The Determinants of Happiness: Some Migration Evidence

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Abstract. *The economic and psychological literature on the determinants of happiness is notable for its inability to confirm a strong relation between material prosperity and happiness. In addition, the empirical work relies primarily on analysis of surveys. Another way to test the determinants of happiness is to investigate migration patterns between jurisdictions where conditions differ. This paper analyzes three different migration flows and finds that differences in material conditions are a prime motivator of the migration decision. To a lesser extent, so are environmental conditions. (JEL I31, D60)*

Introduction

Can money buy happiness? If by money we mean a greater resource endowment to fund voluntary exchange, and if by happiness we mean utility, it is hard to imagine an orthodox neoclassical model that yields the answer "No." And yet there is an extensive literature that suggests that the determinants of human happiness are far more complex. Whether because of too much time spent earning labor income [Schor, 1991], the lack of correlation between measures of income such as per capita gross domestic product and the availability of particular goods generally considered basic necessities [Rodriguez and Rodrik, 2001], market failures that GFP by definition explicitly ignores [Daly and Cobb, 1989], or because people are more concerned with relative economic standing than absolute levels of consumption [Frank, 1999; Easterlin, 1995; Easterlin, 1974, Dusenberry, 1949], there are substantial reasons in the literature for doubting a strict relationship between material prosperity and human satisfaction.

However, much of this literature relies on surveys, either comparing individuals across countries [Diener et al., 1995] or individuals within one or more countries over time [Blanchflower and Oswald, 2000; Lane, 2000]. Respondents numerically rate the state of their lives, and their answers are tested against their material conditions and other considerations. But in a recent survey of the happiness literature Frey and Stutzer [2002] note that it suffers from several omissions. Among them are that such surveys do not examine actual choices, and that they do not control for such considerations as the state of the environment and the level of health conditions and violence that people face.

This paper proposes a different but complementary approach that addresses these problems. Rather than attempting to measure happiness and investigating its relation to various data, it is instructive to look at the determinants of substantial, rationally chosen decisions and reasoning backward to preferences. One such choice is migration. Using migration data to test the components of human welfare is based on a strikingly simple proposition about behavior: if life is better there than here, people will tend to leave here and go there. This paper explores the relation between migration and several proposed determinants of it, only some of which have been employed in the happiness literature. In doing so it relies on macroeconomic, cross-jurisdictional analysis rather than using the microeconomic data as is so often done in the literature on migration. The approach can be challenged on at least one ground based in that literature. The first section addresses this objection and examines international migration, the next examines migration to the United States, and the third examines migration within the U.S.

Migration Worldwide

In using migration as a measure of differences in human welfare, it is necessary to deal with one complication that has arisen in the happiness literature. It would occur in any attempt to reason backwards from choices to preferences. The standard assumption of most modern economic theory is rationality: people have preferences and always take actions that are consistent with those preferences given the constraints they face. Given this, the argument that higher income in particular should not uniformly be associated with greater happiness is hard to accept. In the standard consumer-choice problem from microeconomics textbooks, the objective is to maximize utility subject to a budget constraint. More income is simply a relaxation of the budget constraint. This should provide more choices, and so could hardly be associated with lower levels of utility. Because the happiness literature, which relies so heavily on micro-level survey responses, has found only a modest (mostly cross-sectional) relation between happiness and income, it posited aspirational preferences (i.e., preferences that include expectations that adjust as income changes) and other devices that do not take absolute consumption levels as their arguments.

