The Determinants of Rural Urban Migration: Evidence from NLSY Data

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Introduction

Patterns of internal migration including out-migration from non-metropolitan areas have long been of interest to economists. Disproportionate out migration of educated young adults from rural areas is of particular concern and has been labeled "the rural brain drain." Migration patterns affect the labor markets and economic vitality of non-metropolitan areas. They also affect incentives for communities to invest in young people. For instance, counties who expect high out migration of educated young adults may have limited incentives to invest in education infrastructure as they don't expect to reap the benefits of the induced education.

Out migration, particularly of young adults, is a widespread phenomenon. Data from the Economic Research Service have shown that between 1995 and 2000 alone over 5.5 million people (accounting for 11 percent of the total non-metropolitan population) moved to an urban area (Marré 2009). The determinants of the migration decision have been the subject of several studies; yet there is little consensus as to the importance that wage differentials and relative economic conditions play on this decision.

Studies of nonmetropolitan out-migration show that leaving a nonmetropolitan county reduces time spent in poverty and unemployment spells, increases wages and overall income (Wenk and Hardesty 1993, Rodgers and Rodgers 1997, Glaeser and Maré 2001) Investigating how important these expected gains are to the decision to move typically involves two steps. First, the economic outcomes associated with residence in the non metro county of origin or a metro county are estimated for each individual. Half of the estimated outcomes are, however, unobserved counterfactuals (since we can only observe individual outcomes at the county of origin for non-migrants and those at the destination for migrants). This step usually involves a correction

procedure to account for the fact that migration is actually a choice that may depend on unobservables. Second, the decision to migrate is modeled as a function of individual and family attributes, regional attributes and predicted differences in economic outcomes. For instance, using data from the 1979 National Longitudinal Survey of Youth (NLSY), Mills and Hazarika (2001) find that a 10 percentage point increase in the ratio of initial hourly earnings upon migration to initial hourly earnings in the county of origin will result in a 7.9 percentage point increase in the probability of migration. Using the Panel Survey of Income Dynamics (PSID), Marré (2009) found additional factors that are important in the decision to move, including pursuing an education and home ownership. Marré (2009) also notes that most studies find differences in how important expected wage differentials are to the decision to migrate. Typically PSID data yields a much lower effect of wages. Some of the differences might lie in the fact that NLSY respondents are typically examined in their early 20's.

This study augments the literature in several important aspects. First, most studies have used data from the 1980s and few from the 1990s; we examine individuals from the NLSY 1997, a survey that covers most of the 2000s, to see if the determinants of migration have changed. Second, limited attention has been paid to the definitions of "non metro". Some counties that are considered non metro by the census definition may, in fact, be rather close to metropolitan areas and might be net recipients of migrants. We examine whether migration propensities from somewhat more remote areas (e.g. ERS rural-urban continuum codes of 6 or higher) are substantially different. Finally, while multiple location attributes have been accounted for, no study that we are aware of accounts for access to higher education. This could be of particular importance to the phenomenon of the rural brain drain; college bound youth might be likely to move in response to educational opportunities. We account for access to higher education by

including distances to the nearest two and four year colleges for each county of residence when respondents are 17 years of age or younger. Finally, most studies find that more educated adults are more likely to move, but there could be two explanations for the phenomenon. More educated adults could have a wider job search area geographically in order to maximize returns to education. Also, initial migration may be triggered by a search for educational opportunities. We control for educational attainment via the number of years of schooling completed and control for attendance of a two or a four year college (regardless of how many years one spent in college) separately.

Migration Model

We model the decision of young people to migrate following the model by Mills and Hazarika (2001).[1] In this model, individual i is at the stage of choosing the desired level of education and subsequent labor force participation. The individual may choose to stay in the local area where his/her earnings are denoted as$W_{i,0,N}$ and growing at a rate of $g_{N.}$ Alternatively, he/she may choose to migrate and have earnings $W_{i,0,M}$ which grow at a rate of $g_{M.}$ Thus it follows that:

(1) $W_{i,t,M} = W_{i,0,M}\, e^{g_M t}$

and

(2) $W_{i,t,N} = W_{i,0,N}\, e^{g_N t}$

where $W_{i,t,M}$ and $W_{i,t,N}$ are individual's i earnings at time t after starting work if he/she chooses to stay in the non-metropolitan local labor market (in migration) or in the non-metropolitan county, respectively.

