Rural-Urban Interdependence in Central Appalachia

Discussion Paper

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Wealth Creation in Rural America

This report is part of the Wealth Creation in Rural America initiative, funded by the Ford Foundation. The aim of the initiative is to help low-wealth rural areas overcome their isolation and integrate into regional economies in ways that increase their ownership and influence over various kinds of wealth. The initiative has produced nine previous papers, which can be found at http://www.yellowwood.org/wealthcreation.asp. The goal of this report is to advance the initiative’s broad aim of creating a comprehensive framework of community ownership and wealth control models that enhance the social, ecological, and economic well-being of rural areas.

Author Organizations

The Rural Policy Research Institute (RUPRI) was founded in 1990 and receives on-going support from Congress to provide objective, non-governmental analysis regarding the impacts of public policy decisions on rural people and places. Continuous service is provided to policymakers and practitioners at the local, regional, state, national, and international levels. RUPRI is widely respected for its analysis and programs across a broad portfolio of rural policy issues from health care to entrepreneurship to regional innovation. RUPRI’s program of work is delivered by a small core staff in Missouri and Washington, D.C., partnering with a broad array of scholars, analysts, and practitioners through RUPRI centers and panels.

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HIGHLIGHTS

- Regional approaches to public and private investment have a long history in the United States and are now making a comeback. They have the potential for making better use of scarce resources, encouraging comprehensive and integrated solutions to complex challenges, establishing the foundations for increased global competitiveness, and overcoming the constraints of no longer relevant jurisdictional boundaries.

- Recognizing the interdependence of rural and urban people and places in a regional context provides the opportunity for insights and investments that can yield mutually reinforcing and equitable outcomes. Strategies for either rural or urban areas that exclude the other are unlikely to be effective.

- A focus on wealth creation and assets is essential for attracting investment in rural (and urban) areas, but the extent to which wealth creation and retention is possible is in part determined by property rights (who owns them?) and terms of trade (how valuable are they?).

- Measuring the flows of production, consumption, savings and investment, and the stocks of capital and wealth across a region’s economic, social, and environmental dimensions is possible through social accounting matrix tools, as is the estimation of the degrees of connectedness between and within regions.

- A first effort to calculate regional economic flows in central Appalachia suggests that:
  - The economies of the urban core and rural periphery economies, even though they both have relatively high degrees of connectedness are heading in different directions. The urban cores tend to be more diversified and attract income flows that mainly stay within these cores and less likely to be distributed to the rural periphery; the rural periphery areas tend to be less diversified with a high dependency on coal mining and thus more vulnerable to global forces. Moreover, the associated income flows tend not to stick in the rural periphery and pass on to the urban cores or back out to external owners.
  - Regional strategies that assume that the effects of investment in urban cores will spill over to benefit rural periphery areas are unlikely to work in central Appalachia — what is invested in the urban core will most likely stay there. On the other hand, investments in the rural periphery may be thwarted by the dominance of the coal-mining industry and by leakages of monetary flows to the urban cores.
  - Strategies likely to create long-term prosperity to central Appalachia are those that seek to counter the dominance of coal-mining by diversifying the economy in ways that bring greater balance of monetary flows between the periphery and the core, and generate real growth in jobs and income.
DISCUSSION PAPER
Regionalism and Wealth Creation in Rural America:
Rural-Urban Interdependence in Central Appalachia

Brian Dabson, Thomas G. Johnson, Kathleen Miller, and Dennis Robinson1
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PART I: INTRODUCTION: CONTEXT AND DEFINITIONS

Background

With support from the Ford Foundation, a group of researchers and practitioners have been exploring the conceptual and practical possibilities of development strategies that will enable wealth to ‘stick’ in poor rural regions. The project began with a triple bottom line framework (TBL) – making investment choices and assessing development impacts using economic, social, and environmental metrics – through the lenses of entrepreneurship, value chains, clusters, and community development financial investing. As the project progressed, the focus shifted from TBL to a broader conception of wealth creation and a set of metrics relating to financial, natural, social, individual, intellectual, and built assets (Ratner). There was also a broadening of the research efforts to include concepts of local ownership and some specific sectoral explorations in areas such as alternative energy and venture capital.

The Structure of the Paper

The paper was prepared to inform a discovery discussion on Wealth Creation and Rural-Urban Linkages in Working Regions at the Ford Foundation on November 6, 2009, and reflects a further addition to the project – an effort to provide a contextual and analytic framework that recognizes the importance of the spatial dimension of wealth creation and retention in rural areas.

