Life Satisfaction and International Migration: Testing a Subjective Well-Being Model of Intention to Migrate Abroad*

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Abstract

In this paper I examine the effect of life satisfaction on intention to migrate abroad using survey data on 18 Latin American countries. Three key findings emerge that support life satisfaction as a significant driver of intention to migrate abroad. First, the findings suggest that an increase in the levels of life satisfaction reduce international migration intentions and the effect is more pronounced when life satisfaction is interacted with education. More specifically, attaining an additional year of education and being more satisfied significantly reduces intention to migrate abroad. Second, even after controlling for relative deprivation the negative effect of the life satisfaction and education interaction term on intention to migrate abroad remains highly statistically significant suggesting that international migration decisions of those with higher education are not solely driven by income differentials. And third, I find that those who are highly educated (college and higher) have strong intentions to migrate abroad, after controlling for life satisfaction and relative deprivation, driven mainly by higher aspirations, lack of opportunities offered by the home country, and weak future economic outlook of the home country. This suggests that individuals in the highly educated cohort are plausibly "frustrated achievers".

Keywords: international migration, subjective well-being, relative deprivation

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1 Introduction

Migration has long been a mechanism for those in search of better opportunities and a good life. A critical debate in the migration domain relates to the migration and specifically international migration of educated and skilled individuals from developing and emerging economies. The 2011 Organisation for Economic Co-operation and Development (OECD) International Migration Outlook states that there is a rise in immigration numbers of students and skilled workers into OECD countries and though there was a decline during the recession period, the overall trend continues to be positive. It further states that countries and regions with skilled and educated labor, especially China, India, and Latin America, continue to be among the top out-migration countries.

These trends raise an interesting theoretical and policy puzzle. Drawing upon neoclassical economics theories it is normally argued that raising incomes in sending countries can reduce international migration. However, even though most of these countries are among the fastest growing emerging economies and have seen wage increases between 6 and 9 percent over the last five years, they continue to experience large international migration outflows year after year, a significant portion of which is out-migration of skilled and educated labor. Further, even though emerging economies are attracting huge foreign investments and creating jobs for skilled workers, they are constantly striving to hold on to their skilled and educated labor. According to a 2001 McKinsey study, roughly a third of the professionals in research and development leave developing countries to work in the United States, European Union, or Japan. According to the 2010 American Community Survey, of all Latin American-born migrants into the United States who are 25 years and older, 25 percent are high school graduates while 28 percent have college and higher level of education (U.S. Census Bureau, 2010). These trends and statistics are suggestive of mechanisms guiding international migration decisions that go beyond economic growth and incomes and may plausibly explain part of the puzzle.

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Using data on Latin America, this paper investigates subjective well-being and more specifically, life satisfaction, as a mechanism that may be driving international migration decisions especially of those who are more educated. Instead of examining linkages solely between life satisfaction and intention to migrate abroad, I also include relative deprivation to identify possible off-setting effects. Relative deprivation is a crucial factor as previous studies have found that income relative to a reference group is closely linked with household migration decisions. Stark (1984) and Stark and Taylor (1989, 1991) posit that individuals within a household undertake migration not only to increase the absolute income of the household but also to improve the economic position of their household relative to a specific reference group. Literature on the linkages between life satisfaction and migration is very limited. A study by DeJong (2000), which explicitly addresses life satisfaction and rural-urban migration decisions in Thailand, finds that evaluation of life satisfaction based on income, comfort, stimulation, and affiliation along with norms about migration are important determinants of intention to migrate. However, his analysis focuses on internal or within-country migration. There is no previous study that has examined intention to migrate *abroad* from a subjective well-being perspective while controlling for relative deprivation.

The paper aims to contribute both to the literature on international migration as well as on subjective well-being. It examines whether life satisfaction is significant in driving international migration decisions after accounting for income differentials. In particular, it investigates the effect of life satisfaction on the migration intentions of highly educated (college and higher) individuals and the factors that reinforce the

effect. In doing so, it aims to identify whether the highly educated individuals who intend to migrate are possibly "frustrated achievers", that is, individuals who are more educated and income-wise better off but still less satisfied (Graham and Pettinato, 2002).

The key findings of this paper are that those who attain higher education and also report higher levels of life satisfaction have weaker intentions to migrate abroad and the result holds across different specifications. Even though relative deprivation significantly increases intention to migrate abroad, the interaction between life satisfaction and education continues to have a significant negative effect on intention to migrate abroad. In addition, those who are highly educated have stronger intentions to migrate abroad owing to their higher aspirations and discontent with opportunities in and economic outlook of their home country. The findings suggest that subjective well-being is a key underlying mechanism driving international migration decisions besides income differentials, particularly of those with higher education.

The paper is organized as follows. Section 2 reviews existing literature and findings on migration, relative deprivation, and subjective well-being. Section 3 describes the data and discusses the methodological framework. Section 4 presents empirical strategy, summary statistics, and main findings. Section 5 discusses the mechanisms driving intention to migrate abroad. Section 6 concludes.