[1] Note that non-metropolitan areas in this study are those with a rural-urban continuum code of 5 or higher.

The individual accounts for costs related to the period of schooling beyond high school and transition from school to work, as well as for the probability of getting a job in migration or in the non-metropolitan county. Thus, individual i expects to find a job with probability $\lambda_{i,N}$ if he chooses to migrate and with probability $\lambda_{i,N}$ if he chooses to stay in the non-metropolitan local labor market. These probabilities are functions of individual characteristics and labor market conditions. We assume that the individual's planning horizon is a period of duration *T*. This subjective rate of discount, r_i to be greater than g_N and g_M. Then, given equation (1), the present value of his earnings from migration over time T is:

$$(3)\ V_{i,M} = \lambda_{i,M} \int_0^T W_{i,0,M} e^{-(r_i - g_M)t}\, dt = \lambda_{i,M} \frac{W_{i,0,M}}{r_i - g_M}\left[1 - e^{-(r_i - g_M)T}\right]$$

If the individual stays in the local non-metropolitan area the present value of his earnings is:

$$(4)\ V_{i,N} = \lambda_{i,N} \int_0^T W_{i,0,N} e^{-(r_i - g_N)t}\, dt = \lambda_{i,N} \frac{W_{i,0,N}}{r_i - g_N}\left[1 - e^{-(r_i - g_N)T}\right]$$

Given this framework if the migration costs are negligible, the individual will choose to migrate if $V_{i,M} > V_{i,M}$. If migration costs are considerable, then the condition for migration is

$$(5)\ \frac{V_{i,M}}{Vi_{,N}} > C_t$$

where C_i is an index of the differential financial costs related to education and transitions into labor markets, actual costs of moving and psychic costs of migration.

Finally, the condition on whether individual i migrates or not can be derived by taking logs of both sides of (5) and (6) and using (3) and (4) to find the following:

$$(6)\ I_i^* = \ln\left(\lambda_{i,M}\right) - \ln\left(\lambda_{i,N}\right) + \ln(W_{i,0,M}) - \ln(W_{i,0,N}) - \ln(r_i - g_M) + \ln(r_i - g_N) + \ln\left[1 - e^{-(r_i - g_M)T}\right] - \ln\left[1 - e^{-(r_i - g_N)T}\right] - \ln C_i$$

where I_i^* can be thought of as the individual's latent tendency to migrate. Thus, individual I would migrate if $I_i^* > 0$ and will choose to stay in the area of origin if $I_i^* \leq 0$.

Data

The primary source of data is the National Longitudinal Survey of Youth (1997) (NLSY97). The survey annually interviews a nationally representative sample of over 8000 youth that were ages 12 to 16 in December of 1996. The 1997 survey collects rich information on family background, household wellbeing, youth location, schooling up to that point, and demographic characteristics. Additionally schooling choices, employment and earnings are elicited each year thereafter. Most respondents also completed a battery of tests called the ASVAB. The component of the ASVAB that covers quantitative and reading skills has been shown in previous work to be a good measure of cognitive skill and to predict labor market outcomes fairly well.

This study uses a total of 7,346 respondents for whom most characteristics and location were observed to estimate migration equations; of these, 3,287 were migrants.

Empirical Estimation

We first start by estimating reduced form equations of migration as a function of pre-labor market characteristics and labor market decisions. An individual is defined as a migrant if the county where they were located at age 16 is different from the county where they are located in the most recent wave of the NLSY97. The migration decision is then estimated as a function of Rural-Urban continuum code associated with the county of residence when the respondent was 16, distance to the nearest four year and two year public colleges, education obtained until 2007, Armed Forces Qualifying Test (AFQT) score, Age in 1997 (age 15, age 14, age 13, age 12 as opposed to 16), demographics (Male, Black, Hispanic, hard times in childhood, income to poverty ratio, households net worth at 16, age of mother when she first gave first birth, father's education and mothers education) as well as variables associated with the county of origin (percent young people in the county, average education, poverty, unemployment and per capita

income). We estimate separate models for all youth and those initially located in rural areas. Control for the “rurality” of the county of origin and estimating separate equations for rural youth allows us to examine differentials in the reduced form determinants of the decision to leave the area of origin for rural youth and to test if these are uniform across rural areas or if it varies by “rurality”.

