WELLS FARGO

Special Commentary — June 1, 2023

The "Secret Sauce": The LGBTQ+ Community & State Economic Growth Rates

Summary

- We analyze the effect that the LGBTQ+ community may have on economic growth rates in the 50 states and the District of Columbia. We start by defining a ratio of LGBT representation, which measures the degree of over-representation or under-representation of the LGBT population of each state relative to its share of the overall U.S. population. We then calculated average per annum growth rates of real gross state product (GSP) for each state over the 2010-2019 economic expansion.
- We find that GSP growth is positively correlated with LGBT representation. That is, states with higher concentrations of people who identify as gay, lesbian, bisexual or transgender had higher rates of GSP growth over the past decade, everything else equal. Of course, this is a rather simple analysis. There clearly are many factors that determine GSP growth rates other than LGBT representation.
- In a more elaborate statistical analysis, we regressed GSP growth rates on employment growth rates between 2010 and 2019, median wage rates, unemployment rates, corporate tax rates and our LGBT representation ratio. Controlling for these other variables, there is a statistically significant positive relationship between GSP growth and LGBT representation at the 90% level of confidence.
- LGBT individuals tend to be younger and more highly educated than the average American. Could our LGBT representation ratio simply be measuring a state's average level of educational attainment and age? We ran another regression that not only included all the variables in our first regression, but it also included variables measuring educational attainment and median age in each state. Remarkably, the LGBT representation ratio remained statistically significant at the 90% level of confidence.
- What can explain the positive association between LGBT representation and GSP growth? We focused on two potential factors. Our analysis found that average GSP growth rates in 2010-2019 are positively correlated with state rates of business formation as well as per capita rates of patent grants, which we used as a proxy for innovation.
- We readily acknowledge there are many factors other than LGBT representation that determine business formation and innovation. In addition, we acknowledge LGBT representation may be associated with factors other than entrepreneurship and innovation that are conducive to strong economic growth. But our finding that states with higher degrees of LGBT representation enjoyed stronger rates of GSP growth between 2010 and 2019, when controlling for other factors, strikes us as remarkable. For now, we leave it to future research to determine the precise links between these two variables.

