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Source-country earnings and emigration☆

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ABSTRACT

While higher wages at home reduce the incentive to emigrate by increasing the opportunity cost of working abroad, they also facilitate emigration for liquidity-constrained individuals. Our theoretical model examines the interaction between these two effects. We show that (i) the relationship between the home-country wage and emigration pressure is hump-shaped, (ii) the hump is more pronounced the lower the cost of migration, and (iii) the ratio of high to low-skilled emigrants is decreasing in the home-country wage. We test our model empirically for three different skill groups of emigrants and find strong evidence in support of the three hypotheses. The peak emigration rate for the low skilled is estimated at $4000 at 2000 PPP-adjusted prices. A rise in the annual per-capita income of the source country from $231 of the poorest economy in our sample to $4000, is associated with an increase in the emigration rate of its low-skilled workers from about 2.7% to 5.0%.

1. Introduction

This paper examines how income in the source country affects the decision to emigrate. Starting with the pioneering works of Sjaastadt (1962) and Harris and Todaro (1970), an increase in the home wage is seen as a deterrent to emigration. It has been recognized by Vanderkamp (1971), however, that an increase in income in the sender region may also play a facilitating role in financing the move.[3] Accordingly, the effect of a change in income of the sender region on the outflow of migrants may be either positive or negative.

Two related questions are addressed by Hatton and Williamson (1994b) in their analysis of mass migration from Europe to the Western Hemisphere between 1850 and 1913: "Why emigration rates were not always highest from the poorest countries, whose populations clearly would have gained the most from the move, and why emigration rates often rose from low levels as successful development took place at home" (Hatton and Williamson, 1994b, p. 534). One possible explanation attributes an important role to liquidity constraints. They note that while workers may have a strong incentive to flee poverty, the cost may be prohibitive for most potential migrants, as their income, being too close to the subsistence level, makes it impossible to accumulate the required savings and pay the transport fee. With industrialization and growth of wages at home, more workers can manage to finance their move, giving rise to a positive correlation between the home wage and emigration flows over time. At some point the liquidity constraint is no longer binding so that further increases in the real wage cause the emigration rate to fall from its peak.

In the case of Mexico–US migration, there is also considerable evidence that liquidity constraints play an important role in the *selection*

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[3] There is an important recent literature providing evidence on the effects of liquidity constraints on international migration. On the basis of data from the Progresa program in Mexico, Angelucci (2004) studies the migration impact of transfers to liquidity-constrained households and finds that unconditional cash transfers are associated with a 60% increase in the average migration rate. More recently, Angelucci (2013) reports similar findings on the basis of data from Mexico's Oportunidades program. In their analysis of internal migration in Russia, Andrienko and Guriev (2004) find evidence that it is constrained by lack of liquidity and that it rises with an increase in income. Bazzi (2012) finds on the basis of Indonesian data that financial constraints are an important barrier to international migration, while Mendola (2008) offers evidence that Bangladeshi households with international migrants tend to be larger, wealthier and have the highest total gross incomes. There is also ample historical evidence on the role of liquidity constraints in influencing migration flows in the 18th and 19th centuries (see, e.g., Hatton and Wiliamson (1994a, 1994b, 1998), Faini and Venturini (1994), and Chiswick and Hatton (2006, p. 2), and during the Colonial period in America (see, e.g., Grubb (1985) and Galenson (1984)).

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of emigrants. With respect to schooling, Chiquiar and Hanson (2005) find that those most likely to migrate are in fact young men with moderately high schooling, not the least skilled candidates for migration for whom the incentive to work in the U.S. is the strongest. Concerning *illegal* immigration from Mexico to the U.S.A., Orrenius and Zavodny (2005, p. 216) note along the same lines that an increase in Mexican incomes may "…enable more individuals to bear the cost of illegally entering the U.S.A., shifting the distribution of undocumented immigrants towards individuals with fewer resources and presumably less education." In a broader setting, using data on 70 source countries and 21 OECD destinations, Belot and Hatton (2012) examine the selection of migrants by education. Their study points in the same direction: a higher share of population living in poverty is associated with more highly educated migration streams.

The present study contributes to this growing literature on the effect of liquidity constraints on the scale of emigration and the selection of emigrants. Our theoretical model considers the problem of a liquidity-constrained agent with a given planning horizon, who must decide whether it pays to migrate, given that this requires sacrificing present for future consumption in order to meet the cost of reaching the destination. The level of the home wage, migration cost, and the economic conditions abroad affect the expected welfare gain from migration. The relationship between this gain and the home wage, w, is found to have the shape of an inverted U. At very low levels of income an increase in w plays a key role in facilitating the move, while at higher levels of income, the increase in the opportunity cost of leaving the home country begins to dominate. The critical level of the home wage,w_{max}, at which the gain from migration reaches the maximum, is an increasing function of migration costs, K, and the foreign wage rate, w^*. There is another, lower critical level of the home wage, w_0, below which it does not pay to migrate. The burden of accumulating the savings needed to meet the cost of migration then outweighs the gains from the move. Finally, there is a critical level of the home wage, w_1, higher than w_{max}, such that it does not pay to migrate if $w > w_1$. Workers then enjoy higher welfare by remaining at home. We find that w_1 is increasing in w^* and decreasing in K, while w_0 is increasing in K and decreasing in w^*. These critical values of the home wage are found to vary across individuals with different levels of skills, while for any given skill level, the shape of the inverted U (or the hump) is flatter, the higher the cost of migration.

