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ECONOMIC FREEDOM PROMOTES UPWARD INCOME MOBILITY

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Chapter 3 Economic Freedom Promotes Upward Income Mobility

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1 Introduction

Economic freedom is positively tied with numerous positive outcomes ranging from faster economic growth (Hall and Lawson, 2014) to environmental progress (Barbier, 2019) and greater resilience in the face of economic crises (Geloso and Bologna Pavlik, 2020; Candela and Geloso, 2021). Recently, more attention has been devoted to the connection between economic freedom and income inequality and the findings are somewhat mixed as some studies show that economic freedom is associated with higher levels of inequality while others find the opposite (Berggren, 1999; Carter, 2007; Ashby and Sobel, 2008; Bennett and Vedder, 2013; Apergis, Dincer, and Payne, 2014; Strum and De Haan, 2015; Holcombe and Boudreaux, 2016; Bennett and Nikolaev, 2016, 2017; Apergis and Cooray, 2017; Bjørnskov, 2017).

These mixed results are unsurprising for two interrelated reasons. First, the study of income inequality is motivated by a concern for income mobility. After all, stating that economic freedom is positively related to economic growth does not tell us if the poorest benefit from that growth. Second, income inequality figures are highly problematic proxies for income mobility. Similar empirical strategies—same time frame, methods, design—yield dramatically different results if one uses one dataset of income inequality instead of another (Holcombe and Boudreaux, 2016). Thus, the validity of each dataset becomes an object of contention (Piketty and Saez, 2003; Mechling, Miller, and Konecny, 2015; Auten and Splinter, 2019, 2021; Larrimore *et al.*, 2017, 2021; Geloso and Magness, 2020; Geloso, Magness, Moore, and Schlosser, 2018). More importantly, statistics of income inequality suffer frequently from composition bias that foils how they speak to income mobility. A composition bias occurs when new individuals add themselves to an existing population but the distribution of income of these new individuals differs from that of the native population. For

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example, when immigrants enter a country, they tend to have lower incomes than the native inhabitants, which will increase the level of inequality. However, if there are no effects from immigration on the income of the native inhabitants, then the increase in income inequality is just a statistical artifice that has no economic meaning for income or social mobility.[1] Correcting for composition biases often shows different levels and movements of income inequality (Moore and Pacey, 2003; Card, 2009; Grubel, 2016), which suggests that inequality figures are very poor proxies for the possibility of upward mobility.[2]

In this chapter of *Economic Freedom of the World*, we provide a direct assessment of the effect of economic freedom on income mobility rather than using income inequality as a proxy of the latter. In the next section, we highlight the possible links between economic freedom and upward social mobility and argue that (on net), there is a strong case for arguing that economic freedom increases mobility. In section 3, we explain the empirical approach and data used to test our claim that economic freedom promotes upward social mobility. In section 4, we present our results that show that the index of economic freedom on income mobility has a strong positive effect on upward mobility. The five subcategories of the EFW index taken individually tell a more nuanced story.[3] Area 1: Size of Government is inversely related to mobility (that is, bigger government means more income mobility) while the other four subcategories are positively related to mobility (that is, more economic freedom in these subcategories means more mobility). In section 5, we conclude.

2 Connecting economic freedom and income mobility

The recent literature on income mobility suggests that higher levels of inequality entail lower levels of mobility (Corak, 2012; Clark, 2015). In other words, high levels of inequality persist as the poor cannot rise and the rich do not fall. The explanatory mechanism that is frequently proposed tends to argue that—all else being equal—the poor are more constrained in their choice sets and thus have fewer options available. At first glance, this appears reasonable. However, first glances are deceiving. This literature tends to eschew the crucial role of

1 Another type of composition bias is related to age. Income is a flow of benefits to a person per unit of time. But people not only want to maximize their income, they want to maximize their wealth (which is a stock). With population aging, more and more people who earned an income in the past have no income, but they live on a stock of accumulated wealth. Thus, as the share of retired workers who live off the wealth they accumulated increases, income inequality is going to rise. However, this does not speak to the actual issue of income mobility (Paglin, 1975; Danziger, Haveman, and Smolensky, 1977; Almås and Mogstad, 2012; Almås, Havnes, and Mogstad, 2011).

2 Herbert Grubel (2016) provided Canadian-specific evidence in this regard. To sort out the issue of composition bias, he tracked inequality for the same people over the period from 1990 to 2009. By following the same people over time, the effect of new individuals in the population would be eliminated. In the process, income mobility is measured directly rather than proxied by income inequality. Grubel found high levels of upward income mobility for the poorest. In fact, Grubel (2016: 86) finds that income mobility was so strong within the group he studied that income inequality fell (even though it rose in the overall population).

3 The five subcategories are: Area 1. Size of Government; Area 2. Legal System and Property Rights; Area 3. Sound Money; Area 4. Freedom to Trade Internationally; Area 5. Regulation.

institutions in determining the strength of the low-income constraint on upward mobility. In countries with high economic freedom, as "citizens are free to engage in commerce with others" and "they do not fear their property will be stolen from them, then they should face better opportunities" for upward social mobility (Boudreaux, 2014: 234). In other words, there are two things that may reduce the chances at upward mobility: the income-constraints imposed by birth and the institutional constraints that are erected in countries that lack economic freedom. However, only the former of the two constraints has been subjected to heavy inquiry.

To properly conceive of the role that economic freedom (that is, a smaller set of institutional constraints) might play in allowing for income mobility, there is an illustrative microcosm at hand. Kufenko and Geloso (2020) used the microcosm of Olympic games, arguing that it was ideal to illustrate the connection between social mobility, economic growth, and inequality. Their argument is that the innate talent needed to compete in Olympics is distributed independent of income. However, income inequality constrains the ability to develop these talents to the level needed to compete at Olympic level. Thus, inequality would prevent the poor from competing even if they are talented. Thus, a country would win fewer medals (all else being equal) when inequality increases. However, Kufenko and Geloso argued that economic freedom would mitigate this effect. First, any monetizable gains from the Olympics would be appropriable thanks to secure property rights. This provides a strong incentive to invest in skills. Second, low taxes and lightly regulated credit markets would augment this effect by increasing the returns and securing cheap funding. Thus, countries with higher levels economic freedom would win more medals (all else being equal). Kufenko and Geloso find that countries with low economic freedom suffer a significant penalty from inequality while countries with high economic freedom do not.

