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MIGRANT BEHAVIOR AND THE EFFECTS OF REGIONAL PRICES: ASPECTS OF MIGRANT SELECTION IN COLOMBIA

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Introduction

Research on migration generally assumes that migrants are homogeneous in their preferences, and consequently their behavior as migrants and as consumers can be understood largely in terms of their current, and possibly past, environmental constraints, such as prices, endowments, technology and amenities.[1] This paper considers some of the implications of heterogeneity among migrants in their preferences for life cycle consumption patterns and human capital investments, in a setting where the structure of prices for these activities varies across regions. The predominant form of migration today is internal to countries, and most involve the movement of people from rural to urban areas. The development and spread of new agricultural and health technologies are also changing the location of rural employment opportunities in some regions, giving rise to substantial flows of intra-rural migration. These urban and rural alternative avenues for internal migration may confront the migrant with distinctly different relative prices for a number of interrelated life-cycle consumption-investment choices, including the rewards to women for labor market participation outside of the family, the opportunity cost of fertility, and the chance for children to receive health care and schooling. This paper explores this group of four behavioral outcomes among migrants and nonmigrants in Colombia as of 1973, in order to assess whether the behavior of migrants differs systematically according to their choice of destination.

To formulate this problem in the simplest form, I assume that the preferences of individuals do not determine who migrates. Only after the decision is made to migrate, and the migrant has incurred the substantial fixed

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costs of relocation, does the migrant's heterogeneous preferences for alternative life cycle consumption patterns and human capital investments affect the choice of destination. Assuming that the migrant has a choice of possible destinations that provide similar income levels, the destination is then selected at which relative prices are lower for the goods and activities that the migrant particularly values.

It has been more commonly assumed that migrants behave in a manner that reflects their origins. Duncan (1965) and Goldberg (1959) proposed the hypothesis that rural-urban migrants take a generation to cast off preferences for higher fertility acquired at origin, before adopting lower fertility associated with their urban destination. It is widely believed that there are substantial lags in adaptation, and migrants, therefore, do not immediately adapt to their adopted (urban) environment with its different relative prices and opportunities. However, with sufficient time, migrants become indistinguishable from the nonmigrant residents at the urban destination. According to this conventional view, migrants and nonmigrants are essentially identical or homogeneous, and with time to adapt, collect local information, and accumulate location-specific capital, they will appear behaviorally identical to their nonmigrant neighbors.

The alternative hypothesis considered in this paper is that populations are heterogeneous in their preferences, and that this heterogeneity may be revealed in persistent behavioral differences between migrants and nonmigrants at destination, and among migrants from the same origin who select destinations with diverse relative prices. For this selection process among migrants to be quantitatively important, the differences in relative prices for major life

cycle activities must be substantial across regions that provide roughly comparable earnings opportunities. This simple self-selection mechanism would imply that consumer demand behavior of migrants would appear to be more "responsive" to local market price variation across regions than would the behavior of nonmigrants who have not sorted themselves to match their tastes to local relative prices. Consequently, a standard demand equation fit to interregional price variation might overstate the actual price response of a representative individual, because the distribution of preferences among migrants will not be randomly distributed with respect to prices, as is commonly assumed in empirical applications of consumer demand theory.

This paper is ordered as follows. Section I illustrates how the proposed selectivity bias might be specified in the two good case, whereas the appendix elaborates on the multiple good case considered in the empirical analysis. The data are briefly described in Section II, and tabulations are reported in Section III that confirm the hypothesized selection process in Colombia. A concluding section discusses the implications of this process for understanding how migration affects economic and demographic behavior.

I. An Illustrative Model

This general story is translated into a concrete model by specifying how tastes vary among migrants and how tastes influence a migrant's choice of destination. Tastes are described by the utility function that migrants are assumed to maximize, where this function assigns different person-specific values to various amounts of the goods consumed over a lifetime. In the simple

two-good case, the relative taste for the two goods may be described by a single taste parameter, α_i, in a Cobb Douglas utility function:

$$U_i = AC_i^{\alpha_i} G_i^{1-\alpha_i},$$

where U_i represents the i^{th} individual's utility, derived from the consumption of C and G as transformed by the arbitrary scale parameter A, and the individual's taste parameters, α_i. The average value of α for the population is denoted $\bar{\alpha}$. It might be assumed that half the people prefer C to G and for them $\alpha_i = \bar{\alpha}(1+\varepsilon)$, and for the other half $\alpha_i = \bar{\alpha}(1-\varepsilon)$, where ε is a random disturbance.

