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**Well-Being and Economic Freedom:
Evidence from the States**

Abstract

There is ample evidence that well-being, measured in various ways, is positively related to economic freedom across countries. Does this relationship hold at the sub-national level? Answering that question is the purpose of this study. Using regression analysis, we test whether economic freedom has an independent effect on well-being across states in the U.S. Our evidence indicates that, at the state-level, improvements in economic freedom lead to higher levels of well-being even after controlling for other economic factors. We also find that the relationship between well-being and economic freedom differs significantly across regions in the United States.

Key words: Well-being; economic freedom; U.S. states

1. Introduction and overview

The interest that social scientists have shown in studying the causes of well-being has increased markedly over the past few decades. Clark (2008) reported that, based on an ECONLIT search, between 1960 and 2006, over 600 articles with some combination of the words “happiness,” “well-being,” “life satisfaction,” or “job-satisfaction” in the title have appeared in academic journals. Of these, almost 60 percent appeared after 2000.

One prominent line of this research has been to determine whether economic success is a factor that explains well-being or happiness. Easterlin’s (1974, 1995) work indicated that rising national incomes are not necessarily associated with increased national happiness was pioneering and controversial. Veenhoven (1991), Diener, et al. (1995), Easterly (1999), Lane (2000), and Blanchflower & Oswald (2000), among others, provided evidence refuting Easterlin’s claim and supporting the idea that improving economic conditions enhances subjective well-being. Others, such as Hagerty & Veenhoven (2003), Tella, et al. (2003), and Ovaska & Takashima (2006), have questioned the robustness of the link. Peiro (2006), for instance, showed that economic factors can have different quantitative effects depending on whether one is interested in happiness or well-being: they are not necessarily the same.

This research raises several important questions. Is it absolute levels of income or relative levels of income that effect well-being and happiness? Is it happiness, satisfaction or well-being that is being captured? Surveys of measuring well-being, such as Sharpe & Smith (2005), give perspective to their diversity. Kahneman, et al. (2004) and Krueger, et al. (2008) represent attempts to provide an economics-based, quantitative measure of well-being based on time allocation. Within their different disciplines’ perspectives, Kahneman, et al. (1999), Diener

and Suh (2000), Frey & Stutzer (2002), Tella & MacCulloch (2006) attest to the unsettled issue of what exactly we mean by well-being and happiness.

Into this mix a number of researchers have investigated the relationship between well-being and economic freedom. Economic freedom is often viewed from the perspective (some would say bias) that an increase in government activity in the private economy (e.g., more spending, larger payrolls, more and higher taxes) reduces economic freedom. Karabegovic & McMahon (2005) provided an archetypal definition of economic freedom: “a minimal level of government interference, relying upon personal choice and markets to answer the basic economic questions,” the latter being what to produce, how to produce it and for whom it is produced. If a greater degree of economic freedom improves one’s economic condition, such as higher levels of income, and improved economic conditions are associated with higher levels of well-being, then it is plausible to suggest that improved economic freedom should generate higher levels of well-being or happiness.

There is some evidence to support this assertion. Esposito & Zaleski (1999), used a sample of countries, find that increased economic freedom is associated with a better quality of life, measured as longer life expectancy and higher literacy rates. Ovaska & Takashima (2006) concluded that economic freedom and improved health are positively related. These are important findings since health is a robust predictor of well-being at the individual and aggregate levels. Welsch (2003) also reported that greater economic freedom is causally prior to income: the direction of influence flows from improved freedom then to income to happiness. This finding of causation was disputed by Dawson (2003), though the freedom-happiness link was not considered. Stroup’s (2007) analysis lead him to conclude that economic freedom helps explain economic well-being conditioned on the country’s level of democracy. Gropper, et al. (2011)

concluded that there is a significant positive relationship between economic freedom, measured using several indices, and happiness across countries. Inglehart, et al. (2008) reported that increased happiness is positively correlated with improvements in economic choice in countries with higher levels of economic security. Bjornskov, et al. (2010) took a similar tack and find that changes in freedom and institutional quality affect happiness differently across countries depending on their level of economic development. And Wilkinson (2007) refuted the argument by Lane (2000) and others that happiness erodes in market economies.

This glimpse into this wide-ranging research agenda touches upon the potential links between economic and non-economic factors that may help us understand the variation in well-being. And these factors can be linked. Economic success, measured by an individual's earnings or a country's rate of economic growth is directly and positively related to general intelligence. There is substantial evidence (among others, Lynn & Vanhannen, 2002; Jones & Schneider, 2007) that countries and states with higher levels of IQ, on average, tend to have higher levels of income per capita and experience faster rates of economic growth. Since research indicates that economically successful countries characterized by greater economic freedom, it is possible that higher levels of general intelligence and economic freedom are positively correlated, and work together to improve well-being.

A common feature of much of this research is reliance on international data to compare economic freedom, economic outcomes, such as greater income per capita, well-being, and happiness. What is lacking, and the void that this study attempts to fill, is to see how robust these links are using sub-national level. We know that state IQ and economic success, measure as the level of real income per capita, are positively related (McDaniel, 2006; Pesta, et al., 2010a

and the papers cited therein). What we do not know is how well-being and economic freedom are related at the state level.

