Economic Freedom and Social Capital

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Abstract

This paper brings together two growing literatures, social capital and economic freedom, to examine whether economic freedom contributes to social capital. More specifically, using US state level data from 1986-2004 and both OLS and System GMM dynamic panel estimation, we find that there is no clear trade-off between economic freedom and either the level or growth of social capital.

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1. Introduction

How are economic freedom and social capital related? Why is it important? A large body of literature shows that economic freedom is associated with economic growth; a related body of literature emphasizes trust and social capital.[5] The relationship between the two has received relatively scant attention, but the interplay between economic freedom and social capital has implications for social stability as well as less narrowly "economic" aspects of quality of life. If economic freedom encourages social atomism and makes us cold and calculating, then it may be that we gain the world while losing our souls. Conversely, if economic freedom encourages the development of strong social ties, liberal capitalism's stability might be self-reinforcing. We study a small aspect of this big issue. Using a newly developed measure of US state level social capital we find using an OLS fixed effects approach that the log level of social capital is negatively related to the level of economic freedom, but unrelated to the change in freedom. The growth rate of social capital shows similar results. However, once endogeneity is accounted for using System GMM estimation, this negative results found using OLS disappear suggesting no relationship between economic freedom and social capital. Our study is subject to the usual limitations, but the evidence presented here suggests that more economic freedom does not lead to more or less social capital.

Our paper proceeds as follows. Section II describes what social capital is and lays the theoretical foundation for a relationship between social capital and economic freedom. Sections III and IV explains our empirical approach and data, respectively. Section V provides the results and we conclude with section VI.

[5] See Hall and Lawson (2014) for a summary of the economic freedom literature. Trust is emphasized by Fukuyama (1995), Knack and Keefer (1995), Putnam (2000), and Guiso et al. (2004).

II. Social Capital and Economic Freedom

What is social capital? Drawing on work by Putnam (2000) and others, Carden et al. (2009: 111) note that "(s)ocial capital takes several forms," pointing out that this consists of "personal relationships", "political/civic engagement", "activities expressing social responsibility", and "activity in the community more broadly." Following Coleman (1988), Chamlee-Wright (2008: 45) puts it this way:

> "Social capital is a complex structure made up of community norms, social networks, favors given and received, potluck suppers, book groups, church bazaars, and neighborhood play groups."

For our purposes, the measure of social capital used in our study from Hawes et al. (2013) is a measure of social capital that focuses on activities within organizations rather than on broader measures like general social trust. Such activity can be consumption: people participate in civic organizations in part because they enjoy civic life. It can also be investment: civic organizations assist with the transmission of information, and they reduce transaction costs. Membership in organizations can have several transaction-cost reducing effects that lead to economic growth, but the effect of economic freedom on this kind of social capital is ambiguous *a priori*.

Theoretically, the relationship between social capital and economic freedom is ambiguous and hinges in part on disagreement about what social capital really measures. If organization-based social capital is a substitute for economic freedom, then it stands to reason that there might be a negative association. If not, then there might be a positive association. With respect to changes in each, any institutional change is likely to be disruptive and, therefore, an increase in economic freedom might reasonably lead to an increase in organizational affiliations. Berggren and Jordahl (2006) measure this directly using international data. Using cross-country, cross-sectional

regressions and a measure of "Generalized Trust" from the World Values Survey, they argue that the Fraser Institute's Economic Freedom of the World Index increases social capital.

Studies using county- and individual-level data in the United States explore the relationship between Walmart and social capital. Walmart is "the face of twenty-first century capitalism," to borrow the subtitle of Lichtenstein (ed., 2006). Goetz and Rupasingha (2006) find that Walmart reduces social capital in the places where the company does business. Using Putnam's data, however, Carden et al. (2009) find that this is not the case.

Secure private property rights and competitive markets lead to economic growth because they are elements of what North et al. (2009) called an "open-access" economic order, or an economic order in which innovators earn short-run economic rents by introducing new goods and services to the benefit of all. This is in contrast to what they call a "limited-access" economic order, or an economic order in which people earn economic rents through the political system. Specifically, they earn economic rents by currying favor with the government. The government, in turn, obstructs potential competitors.

Measurement of economic freedom started with the first edition of the Economic Freedom of the World report that has turned into Gwartney et al. (2013). Measures of economic freedom broadly measure the security of private property rights and firms' and individuals' access to competitive markets. High degrees of economic freedom lead to economic growth (Compton et al. 2011, Hall and Lawson 2014), and Berggren and Jordahl (2006) summarizes some of its other salutary effects.

There are several ways to interpret the effects of economic freedom on social capital. First, economic freedom can increase social capital as people use that freedom to form associations that might be complements to investment and exchange. Second, economic freedom can increase social

capital by generating additional income and leisure people can use to form associations as consumption goods. In this sense, economic freedom might lead to richer, fuller lives. Third, economic freedom might reduce social capital by undermining the historic associations and community ties that formerly bound people together.

Fourth, economic freedom might unravel the associations and forms of social capital that are part and parcel of the rent-seeking society. To the extent that a measure of social capital is picking up the type special interest groups and associations identified by Olson (1982), whose main activities involve rent-seeking, it is possible that increased economic freedom can lead to lower measured social capital. As economic freedom increases the rents that these Olson groups compete for gets smaller and thus the prevalence and activities of the Olson groups diminish in response. This reduction in measured social capital can actually be beneficial as Coates et al. (2011) added empirical evidence to Olsen's claims that activities of rent-seeking special interest groups reduce economic growth and reduce capital accumulation.

Finally, social capital might be the road to exchange in a society with relatively little economic freedom. More economic freedom might reduce the demand for exchange-enabling social capital. With more economic freedom, people will move from non-market to market exchange; therefore, we might see reductions in social capital when economic freedom increases.