2 Migration, subjective well-being, and relative deprivation: A review of literature

While there is literature examining relative deprivation and migration, and life satisfaction and migration separately, there is no study that links the three variables in the context of international migration decisions. Existing literature on relative deprivation and migration argues that in addition to absolute income, migration decisions within a household are also significantly correlated with the desire to improve economic position of the household relative to a specific reference group (Stark, 1984; Stark and Taylor, 1989, 1991). The relative deprivation construct has been systematically and in detail explained by Crosby (1982) in his study on relative deprivation felt by working women. He argues that relative deprivation arises due to two preconditions - (i) to want what one does not have and (ii) feeling that one deserves whatever one wants but does not have. Using the economic approach Stark and Yitzhaki (1988) further refined the construct of relative deprivation by building upon Runciman's (1966 as quoted in Stark and Yitzhaki 1988) conditions for an individual to feel relatively deprived. Runciman defined four conditions - (i) a person does not have X (ii) the person sees other person or persons as having X (iii) the person wants X and (iv) he sees it as feasible that he should have X. The relativity of the concept is due to (ii) and (iv). The feeling of deprivation is defined by (i) and (iii).

Stark and Taylor (1991) empirically test the effect of relative deprivation on migration using Mexico-to-U.S. migration data. They use a sample of 423 adults from 61 randomly selected households in two villages in Mexico and collect data on both individual and household characteristics. Their findings support their hypothesis that greater relative deprivation in terms of income was associated with a higher probability of a household allocating its labor time towards migration. In addition, they find that there is a significant negative effect of the relative deprivation squared term on migration, indicating that individuals at the bottom of the income distribution may not engage in migration due to the associated costs. Bhandari (2004) tests the relative deprivation hypothesis in Nepal using the Chitwan Valley Family Study and the Population and Environment Study surveys consisting of observations from 1805 households. Instead of income, he defines relative deprivation in terms of ownership and access to land. Based on this definition of relative deprivation he finds that after controlling for the effects of other socio-economic factors, those with lesser landholdings

(in terms of area) were more likely to engage in migration than those with greater landholdings. However, the effect was not statistically significant for those in the bottom-most category of landholdings suggesting that subsistence and survival was probably more important to these households than allocating resources towards migration. Thus, his findings are in accordance with those of Stark and Taylor (1991).

In the one study that examines internal migration and life satisfaction using the 1992 and 1994 waves of the Thailand National Migration Survey, DeJong (2000) finds that evaluation of life satisfaction based on income, comfort, stimulation, and affiliation along with norms about migration are important determinants of intention to migrate. In addition, he finds gender differences in expectations and evaluations of life satisfaction, which in turn affect the migration behavior of men and women differently. While women are driven to migrate by lower income and stimulation, men's intentions are promoted by affiliation and networks.

In summary, both relative deprivation and life satisfaction examined separately have a significant effect on migration decisions. Drawing upon this literature, this paper evaluates the effect of life satisfaction on intention to migrate abroad after controlling for effects of relative deprivation using nationally representative survey data.

3 Data and methodological framework

3.1 Dataset

I use four waves of the Latinobarometro survey from 2004 to 2007 for the analysis. The surveys are repeated cross-sections conducted annually and contain approximately 1000 observations each from 18 countries across Latin America which include: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela. Because the survey does not interview the same people every year, it is not possible to examine changes in life satisfaction and international migration intentions, except in aggregate, if we use the cross-sections. To overcome this shortcoming, I create a "pseudo-panel" using the four waves to account for unobserved heterogeneity using observed characteristics of the respondents.

Deaton (1985) proposes creating a pseudo-panel from repeated cross-sectional data by taking weighted-average values of variables of interest by time-invariant characteristics such as year of birth, time or period of survey, and gender and forming "cohorts". This time series of "cohort" averages is treated as an approximation of a true panel. In this paper, I use country of birth, 10-year age-categories, and gender as the time-invariant characteristics to create cohorts from each wave and then merge the waves to create a four-year pseudo-panel. The cohort averages are computed using sampling weights corresponding to each wave.

To illustrate the use of pseudo-panel mathematically, if the true panel model were:

$$y_{it} = \alpha + \beta x_{it} + \mu_i + \nu_{it} \tag{1}$$

where, μ_i represents unobserved individual fixed effects that do not change over time and ν_{it} represents unobserved effects that vary over both individuals and time. However, in a pseudo-panel this model cannot be identified because each individual is observed only once. Then, we can define C cohorts based on a set of time-invariant characteristics Z, which are similar to the individual fixed effects. The variables, both dependent and independent, are the cohort means (where the original variable is continuous) or proportions (where the original variable is a dummy). The pseudo-panel model can then be written as:

$$\bar{y}_{ct} = \bar{x}_{ct}\beta + \bar{\mu}_{ct} + \bar{\nu}_{ct} \tag{2}$$

where, $\bar{y}_{ct}$ is the average of y_{it} over all individuals belonging to cohort c at time t. Unlike the true panel model, $\bar{\mu}_{ct}$ retains the t subscript to indicate that each period's cohort mean is calculated using a different set of individuals (Russell and Fraas, 2005).

3.2 Methodological framework

The research question that this paper examines is: *Is overall life satisfaction significant in explaining intention to migrate, particularly of individuals with higher education, after controlling for relative deprivation?* Three key variables need to be operationalized and delved into - intention to migrate, life satisfaction, and relative deprivation.