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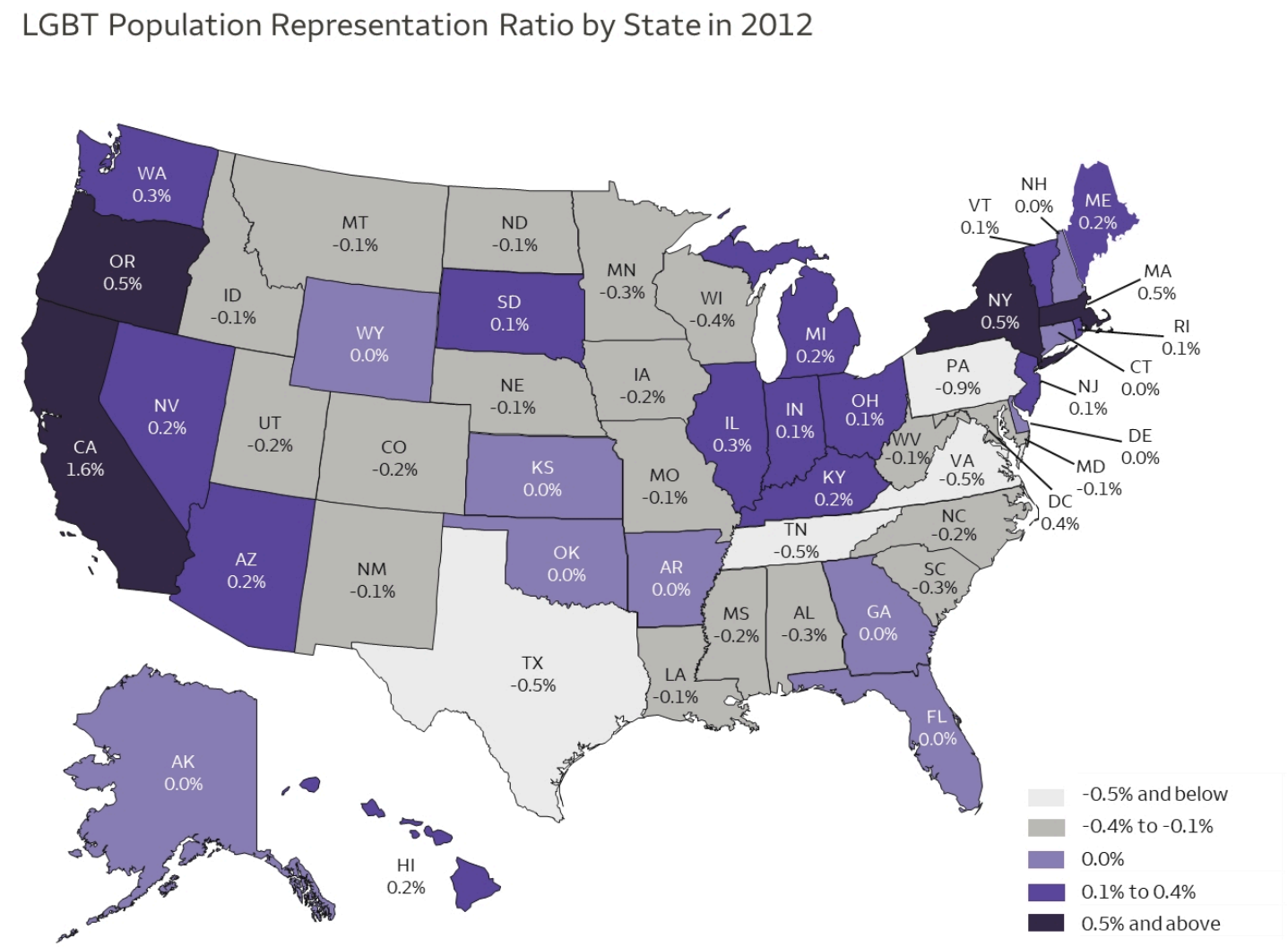
Do LGBTQ+ Individuals Have an Effect on State Economic Growth Rates?

We published a report last June in which we discussed a number of economic and financial characteristics of the LGBTQ+ community in the United States. One of the most notable takeaways of that report was the marked increase in recent years in the number of people identifying as gay, lesbian, bisexual or transgender. Specifically, a Gallup survey found that 3.5% of the population identified as LGBT in 2012, but this percentage rose to more than 7% in 2021.[1] Furthermore, the proportions of individuals from younger generations (i.e., millennials and Gen Z) who identify as LGBT are higher than proportions from older generations. We also discussed the locational concentration of LGBT individuals. Although people who identify as LGBT are found in every state in the nation, they tend to be concentrated in many, although not all, states in the West, the Northeast and the Midwest.

As we began to think about our research agenda for this year's report to commemorate Pride Month, we decided to drill down further into the implications of the locational concentrations of the LGBT population. Our analysis in this report specifically considers some of the factors that were associated with different rates of economic growth among the 50 states and the District of Columbia during the previous cyclical upswing (i.e., 2010-2019). Is there a correlation between state economic growth rates and the concentration of LGBT individuals during the long economic expansion of the past decade?