Investigating migration avoids the need to resort to these complex models, as long as the migration decision is a rational and well-informed one. To be sure, the prospect-theory literature demonstrates that people sometimes make choices inconsistent with the expected-utility model of choice under uncertainty. However, the probative force of these findings is sometimes overstated. Kuttner [1997] goes so far as to argue that

prospect-theory findings debunk the entire rational-actor approach to constrained choice.[1] But what the literature finds is merely that in some highly specific, often highly complex situations of choice under uncertainty, people are prone to systematic biases that cause them to make choices not in their self-interest. But that such cognitive biases would in and of themselves (as opposed to lack of costly information) lead to people systematically erring in the major decisions in life – whether to have children, what career path to pursue – does not follow from these findings. Migration, of course, is a major decision. In their study of U.S. immigrants Suárez-Orozco and Suárez-Orozco [2001, p. 70] refer to it as "one of the most stressful events a family can undergo." In using it to measure what people value the migration decision is assumed to be rationally considered in the presence of significant information about conditions in the source and destination locations. People leave familiar environments for foreign ones only when they expect benefits to exceed costs, and when those expectations are well-grounded.

There is a fairly significant existing empirical literature on the transnational immigration decision. However, much of it examines the determinants of immigration to the U.S.[2] Bratsberg [1995] finds that illegal and legal immigration into the U.S. depend

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1. Specifically, Kuttner claims that this literature is "far more damaging to the standard market model than it may first appear. For one cannot project a general optimum based on the response of the price system to preferences that are random, unstable, or extra-economic to begin with. If that is true, then general-equilibrium theory is elegant mathematics built on sand." (p. 48)

2. There is a sizable literature on the effects of immigration on the destination country and the characteristics of immigrants, summarized in Borjas (1994).

on per capita GDP after standardizing for a small number of other variables – distance from the U.S., living under a Communist government and coming from a country in which English is the native language. Huang [1987] finds political and social considerations every bit as important as economic ones in determining the immigration decisions of potentially high-income professionals.

But it is also possible to investigate global migration. The United States Bureau of the Census estimates migration rates for all countries. Equation (1) attempts to determine the extent to which global migration is related to material prosperity, other factors considered in the happiness literature and some factors never before considered:

$$MIGRATION = a_0 + a_1\, GDPPC + a_2\, LIFEEXP + a_3\, CO2 + a_4\, TOTFREE + a_5\, CRIME + a_6\, CIVWAR + a_7\, NEIGHBOR \qquad \textbf{(1)}$$

MIGRATION is the rate of net immigration to a country in 1998 as a percentage of its population. *GDPPC* is 1997 per capita gross domestic product, adjusted for purchasing-power parity and measured in U.S. dollars. It comes from the U.S. Office of the Director of Central Intelligence [2001]. *INFANT* is the infant-mortality rate in the country in 1998. It is designed to measure health conditions in the country. This variable comes from the World Bank World Development Indicators data base.

CO2 is a proxy for the state of the environment. It is the nation's total carbon dioxide emissions into the atmosphere in 1996, divided by the country's surface area. The emissions data are posted by the World Resources Institute at http://earthtrends.wri.org. While not directly harmful to human health through

respiration, carbon dioxide emissions are assumed to be a proxy for pollution generally. These emissions are in fact highly correlated with World Bank measures of pollutants that directly damage human health ($\rho = 0.83382$), while being available for more countries. If the effect of environmental damage on human welfare is a determinant of happiness independently of per capita GDP, the expectation is that larger carbon dioxide emissions will be negatively associated with immigration. *CRIME* is the nation's number of crimes reported to law enforcement in 1997 divided by the country's population, and comes from the United Nations World Surveys of Crime Trends and Criminal Justice Systems. Crime, of course, is expected to be negatively associated with immigration.

Another potential non-material determinant of the migration decision is government oppression and the amount of political choice. There is great controversy over the willingness of people to trade off political freedom for material prosperity, with countries such as Chile until 1990 and Taiwan and South Korea until the late 1980s often cited as examples of societies where citizens were willing to put political reform on hold until modernization was sufficiently advanced. Indeed, there is some empirical evidence that democracy in particular is a superior good, rising with per capita income [Barro, 1996]. However, people might value more political freedom to less for the same reason they value more economic freedom to less – because more choices are better than fewer. Veenhoven [2000] has used measures of happiness and found a positive relation between economic, political and personal freedoms (e.g., the freedom to marry as one pleases) and happiness in a cross-sectional analysis among countries. He finds that political freedom matters less in poor countries and more in wealthier ones.