The budget constraint completes the characterization of the consumer demand constraints:

$$Y_i = P_C C_i + P_G G_i,$$

where P_C and P_G represent the prices of C and G in a particular destination region and Y_i refers to the individual's money income. Individuals choose C, and hence G, so as to maximize their utility, given prices, income and tastes. The general demand function for C and G can then be written conditional

on income, prices and tastes, with individual subscripts suppressed:

$$C = \frac{Y\alpha}{P_C}$$

$$G = \frac{Y(1-\alpha)}{P_G}$$

Expressed in logarithms, these demand functions are linear in proportionate variations:

$$\ell nC = \beta_C \ell nY - \gamma_C \ell nP_C + \delta_C \ell n\alpha$$
$$\ell nG = \beta_G \ell nY - \gamma_G \ell nP_G + \delta_G \ell n(1-\alpha).$$

The specialized Cobb Douglas utility functional form implies that income and own-price elasticities, the β's and γ's, are all unity, and the cross-price elasticities are zero, or in other words, demand for a good responds proportionately to a migrant's income and the price of only that one good.

There are two reasons for examining together this cluster of four life cycle economic and demographic activities--fertility, child survival, child schooling, and women's market labor force participation. First, the prices of this group of activities vary together from rural to urban areas, and second, household demand studies suggest substantial cross-price effects within this group of activities that reinforce own-price effects (see appendix). Variation in prices of this cluster of activities will be approximated by the degree of urbanization of the locality; it is anticipated, therefore, that among

nonmigrants regional differences in demand behavior for these activities will be induced by price variation. Since this cluster of life cycle activities affects a major share of a person's allocable resources, price induced regional differences in demands will be even greater among heterogeneous migrants, due to the tendency of migrants to select as their destination a region with lower relative prices for their preferred activities.

Children are believed to be more costly to rear in urban-metropolitan areas than in rural-agricultural areas because the prices of basic inputs to children are higher (for example, food and housing) and the value of child labor is lower. Schooling and health services are more widely available and more heavily subsidized by the public sector in urban areas than in rural ones. Thus, the relative price of child health and schooling is lower in most urban areas compared with neighboring rural areas, at least in today's low income countries. Finally, in Latin America women generally earn more relative to men in urban-metropolitan areas than they do in rural areas, though there is much variation in women's relative wages across rural labor markets within countries such as Colombia, and even more notably across regions in the world. Urban-rural relative prices for these four life cycle consumption-investment activities are believed to be substantially different in rural and urban areas of Colombia.

This cluster of behavioral outcomes appears to be comprised of close substitutes and complements for one another. For example, where the price of children is higher in urban areas, we observe not only lower fertility but also more parental resources being invested per child in the health and education of children (Rosenzweig and Wolpin, 1982). In this case, the two aspects of

"child quality"--schooling and health--are thought to substitute for the quantity of children parents have. The inverse relationship between women's wages outside of the family in the market labor force and fertility suggests that in many societies the balance of a woman's time in family nonmarket activities is a complement to having more children or higher fertility (Rosenzweig and Schultz, 1982). The observed own-price and cross-price effects, however, generally embody also the effect of income changes that are induced by these variations in prices. The largest income effect would be that associated with the price of women's time in the market labor force in settings where women frequently participate in the labor force outside of the family. In this case, the income effect would tend to offset the compensated own-price effect on the demand notably for one good, children, and we expect, therefore, to observe a smaller negative response of fertility to variation in women's wages as women participate on a more equal basis with men in the labor force. Since the implicit income effects of local prices would already be taken into consideration by the migrant in selecting a destination, these income effects should be less salient in the demand behavior of migrants than of nonmigrants.

II. Data

This study examines the public use sample of four percent of the household and individual returns from the 1973 Census of Colombia.[2] The census sample excludes a few percent of the population residing in frontier areas and territories. All women over age 14 are included who responded to the census questions on age, education, fertility and labor force participation. The women were divided according to their highest level of schooling attainment

into four categories: completed no years of schooling; some primary but no secondary schooling completed; some secondary but no higher education; and completed at least some higher education. A few women were omitted whose educational status could not be confidently assigned to one of these four categories.