We answer the question “Does greater economic freedom increase well-being at the state level?” using two indices of well-being and economic freedom. The well-being index comes from the recent work of Pesta, et al. (2010a). The economic freedom measure is published by the Fraser Institute. In the next section we briefly describe the index of well-being and the Fraser economic freedom measure. Following that discussion, our empirical methodology is presented in Section 3, our results are found in Section 4, followed by conclusions in Section 5.

2. Well-being and Economic Freedom

2.a. Well-being

Measures of well-being span many disciplines, including psychology, economics, sociology, criminology and public policy. The well-being index generated by Pesta, et al. (2010a) is an important development because it allows psychologists, and others, to analyze observed geographical differences in well-being across states. Such information lends itself to investigation by applied economists, psychologists and sociologists to gauge the efficacy of the different states’ public policies.

This well-being index also fits within the research agenda aimed at more completely understanding the so-called “g nexus.” A number of studies in psychology and economics have found (see references in Pesta, 2010a) general intelligence is a robust predictor of an individuals’ educational success, higher income, health and longevity. The growing body of work in economics finds that countries with higher levels of general intelligence also tend to experience higher rates of economic growth. Jones & Schneider (2006), for example, found that Lynn & Vanhanen’s (2002) IQ measure is an extremely robust predictor of economic growth even after

accounting for a wide variety of other possible factors, including health and educational attainment. With a well-being index that reliably overlaps with the *g* nexus, Pesta, et al. (2010a) provide a valuable data set that allows researchers to analyze how alternative institutional arrangements—government policies, legal structures, social conditions—affect well-being.

Well-being generally is measured in one of two ways.¹ One is based on subjective assessments, compiled from survey responses to questions related to factors such as life satisfaction, happiness, and quality of life. The approach used in constructing the well-being index used here considers the attainment of physical needs, such as food and shelter, along with measures of psychological health. Pesta, et al. (2010a, page 161) argued that improved psychological health stems in part from the ability to deal with the demands of life (competence), the ability to establish and work toward goals (aspiration) and others. Because many of these attributes overlap are correlated with the *g* nexus, one objective in constructing the well-being index was to construct an empirical measure that interconnects it with the *g*-nexus.

Pesta, et al. (2010a) identified several state-level “sub-domains” that are most likely to affect overall well-being. Previous research leads them to consider the sub-domains of general intelligence, health, crime, education, income, and religiosity.² Educational attainment is generally a significant predictor of economic success (Hanuschek & Woessmann, 2010) and well-being. Health has been found to be a critical measure in one’s perception of personal well-being. Higher incidence of crime, as one might expect, has been shown to reduce one’s subjective assessment of well-being. It also is true that crime and *g* are negatively correlated, a result most recently found by Potrafke (2012) in his international comparison of corruption and

¹ It is beyond the scope of our study (and our expertise) to weigh-in on the controversy surrounding the use of self-perceived measures (responses to surveys) or the objective type typified by Pesta, et al. (2010a). Reviews and discussion can be found in, among others, Diener (2000), Anger (2005, 2009), and Pesta, et al. (2010a).

² See Pesta, et al. (2010a) for the relevant citations in each area.

IQ. Along with the finding that corruption and income are negatively correlated, this relationship helps to explain why higher IQ countries seem to succeed economically.

Religiosity delivers a mixed signal with respect to well-being and economic success. Pesta, et al. (2010a) noted that religiosity has been found to be both positively and negatively related to health and longevity. Since health and increased life expectancy should increase well-being, this mixed signal complicates the expected effect of religiosity on well-being. It also appears that high levels of *g* and education are associated with lower levels of religiosity at the national level (Lynn, et al. 2008; Glaeser & Sacerdote, 2008) and at the individual level (Bertsch & Pesta, 2009). Furthermore, Barro & McCleary (2003) reported that church attendance and economic growth are negatively correlated across countries. The complex relationship between religiosity, *g* and economic success remains an area in need of further study.

Pesta, et al. (2010a) operationalized their measure by assembling numerous data sets related to each sub-domain. The data come from public sources, such as the U.S. Census Bureau's *Statistical Abstract of the United States*, and private sources, like information collected by the Pew Foundation through surveys. Using principles component analysis, the array of variables in each sub-domain was used to generate a multi-dimensional index of well-being for each of the 50 U.S. states that is "a nexus of inter-correlated variables... that together seem to offer a reliable indicator of well-being." While Pesta, et al. (2010a) did not provide specific state-by-state analysis, they find that states with higher levels of well-being are characterized as having higher levels of education and IQ, greater wealth, more liberal political views, and less religiosity.

Of all the measures considered by Pesta, et al. (2010), they did not explicitly consider measures of economic freedom. While it may be that measures used to construct the well-being

index overlap with those that comprise economic freedom, that link should be examined. If economic freedom represents a broad array of institutional characteristics that promote improved economic outcomes, and these institutions in turn influence well-being, then having a better understanding of the well-being/economic freedom nexus is a worthwhile endeavor: Finding a relationship between economic freedom and well-being at the state level provides one more avenue for the evaluation of competing social and economic policies.