We identified three reasons that increased economic freedom might lead to reduced social capital. However, of these reasons only one can be viewed in an entirely negative manner. If economic freedom is undermining the historic associations and community ties that formerly bound people together this is undoubtedly a bad thing. However when economic freedom is reducing social capital associated with rent-seeking activity or reducing exchange enabling social

capital thus freeing up resources to be spent elsewhere, the reduction in measured social capital can be good for society.

III. Empirical Approach

The empirical approach employed in this study to test the freedom – social capital link is based on annual data and dynamic panel analysis. We transform our data into 4 to5 year averages to allow us to focus on the long run effects of economic freedom on social capital.[6] This approach is common in the economic growth literature to capture long run effects, and so suits our purposes well. Our data allow us to look at the relationship from two angles: the effect of economic freedom on the level of social capital and on the growth of social capital.

We estimate the following equation for the level of social capital:

$$SC_{it} = \alpha + \beta_1 F_{it} + \gamma' X_{it} + \eta_i + \delta_t + \varepsilon_{it} \quad (1)$$

and borrowing heavily from the extensive literature on economic freedom and economic growth, we estimate the following equation for the growth of social capital:

$$\Delta SC_{it} = \alpha + \beta_1 ISC_{i\,t-1} + \beta_2 F_{it} + \gamma' X_{it} + \eta_i + \delta_t + \varepsilon_{it} \quad (2)$$

where for state *i* at time grouping *t*, SC_{it} is the average log level of social capital, ΔSC_{it} is the average growth (natural log-difference) of social capital, $ISC_{i\,t-1}$ is the natural log of social capital in the year preceding the grouping[7], F_{it} is the average value of the freedom measure (either level or change), X_{it} is the set of control variables[8], η_i is an unobserved state fixed-effect, δ_t is a time dummy, and ε_{it} is the error term.

[6] We separate our data into 4 groups based on year: group 1 spans 1987-1990, group 2 spans 1991-1995, group 3 spans 1996-2000, and group 4 spans 2001-2004.

[7] This control is common in the growth literature as a convergence effect.

[8] Control variables are also averaged over the time grouping.

For this study our variable of interest is the freedom variable. It is modelled as both the level and the change. These two specifications are common in the large literature on economic freedom and growth, and so are employed here as well (c.f. Ashby and Sobel, 2008 or Compton, Giedeman and Hoover, 2011).

We estimate this model using OLS with fixed effects as well as System-GMM dynamic panel estimation. System-GMM, developed by Arellano and Bover (1995) and Blundell and Bond (1998) and now widely used in panel analysis, is employed due to its ability to handle fixed effects and regressor endogeneity while avoiding dynamic panel bias (Roodman, 2009, p. 136). A nice attribute of this approach as well is that rather than having to rely on clever instruments found outside the sample to account for endogeneity, this approach generates its own instruments based on earlier observations of the instrumented variables. More specifically with System GMM one part of the system that is estimated is a differenced specification that uses the lagged values of the levels of the independent variables as instruments, while the other is a levels equation that uses the lagged differences of the independent variables as instruments.[9] This approach therefore allows us to rely on the existing dataset to construct these instruments.

As practitioners of System GMM are well aware, there involves a significant amount of choice for the options used in System GMM estimation. For transparency, when using System GMM we have treated all of the independent variables as endogenous, with the exception of initial social capital which is treated as predetermined. Robust standard errors are used to account for autocorrelation and heteroskedasticity, while our time dummies are treated as IV-style instruments in levels only. Lastly, as Roodman (2009) demonstrates, users of System GMM need to be aware of the possibility of instrument proliferation invalidating the diagnostic statistics often used to

[9] For those unfamiliar with System GMM, Roodman (2006) provides a nice overview of the benefits and practical application of System GMM using the Xtabond2 command and Stata econometrics package.

determine the validity of the instruments generated in this approach. With the large sample used in this approach, a large number of instruments can be generated. To maintain transparency in our methods we provide two sets of System GMM results for each specification: in both we restrict the number of instruments with a single lag and in one we also collapse our instruments to bring the number of instruments even lower.

IV. Data

Our measure of social capital comes from Hawes et al. (2013), who use biannual survey data on over 20,000 people from MediaMark Research, Inc. to construct a social capital index for the 48 contiguous US states stretching from 1986 through 2004[10]. Hawes et al. (2013: 123) acknowledge and summarize existing work pointing to potential distinctions between attitudes (like "generalized trust") and activities (membership in community organizations, voting, and volunteering). Hawes et al. (2013: 125) "are able to capture three of these categories[11] [discussed by Putnam (2000)]: *community organizational life*, *engagement in public affairs*, and *community volunteerism*." Some of the states (e.g., the Dakotas and the Carolinas) are clustered together. After assembling from their data 22 different activities that are related to social capital, Hawes et al. (2013) use factor analysis to construct an index that varies by state and across time. The unique aspect of this dataset is that it captures the movement of social capital measured by the log of social capital (*logsocapital*)[12] across time allowing us to use System GMM methods to control for endogeneity and analyze the growth rate of social capital as calculated by the log difference in

[10] Due to missing data, Hawes et al. (2013) compute no index for 1991. We use an interpolated value for this missing observation.

[11] Several items used to produce the Hawes et al. (2013) index could indicate participation in the type of groups and activites that Olson (1982) cautions against. Thus our measure of social capital may be measuring both Putnam type activity that contributes to social capital but could also include participation in Olson groups and activities.

[12] In order to calculate the log we transform the Hawes et al. index into values that lie between 1 and 100 by means of a linear transform.

social capital (*dlogsocapital*). This represents a significant advantage over cross section techniques generally used for empirical work on social capital or economic freedom more broadly.