Additionally we estimate separate models which include initial attendance at a four year or two year college separately to see how this mediates the coefficient for education.

The next set of reduced form models differentiates by destination. In this model individuals have three residence choices at the age of 17. They may choose to stay in the county of origin; they may choose to migrate to a metro area; or they may choose to migrate to a non-metropolitan area. We estimate multivariate logits for the nationally representative sample as well as the non metro sample using the same covariates as above.

To here, the analyses has not examined if returns to education and other skills or attributes are different upon migration and if such expected earnings differentials affect the decision to migrate. For both, migrants and non migrants earnings are observable for the choice that they make. However, in order to be able to examine the decision of individuals to migrate or not, we need consistent estimates of potential earnings for each choice. So we first estimate the wage equations for migrants and non migrants using Heckman selection wage models that explicitly account for migration. These are identified by including distance to the nearest college to the migration equation but not the wage equation. Distance to the nearest college affects the propensity to migrate but it is assumed to be uncorrelated with the unobserved determinants of wages. This identification strategy has been used in several previous studies to estimate wage equations with endogenous education decisions; many authors have argued that distance to the

nearest college is uncorrelated with unobserved determinants of wages (e.g., Constantine 1995, Mykerezi and Mills 2008). We then predict actual and counterfactual wages and estimate the expected wage differential upon migration. This predicted wage differential is then used to estimate a structural equation for (6).

Results

We start with logistic regressions of migration, with migrants being defined as individuals who were not in their county of origin as of the last survey year in which their location is observed (ages 23-28). Table 1 presents the summary statistics for the sample.

Table 1 presents four specifications, two for the nationally representative sample and two for the non metro sample. The first specification for each sample controls for the number of years of education completed as of the last survey round, while the second specification accounts for education and for an indicator of whether they started college at a two or four year college (relative to individuals who don't go to a postsecondary institution). Typically studies account for education and find that educated individuals are more likely to migrate, but are unable to establish whether individuals migrate because they can find higher returns to education elsewhere or whether they move in search of educational opportunities and do not come back. We find that education increases the propensity to migrate, but the decision is to a large extent explained by searching for educational opportunities. Once the college they start in is controlled for the coefficient on education drops significantly. Attending a two and four year college increases the propensity to migrate. So the rural brain-drain likely begins before wages are realized but when education choices are made.

It is also worth noting that distance to public four year colleges increases the propensity to migrate. Individuals of high ability are also more likely to migrate, regardless of educational attainment and access to education, perhaps in search of higher returns to cognitive skill.

In terms of rurality, youth in all counties with codes 5-9 are more likely to migrate than urban youth. Further, the propensity to migrate of rural youth in more remote areas (rural-urban continuum codes 7-9) is much higher (two to three times higher) than non-metro youth located relatively close to metro areas (codes 5-6).

Naturally, younger individuals are less likely to have migrated. Also Blacks and Hispanics are less likely to migrate holding education ability, rurality of the county of origin, and age constant. Individuals reporting having gone through hard times growing up are more likely to migrate. Also, individuals from households with higher current income (relative to the poverty threshold) are more likely to move but individuals from households with higher permanent wealth are slightly less likely to move, ceteris paribus.

After holding individual and household attributes constant, youth living in counties with a higher share of the population between the ages of 18 and 35 are less likely to leave. All other county-level characteristics do not show significant associations with the migration decision for the nationally representative sample of youth.

The second panel of table 2 presents the determinants of migration for a sample of youth representative of those living in non metro areas prior to the age of 17. Individual and household level determinants of migration are not substantially different from the nationally representative sample. Non metro youth in remote areas are more likely to migrate than those located in non metro areas closer to metropolitan centers. Individuals of high education and ability are more likely to migrate and once the type of college one starts in after high school is accounted for most

of the coefficient on education is mediated. Demographics also show similar influences on migration, but the parameter estimates are somewhat smaller and not statistically significant at conventional levels; perhaps due to the smaller sample size.

County attributes show some differences. The coefficient on percent county population between the ages of 18 and 35 is still negative and very similar in magnitude, but the standard error is now larger and the estimate is not statistically different from zero. Non-metro individuals originating from counties with higher poverty rates are more likely to migrate. Surprisingly so are non metro youth from counties with higher median income.

In table 3 we distinguish between migration to an urban county versus a non metro county to examine if the determinants of migration vary by destination. Table 3 presents multinomial logit estimates of migration (1 = non migrants 2 = migrants to city 3 = migrants to non metro).