Individuals were allocated among four urban-rural current residence categories based on the size of their residential population center and whether it was one of the 900 municipal county seats (Cabeceras): (1) Largest cities: includes the four largest metropolitan areas of Bogota, Cali, Medellin and Baranquilla: (2) Other cities: includes cities with between 35,000 and 400,000 inhabitants in 1973; (3) Towns: includes all remaining urban locations and Cabeceras; and (4) Rural: includes areas in a municipality outside of the Cabecera. Municipality of birth as reported in the census does not permit one to determine whether persons were born in an urban or rural area or whether the location of birth was their usual residence or not. It is assumed that persons born in municipalities containing a "city" were born in this city, and those born in a municipality with a Cabecera of less than 35,000 inhabitants were born in a mixed residual category of "towns" and "rural" areas.

The behavioral outcome variables that are available in the Colombian Census are imperfect measures of the desired concepts of permanent or life cycle behavior. They should, nonetheless, record major differences between migrants and nonmigrants, even if they do not measure exactly the same thing across age groups. Fertility is measured by the number of children ever born per woman of a specific age and education group. Labor force participation is defined as working or looking for work in the month before the census. This

measure of activity is believed to understate women's productive contribution in Colombian agriculture, but this is a common problem with rural labor force measures throughout Latin America. Child survival is represented by the retrospective report of the mother on the ratio of number of her children alive to the number ever born. Although this survival ratio is not purported to approximate a life table concept of age-specific mortality, empirical studies have indicated that these "raw" survival ratios are very highly correlated with more conventional measures of child survival estimated with additional information on the timing of births and thus the period of exposure of the woman's children to mortality risks (Trussell and Preston, 1983).[3] Probably the least satisfactory measure of behavior is that of the educational attainment of the mother's children. In this case, several sources of systematic bias may exist, for analysis is limited to women with some school-aged own-children in their household. A rough normalization is achieved by dividing the average years of schooling per child for each mother by the average observed in the sample for children of the same sex and age who are living with their mothers. There are clearly many problems with such a measure of education for those still in school, as there are with more sophisticated constructs (King and Lillard, 1982).

III. Empirical Findings

Table 1 summarizes the relative distribution of Colombian women in 1973, as tabulated from the Census four-percent sample, according to their current residence and birthplace. Migrants are defined as those who currently reside in a municipality different from that of their birth, and they are shown

Table 1

The Distribution of Four Percent of Colombian Women in 1973, by Current Residence and Birthplace*

Current Residence	Total	ORIGIN (Birthplace)				
		Non Migrant	Migrant Total	Migrants from: Largest Cities	Other Cities	Towns and Rural
	(1)	(2)	(3)	(4)	(5)	(6)
Largest Cities	66,877	18,921	47,956	2,608	9,890	35,468
Other Cities	29,241	10,069	19,172	1,045	4,383	13,744
Towns	35,370	16,862	18,508	850	2,756	14,902
Rural	55,465	37,770	17,695	387	2,587	14,721
Total	186,953	83,622	103,331	4,890	19,616	78,825

*Tabulation based on 4 percent advanced use sample of 1973 Population and Housing Census. Women age 15 or more included who answered the relevant questions and reported their education. For definition of current residence and birthplace categories see text.

to constitute a majority of adult Colombian women. About three-fourths of these migrants were born in rural areas or in towns with fewer than 35,000 inhabitants in 1973.[4] About one-third of all migrants have moved from one to the other extreme of the rural-urban continuum, that is, they were born in a small town or rural area and resided in 1973 in one of the four largest cities of Colombia.

The four indicators of consumption and human capital investment behavior considered in this paper are shown in table 2 for a representative age and education group—women between the ages of 30 and 34 with some primary, but no secondary, schooling. The nonmigrant differences in the four types of behavior associated with the four current residential regions are interpreted here as a response to the systematic differences in regional rural-urban relative prices for these activities and other institutional constraints. Although these behavioral outcomes vary substantially across all four regions, the largest absolute differences are observed between small "towns" and "rural" areas.