2.b. Economic Freedom

Economic freedom is represented by the index published by the Fraser Institute (Ashby, et al. 2010). Other state-level measures of economic freedom are available. These include the U.S. Freedom Index, published by the Pacific Research Institute, and the Index of Personal and Economic Freedom, published by the Mercatus Center at George Mason University. We use the Fraser Institute's measure because we are interested not only in the contemporaneous relationship between well-being and economic freedom, but also whether changes in freedom affect well-being. In addition, it is the most widely used economic freedom measure in the relevant literature, and it is available over a much longer time span than the others. The Fraser measure is available since the 1970s while the Pacific Research Institute index is available only since 1999, and the Mercatus Center measure only first appeared for 2007.

The Fraser Institute publishes two state-level economic freedom indexes. One incorporates total government activity, including local, state and federal governments. The other measure focuses on the activities of state and local governments and excludes federal-level activity. We use the latter measure because we wish to focus on the effects of economic freedom at the state-level without any confounding effects from federal government activity. Similarly, Garrett & Rhine (2011) used the sub-national measure in their analysis of the effects of

economic freedom on state job creation. The freedom index is measured on a 10-point scale; the closer the state's score is to 10 the greater the level of economic freedom. That is, higher scores are found for those states in which the government plays a smaller role, whether it in expenditures, payroll or taxation.

There are four measures of economic freedom. One is an "Overall" index of economic freedom, comprised of three components. These components are "size of government," "takings and discriminatory taxation," and "labor market freedom." The "government" measure is based on factors such as government consumption expenditures relative to state GDP, government transfers and subsidies, and Social Security payments as a percent of state GDP. The higher the percent that state and local governments account for a state's income, the lower the state's economic freedom score. The "taxes" component is constructed to gauge the level of governmental appropriation of resources via taxation. It uses total tax revenues as a percent of GDP and the level of marginal tax rates to determine the "tax" score. The "labor" component evaluates the extent of state minimum wage legislation, the relative size of government employment and the degree of unionization. A highly unionized state or one in which government employment is high has a lower freedom score compared to a right-to-work state in which labor markets are more open, and/or a state whose government payroll is a smaller percentage of the total workforce.

The use of the freedom index is not without criticism. Hanson (2003) argued that the observed positive correlation between freedom indices and country wealth occur because of endogeneity.³ Heckelman (2005) showed that this criticism does not generalize across components of the index, and that Hanson (2003) simply misinterpreted his results. Heckelman & Stroup (2000) also suggested that reliance on any one overall measure of freedom may give

³ Using economic growth and not the level of income reduces the possibility of such bias.

rise to specification bias. This problem is mollified by using the subcomponent measures along with the overall measure of freedom, the approach used in Garrett & Rhine (2011) and this study. Though the use of the freedom index (or any other index) is not flawless, we believe that the issues raised are adequately addressed in our estimation methodology.

2.c. Overview

Table 1 lists the states along with their well-being and overall economic freedom scores. Both measures are for 2005. The states are ranked by well-being. The mean of the well-being measure is set at 100, and the standard deviation is 15. The lowest well-being score is a 61.2 for Mississippi, and the highest score, 127.2, is for Massachusetts. Additionally, the neighboring states to Massachusetts and Mississippi have similar scores to one another such that the group of states with the highest scores tends to be East Coast states; and the lower scores tend to be found among Southern states. This clustering is comparable to that found for state-level IQ (McDaniel, 2006).

The array of economic freedom scores (we report only the overall score) indicates a much tighter distribution. The average value is 6.92 with a standard deviation of just 0.68. The highest freedom index is for Delaware at 8.3 whereas West Virginia has the lowest overall score at 5.5. In contrast to the well-being index, Northeastern states are more likely to be toward the bottom of the economic freedom index and Southern states are more likely to be toward the top. With that said, there is far from a perfectly inverse relationship between well-being and economic freedom: The rank correlation between the two indices is only -0.238.

3. Empirical Methodology

We now test whether well-being and economic freedom are empirically related at the state level. One approach is to calculate correlations between the relevant series. Simple

correlations are informative, but they disregard potential influences from other factors. To better isolate the relationship between well-being and economic freedom we rely on regression models where state well-being is explained by state economic freedom along with economic and regional control variables. These latter variables are used to account for idiosyncratic differences in a state's well-being that are not related to economic freedom. We propose to estimate two models. The first is:

$$(1) \quad WB_i = \alpha + \beta_1 (EF_i) + \beta_2 (Controls_i) + \varepsilon_i$$

where WB_i is the well-being measure for the i th state, EF_i is the i th state's economic freedom and $(Controls_i)$ is a set of control variables for each state. Specifically, the latter are used to account for non-freedom-related factors that, at the state level, may explain observed differences. The term ε_i is the error term with the usual properties.

We are fully cognizant that this is a very sparing specification. The problem is selecting the proper set of control variables, a process made difficult by the fact that the two indexes already are based on a large number of variables and the limited number of observations. Facing a similar challenge, Gropper, et al. (2011) argued that the problem with including a large number of controls is that many such candidates are highly correlated with economic freedom. And, in our study, many of the feasible control variables already are factors used in the construction of the well-being index. A good example is the oft-used level of real income which, if included in our regression, would introduce endogeneity bias into the estimates.