It begins by providing some key definitions of ‘assets’, ‘wealth’, ‘rural’ and ‘regions’ before giving a brief account of the experience of regionalism in the United States and of the growing appreciation of the idea of rural-urban interdependence. The paper continues by discussing how regionalism and interdependence have become part of the narrative of public policy. Attention is then turned to the Central Appalachian region, which is the current focus of the Wealth Creation in Rural Communities project, and a presentation of the preliminary results and possible implications of some ground-breaking

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econometric modeling to describe the nature of the economic linkages that impact the region.

**Defining Our Terms**

The underlying premise of *Wealth Creation in Rural America* is that for many rural communities and regions of the United States the path to resiliency and prosperity is blocked by factors that drain or diminish assets and inhibit the creation of community wealth. Investment approaches that remove or avoid those blocking factors and enable wealth to be created and retained in these rural communities and regions are the focus of the *Wealth Creation in America* project. This paper looks at the spatial dimensions of wealth creation and in particular the importance of the interconnectedness of rural and urban people and places in a regional context.

A number of terms used in the preceding paragraph require some explanation as they assume different meanings depending on the context in which they are used.

**Assets**

Assets represent the natural and created attributes of a place, community, or individual, whose value can be increased by investment to create wealth or decreased by abuse or neglect. For the purposes of the *Wealth Creation in Rural America* project, assets may be financial, natural, social, individual, intellectual, or built (see Ratner).

**Wealth**

Wealth, both individual and collective, is a stock which accumulates or dissipates depending on the flows in and out. It usually refers to accumulated net income or savings in a household or business, where accumulation occurs when income is greater than expenditures – or at a broader economy level, when production exceeds consumption. When this accumulation is invested in a productive asset, it becomes wealth. This concept of investment in assets applies equally well outside the traditional areas of household and business into the realm of human, social, and environmental assets. When expenditures exceed income, or for instance when removal of timber exceeds its replenishment, the result is a draining of wealth and eventually disinvestment out of a productive asset. **Thus a truly wealthy community is one where most or all of its assets are being put to productive use and managed in ways that continue to enhance their value.**

When considering wealth in a regional context, the focus is on the spatial distribution and the dynamics of these assets, especially on how these are influenced by rural-urban linkages.

**Rural**

Defining rural is both technically and politically challenging and it is unlikely that there will be a universally agreed definition any time soon. The two official starting points are provided by the US Census Bureau and the Office of Management and Budget (OMB). The Census Bureau uses population size and density to define what is urban and by default defines rural as that which is
not urban. OMB defines metropolitan areas by blending information on urbanized areas (core counties) with their linkage to surrounding counties based on the strength of commuting patterns. Counties that are not designated as metropolitan are designated as non-metropolitan counties. These are further divided into micropolitan counties, and “non-core counties” which are often used as proxies for rural. These are overlapping and often contradictory definitions, with more than half (51 percent) of all rural residents, amounting to over 30 million people, living in metropolitan counties, and 41 percent of the non-metropolitan population (over 20 million residents) living in urban areas (Miller). For Federal programs, many combinations and variants of these definitions are applied. There are also a number of other methods for classifying counties according to their degree of rurality (Economic Research Service) or a more nuanced typology of urban-rural mix (Isserman). For the purposes of this paper, we have chosen to adopt the OMB’s usage of “core” and “non-core” counties.

**Regions**

A region is a geographical unit that is defined according a specific purpose. Regions can be defined by topology, such as a mountain range, a plateau, or a plain; by hydrology, such as a river basin or aquifer; by climate, by economic linkages, by ethnic or cultural characteristics, or for some administrative or service delivery purpose. In truth, any given community can be a member of several regions. When the idea of regions becomes linked to governance (regionalism) then it becomes a means of framing policy and allocating resources. As will be discussed later, regionalism represents a particularly useful approach to understanding the relationship between rural and urban communities.

**PART II: REGIONALISM AND RURAL-URBAN INTERDEPENDENCE**

**The Experience of Regionalism in the United States**

Efforts to plan and coordinate public and private activities date back to late 18th century Philadelphia when special districts were established to administer prisons, schools, public health, and the port. In cities, in the early 20th century, regional coordination appeared in New York and Boston, and in Chicago where a private-public partnership laid out plans for railways, the lake shore, and other public facilities.

In rural America, the idea of using watersheds as the basis for regional governance was first promoted by the explorer John Wesley Powell in 1890; in the 1930s, Franklin Delano Roosevelt’s New Deal philosophy sparked strong interest in multi-state regions from New England to the Pacific Northwest and led to the creation of the Tennessee Valley Authority as the first comprehensive river basin development experiment to pursue power generation, flood prevention, soil stability, reforestation, and economic development. In the 1940s during the Truman administration, some 40 multi-county commissions were formed in an attempt to reduce regional disparities but few had lasting impact.