Our measures of economic freedom come from Bueno et al. (2012).[13] The Economic Freedom of North America (EFNA) report gives US states and Canadian provinces scores on a ten-point scale that includes measures of economic freedom allowed which "captures the impact of restrictions by federal, state or provincial, and local governments." The investigators consider ten components grouped into three broad areas: "size of government," "takings and discriminatory taxation," and "labor market freedom."

"Size of Government" has three components: "General Consumption Expenditures by Government as a Percentage of GDP," "Transfers and Subsidies as a Percentage of GDP," and "Social Security Payments as a Percentage of GDP." "Takings and Discriminatory Taxation" includes "Total Tax Revenue as a Percentage of GDP," "Top Marginal Income tax Rate and the Income Threshold at Which It Applies," "Indirect Tax Revenue as a Percentage of GDP," and "Sales Taxes Collected as a Percentage of GDP." "Regulation" includes "Labor Market Freedom," which includes as sub-components "Minimum Wage Legislation," "Government Employment as a Percentage of Total State/Provincial Employment," and "Union Density."

Bueno et al. (2012) provide these measures of economic freedom for two differing levels of government involvement: including the involvement of the federal, state, and local governments; or including the involvement of the state and local governments only. We believe that any effect of economic freedom on social capital should include the involvement of

[13] The description and definitions that follow are drawn from Bueno et al. (2012:iv, 7ff). Detailed descriptions of the individual indicators can be found in Bueno et al. (2012:51ff), and the data can be downloaded from www.freetheworld.com.

government interventions at all levels. As such, our analysis relies on the freedom measures that account for government at the federal, state, and local levels.[14] The overall economic freedom measure is denoted *OSFSL* and the subcomponents are: size of government (*SGFSL*), takings and discriminatory taxation (*TDTFSL*), and labor market freedom (*LMFSL*). Changes in the freedom measures are preceded with a *D*.

In order to isolate the effect of economic freedom on social capital we must also include control variables. We chose control variables to be in line with those included in the analysis of Berggren and Jordahl (2006) and the vast economic freedom and growth literature. Our controls include: the gini coefficient on state income inequality (*gini*), the percentage of a state's population living in a metropolitan area (*metropercent*), a Herfindahl-Hirschman index of racial homogeneity calculated as the sum of the squared percentage of a state population that is white, black, and hispanic (*HHI*), the state unemployment rate (*unemploymentrate*), the state population growth (*population*), the percentage of residents over the age of 25 with a college degree (*college2*), the log of real state gross product per capita (*logrgsp_cpc*), and the percentage of the population that is under the age of 25 (*under25*).

Summary statistics for all variables can be seen in table 1.

[14] Our results are consistent when using the economic freedom measures at the state and local level.

Table 1: Summary Statistics

VARIABLES	N	mean	sd	min	max
dlogsocapital	192	-0.0139	0.0907	-0.337	0.467
logsocapital	192	3.904	0.303	2.736	4.420
ilogsocapital	192	3.911	0.434	1.691	4.542
OSFSL	192	6.833	0.499	5.349	8.291
DOSFSL	192	0.156	0.254	-0.643	0.732
SGFSL	192	7.301	0.836	4.340	8.991
DSGFSL	192	-0.0160	0.274	-1.426	0.843
TDTFSL	192	6.410	0.576	4.830	8.060
DTDTFSL	192	0.191	0.708	-1.202	1.988
LMFSL	192	6.788	0.560	5.052	8.033
DLMFSL	192	0.292	0.251	-0.342	0.993
gini	192	0.567	0.0257	0.514	0.638
metropercent	192	0.722	0.188	0.295	1
HHI	192	0.685	0.156	0.330	0.965
unemploymentrate	192	0.0525	0.0132	0.0266	0.0976
population	192	0.0549	0.0587	0.00463	0.351
college2	192	0.226	0.0482	0.112	0.364
logrgsp_cpc	192	10.41	0.179	9.988	11.01
under25	192	0.360	0.0262	0.312	0.482

Data for *gini* is that of Frank (2009) derived from IRS data downloadable at http://www.shsu.edu/eco_mwf/inequality.html.
Real gross state product (logrgsp_cpc) is from the Bureau of Economic Analyses. Data for the construction of *HHI*, as well as *college2*, *population*, *under25* and *metropercent* come from the census bureau. *Unemploymentrate* is from the Bureau of Labor Statistics. The freedom measures are based on Bueno et al. (2012).

V. Results

We now discuss the regression results in the following two sections. In the first section (Section A) we present regression output regarding the effect of the overall measure of economic freedom on the level and growth of social capital. In the section that follows (Section B) we break economic freedom down into its measured components. We then discuss the difference between our results and those of Berggren and Jordahl (2006).

In all tables, Columns 1 and 4 provide coefficient estimates from OLS regressions. Columns 2-3 and 5-6 provide coefficient estimates from system GMM regressions in which all regressors are treated as endogenous. Columns 2 and 5 are based on an instrument set which is restricted to a single lag, while columns 3 and 6 are based on an instrument set which is collapsed and restricted to a single lag. System GMM regressions were computed using a two step procedure and all reported standard errors are robust. For the system GMM regressions we provide a number of diagnostic tests so that the reader can ascertain their credibility. We report the number of instruments used, p-values for tests of autocorrelation processes in the residuals of type 1 and type 2, and p-values for the Hansen test of over-identifying restrictions.

A. Overall Freedom

Regression results using the log level of social capital as the dependent variable and the overall measures of economic freedom (*OSFSL*) as the main variable of interest are found in table 2.