This microcosm is quite illustrative for our purposes. It shows that economic freedom increases the set of feasible (and worthwhile) opportunities available to those at the bottom. In fact, there is considerable direct and indirect evidence to that effect—especially for the subcategories of economic freedom that are not related to the size of government (Area 1). In the only study that directly linked institutions to income mobility, Boudreaux (2014) used a dataset of 25 countries for which there were intergenerational income-mobility data and related that data to a measure of the rule of law. His result was that stronger measures of the rule of law are associated with more upward mobility. As a proxy for secure property rights (Area 2 of the EFW index), the rule of law's effect suggests that the gains from entrepreneurial efforts and other investments can be securely appropriated in ways that permit substantial upward mobility.

The indirect evidence speaks to how the effect of regulations (which correspond to Area 5 of the EFW index) hurt those at the bottom of the income ladder rather than those at the top. For example, Bailey, Thomas, and Anderson (2019) point out that regulation across American industries slows down wage growth for low-income workers while Chambers,Collins, and Krause (2019) find that regulations across those same industries tend to increase the price of goods that figure disproportionately in the expenditures of poor households (which reduces real wages). Zhang and Gunderson (2020) find that, in Canada, occupational licensing tended to hurt the income growth of the poor more than that of higher-income workers, a finding echoed by Kleiner and Vorotnikov (2017) for the United

States. There is also some evidence that the effect of inflation (which corresponds to Area 3 of the EFW index) is more severely felt by those nearer the bottom of the income ladder (Easterly and Fischer, 2001). In these examples, the common denominator is that government interventions tend to reduce the set of feasible and worthwhile opportunities for people lower on the income ladder. This can easily be related to income mobility: fewer opportunities imply a greater persistence of socio-economic status.

One could reasonably expect that the size-of-government subcategory of the EFW index would not work in the same direction. In all the examples used above, government interventions had clear and strong skews against the poorest in society by limiting their opportunity to move up. However, one could argue that size of government could lead to more opportunity for the poorest. Consider the example of the accumulation of human capital (that is, skills, education, experience). If the ability of a poor individual to acquire more human capital is constrained by low income, taxation and redistribution may aid in the acquisition of that human capital. More importantly, as Galor and Zeira (1993) and Lindert (2004a, 2004b, 2021) argue, if the marginal return on physical capital is greater than the return on human capital, redistribution may even enhance growth. Thus, increasing fiscal transfers could mean increasing both opportunity and economic growth.

This is generally the corrective mechanism proposed by scholars who are engaged with documenting the effect of the constraints imposed by birth. However, the effect of their correction could also run in the opposite direction. For example, high taxes could discourage people to take on a risky investment in education in the first place (Feldmann, 2017). As another example, if those earning higher incomes can change jobs or regions more easily, they will possess more bargaining power with their employers. Thus, they might be able to ask for higher *net* wages and employers will delay wage increases for workers further down the income ladder who are less mobile (Gordon, 2016). In this situation, higher taxes to fund social transfers might end up reducing resources available to lower-income households and thus limit their ability at investing resources to climb up the income ladder. Thus, the effects of the size of government subcategory could work both ways.

As pointed out above, the only study (to our knowledge) that directly links upward income mobility to institutional constraints is that of Boudreaux (2014), who was forced to rely on a relatively small sample (25 countries in cross-section) and used an indicator that spoke only to a single aspect of economic freedom. The rest of the literature either allows only for an indirect link or is concerned with the role of income-constraints inherited at birth. The goal of this paper is to assess whether there is more direct evidence for the role of the institutional constraints on mobility.

3 Data and method

To provide this assessment, we rely on two measures of mobility as dependent variables. One that speaks to social mobility broadly speaking—the World Economic Forum's *Global Social Mobility Index*—and one that speaks to income mobility directly—the World Bank's *Global Database on Intergenerational Mobility* (Narayan *et al.*, 2018).

3.1 The *Global Social Mobility Index*

The first dependent variable comes from the World Economic Forum's *Global Social Mobility Index* (GSMI). Previous attempts at measuring social mobility have analyzed social mobility across generations through intergenerational comparisons of the earnings of children and their parents. According to the GSMI, an issue with this approach is that it captures the effect of measures taken decades ago. The GSMI, however, operationalizes the drivers of relative social mobility, rather than the outcomes: it specifically measures social mobility through policies, practices, and institutions. The GSMI is an aggregate score of mobility that takes a simple average of ten "pillars" that represent five determinants of social mobility. The five determinants are health, education, technology access, work opportunities and working conditions, and social protection and inclusive institutions.

Low-quality health care affects the disadvantaged disproportionately, impeding social mobility. The first determinant, health, is measured using only one Pillar, *Health*. This pillar comprises adolescent birth rates (per 1,000 women), prevalence of malnourishment, health access and quality index, and a health life expectancy index adjusted for inequality.

Education and the human capital that arises from access to education is considered a core factor of social mobility. Education, the second major determinant, comprises three pillars. Pillar 2, *Education Access*, encompasses pre-primary enrollment, quality of vocational training, the NEET[4] ratio, out-of-school children, and an education index adjusted for inequality. Pillar 3, *Education Quality and Equity*, measures children below minimum proficiency, pupils per teacher in pre-primary, primary, and secondary education, harmonized learning outcomes, social diversity in schools, and lack of education material among disadvantaged children. Finally, Pillar 4, *Lifelong Learning*, scores the extent of staff training, active labor-market policies, access to basic services through information and communication technology (ICT), and the percentage of firms offering formal training.

Even if countries provide education, the access to those opportunities through technology could be necessary. Technological access, the third major group, has just Pillar 5, *Technology Access*. They supply this pillar using data on percentage of Internet users, fixed broadband Internet subscriptions per 100, mobile broadband subscriptions per 100, percentage of the population covered by at least 3G mobile network, percentage of the rural population with access to electricity, and Internet access in schools.

Measurements of fair work and opportunities are used because of the complementary effect that labor-market factors have on social mobility. This fourth major group contains Pillars 6, 7, and 8. Pillar 6, *Work Opportunities*, is made up of data on unemployment among the labor force with basic, intermediate, and advanced education, unemployment in rural regions, ratio of female-to-male labor force participation rate, and percentage of workers in vulnerable employment. Pillar 7, *Fair Wage Distribution*, measures low-pay incidence, ratio of bottom 40% and top 10% labor-income share, ratio of bottom 50% to top 50% labor-income share, mean income of bottom 40%, and adjusted labor-income share. Pillar 8, *Working Conditions*, takes

4 "This indicator presents the share of young people who are not in employment, education or training (NEET), as a percentage of the total number of young people in the corresponding age group, by gender" (OECD, 2020).

an average of a Worker's Right Index, cooperation in labor-employer relations, an index on the meritocracy at work, the percentage of employees working more than 48 hours per week, and the collective bargaining ratio.

