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Rural Economic Development Prospects in a High Energy Cost Environment

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Summary

Rural America is a diverse landscape ranging from rapidly growing amenity rich communities to struggling resource-based towns and villages. A key feature is that rural population growth quickly tails off for rural communities more distant from urban centers. A long period of higher energy prices will put particular pressures on exurban and more remote rural communities that rely on urban commuting. The adverse effects will also be felt in resource-based communities. The combination of urban-centered rural growth and higher energy costs suggests the following:

- More regional planning mechanisms are needed to ensure rural areas participate in urban growth;
- The adverse effects of high energy costs in remote rural communities will need special policy supports including infrastructure investments and planning for (remote) rural to urban in-migration;
- Higher energy costs and mortgage rates will put pressures on exurban property values, leading to local property tax shortfalls that may force state intervention. Because past trends are likely unsustainable, *future* infrastructure planning should be based on realistic expectations of exurban growth;
- Higher energy costs will likely place strains on overcommitted exurban households, requiring workplace supports to ensure their financial viability.

Motivation

A persistent "urban legend" is that rural America is on its last legs in retaining population, but its plight is often exaggerated.[1] Using Bureau of Economic Analysis data, nonmetropolitan America grew 8.9% during the 1990s, or only 5 percentage points less than metropolitan America.[2] In fact, amenity and recreation based rural areas are faring quite well in terms of population growth, which also holds for many rural counties located near urban centers, though they are wrestling with the adverse effects of sprawl. Yet, counties more distant from urban centers and farm/mining dependent counties have long struggled (predominately in the Great Plains). Thus, rural America presents a diverse picture. However, one overriding theme is that rural growth generally takes place in broad regions surrounding an urban center, suggesting that more rural communities need to participate in urban-led growth.

One wildcard is steadily rising energy prices since 2000. Though future energy costs are uncertain, growing demand in Asia and elsewhere suggests that energy prices will remain much higher than the 1990s. As evidence mounts, it is also increasingly difficult to dismiss global warming predictions. Policies to mitigate global warming generally require higher carbon

[1] Unless defined, rural and nonmetropolitan will be used interchangeably as well as urban and metropolitan.

[2] Nonmetropolitan America grew 1.1% between 2000-2003 compared to 3.4% in metropolitan areas. More discussion of rural population growth can be found in the USDA Economic Research Service Briefing Note on Rural Population Change and Net Migration, which can be accessed at: http://www.ers.usda.gov/Briefing/Population/popchange/ and *Rural America at a Glance, 2005,* which can be accessed at http://www.ers.usda.gov/publications/EIB4/. Specific details of metropolitan and rural population using the latest metropolitan boundaries can be found at the Bureau of Economic Analysis, Regional Economic Information System website at http://bea. gov/bea/regional/reis/ (last accessed on December 9, 2005).

taxes, reinforcing the upward price trend. Higher energy costs are particularly worrisome for rural America because it relies more on the energy-intensive primary sector and long-work commutes. Even when allowing for potentially offsetting factors such as oil-shale, bio-fuel and wind-power production, it is hard to imagine that much of rural America will not lose more ground to urban areas as a result of high energy costs.

Rural America and the Reality of Urban Led Growth

The unmistakable reality of American economic geography is that outside of high amenity areas, rural population growth generally occurs in broad regions more proximate to urban centers (see Deller et al. 2001 for a discussion of amenity led growth). Table 1 illustrates this point. It shows 1990-2000 county population growth (weighted by 1990 population) for two "urban" groups: metropolitan and micropolitan areas.[3] Also, four (non-urban) rural county groupings are defined based on distance from their nearest urban center: (1) less than 30kms (≈19 miles), (2) 30-60kms, (3) 60-100kms, and (4) over 100kms, which is measured from the center of the county to the center of the nearest metropolitan/micropolitan area.

Row 1 shows that metro counties grew by 14.1% on average while micropolitan counties grew almost 10%. As a result of sprawl and exurban growth, rural counties within 30kms actually grew faster than micropolitan counties on average. Yet, rural population growth quickly tapers off further from an urban center. A typical rural county over 100kms (62 miles) from an urban center grew a notable 8.4 percentage points less than the typical metro county. The longer 1980-2000 period (not shown) exhibits an even stronger pattern in which the typical metro county grew 23 percentage points more than the typical rural county located over 100kms from an urban center.

Other regression analysis suggests that after controlling for a host of economic, amenity, demographic causes of population growth (including state effects), a rural county located 62 miles from its nearest urban center grew approximately 10 percentage points less during the 1990s than an otherwise equal rural county adjacent to the urban adjacent to the urban center (Partridge et al. 2006). Thus, even after accounting for these key factors, urban accessibility is of paramount importance for rural vitality. There are many reasons why access to an urban center matters, including: urban residents relocating for lower housing costs and rural workers having more urban-center commuting options (Partridge et al. forthcoming).

