Panel evidence on economic freedom and growth in the United States

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ABSTRACT

Using the measures of economic freedom developed by Karabegovic et al. (2003), we are able to create a dataset spanning the period 1981 to 2004 in order to investigate the nature of the relationship between economic freedom and economic growth for the fifty US states. Overall, we find a significant positive relationship between economic freedom and economic growth. However, not all components of economic freedom affect growth equally.

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1. Introduction

Economists believe that economic growth is critical in alleviating world poverty and despair. Growth, as defined by Romer (1990), is composed of labor, physical capital, human capital and technology. The pressing question as put forth by Berggren (p. 193, 2003) is "which economic policies are most favorable to growth?"

Policies that promote economic freedom have been suggested as a viable path towards sustained economic growth. An economy is freer when there is little government intervention in markets and individuals are able to enter into transactions that are enforceable and protected. As Gwartney et al. (1996) state "Individuals have economic freedom, when (a) property they acquire without the use of force, fraud, or theft is protected from physical invasions by others and (b) they are free to use, exchange, or give away their property as long as their actions do not violate the identical rights of others."

In what is considered a novel and controversial attempt to index economic freedom across countries, Gwartney et al. (1996, 2009) created the Economic Freedom of the World index (EFI).[1] These data begin in 1970 and are updated every five years, although for more recent years, it is available annually. The index initially had 54 countries but has grown to include over 120 countries in more recent iterations. There has been a great deal of debate over the components of this index (as well as other freedom indices more generally) and the implications for scholars using these data in their research. For an excellent overview of

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[1] The index, as it is currently constructed, has 23 components, which are grouped into five main areas, measured on a scale of 1–10, with a higher number being associated with greater freedom. Thus, a measure of 10 would indicate complete economic freedom. These main areas of the index are: the size of government, legal structure and security of property rights, access to sound money, freedom to trade internationally, and regulation of credit, labor, and business.

the issues surrounding this controversy, see Berggren (2003), as well as De Haan and Sturm (2000), Leschke (2000), Gwartney and Lawson (2003), Heckelman and Stroup (2000, 2005) and De Haan et al. (2006).

Irrespective of the issues concerning the exact construction of freedom indices, a growing literature has studied the influence of freedom on economic growth. In a prominent survey paper, De Haan (2003) demonstrates that while most of the existing literature finds a relationship between economic freedom and growth, the relationship is not entirely robust across all studies. Carlsson and Lundström (2002), for example, find that the relationship between freedom and growth depends greatly on what components of economic freedom are being studied. Using more advanced panel approaches, Dawson (2003) finds that the level of economic freedom, in general, Granger-causes economic growth while there is a bi-directional causal relationship between the change in economic freedom and economic growth. More recently, Justesen (2008) also uses Granger-causality tests and finds economic freedom with respect to the size of government and regulatory policies dimensions have robust positive effects on growth, while other dimensions of freedom do not. Lastly, many studies in the literature tend to find the change in freedom is much more robustly related to growth than the level of freedom (c.f. Sturm and De Haan, 2001; De Haan et al., 2006; Ashby and Sobel, 2008).

The above studies have generally used broad cross-country datasets to study the effects of freedom on growth. Creating an index of economic freedom for states that is similar to those used at the country-level requires some tweaking that should be noted. For example, topics of concern for measures of world economic freedom include the stability and security of the legal system, monetary policy, freedom to own foreign currency, structure of capital markets, private ownership of banks, international exchange rates, and avoidance of negative interest rates, which will not be effective metrics at an intranational level (more detail on the exact composition of this index will be provided in the next section). However, a number of key elements from the world measures of economic freedom are easily measurable at the state/provincial level, such as size of government, transfers and subsidies as a percentage of GDP, takings and discriminatory taxation, top marginal income tax rate and income threshold at which it applies, indirect taxes as a percentage of GDP, sales taxes collected as a percentage of GDP, minimum wage legislation, government employment as a percentage of total state/province employment, and union density.

For our current study, we utilize Karabegovic and McMahon's "Economic Freedom of North America" index. Their index contains annual observations beginning in 1981 for the United States and Canada on state and provincial level economic freedom. Karabegovic and McMahon initially used their index to do analysis concerning the nature of the relationship between economic freedom and economic growth/levels at the state/provincial level in their 2003 paper with Samida and Schlegal. Their results indicate that the level and growth of economic freedom have a significant positive effect on both the level and growth of per-capita output.

Karabegovic and McMahon's "Economic Freedom of North America" index has been used by other authors as well. Ashby and Sobel (2008) use the index to study economic freedom and inequality within the United States. They found that economic freedom was positively and significantly associated with income and income growth. The authors also conclude that reducing state minimum wages and tax burdens would result in higher incomes, income growth, and the share of income going to the lowest quintile of the income distribution. Kreft and Sobel (2005) and Ashby (2007) have also successfully incorporated the "Economic Freedom of North America" index into the analysis of entrepreneurship and migration, respectively.

Our work builds upon and compliments the existing literature in several ways. We show a link between economic freedom and growth, taking care to address many of the econometric problems that have hindered previous efforts (which we discuss in the next section). In addition, we investigate the sub-components of freedom indices to examine what aspects of freedom affect growth and which do not.

The rest of the paper is organized as follows: the next section presents the data and data sources used in this analysis along with the outlines of the empirical model that we employ. The following section presents the results of our analysis. The final section has concluding remarks and policy implications for our work.

2. Data and empirical approach

2.1. Data

We consider the relationship between economic freedom and economic growth for the United States using data from 1981–2004. Our main dependent variable is the log difference of real per-capita gross state product, which is collected from the Bureau of Economic Analysis (BEA).

Our control variables include education (as measured by the percent of the population aged 25 and older who graduated from college), the percent of state population that is black and Hispanic, and the percent of the state population that resides in metropolitan areas. The above-mentioned data come from the Census Bureau. Additional controls include initial real per-capita gross state product (from the BEA) and investment (measured as gross private investment in thousands per capita) from Garofalo and Yamarik (2002). Initial real GSP per capita, investment, and education are standard economic controls seen in the economic growth literature,[2] while percent Hispanic, percent black, and percent in metro areas represent demographic controls and are found in papers such as Ashby and Sobel (2008) and Gallet and Gallet (2004). In fact, Gallet and Gallet (2004) successfully argue that racial/ethnic differences matter in the relationship between economic growth and economic inequality. Our work here, using

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[2] Interestingly, investment is often not included in the freedom and growth literature (see many of the studies cited in our research).