The final major group, social protection and inclusive institutions, is included to quantify the ability of countries to provide social protection, institutions, and efficient public services. Pillar 9, *Social Protection*, is made up of a measurement of the guaranteed minimum income benefits (as a percentage of median income), social protection coverage, social protection spending, and an index of social safety-net protection. The final and tenth Pillar, *Inclusive Institutions*, uses the Corruption Perceptions Index and scores on government and public services efficiency, inclusiveness of institutions, and political stability and protection from violence.

The World Economic Forum develops a framework split into two "cycles" that describe the social mobility of a country. In the virtuous cycle, the five determinants of social mobility lead to equality of opportunity, which then increases social mobility, causing fewer inherited inequalities, which then loops back into the five determinants. On the other hand, countries described to be in the vicious cycle have low scores on the determinants, causing less equality of opportunity, less mobility, more inherited inequalities, which again then harms the pillars of the index.

The values of the GSMI could range from 0 to 100 but, in reality, scores from 34 (Ivory Coast) to 85.2 (Denmark). The index provides a value for 82 countries. The other four Nordic countries are in the top five, with Norway ranked second (83.6), Finland third (83.6), Sweden fourth (83.5), and Iceland fifth (82.7). Ranks of other major countries include Canada (14th, 76.1), United Kingdom (21st, 74.4), the United States (27th, 70.4), Russia (39th, 64.7), China (45th, 61.5), and India (76th, 42.7).

While our main results will be based on the index as a whole, we will also try our results with each of the pillars separately. We do this because, as we highlight below, some subcategories might be slightly problematic since they share definitional similarities with economic freedom (and thus the results would not be an actual association but rather one that was baked-in thanks to shared definitions).

3.2 The *Global Database on Intergenerational Mobility*

The problem with the *Global Social Mobility Index* (GSMI) is that there is some recursiveness between the dependent variables and the independent variable (economic freedom). For example, Pillar 9, which includes government benefits in the form of social spending, will most likely be directly related to the Area 1 of the EFW index, which speaks to size of government. Thus, by its inclusion, Pillar 9 would drive some of the results because the two variables are simultaneously defined.[5] This implies that any results might be flawed if we rely exclusively on the GSMI. This would be a problem similar to that highlighted by the finding that different measures of income inequality (which are taken as a proxy for income mobility) yield different results in terms of the connection with economic freedom (Holcombe and Boudreaux, 2016).

This being the case, we adopt a second dataset in order to speak to generalizability: the *Global Database on Intergenerational Mobility* (GDIM) from the World Bank (Narayan *et al.*, 2018). This measurement contains estimates of intergenerational mobility, on both an absolute and relative scale, by 10-year cohorts. We use the cohorts from the 1980s, that is, the parents surveyed in the study were born in this decade. This is because more countries have data available for

5 A similar problem could apply through some elements of Pillars 7 and 8.

this decadal cohort than any other. GDIM has measurements of income mobility. Unlike the GSMI index, lower scores correspond to *greater* intergenerational mobility. The downside of the GDIM is that we have a smaller sample (50+ countries) and, more importantly, we lose multiple countries with low values for economic freedom. This consigns the variance of economic-freedom measures to the high-freedom group. Thus, the effects may appear more muted in that group, which will heighten the adverse effect of a smaller sample size.

3.3 Index of *Economic Freedom of the World*

Our main independent variable of interest is economic freedom. We use the index published in the Fraser Institute's *Economic Freedom of the World* (EFW) (Gwartney, Lawson, Hall, and Murphy, 2020). The 2020 edition of the EFW index comprises forty-two variables in five major Areas. The EFW index itself is a simple average of these five major areas: Size of Government (Area 1); Legal System and Property Rights (Area 2); Sound Money (Area 3); Freedom to Trade Internationally (Area 4); Regulation (Area 5). The score of the EFW index ranges from 0 to 10, with higher overall and area scores corresponding to greater economic freedom.

As we indicated in section 2, the last four Areas of the EFW index can be expected to yield signs that more economic freedom leads to more mobility while the first Area (Size of Government) is more ambiguous. This being so, we must provide a two-pronged approach. The first uses the EFW index as a whole while the second uses the Areas individually. This will allow us to capture the potentially uneven effects of each subcategory. As a corollary, it will allow us to identify which subcategories have the strongest effect.[6]

3.4 Econometric strategy

As our data is cross-sectional in nature, to test the relationship between the dependent variables (GSMI and GDIM) and the independent variables (the EFW index and its five Areas) we must rely on an ordinary least squares (OLS) strategy. We use three major control variables in the baseline analysis. A major determinant of social mobility is the level of development, so we include the logged value of GDP per capita to measure the impact of economic freedom on social mobility independently of economic freedom's impact on incomes. We use the 2016 estimate of GDP per capita from the Maddison Project (Groningen Growth and Development Centre, 2020). We also include the most recent edition of the Economic Complexity Index (ECI). This measurement is based on the complexity of exporting goods. The ECI is a proxy for the sophistication of the production abilities within a country. The ECI index's scores in 2018, the edition used in this paper, range from 2.43 (Japan) to Nigeria (–1.90), where higher scores correspond to greater complexity. Finally, we include the percentage of urban population in 2018 from the World Bank.[7] The summary statistics of the outcome, main independent, and control variables can be found in table 3.1.

6 For example, readers will notice that we did not provide any example of the effect of freedom to trade internationally on income mobility in section 2. This is because we were unable to find studies that did a similar analysis as those that pertained to Areas 2, 3, and 5.

7 Many regressions with economic freedom and other social outcomes (*e.g.*, inequality) tend to use measures such as life expectancy. We do not include them in this paper because they are already included in the GSMI data (Pillar 1). Adding those as control variables would only amplify the problem with GSMI discussed in section 3.2.