There are several notable regularities between the behavior of migrants and nonmigrants in table 2. Fertility is lower among migrants to cities than among nonmigrants native to these cities, whereas migrants to towns and rural areas report higher fertility than do nonmigrants born in these areas. The opposite pattern holds for women's labor force participation rates, with migrants to the cities working most and migrants to rural areas working least often in the market labor force. These differences in fertility and female labor force participation between nonmigrants and migrants by destination are consistent with the hypothesis that in their selection of a destination

Table 2

Average Characteristics of Women age 30-34 with Only Some Primary Schooling

Migrant Status and Current Residence	Children Ever Born (1)	Women's Labor Force Participation (2)	Child Survival Rate (3)	Years of Children's Schooling (4)	Number of Observations (5)
Nonmigrants - Total	4.67	.133	.896	2.03	5032
Largest Cities	3.81	.235	.933	2.72	902
Other Cities	4.20	.185	.916	2.53	617
Towns	4.66	.151	.903	2.15	1010
Rural	5.19	.076	.872	1.65	2503
Migrants - Total	4.18	.194	.891 (.902)*	2.32 (2.50)*	7025
Largest Cities	3.49	.296	.926 (.932)*	2.66 (2.77)*	3154
Other Cities	4.17	.189	.909 (.916)*	2.47 (2.63)*	1346
Towns	4.74	.147	.879 (.869)*	2.23 (2.44)*	1238
Rural	5.36	.064	.858 (.856)*	1.62 (1.78)*	1287
Total	4.39	.169	.897	2.19	12,057

*Includes only migrants who reported residing in the current location for ten or more years.

migrants are importantly influenced by regional relative prices and by differences in their own tastes for these life-cycle activities.

Migrants do not generally achieve the same levels of child survival and child education as do nonmigrants in the destination region. Differences between migrants and nonmigrants are, nonetheless, relatively small compared with the interregional differences that might be attributed to regional availability and cost of schools and health services as well as other environmental factors. The inability of migrants to the cities to achieve nonmigrant levels of investments in their children could be due to the migrants' children being exposed at origin to greater rural mortality risks and higher rural costs of schooling, as well as to family dislocations that are virtually inseparable from the act of migration itself.

To explore this hypothesis further it is necessary to distinguish migrants by the number of years they have resided at destination. Those who have lived longer in their current city of residence should have obtained more schooling for their children, and report a higher rate of child survival. Indeed after five years of residence, the children of migrants in urban areas of Colombia do generally have more schooling than the children of nonmigrants, given their mother's age and education. After ten years of residence at destination, the advantage of children of migrants is quite substantial, as shown by the figures reported in parentheses in column 4 of table 2. Alternatively, one can distinguish migrants by their origins, and such cross tabulations (not reported here) confirm that migrants born in cities generally report their children have obtained more schooling than nonmigrants residing in the same size class of city, confirming that the schooling deficit reported by children of all migrants is due to the lower schooling level of the children of

migrants born in small towns and rural areas that have fewer schools. Thus, for investments in child schooling, the conditions of migrants at origin appear to affect the achievements of their offspring.

There is an analogous tendency shown in table 2, column 3 for child survival to improve for rural to urban migrants with ten or more years of city residence. But in the case of child survival, the converse is also true for urban-to-rural migants, for whom child survival decreases with duration of residence in small towns and rural areas. This deterioration in health is consistent either with migrants having acquired less immunity to local disease, such as malaria, or with migrants who go to less healthy areas, assigning a lower value to health and consequently tolerating more child mortality. In contrast with either child schooling or child survival where duration of current residence is associated with different outcomes, fertility and women's current labor market participation are primarily associated with the migrant's current environment and relatively insensitive to duration of residence (for further evidence on fertility patterns, see Ribe and Schultz, 1980).

Better educated Colombian women report lower fertility and women's labor force participation, whereas their child survival and child schooling rates are higher, within various maternal age, region and migration status groups (not shown here). The primary exception is found among women over age 40 residing in rural areas; in this group fertility is greater (not less) for those who have obtained some primary education relative to the majority who have not received any schooling. It might be conjectured that the traditional agricultural economy in Colombia did not provide these more educated women in

the 1950s and 1960s with a sufficient reason to reduce their fertility, although these women are observed more frequently to work in the labor force in 1973 and to report greater child survival and schooling rates. Income effects associated with female education may have exceeded the own price of time effects of education in determining fertility in this older rural population.

