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THE REGIONAL ECONOMY

OF UPSTATE NEW YORK

How Volatile Is New York State's Economy?

Just as economic growth is of considerable importance to a region, stability also plays a significant role. Regional volatility can be a serious problem, creating uncertainties and distress for businesses, households, and local governments. An unstable economy, for example, can cause businesses to expand and contract, creating precarious employment conditions for workers. Economic volatility can also produce uncertainties for state and local governments, making it difficult for them to assess fiscal conditions.

Accordingly, national stabilization efforts—such as the Federal Reserve's implementation of monetary policy and the federal government's use of fiscal policy—are often the subject of a great deal of analysis. Yet even though such efforts may stabilize the economy as a whole, they are unlikely to affect every region equally. This is true because regions often have their own destabilizing forces—such as the rapid growth or decline of a dominant employer or adverse weather—that may influence their economy in various ways. Thus, regional volatility warrants analysis in its own right.

In this issue of *The Regional Economy of Upstate New York*, we measure employment volatility in New York State. We find that although New York has demonstrated slow employment growth during the postwar period, its diverse industry composition has helped make it the most stable economy in the nation. We also examine the extent to which regional volatility is due to national, as opposed to local, economic fluctuations. This examination enables us to compare the volatility of New York's major metropolitan areas with a sampling of U.S. cities. Here, we find that New York's metro areas were relatively stable during the postwar period, but some areas have exhibited a fair degree of volatility in more recent years.

National Volatility

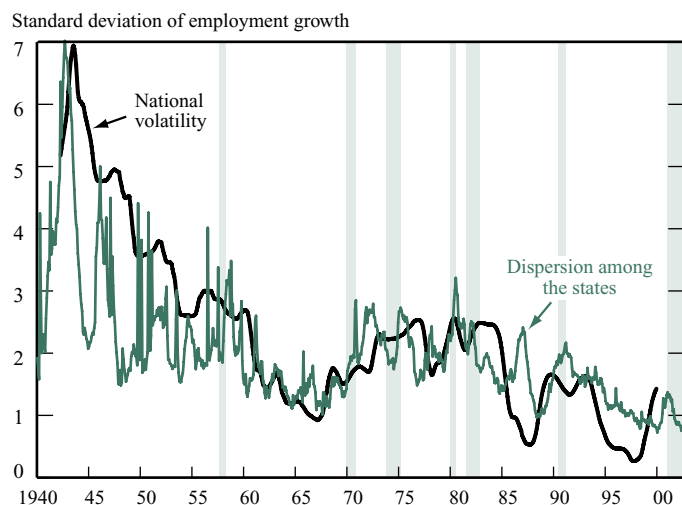
The U.S. economy is less volatile today than it has been in the past. Recessions tend to be shorter, expansions longer, and output and employment are generally more stable.

Researchers have quantified and explained this increased stability in a variety of ways.¹ One view is that the economy has shifted production and employment away from the volatile agriculture and manufacturing sectors toward the more stable services sector. Although this shift has indeed occurred, greater stability may not necessarily have resulted. The manufacturing sector today is more stable, while parts of the services sector remain relatively volatile. Another reason often cited is that companies now maintain better inventory control. Because of new technology and management techniques, companies can predict demand more accurately, monitor and control inventory more effectively, and reduce economic swings that follow from inventory problems. Others argue that monetary and fiscal policies may have become more effective in smoothing the business cycle, particularly since the Great Depression. Finally, economic shocks such as war or significant oil-price increases have occurred less frequently, and with less severity, in recent years.

These theories suggest that economic volatility can be measured in different ways. Although many studies focus on output volatility, we concentrate on volatility in employment growth—in part because of the difficulties obtaining output measures for regional economies. Volatility in employment growth is also an appropriate focal point because of its direct effect on the population. Thus, the stabilization of employment is often a primary goal of local policymakers.

To measure employment volatility, we examine fluctuations in job growth based on the standard deviation—a statistical measure that shows how job growth rates vary in relation to their mean rates during a given period.² Like output growth volatility, employment growth volatility declined steadily from the 1940s to the 1960s, but it has since moved up and down, often in tandem with the business cycle (Chart 1).