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2 Dabson, 2007b
Twenty years later, the President’s Appalachian Commission, initially set up by John F. Kennedy to determine ways in which the intense poverty conditions he saw in Appalachia during his election campaign could be tackled, reported that Appalachia was a “region apart.” The Commission called for regional development to attain “an employment base to sustain its people at a level of dignity and prosperity comparable to the relatively affluent nation of which it is part.” (PARC) The Appalachian Regional Commission was formed in 1965 and together with its 69 partner multi-county local development districts in 13 states remains the main regional development institution in the nation. There have been other Commissions created by Congress at much lower levels of funding and impact in the Delta and Alaska (Denali) and efforts continue to support others on the Northern Great Plains and elsewhere.

The 1960s also saw the creation of the US Economic Development Administration and a nationwide network of multi-county economic development districts to promote the long-term recovery of economically distressed areas. Although starved of funds in recent years, these agencies have continued as the main vehicle of encouraging minimal levels of cooperation across county jurisdictions and sectors in rural America. In the urban areas, metropolitan planning organizations have followed a similar path as channels for Federal funds for transportation, economic development, housing, historic preservation, recreation, employment and training, water quality, and airports.

After a flagging of interest during the latter part of the 20th century, regionalism has re-emerged as a means of achieving and maintaining global competitiveness. Through contributions from Thomas Friedman, Michael Porter, Richard Florida, and Mark Drabenstott, regions have been framed as the basic unit of global competitiveness with clusters as the organizing principle for regional economies. As Drabenstott observes, “Strategies that help regions innovate and grow business with the resources at hand have become central features in state-of-the-art models of economic development.” (Drabenstott)

The Idea of Rural-Urban Interdependence

A 2007 Brookings paper argues that there is a high degree of connectedness and interdependence between metropolitan and rural America.

“No bright lines separate the two types of areas, either geographically or economically. If metropolitan America is to drive national prosperity, metropolitan areas will need a healthy and sustainable rural economy and culture. Likewise, if rural America is to flourish, it will surely depend upon vibrant, well-functioning cities and suburbs.” (Dabson, 2007a)

The paper makes four main points.

- Despite official definitions that distinguish urban from rural, and metropolitan from non-metropolitan, the realities of settlement, commuting, and migration patterns suggest a far more
complicated interface in which much mixing occurs among urban and rural populations, and rural areas themselves exhibit a great deal of diversity.

- Research, especially in the developing world, has recognized the complicated human, market, environmental, and functional interactions that link urban to rural areas, especially at the so-called ‘peri-urban’ interface where urban meets rural.
- Current thinking on strategies to achieve greater rural prosperity emphasize the value of strengthening productive ties between rural and urban places, implying the need for efforts to preserve rural natural resources; improve labor market connections, including technology infrastructure; upgrade education in rural areas; and ensure that America’s rural economy keeps pace with changing metropolitan demand at home and abroad.
- America’s rural and urban areas share many degrees of interdependence: rural areas provide critical consumption goods for metropolitan consumers, such as food, energy, labor, land, and unique experiences. Metropolitan areas constitute the end market for rural production, and provide specialized services, offer diverse job opportunities, and generate resources for public and private investment in rural America.

The Aspen Institute published a report in 2008 on steps to bridge the divide between rural and urban America (Kubisch et al). The report quotes Robert Ross, the head of the California Endowment:

“It’s time for a new equity and opportunity agenda for this country. I am looking for that wagon and for opportunities to hitch my horse to it. Historically, the rural folks have had their agenda and the urban folks have their agenda, but there is an opening now for advocates across rural and urban to come together to create a new opportunity agenda for everyone.” (Kubisch et al, p.2)

A number of action steps were recommended to move the idea of interconnectedness into a reality. These included changing the official definitions of what is meant by rural, urban, and suburban into more meaningful regions. It was noted that although regional frameworks developed by the smart growth movement for promoting city vitality and equitable development had promoted a venue for rethinking political, economic, and environmental boundaries, more work is needed to ensure the “genuine incorporation of the rural reality (especially the rural economy)” into these frameworks.

