

Youth Out-Migration from Pennsylvania: The Roles of Government Fragmentation vs. the Beaten Path Effect

Georg Grassmueck, Stephan Goetz, and Martin Shields

Lycoming College, Pennsylvania State University, and Colorado State University - USA

Abstract. The authors of a recent Brookings report argue that Pennsylvania's lackluster economic performance, including a high rate of loss of young residents (age 25-34), is partly due to fragmented local units of government hindering comprehensive and regional approaches to stimulating economic growth. This assertion is based on casual inference rather than rigorous statistical analysis. In the present study we employ a newly-developed measure of state/county government fragmentation in a county-level econometric migration model to test the Brookings assertion formally. After examining and controlling for the complete set of factors identified from previous studies to motivate youth out-migration, we conclude that government fragmentation acts to keep youth in Pennsylvania rather than drive them out. We conclude that calls for consolidating sub-county government units based on young migration are premature and offer a number of explanations for our finding along with policy implications.

1. Introduction

Only two states, West Virginia and North Dakota, are experiencing slower population growth than Pennsylvania. Perhaps more ominously, Pennsylvania ranked first nationally in the absolute loss of young workers between 1990 and 2000. In 2003, the Brookings Institution published the report "Back to Prosperity: A Competitive Agenda for Renewing Pennsylvania," which examines the difficulties that the state faces in renewing its economy and preparing for the next century. The Report's authors identified several reasons why the state is unable to attract and keep a young workforce. One key reason is the relatively high degree of government fragmentation in the state, measured in the Brookings report as government units per capita. In fact, the metropolitan areas of Pittsburgh, Philadelphia, and Scranton/Wilkes-Barre have one of the highest degrees of government fragmentation in the nation. The Report's authors contend that the large number of local government units in the state can undercut economic competitiveness, increase the cost of government, worsen sprawl, limit government capacity (Brookings, 2003). This in turn is argued to

create bureaucratic overlap, resulting in inconsistent and confusing laws, duplicated services, haphazard spending, and wasted tax dollars. The Brookings authors conclude, "in the short run, Pennsylvania's profusion of players and agendas has made it difficult for the state to adopt a single economic development plan as other states have" (Brookings, 2003, pg. 67).

Brookings contends that "intense localism in planning has over time stunted the Commonwealth's own state level planning and coordination capacity" (Brookings, 2003, pg. 71). In summary, Brookings and advocates of a consolidated system of government argue that government fragmentation leads to policy fragmentation across the multiple competing local government units, which leads to inconsistent public policies in terms of encouraging and enhancing economic growth. In the end, the lack of a statewide or at least regional approach to economic development accounts for Pennsylvania's weak economic performance.

One symptom of poor economic performance and a bleak economic outlook is a high degree of youth outmigration. This follows from Hirschman's (1970) notion of *exit*, whereby households leave a region (unit

of government) once expected future net benefits become negative. Young adults are the first to move as they can expect to gain the most from moving, when the expected future utility at the new location outweighs the expected future utility at the current location. Therefore, out-migration can be seen as an important indicator of a region's near to long term economic future. Growing economies attract in-migrants, while declining economies lose out-migrants. The decision of young adults to leave Pennsylvania can be seen as an indication of a declining economy. The loss of young residents, especially from rural areas, has become a major concern for policy makers in virtually every state in the Northeast as well as the Midwest region of the United States.

The principal mechanism by which government units affect the household location decision is through the influence of amenities on economic growth. The recent migration literature has focused on the role of natural and artificial amenities as determinants of the location decision (e.g., Rupasingha and Goetz 2004, Deller et al. 2001). A missing piece in the role of artificial amenities is the role of the producer and provider of artificial amenities, the local government unit.

As a provider of public goods, government units supply important inputs and services to firms.¹ Public goods and services provide firms with an educated workforce, transportation infrastructure, police and fire protection services and many more goods and services allowing profit maximization. Profit maximizing firms locate in the government unit that most closely matches their particular preferences for public goods and services. Households follow firms to the government units attracting the most desirable firms. Similarly, households benefit from public goods and services such as roads, libraries, parks, schools, environmental protection and others and wealth maximizing households locate in the government unit that offers the goods and service bundle with the closest match to their preferences. Either way, efficient and responsive government units attract households directly or indirectly by providing employment opportunities.

The institutional perspective advanced by North (1990) views governmental institutions and organizations as lowering transaction costs. Advocates of consolidation contend that a single body of government allows the center to govern more effectively by reducing duplication in efforts, enabling more public visibility and electoral connection, thus allowing voters to hold those in power accountable. Consequently, transaction costs are reduced, thereby encouraging

economic growth (see Savitch and Vogel 2000a, 2000b, Brookings 2003, and Rusk 2003). Advocates of government consolidation see competition as the root of inefficiencies and inequities through duplication and lack of scale and managerial inefficiencies, while

Opponents of consolidation see competition as a mechanism for assuring efficiencies and equities. Tiebout's model (1956) of competitive federalism serves as the foundation of the discussion. Household mobility is Tiebout's primary tool for achieving a competitive market-like mechanism and his analysis revealed that competition among government units for households was a key component of that mechanism. In the end, public goods and services are efficiently distributed among individuals and they are produced at the least cost (Kenyon and Kincaid, 1991).² Those government units that succeed in offering the best and most cost efficient combination of public goods and services will attract households to locate within their boundary, while government units that are inefficient and unresponsive to households' needs will see an outflow of households. Therefore, the decision to migrate can be seen as the expression of dissatisfaction with the current system of government.