To circumvent this econometric problem, we want to use control variables that a) were not used in the construction of the well-being index and b) capture economic influences that the economic freedom measure alone may have missed. To this end we settled on two measures:

the 2005 unemployment rate in each state and each state's population density.⁴ Using these two variables is not without precedent. The unemployment rate often is used to capture the general condition of an economy (e.g., Ovaska & Takasima, 2006). Population density, in particular, is useful to control for the regional variation between the heavily populated areas such as the Northeast and the less densely populated states (e.g., Garrett & Rhine, 2011).

We also include regional variables in the regression. Because we have a limited number of observations, we use four regional dummies based on Census divisions.⁵ The purpose of controlling for regional variation is to make sure that any cultural or institutional factors specific to a region and that may explain a portion of the variation in well-being are accounted for. This is particularly important in light of our earlier discussion that highlighted the relative clustering of high- and low-well-being states in the Northeast and South, respectively. The (0,1) regional variables thus serve to capture any differences in the intercept of the regression relative to a predetermined control region (we use the Midwest region as the control). The regional dummies allow us to control for whether or not the average state within a particular region has a different starting position than a states in an alternative region.⁶

In addition to estimating equation (1), we also wish to see if *changes in* economic freedom affect well-being. Do states that experience improvements in economic freedom end up with higher levels of well-being? Considering the effect of changes in freedom is not without precedent. Esposito & Zaleski (1999) and Weede & Kampf (2002) found that increases in economic freedom are associated with higher levels of economic growth. Gwartney, et al.

⁴ We also tried percent manufacturing in each state, size of population and life expectancy. None ever achieved statistical significance and, therefore, were not retained in the estimations reported below.

⁵ The Census regions and the states can be found at www.eia.doe.gov/emeu/reps/maps/us_census.html. We also estimated with a model that used Census sub-divisions with little effect on the estimates. The results reported in this paper continued to hold.

⁶ A potential problem is that population density and the regionals may be correlated. Including the regional variables may thus reduce the significance of the population density variable.

(2006) reported that improvements in economic freedom result in higher levels of capital investment relative to GDP, a factor that leads to higher levels of GDP per capita and economic growth.

To determine if *changes in* economic freedom influence a state's of well-being we estimate the model:

$$(2) \quad WBi = \alpha + \beta_1 (\Delta EF_i) + \beta_2 (Controls_i) + \varepsilon_i$$

where ΔEF_i is the change in economic freedom over time and the other variables are defined as above.

A difficulty with estimating equation (2) is that fact that we do not have a measure of well-being over time. Econometrically, one would prefer to regress the change in well-being on the change in economic freedom. Can we justify the use of the change in economic freedom in equation (2)? The economic growth literature provides a clue.

There is substantial evidence of economic convergence; that is, there is some long-term growth path to which countries tend. The evidence indicates that countries that begin with relatively low levels of real GDP per capita demonstrate a propensity to grow faster over time than those countries that start out "rich." For our purpose, consider the following analogy. Suppose that some states with relatively high levels of well-being are states that began with relatively low levels of economic freedom. Such states may enjoy higher levels of well-being because they are naturally "rich" (better ports, better educational systems, etc.). In such cases it may be that it is easier to extract economic rents, in the sense that low economic freedom could co-exist with high levels of well-being. Over time, however, such rents become increasingly difficult to capture. States that once were relatively worse off are now, perhaps due to increases

in economic freedom, better able to compete with other states. In other words, over time well-being and freedom grow together.

To justify the use of the change in freedom measure, we should establish whether the above scenario holds. We do this by first determining if the *level* of economic freedom in the past is negatively correlated with the level of well-being today. Second, changes in freedom should exhibit convergence. If these conditions hold, then we are confident in estimating equation (2).

The initial problem is determining what the time horizon for the change in freedom should be. With no theoretical model to guide us, we experimented with different time horizons. Using available data, we find that the 5-year change in freedom exhibited little variation in the freedom measures. We settled on a 10-year window that, while admittedly ad hoc, allowed for enough time for some changes to occur. Thus, the change in economic freedom is measured from 1995 to 2005.

To justify the use of the change-in-freedom measure, we should find that initial freedom and current well-being are negatively correlated. Using 1995 as the “initial” period, the correlation between economic freedom index and well-being (both in levels) is -0.39. This is significant at the 5 percent level of significance ($t = 2.96$). This finding does not reject our use of the change measure. We also should find evidence of convergence in economic freedom. Following the economic growth literature we test for convergence by regressing the change in economic freedom on its initial level. The results of that estimation are (absolute value of t -statistics in parentheses)⁷:

⁷ The regression includes the same set of Census regional dummy variables described above, is estimated using OLS with cluster-robust standard errors, and includes all 50 states.

$$\Delta EF(1995-2005) = 0.301 - 0.039 (EF1995)$$

(4.54) (3.90)

$$\bar{R}^2 = 0.36 \quad F = 6.45 \text{ (pr} = 0.00)$$

The results indicate that we cannot reject convergence in economic freedom.⁸ Finding that the estimated coefficient on the 1995 level of economic freedom is negative and statistically significant suggests that, all else the same, states with lower (higher) initial levels of economic freedom experience a relatively faster (slower) increase in economic freedom over time. In addition, the overall explanatory power of the regression is reasonable and is significant at greater than the one-percent level. These two pieces of evidence together support our contention that it is statistically valid to consider the effect of temporal changes in economic freedom on the level of well-being.