Table 3.1: Summary statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Social Mobility Variables					
Social Mobility (GSMI)	82	62.207	13.670	34.475	85.172
Social Mobility (GDIM)	52	0.482	0.257	0.113	1.095
Health	82	74.530	14.810	36.366	94.469
Education Access	82	61.703	18.335	16.644	88.056
Education Quality	82	63.053	19.331	15.727	87.378
Lifelong Learning	82	55.385	12.377	37.251	81.101
Technology Access	82	72.069	14.956	30.917	94.120
Work Opportunities	82	67.714	13.254	29.716	88.078
Fair Wage Distribution	82	49.600	18.854	1.852	88.411
Working Conditions	82	59.668	11.534	37.704	83.613
Social Protection	82	55.093	55.093	17.564	89.811
Inclusive Institutions	82	63.254	15.121	33.537	89.514
Economic Freedom (2018)					
Economic Freedom	82	7.330	0.709	5.377	8.653
Size of Government.	82	6.755	1.149	4.572	9.505
Legal System & Property Rights	82	5.934	1.334	3.041	8.246
Sound Money	82	8.894	0.976	5.648	9.869
Freedom to Trade Internationally	82	7.649	1.002	5.121	9.440
Regulation	82	7.419	0.860	4.772	9.137
Standard deviation of EFW Areas	82	1.388	0.305	0.733	2.135
Economic Freedom (Lagged)					
Economic Freedom (2013)	81	7.237	0.733	5.140	8.460
Economic Freedom (2008)	80	7.187	0.730	5.580	8.640
Economic Freedom (1990)	68	6.106	1.360	3.280	8.560
Economic Freedom (1980)	64	5.609	1.246	2.950	8.130
Controls					
GDP per capita (logged)	82	9.786	0.844	7.815	11.244
Economic Complexity	79	0.500	0.905	–1.601	2.427
Percentage Urban	82	68.838	17.458	18.476	100.000

While our baseline regressions use each country's EFW score from 2018, we also include four lagged values of economic freedom as robustness checks in an attempt to address endogeneity (2013, 2008, 1990, and 1980). This is particularly important for the results based on the GDIM data as intergenerational mobility is assessed over a longer period of time, so that a person born in 1990 will not be too affected by the level of economic freedom in 2018. Rather, that person will be affected by the level over the interceding years.

4 Results

4.1 Results with the overall EFW index

We run a cross-sectional regression with up to 82 countries. Table 3.2 reports a basic OLS regression with social mobility (GSMI) as the dependent variable and economic freedom as independent. Column 1 reports no controls and shows a positive and statistically significant result, with a one standard deviation increase in EFW score corresponding to 67.6% of a standard deviation increase in social mobility. This implies that, if our least economically free country, Egypt, increased its economic freedom by one point, its social mobility would be equal to that of Argentina or Vietnam.

Table 3.2: Economic freedom on the *Global Social Mobility Index*

Variable	(1)	(2)	(3)
Economic Freedom	13.038***	2.640*	2.667*
	(1.419)	(1.447)	(1.399)
GDP per capita (logged)		10.594***	10.429***
		(1.616)	(1.633)
Economic Complexity		3.045***	2.981***
		(0.974)	(0.951)
Percentage Urban		−0.001	0.005
		(0.047)	(0.047)
Standard deviation of EFW Areas			−1.893
			(2.257)
Constant	−33.361***	−62.731***	−59.026***
	(10.413)	(11.862)	(13.636)
Observations	82	79	79
R-squared	0.457	0.832	0.833

Note: Robust standard errors in parentheses; *** p <0.01, ** p <0.05, * p <0.1.

Column 2 includes our three control variables. Now, we find that the aggregate EFW index is positive and significant at the 10% level. Bolen and Sobel (2020) argue that when certain Areas in the EFW index are weak better scores in the other Areas are not substitutable (as a simple average would suggest). They suggest addressing this by including a measure of the within-country standard deviation among the five Areas in the regression. We do so in Column 3. Economic freedom yields similar results as in Column 2. The standard deviation of the five Areas is negative but insignificant. In the final two columns, GDP per capita (logged) and the measurement of economic complexity are both positive and significant at the 1% level.

In table 3.3, we use GDIM's measure of income mobility instead. This shrinks our observations to 52 with controls and 51 without. Again, column 1 includes only economic freedom in the regression, column 2 includes the three controls, and column 3 adds the standard deviation of the five Areas of the EFW index. Without controls, economic freedom is negative and statistically significant at the 1% level. (Remember that lower scores on the GDIM correspond to *greater* mobility). However, when controls are included, economic freedom is no longer significant. In fact, only GDP per capita (logged) is negative and statistically significant. Taken at face value, it seems that richer countries provide higher income mobility.

Table 3.3: Economic freedom on the *Global Database on Intergenerational Mobility*

Variable	(1)	(2)	(3)
Economic Freedom	−0.150***	0.039	0.038
	(0.039)	(0.077)	(0.080)
GDP per capita (logged)		−0.245***	−0.248***
		(0.080)	(0.082)
Economic Complexity		−0.028	−0.030
		(0.038)	(0.039)
Percentage Urban		0.002	0.002
		(0.002)	(0.002)
Standard deviation of EFW Areas			−0.077
			(0.105)
Constant	1.595***	2.516***	2.647***
	(0.294)	(0.506)	(0.555)
Observations	52	51	51
R-squared	0.188	0.461	0.469

Note: Robust standard errors in parentheses; *** p <0.01, ** p <0.05, * p <0.1.

To attempt to address potential endogeneity, we report the results of including four lags of economic freedom (5- and 10-year lag, as well as EFW scores in 1990 and 1980) in table 3.4 (GSMI) and table 3.5 (GDIM). Without controls (Columns 1, 3, 5, and 7 in both tables), economic freedom is significant at the 1% level and shows the expected sign (economic freedom is positively associated with greater mobility). Once we include controls, we find some interesting results. When using GSMI as the dependent variable, economic freedom in 2013 is positive and significant (shown in column 2). For GDIM, though, only economic freedom in 1980 is significant (column 8). This result, that earlier values of economic freedom are significant relative to present values, is consistent with the way the GDIM constructs mobility. However, the results suggest that economic freedom in 1980 is *negatively* associated with income mobility for children with parents born in that decade. In columns 9 of both tables, we instead use the average EFW score from 1980 to 2018 as our variable of interest. When GSMI is the dependent variable, the average EFW variable is positive and significant, but it is insignificant for GDIM.

4.2 Results with individual components of the *Global Social Mobility Index*

As discussed in the section 3.1, the GSMI measurement of social mobility is a simple average of ten pillars. We have so far found fairly robust evidence that economic freedom is positively correlated with social mobility. However, we want to dive further into understanding for *which* pillars this is true. There is no *a priori* reason to expect economic freedom to have the same impact on each pillar equally, so splitting the results into these pillars seems warranted. This exercise, with controls and the standard deviation in the Areas of economic freedom, is included in table 3.6.