Whether government fragmentation is beneficial or detrimental to lowering transaction costs, thus encouraging economic growth, can be answered empirically only through the use of a proxy for the efficiency of government production and provision. Obtaining a proxy for government efficiency is problematic, as quality and quantity considerations are vital in assessing the efficiency of government functions. Zax (1989), Schneider (1989), and Eberts and Gronberg (1998) conclude that a consolidated government is associated with larger government expenditures and more public sector employment, thereby supporting the notion that fragmentation limits the size of government, while consolidation is positively related to higher government expenditures. Chicoine and Walzer (1985) investigated the link between satisfaction with public goods and services and government fragmentation, and concluded that satisfaction is higher in fragmented government units. Niskanen's (1994) overview of the government bureaucracy may provide some motivation for these empirical findings.

Brueckner (1979, 1981) offers a contrasting view on how government interacts with households and firms. In a Tiebout world he argues that government plays only a passive role in the economy. Once a bundle of public goods and services in combination with the

¹ Note that this shifts the focus to firms and away from consumers (the focus of Tiebout's analysis).

² Tiebout himself never really talks about the production side; this has only been introduced later by others.

adequate taxes is offered by a local government unit, government steps back and allows markets to take over. While this mechanism has strong appeal from a *laissez-faire* perspective, the empirical evidence on investment incentives for firms, public funding for various artificial amenities in metro areas suggests that government units in fact play an active role in economic development and growth. Given that market forces largely determine economic outcomes for local government units, local government structures provide the framework in terms of tax structures, public infrastructure as well as goods and services that allow firms and households to succeed in the market economy (see Farrell, 1996). Therefore, a clear understanding of how governmental organizational form and ultimately its public policies affect economic growth and the migration decision of young adults offers public policy makers an opportunity to enhance and improve the position of many localities.

Whether the high rate of government fragmentation causes the state's lackluster economic performance is at least debatable. The Brookings Report and its conclusion are primarily based on the observation that Pennsylvania has high rates of government fragmentation and a slowly growing economy combined with high rates of youth out-migration. The study does not offer rigorous empirical support for this conclusion. Instead the study provides casual inferences based on Rusk (2003) and empirical papers that link fragmentation to urban sprawl and economic growth (Carruther 2003; Carruther and Ulfarsson 2002, Paytas, 2003).

The analysis presented here offers a direct and robust empirical test of the determinants of youth out-migration from Pennsylvania. We also investigate whether youth out-migration is subject to the beaten path effect, a competing explanation, whereby prior out-migration encourages more subsequent migration to the same destination.

2. Theoretical Framework

The basic framework for determining migration at the county level is based on a utility maximization model in which counties differ in terms of wages, and amenities (Ezzet-Lofstrom, 2003). A migrant chooses whether to migrate to another county or stay in the current county of residence. The decision to move depends on several factors that determine the expected utility achieved in each county. A migrant's utility is a function of local labor market-specific variables, and locale-specific amenities, which include the government fragmentation index. Therefore, utility can be expressed as a function of wages, w , and lo-

cation specific amenities, A . Specifically, migrants (i) maximizes utility (u_i) over a set of counties, $k=1,2,\dots,K$. Within a given county, the basic indirect utility function can be expressed as:

$$u_i^k = u[w_i^k, A^k] \quad (1)$$

Utility in the county of current residence is u_i^k and expected utility in the destination county is $u_i^{k^D}$. County amenities, A^k , are assumed to uniformly affect a migrant's utility across the county, such as plentiful sunshine in the winter affecting all residents evenly across a county.

An individual will migrate if the expected utility of moving to a new county, denoted $E(u_i^{k^D})$, exceeds the expected utility from staying in the current county $E(u_i^k)$. Expected utility of staying is:

$$E(u_i^k) = \beta^k w_i^k + A_i^k \alpha^k + \varepsilon_i^k \quad (2)$$

while expected utility after moving is:

$$E(u_i^{k^D}) = \beta^{k^D} w_i^{k^D} + A_i^{k^D} \alpha^{k^D} + \varepsilon_i^{k^D} \quad (3)$$

where ε^k and ε^{k^D} are jointly normally distributed with mean zero and variance σ_k^2 and $\sigma_{k^D}^2$. A migrant will move, M_i , if:

$$M_i^{k,k^D} = E(u_i^{k^D}) - E(u_i^k) > 0. \quad (4)$$

The data set does not provide information on individual households; instead the migration decision represents that of the average person (or migrant) in the county. Therefore the notation is simplified to

$$M^{k,k^D} = E(u^{k^D}) - E(u^k) \quad (5)$$

where $E(u^{k^D})$ is expected utility of the average person in the destination county and $E(u^k)$ is expected utility of the average person in the origin county without moving.