A second recommendation focused on the rebuilding of civic capacity in ways that leadership would operate as boundary-spanners across the rural-urban divide. The emphases were both on issues that are of mutual concern to urban and rural people – economic development, environment, employment, health, and education – and on engaging segments of the population often excluded from civic leadership. Another recommendation was concerned with building upon examples of successful rural-urban collaborations relating to a range of challenges, such as water, public education, community forestry, affordable housing, immigration, and healthy food.
The Current Policy Frame

The Brookings Institution has become the main proponent of regional strategies to position metropolitan areas as the main drivers for national prosperity, and their approach has been influential in the framing of the Obama Administration’s approach to urban policy. A recent White House memorandum provided some policy principles to advance the Administration’s domestic and fiscal priorities, which included:

“Many important challenges demand a regional approach. The Nation is increasingly a conglomeration of regional economies and ecosystems that should be approached as such. Federal investments should promote planning and collaboration across jurisdictional boundaries. Given the forces reshaping smaller communities, it is particularly important that rural development programs be coordinated with broader regional initiatives. Programs in neighboring zones and with larger regions – some of which connect rural communities to metropolitan regions – should complement each other.” (The White House)

Regionalism has also attracted new attention from a rural perspective, with the 2008 Farm Bill authorizing the Rural Collaborative Investment Program as a means of encouraging cross-sectoral multi-jurisdictional collaborations to achieve rural regional competitiveness. The recently created Southern Minnesota Regional Competitiveness Strategy, a public-private-philanthropic partnership across 38 rural and urban counties represents a model of this approach.

Not all regional approaches are public sector initiated or driven. For instance, the Kellogg Foundation launched the Entrepreneurship Development Systems in Rural America project in 2004, a multi-million dollar effort to promote regional transformation in rural America through public-private and nonprofit collaboration. The aim was to connect the dots of geographically-dispersed public and private resources so as to improve the prospects for struggling regions. Elsewhere, there are many examples of ad hoc regional projects that have emerged to deal with a broad range of challenges, such as growth management, watershed protection, and economic development.

In a collection of essays compiled by the Funders’ Network for Smart Growth and Livable Communities in 2009, a case is made for a new policy frame that brings together regionalism, assets, and entrepreneurship. (Dabson, 2009) Here, regionalism is seen as an antidote to diseconomies of scale in rural areas, implying cooperation and collaboration across jurisdictions and urban-rural divides, as well as efforts to identify and articulate common priorities. A focus on assets (or wealth or capital) recognizes the importance of communities and regions building upon their particular strengths and applying strategies that improve competitiveness and sustainability. Entrepreneurship, along with innovation, provides the means by which these assets can be converted into economic opportunity and social equity.
The outcomes sought from such an approach, it was argued, should be economic prosperity, environmental sustainability, and social equity across any given region. The incomes and wealth of rural people need to be at least on a par with the population as a whole; in pursuit of jobs and economic development, there has to be better stewardship of the rural environment and natural resources; and disparities and powerlessness should not be inevitable byproducts of remoteness and policy neglect.

PART III: LINKAGES ANALYSIS IN CENTRAL APPALACHIA: THE SET-UP

Constraints on Wealth Creation

Our approach to wealth and assets is summarized in the definitions on page 4.

The ability of a business, community, region, or nation to produce goods and services is dependent upon the availability of a range of assets and the level of productivity it can achieve from those assets. For the individual or family, as for a business, income depends upon two important concepts, ‘property rights’ and ‘terms of trade.’

- **Property rights** determine the ability of individuals to claim the production from the available assets – important factors include their strength, security, and enforceability.

- **Terms of trade** refers to the value of those property rights and the products from the assets when exchanged for other assets or products.

For example, someone with high level skills that are highly sought after will have strong property rights in that they cannot be easily taken away or replicated, and that she has choice as to where to apply those skills. This allows her to demand favorable terms of trade from potential employers or customers and thus achieve a higher flow of income.

In another example, a community might have an abundance of valuable assets such as minerals or timber, but if the commodity is owned by investors in another country and their property rights are protected by law, the community may have little ability to claim any of the production from those assets. Moreover, the terms of trade may mean that not only is there little income available to the community, there may be externalities from the extraction of the asset that in fact diminish the value of other community assets, such as water quality, clean air, and aesthetics.

There is also a temporal dimension. The purpose of production is consumption: income that is not spent in the short term on goods and services becomes savings for future consumption. Decisions on how and where to invest those savings will determine the speed and scale of wealth creation, recognizing that the higher the rates of return the more risks will be attached to those investments.
Regional Social Accounting

All of these concepts – production, consumption, savings, investment, wealth, and assets – can be brought together in a tool called a Social Accounting Matrix or SAM. Social accounting links the flows with the stocks, thus the ‘current account’ traces the flows of production, consumption, savings, and investment, while the ‘capital account’ links savings and investments to stocks of capital or wealth. Typically SAMs include only flows of traditional economic indicators, but they can also be used to trace environmental and social indicators.

For example, the consumption of energy for transportation requires a flow of money from consumers to energy producers, but it also means the release of greenhouse gases, the use of public infrastructure, and increased rates of traffic accidents and thus health care costs. A proper accounting of these flows would enable the tracking of the effect of these flows on environmental and human capital as well as on the financial stock of the energy producer. There is little known about the precise relationships between the different forms of assets but these linkages do exist, and can be recognized through SAMs or similar accounting frameworks.