Table 1
Summary statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Growth	250	0.0141	0.0143	−0.0563	0.04845
Initial GSP per capita	250	$31,962	$7933	$19,474	$80,548
Education (% college)	250	0.22	0.05	0.10	0.36
Black %	250	0.10	0.09	0.00	0.37
Hispanic %	250	0.06	0.08	0.00	0.43
Metro %	250	0.72	0.19	0.29	1.00
Investment (000's)	250	$1876	$779	$415	$5637
Overall freedom	250	6.55	0.58	4.86	8.33
1. Size of government (% GSP)	250	7.25	0.81	4.40	9.26
1a. Gov. consumption expenditures (%GSP)	250	7.53	1.08	3.74	9.83
1b. Transfers and subsidies (% GSP)	250	8.68	0.82	4.35	9.88
1c. Social security payments (%GSP)	250	5.55	1.18	0.63	9.58
2. Takings and discriminatory taxes	250	5.73	0.77	3.68	8.28
2a. Total tax revenue (%GSP)	250	5.83	1.05	3.38	9.53
2b. Top marginal income tax rate	250	4.55	2.12	0.00	7.90
2c. Indirect tax revenue (%GSP)	250	5.14	1.49	0.44	8.94
2d. Sales taxes collected (%GSP)	250	7.40	1.02	4.66	9.88
3. Labor market freedom	250	6.67	0.65	4.56	8.03
3a. Minimum wage legislation	250	6.32	1.36	1.86	9.86
3b. Government employment (% employment)	250	7.57	1.43	1.00	9.82
3c. Union density	250	6.13	1.85	2.18	9.60
Δ Overall freedom	250	0.19	0.47	−1.00	1.10
Δ 1. Size of government (% GSP)	250	−0.06	0.40	−1.20	1.00
Δ 1a. Gov. consumption expenditures (%GSP)	250	−0.13	0.60	−1.80	1.40
Δ 1b. Transfers and subsidies (% GSP)	250	−0.11	0.38	−2.70	1.60
Δ 1c. Social security payments (%GSP)	250	0.06	0.52	−1.20	1.40
Δ 2. Takings and discriminatory taxes	250	0.35	1.10	−2.10	2.60
Δ 2a. Total tax revenue (%GSP)	250	0.22	1.04	−2.80	2.80
Δ 2b. Top marginal income tax rate	250	1.24	3.59	−5.00	8.00
Δ 2c. Indirect tax revenue (%GSP)	250	−0.05	1.06	−4.10	3.00
Δ 2d. Sales taxes collected (%GSP)	250	−0.02	0.25	−0.90	0.80
Δ 3. Labor market freedom	250	0.29	0.34	−0.70	1.40
Δ 3a. Minimum wage legislation	250	0.78	0.82	−1.20	3.30
Δ 3b. Government employment (% employment)	250	0.02	0.35	−1.30	1.20
Δ 3c. Union density	250	0.07	0.44	−1.90	1.30

economic freedom is a natural extension for a country like the United States. Summary statistics for all variables are presented in Table 1.

We use the freedom data from Karabegovic and McMahon (2005). The overall freedom index is comprised of three equally-weighted main components that measure government involvement in three aspects of states' economies[3]: *Size of Government*, *Takings and Discriminatory Taxes*, and *Labor Market Freedom*. In turn, these three main components are comprised of equally-weighted sub-components. In all cases, the assumption is that economic freedom is greater when government involvement in the economy is lower; higher freedom scores in the data represent higher levels of economic freedom.

Size of Government is determined by *Government Consumption Expenditures*, *Transfers and Subsidies*, and *Social Security Payments* (all as a percentage of gross state product). This broad component of freedom is intended to capture the idea that the role of a government in a free economy is to provide functions that are protective (such as defense and legal mechanisms designed to protect private property) and productive (such as the provision of public goods). Government expenditure beyond these basic functions (i.e. providing goods that could be privately provided) as well as the transferring of resources between tax payers are therefore considered as impinging on economic freedom.

Takings and Discriminatory Taxes is made up of *Total Tax Revenue*, *Indirect Tax Revenue*, *Sales Taxes Collected* (all as a percent of gross state product), and the *Top Marginal Income Tax Rate and the Income Threshold at Which It Applies*. This component addresses the notion that taxes restrict private choices, thereby lowering economic freedom. This reduction in freedom is exacerbated if the taxes collected are not closely connected to the services the government provides using the tax revenue.

The final major component of economic freedom, *Labor Market Freedom*, is comprised of *Minimum Wage Legislation*, *Government Employment as a Percent of Total State Employment*, and *Union Density*. This component addresses the idea that restrictions in the labor market reduce economic freedom. For example, minimum wage laws reduce the freedom of private agents to transact with each other and may lessen the freedom of low-skill workers to enter the labor market. As government employment increases beyond that needed to provide the "protective and productive" functions described above, the additional labor demand from the government interferes with the operation of the labor market and may further indicate that the

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[3] In particular, we utilize the "all-government" index which takes into account the impact of all levels of government (federal, state, and local) involvement in the economy.
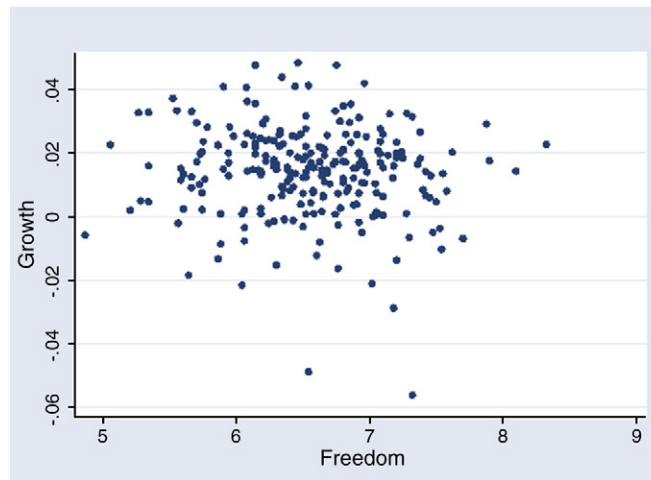
Fig. 1. Freedom and growth.

government is providing goods and/or services that are not desired by overall society. Union density serves as a proxy measure for labor-market laws and regulations.

