THE NEW HAVEN REGION AFTER THE GREAT RECESSION: A SHIFT-SHARE ANALYSIS

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Abstract

Shift-share analysis is a decomposition technique that is commonly used to measure attributes of regional change. In this method, regional change is decomposed into expected and regional (idiosyncratic) parts. We use it here to scrutinize the performance of the greater New Haven region relative to the performance of the national economy. We do so for the years following the great recession: June 2009 through September 2016. The approach provides a sense of the comparative advantage or disadvantage of the various sectors in our region. The results are distressing: the greater new haven region is lagging and underperforming badly.

If it is to inform policy, the results here are likely to recommend generalized policies of broad applicability rather than targeted emphasis on a few seeming outperforming areas as appears to be the case with the current administration.

Keywords: *shift-share, comparative advantage, trends, and regional development*

You won't hire me because I don't have experience.
I don't have experience because you won't hire me.

Fat Bastard

Seven years hence and the New Haven region has barely recovered from the great recession. By any number of measures we are lagging the nation and we are lagging our neighbors.[1] What we didn't know, was the extent of our comparative disadvantage.

A shift-share analysis examines jobs growth performance.[2] It tells us how much of our employment growth (or lack thereof) is unique to us and distinct from what is to be expected based on national trends. Shift-share analysis is part of the standard regional analysis tool-kit and especially insightful for a small region such as the greater New Haven region. By virtue of our size we are less likely to be isolated from national trends. At the same time, we boast of several unique attributes that have historically kept Connecticut among the ranks of the high-performers, at least in terms of income-per-capita. Thus, by stripping away the sway of national influences we are capable of singling out our regional performance.

The results are eye-popping. We are lagging across ALL sectors relative to the rest of the nation. And when all our sectors are underperforming it is difficult to avoid concluding that the underlying problem is a generalized one.

The performance appraisal should be especially useful in this post-election reckoning. The analytical insights here should inform policy – especially to the extent that our regional performance resembles Connecticut at large. For instance, one could naturally conclude that the administration should curtail Connecticut's hasty focus on fostering and subsidizing specific clusters – be it biotechnology, health sciences, or financial groups. It suggests that the problem

1 *See, e.g.,* Federal Reserve Bank of New York, "New England Economic Indicators, Q3" (2016); Jungmin Charles Joo, "Introducing the State Economic Indexes (SEI)," *The Connecticut Economic Digest,* Vol. 21, No. 11 (November 2016).

2 *See*, Steven P. Lanza, "Connecticut Job Losses: Our Share of National Effects? Or Are We Shifting for Ourselves?" *The Connecticut Economy* (Spring 2004), for a shift-share analysis of Connecticut over the 1989-Q1 to 1992-Q4 period and the 2000-Q3 and 2003-Q3 period.

is a more generalized one: regulatory burdens, tax burdens, budget uncertainty –all impediments to growth and increased productivity.

The Greater New Haven Region

The region we examine is the New Haven NECTA (New England City & Town Area). This is the set of towns containing the contiguous urbanized area centered on the city of New Haven. It also includes the outlying towns that have a sufficient number of people commuting into the central towns. This definition includes the following 23 towns: Bethany, Branford, Chester, Cheshire, Clinton, Deep River, Durham, East Haven, Essex, Guilford, Hamden, Killingsworth, Madison, Meriden, Middlefield, New Haven, North Branford, North Haven, Old Saybrook, Orange, Wallingford, Westbrook, and West Haven. All data is obtained from FRED, the Federal Reserve Bank of St. Louis Economic database.[3]

The Analysis

Conventional shift-share analysis compares the performance of one region in relation to a benchmark. In this paper we compare New Haven county and its surrounding communities' job performance relative to the United States. In other words, we ask: how did we do relative to the nation at a whole? Our analysis looks at jobs broken down by sector over the period June 2009 through September 2016. June 2009 marks the end of the great recession that started in December 2007.

At its most elementary, the analysis allows us to interpret change in a particular economic variable – regional jobs in our case - as the sum of three components: (i) National Growth, (ii) Industry Mix, and a (iii) Regional Shift component. Succinctly,

3 https://fred.stlouisfed.org/

Actual Job Losses = (National + Industry Mix) + Regional Job Losses

The (National + Industry Mix) job losses constitute the expected job performance and thus a basis against which to compare our regional performance. To explain the analysis and results, let's take two sectors: Manufacturing and Education & Health Services, and look at them closely, by way of example. The formal shift-share model is explained in greater detail in an appendix to this report.

Nationally, employment in Manufacturing grew by 4.6 percent but declined by 4.2 percent in the New Haven region; there were 27,800 jobs in Manufacturing in the region in June 2009, when we start our analysis.

Education & Health Services increased by 16.3 percent nationally and 5.8 percent regionally; there were 71,700 jobs in this sector in the region at the outset of the examination period. Employment grew nationally by 10.77 percent.