4. Empirical Results

4.a. Summary statistics

Table 2 provides the summary statistics of the measures used. Unemployment rate data are from the Bureau of Labor Statistics (BLS). The average unemployment rate in the sample is 4.9% with Hawaii reporting the lowest unemployment rate (2.9%) and Mississippi at the other end of the spectrum (7.9%). The population density data, from the U.S. Census, measures the number of people per square mile. The state-wide average population density is around 189 people per square mile with a standard deviation of 257.66. Not surprisingly there is a very wide dispersion, especially when one compares states in the Northeast relative to the rest of the country. For example, New Jersey has the highest population density with over 1,175 people per square mile while Alaska has the lowest with just over one person per square mile.

⁸ This finding also holds if the dependent variable is measured as a simple change or as a percentage change.

With regard to economic freedom, we present information on both the levels and the 10-year changes. The average state experienced a 0.11 point increase in their overall freedom score. However, the relatively high standard deviation indicates a fairly wide dispersion across states: freedom scores in some states fell as much as 0.8 points while it rose by up to 0.9 in others. Similarly, there were increases to the average state in terms of tax and labor freedom as tax rates dropped over the decade and unionization rates fell to an all-time low. In contrast, government freedom fell over that period, due to some combination of increased government spending as a percent of state GDP, or increased government payrolls.

To provide some perspective on the relationship between well-being and economic freedom, Figure 1 plots the levels of well-being and overall economic freedom for all 50 states. It is evident from the figure that there is little correlation between the two series. Indeed, the simple correlation (reported in Table 3) is small. Notice, however, that comparing well-being with the *change in* economic freedom, the scatter in Figure 2, reveals a positive relationship. This ocular analysis is confirmed by the correlation reported in Table 3: The correlation between well-being and the change in economic freedom is 0.488, statistically significant at the 1% percent level.

What is the bivariate correlation between well-being and economic freedom and the other variables? The correlations, found in Table 3, indicate that well-being is significantly negatively correlated with the unemployment rate and positively correlated with population density. The latter relationship indicates that urban regions of the country have higher well-being scores compared to more rural regions. Additionally, we see that economic freedom is weakly (and negatively) related to our control variables. The low correlations with freedom indicate that

from a statistical perspective, population density and unemployment are good control factors to use in our regression analysis.

4.b. Estimation results

The simple correlations in Table 3 suggest that well-being and changes in economic freedom are positively related. They do not, however, control for other factors. To further assess the empirical relationship between well-being and economic freedom we estimate equations (1) and (2). The results for equation (1) are reported in Table 4. Each column reports the outcome of using a different economic freedom measure. The first column uses the overall measure of economic freedom with the remaining columns reporting the results based on the component measures of economic freedom.⁹

The results based on the level of economic freedom are, overall, disappointing. Though the sign on the estimated freedom coefficients is positive, indicating that an increase in overall economic freedom is associated with an increase in well-being, it is insignificant. This holds true for the government subcomponent as well. In contrast, the estimated coefficient on the labor subcomponent is negative, though it, too, does not achieve statistical significance at any reasonable level.

Of the results reported in Table 4, the outcome for the tax subcomponent stands out. Found in column 3, the sign and statistical significance of the coefficient on the tax subcomponent indicates that, all else the same, states with lower levels of taxation (greater tax freedom) are, on average, states with higher levels of well-being. The estimated coefficient

⁹ To conserve space, we do not report the estimated coefficients on the regional variables. What they indicate, across the different freedom measures and when using the change in freedom, is that the Northeast and West generally shifts upward relative to the Midwest; and the South was statistically indifferent from the Midwest. An alternative specification using a joint baseline of the Southern and Midwestern states also saw the Northeast and West with slightly higher intercepts than the baseline states. These changes do not affect the other coefficient estimates.

suggests that the average state's well-being increases by a little over two percentage points for every one standard error increase in tax freedom.

The coefficient estimates for the control variables also are consistent with prior expectations. A high unemployment rate, indicating a worse economic environment, reduces well-being. The estimated coefficients on the unemployment rate are highly significant across specifications. The estimated effect of population density also is correctly signed, but the coefficients never achieve significance. As noted earlier, this is likely due to the inclusion of the regional variables. In fact, estimating equation (1) without regionals yields estimated coefficients on population density that are highly significant.

The results of estimating equation (2) are found in Table 5. The results in the first column indicate that state well-being is positively and statistically related to the change in overall economic freedom. An increase in overall economic freedom by one-standard deviation is associated, on average, with an increase in well-being by 2.3 points. In Table 5 we again find that well-being is positively and significantly related to changes in tax freedom. The estimated coefficient on the tax component shows that there is a 2.4 point increase in well-being for a one-standard deviation increase in the tax score. In effect, as taxes become more onerous, well-being suffers. Though the estimated coefficients are positive, changes in the government and labor market freedom do not exert statistically significant effects on well-being. Based on our results, we cannot refute the notion that increases in overall economic freedom and in tax freedom, on average, increase well-being at the state level.