For exurban rural counties trying to manage/contain sprawl and rising congestion, a comprehensive regional approach that addresses zoning, transportation, environmental degradation, and economic development will greatly help in charting a sustainable future. Conversely, more remote rural communities often lack the critical mass to initiate economic growth. The good news is that rural areas share a significant amount of urban centered growth, in which urban growth can extend to rural areas up to about 100 miles—i.e., urban growth is not a zero sum game that "steals" from nearby rural communities (Henry et al. 1997; Khan et al. 2001; Partridge et al. forthcoming). Therefore, for rural counties/communities to fully benefit from these regional dynamics, they should be more closely aligned with their region's urban center in terms of governance and planning.

The policy implication is that by linking with their city cousins, small rural communities can achieve a critical mass and participate in urban-led growth. Besides tighter governance arrangements, declining and remote rural communities should also support better transportation links to improve commuting options as well as seek to enhance accessibility to urban services and amenities that help retain rural population.

High Energy Costs and Rural Development

The post-1999 trend of rising energy costs suggests that more planning is needed to assess how the trend will affect location decisions, government finances, and public service delivery. One reason why virtually no related planning has occurred is that forecasts are difficult because there is so little experience with such high U.S. energy costs—i.e., out of sample forecasts are notoriously tricky. Yet, Canada provides a nice backdrop for this assessment. Despite having similar geography, settlement history, and institutional arrangements, Canada has long had significantly greater energy costs due to higher taxes. For example, during the 1990s, Canadian regular unleaded gasoline prices averaged 41% above the corresponding U.S. level (U.S. Energy Information Agency 2005), which would place more pressures on remote Canadian communities. Thus, even as there are many reasons for different set-

[3] Micropolitan areas are roughly defined as a county(ies) with a city of 10,000-50,000 population plus other counties with tight commuting links to the urban center. Metropolitan areas are defined as an urbanized population of at least 50,000 people and all counties with tight commuting links to the urban center. For details, see the U.S.D.A. Economic Research Service Briefing, *Measuring Rurality: New Definitions in 2003,* accessed at: http://www.ers.usda.gov/Briefing/Rurality/Newdefinitions/.

tlement patterns, Canada does offer some guidance as to whether rural communities suffer in a high energy cost environment.[4]

Row 2 of Table 1 reports the corresponding 1990s population change for Canadian communities (see the notes in Table 1 for details). To facilitate the comparison, Row 3 shows the difference between U.S. and Canadian averages. One general pattern is that Canadian and U.S. trends are similar with the exception that the Canadian equivalent of micropolitan areas fared worse than their American counterparts.

On average, U.S. growth was about 3.4 percentage points faster than in Canada during the 1990s. The gap between the typical rural U.S. county and rural Canadian community was actually larger across all distance categories, indicating that rural Canada fared worse. Indeed, the Canadian equivalent to metropolitan areas grew an average of just 1.6 percentage points less than their American counterparts, but rural Canadian communities more than 100kms from an urban center grew fully 6.7 percentage points less than their American counterparts.[5]

In sum, "high energy cost" rural Canada has fared worse than "low energy cost" rural America on average, while proximity to urban centers took on even more importance. Even more telling, regression analysis with controls for economic, demographic, province, and amenity effects finds that a rural Canadian community located 62 miles from the nearest urban center grew about 30 percentage points less during the 1990s than an otherwise equivalent community adjacent to the urban center (Partridge et al., forthcoming). Although many factors are at work, that is about triple the corresponding U.S. response. With Canada's experience providing guidance, rural American communities will face severe adjustments, from sprawling exurban areas to struggling remote communities. The unwinding of the "low-energy cost" U.S. rural economy will likely be painful, certainly warranting much more policy attention.

Policy Discussion

Given the growth patterns of recent decades and the potential permanence of the high energy-cost environment, the following are implications U.S. policymakers would be advised to consider. First, regardless of the cost of energy, the unmistakable reality is that rural population is concentrating *near* urban centers, which suggests that state policymakers need to facilitate more regional governance mechanisms, perhaps through financial incentives, better infrastructure (traditional and broadband), and expanded local option taxes. That is, policymakers need to extend the reach of urban-led growth to ensure that more rural communities participate in this process.

Second, rising energy costs will not only hurt rural communities in general, but they will particularly harm more remote communities as commuting becomes prohibitively expensive and obtaining urban goods and services becomes more costly. Stronger regional governance arrangements are needed to bring rural stakeholders into this process with their urban cousins. Legislators should also consider what type of supports are needed to cushion the fall for remote communities and plan for the possible in-migration to their state's urban centers (which will require more infrastructure and service delivery).