Chart 1
Employment Growth Volatility in the U.S. Economy



Sources: U.S. Department of Labor; authors' calculations.
 Notes: The shading indicates postwar national recessions; national volatility is calculated as the average standard deviation of five-year rolling windows, plotted at the midpoint of the interval; state dispersion is the standard deviation among all states.

State Volatility

Considered as a whole, the U.S. economy has become more stable in terms of the differences in job growth between the states. These differences have become smaller as state employment growth rates have converged (Chart 1).

Yet while this convergence in employment growth has taken place, important differences remain in the magnitude of volatility that states experience. The most common explanation for regional volatility differences is the variable mix of industries within regions. Areas with a large percentage of employment in relatively few dominant industries tend to experience a high degree of volatility. As similar businesses expand and contract together, the magnitude of the combined effect on the local economy is likely to be great. If the dominant industry is particularly volatile, such as the energy industry, this effect can be heightened. In contrast, regions with diverse industries may be insulated against ups and downs in a particular industry, similar to the way a diversified portfolio protects investors from sector-specific risk.³

The different levels of volatility in the states are shown in Table 1. Many of the most volatile states, such as Alaska and Wyoming, have a specialized economy highly concentrated in a natural resource industry, typically a highly volatile sector. Less volatile states include the three mid-Atlantic states, with New York being the least volatile. These states are relatively diverse in their industry composition.⁴

In addition to being among the least volatile, the mid-Atlantic states have tended to grow very slowly, with New York being the slowest growing state during the postwar period.⁵ It may be tempting to associate slow growth with low volatility, since areas with little growth may be more likely to experience little decline, and areas with rapid growth may have farther to fall during economic contractions. However, this is not necessarily

Table 1
State Growth Volatility: 1955 to Present

State	Volatility	Percent National*	Growth Rank	State	Volatility	Percent National*	Growth Rank
Alaska	3.8	6	4	Ariz.	1.9	54	15
Nev.	3.2	36	1	Maine	1.9	62	38
Mich.	3.1	77	43	Utah	1.9	43	6
Ark.	2.7	44	2	Colo.	1.8	36	5
Wyo.	2.6	7	27	Wisc.	1.8	84	33
N.H.	2.5	59	17	Calif.	1.8	70	13
Ind.	2.5	80	39	Iowa	1.8	58	37
W. Va.	2.4	38	48	Md.	1.8	67	24
Wash.	2.4	51	16	Minn.	1.8	80	23
Fla.	2.3	50	3	Ill.	1.8	81	46
R.I.	2.3	60	47	Mo.	1.8	83	41
Ore.	2.3	66	19	Ala.	1.8	73	31
Ohio	2.2	89	45	Kans.	1.7	49	36
Miss.	2.1	50	20	Tex.	1.7	47	8
Del.	2.1	48	22	N. Mex.	1.7	23	7
Vt.	2.1	69	28	S. Dak.	1.7	26	26
Idaho	2.1	25	9	Hawaii	1.7	17	14
Tenn.	2.1	73	21	Mont.	1.7	25	35
Ga.	2.1	79	10	Pa.	1.6	82	49
S.C.	2.1	72	18	Okla.	1.6	25	29
La.	2.0	30	32	Va.	1.6	69	11
Ky.	2.0	69	25	N.J.	1.6	75	40
Conn.	2.0	73	42	Nebr.	1.5	45	34
Mass.	2.0	59	44	N. Dak.	1.4	7	30
N.C.	2.0	76	12	N.Y.	1.4	65	50

* Volatility attributable to national fluctuations.

Sources: U.S. Department of Labor; authors' calculations.
 Notes: Volatility is calculated as the average standard deviation of five-year rolling windows; percentage attributable to national fluctuations is the R-squared from a regression of national employment growth on local employment growth; growth rates are calculated as monthly year-over-year percentage changes; rankings are based on the average of all years' employment growth rates; Michigan data begin in 1956, Hawaii data begin in 1958, and Alaska data begin in 1960.

