{n^1_{t,j}y_{t,j}}=\frac{(1-\alpha)\beta}{1+\beta+\rho\left(f_{t,j}\right)}-\frac{\alpha}{r}\left(a_{t,j}\left(1+f_{t,j}+m_{t+1,j}\right)-(1-\delta)\right)$$

Equations (3) and (4) show how investments and savings depend on migration, fertility and total factor productivity growth across countries and time. Equations (5) and (6) then use the expression for savings and investment to determine the relation between our variables of interest and the current account balance. Overall, these equations provide a simple account of how investment needs and consequently the current account balance are related to migration, fertility, and total factor productivity growth.

Fertility and Migration

Equation (3) is the core equation in our analysis and shows how population growth – whether caused by migration or fertility – is related to investment needs. As is evident from the equation, population growth from either source raises the investment

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[5] To close the model we use $\frac{k_{t+1,j}}{k_{t,j}}=\left(\frac{A_{t+1,j}}{A_{t,j}}\frac{r_t}{r_{t+1}}\right)^{\frac{1}{1-\alpha}}$ and impose that the world market for investment goods clears by integrating over the distribution $G_t(n,A_t,A_{t+1},m,f)$:

$$\int n^1_{t,j}y_{t,j}\left(\frac{(1-\alpha)\beta}{1+\beta+\rho\left(f_{t,j}\right)}-\frac{\alpha}{r_t}\left(\left(\frac{A_{t+1,j}}{A_{t,j}}\frac{r_t}{r_{t+1}}\right)^{\frac{1}{1-\alpha}}\left(1+f_{t,j}+m_{t+1,j}\right)-(1-\delta)\right)\right)dG_t=0$$

needs of the economy similarly. Migration and fertility differ, however, in how they affect the current account. In our model, fertility lowers savings rates – whereas migration does not. Countries with high fertility rates have low savings rates because altruistic parents with many children substitute consumption of children for old age consumption and therefore save less. All else equal, expenditures on children will be larger in countries with higher fertility rates, lowering the savings rate. Thus, while migration and fertility-induced growth in the work force has the same impact on investment rates, fertility induced growth will have a larger impact on the current account balance than will migration-induced changes.

In a similar conceptual framework, Hatton and Williamson (1996) analyze how demographic changes in the size of the working age population affect capital flows. Our paper extends this analysis and focuses on migrations. In OECD countries, birth rates typically change slowly over time, and variations in birth rates affect the size of the labor force only with a delay of several decades. By contrast, migration rates often vary substantially within reasonably short periods of time -- and they have essentially immediately impact on the size of the work force. Relative to birth rates, migration episodes arguably offer better opportunities for empirical identification of the relationship between investment rates and the growth of the workforce in developed countries.

The Multiplier Relating Migrations and Capital Demand

The OLG economy above also provides a first indication on the quantitative relevance of migrations in determining capital flows. The investment equation (3) shows that variation in migration rates will be translated into variations of investment via the multiplier $\frac{\alpha}{r_t}\frac{k_{t+1,j}}{k_{t,j}}$. In a stationary world, with constant interest rates and productivity this multiplier reduces to $\frac{\alpha}{r}$, which is also the ratio of capital to output ($\frac{k}{y}$) in the steady state. The causal impact of migrations on investment rates and current account balances can therefore be calibrated using the capital-output ratio $\frac{k}{y}$.

A typical value for the capital-output ratio found in the macroeconomic literature (e.g. Manuelli and Seshadri, 2007) is 2.5.[6] This implies that a one percentage point exogenous increase in migration rates will cause an increase in total investment needs of about 2.5 percentage points of GDP. Historically, migration rates vary less than 1 percentage point over medium length horizons -- even though in exceptional periods some countries (such as Spain during the last decade) have observed swings in migration rates of this order of magnitude. In the US during the second half of the 20th century, net migration rates have fluctuated between 0.1 and 0.5 percentage points. Our simple calibration here suggests that it is plausible that these variations in migration rates can account for a fairly substantial fraction of the variation in investment needs and current account balances observed over time.

Endogenous Migrations and Interest Rates

Above we showed that exogenous migrations can have moderate to large impacts on investment rates and current accounts in small open economies. We assumed that these economies are small and open and that therefore investment goods were elastically

[6] With a capital share on the production function of 0.35, this corresponds to a gross interest rate (including compensation for depreciation) of about 0.14.

supplied at the world interest rate. Furthermore, we considered only exogenous variation in migration rates, and excluded all other sources of variation from the model. However, the empirical evidence available to us stems from observational data from a panel of countries that experience not only exogenous variations in migrations, but perhaps also exogenous variation in the supply of capital and in productivity. These countries will also probably face input supply functions that are (at least in the short run) upward sloping. To account for these features of real economies, we next analyze how migration and investment rates are related if (*i*) the supply of investment goods slopes upwards with respect to the interest rate; (*ii*) migration rates depend on local wages; and (*iii*) the source of variation includes not only exogenous variation in migration rates but also variation in the supply of capital and in local production conditions.

Rather than fully specify the savings and migration decisions, we instead specify directly the migration supply function and the capital supply function. To keep the analysis tractable, we postulate constant elasticity migration and capital supply functions.