The Components

The *National Growth rate component* is the one that reflects the "a rising tide lifts all boats" concept; that is to say, of the observed changes in our job performance, it estimates how much was due to the growth of the overall economy. In Education & Health Services we would have grown by 7,722 jobs [= 71,700*0.1077] if the national tide has raised our boat here in the greater New Haven region. In Manufacturing we would have grown by 2,990 job [=27,800*0.1077] again, our dividend from the general economic growth.

Some sectors grow or decline apart from what is happening nationally. The fortunes of the oil industry, for example, primarily impact Texas, North Dakota and the other oil producing states. The *Industry Mix component* measures the influence on our job performance on how our particular industry mix fared at the national level.

Manufacturing grew by 4.6 percent nationally. To arrive at the national Manufacturing-specific growth rate we subtract the national growth rate from the manufacturing growth rate [4.6% - 10.77% = -6.16%]. Applying this to the regional industry, we expected Manufacturing jobs to decline in the region by -1,712 [= 27,800*0.0616].

Education & Health Services grew nationally by 16.295 percent. Again, to arrive at the sector-specific growth rate we subtract the national growth rate from the sector growth rate [16.295% - 10.77% = 5.525%]. Thus, we expected the Education & Health Services sector to increase by 3,961 jobs [= 71,700*0.05525].

Last, is the *Regional Competitiveness* element of the analysis. This is the reveal, the "meat" of the analysis. It identifies the areas that did comparatively well – the silver-lining – one hopes. It identifies the sectors at which we have a comparative advantage. The component constitutes the balance of job losses or gains after the national and industry-mix component have been accounted for. The national and industry components are the Expected Jobs portion of the analysis. The regional performance is the residual.

Returning to our working example, Manufacturing declined by 4,200 jobs in the New Haven area. The national decline in Manufacturing accounts for 1,712 of those losses whereas the national rising tide would have resulted in an increase of 2,990 jobs. Thus, we would <u>expect</u> a gain of 1,278 jobs [= 2990 – 1712] as a result of national and industry trends. However, the difference between actual performance (-4,200) and what we expected (1,278) is -5,843 [= -4200 - 1278] jobs. That's on us. We fell short of the expected change by a whole lot of jobs due to something specific to us.

As to the second example, the Education & Health Services sector based on national performance should have been an increase of 7,720 jobs. The performance of the Education & Health Services industry at a national level accounts for 3,961 of those jobs. Which means that we

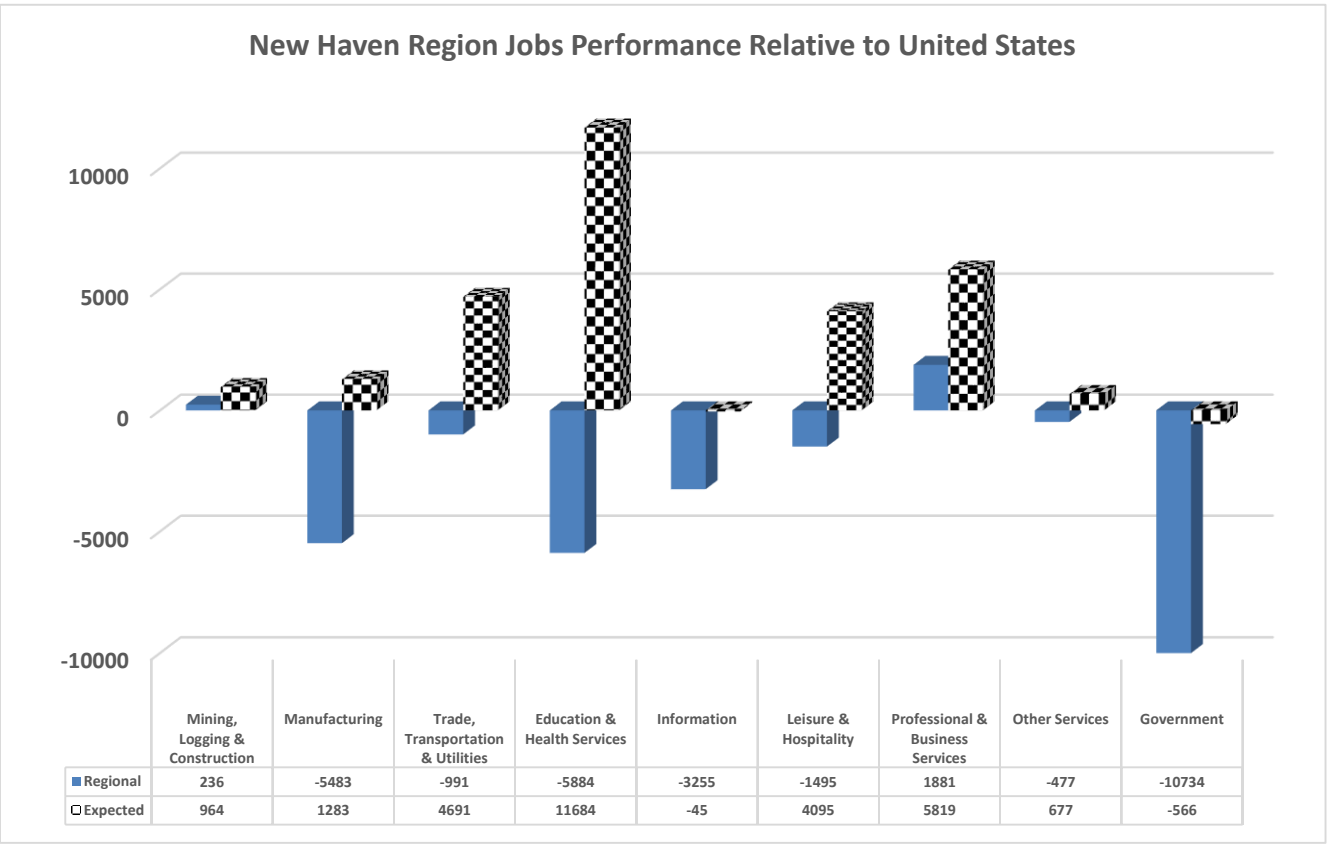
would expect a regional performance gain of 11,681 [= 7720 +3961] jobs. However, regionally, we accounted for 5,800 jobs. Which means that the balance of – 5,884 [=5,800 – 11,681] jobs, is on us. Again, there is something askew in our region.