Another simplifying assumption is that the parameters for wages and amenities affect each migrant equally. Therefore we can write:

$$\beta^{k^D} = \beta^k \text{ and } \alpha^{k^D} = \alpha^k \quad (6)$$

From equations (2), (3), (4), (5), and (6), M can be defined as:

$$M^{k,D} = \beta^k w^D + A^D \alpha^k + \varepsilon^D - (\beta^k w^k + A^k \alpha^k + \varepsilon^k) \quad (7)$$

$$\begin{aligned} M^{k,D} &= \beta^*(w^D - w^k) + \alpha^*(A^D - A^k) + e \\ e &= \varepsilon^D - \varepsilon^k \end{aligned} \quad (8)$$

Based on the theoretical reasoning above, the econometric model for estimating out-migration in Pennsylvania can be expressed as:

$$M_i = \alpha_o + a_1 \times \Delta E + a_2 \times \Delta U + a_3 \times \Delta W + a_5 \times \Delta A + a_6 \times G + a_7 \times TD + a_8 \times AD + a_9 \times B + a_{10} \times Y + \varepsilon$$

where:

ΔE = Difference in employment growth between origin and destination county

ΔU = Difference in unemployment rate between origin and destination county

ΔW = Difference in earnings per worker between origin and destination county

ΔA = Difference in natural and artificial amenity variables between origin and destination county

ΔG = Difference in Government Fragmentation Indexes

TD = Type of move between dif. types of counties (metro vs. adjacent vs. nonadjacent counties)

B = Migration rate between 1985 and 1990 (Beaten path effect)

Y = Difference in the proportion of young adults in total population

AD = Dummy variable move to adjacent state

All differences are calculated for the mean person in the origin and destination county.

3. Data

Migration theory focuses on the role of expected regional wage differentials. According to the neoclassical model of regional economic growth, production factors such as labor flow to the county with the largest return. This labor flow to a county continues until real wages are equalized across counties. It is equally important to incorporate the expected probability that a household will receive a specific wage in a county.

While in theory wage is readily defined, it cannot be easily observed empirically. Most datasets do not include information on the specific wage rate for each sector in a county. Therefore, it is important to find a variable that serves as a substitute for expected wage and employment opportunity. Most studies use employment growth and unemployment rates as measures of wage and employment opportunity (Shields et al. 2005; Duffy-Deno, 1998; Deller et al. 2001).

In addition to wages, location-specific amenities are important in individuals' utility function. Amenities provide utility that is unrelated to wage and as a consequence may attract additional immigration (Graves, 1979; Deller et al. 2001). As labor supply increases in high-amenity areas, local wages may decline

to the point where the increased utility from amenities is offset by the lower wage rate.

Numerous studies within the U.S. examine how expected income and amenities influence a household's migration decision (e.g., Shields et al. 2005; Rupasinga and Goetz 2004; Deller et al. 2001). Fox et al. (1989) examined the linkage between local fiscal structure and economic development, while Clark and Hunter (1992) examined the impact of economic opportunity, amenities and fiscal factors on age specific migration rate. Charney (1993) conducted research on the influence of public expenditure on a number of goods on attracting immigration. Few if any studies have investigated the role of government fragmentation or the distribution of governmental powers within a county in determining a household's decision to move.

The data on county-to-county migration are from the 1990 and 2000 US Census. The census tracks the number of people moving from 1995 to 2000 and 1985 to 1990 respectively, disaggregated by age cohort. A person in this data set could have moved from one county to another at any time between 1995 (1985) and 2000 (1990). It is also possible that a person or household moved more than once in the time frame. In the end, the data set measures gross migration flows from the origin county in 1995 (1985) to the destination county in 2000 (1990). In our model only total out-migration data for the 25-34 year old age cohort are

used, from the 67 counties in Pennsylvania to all counties within the lower 48 states, excluding Alaska and Hawaii.³

Population numbers are critical in analyzing migration, because areas with larger numbers of population will have a higher likelihood (or risk) of migration occurring (Goetz, 2007). For example, the number of people moving from Allegheny County, PA to Medina County in Ohio was 36. To make this analysis meaningful, the number of out-migrants is divided by the total population in the age bracket between 20 and 34 times 10,000.

A large part of the migration literature considers labor market indicators as the most important reason why people move. We used data from the Bureau of Labor statistics on work force, active work force and unemployment rate in absolute numbers and as a percentage rate. Unemployment rate and employment growth rate differentials were calculated using a three-year average from 1995 to 1997 for each county. Earnings per worker in each county were obtained from the BEA-REIS.

The natural amenity data are from the US Department of Agriculture's Economic Research Service, which assigns a score for six environmental qualities preferred by individuals (McGranahan, 1999). These variables are January temperature, days of sun, July temperature, July humidity, water area, and topography, which we include as an aggregate index (results for individual variables are available from the authors on request. Our regional indicator variables also to a large extent capture this amenity-based migration (to South, West, and Southwest). As a reviewer suggested, "bright city lights" may play an even bigger role in youth outmigration from Pennsylvania.