In analyzing our theoretical model we focus on three testable implications: i) there is a hump-shaped relationship between the source-country wage and the emigration rate for liquidity-constrained individuals, ii) this relationship is more pronounced when migration costs are lower, and iii) the ratio of high-skilled to low-skilled emigrants is a decreasing function of the source-country wage of low-skilled workers. We test these implications in an empirical investigation which combines a rich dataset on the stock of emigrants in 30 OECD countries by country of origin and skill level, developed by Docquier et al. (2009), with a number of auxiliary datasets that provide us with control variables. Although our primary analysis is based on cross-country data, we also utilize the panel dimension of our data on emigrant stocks to check the robustness of our findings. The results strongly support our three hypotheses and are consistent across data types.

A key distinguishing feature of our empirical analysis is that we test the hump-shaped relationship separately for three different skill groups. We find strong statistical evidence of this relationship for low-skilled migrants. By contrast, if we do not separate the skill groups, we find no such evidence. Since members of the low-skilled group are most likely to be affected by a shortage of liquidity in formulating their migration decisions, this finding provides more robust evidence of the importance of liquidity constraints. The peak of the hump for low-skilled workers takes place at the source-country average income level of $4000 at 2000 PPP-adjusted prices. A rise in the annual per-capita income of the source country from $231 of the poorest economy in our sample to $4000, is associated with an increase in the emigration rate of its low-skilled workers from about 2.7% to 5.0%.

We test the second implication of our model (i.e., how the hump-shaped relationship varies with migration costs) using alternative measures of these costs. To the best of our knowledge, this is the first study that uncovers evidence that the hump is more pronounced when migration costs are lower. Finally, with respect to the third implication, our empirical analysis confirms that the ratio of high- to low-skilled migrants is decreasing in the level of source-country earnings of low-skilled workers.

The next section provides a brief review of the related literature. Our theoretical analysis of how a worker's home-country earnings affect the decision to migrate is provided in Section 3. Section 4 describes the data used in our empirical investigation, explains our estimation strategy and presents the findings. Section 5 summarizes the main results of the paper.

2. Review of the related literature

There is a large and growing literature on the relationship between earnings in the home country and the decision to migrate. We begin with a review of the studies addressing theoretical aspects of the problem, with the aim of highlighting the contribution of our paper to that literature. We subsequently review related empirical studies and compare our findings with those of the earlier contributions.

The theory of how wealth, earnings at home, and migration costs influence the decision to migrate is still in its early stages of development. The insights of Vanderkamp (1971), Faini and Venturini (1994), and Hatton and Williamson (1994b) have paved the way for more formal treatment. Building on the work of Borjas (1987) along the lines of Chiquiar and Hanson (2005), Orrenius and Zavodny (2005) develop a model of migration from Mexico to the U.S.A., whereby individuals go abroad if their expected earnings in the host country exceed the sum of their earnings at home and migration costs. It is assumed that (1) the least-skilled workers are budget constrained and (2) the relative return to skill is greater in the home country. Liquid asset holdings are posited to depend on one's earning potential, which in turn depends on skills. In that simple static model, the least skilled do not migrate, as they lack the savings needed to cover migration costs, while the most-skilled individuals do not migrate because the return to skill in Mexico exceeds that in the U.S.A.

In a similar vein, McKenzie and Rapoport (2007) consider a model of migration where rural households may or may not be liquidity constrained, depending on their ownership of a productive asset such as land. Larger landholding makes it easier to finance migration costs, but it also increases the opportunity cost of migration, as landholding is assumed to have a positive effect on the productivity and earnings of each household member on the family farm. In this context, it is possible to solve for the critical level of assets such that the family's subsistence needs do not prevent it from being able to send a migrant abroad. When the subsistence constraint is binding, an increase in wealth raises the propensity to migrate. When wealth is high enough so that the subsistence constraint is no longer binding, further increases in wealth merely raise the opportunity cost of migration (measured in terms of lost productivity at home) and therefore reduce the incentive to migrate.

The simple theoretical structures developed by Chiquiar and Hanson (2005), Orrenius and Zavodny (2005) and McKenzie and Rapoport (2007) address some of the key implications of migration costs, liquidity constraints, wealth, and potential earnings at home and abroad in shaping migration decisions. The present study extends the analysis further by considering the problem in a dynamic framework. We treat a potential migrant's asset holdings at any point in the lifecycle as an endogenous variable. The optimal saving rate is determined not only by an agent's preferences and earning potential at home, but also the expected earnings abroad and any other variables that may influence the scale of benefits related to being in the foreign rather than in the home country. We then measure the sacrifice that migration calls for in terms of forgone utility over the pre-migration, asset-accumulation phase of the planning horizon and compare it with the utility gain stemming