The overall level of economic freedom is negatively correlated with the log level of social capital as is evidenced by the negative coefficient in column 1 which is statistically significant at the 5% level. However, when we examine columns 2 and 3 we see that the statistical significance vanishes once we control for endogeneity in the system GMM regressions[15]. Inspection of the system GMM diagnostics reveals that with the larger set of instruments, as in column 2, all diagnostic tests confirm the validity of the instruments. However, the diagnostics for the collapsed instrument set, as in column 3, do not all check out. The AR(1) statistic has a p-value of .202

[15] That the correlation appears in OLS but disappears in system GMM when endogeneity is accounted for suggests that economic freedom doesn't cause less social capital, but does leave open the potential that more social capital could reduce economic freedom. This is a question that we relegate to future work.

which is above an acceptable threshold implying the instruments may not be exogenous. The other diagnostics do indeed fall into acceptable ranges. There are additional correlations that the data reveal but the only one that has support after controlling for endogeneity is the positive effect of an increase in the college educated population (*college2*).

Table 2: Levels

	(1) OLS	(2) SYS1	(3) SYS2	(4) OLS	(5) SYS1	(6) SYS2
OSFSL	-0.239**	-0.227	-0.652			
	(0.108)	(0.196)	(0.667)			
DOSFSL				-0.084	-0.016	-0.153
				(0.063)	(0.178)	(0.307)
gini	1.519	1.802	-0.173	2.730**	4.024	3.722
	(1.076)	(1.688)	(4.637)	(1.248)	(2.738)	(3.360)
metropercent	-0.208	0.367	2.392	-0.395	0.314	1.070
	(1.303)	(0.591)	(1.840)	(1.236)	(0.319)	(0.891)
HHI	2.025*	0.521	0.657	2.572**	1.019**	1.822
	(1.124)	(1.090)	(1.401)	(1.138)	(0.502)	(1.265)
unemploymentrate	4.535*	3.843	2.127	3.957*	6.319	-6.013
	(2.535)	(5.205)	(8.752)	(2.295)	(5.930)	(3.714)
population	0.762	-1.494	-2.769	0.412	-1.509***	-0.556
	(2.441)	(1.155)	(2.014)	(2.443)	(0.526)	(0.878)
college2	3.476***	4.733**	8.388	3.494***	3.078**	0.892
	(1.098)	(1.950)	(7.066)	(1.091)	(1.379)	(2.194)
logrgsp_cpc	0.599	-0.253	-1.715	0.100	-0.191	-0.295
	(0.416)	(0.588)	(2.258)	(0.377)	(0.402)	(0.554)
under25	0.933	4.854	6.090	0.704	2.337	4.370
	(2.387)	(4.714)	(8.294)	(2.452)	(2.438)	(5.009)
Observations	192	192	192	192	192	192
R-squared	0.281			0.266		
# Instruments		40	22		40	22
AR(1)		0.0439	0.202		0.0918	0.0905
AR(2)		0.866	0.956		0.507	0.326
Hansen		0.404	0.670		0.212	0.186

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Columns 4-6 of table 2 display results of similar regressions but using the change in the overall freedom measure (*DOSFSL*) as the main variable of interest. Coefficient estimates on the

change in economic freedom for all three regressions are negative but none yield any statistical significance. Additional evidence supporting a positive effect of an increase in the college educated population on the level of social capital is present in positive and statistically significant coefficients in both the OLS and system GMM results in column 5. There is also evidence that racial homogeneity leads to increased level of social capital as shown by positive and statistically significant coefficients for this measure (*HHI*). Weaker evidence supports the hypothesis that states with a large population experience lower levels of social capital. However, statistical significance for this coefficient (*population*) only appears in column 5.

Table 3 gives results from OLS regressions of the growth rate of social capital on the level of economic freedom and change in economic freedom. The standard practice in the growth literature also dictates that a convergence effect appear in growth regressions. We then include the log level of social capital from the year preceding our grouping (*ilogsocapital*) in order to account for any convergence in our social capital growth rates. For example, for the grouping of years 1987-1991 whose growth rates are averaged to form the dependent variable for group 1, the log level of social capital in the year 1986 is used for the convergence effect and so on for groups 2, 3, and 4.

Table 3: Growth

	(1) OLS	(2) SYS1	(3) SYS2	(4) OLS	(5) SYS1	(6) SYS2
OSFSL	-0.034	-0.079*	-0.196			
	(0.040)	(0.046)	(0.185)			
DOSFSL				-0.013	-0.055	-0.077
				(0.020)	(0.047)	(0.106)
ilogsocapital	-0.286***	-0.231***	-0.284***	-0.285***	-0.226***	-0.242***
	(0.008)	(0.022)	(0.059)	(0.008)	(0.019)	(0.029)
gini	0.524	0.872	-0.819	0.695*	1.237**	1.261
	(0.382)	(0.785)	(1.572)	(0.369)	(0.552)	(1.290)
metropercent	0.025	0.164	1.124	-0.004	0.172	0.627*
	(0.517)	(0.129)	(0.738)	(0.500)	(0.104)	(0.351)
HHI	1.049***	0.494***	0.663	1.122***	0.577***	1.005**
	(0.351)	(0.183)	(0.600)	(0.340)	(0.168)	(0.406)
unemploymentrate	0.685	0.680	0.447	0.590	0.217	-3.041*
	(0.675)	(1.147)	(3.837)	(0.694)	(1.027)	(1.512)
population	0.569	0.155	-0.432	0.523	0.192	0.435
	(0.941)	(0.360)	(1.104)	(0.950)	(0.224)	(0.424)
college2	1.340***	0.556	3.037	1.339***	0.648*	0.037
	(0.459)	(0.510)	(3.560)	(0.460)	(0.343)	(0.763)
logrgsp_cpc	0.161	0.131	-0.936	0.092	-0.070	-0.320
	(0.163)	(0.195)	(1.106)	(0.136)	(0.099)	(0.200)
under25	0.188	1.918*	1.712	0.155	0.602	1.715
	(1.005)	(1.020)	(2.055)	(1.016)	(0.628)	(1.512)
Observations	192	192	192	192	192	192
R-squared	0.747			0.746		
# Instruments		46	24		46	24
AR(1)		0.0187	0.0807		0.0127	0.0108
AR(2)		0.517	0.326		0.366	0.795
Hansen		0.442	0.791		0.758	0.635