Table 3.4: Lagged economic freedom on the *Global Social Mobility Index*

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Economic Freedom (2013)	12.055***	2.417*							
	(1.660)	(1.236)							
Economic Freedom (2008)			12.905***	1.246					
			(1.367)	(1.140)					
Economic Freedom (1990)					6.613***	0.078			
					(1.026)	(0.601)			
Economic Freedom (1980)							7.682***	0.906	
							(0.922)	(0.699)	
Standard deviation of EFW Areas		−0.232		1.004		−1.754		−2.131*	
		(1.958)		(2.290)		(1.461)		(1.114)	
Avg. EFW (1980–2018)									2.962**
									(1.318)
GDP per capita (logged)		10.766***		11.862***		12.622***		11.731***	10.090***
		(1.537)		(1.362)		(1.346)		(1.306)	(1.615)
Economic Complexity		2.841***		2.697***		2.032**		1.998**	2.901***
		(0.954)		(0.871)		(0.914)		(0.893)	(0.946)
Percentage Urban		0.005		0.002		0.060		0.075*	0.006
		(0.047)		(0.048)		(0.046)		(0.043)	(0.044)
Constant	−24.804**	−62.478***	−30.250***	−65.737***	21.805***	−65.626***	18.863***	−62.068***	−59.583***
	(12.130)	(12.664)	(9.843)	(12.190)	(6.968)	(11.608)	(5.730)	(10.547)	(11.440)
Observations	81	78	80	77	68	65	64	61	79
R-squared	0.422	0.827	0.474	0.842	0.382	0.875	0.415	0.888	0.835

Note: Robust standard errors in parentheses; *** p <0.01, ** p <0.05, * p <0.1.

Table 3.5: Lagged economic freedom on the *Global Database on Intergenerational Mobility*

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Economic Freedom (2013)	−0.156***	0.044							
	(0.044)	(0.082)							
Economic Freedom (2008)			−0.153***	0.055					
			(0.043)	(0.071)					
Economic Freedom (1990)					−0.084***	0.046			
					(0.024)	(0.036)			
Economic Freedom (1980)							−0.080***	0.073**	
							(0.021)	(0.030)	
Standard deviation of EFW Areas		−0.055		−0.145*		0.036		0.059	
		(0.081)		(0.085)		(0.077)		(0.045)	
Avg. EFW (1980–2018)									0.070
									(0.065)
GDP per capita (logged)		−0.245***		−0.246***		−0.253***		−0.285***	−0.272***
		(0.082)		(0.082)		(0.067)		(0.063)	(0.080)
Economic Complexity		−0.029		−0.038		−0.054		−0.049	−0.030
		(0.039)		(0.041)		(0.040)		(0.041)	(0.038)
Percentage Urban		0.002		0.002		0.001		0.002	0.002
		(0.002)		(0.002)		(0.003)		(0.003)	(0.002)
Constant	1.630***	2.570***	1.604***	2.617***	1.019***	2.605***	0.943***	2.711***	2.592***
	(0.331)	(0.525)	(0.327)	(0.499)	(0.169)	(0.593)	(0.138)	(0.544)	(0.507)
Observations	52	51	52	51	45	44	44	43	51
R-squared	0.186	0.470	0.190	0.500	0.221	0.544	0.177	0.568	0.471

Note: Robust standard errors in parentheses; *** p <0.01, ** p <0.05, * p <0.1.

Table 3.6: Economic freedom on the ten pillars of the *Global Social Mobility Index*

Variables	(1) Health	(2) Education Access	(3) Education Quality and Equity	(4) Lifelong Learning	(5) Technology access	(6) Work Opportunities	(7) Wage Distribution	(8) Working Conditions	(9) Social Protection	(10) Inclusive Institutions
Economic Freedom	1.963	1.187	5.191*	2.966*	2.903***	4.071	0.050	1.650	−1.023	7.714***
	(1.630)	(2.564)	(2.640)	(1.743)	(1.047)	(2.838)	(3.534)	(2.234)	(3.041)	(1.746)
Std. dev. of EFW Areas	−5.267*	−4.315	-6.010	−0.277	−5.690***	8.060*	7.584	−1.199	−4.197	−7.616***
	(2.807)	(3.990)	(4.518)	(2.799)	(2.000)	(4.570)	(5.164)	(3.063)	(4.051)	(2.844)
GDP per capita (logged)	11.303***	13.114***	17.449***	6.355***	9.464***	4.235*	13.432***	8.134***	14.259***	6.547**
	(1.914)	(2.661)	(2.356)	(2.185)	(1.253)	(2.525)	(4.040)	(2.475)	(3.128)	(2.520)
Economic Complexity	3.264**	4.226***	0.872	3.094**	3.384***	3.576**	4.519*	1.338	3.883**	1.649
	(1.238)	(1.572)	(1.859)	(1.494)	(0.955)	(1.793)	(2.351)	(1.415)	(1.821)	(1.463)
Percentage Urban	−0.019	0.089	−0.244***	0.034	0.137***	−0.046	−0.109	−0.036	0.163	0.079
	(0.068)	(0.077)	(0.091)	(0.061)	(0.049)	(0.074)	(0.125)	(0.075)	(0.109)	(0.065)
Constant	−43.928**	−77.968***	−121.587***	−32.500**	−45.350***	−13.903	−88.195***	−28.838*	−84.522***	−53.469**
	(17.248)	(21.953)	(24.205)	(16.193)	(12.396)	(24.807)	(32.235)	(16.283)	(23.026)	(21.551)
Observations	79	79	79	79	79	79	79	79	79	79
R-squared	0.770	0.746	0.671	0.613	0.867	0.359	0.489	0.515	0.668	0.715

Note: Robust standard errors in parentheses; *** p <0.01, ** p <0.05, * p <0.1.

The results in this table suggest that economic freedom is positively associated with more education quality, lifelong learning, technology access, and inclusive institutions (columns 3, 4, 5, and 10). These results are largely meaningful as well. A standard deviation increase in economic freedom corresponds to 19% of a standard deviation increase in education quality, 17% of a standard deviation increase in lifelong learning, 14% of a standard deviation increase in technology access, and 36% of a standard deviation increase in inclusive institutions. Another interesting result comes from looking at Bolen and Sobel's (2021) suggestion of including the standard deviation of the five Areas of the EFW index. Having higher variance in the five Areas, all things equal, provides *massive* harm to technology access and inclusive institutions (columns 5 and 10). GDP per capita (logged) is positive and statistically significant in each of the ten pillars.