To account for the affect artificial amenities such as entertainment, restaurants and bars, arts and culture, and recreational opportunities play in the outmigration decision, we compiled data from the County Business Patterns CD on these specific industries. In addition, we include educational and health care establishments as migration determinants. Another indicator is a "Putnam" index of social gathering places such as religious, grant-making, civic, professional and like organizations. We used the data from 1998, which are more detailed as they are based on the NAICS codes. The one minor drawback is the year of the data (causing potential endogeneity), but we main-

tain this is more than compensated for by the more detailed information we have on establishments within the NAICS.

Various studies indicate that quality of schooling influences migrants' decision, especially as they begin to have their own children. Data on the total number of students and teachers as well as expenditure are obtained from the Common Core of Data (CCD) Series compiled by the National Center for Education Statistics. As a measure of quality of schooling we used expenditure per student, calculated as total school expenses divided by total student enrolled. Schools with higher funding are hypothesized to provide better education, as they have more resources available to provide quality teaching.

Differences in housing prices across counties are also included in the model. A housing affordability ratio was calculated by dividing the median housing value by the median household income in 1989, using 1990 U.S. Census data; a higher ratio indicates *less* affordable housing. Furthermore, a variable for difference in crime rate was added. The crime rate is measured as serious crimes per 100,000 people, and is from the USA County CD-ROM for 1995.

Shields et al. (2005) found adjacency to be significant in terms of migration choices. They showed that migration to a nearby county is common as people try to stay close to their respective area of origin. To investigate the effect of distance on young people's decision to move in more detail, we added an adjacency variable for moves to a county adjacent to the origin county.

A primary contribution of this study is the use of a new measure of government fragmentation in the migration context. In the previous literature, researchers primarily measured governmental organizational form by using the number of government units per capita. One advantage of this measure is the ease with which it can be calculated. However, a significant shortcoming is its inability to distinguish among different levels of government (e.g., townships, villages, boroughs, etc.). The measure explicitly assumes that each government unit equally affects the location decision of young adults. For example a rural township has the same effect as a city within the same county. The advantage of using the fragmentation index proposed here is its ability to capture explicitly the distribution of (political and) economic power within a county. By using government expenditure data as the basis for calculating government fragmentation, we capture the fact that government units with greater expenditures are likely to have more population and economic as well as political power in affecting economic growth. We assume that the distribution of

³ A special case is Virginia with independent cities. For the purpose of this analysis, independent cities were combined with counties in Virginia according to the information provided by the Census 2000 county to county migration flows. A detailed list can be obtained from the census website. The city of Philadelphia is considered a county.

economic and political power can be approximated by the distribution of government expenditures within the metro area.

To calculate the government fragmentation index, data on spending by government units were compiled from the 1992 Census of Governments. Every five years this Census collects information on expenditures, revenues, and inter-governmental transfers for every unit of government in states, counties, boroughs, townships, cities, towns as well as special districts. Miller (2002) writes that expenditures are a good indicator of how political power is divided up in any region. In the Census of Governments all expenditure amounts are classified by function and by character and object.

A detailed overview of the method used to calculate the fragmentation index can be found in Grassmuck (2006).⁴ For each unit of government in the county, such as borough or township, the totals were obtained for all direct expenditures and capital outlay categories. The sum of the square root of the percentages was then taken to calculate the fragmentation index following Miller (2002). The fragmentation index is calculated as:

$$MPDI_i = \sum_{j=1}^J \left(\frac{n_{ij}}{N_i} \right)^{1/2}$$

where n_{ij} is the expenditure in government unit j in county i , and N_i is the total expenditures in county i . Therefore, n_{ij}/N_i is the proportion of expenditure per unit of government j in county i . The fragmentation increases with the number of units of governments. A fragmentation score close to 1 means that there is only a small number of government units with economic power, an indication of a consolidated organizational form of government. A higher fragmentation score means that there are several government units with similar market power, an indication of government fragmentation. In our data set the MPDI ranges from 1 to 3.04 for Pennsylvania, and from 1 to 4.89 for the nation (before differences are calculated).

A special case in Pennsylvania is the city of Philadelphia, which is treated as a county. The government fragmentation index for Philadelphia is 1, because the city has only one level of government. The summary statistics shown in Table 1 were calculated for the mean mover by subtracting the value from the origin county from the value in the destination county.

For the sake of brevity we only discuss the difference in the county fragmentation index. The mean for this variable is negative, which indicates a move towards less fragmented government units for the average moving household. Importantly, this average, unconditional mean value supports the Brookings Institution's contention that young residents are leaving Pennsylvania for counties with a less fragmented system of government. However, this finding is not based on *ceteris paribus* conditions, i.e., holding constant other migration determinants.

4. Regression Results

In the model, out-migration numbers of the 25-34 year old age cohort per 10,000 residents in the 25-34 year old population group for each of the 67 Pennsylvania counties are the dependent variable. The independent variables are the differentials of variables between the origin county in Pennsylvania and destination county in the lower 48 states for previous out-migration rates, the proportion of young adults to total population, earnings, average employment growth and average unemployment rate (both for the 95-97 period), natural amenity scale and artificial amenities (density of education, food, entertainment, health, museum, social, and recreational establishment per 1000 residents), county fragmentation index in 1992, housing affordability, crime rate, dummy variable for adjacent-metro, non-adjacent-metro, adjacent-adjacent, and metro-metro move, plus adjacency as well as for regional moves to the West, South, and Northeast. The dependent variable is truncated at 0 and OLS can yield inefficient parameter estimates (Hayashi, 2000) if observations with zero migration between 1995 and 2000 are excluded, and lead to attenuation of the slope if they are included. Instead a truncated regression using maximum likelihood estimation may be appropriate in this case (Hayashi, 2003). We used SAS to estimate both the OLS estimators and the truncated estimators.

