



Small City Economic Dynamism Index Version 2.0

Indicators and Sources, Literature Review, Methodology, and References

March 2017

The Small City Economic Dynamism Index provides a snapshot of the economic trajectory of small and midsize cities. This version of the index (version 2.0) has been updated with more than 150 new cities, the most recent data available, and several new indicators and data analysis features.¹ The index and its underlying data set are tools for leaders working in or on behalf of small and midsize cities. In it, economic dynamism is defined as *churning* in a local economy that creates the potential to generate positive economic performance. It is assessed by changes across four dimensions: **demographics, economics, human and social capital, and infrastructure**. The index is an aggregation of 13 indicators that have been shown to correlate with local economic growth or development. Indicators, sources, and references to literature are detailed in the table below.

¹ The original version of the index was released in 2015. Based on feedback from program partners and peers, we made several changes to this 2.0 version of the index. First, the new version includes both micropolitan and metropolitan areas. We made this change so the index and its underlying data set could be useful to a broader audience of practitioners and policymakers in smaller cities. The addition of micropolitan areas, however, meant that we had to change several of the original indicators based on data availability. Second, we added the most recent data available for each indicator. In most cases, this meant adding data for 2015 and shifting the time frames in our analysis to reflect newer data. Importantly, the trade-off associated with these changes (new indicators and new data) is that it is not possible or appropriate to compare economic dynamism scores for any particular city from the first to second version, because the component parts of the index have changed. New indicators are noted and explained in footnotes.

Indicators and Sources

Dimensions of economic dynamism	Indicator	Time frames	Geographic level ²	Technical notes	Data source	References
Demographics	Population growth	2005–15	County	Percentage change in population	U.S. Census Bureau’s Population Estimates program	Kotkin, J. (2014); Kodrzycki, Y.K. and Muñoz, A.P. (2013); Petrakos, G., Arvanitidis, P.A., and Pavleas, S. (2007)
		2014–15				
	Change in migration ratio	2005–15	County	Percentage point change in the ratio of in- to out-migrants	Internal Revenue Service’s Statistics of Income	
		2014–15				
Economics	Change in employment ³	2005–15	County	Percentage change in the number of employed individuals	U.S. Bureau of Labor Statistics: Quarterly Census of Employment and Wages	Kodrzycki, Y.K. and Muñoz, A.P. (2013)
		2014–15				
	Change in income equality (GINI)	2008–15	County	Inverse of the change in the Gini coefficient	U.S. Census Bureau’s American Community Survey 2006–10 5-year estimates and 2014 and 2015 1-year estimates	Cingano, F. (2014); Nord, S. (1980); Persson, T. and Tabellini, G. (1994); Clarke, G. (1995)
		2014–15				
	Change in poverty rate	2007–15	County	Inverse of the percentage point change in poverty rates	U.S. Census Bureau’s American Community Survey 2005–09 5-year estimates and 2014 and 2015 1-year estimates	Kodrzycki, Y.K. and Muñoz, A.P. (2013)
		2014–15				

² The geographic level indicates the lowest geographic area from which the data have been drawn before aggregating to create measures for metro or micropolitan areas. The data were adjusted for any metropolitan statistical area boundary changes that have occurred, to allow for a comparison over time.

³ Change in employment is a new variable in this version of the index. It replaced two indicators from version 1.0, change in labor force and change in jobs. This change was made because the indicators used previously were taken from metropolitan level data sources.

	Change in median household income	2007–15 2014–15	County	Percentage change in median household income, adjusted to 2015 dollars	U.S. Census Bureau’s American Community Survey 2005–09 5-year estimates and 2014 and 2015 1-year estimates; U.S. Bureau of Economic Analysis NIPA table 1.1.4	Erickcek, G. and McKinney, H. (2006); Kotkin, J. (2014)
Human and Social Capital	Change in educational attainment ⁴	2007–15 2014–15	County	Percentage point change in the share of the population that is aged 25 years and over with a bachelor’s degree or higher	U.S. Census Bureau’s American Community Survey 2005–09 5-year estimates and 2014 and 2015 1-year estimates	Barrow, R. (1991); Erickcek, G. and McKinney, H. (2006); Kodrzycki, Y.K. and Muñoz, A.P. (2013)
	Change in startup rate ⁵	2008–13 2012–13	Metropolitan and micropolitan area	Percentage point change in the share of new out of total business establishments	U.S. Census Bureau’s Statistics of U.S. Businesses	Grant Thornton (2014); Hughes, D., Mallory, K., and Szabo, M. (2005)
	Change in per capita nonprofit revenue ⁶	2005–15	County	Percentage change in per capita revenue of nonprofits (adjusted to 2015 dollars) that file a Form 990	Internal Revenue Service’s Exempt Organizations Business Master File; The Urban Institute, National Center for Charitable Statistics	Saxton, G. and Benson, M. (2005); Whiteley, P. (2000)
		2014–15				
Infrastructure	Change in	2005–15	County	Percentage change in	U.S. Census Bureau’s County	Strauss, J. (2013); U.S.

