Do Changes in Economic Freedom affect Well-Being?

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Abstract. In this paper we test the relationship between changes in economic freedom and well-being. Unlike previous work which has relied on international data sets, the novelty of this paper is that we use state-level data. Using the economic freedom measures provided by the Fraser Institute and a recently published data set on well-being across states, we find that improvements in economic freedom lead to increases in well-being for the average state. Further analysis shows that the presence of regional variations across the states may in fact suggest differences in optimal freedom levels between regions.

1. Introduction and review

The question posed in the title incorporates two areas of burgeoning interest: determining how the development of social institutions fosters economic freedom and how economic freedom is related to well-being. This area of research crosses disciplinary boundaries, including social psychology (for an excellent review, see Kahneman et al., 1999) and economics (a review of the happiness/well-being and economics literature is provided by Frey and Stutzer, 2002). While increasing one's subjective well-being is a basic principle in economics, attempts to measure this concept and ascertain just what causes well-being to change is a continuing area of empirical research.[1]

Easterlin (1974) made early use of available relevant country-level data on happiness to conduct a systematic analysis of the role that economic factors play. Twenty years later, Easterlin (1995) argued that the use of such aggregative measures masks the unequal distribution of happiness across populations, thus casting doubt on country-level results. In a long-delayed exchange, Hagerty and Veenhoven

(2003) found that increasing national incomes are associated with increasing national happiness, though Easterlin (2005) continued to refute this claim. Other investigators, such as Tella et al. (2003) also found that changes in survey-based measures of happiness are positively correlated with macroeconomic measures, such as GDP. While areas of disagreement remain, in general the data suggest that well-being is positively related to increases in income.

A number of studies have broadened the scope of this research agenda by examining the relationship between well-being and economic freedom. If, as the preponderance of previous research results suggests, improvements in economic freedom lead to improved economic outcomes (e.g., higher per capita income and faster economic growth), does improved economic freedom also promote higher levels of well-being? Norton (1998) found that the poorest citizens in countries in which property rights (a building block of economic freedom) were established and enforced showed improvements in well-being when economic freedom expanded. Esposito and Zaleski (1999) reported that increased economic freedom improves the quality of life, measured as life expectancy and literacy. A causal link from economic freedom to income to well-being is indicated in Welsch (2003). Stroup (2007)

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[1] We use happiness and well-being interchangeably, even though we recognize that in survey measures the questions used to assess happiness and well-being may not be the same. For more on alternative measures of well-being, see Sharpe and Smith (2005).

concluded that improvements in economic freedom enhance economic well-being, though the magnitude of the effect varies with the level of democracy in a country. Inglehart et al. (2008) and Bjornskov et al. (2010) also found that increases in economic freedom and institutional quality raised levels of happiness and well-being, though again the magnitude of the effects differs across rich and poor countries. Gropper et al. (2011) tested the happiness-economic freedom nexus using three separate measures of happiness. Conditioned on the presence of GDP per capita, they found that countries with higher levels of economic freedom on average report higher levels of happiness.

The evidence from this large body of work, of which the above is just a sample, does not reject the hypothesis that improvements in economic freedom create an environment in which economic success blossoms and this, in turn, improves individual well-being. One feature of the aforementioned studies is that the focus has been, mostly due to data availability, on national-level relationships. We break from that tradition by examining the economic freedom—well-being relationship at a disaggregated level. Using a newly-published well-being index for U.S. states (Pesta et al., 2010), we investigate the relationship between well-being and economic freedom at the state level. This study thus asks whether the link between well-being and economic freedom found at the national level also holds at the state level. Looking ahead, our evidence indicates that the answer is yes.

The next section provides a brief overview of the well-being and economic freedom measures used in this study. Our empirical analysis is carried out in Section 3, followed by conclusions and implications for future research in Section 4.