The use of intention to migrate instead of actual migration numbers as the dependent variable is both data-driven as well as theory-driven. The Latinobarometro only asks respondents about their intention to migrate abroad by posing the question *"Have you and your family ever seriously considered going to live abroad?"* and does not ask about actual present or past movements. It may be argued that intentions are not reflective of actual migration patterns and therefore examining intentions may be of little relevance to migration policy. However, previous research on intention to migrate or the behavioral aspect of migration suggests otherwise and justifies the use of intentions to migrate as a predictor of actual migration. Among the first to investigate the socio-psychological dimensions of within-city migration, Rossi (1955), uncovers "place utility" factors as the main drivers of migration decisions and these are pertinent even in the context of international migration. These factors include assessments of social and physical characteristics of the current place or country of residence, job opportunities, and access to public services. Rossi (1955) does not limit himself only to identifying socio-psychological factors that increase migration potential, but goes a step further and uses them to predict actual migration, and verifies the predictions in a follow-up survey carried out eight months later. He finds that most of the families intending to move had done so and an even higher percentage of the families not intending to move remained in their old neighborhoods. Thus, he finds that migration intentions strongly correlate with actual patterns of migration or movements.

In a review of five studies on intention to migrate conducted in different socio-economic contexts, Simmons (1986) finds that in four out of five studies that conducted follow-up surveys, intentions to migrate or move were moderately strong predictors of subsequent migration. These studies also utilize place-utility factors as the main independent variables to assess the degree of migration intentions. He argues that migrant intentions and motives provide a more complete understanding of why people move, and therefore help us identify the policies which would have to be implemented to modify the magnitude and/or direction of migration. In a more recent study on international migration, Liebig and Sousa-Poza (2004) use intention to migrate in their analysis and argue that using actual migration data in analyzing behavioral linkages especially in the context of highly educated individuals can be problematic due to certain inherent biases in the data such as migration policies, migrant networks, proximity, and so on. As "intention to migrate" is more pertinent to the incentives and disincentives that may lead to actual migration, it is a good proxy to test the propensity to migrate. In this paper, I use satisfaction with education services, satisfaction with health services, and confidence in institutions as additional control variables to capture any effect that place-utility might have on intention to migrate abroad.

To operationalize subjective well-being, I use the question on life satisfaction - *"In general, how satisfied*

are you with your life?" Life satisfaction is measured on a scale of 1 to 4 with value 1 representing "not at all satisfied" and value 4 representing "very satisfied". The use of life satisfaction as against happiness is justified by literature, which argues that life satisfaction is a cognitive and judgmental state, which refers to an assessment of life as a whole. Essentially, life satisfaction is a cognitive-evaluative concept in contrast with happiness, which is thought of primarily as an affective concept reflecting positive feelings (Tsou and Liu, 2001). Shin and Johnson (1978 as quoted in Diener et al. 1985) define life satisfaction as "a global assessment of a person's quality of life according to his chosen criteria." Diener (1984) terms life satisfaction as the hallmark of subjective well-being as it emphasizes an individual's own judgments and is not externally imposed. Some researchers such as Tatarkiewicz (1976 as quoted in Diener et al. 1985) go as far as stating that "...happiness requires total satisfaction, that is *satisfaction with life as a whole*", thus making life satisfaction a pre-condition for seeking happiness.

It is often argued that subjective well-being metrics such as life satisfaction are confounded by moods and contexts leading to validity issues. Moods and contextual factors such as a happy event or outcome of a game immediately prior to the survey may profoundly affect questions on life satisfaction (Schwarz and Strack, 1999). Further, there is evidence from psychology that some people are intrinsically happy and such personality traits systematically influence subjective well-being (Ravallion and Lokshin, 2001). In addition, respondents are also often inclined to answer subjective well-being questions such that they can avoid looking bad in front of the interviewer (Bertrand and Mullainathan, 2001). Particularly, questions pertaining to negative feelings or depression are prone to such social desirability bias. However, a growing literature on subjective well-being finds evidence that considerable inter-personal convergence exists in the effects of pleasure, pain, income, and unemployment on happiness and life satisfaction between individuals, within countries as well as across countries, and across various subjective well-being metrics thus strenthening the external validity of subjective well-being measures (Frey and Stutzer, 2002; Di Tella and MacCulloch, 2006; Kahneman and Krueger, 2006; Diener et al., 2009; Helliwell and Barrington-Leigh, 2010).[1] More recently, panel data and quasi-experimental models using propensity scores and instrumental variables are also being used to examine effects of specific independent variables on subjective well-being measures and increase internal validity of the results (Graham, Eggers, and Sukhtankar, 2004; Graham and Chaparro, 2011). The use of a pseudo-panel in this paper is one such approach to overcome the validity issues as well as data limitations pertaining to subjective well-being.