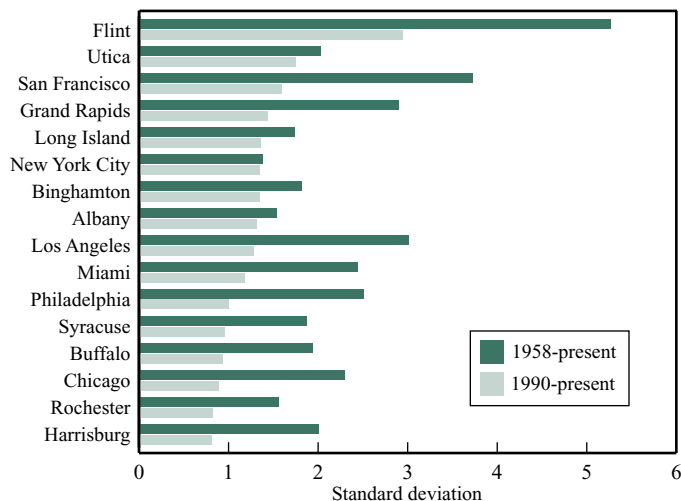
the case. Although there is a positive association between growth and volatility, it holds for a few of the fastest growing states only: four of the five fastest growing states were indeed among the ten most volatile. Aside from them, however, there is no broad correlation between volatility and growth.⁶ West Virginia, for example, has grown very slowly, but is among the most volatile states, while Texas and New Mexico are among the top ten fastest growing states, but they rank low in volatility.

National and Local Sources of Volatility

Just as volatility differs among regions, so does its source. Volatility may be influenced by national or local economic conditions. If a national economic expansion leads to more automobile purchases, for instance, a local economy dependent on automotive production will likely see an increase in activity. In contrast, if an economy relies on a local industry not directly tied to national economic conditions—for example, agriculture dependent on local growing conditions—volatility may be localized. In other cases, an economy may have localized volatility initiated by national economic conditions, but the effect may persist and thus become local in character. Buffalo, for example, saw its steel industry decline in the 1980s as a result of a national downturn. The local industry then declined further because of competition from national and international steel producers. These events affected many other parts of the local economy because of the steel industry's dominance in the region, and ripple effects followed throughout the area for a long time.

Chart 2

Employment Growth Volatility in Selected U.S. Metro Areas



Sources: U.S. Department of Labor; authors calculations.

Notes: Volatility is calculated as the average standard deviation of five-year rolling windows; growth rates were ignored during years in which metro area definitions were changed by the Bureau of the Census.

Statistical analysis can reveal the extent to which variability in a regional economy is due to national economic fluctuations rather than local phenomena. In this study, we divide the sources of volatility into those two components, measuring the percentage of the variation in local employment growth that coincides with movements in national employment growth, with the remaining percentage attributable to localized sources.⁷

The percentage of state volatility attributable to national economic fluctuations is shown in Table 1. States with low values and a large percentage of localized variability include Alaska and Wyoming. Both are highly dependent on the very volatile energy industry—which does not necessarily move in step with the U.S. economy. Hawaii also experienced a high percentage of localized volatility, which is not surprising given its reliance on foreign tourism. The Dakotas and Montana—among the most stable economies—experienced a high degree of localized volatility, explainable by their concentrations in the volatile ranching and natural resource industries. The table also reveals that states with a high degree of volatility owing to national economic fluctuations include many of the Great Lakes states. These economies are closely tied to manufacturing, particularly the auto industry, and are therefore closely tied to fluctuations in the general economy. New York is in the middle of the pack, with about 65 percent of the fluctuations in its employment growth volatility attributable to national swings.

New York State Volatility and Its Sources

New York, with the most stable state economy, likewise comprises metro areas that have experienced relatively low volatility. Volatility levels for these areas from 1958 to 2002, together with a comparative sample of cities, are presented in Chart 2.⁸ The chart reveals that Utica, Buffalo, Syracuse, Binghamton, and Long Island have displayed higher volatility

than New York City, Albany, and Rochester. These differences are not very large, particularly when compared with more volatile areas. Flint, Michigan, for example, had a heavy dose of employment growth variability, much of it occurring in the 1950s, 1960s, and 1970s.

Most areas in our study showed a significant decline in volatility during the 1990s. Then from the 1990s to the present, Rochester, Buffalo, and Syracuse experienced relatively low volatility, while Utica was more volatile. Downstate, Binghamton, and Albany were in-between.