Parameter estimates on the indicators of rurality of the county of origin now reveal some interesting patterns. Holding household attributes and other location attributes fixed, we find a general tendency to migrate to "less rural" areas but not a uniform tendency to migrate to urban areas. For instance, individuals living in counties with codes 5 and 7 are more likely to move to an urban area but individual living in counties with codes 8 and9 are more likely to move to another non metro area. Actually, individuals living in the most remote areas (code 9) show a smaller propensity to move to an urban area ($p<0.1$) but a higher propensity to move to another non metro area relative to their peers in the non metro counties adjacent to metro areas (code 4).

Distance from the nearest four year college is still associated with a higher propensity to migrate. Education is positively associated with migration to urban areas but not to non metro

areas. For both, the nationally representative sample and the non metro sample, more education lowers the propensity to migrate to a non metro area (only significant for the non metro youth). This is indicative of the rural brain drain issue; while young adults don't uniformly flow to urban areas, educated young adults appear to do so.

We next turn our attention to structural estimation of the returns to migration and the impact that such expected returns have on the migration decision. Table 4 presents selectivity corrected models of the determinatns of wages for migrants and non migrants, for both, the national and non metro sample. Two main conclusions arise: Returns to education are higher for migrants than non migrants and returns to education are lower for non metro youth. The estimated return to an additional year of schooling is seven percent for the average youth in the nation who chooses to migrate, but only four percent for those who do not move. Returns among non metro youth appear surprisingly low. There is only a 1.6 percent estimated return for migrants and virtually no return for non metro youth who don't migrate. Other household attributes have the expected associations with wages.

Finally, table 5 presents the determinants of the migration decision after explicitly accounting for the expected wage differential due to migration. The expected wage differential has a large statistically significant impact on the decision to move for the nationally representative sample and the non metro sample, but it appears to have a larger draw on the nationally representative sample. This implies that migration out of non metro areas may be motivated by expected earning to a smaller extent than migration away from an urban county. After holding expected wage differentials constant, education no longer appears to be associated with migration.

Summary and Conclusions

We find that in the last decade individuals in non metro areas have a much higher propensity to migrate than those in urban areas but the tendency is not the same across all non metro areas. We find that individuals in remote rural areas (code 7 or above) show propensities to migrate that are two to three times higher than those in non metro areas that are adjacent to cities. We find that in general, individual from remote non metro areas are more likely to migrate to either a city or another non metro area, with one exception: individuals who live in the most remote set of counties may be less likely to migrate to an urban area relative to individuals living in nearly adjacent non metro areas.

We also find that individuals with more education of any origin tend to migrate more. This is a known result and it is generally interpreted in reference to a search model where a wider search increases the returns to education, so more educated people have more to gain by conducting a wider job serach. But we find that the explanation may be much simpler; to a large extent youth go to college and fail to make it back. We control for continuous education measures and add indicators of where one starts college (2 or 4 year school) and starting at any type of college (relative to no college) is highly significant and positive, but the coefficient on the ritcher measure of years of education is reduced to 50-30% of the original coefficient. This is further reflected in the fact that distance from the nearest four year college when the youth is 17 or younger predicts migration.

Multivariate logits that distinguish non metro migration to another non metro area as opposed to a metro area uncover some trends that indicate brain drain. Education and cognitive ability are positively associated with non metro migration to a metro area but show either a zero effect or even a negative association with migration to another non metro area. Finally, consistent with

previous literature, returns to education are higher upon migration and this expected earnings differential does predict migration as in Mills and Hazarika (2001).

For future work and policy we recommend that non metro areas be dissagregated by rurality as some non metro area show patterns that are more similar to adjacent urban areas than they are to remote non metro areas. Further, while much attention has been devoted to the impact of wages and employment we show that, at least for young adults, educational opportunities may instigate sizable migration that resembles migration in response to employment opportunities in magnitude. So policies that extend educational opportunities to remote areas coupled with enhanced economic opportunity may help retain some of the rural talent.