2.2. Empirical approach

For our empirical analysis we employ both OLS with fixed effects as well as System GMM dynamic panel analysis. Developed by Arellano and Bover (1995) and Blundell and Bond (1998), System-GMM is widely used in the recent growth literature due to its ability to address many of the drawbacks of earlier cross-sectional and panel growth studies, such as omitted variable bias due to heterogeneity as well as problems of endogeneity.[4]

The panel growth equation we estimate is:

$$\Delta y_{it} = \alpha + \beta_1 y_{i\,t-1} + \beta_2 F_{it} + \gamma' X_{it} + \eta_i + \delta_t + \varepsilon_{it} \tag{1}$$

where for state i at time t, Δy_{it} is the five-year average log difference of real GSP per capita, y_{it-1} is the log of real GSP per capita at the start of each five-year period, F_{it} is the freedom variable for the period, X_{it} is the set of control variables measured as the average over the period, η_i is an unobserved state-specific fixed-effect, δ_t is a time dummy, and ε_{it} is the error term.[5]

The control sets X, we consider take on two cases. Our first set of controls is based on economic explanations for growth and includes education as well as average investment per capita, as mentioned previously. Our second set of controls includes the economic controls and adds demographic controls in the form of the percent of a state's population living in metropolitan areas, the percent of the population that is black, and the percent of the population that is Hispanic.

Our variable of interest is the freedom variable which we consider in two forms. First we consider the average level of freedom during the 5 year period, and then consider the change in the freedom index over the 5 year period. When we consider graphically the relationship between freedom and growth we can see in Figs. 1 and 2 that while the relationship between average freedom and average growth (based on 5 year periods) is rather flat, the relationship between the change in freedom (over the 5 year period) and average growth (over the 5 year period) is positively correlated. As we will see in the next section, these general relationships also follow in our growth regressions.

As mentioned previously, Karabegovic et al. (2003) is a paper related to our current study. The authors use annual data from 1994 to 1999 using a panel approach and find that both the level and change in freedom positively affect growth. A major concern with their work is its very short sample and the extent that such a short sample at annual frequency can pick up the sort of growth relationship the authors hope to capture. Our approach uses 5-year averages for its data, which is more commonly used in the growth literature and allows us to abstract away from any business-cycle frequency relationships to ensure that any relationship we pick up is indeed a long-run relationship. A second issue, of course, is endogeneity. Endogeneity is always a major concern with growth regressions, and unfortunately in the case of Karabegovic et al. (2003) is not something addressed by the authors.

The issue of endogeneity also arises in the study of Ashby and Sobel (2008) who rely on a cross section rather than a panel approach for their estimates of the effect of freedom on quintile level growth. Ashby and Sobel (2008) address the issue of endogeneity using initial values in all variables except for the change in freedom. Importantly, their results generally find that the level of freedom has a negative or insignificant effect on a given income quintile, while it is the change in freedom (the one variable

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[4] See Hoeffler (2002) for a nice overview of the benefits of this approach over other panel approaches.
[5] Our final time period is averaged over four annual observations (2001–2004).
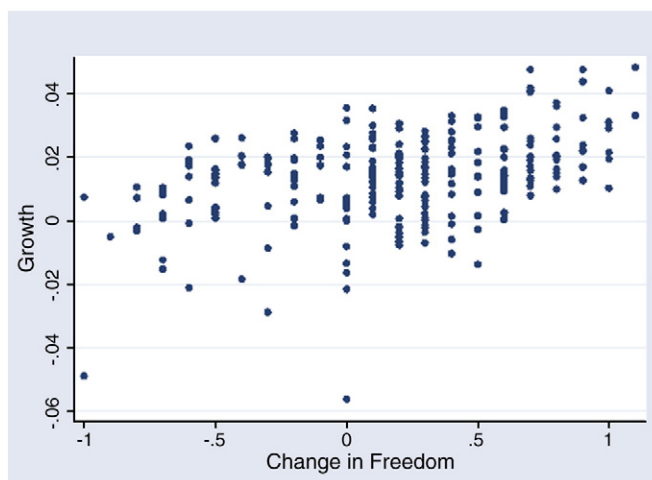
Fig. 2. Change in freedom and growth.

for which they are not able to control for endogeneity) that has the positive and significant effect. This is problematic. Additionally, within a cross-section the issue of omitted variable bias is also a major concern which can be difficult to address.

The empirical approach used in our study therefore represents a contribution to this literature as it allows us to get past the limitations of these earlier studies. By using a panel approach with fixed effects, we are able to better account for omitted variables in our regressions. Further, using 5-year averages rather than annual data we are able to ensure we pick up the long-run relationship between freedom and growth that we are primarily interested in. Lastly, by using System-GMM dynamic panel analysis, we are able to handle the issue of endogeneity head-on and ensure that it is the change in freedom affecting growth and not the other way around.

3. Results

3.1. Aggregate state-level freedom and growth

Table 2 details the results of our OLS and System GMM estimates of the effect of freedom on growth.[6] As Justesen (2008) explains, it is important to note that the use of fixed-effects in our regressions necessitates care in the interpretation of the regression results. The inclusion of fixed effects implies that the data are demeaned in the time dimension, and thus the "level" of freedom in our regressions measures short-run deviations from the long-run mean of freedom, while the "change" of freedom measures short-run deviations from the long-run mean of changes in freedom. We will use the terms "level of freedom" and "change in freedom", but it is important to keep these meanings in the back of one's mind for interpretation purposes.

Columns (1)–(4) of Table 2 provide the results based on the level of freedom as our variable of interest. Columns (1) and (2) detail the results based on the economic control set using both OLS with fixed effect (column 1) and System GMM (column 2). What can be seen is that, while the level of freedom has a positive and significant effect on growth in our OLS results, this effect no longer holds under the system GMM results in column (2). Columns (3) and (4) which include the demographic controls in addition to the economic controls tell a similar story. Columns (5)–(8) detail the results based on the change in freedom and its effect on growth. Here, the change in freedom has a strong and robust relationship with growth as it maintains a stable and significant effect on growth across OLS and System GMM estimates as well as economic and combined economic-demographic control sets. As well, it can be seen that in terms of controls, the log of initial GSP per capita, investment per capita, as well as the percent of the state population that is Hispanic and the percent of the state's population that lives in a metropolitan area all have statistically significant effects on growth (each with their expected sign).

In terms of interpreting these results for economic, rather than just statistical, significance in the case of the level freedom, consider column (3) which indicates that for a particular state a 1-unit increase in the level of freedom above its mean level of economic freedom is associated with an increase in economic growth of 1.4 percentage points above its mean. This of course is tempered by the fact that the level of freedom fails to retain its significance in the System GMM regressions. In terms of the change in freedom results, we would interpret our result in column (7) as indicating a 1-unit increase in the change in freedom over a 5 year period above a state's average change in freedom would result in a 2 percentage point increase in growth above its mean.