Relative deprivation is operationalized using the economic ladder question (ELQ) and computed using the approach followed by Stark and Yitzhaki (1988). ELQ is used because the Latinobarometro does not gather information on actual income or consumption. The ELQ asks respondents to place themselves on a 10-step ladder where the poorest are on step one and the richest on step ten. Formally, Stark and Yitzhaki (1988) present the model for migration and relative deprivation as follows. Let $F(y)$ be the cumulative distribution of income. Then, $1 - F(y)$ is the percentage of individuals whose income is higher than y. The feeling of deprivation therefore is an increasing function of the percentage of individuals who have income larger than y, that is, $1 - F(y)$. Let $h(1 - F(y))$ be the deprivation from not having the higher or reference group income, that is, $y+\Delta y$. The total deprivation for an individual with income y therefore would be,

$$RD(y) = \int_{y}^{ymax} h[1 - F(z)]\, dz \tag{3}$$

[1] Diener et al. (2009) examine four subjective well-being surveys across 55 countries with a total survey sample of 100,000 respondents and find that different subjective well-being metrics and scales yield similar results across countries.

where $ymax$ is the highest income in the reference group. Since the true reference group is almost always unobservable, the relative deprivation function above can be re-written as below for estimation purposes. If incomes are ranked from 1 to $ymax$, then for any individual i with income y_i, the degree of relative deprivation is the percentage of persons richer or poorer than the individual times their mean excess income, that is,

$$RD_i = [1 - F(y)]\, E[y_{max} - y_i] \mid ymax > y_i \tag{4}$$

An issue pertaining to relative deprivation is that of reference groups. There is abundant evidence that when making relative assessments, people compare themselves with a reference group composed of individuals having some common characteristics such as place of residence, income category, age category, or education category. The Latinobarometro does not impose any reference group nor asks questions eliciting responses on what the true reference group might be. Therefore, the true reference group remains unobserved. Relevant reference group may differ depending on the context and purpose of the study. Previous studies have defined reference groups in many different ways. In investigating the effect of relative income, relative deprivation, or relative status on subjective well-being, reference groups have been defined based on broader geographic areas such as country, state, city, or census tract (Blanchflower and Oswald, 2004; Luttmer, 2005; Helliwell and Huang, 2009; Graham and Felton, 2006). Knight et al. (2009) in their paper on social comparisons in China identify village as the relevant reference group. Fafchamps and Shilpi (2008) go a step further and identify immediate neighbors within a village as the reference group. Reference groups have also been defined based on age cohorts (Deaton and Paxson, 2001) and other demographic characteristics such as region, age, gender, and education (Ferrer-i-Carbonell, 2005). Graham and Felton (2006) find that effects of relative status are more pronounced when the relevant reference group used is city of residence as compared to country of residence. Thus, "social distance" is strongly associated with relative well-being. In this analysis, I use each country as the reference group due to the pseudo-panel nature of the data. As the dataset is designed to track cohorts it constrains the use of additional levels such as province or district to define reference groups due to the risk of having cohorts with very few observations and low within-cohort variation.

4 Empirical specification and analysis

As discussed in section 3.1, the variables in a pseudo-panel represent cohort means or proportions. Therefore, the dependent dummy variable "intention to migrate abroad" is transformed into the proportion of observations in each cohort who indicated that they intend to migrate abroad; the continuous variable life satisfaction represents mean life satisfaction across each cohort; and relative deprivation is computed using mean ELQ across each reference group. Similarly, other independent variables have been transformed as either cohort means or proportions. All means and proportions are computed taking into account sampling weights for each wave of the dataset.

The empirical specification is a panel regression model with AR(1) errors.[2] The lagged errors are included to correct for first order serial autocorrelation that was identified in the pseudo-panel and minimize the upward bias caused by the error term. I estimate variations of the following baseline empirical model:

$$\overline{Migrate}_{ct} = \beta_0 + \beta_1 \overline{LS}_{ct} + \beta_2 \overline{Edu}_{ct} + \beta_3 \overline{LS} * \overline{Edu}_{ct} + \beta_4 \overline{RDHigh}_{ct} + \beta_5 \overline{RDLow}_{ct} + \bar{X'}_{ct}\gamma + \varepsilon_{ct} \tag{5}$$

[2] Fixed effects are not explicitly specified in the models because cohort fixed effects are captured by the time invariant characteristics - country, gender, and age categories - used to define the cohorts.

where, c represents each cohort at time t. $\overline{Migrate}_{ct}$ is the dependent variable measuring the proportion of observations in each cohort who intend to migrate abroad; $\overline{LS}_{ct}$ is the mean life satisfaction; $\overline{Edu}_{ct}$ is the mean education level; $\overline{LS} * \overline{Edu}_{ct}$ is the interaction between mean life satisfaction and mean education level; $\overline{RDHigh}_{ct}$ is the share of observations within each cohort having higher economic well-being when compared to each cell; $\overline{RDLow}_{ct}$ is the the share of observations within each cohort having lower economic well-being when compared to each cell; and $\bar{X'}_{ct}$ represents additional control variables such as distance from capital of United States, marital status, employment status, satisfaction with education services, satisfaction with health services, confidence in institutions, future economic perspective of the country of residence, and future economic perspective of self. Confidence in institutions includes both public institutions such as the government, Congress, political parties, police, and the judiciary as well as private institutions such as corporate firms, banks, and the stock exchange.

