FRBSF WEEKLY LETTER

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# Regional Economic Stability

State and local government officials often want to improve economic performance by changing their region's industry mix. For example, a state or local government might offer tax abatements to relocating firms in an industry that is expected to enhance the region's economy. However, it often is unclear just which industries improve the region's economy. Specializing in a small number of fast-growing industries may make rapid economic growth possible, but it also makes the region's economy vulnerable to downturns in the industries in which it specializes. Thus, a specialized regional economy may be relatively volatile. If economic diversity reduces volatility, then a diverse industrial mix might be a desirable goal for regional economies.

Understanding the relationship between regional economic volatility and economic growth also provides useful insights regarding a region's optimal industry mix. If, for example, regional economies face a tradeoff between stability and growth, then they may be willing to accept greater volatility in order to achieve more rapid growth. However, if no such tradeoff exists, then stability would be a desirable goal regardless of the region's aspirations regarding economic growth.

This *Letter* evaluates these relationships by attempting to draw an analogy with financial portfolio theory. The analysis shows that economic diversification tends to reduce one component of regional economic instability. However, there does not seem to be any tradeoff between stability and growth, suggesting flaws in the analogy between risk and return in financial markets, on the one hand, and instability and growth in regional economies, on the other.

**Lessons from financial markets**

Economists have addressed the relationships between diversity and stability and between stability and return in the context of financial markets. In a financial portfolio, diversification spreads risk among various assets. As long as the returns to the various assets do not move in complete synchrony, changes in the returns to one asset are offset by changes in the returns to other assets. The benefits of diversification are greatest when the returns of the assets move in opposite directions. However, since the returns to most financial assets are associated with general economic and financial conditions, their returns tend to move in the same direction.

Thus, investors cannot completely eliminate risk from their portfolios. The portion of risk that can be diversified away is referred to in the financial literature as *nonsystematic* risk, and the remaining, nondiversifiable, risk is called *systematic* risk.

Not all assets or portfolios face the same degree of systematic risk, and the market adjusts returns to compensate for varying degrees of such risk. Investors generally prefer the least possible risk at any given level of expected return, so prices for assets that face little systematic risk are bid up (thus reducing their total expected returns) relative to prices of assets that offer the same yield with more systematic risk. In this way, investors who are willing to accept more nondiversifiable risk can expect to receive greater returns. Thus, the financial market bidding process results in a tradeoff between systematic risk and return.

**Implications for regional economies**

In the finance literature, there is no disagreement that diversification can reduce volatility. The logic of the diversification strategy is compelling for regional economies as well. This result follows from the mathematics of risk-spreading alone, and does not depend on the particular economic or statistical characteristics of a region's industries.

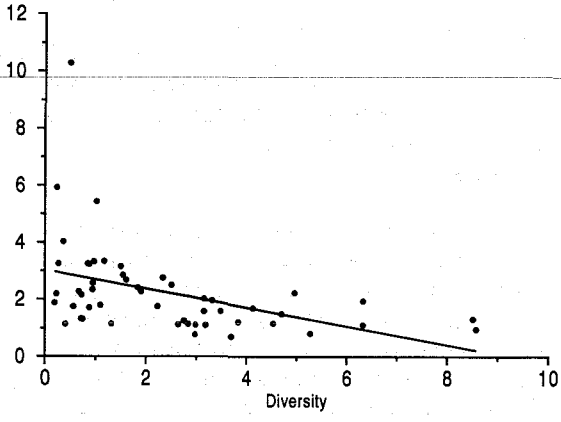
Nevertheless, previous evidence regarding the relationship between regional economic diversification and regional economic instability is mixed. Studies of diversity and volatility in regional economies have used a variety of measures to capture the relevant variables, but all have suffered from a common conceptual

problem: they have examined the relationship between economic diversity and *total* instability.

The analogy with financial portfolios, however, suggests that economic diversification should reduce only the diversifiable component of regional economic volatility, the portion that is *not* associated with conditions in the broader economy. Since diversity is expected to reduce only diversifiable, or nonsystematic, volatility, it is not surprising that previous studies of the relationship between diversity and total volatility have yielded conflicting results.

Empirical tests of the relationship between diversity and diversifiable volatility that are analogous to those in the financial literature reveal that states with more diverse economies tend to have less nonsystematic volatility. Chart 1 plots the relationship between a state's economic diversity (measured using the extent of deviation between state and national industry mix) on the horizontal scale and a measure of its nonsystematic volatility (measured as the standard deviation in the state's growth rate *not* explained by national variations) on the vertical scale. In the Chart, states that have relatively specialized economies (those on the left-hand side of the horizontal axis) tend also to be higher on the vertical scale, indicating that these states' economies have relatively more diversifiable volatility. Statistical tests reveal that this relationship is highly statistically significant. This tends to confirm the hypothesis, based on the portfolio literature, that more diverse regional economies have less nonsystematic volatility.