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Table 1. Summary Statistics

	Non Migrants		Migrants	
Rural Urban Code as a Teen	Mean	S.D.	Mean	S.D.
5	0.034	0.182	0.040	0.196
6	0.039	0.194	0.045	0.208
7	0.043	0.202	0.084	0.277
8	0.015	0.121	0.019	0.138
9	0.014	0.119	0.015	0.120
Distance to Public College(miles)				
Four Year	21.654	28.463	23.975	27.782
Two Year	17.308	20.450	18.759	21.307
Human Capital				
Education	13.031	2.496	13.863	2.702
AFQT	37.149	31.266	44.159	33.845
Age in 1997				
age 15	0.182	0.386	0.217	0.412
age 14	0.204	0.403	0.202	0.401
age 13	0.207	0.405	0.182	0.386
age 12	0.228	0.419	0.177	0.381
Demographics				
Male	0.531	0.499	0.494	0.500
Black	0.184	0.388	0.123	0.328
Hispanic	0.153	0.360	0.103	0.304
Hard times in childhood	0.039	0.195	0.048	0.214
Poverty Ratio	2.195	2.649	2.601	3.005
Net Worth	7.360	12.864	8.932	14.680
Age mom gave first birth	21.124	8.088	21.541	8.325
Father's Education	12.140	4.723	12.849	4.563
Mothers Education	12.180	4.123	12.790	3.850
County				
Age 18-35 (%)	28.437	3.768	27.997	4.279
Graduated HS (%)	74.934	8.687	75.571	8.917
Graduated College (%)	19.802	7.720	19.752	8.556
Below Poverty (%)	13.312	6.577	12.867	6.609
Unemplyed (%)	6.862	2.202	6.771	2.189
Median Income	14.135	3.438	14.110	3.698
Wages ($/hour)	14.64	15.70	15.91	16.75
N	4059		3287	

Table 2. Migration Decisions (Reduced Form)

	Full Sample						Non Metro Sample					
	M.E.	S.E.		M.E.	S.E.		M.E.	S.E.		M.E.	S.E.	
Rural Urban Code as a Teen												
5	0.096	0.044	**	0.080	0.044	*	0.081	0.080		0.073	0.081	
6	0.061	0.034	*	0.062	0.034	*	0.007	0.058		0.013	0.057	
7	0.205	0.030	***	0.203	0.030	***	0.194	0.055	***	0.194	0.055	***
8	0.160	0.049	***	0.165	0.049	***	0.186	0.055	***	0.195	0.055	***
9	0.195	0.056	***	0.187	0.056	***	0.111	0.083		0.111	0.082	
Distance to Public College												
Four Year	0.001	0.000	***	0.001	0.000	***	0.002	0.001	***	0.002	0.001	***
Two Year	0.000	0.000		0.000	0.000		-0.001	0.001	*	-0.001	0.001	
Started College In												
Four Year				0.042	0.017	**				0.065	0.044	
Two Year				0.127	0.021	***				0.136	0.050	***
Human Capital												
Education	0.018	0.003	***	0.006	0.004	*	0.017	0.007	**	0.003	0.009	
AFQT	0.001	0.000	***	0.001	0.000	***	0.002	0.001	***	0.002	0.001	***
Age in 1997												
age 15	-0.001	0.021		-0.003	0.021		-0.035	0.051		-0.038	0.051	
age 14	-0.028	0.020		-0.029	0.020		-0.108	0.054	**	-0.116	0.053	**
age 13	-0.059	0.019	***	-0.064	0.019	***	-0.127	0.049	***	-0.135	0.048	***
age 12	-0.082	0.019	***	-0.088	0.019	***	-0.091	0.051	*	-0.102	0.050	**
Demographics												
Male	-0.012	0.012		-0.010	0.012		-0.004	0.030		-0.004	0.030	
Black	-0.054	0.018	***	-0.062	0.018	***	-0.025	0.048		-0.035	0.047	
Hispanic	-0.076	0.019	***	-0.070	0.019	***	0.023	0.059		0.020	0.059	
Hard times in childhood	0.091	0.028	***	0.092	0.028	***	0.013	0.068		0.017	0.068	
Poverty Ratio	0.010	0.003	***	0.009	0.003	***	0.008	0.009		0.008	0.009	
Net Worth	-0.001	0.001	*	-0.001	0.001	*	-0.001	0.001		-0.001	0.001	
Age mom gave first birth	0.000	0.001		-0.001	0.001		-0.001	0.004		-0.001	0.004	
Father's Education	0.002	0.002		0.002	0.002		0.008	0.007		0.007	0.007	
Mothers Education	0.003	0.002		0.002	0.002		0.016	0.008	**	0.015	0.008	*
County												
Age 18-35 (%)	-0.005	0.002	**	-0.004	0.002	*	-0.004	0.005		-0.003	0.005	
Graduated HS (%)	0.002	0.002		0.002	0.002		0.003	0.004		0.003	0.004	
Graduated College (%)	0.002	0.003		0.001	0.003		-0.003	0.007		-0.004	0.007	
Below Poverty (%)	0.000	0.002		0.000	0.002		0.017	0.005	**	0.017	0.005	***
Unemplyed (%)	-0.002	0.004		-0.001	0.004		-0.010	0.008		-0.009	0.008	
Median Income	-0.004	0.006		-0.004	0.006		0.050	0.019	***	0.054	0.019	***
N	7346						1464					