2. Well-being and economic freedom

2.1. Well-being

Pesta, McDaniel, and Bertsch (2010) (hereafter PMB) note that trying to explain well-being spans several disciplines, including psychology, economics, sociology, criminology and public policy. Having a measure of well-being at the state level is important. Obviously it permits researchers to observe geographical differences in well-being and their trends over time. Just as important, it allows those interested in the effects of government policy the ability to gauge the differential effects of state-level policies under the umbrella of federal constraints.

Well-being sometimes is measured using individuals' subjective assessment to survey questions regarding life satisfaction, happiness, and quality of life. The approach taken by PMB is partly to measure well-being as being able to meet certain physical needs, quantified with measures such as income, education, physical health, and psychological health. The latter construct stems from the realization of being able to deal with demands of life (competence), the ability to establish and work toward goals (aspiration), and others. Since many of these attributes are highly correlated with general intelligence, PMB created a single index that combines the idea of well-being from a physical standpoint and from the broad concept of general intelligence.[2]

PMB constructed their measure by identifying several "sub-domains" that, based on previous research in psychology, are closely related to well-being. This set of variables includes quantitative measures of intelligence, health, religiosity, crime, education, and income. For example, since health is found to be a critical measure in one's subjective perception of well-being, states with better health measures will also have higher levels of well-being, *ceteris paribus*. Crime, as one might expect, is related to lower levels of subjective well-being. And, in keeping with the aforementioned economic literature, higher levels of income and subjective well-being are positively correlated.

PMB assembled numerous empirical indicators related to each sub-domain using data from public sources, including the U.S. Census Bureau's *Statistical Abstract of the United States*, and from private sources, such as Pew Foundation surveys. Using a principal components analysis, PMB used the array of variables in each sub-domain to create a multi-dimensional measure of well-being for each of the 50 states. "At the level of the U.S. state," PMB noted, "a nexus of inter-correlated variables exist that together seem to offer a reliable indicator of well-being" (p. 164).

The PMB well-being index is for 2005. Its mean is set at 100 with a standard deviation of 15. The extremes are represented by Massachusetts, with an index value of 127.2, and Mississippi, with a well-

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[2] Often referred to as the *g* nexus, the idea is to fashion one overarching measure that can serve as a general predictor of economic and social success. Researchers in psychology and economics have found that general intelligence, or IQ, is a fairly robust predictor of educational success, higher income, better health, and longevity, among other variables. Examples of this research can be found in Lynn and Vanhanen (2002), Weede and Kampf (2002), Jones and Schneider (2006), and McDaniel (2006).

being index of 61.2. PMB noted that the well-being index is positively correlated with greater education, lower crime rates, higher income and higher levels of IQ.[3] These correlates conform to results in previous research in psychology and economics. PMB also found that states with more liberal political views, measured by voting patterns in the 2008 presidential election, on average have higher well-being measures, as do states that are less religious. This latter finding agrees with previous research (e.g., Barro and McCleary, 2003), although the evidence is mixed. Among all of the measures PMB considered, however, they ignored the potential effects of other social institutions, such as rule of law, or, in a more general sense, economic freedom.

2.2. Economic freedom

The state-level economic freedom index is taken from the Fraser Institute's *Economic Freedom of North America 2010* (Ashby et al., 2010). The index uses a 10-point scale: the closer a state's index value is to 10, the greater is the level of economic freedom. The index we use quantifies the level of state- and local-government involvement in the local economy to measure economic freedom. The index used here thus abstracts from federal government activity. Basically, the greater the level of state and local government involvement in the state economy, the lower is that state's economic freedom score.