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[6] Note that our OLS results also include the traditional R^2 value and number of observations in each regression. In addition to the number of observations, our System GMM results report the Arellano and Bond test for AR(1) and AR(2) in first differences. Following Roodman (2009) we also report the number of instruments used in our System GMM estimation. To reduce our instrument count our System GMM estimates are based on limited lags of 1 per period. Also, standard errors in all our regressions are robust standard errors which are also clustered according to states in order to account for heteroskedasticity and autocorrelation.

Table 2
Economic freedom and growth.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	SYS	OLS	SYS	OLS	SYS	OLS	SYS
Initial [a]	−0.134***	−0.076***	−0.133***	−0.073***	−0.086***	−0.046***	−0.084***	−0.048***
	(0.021)	(0.009)	(0.21)	(0.009)	(0.016)	(0.011)	(0.016)	(0.009)
Education	−0.073	0.023	−0.056	−0.018	−0.065	0.035	−0.056	0.012
	(0.058)	(0.048)	(0.059)	(0.048)	(0.044)	(0.028)	(0.044)	(0.031)
Investment	0.012***	0.020***	0.012***	0.017***	0.009***	0.009***	0.009***	0.009***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.001)	(0.003)	(0.001)	(0.002)
Freedom	0.013***	−0.003	0.014***	−0.001				
	(0.004)	(0.005)	(0.004)	(0.004)				
ΔFreedom					0.020***	0.028***	0.020***	0.026***
					(0.004)	(0.008)	(0.004)	(0.005)
% Black			−0.100	−0.015			−0.079	−0.013
			(0.116)	(0.023)			(0.095)	(0.020)
% Hispanic			−0.087*	−0.065**			−0.068*	−0.048**
			(0.045)	(0.028)			(0.038)	(0.023)
% Metro			0.133***	0.034**			0.069	0.023**
			(0.044)	(0.014)			(0.044)	(0.009)
Obs	250	250	250	250	250	250	250	250
R²	0.22		0.29		0.36		0.43	
AR(1)		0.006		0.001		0.000		0.000
AR(2)		0.911		0.833		0.227		0.352
Instruments		31		49		31		49

Robust and clustered standard errors are indicated in parenthesis; ***, **, * indicates significance at 1, 5, and 10 percent levels; time dummies included but not reported; AR(1) and AR(2) are reported p-values.

[a] Denotes a log variable.

Although these findings are generally consistent to those found by prior studies, these results are the first which are based on a U.S. state-level study that attempts to control for omitted variables and endogeneity. A natural question arises though that if freedom matters for growth, why is this the case? What aspects of freedom matter for growth?

3.2. State-level freedom components and growth

The freedom measure used in this study is an aggregate measure, and while we have seen in Table 2 that changes in freedom are positively related to higher economic growth, aggregate measures can hide a good deal of detail. In this section we consider the sub-

Table 3a
Size of government (level) and growth.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	SYS	OLS	SYS	OLS	SYS	OLS	SYS
Initial [a]	−0.148***	−0.073***	−0.131***	−0.072***	−0.121***	−0.074***	−0.145***	−0.092***
	(0.013)	(0.012)	(0.014)	(0.008)	(0.015)	(0.009)	(0.021)	(0.016)
Education	−0.079	−0.029	−0.067	−0.021	−0.064	−0.013	−0.079	−0.082
	(0.056)	(0.046)	(0.058)	(0.046)	(0.059)	(0.048)	(0.055)	(0.052)
Investment	0.010***	0.017***	0.010***	0.016***	0.013***	0.017***	0.010***	0.015***
	(0.001)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.001)	(0.003)
Freedom	0.015***	0.003	0.008***	0.001	0.006**	−0.001	0.013***	0.008**
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.004)
% Black	−0.108	−0.005	−0.128	−0.011	−0.101	−0.026	−0.089	−0.002
	(0.108)	(0.022)	(0.118)	(0.022)	(0.113)	(0.027)	(0.102)	(0.026)
% Hispanic	−0.173***	−0.059**	−0.151***	−0.065**	−0.080*	−0.081**	−0.143***	−0.069**
	(0.047)	(0.027)	(0.052)	(0.027)	(0.044)	(0.034)	(0.043)	(0.028)
% Metro	0.129**	0.022*	0.128***	0.034***	0.146***	0.046**	0.092**	0.033**
	(0.043)	(0.013)	(0.044)	(0.013)	(0.045)	(0.017)	(0.043)	(0.013)
Obs	250	250	250	250	250	250	250	250
R²	0.28		0.26		0.23		0.39	
AR(1)		0.001		0.001		0.001		0.001
AR(2)		0.824		0.924		0.850		0.617
Instruments		49		49		49		49

Robust and clustered standard errors are indicated in parenthesis; ***, **, * indicates significance at 1, 5, and 10 percent levels; time dummies included but not reported; Freedom indicators are: (1) and (2) "size of government"; (3)and (4) "general consumption expenditures by government as % of GSP; (5) and (6) "transfers and subsidies as % of GSP; (7) and (8) "social security payments as % of GSP".

[a] Denotes a log variable.

Table 3b
Size of government (change) and growth.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	SYS	OLS	SYS	OLS	SYS	OLS	SYS
Initial [a]	−0.083***	−0.040***	−0.091***	−0.049***	−0.105***	−0.077***	−0.087***	−0.028
	(0.014)	(0.009)	(0.018)	(0.009)	(0.017)	(0.009)	(0.012)	(0.017)
Education	−0.066	−0.012	−0.084	−0.023	−0.057	0.008	−0.030	−0.017
	(0.051)	(0.032)	(0.053)	(0.048)	(0.061)	(0.047)	(0.042)	(0.026)
Investment	0.007***	0.008***	0.010***	0.010***	0.012***	0.014***	0.008***	0.006*
	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
ΔFreedom	0.017***	0.022***	0.008***	0.014***	0.004**	0.004	0.013***	0.022***
	(0.003)	(0.004)	(0.001)	(0.003)	(0.002)	(0.003)	(0.002)	(0.004)
% Black	−0.099	−0.003	−0.065	−0.010	−0.110	−0.031	−0.119	−0.008
	(0.105)	(0.018)	(0.114)	(0.017)	(0.113)	(0.029)	(0.096)	(0.022)
% Hispanic	−0.072*	−0.047**	−0.063	−0.061***	−0.056	−0.074**	−0.071*	−0.045*
	(0.041)	(0.022)	(0.047)	(0.022)	(0.049)	(0.032)	(0.035)	(0.027)
% Metro	0.083*	0.017*	0.089**	0.028***	0.113***	0.004	0.105**	0.015
	(0.044)	(0.009)	(0.044)	(0.009)	(0.042)	(0.003)	(0.002)	(0.016)
Obs	250	250	250	250	250	250	250	250
R^2	0.40		0.39		0.28		0.34	
AR(1)		0.001		0.001		0.003		0.000
AR(2)		0.836		0.115		0.400		0.989
Instruments		49		49		49		49