4.3 Results with individual Areas of the EFW index

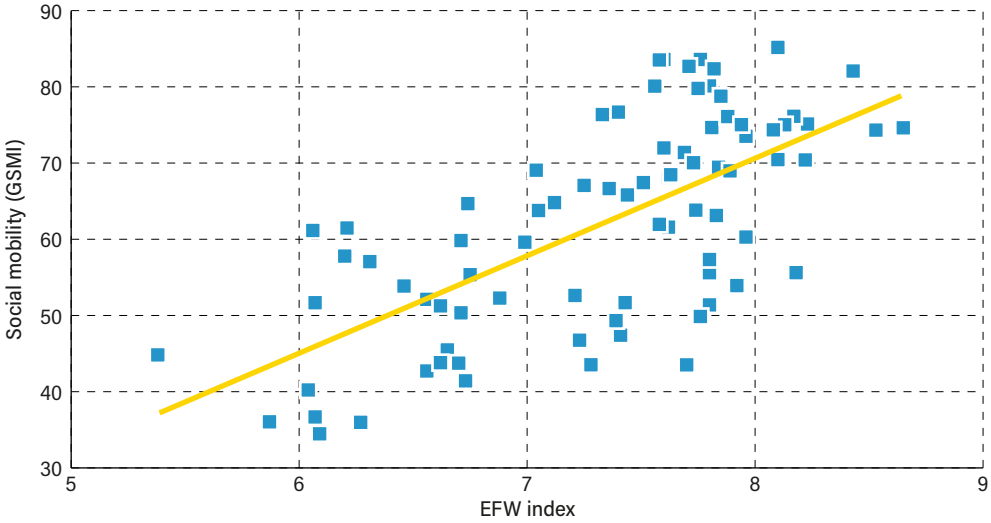
Much as we would not expect economic freedom to affect each pillar of mobility equally, we also would not anticipate each Area of economic freedom to affect social mobility (generally, and each pillar) equally. We now separate the EFW index by its five major Areas to take an even deeper dive in the results. Without controls,[8] we get statistically significant results at the 1% level on all five Areas.

8 The results without controls are available upon request.

Interestingly, all Areas except for Size of Government (Area 1) have a positive sign on the coefficient. This implies that larger government size is correlated to more social mobility.

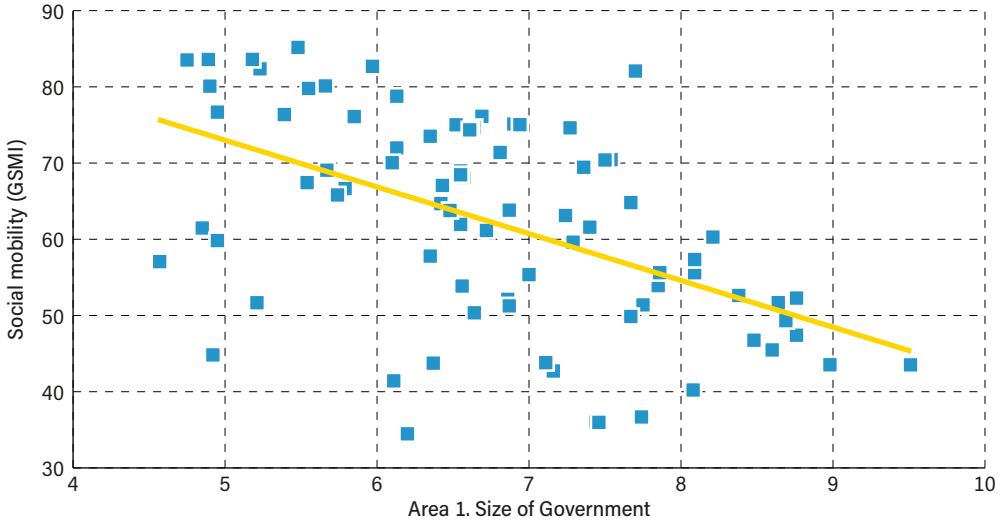
The scatter plots of the EFW index and its five Areas on the *Global Social Mobility Index* (GSMI) (figures 3.1–3.6) show the fitted value in each. Based on the R-squared in the regressions above and the fitted lines of the figures, we find that Legal System and Property Rights (Area 2) has the strongest fit (figure 3.3). The results imply that over 77% of the variation in social mobility can be explained by the quality of legal systems and protection of property rights. Size of Government (Area 1; figure 3.2) with an R-squared of 0.27, and Sound Money (Area 3; figure 3.4) with an R-squared of 0.30 have the worst fit.

Figure 3.1: The EFW index and the *Global Social Mobility Index*



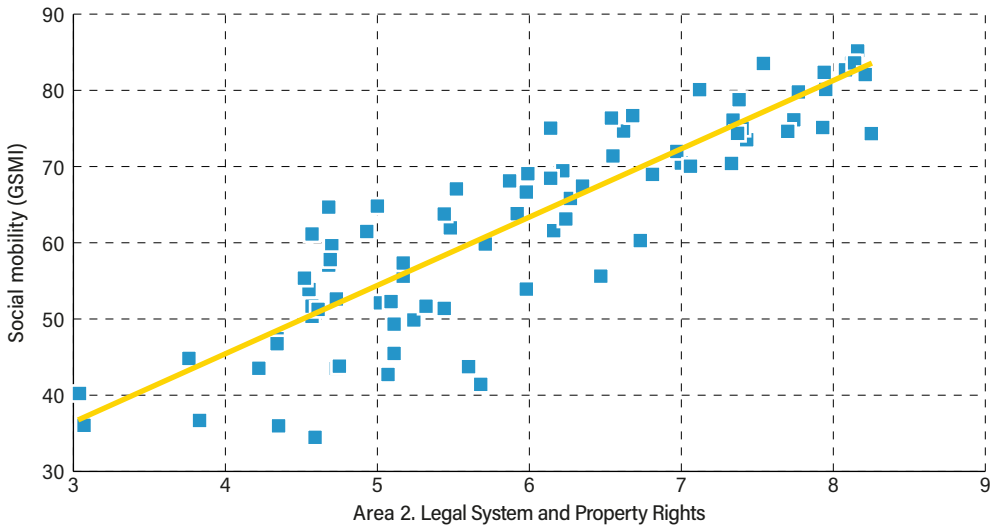
R^2: 0.46; coefficient on EFW: 13.038; t-stat: 9.18.