(7) $$N_{t,j} = \Psi^{N}_{t,j} w_{t,j}^{\theta_N}$$

(8) $$K_{t,j} = \Psi^{K}_{t,j} r_{t,j}^{\theta_K}$$

The parameters $\left(\Psi^{K}_{t,j}, \Psi^{N}_{t,j}\right)$ capture exogenous determinants of capital and labor supply to a location *j* at time *t*.

Using the input supply functions (7) and (8), together with the input demand functions implicit in the production function, we can solve for the market clearing quantities of *K* and *N*:

(9) $$N_{t,j} = \left(\left(\Psi^{K}_{t,j}\right)^{\alpha\theta_N} \left(\Psi^{N}_{t,j}\right)^{1+\theta_K(1-\alpha)} A^{\theta_N(1+\theta_K)} \right)^{\frac{1}{1+\alpha\theta_N+(1-\alpha)\theta_K}}$$

(10) $$K_{t,j} = \left(\left(\Psi^{K}_{t,j}\right)^{1+\alpha\theta_N} \left(\Psi^{N}_{t,j}\right)^{\theta_K(1-\alpha)} A^{\theta_K(1+\theta_N)} \right)^{\frac{1}{1+\alpha\theta_N+(1-\alpha)\theta_K}}$$

These and equation (3) solve for the (gross) investment rate and the growth of the labor force as:

(11) $$i + \frac{\alpha}{r}(1-\delta) = \frac{\alpha}{r}\left(d\Psi_K^{1+\theta_N\alpha} d\Psi_N^{\theta_K(1-\alpha)} dA^{\theta_K(1+\theta_N)} \right)^{\frac{1}{1+\alpha\theta_N+(1-\alpha)\theta_K}}$$

(12) $$1+m = \left(d\Psi_K^{\theta_N\alpha} d\Psi_N^{1+\theta_K(1-\alpha)} dA^{\theta_N(1+\theta_K)} \right)^{\frac{1}{1+\alpha\theta_N+(1-\alpha)\theta_K}}$$

In equations (11) and (12) we suppress the *t* subscripts and define $dX = \frac{X_{t+1}}{X_t}$.

Interpreting Regression Coefficients

We are trying to understand how migration rates and investments are empirically related if migrations and interest rates are both partially endogenous and if there are multiple sources of variation in the model: variation in the supply of migrants, variation in the supply of capital, and variation in local productivity levels, A. We will allow for variation in these three variables by specifying $\left(d\Psi_K, d\Psi_N, dA\right)$ as random variables. To isolate the effect of each of these random variables, we assume that they are uncorrelated. This allows us to focus on the correlation between investment rates and migration rates that stems from the structure of the production function and the assumptions on the supply of foreign labor and the supply of capital incorporated in equations (7) and (8).[7]

We are primarily interested in the coefficient resulting from a regression of investment rates on net migration rates. To examine how this regression coefficient depends on the fundamentals of the model expand equations (11) and (12) linearly around the means $\left(i^*, m^*\right)$ of investment and migration rates. With some additional algebra, we obtain the following expression for the regression coefficient on migration rates in a regression of investment rates on migration rates:

(13)
$$\beta_{i|m} \approx \left(i^* + (1-\delta)\frac{\alpha}{r}\right) * mf$$
$$with$$
$$mf = \frac{\left((1-\alpha)\theta_K\left(1+(1-\alpha)\theta_K\right)\right)CV^2\left(\Psi_N\right) + \left((1+\theta_N\alpha)\theta_N\alpha\right)CV^2\left(\Psi_K\right) + \left(\theta_N\left(1+\theta_K\right)\right)\left(\theta_K\left(1+\theta_N\right)\right)CV^2(A)}{\left(1+\theta_K(1-\alpha)\right)^2 CV^2\left(\Psi_N\right) + \left(\theta_N\alpha\right)^2 CV^2\left(\Psi_K\right) + \left(\theta_N\left(1+\theta_K\right)\right)^2 CV^2(A)}$$

Here $CV^2(X) = \dfrac{\operatorname{var}(X)}{E[X]^2}$ represents the squared coefficient of variation.

All terms in equation (13) are positive and therefore $\beta_{i|m} > 0$ regardless of how the model is parameterized. This robust prediction stems from the fact that both labor migrations

[7] It is not possible to derive the empirical relation between I and m without imposing some restrictions on the correlations of the forcing variables $\left(d\Psi_K, d\Psi_N, dA\right)$.

and investments represent changes to production inputs. If production conditions improve, then this economy will draw both more capital and more migrant labor. In addition, since the production function exhibits constant returns to scale and is specified with only two inputs, these inputs are by necessity *q*-complements and therefore migration flows and investments tend to reinforce each other. For these reasons, the relation between investments and labor demands -- and consequently migrations -- will be positive regardless of the source of variation in the model or the supply elasticities of capital and labor.

According to equation (13) the regression coefficient $\beta_{i|m}$ equals $\left(i^* + (1-\delta)\frac{\alpha}{r}\right)$ multiplied by a multiplicative factor *mf* that depends on the parameters (θ_N, θ_K) and the source of variation in the model. The term $\left(i^* + (1-\delta)\frac{\alpha}{r}\right)$ will be close to the ratio $\frac{\alpha}{r}$, which we have previously shown to be the causal effect of an exogenous increase in migration rates on capital flows in a small open economy.