All these economic activities – production, consumption, and investment – occur in the context of space and distance. Decisions by individuals on where to live, work, shop, and recreate; by firms as where to locate, purchase inputs, hire labor, and sell products; and by governments as to where to locate infrastructure, provide services, and impose taxes, all determine the spatial structure of the economy. From an economic viewpoint, space is generally regarded as an asset, but distance is usually a liability. This means that an ideally structured regional economy will be organized so that rural areas are devoted to activities that require space, while activities that require proximity are concentrated in urban areas.

Spatial linkages between rural and urban areas in a region differ according to the region’s economic base and the degree to which the economy is self-sufficient or dependent upon trade with other regions. Larger economies tend to be relatively more self-sufficient and less economically connected; smaller economies tend to be more economically connected as they are essentially subsets of larger economies.

- **Less Economically Connected Regions** – rural-urban linkages will be balanced, so that flows of products (goods and services) are offset by flows of payments. Rural periphery areas will supply the urban core areas with their needs, including final goods and services consumed by individuals and governments, as well as intermediate products used by firms to produce final goods and services.

- **More Economically Connected Regions** – the economic base may be either space-based or proximity-based:
  - **Space-based open economy** – revenues flow into the region from the export of agricultural, mining, forestry, fishing, energy, outdoor recreation, and some
manufacturing goods. Here the urban core areas supply inputs, services, and some labor to the rural producers.

- **Proximity-based economy** – the revenues flow mainly from the export of goods produced in the urban core areas taking advantage of proximity, scale, and sectoral clusters.

It is possible to classify regional economies according to their degree of connectedness as well as the extent to which they are space- or proximity-based by measuring and comparing the type and size of monetary flows. Table 1 provides the basis for such a classification.

### Table 1: Monetary Flows by Type of Regional Economy

<table>
<thead>
<tr>
<th>Monetary Flows</th>
<th>Indicator</th>
<th>Less Connected Regions</th>
<th>More Connected Regions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Space-Based</td>
<td>Proximity Based</td>
</tr>
<tr>
<td>Outside to Periphery</td>
<td>% of Periphery Sales to External buyers</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Outside to Core</td>
<td>% of Core Sales to External buyers</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Periphery to Core</td>
<td>% of Periphery Sales to Core buyers</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Core to Periphery</td>
<td>% of Core Sales to Periphery buyers</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Periphery to Outside</td>
<td>% of Periphery Purchases from External sellers</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Core to Outside</td>
<td>% of Core Purchases from External sellers</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

The monetary flows within and between regions provide insights into the extent of regional savings (the extent to which production exceeds consumption) and thus the potential for wealth creation. For instance, if monetary outflows exceed inflows (this can be associated with both public and private sector activities) then there will be a regional current account deficit; this will need to be brought back into balance either by focusing on activities that will increase sales or reduce purchases, or by a depletion of the regional capital account. A deficit in the capital account is the result of continuing offsets against current account deficits or the transfer of capital to owners outside the region.

**Regional Accounting in Central Appalachia**

The methodology for the regional accounting analysis was as follows:

- The analysis utilized the data from IMPLAN. The data is based on the 2002 commodity-specific county-to-county trade flows, updated with 2007 databases for the central Appalachian sub-region. This data shows county flows in sales by industries to other counties, as well as the volume of sales by sector from each county to other counties.
The analysis examines each of eight BEA Economic Areas which intersect the 87 county central Appalachian region (see map below). These areas are regional markets around metropolitan and micropolitan areas that serve as regional centers of economic activity. The BEA determines these economic areas through commuting flows and newspaper circulation.

For each region, the central metropolitan county was selected and analyzed as the “core,” and the remaining region was treated as the “periphery” or “rural” portion of the BEA region.

The average of these is utilized to determine the degree of economic connectedness of the regional economy (see hypothesis 1, page 13).

Imports were defined as the amount of purchases made within the region from areas outside the BEA region. Exports were defined as the amount of sales made from the region to areas outside the region.

This analysis is unique because of the data used and because of its spatial perspective. Most previous studies look at linkages based on commuting patterns which tell part of the story. A few (Holland 2009 for example) have used input-output relationships to look at flows of goods and services. In this study we combined input-output data with unpublished data on source-destination estimates for goods and services flows. This data allowed us to estimate flows to and from multiple locations, disaggregated by sectors. Finally, we are able estimate similar indicators for several regions (eight in this case) and search for patterns in the correlations between the indicators.