To summarize behavioral differences between migrants and nonmigrants, it is convenient to focus on the single largest group of migrants: those who were born in towns and rural areas and currently reside in one of the four largest cities. In table 3, the four indicators of life cycle economic-demographic behavior are reported for this dominant migrant group, first, relative to nonmigrants at destination in the large cities, and second, relative to members of their birth cohort at origin who did not migrate. Since the probability of migrating to an urban area increases sharply as the migrants' education increases, the selectivity of migration with respect to preferences can be inferred from distinct behavioral patterns only among the less educated population, for whom a substantial fraction migrates to both rural and urban destinations.[5]

Compared with nonmigrants at rural origins (table 3, cols. 5-8), migrants to large cities have 20 to 30 percent fewer children and work three or four times as often in the labor force. The survival rate for their children is a few percentage points higher, and the children of the migrants obtain 50 to 100 percent more schooling than do the children of the nonmigrants in rural areas.

The comparison of migrant behavior with that of nonmigrants at destination in the large cities (table 3, cols. 1-4,) is more complex, since it

Table 3

Ratio of Rural-City Migrants' Behavior to that of Nonmigrants at Destination and at Origin

Age and Education of Women	Migrant Behavior Relative to Nonmigrant at City Destination				Migrant Behavior Relative to Nonmigration at Rural Origin			
	Children Ever Born	Women's Labor Force Participation	Child Survival Rate	Years of Children's Schooling	Children Ever Born	Women's Labor Force Participation	Child Survival Rate	Years of Children's Schooling
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Age 20-24								
None	.91	2.75	.99	1.45	.69	4.38	1.01	3.17
Primary	.81	1.92	.99	1.72	.68	5.28	1.05	2.52
Secondary	1.13	1.02	1.01	.97	1.13	1.56	1.01	1.09
Higher	.65	.94	1.08	-	.55	1.22	1.00	-
Age 25-29								
None	.75	1.72	.95	.81	.62	3.98	.99	1.57
Primary	.92	1.32	1.01	1.12	.69	4.40	1.04	1.45
Secondary	1.00	1.00	.99	.89	.86	1.36	1.02	1.59
Higher	1.04	.92	.99	-	2.18	-	-	-
Age 30-34								
None	1.01	1.32	.97	1.21	.78	3.04	1.03	1.94
Primary	.92	1.15	.99	.96	.71	3.55	1.05	1.58
Secondary	1.06	1.02	.98	.97	.86	1.78	.98	1.65
Higher	1.05	.77	.99	1.02	.76	-	-	-
Age 35-39								
None	1.01	1.59	1.01	1.10	.72	3.66	1.01	2.26
Primary	.95	1.28	.98	.95	.71	3.63	1.07	1.73
Secondary	1.02	.97	.99	.95	.77	.82	1.09	1.71
Higher	.84	.89	.99	1.13	.86	-	.99	-
Age 40-44								
None	.88	1.34	.98	1.09	.81	2.55	1.03	2.14
Primary	1.00	1.05	.99	.98	.74	2.63	1.06	1.88
Secondary	1.11	1.08	.97	.97	.75	1.23	1.07	1.81
Higher	1.13	.92	1.00	.80	-	-	-	-
Age 45-49								
None	.82	1.33	.98	.98	.77	2.79	1.02	2.18
Primary	1.01	1.04	.99	.98	.76	2.91	1.06	1.84
Secondary	1.01	.95	1.00	.99	.96	1.53	1.03	1.42
Higher	1.49	.67	.99	1.01	-	-	-	-

is not possible in this initial analysis to decompose the differences into the effect of the selection process and the effect of duration of residence. The majority of migrants to large cities who have no more than a primary education report fertility slightly lower than that of nonmigrants in the cities, and labor force participation rates markedly higher than those of city nonmigrants. Child survival and schooling of migrants is almost on a par with that of nonmigrants, but as noted earlier these indicators of child investments would also exceed those of nonmigrants, if the comparison were limited to migrants who had resided in the cities for at least ten years.[6]

IV. Conclusion

In many countries today there are marked differences between urban and rural populations in fertility, child survival rates, and child schooling rates for women with otherwise similar educational attainments. Women's participation in the labor force is also much higher in urban than in rural areas of Colombia and this pattern is observed in a number of other regions of the world. One explanation for these rural-urban differences in economic and demographic behavior is differences in regional relative prices. If rural and urban environments provide different incentives to expend resources on the number and "quality" of children, one would expect the innate heterogeneity in people's tastes for these important consumption/investment activities to be clearly revealed among migrants who would weigh most explicitly regional relative prices in choosing their destination. Local relative prices are analyzed here as one explanation for rural-urban differences in economic and demographic behavior among and between migrants and nonmigrants.