We will therefore focus on the factor *mf* in equation (13). Inspection of *mf* shows that it can be larger or smaller than 1 depending on the source of variation in the data and the values of (θ_N, θ_K). This implies that it is not generally possible to deduce the causal effect of migrations on investment rates from the coefficient on migrations.

Nevertheless, if we make additional assumptions about the source of variation in the model, then we can use equation (13) to interpret the size of the regression coefficient. To achieve this we will sequentially shut down all but one of the fundamental structural sources of variation and then consider the size of *mf*. Table 1 shows how *mf* varies with the parameter values (θ_N, θ_K) for each of the possible sources of variation in the data.

TABLE 1: PREDICTED MAGNITUDE OF REGRESSION COEFFICIENT OF CAPITAL FLOW OR INVESTMENT RATE ON MIGRATION RATE, RELATIVE TO $\frac{\alpha}{r}$.

Source of Variation	*Multiplicative factor mf*	$\theta_K \to 0$	$\theta_K \to \infty$	$\theta_N \to 0$	$\theta_N \to \infty$
Ψ_N	$\frac{(1-\alpha)\theta_K}{1+(1-\alpha)\theta_K}$	<1, →0	<1, →1	<1	<1
Ψ_K	$\frac{1+\theta_N\alpha}{\theta_N\alpha}$	>1	>1	>1, →∞	>1, →1
A	$\frac{\theta_K(1+\theta_N)}{\theta_N(1+\theta_K)}$	>1 if $\theta_K > \theta_N$ else <1			

This table shows how the multiplicative factor *mf* in equation (13) behaves if we consider only one source of variation and for different parameter values. In each row we consider one source of variation and shut down the two remaining sources of variation. We then show the multiplicative factor *mf* and how *mf* behaves as the (positive) parameters (θ_N, θ_K) vary over (0, ∞).

Depending on whether *mf* falls short of or exceeds 1, the estimated regression coefficients will be downward or upward biased estimates of $\left(i^* + (1-\delta)\frac{\alpha}{r}\right) \approx \frac{\alpha}{r}$. It should be clear from equation (13) and Table 1 that the direction and size of the bias depends crucially on the source of variation as well as the relative supply elasticity of capital and labor. Our priors with respect to these parameters and the source of variation will clearly determine how we interpret the coefficient estimates.

Interestingly, even if the entire variation in the data is due to exogenous variation in the supply of migrants, the regression coefficient $\beta_{i|m}$ will only identify $\frac{\alpha}{r}$ if the supply of capital is infinitely elastic ($\theta_K \rightarrow \infty$), a condition that will only hold in the long run. In the short run (finite θ_K), even if the principal source of variation is exogenous variation in net migration rates, the coefficient $\beta_{i|m}$ will be biased downward relative to $\frac{\alpha}{r}$.

Next, consider $\beta_{i|m}$ if the variation in the model stems from exogenous shifts in the supply of capital. From row 3 of Table 1 we see that in this case the estimates of $\beta_{i|m}$ will exceed $\frac{\alpha}{r}$ and they will exceed $\frac{\alpha}{r}$ more if the supply elasticity of migrants is low. If fads and fashions for investing cause most of the variation in investment rates, and if migration rates do not respond much, then observed changes in investment rates will be large relative to changes in migration rates, even though migration rates do not drive investments. In this case, $\beta_{i|m}$ will exceed $\frac{\alpha}{r}$.

Finally, the last row of Table 1 examines *mf* when the entire variation in the model stems from variation in total factor productivity. In this case, the multiplicative factor *mf* will be smaller or larger than 1, depending on the relative elasticity of capital and migration. If the supply elasticity of capital exceeds the supply elasticity of labor, then $\beta_{i|m} > \frac{\alpha}{r}$. In this case, the strength of the relationship between migration and investments will be stronger among economies that face a supply of capital that is relatively elastic, compared to the supply of labor.

Discussion

Equation (13) illustrates how the regression coefficient on migration rates varies with the supply elasticities of capital and labor and with the source of variation in the model. Crucially, it is not possible to determine the size of the regression coefficient $\beta_{i|m}$ relative to the causal effect of migration on investment rates without imposing additional assumptions.

We believe that exogenous variation in migrants contributes significantly to the overall variation in migration rates. From the perspective of receiving countries, migration rates vary exogenously if caused by political changes or policy decisions in sending countries. For example, the collapse of the Soviet Union has resulted in substantial migrations into western European countries that are largely exogenous to the recipient nations. Economic crises in source countries can also generate migration pressures. During the course of the 2000-2001 economic crisis in Ecuador, around 1 million migrants left Ecuador, a majority of which for Spain, contributing substantially to the large inflow of migrants into Spain after 2000. Similarly, the poor performance of the Mexican economy in the 1970s and 1980s contributed significantly to the flow of migrants into the US. Policy decisions in receiving countries can also contribute to variation in migration rates – and in some cases these changes are plausibly exogenous to economic conditions. Efforts to close the US-Mexico border would most likely reduce net immigration rates to the US, and in some situations these changes might be induced by policy shifts that would be plausibly distinct from economic conditions. For example, what party controls Congress is likely to alter immigration policies, irrespective of economic conditions.