Robust and clustered standard errors are indicated in parenthesis; ***, **, * indicates significance at 1, 5, and 10 percent levels; time dummies included but not reported; Freedom indicators are: (1) and (2) "size of government"; (3)and (4) "general consumption expenditures by government as % of GSP; (5) and (6) "transfers and subsidies as % of GSP; (7) and (8) "social security payments as % of GSP".

[a] Denotes a log variable.

components of our freedom index to determine what aspects of freedom matter for growth and which do not. Recall from our data discussion that the North American Economic Freedom Index consists of three main components: (1) *size of government*, (2) *takings and discriminatory taxation*, and (3) *labor market freedom*. Size of government and labor market freedom both contain three further sub-components each, while *takings and discriminatory taxation* is made up of four sub-components.

Tables 3a and 3b are based on considering the level and change of the *size of government* component of the freedom index as well as the three sub-components of the size of government measure. Table 3a focuses on the level of each freedom component while Table 3b considers the change in each freedom component. It is important to note that Tables 3a and 3b (and all remaining tables) report OLS and System GMM estimates for the full specifications and do not report the specifications based on only economic controls in order to make the size of these tables manageable.[7]

Columns (1)–(2) coincide with the freedom measure *size of government*, one of the three main components of the aggregate freedom measure used in Table 2. Recall that the *size of government* is supposed to capture the notion that with economic freedom, governments are intended to provide basic functions such as the protection of property rights and major public goods. Government expenditure beyond these basic functions of being protective and productive is therefore considered as impinging on economic freedom.

The *size of government* indicator can further be divided into three additional components. Columns (3)–(4) are based on *general consumption expenditures by government as a percent of GSP*, columns (5)–(6) are based on *transfers and subsidies as a percent of GSP* and (7)–(8) are based on *social security payments as a percent of GSP*.

The results of Table 3a coincide largely with the results based on the aggregate freedom index in that the level of economic freedom appears unrelated to economic growth. The sole exception is the component *social security payments as a percent of GSP* used in columns (7) and (8), where lower levels of social security payments (i.e. higher economic freedom and thus a higher recorded economic freedom variable) is associated with more growth. Table 3b, which considers change in economic freedom, shows strong and robust effects of various forms of government size on economic growth with the main component as well as two of the three sub-components also positively related to economic growth in the System GMM estimations. These results indicate that the broad size-of-government indicator as well as the measure of government consumption in the economy and social security payments all have significant impacts on economic growth.

Tables 4a and 4b consider government taxation and its effect on economic growth. Recall that government taxation is considered as impinging on economic freedom as higher taxation tends to decrease private choice and cause an increasing wedge between services received and taxes paid. Columns (1)–(2) are based on the freedom measure *takings and discriminatory taxation* which is one of the three main components of the aggregate freedom index. *Takings and discriminatory taxation* is itself based on four sub-components: *total tax revenue as a percent of GSP* in (3)–(4), *top marginal tax rate and income threshold it is applied* in (5)–(6), *indirect tax revenue as a percent of GSP* in (7)–(8) and *sales tax collected as a percent of GSP* in (9)–(10).

Table 4a shows that across the board the level of economic freedom (as measured by takings and discriminatory taxation and related sub-components) is unrelated to economic growth in both the OLS as well as System GMM results. Table 4b, focuses on the

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[7] Results based on the economic control set are available through any of the study's authors.

Table 4a
Takings/discriminatory tax (level) and growth.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	OLS	SYS	OLS	SYS	OLS	SYS	OLS	SYS	OLS	SYS
Initial [a]	−0.109***	−0.070***	−0.115***	−0.074***	−0.108***	−0.075***	−0.104***	−0.076***	−0.110***	−0.070***
	(0.022)	(0.009)	(0.021)	(0.009)	(0.019)	(0.011)	(0.019)	(0.008)	(0.021)	(0.012)
Education	−0.057	−0.056	−0.059	−0.025	−0.047	−0.068	−0.053	−0.029	−0.061	−0.036
	(0.060)	(0.051)	(0.064)	(0.047)	(0.062)	(0.049)	(0.060)	(0.053)	(0.058)	(0.064)
Investment	0.013***	0.016***	0.012***	0.015***	0.013***	0.015***	0.013***	0.014***	0.013***	0.016***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Freedom	0.001	−0.005	0.003	−0.002	0.003	−0.002	−0.002	−0.001	0.002	−0.004
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.001)	(0.001)	(0.004)	(0.003)
% Black	−0.106	−0.011	−0.113	−0.002	−0.124	−0.024	−0.100	−0.023	−0.089	−0.014
	(0.115)	(0.024)	(0.115)	(0.021)	(0.113)	(0.029)	(0.114)	(0.028)	(0.121)	(0.031)
% Hispanic	−0.058	−0.075**	−0.059	−0.052*	−0.050	−0.81**	−0.039	−0.080**	−0.054	−0.093**
	(0.050)	(0.031)	(0.052)	(0.027)	(0.050)	(0.033)	(0.051)	(0.033)	(0.051)	(0.041)
% Metro	0.125***	0.043**	0.133***	0.031*	0.114**	0.056***	0.115**	0.051***	0.132**	0.047**
	(0.046)	(0.016)	(0.046)	(0.017)	(0.043)	(0.017)	(0.046)	(0.016)	(0.050)	(0.019)
Obs	250	250	250	250	250	250	250	250	250	250
R²	0.27		0.26		0.26		0.27		0.27	
AR(1)		0.000		0.000		0.000		0.000		0.003
AR(2)		0.377		0.675		0.655		0.513		0.877
Instruments		49		49		49		49		

Robust and clustered standard errors are indicated in parenthesis; ***, **, * indicates significance at 1, 5, and 10 percent levels; time dummies included but not reported; Freedom indicators are: (1) and (2) "takings and discriminatory taxation"; (3)and (4) "total tax revenue as % of GSP; (5) and (6) "top marginal tax rate and income threshold it applied; (7) and (8) "indirect tax revenue as % of GSP"; (9) and (10) "sales tax collected as % of GSP".