This paper has presented data from the 1973 Census of Colombia that are consistent with the proposed hypothesis that migrants are heterogeneous in their preferences, and these differences in tastes are revealed in differences in behavior among those selecting different destinations. Four forms of interrelated life cycle economic and demographic behavior were considered--fertility, women's participation in the labor force, child survival and child schooling--because it was believed that the relevant shadow prices for these activities varied systematically from rural to metropolitan areas and that the cross-price effects among this group of four activities reinforced the predictable own-price effects. Initially the regional variation in behavior among nonmigrants was interpreted as the undistorted effect of regional prices within an age-education group, as well as unmeasured institutional constraints. The covariation between these regions and various forms of demand behavior were observed to be more pronounced among migrants than among nonmigrants, presumably because the migrants were self-selected according to their own tastes across destination regions. Moreover, migrants from a single origin who chose to locate in either a metropolitan or a rural destination exhibited the most pronounced differences in behavior, probably because they represent the extreme self-selected segments of the full range of tastes for these various life cycle activities. But it may not always be possible for migrants to compensate later for the relative price effects accumulated at origin before their departure. Thus, after migration their children may continue to bear the effects of that period of residence at origin as well as show the consequences of the new relative prices and environmental conditions experienced at destination. Duration of residence appears to be a particularly important factor in accounting for

migrant outcomes in the case of child schooling, whereas it has little explanatory power for understanding current labor force behavior of women or their cumulative fertility.

In conclusion, the simple correlation of urban-rural environments and demographic and economic life cycle behavior is likely to overestimate the impact of these environmental differences on household behavioral outcomes. One way to correct partially for this potential bias is to restrict analysis to nonmigrants residing in different regional price settings. But this approach depends on the working assumption adopted at the outset, that the migration decision itself is independent of preferences. It is surely a tenuous assumption. Potential migrants undoubtedly decide whether or not to migrate after comparing local relative prices with those existing elsewhere, in addition to regional income levels (deflated by a common price index).

There may also be a tendency to attribute too large a behavioral consequence to the process of rural-urban migration. Comparisons of migrant behavior with that of nonmigrants at origin will generally overstate the behavioral effect of migration ceteris paribus, because migrants are self-selected and their tastes for these types of activities will not represent a random distribution of these preferences in the population. For example, if some of the rural-urban migrants had not been able to leave the rural sector for the cities, rural fertility would probably have been lower than it was because these restrained migrants would have a "taste" for smaller families. Conversely, women's labor force participation in rural areas would probably have been higher, if rural-urban migration had proceeded more slowly. The interplay between tastes and regional relative prices tends to overstate the

role of intersectoral migration in facilitating the demographic transition with its trends of decreasing fertility and mortality and increasing investments in the "quality" of future generations.

Footnotes

[1]Studies of migration generally seek to explain who moves and to where they move, conditional on the characteristics of the potential migrant and the environments at origin and at alternative possible destinations. The act of migration is often interpreted as one of investing current resources and foregoing earnings to secure in the future a more productive location for oneself and family. Income differences among regions are treated as the principal motivation for migration, though uncertainty and imperfections in information are also attributed a role, difficult though they are to conceptualize and to measure empirically (Harris and Todaro, 1970; Corden and Findlay, 1975). Regional income opportunities are deflated by regional prices, where available, to obtain commensurate units of real income.

[2]Tabulations from the Public Use Sample and a description of the file are found in a report by DANE (1977).

[3]Regardless, the Colombian Census does not provide information on the timing of births on which to base the more refined estimates of age specific child mortality.

[4]As noted in the text, it is not possible to distinguish whether the birthplace was in a rural or town setting, since the census only asked for the municipality of birth. There are approximately a thousand municipalities in the sampled departments of Colombia, and this implies an average municipality had a population of about 20,000. Persons are also unavoidably allocated to the two city birthplace categories, even though they might have been born in a rural area within a municipality in which there is today a large or medium sized city.