**Chart 1**




**Risk-return relationships?**

Although a relationship between diversity and nonsystematic volatility appears to hold for states' economies, a relationship between growth and the remaining, nondiversifiable, component of volatility may not hold. For financial assets, a tradeoff between systematic risk and return holds because the operation of financial markets ensures that investors are compensated through higher expected returns for accepting higher systematic risk. This suggests that for such a relationship to hold for regional economies, a market, or market-like mechanism, is necessary. Under such a mechanism, risk-averse states would accept greater volatility only if they received compensation in the form of higher growth. However, several characteristics of regional economies make this unlikely.

Most importantly, a region's officials are limited in the extent to which they can "trade" in a "market" for industries the way investors can trade in the market for financial assets. For one thing, no individual has the authority to change the industrial composition of a region's economy that an investor has over a portfolio. Local residents or decision makers are likely to disagree about what industry mix the region should move toward.

Moreover, although state and local governments often compete with each other to attract industries to their regions, using such tools as tax incentives, infrastructure investments, and zoning variances, the "market" is thin and adjustments are slow. These features contrast sharply with the high degree of liquidity and rapid adjustments that characterize financial markets.

In addition, whereas an asset earns the same return regardless of whose portfolio it is in, a given industry may perform differently depending on where it is located. Differences in regions' natural resource endowments and transportation infrastructures suggest that conditions in a given region will generally favor production of some goods over others. Growth will also vary among regions because the health of a region's economy affects the demand for goods that are locally produced and consumed.

These differences between assets in a portfolio and industries in a regional economy suggest

that a tradeoff between nondiversifiable volatility and growth may not be observed for regional economies. Thus, it is not surprising that no such relationship is evident in empirical tests of this hypothesis. Chart 2 plots nondiversifiable volatility (measured as the standard deviation in the state's growth rate that is explained by national fluctuations) on the horizontal axis and growth (average annual growth rate) on the vertical axis. There is no apparent relationship between these two variables in the Chart, and statistical tests confirm that the correlation between them is small in magnitude and is not statistically significant.

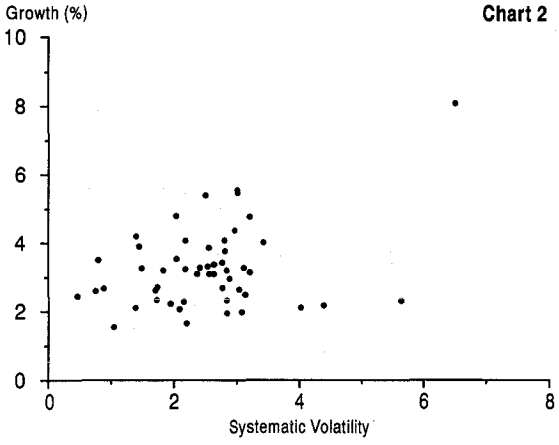



**Chart 2**

## Similarities and differences

This *Letter* has reported evidence of a strong negative relationship between diversity and diversifiable volatility. That is, states that have more diverse economies tend to experience less nonsystematic volatility. This observation, which parallels the portfolio literature, reflects the benefits of risk-spreading that arise as regional economies diversify.

However, the correlation between growth and systematic volatility (that which cannot be diversified away), which would exist if the portfolio analogy holds, does not occur for regional economies. This result is not surprising, since the mechanism by which the tradeoff occurs in financial markets does not exist for regional economies. The financial market relationship between systematic risk and return in portfolios occurs because risk-averse investors will not hold high-risk assets unless they expect to be rewarded with higher returns. Regional economies, in contrast, lack a single omnipotent decision-maker, and the "market" for industries is illiquid and slow to adjust.

The implications for regional policy makers are relatively straightforward: greater economic diversity does improve the stability of a region's economy. Thus, other things equal, diversifying a region's industrial mix would tend to make the region's economy more stable. However, the instability associated with fluctuations in the national economy remains a significant source of instability for most states. It cannot be diversified away and it is not compensated by higher growth rates.

Of course, regions may pursue other economic goals, such as rapid growth, instead of or in addition to seeking economic stability. If a region has a natural resource, or a concentration of activity that provides it with a comparative advantage in a particular industry, then pursuing that advantage may be a better overall strategy than a pure diversification strategy would be. By the same token, however, the evidence presented here suggests that a region with an industry mix that yields strong growth need not "pay" for that rapid growth by accepting greater volatility.

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