4.c. The Role of Regional Variation

In the development of the well-being and freedom measures, regional variation is not an explicit factor. That is why in our regression analysis we explicitly account for potential

geographic variation. Explicitly accounting for such regional differences has important effects on the estimated results. Indeed, in preliminary regressions we found that the estimated coefficients of changes in overall freedom, the government and the tax components all are highly significant when the regional variables are excluded. Moreover, including the regional variables increases the overall explanatory power of the regression.¹⁰

The fact that regional variation is important in explaining well-being across states warrants further investigation. Analogous to Lynn's (2010) testing for and finding that regional differences in IQ across Italy affects the estimated relationship between it, income and education, we explicitly consider whether there is significant regional variation in the effects of changes in economic freedom on well-being. With the caveat that the sample sizes are small, we estimate an extended version of equation (2) that allows for regional variation in the effect of changes in the economic freedom on well-being by creating interaction terms between our regional dummies and each of the economic freedom measures. While the regional variables in the previous regressions account for intercept shifts, including interaction terms reveals if there are any inter-regional differences that exist between well-being and economic freedom.

Estimating the extended model produces the results in Table 6. The regression results reveal notable regional variation in the effects of changes in economic freedom on well-being.¹¹ Looking first at the results using the overall economic freedom measure, the estimated coefficient on the West interaction term is not statistically significant. In contrast, for the states included in the Northeast region—Maine, New Hampshire, Vermont, Massachusetts, Rhode

¹⁰ These results are available upon request.

¹¹ We tested the hypothesis that the estimated interaction terms are equal. Based on our tests (available upon request) we find that we can reject equality for only one pair, that being the interaction term for the South and the Midwest using the overall freedom measure. Since we also find that combining these two regions in that regression (column 1 of Table 6) does not change the story—economic freedom in the South/Midwest region has a significant and positive effect on well-being—we rely on the individual region results as reported in Table 6.

Island, Connecticut, New York, New Jersey, and Pennsylvania—our regression indicates that an increase in overall economic freedom significantly *reduces* the level of well-being. For the average state in this region, a one-standard deviation increase in economic freedom lowers well-being by 3.1 points. This result may not be too surprising. Pesta, et al. (2010a) reported that many states in the Northeast tend to have higher well-being scores, and these are associated with greater liberalism, higher minimum wages, fewer residents owning guns, and a higher Starbucks-to-Walmart ratio. Such variables are likely to be inversely related to those aspects that deliver a higher economic freedom score. Indeed, the negative rank correlation (-0.238) reported for Table 1 suggests this to be the case. The results for the Northeast using the component measures of freedom also indicate that an increase in these respective economic freedoms has a negative though not statistically significant effect on well-being.

In sharp contrast to the Northeast, the estimated coefficients reveal that an increase in economic freedom significantly improves well-being in the Midwest and South regions. The estimated coefficient on overall economic freedom, the size of government and taxes are all positive and statistically significant at high levels. The estimated coefficients in Table 6 suggest that increases in tax freedom have the largest effect on well-being in the Southern states, but that increases in government freedom are relatively more important in affecting Midwestern states' well-being. Because the regressions also includes regional dummies to account for any intercept differences in the relationship, the results in effect suggest that well-being in the Midwest and the South is put on a different “path” with an increase in economic freedom. This is exactly the opposite reaction by states in the Northeast. Finally, comparable to our previous findings, it appears that well-being is not statistically related to changes labor market freedom.

5. Conclusions

We set out to see if there is an empirical link between well-being and economic freedom across the U.S. states. Using a newly-created index of well-being and a popular measure of economic freedom, we find that while there is little correlation between the levels of the measures, there is a positive, statistically significant effect of an increase in economic freedom on well-being. This outcome is especially evident once we account for regional variation in the effect. Our state-based results broadly corroborate previous findings based on international data: improving economic freedom leads to improvements in well-being.

Our results add to the existing body of evidence that can be used to guide the debate over the role of the government and its potential influence on individual well-being. Because our measure of economic freedom is inversely related to the amount of government activity in a state economy, our findings suggest that policies aimed at reducing the role of state and local government, whether it is through reduced government spending or taxation, could improve well-being. This conclusion must be tempered somewhat, as the regional estimation results indicate that it is not universal. Would reducing governmental activity in a state always improve well-being if such an act reduced employment and lowered incomes? While our results suggest that the answer is yes, one must consider costs as an economy transitions from a low to high freedom environment. Answering such policy questions is difficult and must consider the time frame over which such changes are made.

Stating that the well-being of a state's inhabitants will improve if economic freedom is increased raises another important though often overlooked concern. Because the freedom and well-being measures used are indexes, they are multifaceted. Consequently, calling for a policy shift to increase economic freedom requires a better understanding of how policy actions impact

the component parts of the index and how this may translate to well-being. The results in this paper shed, though preliminary, some light on this important issue. What remains is to explore the role that economic freedom and other important state-level institutions—such as those embodied in the g nexus—interact to influence well-being.