However, there are several caveats that should be noted:

- Although this is a somewhat complex inter-regional trade flows analysis, it represents a tentative first step in creating a full interregional social accounting matrix. Conclusions are
therefore partial and tentative, although they do point to some interesting directions for further development and analysis.

- The analysis assumes that the central county selected in each region appropriately represents the urban core, while this may not be the case. For example, the urban areas of Cincinnati and Louisville spill across more than one county, so selecting one core county may be therefore be inappropriate. An important next step will be to perfect the geographic allocations. However, the reality is that the data is county based, and the defining of a perfect core and periphery may not be possible.

- The determination of an economy as more or less economically connected is somewhat subjective as there is no agreed-upon threshold, and analyses of this type are few in number. Does it make sense to call an economy in which 50 to 60 percent of the activity occurs within the region “connected?”

- Making any conclusions based on eight observations is suspect. However, for purposes of describing the relationships within Central Appalachia, the eight regions represent this study’s universe, so it is accurate for descriptive purposes of the connectedness of the economies, and the flow of resources within the regions. However, without a larger base for comparison beyond the eight economic areas, there is some risk in drawing hard and fast conclusions as to what constitutes “large” or “small” economies or “Spaced-based” or “proximity-based” economies.

PART IV: LINKAGES ANALYSIS IN CENTRAL APPALACHIA: HYPOTHESES AND CONCLUSIONS

The analyses of the data generated by the model enabled us to test a number of hypotheses and to draw some initial conclusions.

Hypothesis 1. The Central Appalachian regions are relatively less economically connected from an economic perspective, meaning they have relatively high levels of internal linkages relative to external linkages.

In a fully “economically connected” economy, 100 percent of the sales from the region would be made to the “rest of world” – areas outside the BEA Economic Area. Likewise a fully “economically disconnected” economy would have 100 percent of the sales inside of the region made within the region. The analysis takes an average of the percent of sales going outside the region and the percent of purchases made from outside the region.

For the eight BEA Economic Areas, this indicator of “connectedness” ranges from 37 percent to 51 percent of the economies of the regions. Interpretation of this is quite subjective. One may consider anything more than a percentage of 50 percent as “connected,” or a threshold of 30 percent may be more reasonable. In this particular analysis, only the Louisville region experienced over half of its economic activity tied to the rest of world, while each other region experienced larger internal linkages (more than half of economic activity tied inside the region).
However, each region could be considered relatively connected as there is a dependence on imports and exports outside the region of at least 37 percent and up to 51 percent. Analyses of this nature are few but a recent study by Holland et al for the Portland, Oregon economic area found that about 33 percent of trade from the Portland area was extra-regional. While this region is larger than any of the regions included in the central Appalachian analysis, it does form a useful base of comparison.

Hypothesis 2. *The Central Appalachian regions with the largest core economies, measured in terms of economic production, are relatively less economically connected, or self-sufficient, than the smaller regions.*

The hypothesis posits that the higher the core economy within the BEA region, the lower the dependence on exports, implying a large core economy would have the highest levels of internal linkages when compared to smaller urban core economies. Results (chart 2) generally support this hypothesis, although there are outliers. The Roanoke region represents a smaller urban core with a generally service-based economy, and is generally a less economically connected economy, with a dependence on exports of 40 percent. Another outlier is the Louisville, which has the largest core economy among the 8 regions, and a much higher dependence on exports (large percentage of sales moving outside the region). However, among the other large urban cores (Cincinnati and Nashville), the dependence on exports is lower, supporting the hypothesis of a less economically connected, or self-sufficient economy.

Hypothesis 3. *Regions in Central Appalachia will have more “space-based” economies than “proximity-based” economies, due largely to the importance of mining and forestry throughout this region.*

The concept of “space-based” economies is used to describe industries for which land or space are essential, such as extractive industries and many types of manufacturing. Proximity-based economies are those that require more agglomeration of people and functions, and tend to cluster near urban centers.

This hypothesis was tested by comparing the exports out of the periphery with exports out of the core, both to areas outside the region. The value is converted to a percentage for ease of interpretation. A value of 100 percent would mean that there are equal exports from the core and from the periphery to areas outside the regions; values over 100 percent indicate the periphery is a larger driver of the regional economy.

The analysis strongly supports this hypothesis. In only one region (Louisville) are exports from the periphery less than exports from the urban core. This is similar to the results found in the Holland et al study of the Portland, Oregon area. The area of Roanoke particularly represents a “space-based” economy, as exports from the periphery are seven times greater than exports from the core.
Note: the analysis of this hypothesis assumes that the core is captured by the central county of the metropolitan area, and in all cases only one central county was selected for analysis. In reality, the urban cores often spill into neighboring counties. In these instances, the core may be underestimated. In a next phase of analysis we may wish to refine the core geography. However, if the core were underestimated in a region such as Cincinnati or Louisville, the “proximity based” economy thesis would be further strengthened.