Table 3. Migration Decisions by Destination (Reduced Form)

	Migration from Anywhere						Migration from Non Metro County					
	To Metro			To Non Metro			To Metro			To Non Metro		
Rural Urban Code as a Teen	M.E.	S.E.		M.E.	S.E.		M.E.	S.E.		M.E.	S.E.	
5	0.103	0.041	**	-0.008	0.016		0.133	0.081	*	-0.055	0.060	
6	-0.008	0.031		0.053	0.020	***	-0.027	0.050		0.033	0.049	
7	0.096	0.030	***	0.089	0.022	***	0.117	0.059	**	0.079	0.060	
8	0.073	0.046		0.075	0.028	***	0.095	0.063		0.093	0.055	*
9	-0.054	0.052		0.214	0.060	***	-0.117	0.065	*	0.237	0.102	**
Distance to Public College												
Four Year	0.001	0.000	**	0.000	0.000	*	0.001	0.001	*	0.001	0.001	
Two Year	0.000	0.000		0.000	0.000		0.000	0.001		-0.001	0.001	
Human Capital												
Education	0.020	0.003	***	-0.002	0.001		0.026	0.007	***	-0.008	0.004	*
AFQT	0.001	0.000	***	0.000	0.000		0.002	0.001	***	0.000	0.000	
Age in 1997												
age 15	-0.017	0.019		0.015	0.009	*	-0.074	0.041	*	0.040	0.031	
age 14	-0.026	0.018		-0.001	0.008		-0.099	0.042	**	-0.011	0.029	
age 13	-0.062	0.017	***	0.002	0.008		-0.122	0.040	***	-0.009	0.026	
age 12	-0.060	0.018	***	-0.020	0.008	***	-0.042	0.044		-0.049	0.024	**
Demographics												
Male	-0.009	0.011		-0.002	0.005		0.042	0.025	*	-0.043	0.019	**
Black	-0.022	0.017		-0.025	0.007	***	0.060	0.048		-0.067	0.024	***
Hispanic	-0.026	0.019		-0.042	0.007	***	0.121	0.062	**	-0.080	0.034	**
Hard times in childhood	0.058	0.028	**	0.029	0.014	**	-0.038	0.060		0.046	0.046	
Poverty Ratio	0.010	0.003	***	0.000	0.002		0.007	0.009		0.001	0.006	
Net Worth	-0.001	0.001		0.000	0.000		-0.001	0.001		0.000	0.001	
Age mom gave first birth	0.001	0.001		-0.001	0.001		-0.001	0.003		0.000	0.002	
Father's Education	0.002	0.002		0.000	0.001		0.005	0.006		0.002	0.005	
Mothers Education	0.003	0.002		-0.001	0.001		0.016	0.007	**	0.000	0.005	
County												
Age 18-35 (%)	-0.006	0.002	***	0.000	0.001		-0.002	0.005		-0.002	0.003	
Graduated HS (%)	0.002	0.002		0.000	0.001		0.001	0.003		0.003	0.003	
Graduated College (%)	0.000	0.002		0.002	0.001		-0.006	0.006		0.003	0.005	
Below Poverty (%)	0.001	0.002		-0.001	0.001		0.012	0.005	***	0.005	0.003	
Unemplyed (%)	-0.001	0.004		-0.001	0.002		-0.003	0.008		-0.006	0.006	
Median Income	0.004	0.005		-0.010	0.003	***	0.063	0.019	***	-0.012	0.017	
N	7346						1464					