The volatility of some New York metro areas is explained primarily by national economic fluctuations, while other areas experienced more localized volatility (Table 2):

- Buffalo’s volatility is not very localized, as more than 70 percent of its variability is explained by national economic fluctuations. Almost two-thirds of the variability in Syracuse’s employment growth is similarly accounted for by the national economy, while nearly 60 percent of Rochester’s employment growth volatility is associated with national conditions.
- Conversely, Albany’s variability is highly localized due to its reliance on state government. New York City’s employment growth has a low association with the national economy too, which we attribute largely to the city’s uniquely high volatility in the 1960s and 1980s.⁹ Long Island’s economy is closely linked with New York City’s, so its volatility is approximately the same.
- The smaller metro areas of Utica and Binghamton fall in the middle of these two groups, with about 50 percent of their volatility explained by national economic fluctuations.¹⁰

Conclusion

The extreme importance of economic stability leads federal policymakers to undertake many efforts to smooth the national business cycle. Their efforts, however, do not affect all areas equally. It is therefore necessary to understand regional as well as national volatility, and volatility measures are a useful tool for achieving that objective.

Table 2
Employment Growth Volatility of New York Metro Areas

Area	Percentage Explained by National Economy
Buffalo	71
Syracuse	64
Rochester	58
Utica	52
Binghamton	47
Long Island	43
New York City	38
Albany	37

Sources: U.S. Department of Labor; authors’ calculations.

Notes: The value for New York State as a whole is roughly 65 percent. These percentages are the R-squareds from a regression of national employment growth on local employment growth (monthly year-over-year percentage changes).

Using measures of employment growth volatility, we find that New York has been the most stable economy in the country during the postwar period, although the state has demonstrated the slowest employment growth. Regional patterns within the state show similarly low volatility. Nevertheless, Utica did experience a high level of volatility compared with Rochester, Buffalo, and Syracuse, while Long Island, New York City, Binghamton, and Albany were in-between.

For the state as a whole, about 65 percent of employment growth volatility is attributable to fluctuations in the national economy. Buffalo, Syracuse, and Rochester had a large percentage of volatility explained by national movements, while New York City, Albany, and Long Island experienced more localized volatility. About half of Utica's and Binghamton's volatility is explained by national economic conditions.

Finally, it is worth noting that explanations for differences in regional volatility often focus on differences in industrial composition, but the reasons are likely more complex. In reality, however, precious little research has been conducted on this issue. Future work examining the causes of these differences in greater detail would therefore be of considerable value.

Notes:

¹ See, for example, Margaret McConnell and Gabriel Perez-Quiros, "Output Fluctuations in the United States: What Has Changed Since the Early 1980s?" *American Economic Review* 90, no. 5: 1464-78, 2000.

² Specifically, we use rolling windows where the standard deviation is computed for a five-year period and then successively moved forward each month.

³ See Richard Deitz, "Regional Diversity, Volatility, and Economic Growth," paper presented at the American Real Estate and Urban Economics Association annual meetings, January 4, 2001.

⁴ See "Economic Diversity and New York State," *The Regional Economy of Upstate New York*, Federal Reserve Bank of New York, Buffalo Branch, Winter 2002.

⁵ Although this statement is based on the average of each year's employment growth, it also holds true for total employment growth compared among the states (where data are available; data do not date back to 1955 for some states).

⁶ In economic terms, the Pearson correlation coefficient is positive and significant for all states, but when the fastest growing four states are removed, the correlation coefficient becomes negative and not statistically significant.

⁷ Specifically, this percentage is the R-squared from a regression of national employment growth on local employment growth (monthly year-over-year percentage changes).

⁸ Data are available for New York's metro areas beginning in 1958; metro areas for comparison were chosen in part by data availability.

⁹ In fact, more than 70 percent of New York City's volatility was explained by fluctuations in the U.S. economy in the 1990s.

¹⁰ Many metro area economies experienced a percentage of volatility due to national economic fluctuations that was lower than the 65 percent value for New York State as a whole. This is because the aggregate of all local economies may exhibit quite different behavior than the sum of its parts.

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The views expressed in this newsletter are those of the authors and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System.