To test the salience of political freedom in the migration decision, a measure for such freedom, *TOTFREE*, is used as a right-hand variable. It is the combined measures of electoral and civil-liberties freedom for 1999, which is compiled annually by Freedom House. This group assigns each country a measure from one to seven for each of these two features, with one representing the most freedom. Thus, the combined measure of freedom can range from two to fourteen.

Finally, a major contribution to the decision to leave one's nation may be the presence of widespread violence. In addition to criminal violence, proxied for by *CRIME*, there is also the issue of warfare within the country. Consequently, *CIVWAR* is a dummy variable that takes the value one if the country was afflicted by a civil war in 1997, and *NEIGHBOR* is a dummy variable that takes the value one if the country borders such a country. Having a civil war might encourage emigration and being located next to a country undergoing civil war might encourage immigration from that country.

Table 1 presents the estimation of (1). Per capita GDP is positively and significantly associated with immigration. This is at odds with the claims in much of the happiness literature that income over time is in many cases not associated with greater satisfaction. *CO2* is significantly but positively associated with migration, suggesting that at a minimum environmental damage is not an important enough consideration in human welfare to deter migration globally. The reasons for the positive sign are not clear. One explanation is that across the entire spectrum of standards of living, the consumption patterns that generate pollution such as motorized transport and the products of industrial factories are seen as desirable.

INFANT, *CRIME* and *TOTFREE* have the expected signs but are not significant. The finding with respect to political freedom is perhaps surprising, in light of the longstanding image of the global migrant who leaves his home to escape political oppression. Finally, while the presence of a civil war in a nation is not quite a significant negative predictor of immigration ($p < 0.14$), being a neighbor of a country in such circumstances is a highly significant, positive predictor of immigration.

[Insert Table 1 here]

Migration to the U.S.

The U.S. Immigration and Naturalization Service (INS) records all legal immigrant arrivals (INS, various years). Given that the United States is one of the world's wealthiest countries, and that it is relatively hospitable to immigration, it presents another interesting test of what makes life better in one society versus another. Accordingly, the following equation is estimated:

$$USRATE = b_0 + b_1\, GDPPC + b_2\, LIFEEXP + b_3\, CO2 + b_4\, TOTFREE + b_5\, DISTANCE + b_6\, CIVWAR. \quad \textbf{(2)}$$

While the I.N.S. records legal immigration, the level of interest is the total of legal and illegal immigration. Thus, *USRATE* is the percentage of a country's population that came to the United States in 1996 as nonfamily immigrants, multiplied by the ratio of illegal to legal immigration to the U.S. for various countries used by Bratsberg [1995]. *GDPPC*, *LIFEEXP*, *CO2*, and *CIVWAR* are defined as in (1), except that they are

measured in the source rather than the destination country. *DISTANCE* is the distance, in kilometers, from the source country's national capital to the 1990 population center of the United States (Steelville, Missouri). The assumption is that greater distances imply higher transportation costs. Use of this proxy for such costs allows measurement of an economic effect that cannot be measured in the other regressions. To conserve on observations, the previously insignificant variable *CRIME* is dropped.[3]

The results of the estimation of (2) are displayed in Table 2. The results are identical to those for (1). Again, per capita GDP is an important determinant of migration in the expected direction. Countries with high incomes, ceteris paribus, send fewer people to the U.S. Immigration to the U.S. is also negatively and significantly related to distance from the U.S. Here, however, migration is significantly and positively related to source-country pollution, suggesting that environmental damage motivates exit. The disagreement with the previous results may have something to do with a selection effect operating on migrants to the U.S. Infant mortality, political freedom and civil war in the source country have the expected signs but are not statistically significant. Overall, the analysis in this section confirms the findings in the first regression, in that opportunities for enhancing material wealth, including the costs of relocation, is a primary motivator of the migration decision. The similarity of this result is notable because of the different ways (1) and (2) model the migration decision. Whereas the previous regression analyzed migration from the "pull" perspective, i.e. looking at

3. When *CRIME* is included, the results are similar in that the same variables are statistically significant in the same direction as reported below, and $R^2 = 0.41$, but there are only 26 observations available. (Details available upon request.)

immigration as a function of conditions in the host country, these results are robust to analyzing migration from the "push" perspective, i.e. as a function of conditions in the source country.