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results in table 3 suggest that the effect of the overall level of economic freedom on the growth of social capital may be negative but is likely to be zero. There is no statistical significance for the *OSFSL* term in columns 1 or 3 with only column 2 displaying a negative and statistically significant effect. The change in the overall measure of economic freedom, *DOSFSL*,

is not statistically significant in any specification. The sign of the convergence effect (*ilogsocapital*) is negative and statistically significant at the 1% level in all regressions. This indicates the presence of a strong convergence effect whereby states with a large level of social capital experience a subsequent slowing down in the growth rate of social capital. There is strong evidence that greater levels of racial homogeneity (*HHI*) results in an increased growth rate of social capital. There is mild evidence that an increase in the college educated population (*college2*) and income inequality (*gini*) may lead to increases in the growth rate of social capital. Other control variables either display no significance or significance that appears in only one specification hardly being representative of a systematic effect.

B. Magnitudes

Difficulty in discussion of the magnitude of the various effects is compounded by several factors. Firstly, both the dependent variables and main variables of interest in the study are based on indices. Interpretation of magnitudes depends critically on how one interprets changes and levels in both the social capital index and the economic freedom index. What does it mean for economic freedom to increase by 1 point or by 5%? What does it mean for measured social capital to increase by 5%. We contend that these are difficult, if not impossible, questions to answer. What we are willing to state is that we can identify increases and decreases in the index values themselves. Therefore, the sign of effects and their statistical significance convey valuable information.

The level of economic freedom has a negative and statistically significant effect on the log level of social capital as seen in column one of table 2. The coefficient value of -.239 for *OSFSL* shows that a 1 point increase in the level of economic freedom leads to an approximately 24%

decrease in social capital[16]. While this magnitude appears large we must realize that a 1 point increase in the level of economic freedom is itself a two standard deviation increase in the level of economic freedom. The resultant change in the log level of social capital is less than a one standard deviation decrease (approximately 80% of one standard deviation). A one standard deviation increase in *OSFSL* is correlated with a decrease in the log level of social capital that is less than 40% of one standard deviation. Furthermore, this effect is only statistically significant in the OLS regression losing significance after endogeneity is accounted for in system GMM. The change in economic freedom has no statistical significance. A one point increase in the change in economic freedom represents a 4 standard deviation leap. A one standard deviation increase in *DOSFSL* is correlated with a decrease in the log level of social capital that is less than 5% of one standard deviation.

The variables *gini*, *HHI*, *unemploymentrate*, *population*, and *college2* each display some statistical significance in table 2 output. A coefficient value of .2730 for *gini* shows that a one standard deviation increase in *gini* corresponds to less than one quarter of a standard deviation increase in the log level of social capital. A one standard deviation increase in *HHI* corresponds to between 25% and 57% of a one standard deviation increase in the log level of social capital. A one standard deviation increase in *unemploymentrate* corresponds to less than 20% of a one standard deviation increase in the log level of social capital. A one standard deviation increase in *population* corresponds to less than 30% of a one standard deviation decrease in the log level of social capital. A one standard deviation increase in *college2* corresponds to between 48% and 75% of a one standard deviation increase in the log level of social capital.

[16] Recall that descriptive statistics are presented in table 1.

The magnitudes are a little different for the growth regressions displayed in table 3. A one standard deviation increase in *OSFSL* leads to 43% of a standard deviation decrease in the growth rate of social capital (using the -0.079 as the coefficient value). A one standard deviation increase in *DOSFSL* corresponds to less than a 22% of a standard deviation decrease in the growth rate of social capital.

The variables *gini*, *metropercent*, *HHI*, *unemploymentrate*, *college2*, and *under25* each display some statistical significance in table 3 output. A one standard deviation increase in *gini* corresponds to less than 35% of a one standard deviation increase in the growth rate of social capital. The coefficient for *metropercent* is only significant in one specification. Using the coefficient value of 0.627 a one standard deviation increase in *metropercent* corresponds to a 130% of a one standard deviation increase in the growth rate of social capital. A one standard deviation increase in *HHI* corresponds to between 193% and 85% of a one standard deviation increase in the growth rate of social capital. The coefficient for *unemploymentrate* is only significant in one specification. Using the coefficient value of -3.041 a one standard deviation increase in *unemploymentrate* corresponds to a 44% of a one standard deviation decrease in the growth rate of social capital. The other specifications have positive yet extremely small coefficient values for *unemploymentrate* generating small positive effects of less than 10% of a one standard deviation increase in the growth rate of social capital. A one standard deviation increase in *college2* corresponds to between 34% and 71% of a one standard deviation increase in the growth rate of social capital. A one standard deviation increase in *under25* is correlated with an increase in the growth rate of social capital that is less than 55% of one standard deviation of the social capital growth rate.

C. Subcomponents of Freedom

As the effects of the overall measure of economic freedom on the level and growth of social capital are revealed to be minimal, the question remains if this is due to the differing effects of the various subcomponents of economic freedom canceling themselves out? Or is there truly such a small relationship that it isn't present in the overall measure nor the subcomponent measures of freedom? We now present regression results for the level and growth rate of social capital on the subcomponents of economic freedom.

Tables A1, A2, and A3 (all located in the appendix) show regression results using the log level of social capital as the dependent variable and the size of government (*SGFSL*), takings and discriminatory taxation (*TDTFSL*), and labor market freedom (*LMFSL*) subcomponent measures as the variable of interest, respectively.