Our empirical investigation of a panel of OECD countries below indicates that the regression coefficient is close to, but maybe slightly smaller than the common calibrated value of $\frac{\alpha}{r} = \frac{k}{y} = 2.5$. According to Table 1, the observed regression coefficient can be smaller than $\frac{\alpha}{r}$ if exogenous variation in the supply of foreign workers is the main source of variation in the model and if the supply of capital is not infinitely elastic. In other words, the data are consistent with a view of the world in which capital flows are driven in part by exogenous variation in migration.

While we cannot strictly reject alternative explanations, the observed low regression coefficients on migration rates are difficult to reconcile with a world in which exogenous shifters in the supply of capital provide the main source of variation.

There are however other reasons, both within the model and outside the model why the regression coefficient observed in the data might be smaller than $\frac{\alpha}{r}$. If variation in local productivity is the main driving force, then the regression coefficient will be smaller than $\frac{\alpha}{r}$ if the elasticity of the supply of labor is larger than the elasticity of supply for capital. Intuitively, an increase in TFP will induce both capital flows and labor flows. If the elasticity of labor supply is large, then the observed movements of capital will be small relative to the observed movements of labor, implying that the regression coefficients on migration rates will be small.

Outside of the model, we obviously have to consider the possibility that migration rates are measured with error, biasing our estimates downwards. Other reasons outside of the model why the estimated coefficient might be smaller are the limitations that many countries impose on the economic activities of certain types of migrants, such as refugees. Furthermore, migrants are often less educated than residents in OECD countries. Both of these explanations could lead migration rates to overstate the flow of effective labor into an economy.

Regardless of how the model is parameterized, we predict a positive relation between investment and migration rates. We test this empirical prediction in the next section. We also show that the estimated regression coefficient is close to or slightly smaller than 2.5, the standard calibrated value of $\frac{\alpha}{r} = \frac{k}{y}$. The model implies that this latter value is the long run causal effect of migration rates on investment rates and current account flows for small open economies.

3. A Panel of OECD Countries

In the previous section, we analyzed what our simple model implies for regressions of investment rates on migration rates. We derived the robust prediction that investment rates and migration rates are positively related. We derived the regression coefficient as a function of the elasticity of supply for capital and labor respectively, as well as of the sources of variation in the model. The magnitude of the regression coefficient depends crucially on the elasticity of the supply of capital relative to the elasticity of supply of labor, as well as the relative importance of different sources of variation in the model.

In this section, we consider the empirical correlation of investment rates with migration rates (and with population growth more generally) to test the prediction of the above model. We also consider how migration and population growth rates affect the current account balance. Our analysis uses a panel of OECD countries between 1970 and

2004. We exclude the former communist countries due to the short panels that are available for these economies. We also exclude Korea and Mexico, since there is no data on migration for these. This leaves us with 24 economies. The data on investment rates and current account balances are taken from the Penn World Tables, and the net migration rates are from the OECD. Native population growth rates are calculated (as total population growth less net immigration) rates and are likewise based on OECD data. The native population growth rate provides a rough proxy for natural growth of the labor force.

Not all of the countries have data for all years, and thus we have an unbalanced panel. Table 2 summarizes the data by country.

TABLE 2: MEANS AND STANDARD DEVIATIONS OF VARIABLES IN OECD

Country	Year Range	Current Account % of GDP	Investment % of GDP	Pop. Growth % [1]	Net Migr. Rate % of Pop	Share in OECD GDP
Australia	1970-2003	-3.70 (1.72)	25.78 (1.85)	0.78 (0.22)	0.55 (0.20)	0.02
Austria	1970-2004	-0.74 (1.60)	25.80 (2.14)	0.06 (0.23)	0.22 (0.31)	0.01
Belgium	1970-2000	2.49 (2.83)	23.85 (2.24)	0.13 (0.09)	0.09 (0.10)	0.01
Canada	1970-2004	-0.96 (2.04)	24.95 (1.56)	0.63 (0.32)	0.51 (0.31)	0.03
Denmark	1970-2004	0.17 (3.27)	23.91 (2.97)	0.14 (0.19)	0.13 (0.13)	0.01
Finland	1970-2004	-0.00 (4.34)	29.95 (6.42)	0.35 (0.17)	0.03 (0.18)	0.01
France	1970-2004	0.62 (1.76)	24.82 (2.06)	0.39 (0.09)	0.12 (0.07)	0.06
Germany	1970-2003	-0.73 (1.70)	26.41 (3.54)	-0.22 (0.32)	0.38 (0.44)	0.09
Greece	1970-2003	-4.59 (2.40)	26.55 (6.70)	0.34 (0.36)	0.35 (0.39)	0.01
Iceland	1970-2004	-3.14 (3.38)	26.11 (5.05)	1.10 (0.36)	-0.04 (0.32)	0.00
Ireland	1970-2003	-3.71 (5.21)	23.28 (3.83)	0.87 (0.27)	0.09 (0.56)	0.00
Italy	1970-2003	-0.01 (1.80)	24.85 (3.41)	0.09 (0.34)	0.13 (0.22)	0.06
Japan	1970-2000	1.85 (1.39)	34.13 (2.52)	0.65 (0.40)	-0.01 (0.02)	0.13
Luxembourg	1970-2004	6.71 (9.15)	26.29 (2.51)	0.20 (0.37)	0.68 (0.43)	0.00
Netherlands	1970-2004	4.18 (1.98)	24.35 (3.20)	0.39 (0.19)	0.25 (0.14)	0.02
New Zealand	1970-2004	-4.69 (2.72)	22.76 (2.60)	1.03 (0.49)	0.01 (0.58)	0.00
Norway	1970-2004	2.73 (7.00)	30.49 (6.09)	0.34 (0.15)	0.17 (0.10)	0.01
Portugal	1970-2004	-10.21 (3.98)	23.09 (3.16)	0.42 (0.85)	0.13 (0.90)	0.01
Spain	1970-2003	-1.69 (1.81)	25.17 (2.37)	0.49 (0.41)	0.20 (0.41)	0.03
Sweden	1970-2004	1.65 (2.95)	22.38 (2.64)	0.13 (0.16)	0.21 (0.17)	0.01
Switzerland	1970-2004	7.67 (3.21)	29.95 (2.95)	0.26 (0.39)	0.22 (0.40)	0.01
Turkey	1973-2004	-2.47 (2.10)	15.75 (4.42)	1.84 (0.44)	0.15 (0.15)	0.01
UK	1970-2002	-0.91 (1.71)	19.10 (1.44)	0.18 (0.09)	0.06 (0.11)	0.06
USA	1970-2003	-1.54 (1.26)	20.85 (1.59)	0.72 (0.07)	0.32 (0.12)	0.36