Education levels and the interaction of education and life satisfaction are included to capture the effect of higher education as well as that of attaining higher education and reporting higher levels of life satisfaction. Two separate relative deprivation variables are included to capture both the relatively "richer and relatively "poorer". The distance variable is included to control for migration intentions driven purely by proximity to a developed country.[3] Satisfaction with education services, satisfaction with health services, and confidence in institutions measure place utility. And future economic perspective of the country of residence and future economic perspective of self are included to control for effect of ambitions and the perceived opportunities provided by the country of residence, factors that are especially relevant to the "frustrated achievers". Table 1 presents the summary statistics for the variables included in the regression models.

<Table 1 around here>

As can be seen from Table 1, an average of 23 percent of cohort observations responded that they intend to migrate abroad. Mean cohort life satisfaction is 2.943, which is on the higher side. Mean cohort perceived economic well-being is 4.131, which resonates with previous literature which suggests that individuals tend to cluster themselves around the middle rungs of the ELQ and very few report very low or very high perceived economic well-being (Ravallion and Lokshin, 2000). The mean cohort education is 8 years suggesting that there are few individuals with college and higher level of education in the sample.

4.1 Results

To test the hypothesis that education strengthens the intention to migrate abroad I estimate a model that controls for background characteristics, education, distance, and place utility variables - satisfaction with education services, satisfaction with health services, and confidence in institutions. Here, place utility factors reflect the quality of life that the home country offers its residents. It is observed that each additional year of education has a highly statistically significant positive effect on intention to migrate abroad. Among the place utility factors, only confidence in institutions has a statistically significant negative effect. Interestingly, life satisfaction has a highly statistically significant negative effect on intention to migrate abroad suggesting that increasing the levels of life satisfaction may indeed weaken international migration intentions.

<Table 2 around here>

[3] Distance to the capital of United States is specifically included because across all waves greatest proportion of individuals indicated that they intended to migrate to the United States.

A more refined hypothesis is that it is not only education, but the interaction of education and life satisfaction that drives international migration decisions. This essentially means that even among those with higher education, the ones reporting higher life satisfaction, are likely less inclined to migrate abroad. The model in Table 3 includes an interaction term of life satisfaction and education to examine the effect of achieving additional year of education and reporting higher life satisfaction. It is observed that the interaction term has a highly statistically significant negative effect, meaning that those with higher education and higher life satisfaction are less inclined to migrate abroad. The inclusion of the interaction term weakens the effect of life satisfaction but education continues to have a statistically significant positive effect on intention to migrate abroad.

<Table 3 around here>

As discussed previously in this paper, of key interest is the effect of life satisfaction on international migration decisions after controlling for relative deprivation, especially of those who have higher education. This would explain whether objective or subjective well-being or both are of greater significance in driving migration decisions. The model in Table 4 controls for relative deprivation, both the share in each cohort with higher perceived economic well-being and lower perceived economic well-being. Having a higher share of observations within a cohort with higher perceived economic well-being has a statistically significant positive effect on intention to migrate abroad, while having a higher share of observations within a cohort with lower perceived economic well-being only has a marginally statistically significant positive effect on intention to migrate abroad. Thus, being "worse off", that is, higher share with higher economic well-being, strengthens the intentions to migrate abroad. Of particular importance is the effect of the interaction of education and life satisfaction, which continues to be negative and highly statistically significant. Thus, life satisfaction or subjective well-being concerns more generally do not cease to be of significant concern for those with higher education after controlling for objective well-being.

<Table 4 around here>

It is likely that both life satisfaction and relative economic well-being have a significant effect on the migration decisions of those with higher education because they have higher aspirations and are dissatisfied with the opportunities that their home country offers. To test this, the model in Table 5 controls for future personal economic perspective and future economic perspective of the country. In addition, instead of including years of education, this model includes the proportion of individuals with higher education, that is, college and above, and its interaction with life satisfaction to isolate the effect on highly educated individuals. It is observed that being highly educated has a highly statistically significant positive effect on intention to migrate abroad. This effect is also large in magnitude as compared to the effect of years of education in previous models. While similar to the interaction effect of years of education and life satisfaction, the interaction of being highly educated and having higher life satisfaction has a highly statistically significant negative effect on intention to migrate. It is also observed that ambitions and the perceived opportunities that the country of residence provides has statistically significant effects on intention to migrate abroad. Having a more positive future personal economic perspective, that is, being more ambitious, has a positive effect while having a more positive future economic perspective of the home country, that is, perceiving the country as progressive, has a negative effect on intention to migrate abroad. Further, having a higher share of observations within a cohort with lower perceived economic well-being has a highly statistically significant positive effect on intention to migrate abroad. Thus, even though they are "better off", the highly educated have stronger intentions to migrate abroad.