[a] Denotes a log variable.

change in the respective freedom measure and finds that the takings and discriminatory taxation measure (columns 1 and 2) as well as total tax revenue as a percent of GSP (columns 3 and 4) are positively related with economic growth while the remaining measures are unrelated to growth. These results are particularly interesting given that, with the main results of Table 2 as well as Table 3b, a change in the respective freedom measures were generally positively and significantly related with growth. In Table 4b we see that for the components of takings and discriminatory taxation, while the main measure is significant, many of the subcomponents (3 of 4) are not, meaning that all aspects of freedom within the aggregate freedom index are not necessarily related to growth. This theme continues with our final set of results in Tables 5a and 5b.

Tables 5a and 5b consider economic freedom as measured by labor market freedom and its effect on growth. As discussed earlier labor market freedom is associated with the notion that minimum wages and labor restrictions reduce the ability of people to provide

Table 4b
Takings/discriminatory tax (change) and growth.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	OLS	SYS	OLS	SYS	OLS	SYS	OLS	SYS	OLS	SYS
Initial [a]	−0.107***	−0.075***	−0.096***	−0.072***	−0.108***	−0.080***	−0.108***	−0.077***	−0.109***	−0.066***
	(0.019)	(0.010)	(0.019)	(0.009)	(0.018)	(0.011)	(0.019)	(0.010)	(0.019)	(0.008)
Education	−0.051	−0.009	−0.042	0.001	−0.053	−0.026	−0.057	−0.004	−0.054	−0.028
	(0.055)	(0.042)	(0.050)	(0.045)	(0.059)	(0.049)	(0.059)	(0.044)	(0.060)	(0.050)
Investment	0.012***	0.012***	0.013***	0.013***	0.013***	0.013***	0.013***	0.013***	0.013***	0.014***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.004)
ΔFreedom	0.004**	0.006**	0.006***	0.009***	0.001	0.004	0.0003	0.0007	0.004**	0.016
	(0.002)	(0.003)	(0.002)	(0.003)	(0.001)	(0.027)	(0.0006)	(0.001)	(0.002)	(0.010)
% Black	−0.089	−0.017	−0.111	−0.019	−0.112	−0.031	−0.096	−0.019	−0.103	−0.021
	(0.107)	(0.027)	(0.105)	(0.022)	(0.113)	(0.033)	(0.116)	(0.025)	(0.118)	(0.021)
% Hispanic	−0.056	−0.068**	−0.022	−0.059**	−0.050	−0.083**	−0.058	−0.067**	−0.064	−0.069**
	(0.049)	(0.027)	(0.052)	(0.026)	(0.053)	(0.035)	(0.049)	(0.027)	(0.052)	(0.029)
% Metro	0.110**	0.045***	0.080*	0.042***	0.117**	0.058***	0.124***	0.043***	0.109**	0.037**
	(0.045)	(0.015)	(0.047)	(0.015)	(0.045)	(0.018)	(0.045)	(0.013)	(0.046)	(0.014)
Obs	250	250	250	250	250	250	250	250	250	250
R²	0.30		0.33		0.27		0.27		0.29	
AR(1)		0.001		0.000		0.002		0.001		0.000
AR(2)		0.682		0.954		0.853		0.836		0.902
Instruments		49		49		49		49		

Robust and clustered standard errors are indicated in parenthesis; ***, **, * indicates significance at 1, 5, and 10 percent levels; time dummies included but not reported; Freedom indicators are: (1) and (2) "takings and discriminatory taxation"; (3)and (4) "total tax revenue as % of GSP; (5) and (6) "top marginal tax rate and income threshold it applied; (7) and (8) "indirect tax revenue as % of GSP"; (9) and (10) "sales tax collected as % of GSP".

[a] Denotes a log variable.

Table 5a
Labor market freedom (level) and growth.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	SYS	OLS	SYS	OLS	SYS	OLS	SYS
Initial [a]	−0.123***	−0.075***	−0.151***	−0.109***	−0.109***	−0.086***	−0.108***	−0.078***
	(0.020)	(0.008)	(0.014)	(0.015)	(0.015)	(0.014)	(0.018)	(0.010)
Education	−0.035	−0.019	−0.039	−0.014	−0.063	−0.041	−0.053	−0.026
	(0.059)	(0.050)	(0.056)	(0.039)	(0.061)	(0.060)	(0.060)	(0.064)
Investment	0.012***	0.015***	0.012***	0.014***	0.013***	0.016***	0.013***	0.014***
	(0.002)	(0.003)	(0.001)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Freedom	0.012***	0.002	0.010***	0.008**	−0.003	−0.001	0.002	−0.0003
	(0.003)	(0.004)	(0.002)	(0.003)	(0.004)	(0.002)	(0.002)	(0.002)
% Black	−0.070	−0.033	−0.049	−0.023	−0.074	−0.021	−0.097	−0.020
	(0.123)	(0.032)	(0.138)	(0.024)	(0.107)	(0.034)	(0.112)	(0.043)
% Hispanic	−0.017	−0.081**	−0.019	−0.059*	−0.042	−0.080**	−0.039	−0.079*
	(0.054)	(0.033)	(0.054)	(0.029)	(0.055)	(0.034)	(0.057)	(0.045)
% Metro	0.114**	0.045***	0.047	0.033**	0.107**	0.058**	0.124***	0.048*
	(0.044)	(0.015)	(0.053)	(0.014)	(0.048)	(0.024)	(0.044)	(0.027)
Obs	250	250	250	250	250	250	250	250
R²	0.29		0.35		0.28		0.26	
AR(1)		0.002		0.001		0.003		0.002
AR(2)		0.797		0.374		0.616		0.621
Instruments		49		49		49		49

Robust and clustered standard errors are indicated in parenthesis; ***, **, * indicates significance at 1, 5, and 10 percent levels; time dummies included but not reported; Freedom indicators are: (1) and (2) "Labor market freedom"; (3)and (4) "minimum wage legislation; (5) and (6) "government employment as a percent of state employment; (7) and (8) "union density".

[a] Denotes a log variable.

their labor, while increased government employment competes with private sector opportunities. The main component is *labor market freedom* and this is found in columns (1)–(2). Labor market freedom is made up of three further components: *minimum wage legislation* in (3)–(4), *government employment as a percent of state employment* in (5)–(6) and *union density* in (7)–(8).