Figure 1



Source: U.S. Department of Commerce, Gallup and Wells Fargo Economics

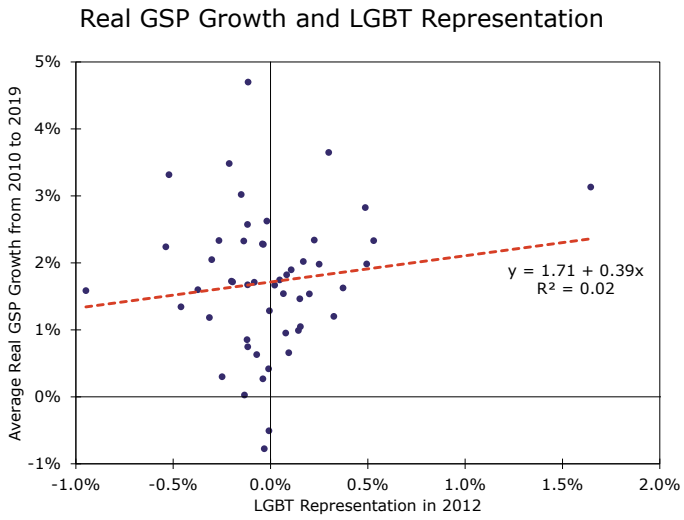
We started our analysis by calculating average per annum growth rates of real gross state product (GSP) between 2010 and 2019 for all 50 states and Washington, D.C. Next, we calculated the degree of "over-representation" or "under-representation" of each state's LGBT population in 2012, which is close to the beginning of the cyclical upswing.[2] That is, we calculated the share of the overall U.S. population that each state represented in 2012, and then compared it to the share of the nationwide LGBT population that each state represented that year. For example, Oregon accounted for 1.2% of the country's population in 2012, but 1.7% of the nation's LGBT individuals were Oregonians that year. Therefore, Oregon's degree of LGBT "over-representation" was 0.5% (1.7% minus 1.2%) in 2012. Conversely, 1.5% of the American population resided in South Carolina in 2012 whereas only 1.2% of the LGBT population lived in the Palmetto State. Consequently, the degree of LGBT "under-representation" in South Carolina was 0.3%. A map of representation ratios for all 50 states and the District of Columbia is shown in Figure 1.

We then plotted each state's average per annum GSP growth rate between 2010 and 2019 against its degree of LGBT representation. As shown in Figure 2, there is some positive correlation between the two variables. That is, states with higher degrees of over-representation tended to have stronger rates of economic growth between 2010 and 2019, and vice versa. However, the loose fit of the regression line in the scatterplot (i.e., the low R^2 that is referenced in Figure 2) indicates there are many factors other than LGBT representation that are associated with state economic growth rates.

In that regard, economic theory postulates there is a direct relationship between growth in the labor force and economic growth. That is, a stronger rate of labor force growth implies there are potentially more workers to produce goods and services, everything else equal. Using employment growth as a close proxy for labor force growth, we plotted each state's average GSP growth rate against its average employment growth rate between 2010 and 2019. The tighter fit of the regression line in Figure 3 relative to Figure 2 (i.e., the higher R^2 in Figure 3) shows that the association between real GSP growth and employment growth is stronger, everything else equal, than the association between GSP growth and LGBT representation.

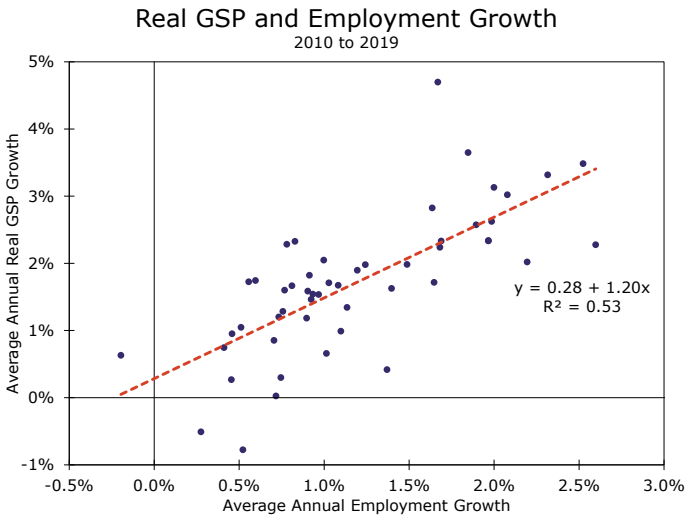
There is a direct relationship between growth in the labor force and economic growth.