<Table 5 around here>

5 Drivers of intention to migrate abroad

The results find evidence to support that life satisfaction is a significant driver of intention to migrate abroad. First, though higher levels of life satisfaction weaken the intentions to migrate, it is the interaction effect of life satisfaction and education that has a consistent statistically significant negative effect on intentions to migrate. This effect is robust to the inclusion of either average cohort years of education or the proportion of individuals with college and higher level of education. Confidence in institutions or how much "trust in the system" individuals place emerges as a factor that significantly reduces intention to migrate abroad. Indeed, Graham and Picon (2009) argue that institutions, both political and economic, and the policies that they promote directly impinge on the life satisfaction of individuals with higher prospects of upward mobility. They find that in Latin America promotion of democracy and market economy are two institutional interventions that are of particular importance to the educated and upwardly mobile individuals. Thus, confidence in institutions is a conduit for improving life satisfaction that consequently weakens migration intentions. Similar to relative income or deprivation, an argument made by Veenhoven (1991) and Graham (2011) is that life satisfaction or happiness is also relative. For instance, living in a neighborhood where the mean level of life satisfaction is high has a positive effect on the life satisfaction of the individual. To empirically test whether relative life satisfaction affects intention to migrate abroad in the sample under study, I run the full model with "share who are more satisfied", that is, share of observations in each reference group who have a higher than mean level of life satisfaction. The results in Table 6 show that relative life satisfaction has a statistically significant negative effect on intention to migrate. This suggests that if the mean life satisfaction levels are high then there is a "spillover positive effect" on the entire reference group and that is likely to weaken the intention to migrate abroad. This further buttresses the effect that increased life satisfaction has on reducing migration intentions.

<Table 6 around here>

Second, international migration intentions of the highly educated are strengthened by relative deprivation, which is also supported by previous literature. The contribution that this analysis makes is that even after controlling for relative deprivation the negative effect of the life satisfaction and education interaction term continues to be highly statistically significant. Contrary to the expectation that inclusion of relative deprivation might significantly weaken the effect of life satisfaction for the highly educated, the results reveal that both the variables are significant drivers of international migration intentions for this group. This is a crucial insight from a "brain drain" perspective and it suggests that income is not the single most important factor driving educated individuals to migrate abroad. If highly educated individuals are provided economic opportunities at par with those in developed countries and which have a positive impact on their life satisfaction, they have lesser incentives to migrate abroad. A further robustness check is done to confirm the results of relative deprivation and the life satisfaction-education interaction term by computing relative deprivation using the income sufficiency question, which asks the respondent *"Does the salary that you receive and your total family income allow you to cover your needs in a satisfactory manner?"* A score of 1 corresponds to very insufficient and a score of 4 corresponds to very sufficient income. From Table 7 it is observed that the results are robust and the effects of the revised relative deprivation and life satisfaction-education interaction term remain statistically significant.

<Table 7 around here>

And third, there is evidence that even though the highly educated are relatively better off they have strong intentions of migrating abroad, which are driven by personal ambitions and economic outlook of the home country. Having a positive future economic outlook of the home country reduces the incentive to migrate abroad, while having a high future personal economic outlook, that is, desiring upward economic mobility strengthens the intention to migrate abroad. To test the robustness of this effect, I run the full model with two additional variables which ask whether lack of opportunities for the youth is a problem facing their home country and whether low wages is a problem facing their home country. Both the perception that the home country will likely not provide the opportunities to achieve the expected economic mobility and persistent low wages should have a positive effect on intention to migrate abroad. Results presented in Table 8 suggest that only the perception about lack of opportunities for the youth has a statistically significant positive effect on intention to migrate abroad.[4] Drawing upon Graham and Pettinato (2002), these results indicate that the highly educated individuals are plausibly "frustrated achievers" who intend to migrate abroad owing to their discontent with the opportunities available in and the growth prospect of their home country, which cannot fulfill their high aspirations.[5]

<Table 8 around here>

6 Conclusion

This paper is a first account providing evidence using pseudo-panel empirical data on the relationship between subjective well-being and international migration intentions. Building on existing theories of subjective well-being and relative deprivation I find evidence to support that life satisfaction is a significant driver of international migration intentions in addition to relative deprivation, especially for the highly educated. The paper also contributes to the related literature that looks at what drives "brain drain" in countries where growth and opportunities are on the rise such as Brazil, Chile, and Peru in this sample.

The results indicate that public policies should be concerned with improving the overall life satisfaction and quality of life of individuals, especially the more educated and aspiring "frustrated achievers". Some interventions of priority are designing labor market incentives and improving institutional (both public and private) performance.[6] Further, the paper finds that international migration decisions are also driven by perceptions about how wealth is distributed in the home country. If there is greater inequality, that is a significant proportion of individuals in the country-level reference group with either higher or lower economic well-being, the resultant discontent induces individuals to migrate to countries which they probably perceive as more equal. The analysis also signals the ability of the home country to provide opportunities, especially for the youth, to be a significant driver of intention to migrate abroad. This again is a critical insight and underscores the importance of targetting public policies towards increasing the economic mobility of the youth and achieving greater equality of opportunity.

[4] The migration trends of the youth are supported by the 2010 American Community Survey. It reports that of all the Latin American born migrants into the United States, 10 percent are in the age group 18-24 years and 46 percent are in the age group 25-44 years.

[5] This is in accordance with the findings of Graham and Pettinato (2002) that expectations and hope for the future underpin the dissatisfaction of the frustrated achievers in Peru and Russia.

[6] An example of labor market incentives is the implementation of the Pay Commissions in India. These commissions almost tripled the wages and provided additional perks for certain categories such as teachers, academicians, researchers, lawyers, and nurses and doctors working in government hospitals.