Overall, the difference in parameter estimates between OLS and the truncated model are minor. Therefore, we report and discuss only the regression results from the OLS estimation (Table 2). In addition, standardized coefficients were calculated to compare the relative strength of the various coefficients within the model.

Turning first to the beaten path effect, specifically, the out-migration rate of youth for the period from 1985 to 1990, we find strong evidence that previous out-migration patterns are important indicators of future out-migration. The coefficient for prior period out-migration is statistically significant at the one per-

⁴ We recognize that the data reported in Census of Government data files may have errors, but have no way of assessing the effect, if any, on our analysis.

Table 1. Summary Statistics of Variables (Dif.=difference)

Variable	Mean	Std Dev	Minimum	Maximum	N
Migration Rate 1995-2000	0.507	1.383	0.003	53.91	9235
Migration Rate 1985-1990	0.422	1.334	0	45.28	9235
Dif. in Earnings per worker	-0.161	7.254	-20.24	34.11	8971
Dif. in Avg. Emp. Growth 1995-1997	0.005	0.021	-0.09	0.14	9235
Dif. in Avg. Unemp. Rate 1995-1997	-0.027	0.075	-0.33	0.30	9235
Dif. in Nat. Amenity Scale	0.832	2.673	-5.65	13.11	9235
Dif. in Cty. Frag. (MPDI 1992)	-0.491	0.702	-2.04	3.80	8583
Dif. in Crime Rate	16.686	27.063	-70.71	88.26	9235
Dif. in Pop. Density	-0.032	1.927	-4.45	20.57	9129
Dif. in Education Density	0.040	0.148	-0.39	1.36	8796
Dif. in Food Density	-0.004	0.764	-2.14	7.39	8796
Dif. in Entertainment Estab. Density	0.037	0.139	-0.13	1.74	8796
Dif. in Health Care Density	-0.154	0.697	-2.65	3.07	8796
Dif. in Art, Museum Density	0.004	0.038	-0.15	0.81	8796
Dif. in Social Activity Density	-0.231	0.514	-2.18	3.26	8796
Dif. in Recreational Acitivity	0.354	4.051	-4.67	48.66	9152
Dif. in Pct. Young Population	-0.007	0.040	-0.21	0.37	8559
Dif. in Housing Affordability	0.416	1.309	-2.69	12.89	9235
Dif. in Exp. Per Student	-1.109	1.798	-8.40	8.20	9121
Move from Adj. Cty. To Metro Cty.	0.180	0.384	0	1	9235
Move from Nonadj. Cty. To Metro Cty.	0.025	0.157	0	1	9235
Move from Adj. Cty. To Adj. Cty.	0.079	0.269	0	1	9235
Move from Metro Cty. To Metro Cty.	0.434	0.496	0	1	9235
Adjacent Cty.	0.290	0.454	0	1	9235
Total number of Observations used	7988				

cent level and the beta coefficient is by far the highest. Furthermore, the coefficient for the variable measuring the proportion of young adults to total population is statistically significant at the one percent level, providing additional support to the beaten path effect. Young out-migrants from Pennsylvania are following in the footsteps of previous out-migrants and relocating to counties with a relative higher proportion of young adults; this in turn also captures the “bright lights” effect, since communities with high shares of 25-34 year olds likely already provide the services that this cohort consumes. This effect could also be a symptom of the growing aging population in Pennsylvania remaining in counties in Pennsylvania.

The economic variables defining labor market differences between origin and destination provide mixed support for the hypothesis that migration is primarily motivated by differences in employment opportunities. First, the coefficient for earnings differ-

ences is not statistically significant at any reasonable statistical level. The coefficients for the difference in employment growth and unemployment rate between destination and origin counties are statistically significant and have the expected signs. The positive sign for the difference in employment growth coefficient, all else constant, suggest that a destination county with higher employment growth relative to the origin county attracted in-migrants from 1995 to 2000. Similarly, a destination county with a relatively lower unemployment rate compared to the origin county, all else constant, attracted in-migrants. These results suggest that young adults find the availability of employment opportunities a more important economic indicator in the migration decision than the level of earnings.⁵

⁵ This may also reflect the fact that average wages in a county are less than perfect predictors of the kinds of entry-level wages that young workers would typically expect to earn.