[Insert Table 2 here]

Migration Within the U.S.

It is also possible to examine the determinants of migration within the U.S. This test is particularly useful because it is more refined. The variance of standards of living within the U.S. is much lower than across the globe. In 1998, Mississippi had the lowest personal income of any U.S. state, at $19,608. This compares to numerous developing countries with per capita GDP of less than $1000. It might be that other considerations that do not affect the migration decision globally nonetheless do so in a country where most are already very prosperous.

Table 3 contains the results of the estimation of two versions of the following equation for the fifty U.S. states plus the District of Columbia:

$$INTRARATE = c_0 + c_1\, PERCAP90 + c_2\, INFNT90 + c_3\, CO2PER90 + c_4\, CRIME90 \quad \textbf{(3)}$$

INTRARATE is the Census bureau's estimate of migration to the state between 1990 and 1999. The left-hand panel contains results for domestic migration, and the right-hand panel contains results for international migration. The latter data include estimates for illegal international migration. Domestic migrants are leaving in the presence of comparatively modest differences in average standard of living, while foreign

arrivals are deciding where in particular to locate in the U.S. on the basis of similarly small differences.

PERCAP90 is nominal per capita gross state product in 1990. *INFNT90* is infant mortality in the state in 1990, per 1000 live births. *CO2PER90* is emissions of carbon dioxide per square mile in 1990. The raw carbon-dioxide data come from the Environmental Protection Agency's global warming Web site, at http://www.epa.gov/globalwarming/index.html. *CRIME90* is the 1990 rate of violent crimes per 100,000 population, as reported by the U.S. Federal Bureau of Investigation.

The results are quite different for the two groups. For domestic migrants, the only variable that is statistically significant is *CO2PER90*, and it has the expected sign. For native-born Americans, fewer environmental emissions are associated with greater migration. Notably, per capita personal income has no relation to domestic migration. One interpretation of this result is that for those with a high level of wealth, the greater satisfaction achieved by moving to a state with a higher standard of living is not sufficient to prompt a move. The same holds for health differences among states, proxied for by infant mortality, and crime. There has been much speculation that crime motivates migration within [Skogan, 1990] and out of urban areas in particular. The results here provide no confirmation of that speculation.

The findings for international migrants are different. For this group, personal income is a positive and significant predictor of the migration decision, while infant mortality is a negative and highly significant predictor. Crime, curiously, is a positive and significant predictor. The results for personal income and infant mortality can be explained by noting that the composition of domestic and foreign migrants is presumably

different in terms of source-jurisdiction standard of living. Table 4 illustrates the top ten source countries for both legal and illegal immigration, along with the number of immigrants admitted in 1999 (for legal immigrants) and the estimated number of total immigrants in the country in 1996 (for illegal immigrants). In both cases the lists are dominated by poorer countries, and these top ten countries account for a substantial proportion of the total.

[Insert Table 4 here]

The dominance of immigrants from poorer countries in migration to the U.S., combined with the different response of international migrants from domestic migrants to differences in standard of living, suggest that the marginal effect of material goods on welfare is greatest at lower levels, and becomes less important at higher levels. This may explain why the citizens of the industrial democracies, who already enjoy the highest standards of living, routinely elect governments that impose high levels of taxation to support elaborate government health and retirement benefits, even at the potential cost of some level of economic growth. It may also explain the well-known empirical regularity known as the environmental Kuznets curve, which indicates that as countries begin to develop environmental health often deteriorates before eventually improving [Cavlovic et al., 2000]. Only at higher standards of living are citizens willing to mobilize in sufficient numbers to press governments to impose stringent environmental regulations at the expense of economic growth.