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7 Tables and figures

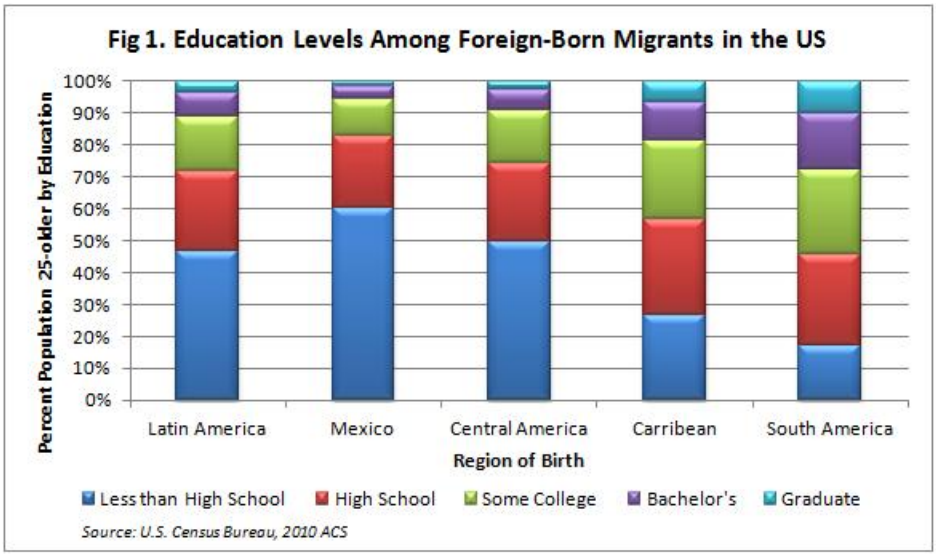
Fig 1. Education Levels Among Foreign-Born Migrants in the US
Percent Population 25-older by Education
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Latin America
Mexico
Central America
Carribean
South America
Region of Birth
Less than High School
High School
Some College
Bachelor's
Graduate
Source: U.S. Census Bureau, 2010 ACS

Tab. 1: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Gender	0.500	0.500	0.000	1.000	720
Age category	3.000	1.415	1.000	5.000	720
Proportion intending to migrate abroad	0.234	0.122	0.014	0.793	720
Years of education	8.180	2.431	2.041	12.761	720
Married	0.584	0.192	0.048	0.958	720
Unemployed	0.057	0.041	0.000	0.280	720
Distance to US capital	3455.662	1437.922	1168.87	5916.900	720
Life satisfaction	2.943	0.285	2.052	3.650	720
Perceived economic well-being	4.131	0.642	1.886	5.433	720
Satisfaction with quality of healthcare	2.577	0.281	1.671	3.208	720
Satisfaction with quality of education	2.622	0.270	1.844	3.355	720
Confidence in institutions	0.000	1.000	-2.845	2.742	720
Future personal economic perspective	3.359	0.326	2.285	4.123	720
Future economic perspective of country	2.977	0.390	1.864	4.009	720

Notes: Estimates based on pseudo-panel consisting of 720 cohorts constructed using country, 10-year age categories, and gender. All variables have been recoded such that lower values correspond to lower satisfaction or well-being, and higher values correspond to higher satisfaction or well-being.

Tab. 2: Life Satisfaction and Intention to Migrate Abroad - Effect of Education and Place Utility

	(1)
Life satisfaction	-0.062***
	(0.019)
Married	-0.082***
	(0.028)
Unemployed	-0.056
	(0.076)
Distance to US capital	-0.000***
	(0.000)
Years of education	0.021***
	(0.003)
Satisfaction with quality of healthcare	0.022
	(0.022)
Satisfaction with quality of education	-0.024
	(0.022)
Confidence in institutions	-0.009**
	(0.004)
Constant	0.396***
	(0.072)
Observations	720
R^2	0.210

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Panel estimates based on a pseudo-panel of 720 cohorts. Robust standard errors in parentheses. Dependent variable is proportion of observations in each cohort intending to migrate abroad.

Tab. 3: Life Satisfaction and Intention to Migrate Abroad - Interaction Effect of Education and Life Satisfaction

	(1)
Life satisfaction	0.056
	(0.050)
Married	-0.087***
	(0.027)
Unemployed	-0.049
	(0.076)
Distance to US capital	-0.000***
	(0.000)
Years of education	0.067***
	(0.018)
Satisfaction with quality of healthcare	0.024
	(0.022)
Satisfaction with quality of education	-0.020
	(0.022)
Confidence in institutions	-0.010**
	(0.004)
Education*Life Satisfaction	-0.016**
	(0.006)
Constant	0.041
	(0.157)
Observations	720
R^2	0.222

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Panel estimates based on a pseudo-panel of 720 cohorts. Robust standard errors in parentheses. Dependent variable is proportion of observations in each cohort intending to migrate abroad.