1 The population growth rate is measured net of the migration rate.

Table 2 shows that investment rates, current account balances, population growth rates and net migration rates vary widely across countries. A cursory look suggests that the average differences in these variables are not systematically related across countries and this cursory look is confirmed in our regression analysis. There are clearly large differences in investment rates and current account balances across countries that are not related to migration and population growth rates. The model proposed above does not account for these large differences and our regressions will abstract from these structural differences by controlling for country fixed effects. The empirical analysis therefore focuses on variation in migration rates and population growth rates around the long-run country mean.

Table 3 displays the results of regressing investment shares of GDP on the net migration rate as well as the population growth rate net of migration. The results in columns 1-4 are obtained by weighting the sample using the average country GDP. We prefer the weighted regressions because we know from Table 2 that a number of small countries (e.g. Luxembourg, Iceland, and Finland) display very large standard deviations in some of the variables of interest. These small countries are likely to be buffeted severely by small shocks that would average out in larger economies. Since we do not model these shocks, we prefer to de-emphasize them by weighting the data with GDP.[8]

Column 1 shows the results if, in addition to country and year fixed effects, we include only the net migration rate as an independent variable in the model. Column 2

[8] Columns 5-8 estimate the same specifications using the raw unweighted data. Columns 9-12 finally display results from unweighted regressions excluding those economies whose GDP is less than 1% of the OECD total GDP and also the US. We exclude the US, because the US is by far the largest economy in the OECD and we want to make sure that the results in the GDP-weighted regressions are not primarily driven by the US experience. The unweighted regressions including the small countries tend to produce somewhat smaller estimates for the impact of investment. Overall however, the results are surprisingly robust. Note that since most of these countries have income levels that are roughly comparable, we would get similar results if we weighted by population.

also allows for a country specific time-trend. We find in columns (1) and (2) that an increase in the net migration rate is associated with a 1.0-1.5 percentage point increase in the investment rate. The model also predicts that other sources of growth in the labor force (for example, through age structure or birth effects) will lead to increases in the investment rate. We therefore show in columns (3) and (4) the results of regressions in which we crudely proxy for variation in the natural growth of the labor force, using the population growth rate net of the migration rate.[9] Now the estimated coefficients on the net migration rates increase to somewhere between 2 and 2.5. Interestingly, the population growth rate does itself come in with a coefficient that is similar in magnitude – though generally smaller – compared with the coefficient for the net migration rate.

The fundamental prediction of the model in Section 2, regardless of parameter values, is that the correlation between labor and investment rates will be positive. Our empirical findings do provide broad support for this prediction.

In the previous section, we showed that the estimated regression coefficients will deviate from the causal effect of an increase in the net migration rate on the capital invested in an economy. In our conceptual model, the long run causal impact of an exogenous increase in the local labor force is equal to $\frac{\alpha}{r} = \frac{k}{y}$, which is typically calibrated to 2.5. Our point estimates are typically somewhat smaller than this calibrated value, but most cannot be statistically distinguished from 2.5. This is a striking result.

Table 4 repeats the analysis of Table 3 using the current account balance instead of investment rates. The structure of the table is the same as that of Table 3. Empirically

[9] If we used data on labor force growth rates, which are available, these would already include migration flows, so we would be double-counting migrants.

our results are consistent with the notion that at least some of the increased demand for capital associated with fluctuations in migration and natural population growth rates are met by importing capital from abroad. Migration rates and natural population growth rates are fairly consistently negatively correlated with the current account balances. This relationship is however not as robust as the relation documented in Table 3. This should not be surprising, since the variation in investment rates will only translate into equivalent variation in the current account balance if we assume that economies are sufficiently open that all capital needs are met by importing capital, rather than through domestic savings.