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Table 1
The well-being and economic freedom of states
(Rank order based on well-being)

State	Well-Being	WB Rank	Economic Freedom	EF Rank
Massachusetts	127.2	1	7.0	23
New Hampshire	126.3	2	7.8	5
Connecticut	122.7	3	6.9	26
Vermont	122.5	4	6.1	44
Minnesota	119.3	5	6.7	31
New Jersey	117.6	6	6.5	36
Maine	115.3	7	5.8	46
Washington	113.5	8	6.3	40
North Dakota	113.4	9	7.1	20
Colorado	113	10	7.5	9
Wisconsin	111.8	11	6.5	37
Iowa	109.2	12	7.1	21
Rhode Island	109.1	13	5.8	47
Virginia	108.9	14	7.9	3
Oregon	108.3	15	6.4	38
Montana	108.1	16	6.6	34
New York	107.9	17	5.7	49
Wyoming	107.5	18	6.9	27
Nebraska	107.1	19	7.2	18
Utah	105.7	20	7.3	15
Idaho	105.6	21	6.7	32
Maryland	105.5	22	7.3	16
Kansas	104.9	23	7.0	24
South Dakota	104.5	24	7.9	4
Alaska	104.4	25	5.8	48
Pennsylvania	103.9	26	6.8	30
Illinois	100.6	27	6.9	28
Hawaii	100.4	28	6.2	42
Michigan	100.2	29	6.4	39
California	98.6	30	6.1	45
Ohio	98	31	6.2	43
Indiana	96.5	32	7.4	12
Delaware	94.9	33	8.3	1
Missouri	93.7	34	7.2	19
Florida	92.2	35	7.5	10
Arizona	90.5	36	7.8	6
Nevada	89.9	37	7.6	8

Texas	89	38	7.8	7
Kentucky	86.7	39	6.7	33
North Carolina	86.6	40	7.4	13
West Virginia	86.4	41	5.5	50
Georgia	85.2	42	7.5	11
Oklahoma	84.9	43	7.0	25
New Mexico	84.7	44	6.3	41
Tennessee	78.5	45	8.2	2
South Carolina	77.3	46	7.1	22
Alabama	76.9	47	7.3	17
Arkansas	75.1	48	6.9	29
Louisiana	69.1	49	7.4	14
Mississippi	61.2	50	6.6	35

Notes: The well-being data are from Pesta, et al. (2010a). The economic freedom data are from Ashby, et al. (2010).

Table 2
Descriptive statistics:

Measure	Mean	Std Dev	Min	Max
Well-Being	100	15.01	61.2	127.2
Economic Freedom	6.92	0.68	5.5	8.3
Government	6.91	0.98	3.8	8.7
Taxes	7.04	0.76	5.4	9.1
Labor	6.78	0.74	5.3	8.4
Change in Economic Freedom	0.11	0.31	-0.8	0.9
Change in Govt.	-0.11	0.55	-1.4	0.8
Change in Taxes	0.35	0.44	-0.7	1.6
Change in Labor	0.04	0.33	-0.9	0.7
Unemployment Rate	4.88	1.06	2.8	7.9
Population Density	189.262	257.66	1.2	1175.3

Notes: The well-being data are from Pesta, et al. (2010a). The economic freedom data are from Ashby, et al. (2010). The unemployment rate is from the Bureau of Labor Statistics. Population density is from the Census Bureau.

Table 3
Bivariate Correlations

	well-being	EF	EF-govt	EF-taxes	EF-labor	chEF	chEFg	chEFt	chEFI
well-being	1								
EF	-0.2062	1							
EF-govt	0.0435	0.8573	1						
EF-taxes	-0.1081	0.7768	0.5054	1					
EF-labor	-0.4952	0.7624	0.4803	0.4014	1				
chEF	0.488	0.0122	0.1915	0.0681	-0.2988	1			
chEFg	0.5363	-0.0102	0.3224	-0.1302	-0.3207	0.7875	1		
chEFt	0.3301	-0.0747	-0.1106	0.2489	-0.3064	0.7281	0.3206	1	
chEFI	0.0464	0.1034	0.1161	0.0685	0.06	0.4442	0.0473	0.1741	1

	well-being	EF	chEF	Unemp.	Pop. Density
well-being	1				
EF	-0.2062	1			
chEF	0.488	0.0122	1		
Unemp.	-0.4931	-0.2041	-0.483	1	
Pop. Density	0.3064	-0.1217	-0.1662	0.0411	1

Notes: Well-being is from Pesta, et al. (2010a). The mnemonics used in this table are: EF represents overall economic freedom with the added “govt,” “taxes” and “labor” referring to the government, taxation and labor subcomponents; chEF is the change in the overall measure with the additional labels as above. “Unemp” is the 2005 unemployment rate in the state and “Pop Density” is the population density for the state. The sample includes all 50 states.