To gauge the general level of economic freedom, we use several available measures. One is the "overall" measure of economic freedom.[4] This general measure is composed of three components: "size of government," "takings and discriminatory taxation," and "labor market freedom." Each component allows one to focus on a specific area in which government activity may limit the freedom of individuals to produce and trade. "Size of government" (hereafter "government") uses data on state and local government consumption expenditures, transfers, subsidies, and social program payments, all relative to state output. The more the government accounts for output generated in the state economy, the lower is the freedom score. "Takings and discriminatory taxation" (hereafter "taxes") is based on measures such as the government's total

tax revenues as a percent of GDP and the level of marginal tax rates, among others. States in which the government takes a relatively larger share of output in taxes have a relatively lower freedom measure. Finally, "labor market freedom" (hereafter "labor") is determined by a state's minimum wage legislation, the relative size of government employment, and the degree of unionization. States with higher levels of economic freedom are characterized by the government sector accounting for relatively less employment overall, lower minimum wages, and a less unionized labor market.

3. Methodology and empirical results

To determine if economic freedom and well-being at the state level are empirically related we estimate the following model:

$$WB_i = \alpha + \beta_1 (\Delta EF)_i + \beta_2 (Control) + \varepsilon_i \qquad (1)$$

where WB_i is the PMB well-being measure for the ith state, ΔEF is the change in the ith state's economic freedom index, *Control* is a vector of control variables, and ε_i is the error term with the usual characteristics.

Note that equation (1) uses the change in the level of economic freedom as the explanatory variable. This specification is used based on two observations. First, the simple correlation between the level of economic freedom (for 2005) and the level of well-being is insignificant.[5] Second, previous research suggests that *changes in* economic freedom are more informative than its level. Esposito and Zaleski (1999) and Weede and Kampf (2002), for example, found that countries with higher levels of economic growth are, on average, those countries that have experienced increases in economic freedom. Gwartney et al. (2006) found that increases in economic freedom result in higher levels of capital investment across countries. If increased economic freedom is an important element to explain investment and economic growth, then perhaps it is increases in economic freedom that explain higher levels of well-being at the state level.[6]

To estimate equation (1) it is necessary to determine the period over which changes in economic

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[3] The state-level IQ measure is taken from McDaniel (2006).
[4] There is some concern in the literature (e.g., Hanson (2003)) about the use of the overall index versus the subcomponents. Heckelman (2005) showed that this concern is mitigated using the components of the index. As do Garret and Rhine (2011), we adopt the practice of using the overall and subcomponent measures of economic freedom.

[5] The simple correlation is -0.21. The correlation between well-being and the component measures of the economic freedom index also are small and insignificant. Belasen and Hafer (2012) also report that the level of economic freedom was not significant in any regression analysis.
[6] Belasen and Hafer (2012) provide further justification for using the changes-in-freedom measure.

freedom occur. With no theoretical model to guide us, we experimented with various time frames and found that a 10-year change maximized the fit of the equation. The change in economic freedom is thus measured from 1995 to 2005.

Equation (1) indicates the fact that to fully understand the link between economic freedom and well-being one must consider the influence of other variables. The problem in selecting the proper set of control variables is two-fold. First, many candidates to include in the set of controls are highly correlated with economic freedom. Second, the control variables also are likely to have been included in the construction of the well-being index: the oft-used control variable that comes to mind is income. To deal with such problems, we sought variables that were not used in the construction of the well-being or freedom indices, but still could serve a role in capturing economic influences on well-being that economic freedom alone may have missed. After experimenting with several measures, we settled on two: one is state unemployment rate in 2005, to capture the overall level of economic activity, and the other is state population density, gathered from the 2000 U.S. Census to control for regional variation between heavily populated states (such as those in the Northeast) and less densely populated states.[7] In related studies Ovaska and Takashima (2006) and Garrett and Rhine (2011) also found these two variables to be useful controls. We also include regional dummies to account for any idiosyncratic effects from different sections of the country. As with Gropper et al. (2011), who adopt a similarly parsimonious specification, we recognize the limitations of this specification and of our sample. Still, we believe that the results are informative.

3.1. Summary statistics

Before turning to our regression results it is useful to consider some preliminary statistics. Table 1 lists the states in order of the PMB well-being index. As noted above, the mean of the well-being measure is set at 100, with a standard deviation of 15. The ranking suggests that states with the higher levels of well-being are clustered in the Northeast region. It also seems that low-well-being states are clustered

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[7] Due to data restrictions, the population density variable is for 2000. While it does not match with the other data, it also is true that this measure does not vary considerably over such a short time span. As will be shown later, the importance of this variable is subject to the specification used.