⁴ Change in educational attainment has been modified in the new version of the index. In version 1.0, this indicator measured the share of population 25 years and over with some college or more. The new indicator measures the percentage point change in the share of the population that is aged 25 years and over with a bachelor’s degree or higher. The latter is a more commonly used measure, for instance, in [reports](#) generated by the U.S. Department of Education’s National Center for Education Statistics. The previous measure gives us less information on the exact educational attainment of these individuals (they could be close to having achieved an associate’s degree, or they could have taken just a few classes), or on the value of this attainment to employers. This group also comprises a large section of those over 25 years old across the country: 21.1 percent, according to the 2011–15 American Community Survey. Comparatively, this group is almost as large as those 25 years and over with a bachelor’s degree or higher: 29.8 percent. It is thus safer to state that cities with higher shares of residents with bachelor’s degrees or higher have a more highly educated populace than stating that cities with larger shares of “some college degree or higher” do. Finally, using percentage point rather than percentage change in the educational attainment variable smooths out substantial variation associated with changes in smaller denominators.

⁵ Change in startup rate has been modified in the new version of the index. In version 1.0, this indicator measured the growth ratio of new firms as a share of all firms at the metropolitan level. The new indicator measures the percentage point change in the share of new out of total business establishments at both the metro and micropolitan levels. This change was made in order to include micropolitan areas in the index.

⁶ Change in per capita nonprofit revenue is a new component of the index. The new indicator was added as a proxy for “social capital” based on evidence in the literature that social capital is important for economic growth (Whiteley, 2000).

	building permits	2014–15		building permits	Business Patterns	Census Bureau (2015)
	Change in principal city population density ⁷	2009–15	City/census designated place	Percentage change in the population divided by the land area of the principal cities	U.S. Census Bureau’s 2010 Census and 2005–09 and 2011–15 American Community Survey 5-year estimates	Kodrzycki, Y.K. and Muñoz, A.P. (2013)
	Change in commuting ratio	2005–14	City	Percentage point change in the ratio of in-commuters to out-commuters into an area’s principal cities	U.S. Census Bureau’s Longitudinal Employer Household Dynamics (LEHD) program: On the Map	Goetz, S.J., Han, Y., Findeis, J.L., and Brasier, K.J. (2010)
		2013–14				
	Change in business vacancy rate ⁸	2010–15	Census tract	Percentage point change in the business vacancy rate: vacant business properties divided by total business properties	U.S. Department of Housing and Urban Development Office of Policy Development and Research; U.S. Postal Service Vacancy Data	Rosen, K. (2011)
		2014–15				

Literature Review

In international development literature, economic dynamism is often described as a process of structural transformation or analogous with the “creative destruction” that precedes and accompanies economic growth (Arvanitidis and Petrakos, 2011; Elert, 2014). Some scholars have argued that knowledge is at the center of economic processes and that therefore knowledge is the main engine for long-term economic growth (Petrakos et al., 2007). The authors define economic dynamism as the potential of a place to generate and maintain high rates of positive economic performance due to its knowledge capacity. Arvanitidis and Petrakos (2011) constructed an indicator for economic dynamism based on human capital, innovation ability, information access, and economic performance. Their index for assessing and comparing place-based economic dynamism includes elements of both infrastructure and economic performance.

In studies that focus on subnational jurisdictions, such as states or metro areas, economic dynamism is defined most often in terms of “innovation” in the private sector context. Metrics such as business formation patterns, initial public offerings, relative share of jobs in gazelle firms, patents, industrial makeup, and share of employment in knowledge-intensive firms provide benchmarks for place-based economic dynamism. Grant Thornton (2014) describes economic dynamism as being based on the quality of growth, where growth contributes to local economic value. In addition to the innovation indicators referenced above, Grant Thornton’s index also includes demographic, economic, and infrastructure indicators. More recent work from the Economic Innovation Group (2017) defines economic dynamism as the rate and scale of creative destruction, where an economy’s resources are reallocated across firms and industries according to their most productive use.

⁷ In the calculation of property density for Macon, Georgia, we used the population and land area of the county as a proxy for the city because of an annexation in 2012 that affected the city’s boundaries.