Figure 2



Source: U.S. Department of Commerce and Wells Fargo Economics

Figure 3



Source: U.S. Department of Commerce and Wells Fargo Economics

The analyses that are depicted in Figures 2 and 3 are rather simple, as each graph represents the relationship between average GSP growth rates and only one other variable. In reality, however, there undoubtedly are factors other than just employment growth or LGBT representation ratios that determine state economic growth rates. For example, businesses may want to relocate to states in which wage rates are relatively low, thereby leading to stronger rates of economic growth in subsequent years. In addition, businesses may be willing to relocate to states in which a readily available pool of labor exists, everything else equal. A state's corporate tax rate may also affect the rate of economic growth in that state.

We then conducted a more elaborate, and arguably more realistic, analysis in which we included more variables in our regression. Specifically, we regressed average GSP growth rates between 2010 and

2019 on each state's LGBT representation ratio in 2012 and state employment growth rates between 2010 and 2019—the two variables that are shown in Figure 2 and 3, respectively. The regression also includes each state's unemployment rate in 2010, which we used as a proxy for the pool of available labor at the start of the economic expansion, the median wage rate in each state in 2010, and the state corporate tax rate in 2010. Readers who are interested in the detailed econometric results should refer to the column labeled "Regression 1" in the table in the appendix.

Consistent with the scatterplot illustrated in Figure 3, this more elaborate analysis again found a statistically significant relationship between average per annum employment growth between 2010 and 2019 and average GSP growth over the same period. The regression results show that each percentage point of average employment growth was associated with 1.46 percentage points of GSP growth, everything else equal. In other words, states with higher average rates of employment growth during the past decade tended to enjoy higher rates of GSP growth, everything else equal.

The analysis also indicates there is a statistically significant relationship between the unemployment rate and GSP growth, but the relationship is inverse. That is, states with higher rates of unemployment in 2010 experienced slower rates of GSP growth in subsequent years, everything else equal. We also found an inverse relationship between median wage levels and GSP growth, which is statistically significant at the 90% level of confidence. In other words, states with lower wage rates in 2010 tended to experience stronger economic growth in subsequent years, everything else equal. The relationship between the state corporate tax rate and GSP growth, when controlling for these other factors, is not statistically significant at conventional levels.

Our analysis found a direct relationship between GSP growth and LGBT representation.

Notably, however, we continued to find a direct relationship between GSP growth and LGBT representation when we controlled for employment growth, the unemployment rate, the median wage and the corporate tax rate. Moreover, we can say with 90% confidence that the relationship is statistically significant.[3] The specific regression results show that a one percentage point increase in the LGBT representation ratio is associated with 0.5 percentage points of stronger GSP growth per annum between 2010 and 2019, everything else equal. For example, consider two hypothetical states (State A and State B) that are identical in terms of employment growth, the median level of wages, their unemployment rates and corporate tax rates. However, the LGBT representation ratio in State A is one percentage point higher than the comparable ratio in State B. Our analysis suggests that GSP in State A, which has the higher degree of LGBT representation, would grow 0.5 percentage points per annum more than GSP in State B.

Is LGBT Representation a Proxy for Educational Attainment and Age?

In our view, this finding is quite interesting. It suggests that states with high concentrations of LGBT individuals will experience higher rates of economic growth than states with low concentrations, everything else equal. Why? As noted previously, individuals who identify as gay, lesbian, bisexual or transgender tend to be younger than the overall national average. Furthermore, the LGBT population as a whole has a higher level of educational attainment than the heterosexual segment of the American population, as we discussed in last year's report. Perhaps the younger age of the LGBT population and its higher level of educational attainment have more to do with state GSP growth rates than LGBT representation, per se.

So we extended our analysis further by running another regression. Not only did we include the five explanatory variables noted previously, but we included a variable to measure educational attainment, namely, the share of each state's individuals (25 years and older) who had a bachelor's degree or higher in 2010. We also included each state's median age in 2010. The detailed results are shown in the column labeled "Regression 2" in the appendix. The inclusion of these two additional variables (i.e., educational attainment and median age) did not materially change the results of the previous econometric analysis. We continued to find a direct relationship between employment growth and GSP growth, which was statistically significant at a high degree of confidence. In contrast, the relationship between educational attainment and GSP growth was not statistically significant, when controlling for these other variables, nor was the relationship between median age and GSP growth.

"Something" about LGBT representation is associated with economic growth.