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**

in the Deep South region.[8] Such apparent clustering reinforces the need to consider regional variation in our regression analysis.

Table 1 also lists the overall economic freedom scores (in 2005 levels) for the states. The average freedom score is 6.92, with a standard deviation of just 0.68, indicating a much tighter distribution than for the well-being measure. The state with the highest level of economic freedom is Delaware, and the lowest score is registered by West Virginia. Does economic freedom form the same clustering as found for well-being? The match is much less clear, although the top-tier well-being states generally are characterized by fairly low freedom scores. Similarly, the 10 lowest well-being states, as a group, tend to have higher than average freedom scores. Although that is the perception, the rank correlation between the two indices is -0.24, showing that there is far from a perfectly inverse relation.

Table 2 provides summary statistics for the different variables used in this study. These statistics are useful when we measure the economic effect of the change in economic freedom on well-being. And, to provide a preliminary look at the overall relationship, Figure 1 is a scatter plot of well-being and the change in economic freedom. The scatter indicates that the two measures are positively related. The robustness of that positive relationship will be determined by our regression results.

Table 2. Descriptive statistics across the states.

Measure	Mean	Std. Dev.	Min	Max
Well-Being	100	15.01	61.2	127.2
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	189.2	257.6	1.2	1175.3

3.2. Regression results

Alternative estimates of equation (1) are found in Tables 3-5. Table 3 reports the results of estimating equation (1) without any control or regional variables. The regression results corroborate the conclu-
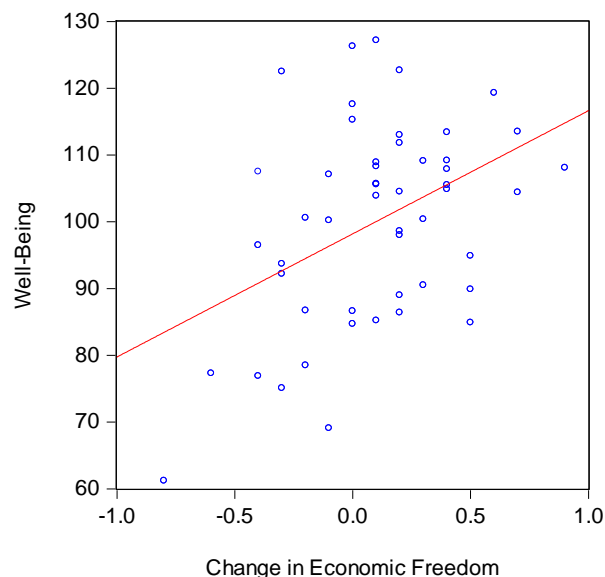
Figure 1. Scatter plot of well-being and change in economic freedom.

sion from Figure 1: well-being is positively related to the change in overall economic freedom. The estimated coefficient on the freedom variable not only is statistically significant at the one-percent level, but it is also economically important. A one standard deviation increase in the overall level of economic freedom leads to a 7.32 point increase in the level of well-being which, for the average state, represents about a half of a standard deviation increase.

Table 3. Regression results: changes in economic freedom.

Dependent Variable: Well-Being				
Freedom Measure	Estimated Coefficients		Summary Statistics	
	Constant	Coefficient	Adj. R^2	F/pr
Overall	97.50 ***	23.63 ***	0.22	15.01
	(49.24)	(3.87)		(0.00)
Government	101.57 ***	14.76 ***	0.27	19.38
	(55.07)	(4.40)		(0.00)
Taxes	96.12 ***	11.21 **	0.09	5.87
	(37.25)	(2.42)		(0.02)
Labor	99.92 ***	2.14	-0.02	0.10
	(46.29)	(0.32)		(0.75)

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.