⁸ Change in business vacancy rate is a new component of the index, replacing the transportation accessibility proxy from version 1.0. This change was made because of feedback from peers that business vacancy rates are a better proxy for the financial health of built infrastructure in a city than workers owning a car.

We define economic dynamism as *churning* in a local economy that creates the potential to generate positive economic performance.⁹ The index provides a snapshot of the economic trajectory of small and mid-sized cities by measuring changes across time in a selection of indicators that have been shown to correlate with economic growth or development. Local leadership and regional circumstances act on economic dynamism in a particular community in order to realize positive economic performance.

Multiple qualitative studies of economic and community development at the local level have identified certain “soft factors” such as local leadership, vision, strategy, and regional context (among others) as being critical determinants of place-based economic performance (Erickcek and McKinney, 2006; Kodrzycki and Muñoz, 2009; Lambe, 2008). This index does not account for these soft factors, except insofar as they may be reflected in changing demographics, economic, human and social capital, and infrastructure.

Our index includes basic demographic and economic indicators. According to Petrakos et al. (2007), population growth and migration play a role in economic growth at the country level. Dynamism is necessarily related to new people moving into a market. Kotkin (2014) as well as Kodrzycki and Muñoz (2013) offer support for these variables at the subnational level. Other researchers link employment growth (Kodrzycki and Muñoz, 2013), median household income (Erickcek and McKinney, 2006; Kotkin, 2014), reductions in the rate of poverty (Kodrzycki and Muñoz, 2013), and reductions in the Gini coefficient (a measure of income distribution) (Cingano, 2014; Nord, 1980; Persson and Tabellini, 1994; and Clarke, 1995) to economic gains for the local economy.

Additionally, the index includes three measures of human and social capital. Barrow (1991) considers human capital a critical element for real per capita gross domestic product growth. Erickcek and McKinney (2006) cite evidence that a more educated workforce provides a competitive advantage, particularly to small and mid-sized cities. Studies tend to measure human capital by using proxies derived from the acquisition of education and training. This index includes a measure of the share of the population aged 25 years and over that have earned a bachelor’s degree or higher. Further, it includes a proxy for the entrepreneurial nature of the population, measured by the change in the ratio of new business establishments out of the total number of businesses in an area. Grant Thornton (2014) and Hughes et al. (2005) connect startup activity to economic growth. The index also includes a measure of the change in per capita nonprofit revenues as a proxy measure for the “social capital” of a place. Saxton and Benson (2005) support nonprofit activity as a measure of social capital and Whiteley (2000) provides evidence to support social capital as a driver of economic growth.

Finally, the index includes several measures or proxies for the trajectory of a city’s infrastructure, the first of which is change in the number of building permits issued within an area. The U.S. Census Bureau (2015) considers building permits a key economic indicator, which “allows analysis of economic performance and/or predictions of future performance,” and they are considered a “principal federal economic indicator” by the Office of Management and Budget. Strauss (2013) also shows that building permits are a significant leading indicator of economic growth or decline, are related to expectations on future economic activity, and are a robust tool for forecasting future job and income growth at the state level. Next, we measure changes in the population density of an area’s urban core, which Kodrzycki and Muñoz (2013) connect to the economic health of a local economy. Goetz et al. (2010) found counties that experience a greater degree of in-commuters experience higher economic growth rates than counties with greater shares of out-commuters. Growth in commuters that move into a small city are an indicator of the health and condition of local transit and transportation infrastructure, and of positive economic performance. Finally, Rosen (2010) attests to the relationship between economic health and commercial vacancy, which we use as a measure of the condition of commercial property in a given small or mid-sized city.

⁹ The term “churning” used in our definition is meant to imply changing rapidly without direction or known cause.

Methodology

To create the index, we extracted data on 400 metropolitan (with 50,000 to 500,000 population) *and* micropolitan (with an urban core of 10,000 to below 50,000 population) areas in 2015. Economic dynamism is measured by long- and short-term changes in 13 indicators. Data availability has determined the selection of specific time periods, but they generally correspond to the following ranges: 2005–15 for the long-term and 2014–15 for the short-term measure of change. Long-term indicators represent the trend of growth reflected by historical data and are used to adjust for extreme variations in a business cycle. For example, the long-term change in migration patterns is measured between 2005 and 2015, changes in commuting trends are measured between 2005 and 2014, and changes in the issuance of building permits are determined between 2005 and 2015. Short-term indicators are used to incorporate more recent performance and reflect changes over a 12-month period with the most recently available data. For example, migration and building permits are measured between 2014 and 2015 and commuters between 2013 and 2014.