Tab. 4: Life Satisfaction and Intention to Migrate Abroad - Effect of Relative Deprivation

	(1)
Life satisfaction	0.130**
	(0.054)
Married	-0.087***
	(0.030)
Unemployed	-0.102
	(0.087)
Distance to US capital	-0.000***
	(0.000)
Years of education	0.104***
	(0.020)
Satisfaction with quality of healthcare	0.026
	(0.025)
Satisfaction with quality of education	-0.002
	(0.026)
Confidence in institutions	-0.007
	(0.005)
Education*Life Satisfaction	-0.027***
	(0.007)
Share with higher relative economic well-being	0.073**
	(0.032)
Share with lower relative economic well-being	0.058*
	(0.031)
Constant	-0.291*
	(0.172)
Observations	720
R^2	0.241

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Panel estimates based on a pseudo-panel of 720 cohorts. Robust standard errors in parentheses. Dependent variable is proportion of observations in each cohort intending to migrate abroad.

Tab. 5: Life Satisfaction and Intention to Migrate Abroad - Effect of Ambitions and Perceived Opportunities

	(1)
Life satisfaction	0.019
	(0.027)
Married	-0.098***
	(0.031)
Unemployed	-0.022
	(0.091)
Distance to US capital	-0.000
	(0.000)
Satisfaction with quality of healthcare	0.030
	(0.026)
Satisfaction with quality of education	0.004
	(0.027)
Confidence in institutions	-0.008
	(0.006)
Share with higher relative economic well-being	0.045
	(0.035)
Share with lower relative economic well-being	0.098***
	(0.033)
Highly Educated	2.667***
	(0.624)
Highly Educated*Life Satisfaction	-0.853***
	(0.205)
Future economic perspective of country	-0.065***
	(0.013)
Future personal economic perspective	0.080***
	(0.018)
Constant	0.044
	(0.109)
Observations	720
R^2	0.203

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Panel estimates based on a pseudo-panel of 720 cohorts. Robust standard errors in parentheses. Dependent variable is proportion of observations in each cohort intending to migrate abroad.

Tab. 6: Life Satisfaction and Intention to Migrate Abroad - Robustness Check with Relative Life Satisfaction

	(1)
Share who are more satisfied	-0.028**
	(0.013)
Married	-0.087***
	(0.032)
Unemployed	-0.046
	(0.091)
Distance to US capital	0.000
	(0.000)
Satisfaction with quality of healthcare	0.015
	(0.026)
Satisfaction with quality of education	-0.002
	(0.027)
Confidence in institutions	-0.006
	(0.006)
Share with higher relative economic well-being	0.043
	(0.035)
Share with lower relative economic well-being	0.082**
	(0.033)
Highly Educated	0.060
	(0.066)
Future economic perspective of country	-0.067***
	(0.013)
Future personal economic perspective	0.072***
	(0.018)
Constant	0.184**
	(0.083)
Observations	720
R^2	0.1199

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Panel estimates based on a pseudo-panel of 720 cohorts. Robust standard errors in parentheses. Dependent variable is proportion of observations in each cohort intending to migrate abroad.

Tab. 7: Life Satisfaction and Intention to Migrate Abroad - Robustness Check with Relative Subjective Income

	(1)
Life satisfaction	-0.015
	(0.025)
Married	-0.087***
	(0.028)
Unemployed	0.048
	(0.080)
Distance to US capital	-0.000**
	(0.000)
Satisfaction with quality of healthcare	0.026
	(0.023)
Satisfaction with quality of education	0.009
	(0.024)
Confidence in institutions	-0.013**
	(0.005)
Highly Educated	1.717***
	(0.583)
Highly Educated*Life Satisfaction	-0.544***
	(0.192)
Future economic perspective of country	-0.056***
	(0.013)
Future personal economic perspective	0.053***
	(0.017)
Share with higher relative subjective income	0.091**
	(0.044)
Share with lower relative subjective income	0.072*
	(0.043)
Constant	0.296***
	(0.097)
Observations	720
R^2	0.1915

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Panel estimates based on a pseudo-panel of 720 cohorts. Robust standard errors in parentheses. Dependent variable is proportion of observations in each cohort intending to migrate abroad.

Tab. 8: Life Satisfaction and Intention to Migrate Abroad - Robustness Check for Frustrated Achievers

	(1)
Life satisfaction	0.023
	(0.028)
Married	-0.095***
	(0.031)
Unemployed	-0.031
	(0.091)
Distance to US capital	-0.000
	(0.000)
Satisfaction with quality of healthcare	0.036
	(0.027)
Satisfaction with quality of education	0.001
	(0.027)
Confidence in institutions	-0.008
	(0.006)
Share with higher relative economic well-being	0.048
	(0.035)
Share with lower relative economic well-being	0.099***
	(0.033)
Highly Educated	2.744***
	(0.626)
Highly Educated*Life Satisfaction	-0.878***
	(0.205)
Future economic perspective of country	-0.064***
	(0.013)
Future personal economic perspective	0.078***
	(0.018)
Low paying jobs is a problem	0.095
	(0.141)
Opportunities for youth is a problem	0.545*
	(0.304)
Constant	0.024
	(0.110)
Observations	720
R^2	0.1980

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Panel estimates based on a pseudo-panel of 720 cohorts. Robust standard errors in parentheses. Dependent variable is proportion of observations in each cohort intending to migrate abroad.