But remarkably, we continued to find a direct relationship between the ratio of LGBT representation and GSP growth, which is statistically significant at the 90% level of confidence. We found this result even though we controlled for the effects of employment growth, the unemployment rate, median wages, the corporate tax rate, educational attainment and median age. There appears to be

"something" or some "things" about a state's LGBT representation ratio that is positively associated with its economic growth rate. But what are these "things" exactly?

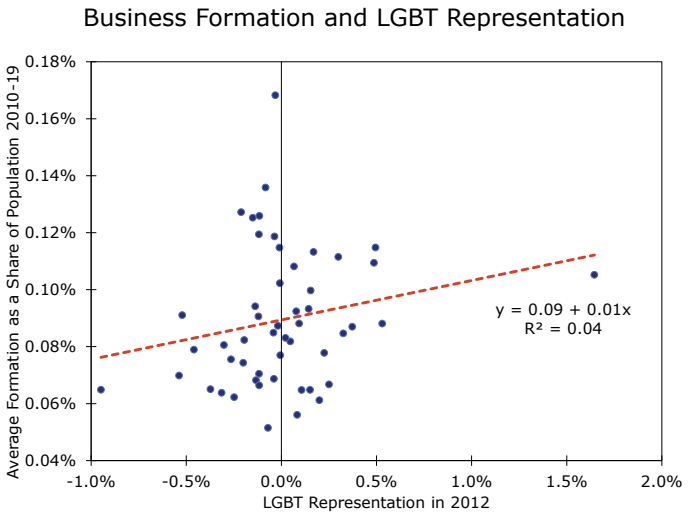
LGBTQ+ Individuals as Entrepreneurs and Innovators

As noted previously, people who identify as gay, lesbian, bisexual or transgender tend to be younger and more highly educated that the average American. Could these traits enable LGBT individuals to be more entrepreneurial and/or creative relative to the overall population? Researchers associated with StartOut, a nonprofit organization that supports LGBTQ+ entrepreneurs, conducted a study in 2016 that included a sample of roughly 100K entrepreneurs.[4] The study found evidence suggesting that individuals who identify as lesbian, gay, bisexual or transgender were over-represented in the sample. Furthermore, these LGBT entrepreneurs were more likely than average Americans or straight entrepreneurs to migrate to California, Massachusetts, New York, Colorado, Washington, Illinois and Washington, D.C. All of these states, except for Colorado, have positive degrees of LGBT representation (see Figure 1). Although interviews with a smaller subset found that only 25% of LGBT entrepreneurs moved specifically to be "in a more LGBT-friendly environment," the vast majority of these individuals resided in cities that scored a perfect 100 score on the Municipal Equality Index that is calculated by the Human Rights Campaign.[5]

We extended the StartOut analysis by considering data on business formation that are collected by the Census Bureau. We calculated the annual average number of new business formations, as a percent of each state's population, between 2010 and 2019. We then plotted these ratios against each state's degree of LGBT representation and show the results in Figure 4. The direct relationship, albeit a loose fit, is consistent with findings from the StartOut survey.

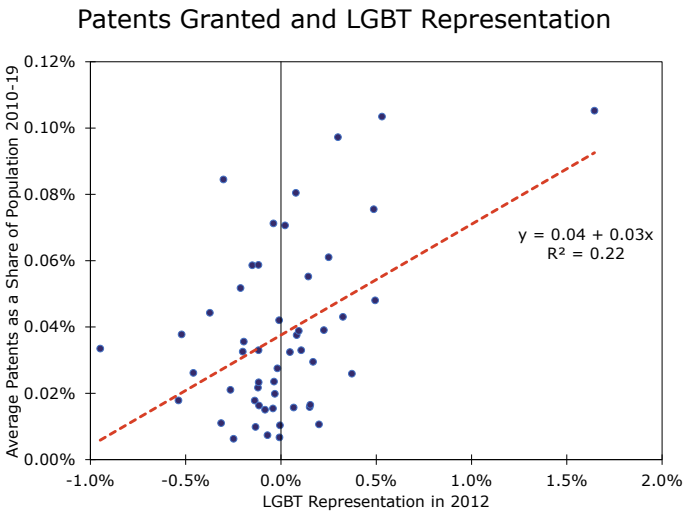
Business formation is positively correlated with LGBT representation.