Next, we normalized the outcomes for each variable, and expressed each variable's value in a range of 0 to 1. This process allowed us accurately to compare across a set of variables whose values varied substantially. For instance, the commuter ratio variable displayed large, occasionally double-digit percentage point shifts. On the other hand, changes in educational attainment or poverty rates were often measured in single-digit percentage points. Simply summing these variables would thus have caused a major imbalance, in which changes in commuting ratios would have overpowered most other variables. By expressing all values as a range between 0 and 1, we are controlling for this natural variation. A summation of these normalized values for all the variables produced a total index score as well as a ranking. Higher scores equate to higher levels of economic dynamism over the previous decade. Finally, to compare relative levels of economic dynamism, the 400 cities were grouped into quartiles based on their scores (high, medium-high, medium-low, and low).

References

- Arvanitidis, P.A. and Petrakos, G. (2011). "Defining Knowledge-Driven Economic Dynamism in the World Economy: A Methodological Perspective." In P. Nijkamp and I. Siedschlag (eds.), *Innovation, Growth and Competitiveness, Advances in Spatial Science*. Berlin, Heidelberg: Springer-Verlag.
- Barrow, R.J. (1991). "Economic Growth in a Cross Section of Countries." *The Quarterly Journal of Economics* 106(2), 407–443.
- Cingano, F. (2014). "Trends in Income Inequality and Its Impact on Economic Growth," OECD SEM Working Paper 163, www.oecd.org/els/workingpapers.
- Clarke, G. (1995). "More Evidence on Income Distribution and Growth." *Journal of Development Economics* 47.
- Economic Innovation Group. (2017). "Dynamism in Retreat: Consequences for Regions, Markets and Workers," February 6.
- Elert, N. (2014). "Economic Dynamism—Essays on Firm Entry and Firm Growth." Orebro Studies in Economics 25.
- Erickcek, G. and McKinney, H. (2006). "Small Cities Blues: Looking for Growth Factors in Small and Medium-Sized Cities." *Economic Development Quarterly* 20(3).
- Goetz, S.J., Han, Y., Findeis, J.L., and Brasier, K.J. (2010). "U.S. Commuting Networks and Economic Growth: Measurement and Implications for Spatial Policy." *Growth and Change* 41: 276–302.

- Grant Thornton. (2014). "Where Growth Happens: The High Growth Index of Places." Place Analytics Insight, Autumn 2014.
- Hughes, D., Mallory, K., and Szabo, M. (2005). "Factors Influencing Venture Capital Availability in Rural States: Possible Lessons Learned from West Virginia." Research Paper 2005-4, 51st Annual Meeting of the North American Regional Science Association International.
- Kodrzycki, Y.K., and Muñoz, A.P., et al. (2009). "Reinvigorating Springfield's Economy: Lessons from Resurgent Cities." Public Policy Discussion Paper 09-6, Federal Reserve Bank of Boston.
- Kodrzycki, Y.K. and Muñoz, A.P. (2013). "Economic Distress and Resurgence in U.S. Central Cities: Concepts, Causes and Policy Levers." Public Policy Discussion Paper 13-3, Federal Reserve Bank of Boston.
- Kotkin, J. (2014). "America's Fastest Growing Small Cities." *Forbes*, September 23.
- Lambe, W. (2013). "Small Town Development Approaches." UN Habitat for a Better Future, *The Global Urban Economic Dialogue Series*.
- Nord, S. (1980). "Income Inequality and City Size: An Examination of Alternative Hypothesis for Large and Small Cities." *The Review of Economics and Statistics* 64(2), 502-508.
- Persson, T. and Tabellini, G. (1994). "Is Inequality Harmful for Growth?" *The American Economic Review* 84 (3).
- Petrakos, G., Arvanitidis, P.A., and Pavleas, S. (2007). "Determinants of Economic Growth: The Experts' View." Working Paper 20, Dynamic Regions in a Knowledge-Driven Global Economy: Lessons and Policy Implications for the EU.
- Rosen, K. (2011). "State of the Commercial Real Estate Markets." Zell/Lurie Real Estate Center, Spring.
- Saxton, G. and Benson, M. (2005). "Social Capital and the Growth of the Nonprofit Sector." *Social Science Quarterly* 86 (1).
- Strauss, J. (2013). "Does Housing Drive State-Level Job Growth? Building Permits and Consumer Expectations Forecast a State's Economic Activity." *Journal of Urban Economics* 73(1), 77-93.
- United States Census Bureau (2015). "Measuring Our Economy: A Brief Overview of the Census Bureau's Economic Indicators." *Investigating Economic Indicators Webinar Series*, April 8.
- Whiteley, P. (2000). "Economic Growth and Social Capital." *Political Studies* 48.