The results in Table 3 also indicate that increases in the government and taxes measures of economic

freedom exert a positive effect on well-being. A one-standard deviation increase in government freedom (i.e., a reduction in government's role in the state economy) leads to an 8.11 point increase in well-being, slightly over a one-half of one standard deviation increase. Though smaller in magnitude, a one-standard deviation increase in freedom from taxation results in a 4.93 point increase in well-being. In contrast to these findings, the effect of an increase in the labor component of the index has no statistical effect on well-being. Except for this latter regression, the equations explain between 10 and 20 percent of the total variation in well-being. The results in Table 3 indicate that, in general, an improvement in economic freedom increases well-being at the state level.

Are the results in Table 3 robust to adding our economic control variables? Table 4 answers that question by adding the unemployment rate and population density to the estimated regressions. Adding the control variables substantially increases the overall fit of the model: in all cases the overall explanatory power of the equation increases to over 30 percent. The estimated coefficient on the unemployment rate is negative, as one would expect, and it is statistically significant: all else the same, a higher level of unemployment is associated with a lower level of well-being. The results also indicate that a higher level of well-being is associated with a greater population density. This result likely stems from the observation made earlier that the higher PMB well-being measures are clustered among states in the Northeast, states that also have higher population densities.

Even with the control variables included, the results reported in Table 4 still indicate that changes in economic freedom have a positive effect on well-being at the state level. As in Table 3 the estimated coefficient on the change in economic freedom variable, measured using, in turn, the overall index and the government and tax components, is positive and statistically significant. Change in the labor component of the index once again has no statistically significant effect on well-being. Adding the control variables does, however, reduce the economic impact on well-being from an increase in economic freedom. The estimated coefficients in Table 4 suggest that a one standard deviation increase in economic freedom, whether it is the overall or government or taxes measure, results in a 3.8 (taxes) to 4.6 (government) point change in well-being. That is, the range of effect is about one-third of a standard deviation in well-being for the average state.

Table 5 extends the model to include regional dummy variables. An earlier paper (Belasen and Hafer, 2012) used the four broad Census regions to test for regional impacts in the estimated relationship. In this paper, we opt for a more disaggregated set of regional variables because the four Census regions do not permit much regional variation.[9] Adding the regional variables has important effects on the previous outcomes, as shown in Table 5. One effect is that the explanatory power of the equation jumps considerably with regional dummies included. The other is that when holding regional variation constant only the estimated coefficients on the change in overall freedom and on the taxation component of the freedom measure are statistically significant at any reasonable level. We also find that the estimated economic effects of an increase in these two measures are diminished somewhat: a one-standard deviation increase in overall economic freedom produces about a 2.5 point increase in well-being, and the effect of a one-standard deviation increase in the taxes component is a 1.9 point increase in well-being. Though not reported, it is worthwhile to note that we find the East South Central (AL, KY, MS, and TN) region to have the lowest intercept value, with the other regions scoring between 8.6 and 35.2 points higher in well-being than those states. The evidence points to significant statistical differences in well-being scores by region. Although we find no evidence of an effect from increases in government or labor market freedom, we cannot reject the hypothesis that increases in overall economic freedom and freedom from taxation increase well-being in the average state.

It is clear that the link between changes in economic freedom and well-being is sensitive to geography. To further assess this we tested for regional differences in the estimated slope coefficients. That is, given an initial start-point, does well-being in the regions diverge because of changes in economic freedom? Belasen and Hafer (2012) report that improvements in economic freedom—all except the labor market measure—had differential effects on well-being across the broad Census regions. While increases in the overall, government, and tax freedom measures improved well-being in the South

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[9] The regions used in this paper are the nine Census sub-regions: Pacific (AK, CA, HI, OR, WA); Mountain (AZ, CO, ID, MT, NM, NV, WY); West North Central (IA, KS, MO, MN, NE, ND, SD); East North Central (IL, IN, MI, OH, WI); West South Central (AR, LA, OK, TX); East South Central (AL, KY, MS, TN); South Atlantic (DC, DE, FL, GA, MD, NC, SC, VA, WV); Middle Atlantic (NJ, NY, PA); and New England (CT, MA, ME, NH, RI, VT).

and the Midwest Census regions, such changes actually decrease well-being in the Northeast region. Do these results hold using a less-restrictive set of regions?