Table 4
 Regression results
 Dependent variable: Well-being
 Level of Economic Freedom and Control Variables

<u>Variable</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Constant	128.13 (7.29)***	131.64 (7.43)***	110.20 (8.96)***	146.63 (9.64)***
Overall	-0.01 (0.01)			
Government		-0.38 (0.21)		
Taxes			2.42 (1.71)*	
Labor				-2.70 (1.33)
Unemployment	-4.89 (3.50)***	-5.07 (3.25)***	-4.75 (3.87)***	-5.02 (3.84)***
Pop Density	0.01 (1.31)	0.01 (1.30)	0.01 (1.35)	0.01 (1.17)
Regionals	Yes	Yes	Yes	Yes
Adj-R ²	0.718	0.718	0.731	0.729
F/pr	24.59 (0.00)	25.19 (0.00)	29.30 (0.00)	25.72 (0.00)

Notes: Absolute value of t-statistics in parentheses below coefficients. Significance is indicated as *** for 1%; ** for 5% and * for 10%. All regressions are estimated using OLS with cluster-robust standard errors. The sample includes all 50 states.

Table 5
 Regression results
 Dependent variable: Well-being
 Change in Economic Freedom and Control Variables

<u>Variable</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Constant	122.47 (17.30)***	125.32 (18.40)***	124.65 (19.99)***	128.03 (18.53)***
Overall	7.52 (1.81)**			
Government		3.10 (1.01)		
Taxes			5.48 (2.46)**	
Labor				0.05 (0.02)
Unemployment	-3.92 (2.83)***	-4.19 (3.00)***	-4.62 (3.76)***	-4.88 (3.58)***
Pop Density	0.004 (0.81)	0.005 (0.88)	0.005 (0.94)	0.007 (1.30)
Regionals	Yes	Yes	Yes	Yes
Adj-R ²	0.73	0.72	0.74	0.72
F/pr	26.98 (0.00)	24.36 (0.00)	29.37 (0.00)	24.50 (0.00)

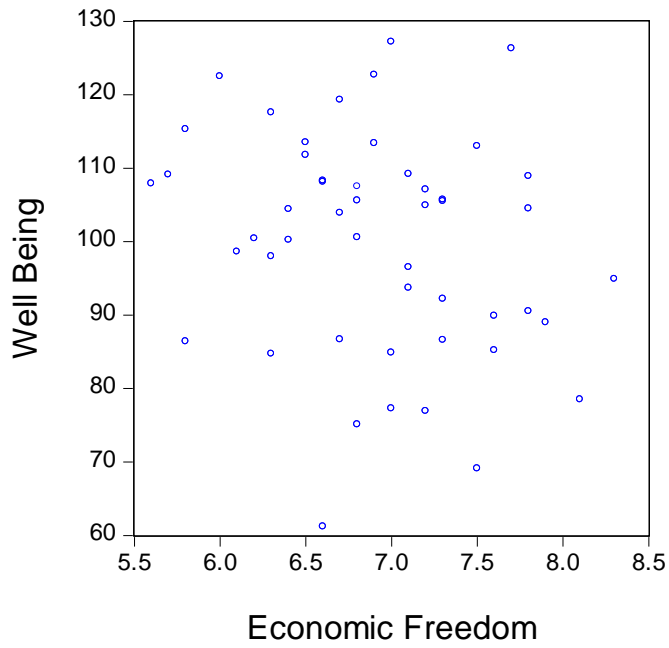
Notes: Absolute value of t-statistics in parentheses below coefficients. Significance is indicated as *** for 1%; ** for 5% and * for 10%. All regressions are estimated using OLS with cluster-robust standard errors. The sample includes all 50 states.

Table 6
Regression results
Dependent variable: Well-being
Changes in Economic Freedom across Regions

<u>Variable</u>	<u>Overall</u>	<u>Economic Freedom Measure</u>		
		<u>Government</u>	<u>Taxes</u>	<u>Labor</u>
Constant	126.28 (19.41)	131.53 (23.26)	133.88 (19.39)	132.23 (17.11)
EF*NE	-29.92 (3.48)***	-11.52 (1.64)	-13.75 (1.53)	-11.79 (1.34)
EF*W	-1.18 (0.15)	-2.36 (0.45)	2.48 (0.72)	-4.17 (0.57)
EF*MW	19.43 (3.67)***	11.75 (3.05)***	9.78 (2.50)**	3.71 (0.71)
EF*S	19.15 (2.96)***	8.77 (2.49)**	11.90 (2.90)**	5.29 (1.07)
Unemployment	-2.06 (1.55)	-3.39 (2.70)*	-3.56 (2.41)**	-4.59 (3.14)*
Pop Density	0.010 (1.82)**	0.008 (1.59)	0.006 (1.15)	0.008 (1.55)
Regionals	Yes	Yes	Yes	Yes
Adj-R ²	0.80	0.77	0.76	0.73
F/pr	33.70 (0.00)	20.68 (0.00)	21.68 (0.00)	17.93 (0.00)

Notes: Absolute value of t-statistics in parentheses below coefficients. Significance is indicated as *** for 1%; ** for 5% and * for 10%. All regressions are estimated using OLS with cluster-robust standard errors. The sample includes all 50 states. NE refers to the Northeast Census region; W is West; MW is Midwest and S is South.

Figure 1
Plot of Well-Being and Economic Freedom



Notes: The well-being data are from Pesta, et al. (2010a). The economic freedom data are from Ashby, et al. (2010).