TABLE 3: INVESTMENT, MIGRATION AND NATURAL POPULATION GROWTH IN OECD COUNTRIES, 1970-2004.

	GDP Weighted Data				Raw Data				Restricted Data			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Net Migration Rates	1.40	1.34	2.58	2.03	0.58	0.81	0.95	1.41	1.69	2.04	1.68	2.92
	[0.62]**	[0.42]***	[0.68]***	[0.47]***	[0.64]	[0.59]	[0.58]	[0.44]***	[0.72]**	[0.59]***	[0.72]**	[0.62]***
Population Growth Rates			2.07	1.22			0.72	1.24			0.15	1.53
			[0.68]***	[0.59]**			[0.50]	[0.58]**			[0.76]	[0.78]*
Country-Time trend		Yes		Yes		Yes		Yes		Yes		Yes
Observations	821	821	806	806	821	821	806	806	400	400	396	396
R-squared	0.83	0.93	0.84	0.93	0.69	0.82	0.7	0.83	0.83	0.9	0.83	0.9

All specifications include year and country fixed effects.
Heteroskedasticity robust standard errors in brackets.
* significant at 10%; ** significant at 5%; *** significant at 1%
Columns 1-4 on data weighted with GDP
Columns 9-12 on countries with more than 1% of total OECD GDP and excluding US

TABLE 4: CURRENT ACCOUNT BALANCES, MIGRATION AND NATURAL POPULATION GROWTH IN OECD COUNTRIES, 1970-2004.

	GDP Weighted Data				Raw Data				Restricted Data			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Net Migration Rates	-0.39	-0.05	-1.03	-0.23	-1.03	-0.75	0.24	-0.95	-0.68	-0.53	-0.90	-1.53
	[0.39]	[0.31]	[0.45]**	[0.44]	[0.43]**	[0.32]**	[0.52]	[0.36]***	[0.43]	[0.43]	[0.53]*	[0.52]***
Population Growth Rates			-1.09	-0.26			2.43	-0.29			-0.40	-1.67
			[0.41]***	[0.54]			[0.53]***	[0.46]			[0.44]	[0.55]***
Country-Time trend		Yes		Yes		Yes		Yes		Yes		Yes
Observations	821	821	806	806	821	821	806	806	400	400	396	396
R-squared	0.83	0.93	0.84	0.93	0.69	0.82	0.7	0.83	0.83	0.9	0.83	0.9

Discussion and Caveats

The empirical analysis in Tables 3 and 4 clearly provides an incomplete picture of the relation between investment rates, current account balances and sources of population growth. First, we do not account for many potential drivers of investment rates, such as business cycles or endogenous changes in savings rates. Our intention here is not to run a horse-race between various plausible candidate variables. Such horse races are in our opinion of limited use in cases where the specification of the estimating equations is not well prescribed by theory, where the variables entering these horse races are typically jointly determined and measured with considerable error, and where the data available for these horse races stems from a short panel.

The purpose of presenting the above results is instead to demonstrate that the simple correlations between migration rates, natural population growth, investment and current account balances are consistent with the conceptual framework laid out in the previous section. The most robust finding of the conceptual model is that investment rates should be positively correlated with migration rates and the growth in the labor force. Our empirical results are strongly consistent with this point. In addition, the model also predicts that for open economies, the correlation between current account balances and migration rates should likewise be positive.

At this point, we emphasize that our empirical specifications focus on within-country variation over time. The across-country variation does not adhere to the patterns predicted by the conceptual framework outlined in Section 2. If we run a simple regression of investment rates on net migration rates and fertility analogous to column (3) of Table 3 but omit the country fixed effects, the regression coefficients on net migration rates and population growth rates are -2.88 and -1.44 respectively and are both significant at the 5% level. These estimates indicate that there are long run differences in the investment level that correlate negatively with population growth (regardless of source). Our model does not explain these long-run differences; we do not have a good explanation why these long-run negative correlations in investment rates and population growth exist.

Section 4: An Empirical Application: The US experience since 1960.