In Table 5a, the sole measure of freedom which is statistically significant in our System GMM results is the minimum wage measure, while in Table 5b, the main component for labor market freedom and again the minimum wage measure are positive and statistically significant in their relationship with economic growth (with the remaining measures unrelated to growth).

3.3. Summary and implications of the results

The above section contains many results, so Table 6 provides a quick summary of the paper's results. Table 6 indicates whether a relationship between a given freedom component and growth was positive and significant, negative and significant or

Table 5b
Labor market freedom (change) and growth.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	SYS	OLS	SYS	OLS	SYS	OLS	SYS
Initial [a]	−0.089***	−0.063***	−0.074***	−0.052***	−0.107***	−0.078***	−0.108***	−0.076***
	(0.016)	(0.010)	(0.017)	(0.014)	(0.019)	(0.011)	(0.019)	(0.009)
Education	−0.058	−0.014	−0.034	−0.037	−0.058	−0.053	−0.057	−0.029
	(0.057)	(0.053)	(0.052)	(0.051)	(0.060)	(0.054)	(0.059)	(0.056)
Investment	0.012***	0.014***	0.012***	0.014***	0.013***	0.015***	0.013***	0.015***
	(0.001)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
ΔFreedom	0.012***	0.010*	0.009***	0.007*	0.002	−0.0001	0.000	−0.0006
	(0.002)	(0.005)	(0.002)	(0.004)	(0.002)	(0.006)	(0.001)	(0.003)
% Black	−0.102	−0.049	−0.182	−0.031	−0.101	−0.018	−0.104	−0.028
	(0.0109)	(0.032)	(0.111)	(0.026)	(0.116)	(0.031)	(0.116)	(0.028)
% Hispanic	−0.062	−0.089***	−0.063	−0.077**	−0.055	−0.079**	−0.056*	−0.079**
	(0.043)	(0.032)	(0.049)	(0.031)	(0.051)	(0.034)	(0.050)	(0.030)
% Metro	0.092**	0.048***	0.056**	0.041***	0.119***	0.054***	0.123***	0.046***
	(0.038)	(0.014)	(0.043)	(0.015)	(0.044)	(0.018)	(0.044)	(0.015)
Obs	250	250	250	250	250	250	250	250
R²	0.34		0.27		0.27		0.27	
AR(1)		0.000		0.000		0.003		0.002
AR(2)		0.655		0.718		0.640		0.574
Instruments		49		49		49		49

Robust and clustered standard errors are indicated in parenthesis; ***, **, * indicates significance at 1, 5, and 10 percent levels; time dummies included but not reported; Freedom indicators are: (1) and (2) "Labor market freedom"; (3)and (4) "minimum wage legislation; (5) and (6) "government employment as a percent of state employment; (7) and (8) "union density".

[a] Denotes a log variable.

Table 6
Summary of results.

Freedom measure	Levels		Changes	
	(1) OLS	(2) Sys GMM	(3) OLS	(4) Sys GMM
N.A. economic freedom index (US)	$(+)^{**}$	(0)	$(+)^{***}$	$(+)^{***}$
1. Size of government	$(+)^{***}$	(0)	$(+)^{***}$	$(+)^{***}$
1a.Gov. consumption expenditure (% GSP)	$(+)^{***}$	(0)	$(+)^{***}$	$(+)^{***}$
1b. Transfers and subsidies (% GSP)	$(+)^{**}$	(0)	$(+)^{**}$	(0)
1c. Social security payments (% GSP)	$(+)^{***}$	$(+)^{**}$	$(+)^{***}$	$(+)^{***}$
2. Takings and discriminatory taxation	(0)	(0)	$(+)^{**}$	$(+)^{**}$
2a. Total tax revenue (% GSP)	(0)	(0)	$(+)^{**}$	$(+)^{***}$
2b. Top marginal tax rate	(0)	(0)	(0)	(0)
2c. Indirect tax revenue (% GSP)	(0)	(0)	(0)	(0)
2d. Sales tax collected (% GSP)	(0)	(0)	$(+)^{**}$	(0)
3. Labor market freedom	$(+)^{**}$	(0)	$(+)^{***}$	$(+)^{*}$
3a. Minimum wage legislation	$(+)^{***}$	$(+)^{**}$	$(+)^{***}$	$(+)^{*}$
3b. Gov. employment (% total emp.)	(0)	(0)	(0)	(0)
3c. Union density	(0)	(0)	(0)	(0)

Dependent variable is average growth rate. Column (1) details OLS results for the level of freedom on growth; (2) is System GMM results for the level of freedom on growth; (3) is OLS results for the change in freedom on growth; and (4) is System GMM results for the change in freedom on growth. 0 indicates insignificantly different from zero. Results are based on the full control set specification.

insignificant for both OLS and System GMM full control results. For comparison purposes, the full control results of Table 2 are also provided.

Focusing on the System GMM results, recall that the main aggregate freedom index indicated that it is the change in economic freedom which matters for growth rather than the level. Considering the three main sub-components of the aggregate index, in every case (1, 2, 3 of Table 6) the change in the respective freedom is significant and positively related to economic growth. The subsequent implication is that constraining the size of government involvement in the economy as well as taxation, and minimizing labor market constraints (which all result in increased economic freedom scores) all play a role in higher growth. In terms of the narrower sub-components in only two cases (social security payments and minimum wage legislation) does the level of freedom matter, and in a number of cases neither the level nor change in the respective freedom measure matters for growth. It is therefore clear that all aspects of the aggregate freedom index do not necessarily matter for growth.

3.4. Robustness tests

The results of this study prove to be fairly robust to a range of sensitivity tests. As detailed in Table 2, our main results hold for both the demographic control set as well as the combined demographic and economic control set. Further, we considered a number of other robustness tests.[8] First, we tested whether the results are sensitive to the exclusion of outliers.[9] Outliers were identified using Hadi (1992, 1994) and the OLS and System GMM results were re-estimated with the indentified outliers removed. Across the range of Tables 2–5b, the results continue to hold.