Figure 3.2: Size of Government and the *Global Social Mobility Index*



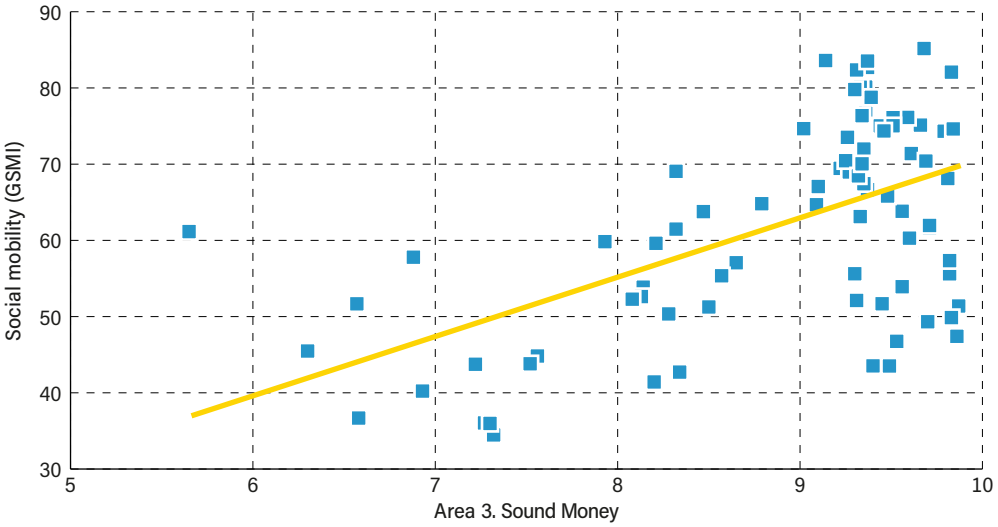
R^2: 0.27; coefficient on Area 1. Size of government: –6.164; t-stat: –5.84.

Figure 3.3: Legal System & Property Rights and the *Global Social Mobility Index*



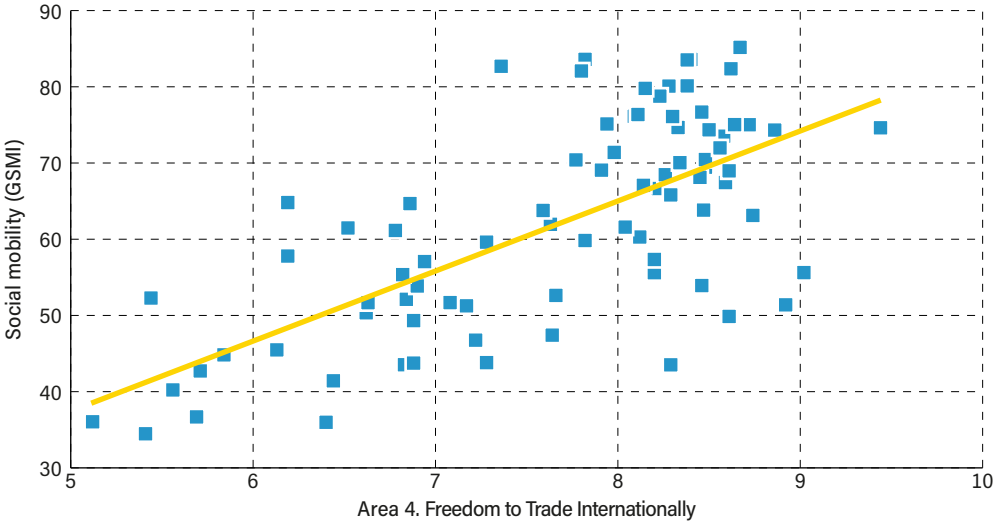
R^2: 0.77; coefficient on Area 2. Legal system & property rights: 9.017; t-stat: 20.68.

Figure 3.4: Sound Money and the *Global Social Mobility Index*



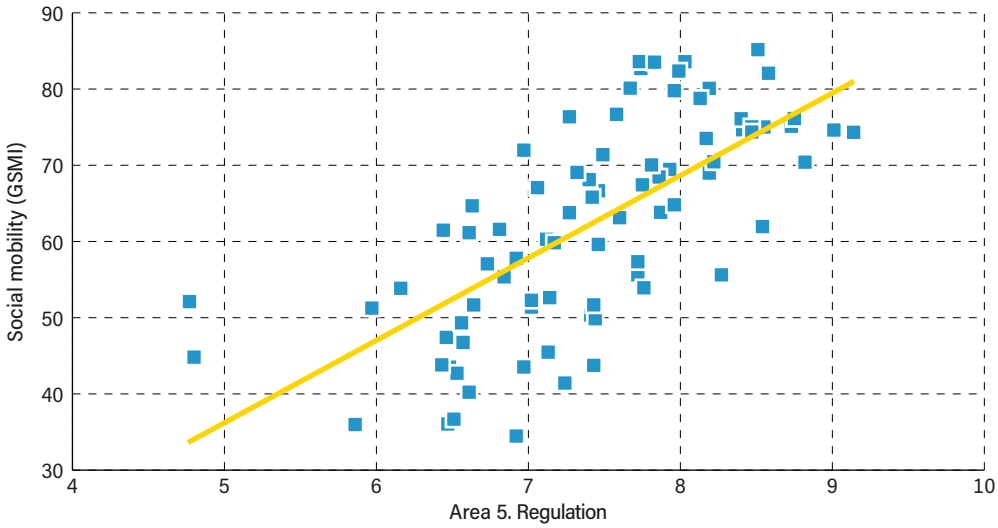
R^2: 0.30; coefficient on Area 3. Sound money: 7.687; t-stat: 5.13.

Figure 3.5: Freedom to Trade Internationally and the *Global Social Mobility Index*



R^2: 0.47; coefficient on Area 4. Freedom to trade internationally: 9.371; t-stat: 9.39.

Figure 3.6: Regulation and the *Global Social Mobility Index*



R^2: 0.48; coefficient on Area 5. Regulation: 11.025; t-stat: 8.16.

We now seek to explain which Areas of economic freedom affect which pillars of social mobility. Doing so requires estimating 60 regressions, so we summarize the results in one table (table 3.7).[9] These are the results when we include the three controls used in the paper thus far. Columns show the overall EFW index and its five Areas, while rows show the ten pillars that make up the GSMI measurement.[10]

For Area 1, Size of Government, we find very interesting results. Only two pillars are statistically significant, but of conflicting signs. Smaller size of government is correlated with better work opportunities (row 6), but lower social protection (row 9). In essence, this means that governments that are larger in size provide worse work opportunities but better social protection, suggesting a trade-off as we indicated in section 2.