[5]For example, consider again Colombian women age 30-34 in 1973. Of those born in towns and rural areas, 23 percent had no schooling, 67 percent some primary, 9.7 percent some secondary and .3 percent some higher education. Of those with no schooling, 54 percent did not migrate and 54 percent of those who migrated moved to a large city. Among the 90 percent of the population with less than a secondary education, the effect of selection on migrant behavior may be revealed by the Colombian data, but one should not expect it to be evident among the secondary and higher educated women from rural and town origins, since outmigration occurs for virtually all of these more educated women, and almost all of these better educated outmigrants move to cities. Thus, there does not appear to be a meaningful alternative (rural) destination for this group of migrants that would permit them to be sorted according to preferences.

[6]Similar patterns were found in a study of a dozen characteristics of child health and years of completed schooling among children of U.S. immigrants and U.S. natives as of 1976 by duration of residence, within mother's age and education classes (Schultz, 1981).

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Appendix

Let us assume the potential migrant receives utility from five goods: Children, child Survival, child Education, the Nonmarket activities of women, and a residual composite Good:

$$U = U(C,S,E,N,G).$$

It is assumed that as one shifts from rural to urban-metropolitan regions, the shadow prices of C and N increase, those of S and E decrease, and G does not change appreciably. The (utility) compensated own-price effects on demands are negative according to conventional consumer demand theory. Several uncompensated cross-price effects are noted in the empirical literature, though there is no consensus on methods for the estimation of compensated price effects. Fertility tends to decrease as the conditions for child survival improve, suggesting that fertility and child survival are substitutes, $dC/dP_S > 0$, and that the number of children demanded is a substitute for the desired schooling per child, $dC/dP_E > 0$. If we can ignore the compensating income effects which are unavoidably combined into the observed cross-price effects, the converse should also be observed, that is, $dE/dP_C, dS/dP_C > 0$. Moreover, it has been common to assume in studies of household demographic behavior that the nonmarket time of the wife and fertility are complements or $dC/dP_N < 0$. It has also been hypothesized that exogenous reductions in mortality augment the private returns to schooling, $dE/dP_S < 0$. Conversely, a substantial empirical literature has developed in the last few years showing increased mother's education is associated with higher child survival, $dS/dE_m > 0$. If the

variation in mother's education were due to variation in the return (or price) of schooling that was expected also to hold for the offspring, then it might be anticipated that $dS/dP_E < 0$.

The remaining two cross-price effects (see Table A) are not prescribed by household demand theory or by empirically estimated studies. The increased value of a woman's time in the market labor force has the potential to augment the family's market income which can purchase inputs to improve the child's survival prospects and educational achievements. Such an increase in the opportunity cost of a mother's time may also lead her to substitute her time away from child care activities that worsen her children's health and retard their schooling. The net outcome of these opposing income and substitution effects depends in part on the income elasticity of consumer demand for the goods and on the substitution possibilities of using market inputs to replace the mother's time, and of course, on the underlying structure of preferences of the consumer. For convenience, I assume that these two remaining cross price effects are positive or they are both substitutes for one another, that is, dS/dP_N, $dE/dP_N > 0$.

It is then possible to see that a shift in the four commodity prices, as one moves from rural to urban areas, operates both through

Table A

Hypothesized Sign of Own- and Cross-Price Effects on Household Economic-Demographic Goods Demanded

Prices of Goods	Fertility	Child Survival	Child Education	NonMarket Time of Wife	Other Goods
	C	S	E	N	G
P_C	-				
P_S	+	-			
P_E*	+	-	-		
P_N(wage)	-	+	+	-	
P_G	?	?	?	?	-

Note: Substitutes have + cross price effects
Complements have - cross price effects

*The price of schooling could be interpreted as the inverse of the private rate of return to schooling.

their own price effects and all three specified cross-price effects to augment the regional price responsiveness of consumer demands, as summarized in table A. Hence, the tendency to overstate own-prices effects, when estimating from cross sectional data a demand equation that does not include prices or proxies for the prices of the other close complements and substitutes identified here. Only when all commodity prices are included in the reduced-form demand equation can one assume that the own-price and cross-price effects are estimated without bias.