The answer is no. To conserve space we summarize rather than report the results. We find that allowing for more regional variation than that afforded by the broad Census regions results in no differential effect of a change in economic freedom on well-being. While the sign of the coefficient on the interaction term (i.e., region x economic freedom) is positive for all sub-regions except for the New England states, the data reject the hypothesis that changes in economic freedom in any one region have significantly different effects on well-being compared to the others.

Table 4. Regression results: changes in economic freedom with control variables.

Dependent Variable: Well-Being								
Variable	1		2		3		4	
Constant	119.97		121.96	***	124.60	***	130.22	***
	(12.38)		(13.18)		(14.28)		(14.23)	
Overall	13.51	**						
	(2.08)							
Government			8.31	**				
			(2.07)					
Taxes					8.53	**		
					(2.15)			
Labor							-0.012	
							(0.02)	
Unemployment	-4.94	***	-4.73	**	-6.27	***	-6.83	***
	(2.63)		(2.45)		(3.78)		(3.85)	
Population Density	0.014	**	0.011		0.016	**	0.017	**
	(2.09)		(1.45)		(2.42)		(2.29)	
Adj-R²	0.38		0.38		0.35		0.28	
F/pr	9.52		9.50		9.66		7.39	
	(0.00)		(0.00)		(0.00)		(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 fifty states.

Table 5. Regression results: change in economic freedom with economic control variables and regionals.

Dependent Variable: Well-Being								
Variable	1		2		3		4	
Constant	99.34	***	100.96	***	100.41	***	102.18	***
	(10.38)		(10.16)		(10.02)		(10.84)	
Overall	8.29	**						
	(1.99)							
Government			2.81					
			(0.99)					
Taxes					4.22	*		
					(1.79)			
Labor							3.145	
							(0.89)	
Unemployment	-3.52	*	-3.84	***	-4.27	**	-4.35	**
	(2.18)		(2.37)		(2.82)		(2.81)	
Population Density	0.001		0.002		0.003		0.004	
	(0.22)		(0.37)		(0.94)		(0.72)	
Regionals	Yes		Yes		Yes		Yes	
Adj-R²	0.80		0.79		0.80		0.79	
F/pr	25.93		21.83		26.37		21.94	
	(0.00)		(0.00)		(0.00)		(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 fifty states.

4. Conclusion

In this paper we tested the relationship between well-being and economic freedom using data for the U.S. states. Our empirical evidence suggests that changes in economic freedom help explain observed levels of well-being amongst the states. Increases in freedom generally are positively and significantly correlated with our measure of well-being. Expanding the estimated equation to include economic control variables and regional dummies forces us to temper this observation somewhat. Changes in government and labor market do not exert any statistically significant effects in this expanded specification, but we continue to find that increases in overall economic freedom and in freedom from taxation exert a positive and statistically significant effect on well-being.

The results based on adding regional variables suggest that there are important aspects about the clustering of well-being and economic freedom that deserve further analysis. Although it is beyond the scope of this paper, an avenue for future research may be to employ spatial econometric models to test the connection between well-being and economic freedom across states. This would be most comparable to Wagner and Wheelock (2005), but alternatively one could rely purely on spatial techniques and omit the regional dummy variables, such as LePage's (1997) treatment of spatial autocorrelation at the state level. Additionally, Hall and Sobel (2008) used a spatial autoregressive model (SAR) as well as a spatial error model (SEM) to deal with high regional variation in entrepreneurship, indicating yet a third possible approach. The findings in this paper should serve as a strong foundation regardless of the approach used in the follow-up.

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