Table 2. Out-Migration Estimation Results for Pennsylvania

Variable	Estimate	Beta Coeff.
Intercept ***	0.3021	0
Migration Rate 1985-1990 ***	0.4390	0.409
Difference in Earnings per Worker	0.0031	0.015
Difference in Average Employment Growth Rates 1995-1997 **	1.6779	0.024
Difference in Average Unemployment Rate 1995-1997 ***	-0.6753	-0.035
Difference in Natural Amenity Scale	-0.0132	-0.025
Dummy Northeast ***	0.1567	0.042
Dummy South **	0.1144	0.039
Dummy West ***	0.2220	0.053
Difference in Government Fragmentation (MPDI 1992) **	0.0713	0.034
Difference in Crime Rate	0.0008	0.015
Difference in Population Density *	0.0390	0.031
Difference in Education Density	0.1484	0.014
Difference in Food Density **	-0.0673	-0.034
Difference in Entertainment Density *	0.3539	0.023
Difference in Health Care Density ***	0.1268	0.059
Difference in Art - Museum Density	-0.2868	-0.007
Difference in Social Activity Density	0.0062	0.002
Difference in Recreational Activity Density	0.0720	0.013
Dif. in Pct. Young Population ***	1.7532	0.046
Difference in Housing Affordability ***	-0.1071	-0.076
Difference in Expenditures per Student **	0.0280	0.035
Move from Metro Adjacent County to Metro County	0.0575	0.015
Move from Nonadjacent County to Metro County ***	1.2875	0.137
Move from Metro Adjacent County to Metro Adjacent County ***	0.1828	0.034
Move from Metro County to Metro County ***	-0.1700	-0.057
Adjacent County ***	0.1089	0.033
Number of Observations	7988	
Adj. R-Squared	0.25	

* Two-tailed statistical significance at 90% confidence

** Idem., 95%

*** Idem., 99%

In terms of specific individual artificial amenities or the “bright city lights” effect we find mixed results. The coefficients for density of traditional city nightlife measured by food/bar and entertainment establishment density are statistically significant at the five and ten percent levels respectively. However, the sign of the coefficient is negative for food/bar density and positive for entertainment density. Entertainment venues seem to play an important role in attracting

young adults. In contrast, artistic venues such as museums and galleries do not play a vital role in attracting young adults, which is no surprise. An interesting result is the statistically significant and positive coefficient for health-related establishments. Young adults are attracted by a relatively higher density of health related establishments, perhaps confirming a trend towards healthy living. Artificial recreation did not play an important role in attracting young adults.

Last, the coefficient for social activity establishments was not statistically significant.

In terms of public policy implications “artificial” amenities are a mixed bag. Amenities such as entertainment opportunities are a function of population density. Rural counties in Pennsylvania are unlikely ever to compete with metro entertainment options. As one reviewer suggested, education is a vital part of young adults decision to move. Pennsylvania has a high density of educational opportunities for young adults. As Hirschman (1970) observed, however, educated young adults are most likely to be the first group to leave if there are no significant future options. One bright spot for future public policies is the health care industry, broadly defined and is recognized by Brookings in a report entitled “Eds and Meds: Cities’ Hidden Assets” (Harkavy and Zuckerman, 1999). This is both a constraint and an opportunity in terms of developing the “Eds and Meds.” As young adults are leaving Pennsylvania, the remaining population increases in average age. This population group will need significant amount of health care coverage in the future and our study shows that the lack of health care options encourages outmigration. The health care industry needs trained professional and providing health care options will likely attract young adults back to Pennsylvania.

The coefficient for the crime rate differences is not statistically significant. Out-migrants from Pennsylvania were attracted to more densely populated counties, where housing affordability was higher relative to the origin county. In addition, young out-migrants were attracted to counties with higher expenditures per student relative to the origin county in Pennsylvania, perhaps in anticipation of the expected needs of their own (future) children’s needs. This anticipation of future children may also explain the high statistical significance of health care related establishments.

Most importantly for our purposes, the coefficient for the government fragmentation variable -- the difference in fragmentation score measured by the Metropolitan Power Diffusion Index (MPDI) -- is statistically significant at the five percent level and positive.⁶ The positive sign indicates that young out-migrants are moving to counties with more fragmentation than they experienced in their origin county in Pennsylvania, *ceteris paribus* and this result is contrary to the conclusion in the Brookings Report that youth out-migration is largely a result of government fragmenta-

tion in Pennsylvania. Several explanations are possible.

Following Tiebout’s (1956) hypothesis, a more fragmented system of government provides households with greater choices in selecting the optimal public goods and services bundle in the destination area. In contrast to a consolidated government unit where an in-migrating household has no choice in which local government unit to locate, in a fragmented system households are able to locate in the local government unit that best fits their needs for public goods and services. Similar to the life cycle effect that Graves (1979) found in their US migration study, households at different points on their lifecycle are attracted to local government units offering different sets of local public goods and services. For example, households with children are attracted to a local government unit that emphasizes education. Conversely, fragmentation serves as a magnet keeping young residents in the state

A second maintained hypothesis for the attractiveness of a fragmented system of government is the benefit of competition among government units. Competition reduces government inefficiencies, thereby lowering tax burdens on households and firms while improving responsiveness to the needs of households and firms, and allowing households easy access to public officials, thereby holding them more accountable. The competition among government units similar to competition among firms in the marketplace encourages efficiencies and responsiveness, allowing firms to maximize profits and households to maximize utility.