The results for size of government and labor market freedom given in tables A1 and A2 reveal that there is no discernible relationship between these measures of economic freedom, in either level or change form, and the log level of social capital. For takings and discriminatory taxation, shown in table A3, a negative and statistically significant relationship appears in the OLS estimates for both the level (*TDTFSL*) and change (*DTDTFSL*) coefficients. This tells us that the correlation between the overall measure of economic freedom and the level of social capital identified in Table 2 is likely coming from a correlation with takings and discriminatory taxation. However, this relationship fails to generate statistical significance upon controlling for endogeneity in the system GMM regression as revealed by the coefficient estimates in columns 2-3, and 5-6. Diagnostic tests for all system GMM regressions reported in table A3 indicate the validity of the chosen instruments. Of the control variables the most systematic relationship revealed in tables A1-A3 is the positive relationship between percentage of residents with a college

education and the log level of social capital. To a lesser degree there is support of a positive relationship between increased racial homogeneity and social capital.

Tables A4, A5 and A6 (located in the appendix as well) then give regression results regarding the effect of the various subcomponents of economic freedom on the growth rate of social capital. No coefficient for any size of government or takings and discretionary taxation measure, either in levels or changes, has statistical significance in any in the specifications. The labor market freedom measure, in table A6, does yield statistical significance in one specification. The system GMM regression in column 2, which looks at the level of labor market freedom, has a negative coefficient that is significant at the 5% level. This effect largely reflects the relationship between unionization and political activism. Again, the most systematic relationship revealed amongst the control variables and the growth rate of social capital was the positive relationship between racial homogeneity and the proportion of the population with a college education.

D. Comparison to previous literature

Berggren and Jordahl (2006) found a positive relationship between economic freedom and social capital as measured by generalized trust. It is important to keep the differences between our study and theirs in mind. Berggren and Jordahl use international cross-sectional data. We use a panel of data for US states. The use of panel data allows us to control for any omitted variables that are time invariant as well as any time varying variables that effect states uniformly. To the extent that such variables exist the Berggren and Jordahl estimates will suffer from an omitted variables bias. Also, the Berggren and Jordahl IV approach to the endogeneity problem only accounts for the endogeneity in the economic freedom measures. Our system GMM approach treats all explanatory variables as endogenous. While our results differ from Berggren and Jordahl in that our estimates suggest a neutral effect of social capital, this, is likely an artifact of the

differences in our data coverage. Where Berggren and Jordahl conduct a cross-country analysis, we limit our attention to US states where there is much lower variance in economic freedom and social capital.

VI. Conclusion

Societies do not flourish on per-capita income alone. Economic freedom is associated with economic growth, but it might encourage a type of atomistic individualism that erodes quality-of-life on other margins and that, perhaps, erodes the social capital that holds societies together. Using a new index of social capital for the US states developed by Hawes et al. (2013) and the Economic Freedom of North America data set compiled by Bueno et al. (2012), we estimate the effects of economic freedom on social capital and find that, across a broad range of specifications, there does not appear to be a clear trade-off between economic freedom and social capital. While Berggren and Jordahl (2006) argue that economic freedom increases social capital, we are unable to identify a clear effect. There is an important implication for how we understand the dynamics of capitalist economies: our results suggest that economic freedom does not fray the social fabric in such a way as to render the system unstable.

Furthermore, where such a trade-off might be apparent raises important questions about interpretation and definition. First, Economic Freedom indexes punish countries and states for having large amounts of government spending as a percentage of GDP. This is likely enabled by high social capital, which would suggest that the causal arrow points in the opposite direction and bias the estimated effect of economic freedom on social capital in a negative direction. Scandinavian countries, for example, are exemplars of high government spending and high-trust societies.

Second, social capital can be a response to high transaction costs. People invest in relationships in order to get around obstructions in the marketplace; these relationships that they use in order to "get things done" are not necessary when transaction costs are lower. Economic freedom reduces transaction costs and obviates the need for investment in transaction cost-reducing social capital. Third, one aspect of associational membership—membership in labor unions—runs precisely counter to economic freedom. By definition, more labor market freedom (meaning a smaller share of the labor force represented by unions) will lead to lower levels of measured social capital.

Finally, the Hawes et al. (2013) index measures associational activities, not necessarily social attitudes. Whether these ways of thinking about social capital differ substantially in their implications for how we understand economic, political, and social institutions remains to be seen. Hawes et al. (2013) have made an important contribution to the study of social capital with their new index. While their index includes membership in religious clubs or organizations, the importance of religion as an element of social capital requires further study.

With these caveats in mind, we conclude with the usual call for further research. Our results suggest that the relationship between economic freedom and social capital—if the two are meaningfully related—does not shout at us from these data. Economic freedom and social capital are nonetheless important elements of flourishing societies, and while they are not apparently related given the data and methods employed here, further research may identify different and clearer patterns.

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APPENDIX

Table A1: Levels

	(1) OLS	(2) SYS1	(3) SYS2	(4) OLS	(5) SYS1	(6) SYS2
SGFSL	-0.130	-0.105	-0.304			
	(0.080)	(0.127)	(0.304)			
DSGFSL				-0.033	0.039	-0.031
				(0.043)	(0.076)	(0.088)
gini	1.861	1.472	0.314	2.757*	3.463	2.942
	(1.178)	(2.191)	(5.003)	(1.440)	(2.780)	(2.655)
metropercent	-0.527	0.351	2.284	-0.353	0.245	1.305
	(1.257)	(0.436)	(1.798)	(1.248)	(0.315)	(0.833)
HHI	1.872	0.338	0.708	2.618**	0.931*	1.782
	(1.400)	(1.335)	(2.404)	(1.133)	(0.554)	(1.289)
unemploymentrate	4.162	0.588	-3.784	4.391*	3.612	-8.212***
	(2.597)	(7.084)	(5.324)	(2.379)	(5.399)	(2.762)
population	0.918	-1.459	-2.132	0.216	-1.333***	-0.379
	(2.325)	(1.359)	(2.436)	(2.396)	(0.457)	(0.945)
college2	3.517***	4.829**	7.854	3.527***	2.276*	1.056
	(1.081)	(1.867)	(5.410)	(1.134)	(1.143)	(1.629)
logrgsp_cpc	0.491	-0.315	-1.401	0.044	-0.033	-0.696
	(0.520)	(0.546)	(2.511)	(0.359)	(0.290)	(0.509)
under25	1.393	2.492	7.119	0.431	1.557	2.624
	(2.323)	(4.930)	(7.853)	(2.453)	(2.324)	(4.894)
Observations	192	192	192	192	192	192
R-squared	0.272			0.261		
# Instruments		40	22		40	22
AR(1)		0.0371	0.0717		0.0744	0.0237
AR(2)		0.660	0.938		0.804	0.0783
Hansen		0.414	0.694		0.272	0.368