Next, we turn the attention to what appears to be the most dominant correlate for social mobility of the five Areas: Legal Systems and Property Rights. The third column reveals that *eight* pillars (all but Work Opportunities and Fair Wage Distribution) are positive and significantly correlated with Legal System and Property Rights (Area 2). All but one of these eight regressions are significant at the 1% level (Education Access, Row 2, is significant at the 5% level). Sound Money (Area 3), on the other hand, is insignificant for each pillar (table 3.7).

Freedom to Trade Internationally (Area 4, fifth column) is positively and significantly associated with four pillars: Health, Education Quality and Equity, Lifelong Learning, and Inclusive Institutions. One possible explanation for this is that the freedom to import provides for better health outcomes, diverse (and better) ways of providing education, and forces countries to provide inclusive institutional environments.

Finally, we examine the impact of regulation on these pillars. Regulation (Area 5, sixth column) is positively associated with six pillars, all but Technology Access, Work Opportunities, Fair Wage Distribution, and Social Protection. When these results are combined, we find that countries with smaller governments, better

9 Full results are available upon request.

10 Note that the first column summarizes the results shown in table 3.6.

Table 3.7: Summary of the EFW index and its five Areas on the *Global Social Mobility Index* and its ten pillars of social mobility

Pillar	Economic Freedom	Area 1 Size of Government	Area 2 Legal System and Property Rights	Area 3 Sound Money	Area 4 Freedom to Trade Internationally	Area 5 Regulation
Social mobility	+*		+***			+***
[1] Health			+***		+**	+**
[2] Education Access			+**			+**
[3] Education Quality and Equity	+*		+***		+**	+***
[4] Lifelong Learning	+*		+***		+*	+***
[5] Technology Access	+***		+***			
[6] Work Opportunities		+**				
[7] Fair Wage Distribution						
[8] Working Conditions			+***			+*
[9] Social Protection		–**	+***			
[10] Inclusive Institutions	+***		+***		+**	+***

Note: *** p <0.01, ** p <0.05, * p <0.1.

legal systems and protections of property rights, free international trade, and less restrictive regulations correspond to higher values for nine of the ten pillars. The one exception is Pillar 7, Fair Wage Distribution.

We now perform a similar test on GDIM (table 3.8). However, only once do we find one of the Areas significant: Area 4, Freedom to Trade Internationally (Column 4). This is only at the 10% level, but with the *opposite* sign as expected. When replacing the level of these Areas in 2018 with the average of these Areas from 1980 to 2018 (table 3.9), we find similar results. Size of Government (Column 1) and Freedom to Trade Internationally (Column 4) are positive and significant at the 10% level. Overall, though, it does not appear that economic freedom matters much to GDIM's income-mobility measurement.

5 Discussion and conclusion

While a broad literature has assessed the relationship between economic freedom and income inequality, there has not been any direct test of economic freedom on social mobility. This is somewhat surprising since one of the main reasons to care about income inequality is as a means of assessing social mobility. We fill this gap here.

Using two measurements of social mobility—the World Economic Forum's *Global Social Mobility Index* (GSMI) and the World Bank's *Global Database on Intergenerational Mobility* (GDIM)—we find the former measurement to be largely correlated to economic freedom, while the relationship with the latter is less robust. Economic freedom appears to be highly related to four pillars of social mobility: Education Quality, Lifelong Learning, Technology Access, and Inclusive Institutions. Our most interesting results come when we disaggregate

Table 3.8: Areas of the EFW index on the *Global Database on Intergenerational Mobility*

Variable	(1)	(2)	(3)	(4)	(5)
Area 1: Size of Government	0.020				
	(0.032)				
Area 2: Legal System and Property Rights		−0.061			
		(0.050)			
Area 3: Sound Money			0.084		
			(0.051)		
Area 4: Freedom to Trade Internationally				0.081*	
				(0.046)	
Area 5: Regulation					−0.042
					(0.042)
GDP per capita (logged)	−0.218***	−0.151	−0.286***	−0.280***	−0.197***
	(0.061)	(0.097)	(0.054)	(0.063)	(0.071)
Economic Complexity	−0.021	−0.019	−0.028	−0.032	−0.026
	(0.039)	(0.035)	(0.037)	(0.034)	(0.036)
Percentage Urban	0.002	0.003	0.002	0.001	0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Constant	2.374***	2.162***	2.496***	2.580***	2.593***
	(0.580)	(0.678)	(0.475)	(0.465)	(0.500)
Observations	51	51	51	51	51
R-squared	0.462	0.478	0.500	0.499	0.469

Note: Robust standard errors in parentheses; *** p <0.01, ** p <0.05, * p <0.1.

Table 3.9: Average (1980–2018) of the EFW Areas on the *Global Database on Intergenerational Mobility*

Variable	(1)	(2)	(3)	(4)	(5)
Average of Area 1: Size of Government	0.059*				
	(0.031)				
Average of Area 2: Legal System and Property Rights		−0.072			
		(0.045)			
Average of Area 3: Sound Money			0.073		
			(0.054)		
Average of Area 4: Freedom to Trade Internationally				0.087*	
				(0.045)	
Average of Area 5: Regulation					−0.014
					(0.041)
GDP per capita (logged)	−0.216***	−0.137	−0.294***	−0.296***	−0.212***
	(0.061)	(0.095)	(0.071)	(0.064)	(0.071)
Economic Complexity	−0.008	−0.015	-0.037	−0.041	−0.029
	(0.038)	(0.033)	(0.039)	(0.034)	(0.038)
Percentage Urban	0.002	0.003	0.002	0.001	0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Constant	2.105***	2.071***	2.672***	2.748***	2.543***
	(0.580)	(0.673)	(0.475)	(0.454)	(0.510)
Observations	51	51	51	51	51
R-squared	0.495	0.485	0.484	0.500	0.457

Note: Robust standard errors in parentheses; *** p <0.01, ** p <0.05, * p <0.1.

the pillars of social mobility (in GSMI) and the different areas of economic freedom. Legal System and Property Rights are related to *nine* of ten pillars of social mobility, suggesting that our results are largely driven by this Area. Freedom to Trade Internationally is also correlated to four pillars and Regulation to seven. Overall, we find fairly robust evidence that economic freedom is generally linked to social mobility. However, a clearer picture is shown when disaggregating both pillars of mobility and Areas of economic freedom.

Future researchers should try to expand on our results in the following ways. First, one could run a horse race between historical levels of inequality and the quality of institutions today. This would expand the reasoning of Kufenko and Geloso (2020) from a microcosm to a more general setting. Second, one could try extending the GDIM-like dataset to expand the dataset. Our results here should provide the necessary impetus to conduct these efforts.

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