Hypothesis 4. Regions with larger core economies are less dependent upon rural exports.

This hypothesis extends the previous one by seeing if the regions with larger core economies are less space-based than regions with smaller core economies. The reasoning behind this hypothesis is that the larger the core economy, the more production there will be from within that core for export out of the region, and will demand more than the periphery can supply.

This hypothesis is supported very strongly by the analysis. The largest core economies (Cincinnati and Louisville) indeed represent the lowest rural exports relative to urban exports. Likewise the smallest core economies (Roanoke and Johnson City) represent the highest ratio of rural to urban exports.

Hypothesis 5. Regions with more space-based economies will demonstrate greater flows of funds from the periphery areas to the core areas. That is, money will first flow into the periphery as space-based products are sold, then money will flow from the periphery to the core.

This hypothesis is tested by calculating the ratio of rural purchases from urban relative to urban purchases from rural (expressed as a percentage). The results found that in all eight BEA regions, there was an imbalance of flow of funds between urban cores and rural peripheries, varying from 217% to 370% of flows in the opposite direction. This is consistent with the Holland et al study, which found that rural to urban flows were 300% of urban to rural areas in the Portland region.

This result illustrates the importance of the rural periphery to the urban cores as a market for goods and services produced in the core. It can follow from this hypothesis testing, that if the economy of the rural periphery were strengthened, then the urban core would find benefit. Therefore, an investment in the rural periphery is in fact an investment in the urban core as well. The reverse is much weaker. This analysis does not seem to be related to the degree to which the economy is space-based, however.

Hypothesis 6. Regions more dependent on mining sectors will be more space-based.

Mining is a space-based sector. While unlikely in the case of coal mining, it is possible that processing of the mined product in the urban core would lead to a stronger proximity-based economy and a balanced economic base, contradicting hypothesis 5. However, in the case of these eight regions, this hypothesis is supported, and the more mining dependent areas tend to be more space-based. The areas with significant dependence on coal mining (Charleston, Johnson City) do indeed show higher rural exports.
relative to urban exports. Roanoke, while depending little on coal, is still quite space-based, largely due to its dependence on rural manufacturing.

**Hypothesis 7. Peripheral areas which depend on mining will also be less dependent on the urban core for services (i.e. more self sufficient from the core).**

The reasoning behind this hypothesis is that the scale of mining and a very specialized demand for inputs and services, periphery areas where the mining occurs will be more self-sufficient, that is, less dependent upon the core areas. This hypothesis is tested by calculating the percent of sales made from the periphery to itself. The data show that there is a slight tendency, within this region, for the mining dependent areas to be more self-sufficient.

Several factors may contribute to the trend. The areas that are represented by a higher dependence on coal mining are more isolated, so the distance to the urban core may be prohibitive of seeking services there. One aberration from the trend is the Knoxville region, which has a low dependence on mining but has a quite self-sufficient periphery, possibly reflecting the presence of micropolitan centers.

**Some Preliminary Conclusions**

The economies of the urban core and rural periphery economies, even though they both have relatively high degrees of connectedness are heading in different directions. The urban cores tend to be more diversified and attract income flows that mainly stay within these cores and less likely to be distributed to the rural periphery; the rural periphery areas tend to be less diversified with a high dependency on coal mining and thus more vulnerable to global forces. Moreover, the associated income flows tend not to stick in the rural periphery and passes on to the urban cores or back out to external owners.

Regional strategies that assume that the effects of investment in urban cores will spill over to benefit rural periphery areas are unlikely to work in central Appalachia – what is invested in the urban core will most likely stay there. On the other hand, investments in the rural periphery may be thwarted by the dominance of the coal-mining industry and by leakages of monetary flows to the urban cores.

Strategies likely to create long-term prosperity to central Appalachia are those that seek to counter the dominance of coal-mining by diversifying the economy in ways that bring greater balance of monetary flows between the periphery and the core, and generate real growth in jobs and income.

**Some Next Steps**

- Test the hypothesis that a balance in monetary flows might be better achieved by investments in micropolitan areas – smaller cities and counties outside the main urban core of each economic area.
- Examine the economic diversity of the core and peripheral areas of each economic area both as a whole and the counties within central Appalachia.
• Consider the construction of a full inter-regional social accounting matrix for central Appalachia showing trade flows between economic areas and between core and periphery areas across regions to obtain a more nuanced view of degrees of economic connectedness and the main drivers of the economies.
• Layer on top of the monetary flows analysis, additional dimensions of regional wealth including employment, and selected indicators of the relative strength of social and environmental assets.
• Conduct a series of case studies of regional collaborations and strategies across the US to draw some conclusions about necessary preconditions and success factors.
APPENDIX A: DESCRIPTION OF THE CENTRAL APPALACHIAN SUB-REGION

A geographical focus of the *Wealth Creation in Rural America* project is central Appalachia, a group of 87 counties within the Appalachian Regional Commission territory in Kentucky, Tennessee, Virginia, and West Virginia. Appendix 1 provides a description of the Central Appalachian region.