Figure 4



Source: U.S. Department of Commerce, Gallup and Wells Fargo Economics

Figure 5



Source: U.S. Patent and Trademark Office, Gallup and Wells Fargo Economics

In analyzing data between 1989 and 2003 for 320 metropolitan statistical areas (MSAs) in the United States, Acs and Mueller found that new businesses lead to positive rates of employment growth in the MSA, although the effect tends to fade over a few years.[6] However, continued business formation would naturally lead to employment growth and thus economic growth over time. Clearly, there are many factors other than LGBT representation that determine the rate of business formation in any given state, as the loose fit of the regression line in Figure 4 suggests, but a full discussion of those factors is beyond the scope of this report. That noted, the scatterplot indicates that the rate of business formation in the 50 states and the District of Columbia is positively correlated with their degrees of LGBT representation. In sum, states with high concentrations of LGBT individuals may enjoy robust rates of new business formation and, hence, stronger rates of GSP growth, everything else equal.

How about innovation? Do people who identify and gay, lesbian, bisexual or transgender tend to be innovative? To explore this relationship, we calculated the average number of patents granted

in each state between 2010 and 2019, as a percent of state population. Figure 5 plots the patent ratio against each state's LGBT representation in 2012. As in Figure 4, the upward sloping regression line in Figure 5 indicates a positive association between patent grants on a per capita basis and LGBT representation. Similar to business formation, there clearly are many factors that determine innovation, which we proxy by patents per capita, but a full discussion of these factors is also beyond the scope of this analysis. That noted, our analysis shows that the per capita rate of patent grants is positively correlated with LGBT representation.

The per capita rate of patent grants is positively correlated with LGBT representation.

Using data from 358 MSAs, researchers at the Brookings Institution analyzed the effect that the per capita rate of patent grants had on productivity growth between 1980 and 2010 in those MSAs.[7] The benefits of a patent grant are not easily restricted to the location of the invention. New technological innovations can be quickly dispersed to other geographical locations. Nevertheless, the researchers found a positive association between patent grants and MSA productivity growth. Specifically, MSAs that were one standard deviation above the mean in terms of per capita patent grants enjoyed a 2.7% increase in economic output, everything else equal. Given the positive effect that productivity growth has on economic growth, the results imply that patent grants are associated with stronger economic growth.

Conclusion

State economic growth rates varied widely during the most recent economic expansion. North Dakota led the pack with an annual average GSP growth rate of 4.7% between 2010 and 2019. On the other end of the spectrum, economic output in Wyoming contracted 0.8% per annum on average over that same period. There are many factors that explain these differing rates of GSP growth, including differentials of employment growth, unemployment rates and wages rates among the states. But we also find some evidence that GSP growth rates during the most recent economic expansion were determined in part by the LGBT proportion of each state's population. That is, higher population shares of LGBT individuals were associated with stronger GSP growth rates, everything else equal.

We should stress an important point. Specifically, we are not saying the state economy of, say, New York will grow faster than the GSP in, say, Texas just because LGBT individuals are over-represented in the former and under-represented in the latter. Indeed, real GSP in Texas grew at an annual average rate of 3.3% between 2010 and 2019, considerably stronger than the per annum growth rate of 2.0% that the New York economy registered during that period. However, our analysis suggests that real GSP in New York grew faster between 2010 and 2019 than it otherwise would have because of the high proportion of LGBT individuals who reside in the state.

Why? We know that individuals who identify as gay, lesbian, bisexual or transgender tend to be younger and more highly educated than the average American. But even when we controlled for age and education variables, the variable that measures LGBT representation was still statistically significant (at the 90% level of confidence). There may be a host of reasons, other than age and education, that GSP growth is positively correlated with LGBT representation. But two reasons seem plausible to us. First, survey evidence shows that LGBT individuals are over-represented among the nation's entrepreneurs. Our analysis indeed finds a positive association between a state's rate of business formation between 2010 and 2019 and its ratio of LGBT representation. In addition, we find a positive association between the per capita rate of patent grants in 2010-2019 and LGBT representation.