Last, we added dummy variables for the origin and destination county designation in terms of urban rural influence scale. We created four variables - (1) move from adjacent county to metro county, (2) move from non-adjacent to metro county, (3) move from adjacent to adjacent county or suburban move, and (4) move from metro county to metro county. The coefficient estimate for the move from non-adjacent to metro-county is statistically significant and positive. All else constant, out-migration rates are higher from non-adjacent origin counties to metropolitan destinations. This result confirms the strong outmigration from rural Pennsylvania to metro areas outside Pennsylvania. The large beta coefficient (second-highest) for non-adjacent to metro moves further supports the importance of this type of move. In addition, the coefficient for a metro adjacent to metro adjacent move is statistically significant and positive, while the coefficient for a metro-metro move is statistically significant but negative. Overall, these results suggest a move by young out-migrants away from rural Pennsylvania towards

⁶ We also estimated an equation with the number of government units per capita, which yielded a negative (and statistically significant) effect. Our results remain the same when we include both measures of fragmentation in the equation.

metro areas. The dummy variable for the adjacency of the destination county (to Pennsylvania) is statistically significant and positive confirming that young out-migrants do not move far away from Pennsylvania. In terms of regional moves, young out-migrants favor a move towards the South, West, and Northeast over a move to the Midwest.

5. Summary and Conclusion

Based on the hypothesis that successful government units in terms of economic growth attract in-migrants and that unsuccessful units lose especially young migrants, this study investigated the determinants of youth out-migration from Pennsylvania. We tested numerous variables hypothesized in the literature to influence the household migration decisions and expanded the set of variables by a measure for governmental organizational form. We argued that how local government units are organized and to what extent the organizational structure allows for competition among local government units has important implications for the economic growth prospects of an area. Local government units are the primary providers and producers of essential public goods and services. Local government units that successfully provide and produce public goods and services efficiently and are responsive allow households to maximize utility and firms to maximize profits, thus providing incentives for in-migrants.

Perhaps most importantly, our findings are counter to the Brookings Institution's conclusion that Pennsylvania's lackluster performance is partially attributable to excessive fragmentation of local government units. In fact, our model suggested the opposite -- that destination counties with greater fragmentation attracted even more in-migrants while those with consolidated forms of government attracted fewer individuals. This has profound implications for public policy related to governance in Pennsylvania and in other states. Although we do not directly test the Brookings assertion here, because we hold constant economic conditions in our regressions rather than allowing these to vary with government fragmentation levels,⁷ results reported in Grassmuck (2006) suggest compellingly that greater government fragmentation does *not* restrict economic growth as measured by income or job growth, *ceteris paribus*.

Previous migration patterns, or the beaten path effect, are a significant influence on subsequent migra-

tion pattern. Migration between 1985 and 1990 had by far the biggest impact on the migration decision ten years later. In addition, we found strong evidence that the primary migration took place between non-adjacent counties in Pennsylvania and metro counties and to a lesser degree between adjacent counties in the state and adjacent counties outside the commonwealth. In contrast, metro counties in PA attracted more in-migrants than out-migrants. Finally, amenities and employment opportunities do matter as does adjacency.

In terms of public policy recommendation, we find no support that young adults in Pennsylvania are driven out of fragmented counties. Therefore, the call for consolidating local government units in Pennsylvania is premature and needs to be reconsidered. The role of local government units is multifaceted and few studies have rigorously investigated the role of governmental organizational form on economic growth with consequences for household migration decisions. This study serves as a starting point in future discussions on governmental organizational form and economic growth. Amenities, natural and artificial, matter in the migration decision but any public policy seeking to increase amenity values is costly and may be difficult to accomplish. Natural amenities allow local government units to be less efficient and less responsive to the needs of households, as they trade the additional amenity utility for reduced public goods and service utility. Therefore, local government units in Pennsylvania need to focus on providing and producing the best and most responsive public goods and services possible to attract and retain households -- especially those headed by relatively young individuals.

Our results and conclusions are not to deny the fact that there is duplication in some services provided across small government units in Pennsylvania and that inefficiencies consequently exist. However, public resources may be better invested (in terms of utility experienced by residents) in raising the productivity of existing units of government, by seeking creative new ways of sharing costs at higher levels of government using the internet as a real-time tool, for example, rather than pushing for consolidation at all costs. Finally, we leave our reader with the question, "if fragmentation is *bad*, how much consolidation is *good*, or too much?

⁷ In other words, the government fragmentation could still lead to out-migration if fragmentation leads to weakened economic performance, which in turn leads to out-migration.