Conclusion

The findings are a useful addition to the literature on happiness. Instead of taking

choices as given and measuring happiness, this paper has observed choices and assumed they are made in well-grounded expectations of greater happiness. If migration is a rational, well-informed decision, the results indicate that the determinants of happiness are somewhat different than the survey-based literature suggests. Globally, the desire to improve one's standard of living is the most consistent motivator of the migration decision, failing only to predict domestic migration within the U.S. There is also some evidence of the salience of environmental conditions in prompting global migration to and domestic migration within the U.S. The unimportance of crime and political freedom are notable.

The results have some implications for the extensive criticisms of gross national product as a measure of human welfare. Many criticize emphasis on material prosperity at the expense of other considerations as woefully shortsighted. Indeed, Armour [1999] goes so far as to argue that emphasis on growth threatens the essence of civilization itself. The findings here cast doubt not just on such profound skepticism of economic growth generally but on the findings of the happiness literature that tend to underplay the role of the standard of living in enhancing welfare.

References

Armour, Leslie. "Economics and Civilisation," *International Journal of Social Economics*, 26, 12, December 1, 1999, pp. 1455-1491.

Barro, Robert. "Democracy and Growth," *Journal of Economic Growth*, 1, 1, March 1996, pp. 1-27.

Blanchflower, David G.; Oswald, Andrew J. "Well-Being Over Time in Britain and the USA," NBER Working Paper 7487, October, 2000.

Borjas, George. "The Economics of Immigration," *Journal of Economic Literature*, 32, 4, December 1994, pp. 1667-1717.

Bratsberg, Bernt. "Legal Versus Illegal U.S. Immigration and Source Country Characteristics," *Southern Economic Journal*, 61, 3, January 1995, pp. 715-727.

Cavlovic, Therese; Baker, K.; Berrens, K.; Gawande, K. "A Meta-Analysis of Environmental Kuznets Curve Studies," *Agricultural Resource Economics Review*, 29, 1, April 2000, pp. 32-42.

Daly, Herman E.; Cobb, John B. Jr. *For the Common Good: Redirecting the Economy Toward Community, the Environment, and a Sustainable Future*, Boston: Beacon Press, 1989.

Diener, Ed; Diener; Marissa; Diener, Carol. "Factors Predicting the Subjective Well-Being of Nations," *Journal of Personality and Social*, 69, 5, May 1995, pp. 851-864.

Dusenberry, James S. *Income, Saving and the Theory of Consumer Behavior*, Cambridge: Harvard University Press, 1949.

Easterlin, Richard A. "Will Raising the Incomes of All Increase the Happiness of All?", *Journal of Economic Behavior and Organization*, 27, 1, June 1995, pp. 35-48.

Easterlin, Richard A. "Does Economic Growth Improve the Human Lot? Some Empirical Evidence," in P.A. David and M.W. Reder, eds., *Nations and Households in Economic Growth: Essays in Honour of Moses Abramowitz*, New York: Academic Press, 1974, pp. 89-125.

Frank, Robert H. *Luxury Fever: Why Money Fails to Satisfy in an Age of Excess*, New York: Free Press, 1999.

Frey, Bruno and Stutzer, Alois. "What Can Economists Learn from Happiness Research?", *Journal of Economic Literature*, 40, 2, June 2002, pp. 402-435.

Huang, Wi Chiao. "A Pooled Cross-Section and Time-Series Study of Professional Indirect Immigration to the United States," *Southern Economic Journal*, 54, 1, July 1987, pp. 95-109.

Kuttner, Robert. *Everything for Sale: The Virtues and Limits of Markets*, New York: Alfred A. Knopf, 1997.

Lane, Robert E. *The Loss of Happiness in Market Democracies*, New Haven: Yale University Press, 2000.

Office of the Director of Central Intelligence. *World Factbook*. Washington: Central Intelligence Agency, 2000.