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A2: Levels

	(1) OLS	(2) SYS1	(3) SYS2	(4) OLS	(5) SYS1	(6) SYS2
TDTFSL	-0.182***	-0.020	-0.782			
	(0.066)	(0.155)	(0.520)			
DTDTFSL				-0.085*	-0.083	-0.277
				(0.043)	(0.092)	(0.494)
gini	1.005	2.764	-5.027	2.036*	4.063**	2.977
	(1.140)	(1.956)	(5.993)	(1.126)	(1.990)	(8.821)
metropercent	-0.429	0.319	3.019	-0.484	0.259	1.384
	(1.411)	(0.402)	(2.692)	(1.219)	(0.311)	(3.650)
HHI	2.300**	0.569	2.202	2.434**	1.105***	1.984
	(1.105)	(0.703)	(1.458)	(1.139)	(0.406)	(1.477)
unemploymentrate	5.190**	4.456	6.330	3.428	2.725	-4.319
	(2.547)	(5.939)	(12.061)	(2.256)	(6.550)	(8.117)
population	0.801	-1.715**	-1.800	0.662	-1.078	-0.168
	(2.482)	(0.682)	(3.879)	(2.466)	(0.643)	(3.366)
college2	3.432***	3.990*	9.458	3.315***	2.331**	4.367
	(1.096)	(2.100)	(7.455)	(1.057)	(0.912)	(12.030)
logrgsp_cpc	0.451	-0.426	-2.858	0.135	-0.100	-1.468
	(0.334)	(0.652)	(2.554)	(0.384)	(0.327)	(5.117)
under25	0.545	1.630	12.319	0.642	1.236	6.502
	(2.407)	(4.730)	(8.853)	(2.518)	(2.190)	(6.775)
Observations	192	192	192	192	192	192
R-squared	0.283			0.277		
# Instruments		40	22		40	22
AR(1)		0.0771	0.302		0.0784	0.0738
AR(2)		0.976	0.654		0.893	0.558
Hansen		0.241	0.780		0.225	0.491

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A3: Levels

	(1) OLS1	(2) SYS1	(3) SYS2	(4) OLS	(5) SYS1	(6) SYS2
LMFSL	-0.066	-0.206	-0.170			
	(0.111)	(0.187)	(0.517)			
DLMFSL				0.046	-0.119	-0.276
				(0.071)	(0.144)	(0.321)
gini	2.322**	1.908	1.057	2.070*	1.882	3.755
	(1.129)	(1.613)	(6.791)	(1.149)	(2.170)	(6.239)
metropercent	-0.078	0.490	2.225	-0.329	0.465	1.749
	(1.373)	(0.476)	(2.522)	(1.263)	(0.417)	(2.067)
HHI	2.636**	0.834	0.674	2.601**	0.722	0.999
	(1.138)	(0.788)	(1.626)	(1.118)	(0.635)	(1.442)
unemploymentrate	4.538*	0.256	-1.828	4.712*	-1.195	-4.736
	(2.463)	(4.686)	(11.969)	(2.516)	(3.507)	(6.091)
population	-0.081	-0.898	-2.893	0.017	-1.307*	-2.327
	(2.376)	(0.769)	(2.502)	(2.359)	(0.743)	(2.610)
college2	3.435***	2.687**	6.834	3.405***	4.136**	6.197
	(1.109)	(1.290)	(8.278)	(1.096)	(1.847)	(6.077)
logrgsp_cpc	0.045	-0.199	-2.664	-0.055	-0.737	-2.248
	(0.335)	(0.409)	(3.282)	(0.328)	(0.580)	(2.608)
under25	0.469	2.059	-2.694	0.205	0.720	2.289
	(2.508)	(3.837)	(7.237)	(2.352)	(2.420)	(5.737)
Observations	192	192	192	192	192	192
R-squared	0.261			0.260		
# Instruments		40	22		40	22
AR(1)		0.129	0.212		0.0582	0.0854
AR(2)		0.686	0.944		0.544	0.787
Hansen		0.595	0.390		0.707	0.692