Table 2 shows how these counties are officially classified:

<table>
<thead>
<tr>
<th>Classification</th>
<th>Definition</th>
<th>Counties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Metropolitan</td>
<td>Counties that contain an urban area with at least 50,000 people</td>
<td>2</td>
</tr>
<tr>
<td>Outlying Metropolitan</td>
<td>Adjacent counties with at least 25% employees commuting to adjoining central metropolitan counties</td>
<td>8</td>
</tr>
<tr>
<td>Central Micropolitan</td>
<td>Counties that contain an urban area with a population of 10,000-49,999</td>
<td>13</td>
</tr>
<tr>
<td>Outlying Micropolitan</td>
<td>Adjacent counties with at least 25% employees commuting to adjoining central micropolitan counties</td>
<td>7</td>
</tr>
<tr>
<td>Non-Core</td>
<td>Counties not classified as above</td>
<td>57</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>87</td>
</tr>
</tbody>
</table>

In 2008, the population of Central Appalachia was 2,197,384, up by 2.1 percent from the 2000 Census. This was a slower growth rate than the nation as a whole which grew 8.0 percent over the same period. Within Central Appalachia, the micropolitan counties experienced the fastest rate of growth at 6.0 percent, whereas the non-core counties declined in population by 0.8 percent.

In all, 38 counties lost population with McDowell County, WV and Buchanan County, VA each losing over 10 percent from 2000-2008. At the other end of the spectrum, eight counties grew faster than the national average rate, of which six were metropolitan counties.

Source: U.S. Census Bureau, Population Estimates Program
Of the 87 counties, 50 are classified as persistent poverty counties in that they have experienced poverty rates of 20 percent or higher in each of the past four decennial censuses. According to estimates from the US Census Bureau, no county has a poverty rate lower than the national average of 13 percent. In fact 62 counties in 2007 had poverty rates in excess of 20 percent, with Clay and Owsley Counties, KY having rates of over 40 percent.

Central Appalachia has historically lagged behind the nation in per capita income. In 2007 according to the Bureau of Economic Analysis, none of the 87 counties had per capita income equal or greater than the national level of $38,615. Only Anderson County, TN, a micropolitan county, had an income level of over 80 percent of the national figure, and eight non-core counties had incomes of less than half.

A similar picture can be seen in levels of educational attainment, in that no central Appalachia county meets the national average of 24 percent of the population 25 years and over having earned a bachelor’s or professional degree. In fact only four counties saw that level of attainment for 20 percent of their population.

One of most obvious linkages between urban and rural places is the flow of commuters within a region. The Bureau of Economic Analysis (BEA) organizes counties into Economic Areas, which are regional markets around metropolitan and micropolitan centers that serve as regional hubs of economic activity. Commuting flows are the
predominant data for determining these areas. Central Appalachia’s 87 counties are divided among eight Economic Areas – in each case the hub is located outside Central Appalachia in metropolitan areas centered on Nashville TN, Knoxville TN, Louisville KY, Lexington KY, Tri-Cities TN, VA, Richmond, VA, Charleston WV, and Cincinnati, OH.

About one-third (34.5 percent) of Central Appalachia workers commute to places outside their home county, with nearly half of workers residing in metropolitan counties commuting beyond their home county, and just 27 percent of micropolitan county residents. As might be expected, within each of the Economic Areas, 58 percent of metropolitan county commuters work in a central metropolitan county within their BEA economic area, whereas for micropolitan and noncore commuters on 18 percent and 12 percent respectively travel to work in a central metropolitan core county within the BEA area.

Another type of rural-urban linkage is reflected in access to services, particularly health care, retail sales, and education, which tend to be located in urban areas. For example, there are 75 hospitals – critical access, short term, and long term – in the 87-county area, of which 20 are located in the principal city of a metropolitan or micropolitan area, and a further 55 in other urban areas across Central Appalachia. The map shows the relative ease of access to these hospitals from across Central Appalachia, taking into account travel times to the closest facility taking into account geography, traffic restrictions and speed limits. The map shows clearly the degrees of connectivity – with some counties in West Virginia and Kentucky having more than 45 minutes travel time to the nearest facility.
Bibliography