Table 4. Selectivity Corrected Wage Equations

	Full Sample						Non Metro Sample					
	Cond on Migr			Cond on Staying			Cond on Migr			Cond on Staying		
Rural Urban Code as a Teen	Param	S.E.		Param	S.E.		Param	S.E.		Param	S.E.	
5	0.041	0.056		-0.210	0.056	***	0.013	0.069		-0.140	0.071	**
6	-0.041	0.056		-0.150	0.032	***	-0.063	0.075		-0.072	0.055	
7	0.116	0.052	**	0.019	0.045		-0.095	0.069		-0.066	0.063	
8	0.212	0.075	***	0.001	0.055		0.079	0.078		-0.043	0.084	
9	0.189	0.080	**	-0.155	0.051	***	0.029	0.076		-0.183	0.071	***
Human Capital												
Education	0.070	0.006	***	0.040	0.004	***	0.016	0.010	*	0.007	0.012	
AFQT	0.002	0.000	***	0.000	0.000		0.001	0.001		-0.001	0.001	
Age in 1997												
age 15	-0.049	0.038		-0.055	0.026	**	-0.100	0.076		0.065	0.065	
age 14	-0.158	0.036	***	-0.044	0.027		-0.018	0.074		0.138	0.067	**
age 13	-0.229	0.040	***	-0.138	0.026	***	-0.159	0.071	**	0.065	0.065	
age 12	-0.273	0.040	***	-0.188	0.025	***	-0.135	0.077	*	0.056	0.072	
Demographics												
Male	0.136	0.024	***	0.160	0.016	***	0.237	0.044	***	0.203	0.040	***
Black	-0.121	0.033	***	-0.088	0.021	***	-0.095	0.050	*	-0.148	0.047	***
Hispanic	-0.094	0.037	***	0.005	0.021		-0.085	0.067		-0.095	0.076	
Hard times in childhood	0.046	0.055		-0.068	0.029	**	-0.190	0.097	*	-0.109	0.084	
Poverty Ratio	0.016	0.006	***	0.012	0.005	**	-0.001	0.010		0.041	0.019	**
Net Worth	0.001	0.001		0.002	0.001	*	0.002	0.002		0.000	0.003	
Age mom gave first birth	0.001	0.003		-0.001	0.002		0.003	0.005		-0.006	0.004	
Father's Education	-0.001	0.004		-0.001	0.002		-0.007	0.012		-0.001	0.011	
Mothers Education	0.004	0.005		0.002	0.004		0.013	0.010		-0.022	0.013	*
Constant	5.480	0.109	***	6.613	0.070	***	6.779	0.192	***	6.897	0.218	***
Rho	0.880	0.018	***	-0.102	0.025	***	-0.219	0.096	***	0.784	0.093	***
F	23.51			21.62			7.48			4.78		
N	6370			6370			1260			1260		

Table 5.

	Full Sample			Non Metro Sample		
	Param	S.E.		Param	S.E.	
Rural Urban Code as a Teen						
5	-0.279	0.039	***	-0.091	0.094	
6	-0.015	0.036		0.056	0.056	
7	0.486	0.034	***	0.405	0.066	***
8	0.009	0.053		0.080	0.066	
9	-0.234	0.054	***	-0.044	0.106	
Distance to Public College						
Four Year	0.002	0.000	***	0.004	0.001	***
Two Year	-0.001	0.000	*	-0.003	0.001	**
Human Capital						
Education	-0.003	0.006		0.009	0.008	
Age in 1997						
age 15	-0.025	0.023		0.253	0.093	***
age 14	0.193	0.045	***	0.142	0.088	
age 13	-0.053	0.022	**	0.191	0.107	*
age 12	-0.106	0.021	***	0.199	0.098	**
Demographics						
Male	0.002	0.014		-0.083	0.040	**
Black	-0.211	0.022	***	-0.089	0.048	*
Hispanic	-0.096	0.019	***	-0.022	0.070	
Hard times in childhood	0.069	0.031	**	0.226	0.081	***
Poverty Ratio	0.026	0.004	***	0.088	0.028	***
Net Worth	0.000	0.001		-0.005	0.002	**
Age mom gave first birth	-0.005	0.002	***	-0.019	0.007	***
Father's Education	0.005	0.002	***	0.027	0.009	***
Mothers Education	0.007	0.003	**	-0.032	0.018	*
Log-Wage Difference						
Predicted Log-Wage Difference	2.817	0.454	***	1.862	0.577	***
N	6370			1260		