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A4: Growth

	(1) OLS	(2) SYS1	(3) SYS2	(4) OLS	(5) SYS1	(6) SYS2
SGFSL	-0.051	-0.024	-0.116			
	(0.031)	(0.025)	(0.097)			
DSGFSL				-0.011	-0.023	-0.031
				(0.012)	(0.020)	(0.052)
ilogsocapital	-0.288***	-0.223***	-0.283***	-0.285***	-0.222***	-0.240***
	(0.007)	(0.020)	(0.046)	(0.008)	(0.018)	(0.023)
gini	0.479	0.977*	0.227	0.781*	1.041**	0.947
	(0.376)	(0.508)	(1.326)	(0.407)	(0.487)	(1.113)
metropercent	-0.072	0.125	0.966*	-0.003	0.132	0.611**
	(0.497)	(0.113)	(0.487)	(0.502)	(0.107)	(0.283)
HHI	0.842**	0.487**	0.708	1.126***	0.508***	0.935**
	(0.389)	(0.191)	(0.685)	(0.336)	(0.168)	(0.412)
unemploymentrate	0.535	0.530	-1.446	0.622	0.221	-3.167***
	(0.730)	(0.854)	(2.158)	(0.656)	(0.957)	(1.048)
population	0.814	0.215	-0.152	0.522	0.115	0.441
	(0.921)	(0.309)	(1.104)	(0.935)	(0.254)	(0.464)
college2	1.372***	0.786**	2.402	1.358***	0.955***	0.393
	(0.465)	(0.340)	(2.257)	(0.461)	(0.311)	(0.579)
logrgsp_cpc	0.280	0.016	-0.497	0.098	-0.087	-0.388**
	(0.210)	(0.171)	(0.802)	(0.125)	(0.112)	(0.172)
under25	0.462	1.306	2.901	0.086	0.509	1.168
	(0.989)	(1.152)	(2.564)	(1.031)	(0.775)	(1.551)
Observations	192	192	192	192	192	192
R-squared	0.750			0.746		
# Instruments		46	24		46	24
AR(1)		0.0124	0.0876		0.0105	0.00735
AR(2)		0.318	0.290		0.226	0.711
Hansen		0.521	0.894		0.462	0.830

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A5: Growth

	(1) OLS	(2) SYS1	(3) SYS2	(4) OLS	(5) SYS1	(6) SYS2
TDTFSL	-0.008	-0.027	-0.304			
	(0.026)	(0.031)	(0.233)			
DTDTFSL				-0.007	0.052	-0.195
				(0.015)	(0.055)	(0.138)
ilogsocapital	-0.285***	-0.226***	-0.303***	-0.285***	-0.224***	-0.297***
	(0.008)	(0.021)	(0.067)	(0.008)	(0.023)	(0.049)
gini	0.567	0.587	-3.049	0.606	0.723	1.801
	(0.430)	(0.622)	(3.327)	(0.369)	(0.490)	(2.430)
metropercent	0.003	0.089	1.442	-0.004	0.089	0.727
	(0.508)	(0.098)	(1.198)	(0.502)	(0.097)	(0.610)
HHI	1.116***	0.475***	1.204	1.116***	0.485**	1.228**
	(0.348)	(0.152)	(0.721)	(0.346)	(0.205)	(0.548)
unemploymentrate	0.713	1.091	3.984	0.597	0.895	-1.473
	(0.637)	(0.871)	(8.008)	(0.726)	(1.080)	(4.214)
population	0.500	0.174	-0.161	0.515	0.154	0.536
	(0.936)	(0.220)	(1.522)	(0.959)	(0.312)	(1.065)
college2	1.330***	0.596	3.619	1.322***	1.053**	0.498
	(0.456)	(0.400)	(4.117)	(0.448)	(0.508)	(3.016)
logrgsp_cpc	0.093	0.053	-1.301	0.085	-0.081	-0.494
	(0.143)	(0.145)	(1.326)	(0.139)	(0.116)	(1.118)
under25	0.133	1.193	4.360	0.140	0.702	3.418*
	(1.019)	(0.855)	(4.503)	(1.018)	(0.572)	(1.992)
Observations	192	192	192	192	192	192
R-squared	0.746			0.746		
# Instruments		46	24		46	24
AR(1)		0.0150	0.359		0.0136	0.0465
AR(2)		0.358	0.523		0.288	0.135
Hansen		0.704	0.666		0.439	0.436

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A6: Growth

	(1) OLS	(2) SYS1	(3) SYS2	(4) OLS	(5) SYS1	(6) SYS2
LMFSL	0.013	-0.087**	-0.078			
	(0.041)	(0.042)	(0.132)			
DLMFSL				0.006	-0.104	-0.127
				(0.025)	(0.071)	(0.106)
ilogsocapital	-0.285***	-0.228***	-0.258***	-0.285***	-0.217***	-0.270***
	(0.008)	(0.019)	(0.056)	(0.008)	(0.020)	(0.026)
gini	0.611*	0.625	0.086	0.595	1.117*	1.806
	(0.362)	(0.508)	(1.761)	(0.379)	(0.592)	(1.625)
metropercent	-0.038	0.081	0.751	0.007	0.168	0.799*
	(0.539)	(0.103)	(0.849)	(0.503)	(0.118)	(0.453)
HHI	1.127***	0.222	0.406	1.125***	0.508**	0.923**
	(0.339)	(0.177)	(0.589)	(0.334)	(0.200)	(0.414)
unemploymentrate	0.691	-0.090	0.281	0.699	-0.371	-1.747
	(0.659)	(1.237)	(5.723)	(0.685)	(1.389)	(2.943)
population	0.490	-0.142	-0.630	0.462	0.120	-0.130
	(0.912)	(0.245)	(1.182)	(0.925)	(0.264)	(0.817)
college2	1.329***	0.920*	2.403	1.324***	0.630	1.902
	(0.452)	(0.521)	(3.602)	(0.461)	(0.484)	(1.763)
logrgsp_cpc	0.055	0.009	-0.978	0.069	-0.114	-0.920
	(0.116)	(0.156)	(1.369)	(0.121)	(0.152)	(0.662)
under25	0.154	0.823	-1.426	0.087	0.721	1.359
	(1.019)	(0.630)	(3.571)	(1.015)	(0.691)	(1.774)
Observations	192	192	192	192	192	192
R-squared	0.746			0.746		
# Instruments		46	24		46	24
AR(1)		0.0233	0.0914		0.00335	0.0288
AR(2)		0.496	0.567		0.122	0.345
Hansen		0.447	0.478		0.742	0.886

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1