References

- Brookings Institution. 2003. *Back to Prosperity: A Competitive Agenda for Renewing Pennsylvania*. Center on Urban and Metropolitan Policy: Washington, DC.
- Brueckner, J. 1979. Equilibrium in a system of communities with local public goods. *Economics Letters* 2: 387-393.
- Brueckner, J. 1981. Zoning and property taxation in a system of local governments: Further analysis. *Urban Studies* 18: 113-120.
- Carruthers, J. I. 2003. Growth at the fringe: The influence of political fragmentation in United States metropolitan areas. *Papers in Regional Science* 82(4): 475.
- Carruthers, J. I. and G. F. Ulfarsson. 2002. Fragmentation and sprawl: Evidence from interregional analysis. *Growth and Change* 33(3): 312.
- Charney, A. 1993. Migration and the public sector: A survey. *Regional Studies* 27(3): 313-326.
- Chicoine, D. L. and L. Walzer. 1985. *Government Structure and Local Public Finance*. Boston: Oelgeschlager, Funn and Hain.
- Clark, D. E. and W. J. Hunter. 1992. The impact of economic opportunity, amenities and fiscal factors on age-specific migration rates. *Journal of Regional Science* 32(3): 349.
- Deller, S. C., T. Tsai, D.W. Marcouiller and D.B.K. English. 2001. The role of amenities and quality of life in rural economic growth. *American Journal of Agricultural Economics* 83(2): 352-365
- Duffy-Deno, K. T. 1998. The effect of federal wilderness on county growth in the intermountain western United States. *Journal of Regional Science* 38(1): 109.
- Eberts, R.W. and T.J. Gronberg. 1998. Can Competition Among Local Governments Constrain Government Spending? *Federal Reserve Bank of Cleveland Economic Review* 24(1): 2-9.
- Ezzet-Lofstrom, R. 2003. Out-migration decisions: The role of regional amenities. Unpublished, Political Economy Working Papers, School of Social Sciences, University of Texas at Dallas.
- Farrel, C. 1996. The Economic War among the States: An Overview. *The Region* 10(2). Federal Reserve Bank of Minneapolis.
- Feiock, R. C. 2004. Metropolitan governance: conflict, competition, and cooperation. Washington, D.C.: Georgetown University Press.
- Fox, W. F., H. W. Herzog, Jr. and A.M. Schlottman. 1989. Metropolitan fiscal structure and migration. *Journal of Regional Science* 29(4): 523.
- Goetz, S. 2007. *Migration and Local Labor Markets*. Webbook of Regional Science accessed Jan. 28, 2007 at: <http://www.rri.wvu.edu/WebBook/Goetz/contents.htm>
- Grassmueck, G. 2006. *The Role of Governmental Organizational Form in Economic Growth*. Unpublished PhD Dissertation, Pennsylvania State University.
- Graves, P. 1979. A life-cycle empirical analysis of migration and climate, by race. *Journal of Urban Economics* 6(1): 135-147.
- Harkavy, I. and H. Zuckerman. 1999. *Eds and Meds: Cities' Hidden Assets*. Washington D.C.: Brookings Institution.
- Hirschman, A.O. 1970. *Exit, Voice, and Loyalty*. Cambridge, MA: Harvard University Press.
- Lewis, P. G. 1996. *Shaping suburbia: how political institutions organize urban development*. Pittsburgh, Pa.: University of Pittsburgh Press.
- Miller, D. Y. 2002. *The regional governing of metropolitan America*. Boulder, CO: Oxford, Westview.
- McGranahan, D.A. 1999. *Natural Amenities Drive Rural Population Change*. Food and Rural Economics Division, Economic Research Service, US Department of Agriculture, Agricultural Economics Report No. 781, Washington, DC.
- Niskanen, W.A. 1994. *Bureaucracy and Representative Government*. Chicago: Aldine-Atherton.
- Oates, W.E. 1972. *Fiscal Federalism*. New York: Harcourt Brace Jovanovich Inc.
- Oates, W.E. 1981. On local finance and the Tiebout model. *The American Economic Review* 71(2): 93-98.
- Oates, W.E. 1985. Searching for leviathan: An empirical study. *American Economic Review* 75(4): 748-757.
- Oates, W.E. 1989. Searching for leviathan: A reply and some further reflections. *American Economic Review* 79: 578-583.
- Oates, W.E. 1999. An essay on fiscal federalism. *Journal of Economic Literature* 37(3): 1120-1149.
- Paytas, Jerry. 2001. *Does Governance Matter? The Dynamics of Metropolitan Governance and Competitiveness*. Carnegie Mellon Center for Economic Development.
- Rupasingha, A. and S. Goetz. 2004. County amenities and net migration. *Agricultural and Resource Economics Review* 33: 98-207
- Rusk, D. 2003. *Little Boxes, Limited Horizons: Local Governance in Pennsylvania*. Background Paper, Brookings Institution.
- SAS Web-book by the University of California Los Angeles Academic Technology Service at www.ats.ucl.edu/stat/webbooks.

- Shields, M., S.J. Goetz and Q. Wang. 2005. Outmigration from the Northeast US: The relative role of economic and amenity differentials. In: Green, G.P., S.C. Deller, and D.W. Marcouiller (eds.) *Amenities and Rural Development: Theory, Methods, and Public Policy*. Cheltenham: Edward Elgar Publishing Limited. Pp. 78-94.
- Schachter, J. and P. G. Althaus. 1989. An equilibrium model of gross migration. *Journal of Regional Science* 29(2): 143.
- Schneider, M. 1989. Intercity competition and the size of local public work force. *Public Choice* 63 (Dec.): 253-65.
- Stephens, G. R. and N. Wikstrom. 2000. *Metropolitan government and governance: theoretical perspectives, empirical analysis, and the future*. New York: Oxford University Press.
- Tiebout, C.M. 1956. A pure theory of local expenditure. *Journal of Political Economy* 64: 416-424.
- Zax, J.S. 1989. Is there a leviathan in your neighborhood? *American Economic Review* 79(3): 560-567.