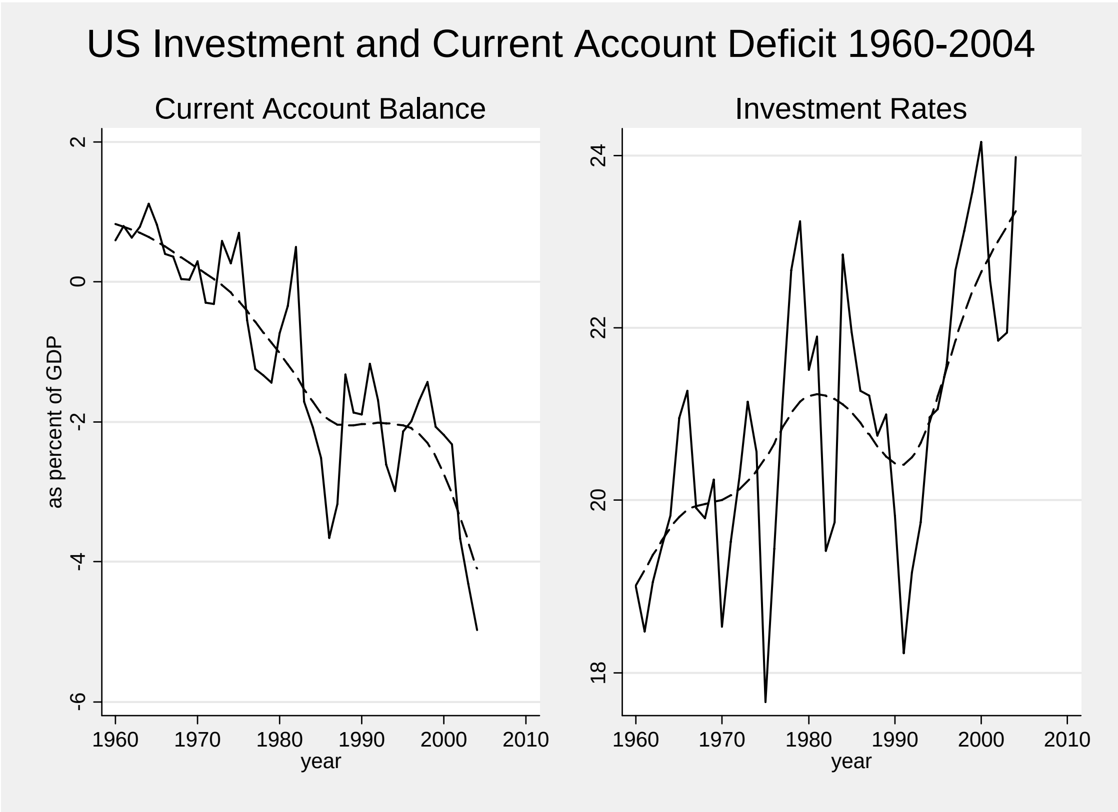
In this section, we ask whether the observed increases in immigration into the US during the last half century can explain a substantial fraction of the observed changes in the current account balance and investment rates. Much of the same data that goes into these calculations already contributed to the regression analysis in Section 3, and the results here therefore do not offer independent empirical evidence. However, they do provide an indication on whether the trends in migration over the last 40 years have contributed in a quantitatively relevant manner to the increase in the investment rates as well as the increase in the current account deficits observed for the US during the last half century. We believe that immigration does indeed contribute to the increased current account deficit, but by no means does it explain the entire increase observed in the data.

To begin, we examine the data on US investment rates and the current account balance from 1960 to 2004. The trends in investment as a share of GDP and of the current account[10] are displayed in the two panels of Figure 2. Overall, we observe that there are high-frequency movements in both the current account and in the investment rates.

[10] Penn World Tables v.6.2

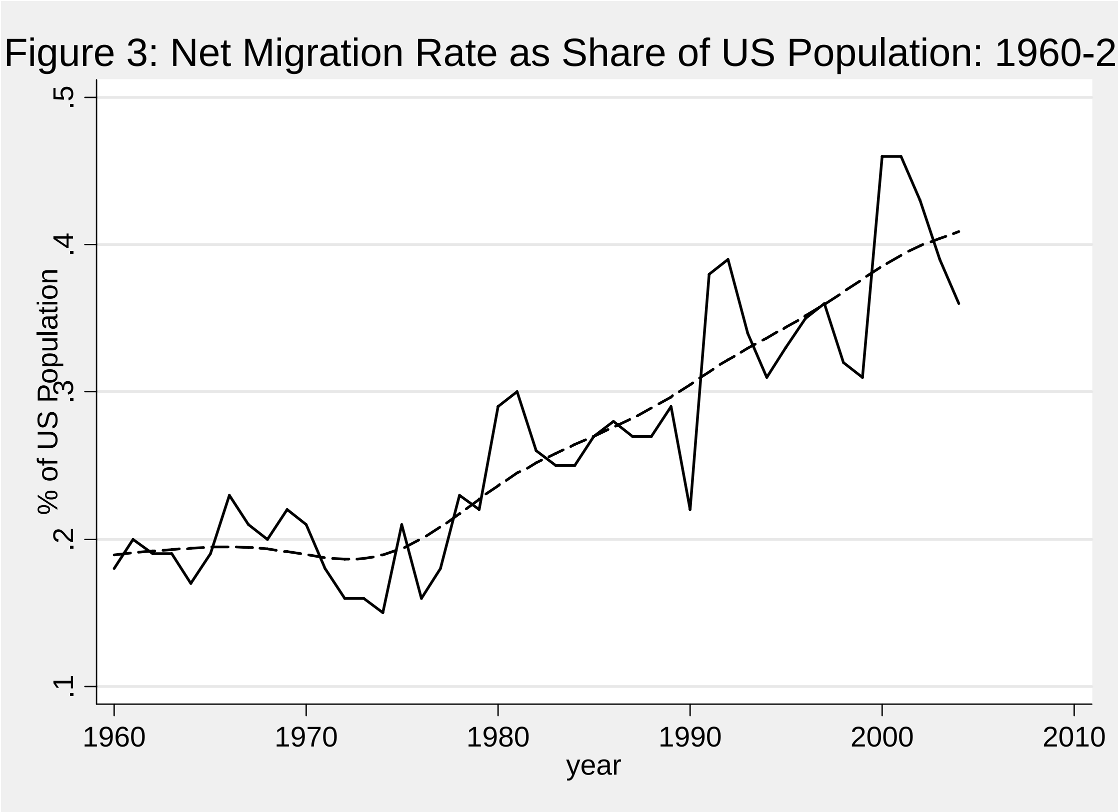
Because our theory does not offer serious explanations of high frequency movements in the current account balance, we also consider the de-trended time series. Figure 2 therefore also displays the trend components for both time-series` from a Hodrick-Prescott filtering exercise using a smoothness parameter of 100.