Rodriguez, Francisco, and Rodrik, Dani, "Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence," in Ben S. Bernanke and Kenneth Rogoff, eds., *NBER Macroeconomics Annual 2000*, 2001, pp. 261-325.

Schor, Juliet. *The Overworked American*, New York: Basic Books, 1991.

Skogan, Wesley G. *Disorder and Decline: Crime and the Spiral of Decay in American Neighborhoods*, New York: Free Press, 1990.

Suárez-Orozco, Carola and Suárez-Orozco, Marcelo. *Children of Immigration*, Cambridge: Harvard University Press, 2001.

United States Immigration and Naturalization Service. *Estimates of the Unauthorized Immigrant Population Residing in the United States: 1990 to 2000,* http://www.ins.gov/graphics/aboutins/statistics/Ill_Report_1211.pdf

United States Immigration and Naturalization Service. *Statistical yearbook of the Immigration and Naturalization Service / U.S. Department of Justice, Immigration and Naturalization Service,* Washington: Immigration and Naturalization Service, various years.

Veenhoven, Ruut. *Happiness in Nations: Subjective Appreciation of Life in 56 Nations, 1946-1992,* Rotterdam: Erasmus University Press, Center for Socio-Cultural Transformation, RISBO, 1993.

Table 1

Migration around the world

Variable	Coefficient
INTERCEPT	--3.84697**
	(-2.49)
GDPPC	0.00035954***
	(4.53)
CO2	0.00010828***
	(5.14)
INFANT	-0.01906
	(-1.05)
CRIME	-0.00026768
	(-1.50)
TOTFREE	0.14212
	(0.77)
CIVWAR	-1.22406
	(-0.92)
NEIGHBOR	2.25740*
	(2.30)

R^2 = 0.6124

F = 14.67****

N = 72

Notes:

* denotes statistical significance at ten-percent level.

** denotes statistical significance at one-percent level.

*** denotes statistical significance at 0.1 percent level

Figures in parentheses are t-statistics.

Table 2

Migration to the U.S.

Variable	Coefficient
INTERCEPT	7.63612**
	(2.85)
GDPPC	-0.00035715*
	(-2.59)
INFANT	0.00685
	(0.24)
CO2	0.000328***
	(4.52)
TOTFREE	-0.24728
	(-0.97)
DISTANCE	-0.00038726*
	(-2.26)
CIVWAR	-0.28632
	(-0.15)
R^2 = 0.3953	
F = 5.34***	
N = 56	

Table 3

Intra-U.S. Migration

	Domestic Migration	*International Migration*
Variable	Coefficient	Coefficient
INTERCEPT	0.00129	0.03164*
	(0.02)	(2.56)
INFNT90	0.00622	-0.00589***
	(0.80)	(-4.86)
CRIME90	0.00001941	0.00004313***
	(0.45)	(6.47)
PERCAP90	-0.00000132	6.965716E-07*
	(-0.70)	(2.38)
CO290	-45.32508*	-3.24265
	(-2.12)	(-0.98)
	R^2 = 0.3041	R^2 = 0.6160
	F = 5.03**	F = 18.45***
	N = 51	N = 51

Table 4

Sources of Migration to the U.S.

Legal Immigration, 1999	*Illegal Immigrants in the U.S., 2000*
1. Mexico 147,153	1. Mexico, 4,808,000
2. China 32,204	2. El Salvador, 189,000
3. Philippines 31,026	3. Guatemala, 144,000
4. India 30,237	4. Colombia 141,000
5. Vietnam 20,393	5. Honduras 138,000
6. Dominican Republic 17,864	6. China 115,000
7. Haiti 16,532	7. Ecuador 108,000
8. Jamaica 14,733	8. Dominican Republic 91,000
9. Cuba 14,132	9. Philippines 85,000
10. Pakistan 13,496	10. Brazil 77,000
Total: 646,568	Total: 7,000,000

Source: INS, various years (legal immigrants); INS, 2003 (illegal immigrants).