The table below contains the Regional and the Expected apportionment of our actual employment performance over the period for all sectors.

Table 1

Sector	Expected	Regional
Mining, Logging & Construction	964	236
Manufacturing	1283	-5483
Trade, Transportation & Utilities	4691	-991
Education & Health Services	11684	-5884
Information	-45	-3255
Leisure & Hospitality	4095	-1495
Professional & Business Services	5819	1881
Other Services	677	-477
Government	-566	-10734
Net Total	28601	-26201

And here is a visual depiction of the same information.



	Mining, Logging & Construction	Manufacturing	Trade, Transportation & Utilities	Education & Health Services	Information	Leisure & Hospitality	Professional & Business Services	Other Services	Government
Regional	236	-5483	-991	-5884	-3255	-1495	1881	-477	-10734
Expected	964	1283	4691	11684	-45	4095	5819	677	-566

The telling feature of the figure is that the solid bars, representing our performance, is always lower than what is to be expected; for all sectors!

What do the Results Reveal?

First, some caveats. This is a static analysis. The technique examines change between the initial and final period without considering intra-period variation. It is susceptible to the period chosen; it is susceptible to the starting point selected; it is susceptible to the period length stipulated. It also ignores changes in sectoral structure, competitive intensity, and level of regional employment. However, our immediate interest lies not in establishing causal factors. Rather our focus is on a succinct understanding of the relative strengths of our region – especially in the years following the great recession. This information is vital for purposes of recommending purposeful allocation of resources.

Nonetheless, we did conduct a sensitivity analysis to determine whether our takeaway varies with an alternative starting point and for a different length of period. The variation is de minimis; the results hardly change the broad understanding found in the analysis presented here. We did worse than expected for *every* sector; a shocking outcome. Our best performers Professional & Business Services and Education & Health Services did remarkably poorly when compared to what was expected. We are lagging badly across the board when compared to the nation as a whole. And more broadly, the general outcome is points to a generalized problem in our state.

Appendix

The analysis entails the casting of a change in a particular economic variable as the sum of three components. Here we focus on a change in employment in sector i between year 0 and year *n*:

$$\Delta E_{i0} = NG_i + IM_i + CS_i$$

Where ΔE_{i0} is net change in employment in sector i in year 0. NG_i is the National Growth component of the realized change in employment in sector i. IM_i is the Industry Mix component in sector i and CS_i is the Competitive Shift component in sector i.

The National Growth component NG_i is computed as the product of employment in sector i for the beginning year (year 0) times the national growth rate:

$$NG_i = E_{i0} \text{ x (national growth rate)}$$

The National Growth rate component establishes how much employment would have changed in New Haven region had local employment mirrored national growth rates. A calculated positive total across all sectors suggests that New Haven county had faster growing industries; negative value total suggests the opposite – a composition of industry that collectively grew at a slower rate than the national rate. The Industry Mix component IM_i is calculated by multiplying local sector i employment in the beginning year (Year 0):

$$IM_i = E_{i0} \text{ x (local sector i growth rate)} - E_{i0} \text{ x (national growth rate)}$$

The industry mix component measures the influence of the mix of fast (or slow) growing industries in New Haven region employment compared to that of the nation as a whole net of any nation-wide economic effects. The Competitive Shift component is computed by multiplying local employment in sector i in the beginning year (year 0), by the difference in the local growth rate in sector i and the national growth rate in sector i:

$$CS_i = E_{i0} \text{ x (local sector i growth rate} - \text{national sector I growth rate)}$$

The competitive shift component of local employment change accounts for the gain (or loss) in local employment from an industry growing faster (or slower) that the same industry nationally. This reflects idiosyncratic area conditions that account for the differential performance with industry results at the national level. After results for all sectors are calculated they are

summed to determine the total effect for each component. Thus, the total change in employment is equal to the sum of the sectoral change for each component.

$$\Sigma(E_i) = \Sigma(NG_i) + \Sigma(IM_i) + \Sigma(CS_i)$$