Figure 2



Between 1960 and 2004, the share of investment in US GDP has increased by about 5 percentage points and at the same time the current account deficit has increased by an equivalent amount. These trends were however not uniform as is evident by the substantial variation of the detrended time-series as well as in the trend line. Around 1990, for example, the trend towards an increasing share of investment and higher current account deficits was temporarily interrupted. Overall however, during the period between

1960 and 2004 investment rates and current account deficits were both increasing by substantial amounts.



During the same time-period, the US experienced a sustained increase in net migration rates. Whereas throughout the 1960s and 1970s the net migration rate in the US fluctuated around or just below 0.2 percent, the net migration rate started to increase towards the end of the 1970s and reached about 0.4 percentage points between 2000-2004.

How much did the increase in the net migration rate contribute to the trends in investment rates and current account balances? To answer this question we interpret the increase in the net migration rate as exogenous and assume that the capital supply to the US is elastic at the world interest rate. We then apply the calibrated value of $\frac{\alpha}{r} = 2.5$ to the net migration rate to generate a counterfactual investment and current account series. This series corresponds to the increase in the investment share of GDP and the current account balance that would have pertained if the net migration rate would have remained at its 1960 level.

In Table 5 we summarize the long run increases in the investment rates and current account balance both observed and under the counterfactual assumption that net migration rates had remained at their 1960 values.

TABLE 5 US CURRENT ACCOUNT BALANCE, INVESTMENT AND MIGRATION RATES

	1960	*Δ(1960-1980)*	*Δ(1980-2000)*
Net Migration Rate (% of Pop.)	0.18	0.11	0.28
Investment Share (% of GDP)	18.99	1.52	5.17
Current Account Balance (% of GDP)	0.59	-1.32	-2.68
Migration Contribution	-	0.275	0.7

Shown are the initial values of migration rates, investment share and current account balance for 1960 as well as the 1960-1980 and 1980-2000 values in those measures. Furthermore, we show the contribution of the migration component to these changes. This contribution is positive for the investment rate and negative for the change in the current account balance.

Clearly, the increase in net migration rates does not represent the main driver in the increase in investment rates or current account deficits. Its contribution is however not insignificant. Our calculations suggest that about 15% of the increase in the investment rate since 1960 and about 25% of the increase in the current account deficit can be attributed to the increase in net migration rates over the same time-period.

Section 5 Discussion and Conclusion

Capital and labor flows are related phenomena and reinforce each other. In this paper, we used a simple conceptual framework to assess the causal impact of labor migrations on investment rates. This allows us to answer the question of how much investment rates would increase if the supply of labor to an economy increased by 1 percentage point. In our simple framework this causal parameter is equal to the units of capital each worker in the economy is endowed with, relative to the annual output of this worker. Standard calibrations set the capital-output ratio to equal about 2.5. This implies that a 1 percentage point exogenous increase in in-migrations will cause an increase in investment rates and current account deficits by about 2.5 percentage points.

We then turn to a panel of OECD countries and confirm that within countries the relation between migration rates and natural population growth is positive. The range of estimated regression coefficients typically includes the predicted value of $\frac{\alpha}{r}$=2.5, but the point estimates are typically, but not always somewhat smaller than 2.5.

Clearly, we cannot interpret the observed regression coefficients as causal parameters. We therefore use our simple conceptual framework to predict the coefficient for a regression of investment rates on migration rates, if there are three distinct sources of variation. These sources of variation include exogenous variation in the supply of labor and in the supply of capital. We furthermore endogenize labor flows and capital flows by making both dependent on the prices paid to labor and capital. Finally and importantly, we allow for the possibility that variation in total factor productivity drives the data. With these additional features, the theoretical regression coefficient is a complicated function of the elasticities of supply of labor and capital as well as the magnitude of the variation induced by the exogenous components of the model. The prediction that the regression coefficient is positive is robust; however, the magnitude of the coefficient depends on the parameterizations of the model and has implications for our interpretation.

If we apply the causal relation between migration rates to the US, then we find that the link between labor flows and capital flows at the heart of our model helps explain the observed variation in the time-series of migration rates, investment shares and current account balances. During the last 50 years, capital investments as a share of GDP rose by a non-trivial amount. During the same period, the US has become a major importer of both labor and capital. Our counterfactual analysis assumes that the increase in the net migration rate is exogenous and then asks how much of the increase in investments and capital inputs can be explained by the increase in immigration. We find that 15 - 25% of the overall increase in investment rates and the current account can be explained by the increase in net migration rates.

A number of developed countries observed much larger fluctuations in net migration rates than the US in recent years. The 1.5 percentage point increase in the migration rates observed for Spain, for instance, implies an increase in the investment rate of up to 4% and an equivalent worsening of the current account. Such a variation in investment rates is large by any standard.

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