Third, along with rising mortgage rates, more expensive exurban commutes will likely put downward pressure on exurban housing prices and population growth as fewer people choose to move to exurbia. To some extent, current exurban house prices are predicated on the expectation of continued population inflows. Offsetting this possibility is that firms will relocate to exurbia to be near their workforce. However, it is unclear whether this would happen as there are already clear agglomeration reasons that are keeping these firms more centrally located in urban centers, while higher transportation costs for inputs and outputs would also likely reduce any urge to locate in exurbia. A bursting of exurban housing prices would present two planning challenges. First, legislators may need to help bridge exurban property tax shortfalls for schools and local government services. Second, new trends would mean that legislators should be especially wary of funding additional infrastructure in outlying suburbs and exurban communities, in which population-growth projections should be questioned unless they incorporate the effects of higher energy costs.

[4] Though regional scientists would expect that transportation costs differences to be a key cause for differential growth patterns that depend on proximity to urban center, there could be other reasons for differences in how urban proximity affects rural population growth in Canada and the U.S. To be sure, there are many reasons for Canadian settlement patterns to differ from the U.S. including climate, land use, crop patterns, and historic policy. Yet, we expect that these would have more impact on *population density* than population growth, though caution should be exercised when comparing Canadian population growth to the U.S. In this fashion, our differencing methodology used below should mitigate the impacts of these distinctions.

[5] The gap is even wider when considering both the 1980s and 1990s. Population in Canadian metropolitan areas grew 3.3% faster than their U.S. counterparts over the 20 year spell, but for rural counties/communities greater 100km from an urban center, U.S. counties grew almost 8% faster than their Canadian counterparts.

Table 1: 1990s Urban and Rural U.S. and Canadian Population Growth (Std Dev)

	All Ctys	Metro Ctys (Urban)	Micro Ctys (Urban)	Rural <=30km to Urban	Rural 30 –60km to Urban	Rural 60km—100km to Urban	Rural Over 100km to Urban
U.S.	13.2%	14.1%	9.9%	11.4%	8.0%	6.4%	5.7%
	(14.1)	(14.4)	(12.1)	(11.5)	(11.2)	(13.5)	(14.6)
Canada	9.8%	12.5%	3.4%	7.2%	3.8%	1.0%	-1.0%
	(14.3)	(13.9)	(10.0)	(12.2)	(13.4)	(15.1)	(14.2)
U.S.-Canada	3.4%	1.6%	6.5%	4.2%	4.2%	5.4%	6.7%
U.S. N=	3,072	1,061	679	88	753	346	145
Canada N=	2,376	364	142	512	637	458	263

Notes: U.S. 1990 and 2000 Census population figures are from U.S. Department of Commerce, REIS. See Partridge and Rickman (2006) for more discussion of the derivation of the U.S. data. Canadian 1991 and 2001 Census data are from Statistics Canada. See Partridge et al. (forthcoming) for more details. All 10 year growth figures are weighted by initial year population (1990 or 1991). U.S. distances are calculated from the population weighted centroid of the county to the population-weighted centroid of the nearest metropolitan or micropolitan area using 2003 metropolitan/micropolitan definitions. Canadian distances are calculated from the rural community's geographic centroid to the Census Metropolitan Area/Census Agglomeration (CMA/CA) geographic centroid using 1996 boundaries. CMAs and CAs are Statistics Canada's respective equivalents to a U.S. metropolitan or micropolitan area in which the unit of observation is a Census Consolidated Subdivision (roughly a community). A CA has an urban population center of 10,000-99,000 people. To ease comparison to the U.S., the CA sample was split into CA's with less than and more than 50,000 people. Rural is defined as U.S. counties or Canadian Consolidated Census Subdivisions outside of a metropolitan or micropolitan area (or outside of a CMA/CA). Row 3 is the difference between the U.S. and Canadian figures.

Finally, higher energy costs and the resulting spillovers will likely place great strains on already financially overcommitted exurban households trying to make mortgage payments and pay commuting costs. Similar pressures will be faced by the poor and lower-middle class households trying to adjust to declining conditions in remote rural communities. Workplace supports such as daycare and commuting assistance may be necessary to help bridge the short-term gap. For instance, innovative solutions that incorporate exurban and rural public transport may be required. Long-term policies may need to resort to relocation assistance as current rural commuting patterns may be unsustainable in this energy-cost environment and rural communities fall below key population thresholds to retain services.

This analysis indicates that much of rural America may undergo a very difficult period if energy prices continue their upward trajectory. Indeed, given the severity of the possible restructuring, it is quite surprising how little forethought has gone towards this issue. Hopefully, this essay stimulates more discussion.

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