Entrepreneurship and innovation are synonymous with creativity. The notable urban studies theorist Richard Florida wrote "creativity requires diversity." He went on to say "creativity thrives when the environment allows people of all lifestyles, cultures, and ethnicities to interact. Regions that wish to encourage economic creativity must also encourage diversity."[8] In our view, Florida's use of the word "lifestyles" can be broadly interpreted to include diversity regarding sexual orientation. The diversity that LGBT individuals bring to a community may help it to achieve "economic creativity" and therefore stronger rates of economic growth.

We readily acknowledge there are many factors other than LGBT representation that determine a state's rate of business formation as well as its per capita rate of patent grants. Furthermore, we readily acknowledge that LGBT representation may be associated with factors other than entrepreneurship and innovation that are conducive to strong rates of economic growth. But our finding that states with higher degrees of LGBT representation enjoyed stronger rates of GSP growth between 2010 and 2019, when controlling for other factors, strikes us as remarkable. For now, we leave it to future research to determine the precise links between these two variables.

Endnotes

1 - The Gallup survey asks respondents if they identify as lesbian, gay, bisexual or transgender. The survey does not explicitly include queer, asexual or other identities. We subsequently refer to the representation statistic as "LGBT" representation in 2012 to reflect this nuance. (Return)

2 - In theory, we should calculate these percentages in 2010, when the economic upswing began. However, the state-level data we have on population by sexual orientation start in 2012. Our sense is the percentages for 2012 would not be meaningfully different from the 2010 percentages and, therefore, would not affect the results of this report. (Return)

3 - In technical terms, we tested the null hypothesis that there is *not* a statistical relationship between GSP growth and LGBT representation ratios. The results indicate that we can reject the null hypothesis with 90% confidence. (Return)

4 - Deutsch, H. Waverly, Vivienne Ming, Mary E. Shea and Chris Sinton, "The State of LGBT Entrepreneurship in the U.S.," StartOut, July 2016. (Return)

5 - The index rates cities on the basis of "non-discrimination laws, the municipality as an employer, municipal services, law enforcement and leadership on LGBTQ+ equality." (Return)

6 - Acs, Zoltan J. and Pamela Mueller, "Employment Effects of Business Dynamics: Mice, Gazelles and Elephants," Small Business Economics 30 (2008), p. 85-100. (Return)

7 - Rothwell, Jonathan, José Lobo, Deborah Strumsky and Mark Muro, "Patenting Prosperity: Invention and Economic Performance in the United States and its Metropolitan Areas," The Brookings Institution, February 2013. (Return)

8 - Florida, Richard, "Entrepreneurship, Creativity, and Regional Development," Carnegie Mellon University, July 2002. (Return)

Appendix

We used annual data for all 50 U.S. states plus the District of Columbia and estimated the following equations:

Table 1

Dependent Variable: Average Real GSP Growth Rate 2010-2019

Variable	Regression 1	Regression 2
Constant	5.106 (2.61)	6.430 (0.87)
Average Employment Growth 2010-2019	1.456 (9.23)	1.393 (7.23)
Unemployment Rate in 2010	-0.190 (-3.86)	-0.157 (-2.57)
Log of Median Wage in 2010	-1.334 (-1.86)	-2.662 (-1.75)
Median Corporate Income Tax Rate in 2010	0.040 (1.12)	0.026 (0.68)
LGBT Representation in 2012	0.540 (1.94)	0.534 (1.90)
Population Share with Bachelor's Degree or Higher in 2010	-- --	0.040 (1.02)
Log of Median Age in 2010	-- --	0.309 (0.19)
R^2	**0.669**	**0.678**

(t-statistics in parentheses)

Source: U.S. Department of Commerce, U.S. Department of Labor, Gallup, The Tax Foundation and Wells Fargo Economics

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