Second, following Roodman (2009) we evaluated our System GMM results for robustness by considering alternative instrument restrictions. Recall the System GMM results in Tables 2–5b are based on using an instrument lag restriction in order to keep the number of instruments small relative to the sample size (and thus ensure the test statistics are not spurious and the results therefore invalid). This is a common approach in the literature to reduce the instrument count (see Roodman, 2009). However, as Roodman (2009) indicates, the results (and validity of test statistics) for System GMM can be sensitive to the instrument count. Therefore two alternatives were considered. First, we collapsed the instruments as well as used lag restrictions for the instruments. This is the most extreme form of constraining instruments (the other two forms being only collapsing the instruments or just restricting the lags for instruments as in Tables 2–5b). Using this approach the results are generally supportive of those found in Tables 2, 3a, 3b, 4a and 5a. Constraining the lags of instruments and collapsing the instruments does remove the significance found for the change in freedom results for Tables 4b and 5b.[10] For sake of completeness, the System GMM results were also checked using the full set of available instruments (i.e. no collapse or lag restrictions). These results are generally supportive of those in Tables 2–5b.[11]

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[8] We would like to thank our two anonymous referees for suggesting these tests.

[9] Given the number of tables resulting from the range of sensitivity tests employed, these are included online rather than in the main text. These can be found at http://www.cba.ua.edu/~ghoover.

[10] Note that it is not surprising that restricting the number of instruments in this fashion reduces the significance of the results. The point of reducing the number of instruments is that a large number of instruments can invalidate the test statistics and cause overfitting. As it stands, the results in Tables 2–5b are based on a lag restriction which results in 31 or 49 instruments (relative to 250 observations and 50 states) which should alleviate concern of large numbers of instruments impacting the test statistics. Further, the Hansen and difference-in-Hansen statistics do not indicate that instrument proliferation is a problem.

[11] A concern however is the resulting large number of instruments (73) relative to the sample size (250) and states (50) when the instrument set is not constrained, particularly given the concerns raised in Roodman (2009) discussed above. Thus the results based on the unrestricted instrument set could suffer from problems of invalid test statistics.

As a final sensitivity check, given the use of fixed effects and a lagged dependent variable in Tables 2–5b, the bias-corrected estimator for dynamic panels developed by Bruno (2005) was also employed to account for any bias in our results. The results using the bias-corrected estimator generally support those of Tables 2–5b (and in a few cases generate improved significance for the given freedom measure).

4. Conclusions

There has been a great deal of work examining the positive impacts of economic growth on societies. However, methods for fully exploiting these benefits have not yet been sufficiently explored. Our research adds to the literature by examining the positive impacts that policies promoting economic freedom can have on economic growth and consequentially on the well-being of society.

The early work in this area based on Gwartney et al. (1996) has been tremendously beneficial, in that they create a functional index of economic freedom at the nation-level. With a corresponding intranational index for the United States and Canada, Karabegovic et al. (2003) made it possible for the literature to be expanded even further.

Our work shows that at the state level for the United States, there is a significant positive relationship between economic freedom and growth. However, our work has added key components that have been heretofore lacking. We are careful to include investment data in our growth equations, thereby bolstering the reliability of our results. In addition, we are able to look at the impact of economic freedom over a considerably longer time frame than has been used previously, thereby allowing us to incorporate the business cycle. We are also able to use econometric techniques that account for omitted variable bias and endogeneity issues.

We find that the level of economic freedom is significantly positively related to growth for a model using OLS but not related under System GMM. Both estimation methods do, however, yield strongly positively relationships between changes in freedom and growth. These results do not hold, though, for every sub-component of economic freedom.

From a policy perspective, what emerges from these results is the importance of constraining excessive government expenditure within the economy and minimizing the tax burden faced by a nation's citizens. Further we see the importance of maintaining an open labor market and, in particular, the cost from a growth perspective that may be associated with increases in state minimum wages.

An area for future research would be to more deeply explore the distributional aspects of the gains to economic freedom. It is not clear that economic freedom impacts growth uniformly throughout the income distribution. Policy makers who seek to minimize government interventions into markets would be keenly interested in how all segments of the economy will be affected by policies that promote economic freedom by reducing the governments' role in providing public safety nets. Although some research has already been conducted on this issue, the methodology we employ in this paper is well-suited to further investigate this topic.

Acknowledgements

Appendix A. 2004 State Freedom Rankings

Overall economic freedom and major freedom components

Freedom rank	Aggregate freedom	Size of government	Takings and discriminatory tax.	Labor market freedom
1	Delaware	Delaware	Delaware	North Carolina
2	Texas	Nevada	Alaska	Texas
3	Colorado	Texas	South Dakota	Virginia
4	Georgia	Colorado	Tennessee	Colorado
5	Nevada	Minnesota	Texas	Delaware
46	New Mexico	Maine	Montana	New York
47	Mississippi	Montana	New Jersey	West Virginia
48	Montana	New Mexico	Maine	Washington
49	Maine	Mississippi	Rhode Island	Alaska
50	West Virginia	West Virginia	West Virginia	Hawaii

Appendix A (*continued*)

"Size of government" components

Freedom rank	Gov. consumpt. expenditures	Transfers and subsidies	Social security payments
1	Delaware	Nevada	Delaware
2	Nevada	Delaware	Connecticut
3	Illinois	Virginia	Texas
4	Minnesota	Colorado	Colorado
5	New Hampshire	New Jersey	Minnesota
46	Virginia	New Mexico	Arkansas
47	Alaska	West Virginia	Alabama
48	Maryland	Montana	Montana
49	Mississippi	Alaska	Mississippi
50	New Mexico	North Dakota	West Virginia

"Taxation" components

Freedom rank	Total tax revenue	Top marginal income tax rate	Indirect tax revenue	Sales taxes collected
1	Delaware	Alaska	Delaware	Delaware
2	Louisiana	Florida	Georgia	Montana
3	Alaska	Nevada	North Carolina	Oregon
4	South Dakota	New Hampshire	Colorado	New Hampshire
5	Tennessee	South Dakota	Utah	Alaska
46	West Virginia	North Carolina	Rhode Island	Mississippi
47	Florida	Ohio	Vermont	Arkansas
48	Maryland	Rhode Island	Maine	Louisiana
49	New Jersey	South Carolina	West Virginia	Hawaii
50	Connecticut	Vermont	Montana	Washington

"Labor market freedom" components

Freedom rank	Minimum wage legislation	Government employment	Union
Density			
1	Delaware	Nevada	New Mexico
2	New Jersey	New Hampshire	Wyoming
3	New York	Massachusetts	Mississippi
4	Wyoming	Rhode Island	North Carolina
5	Minnesota	Florida	South Carolina
46	Oregon	Mississippi	Minnesota
47	West Virginia	North Dakota	Rhode Island
48	Vermont	Wyoming	New Jersey
49	Maine	New Mexico	Michigan
50	Mississippi	Alaska	New York

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