

## **When does Economic Freedom promote Equitable Social Development?**

Marcus Marktanner, Kennesaw State University

Almuth Merkel, Wenzhou-Kean University

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### **Abstract**

Why do some countries successfully combine economic freedom with equitable social development while others fail to do so? We focus on three sectors in which government is supposed to play a strong role according to the history of economic thought. These are health, education, and social safety. Yet, identifying the exact role of government in these sectors – either through the provision of public goods or the regulation of markets - is difficult. Necessary data is often not available or comparable. We therefore suggest focusing on revealed policy strengths. This approach rests on the assumption that higher incomes, all else equal, allow for better public health, higher human capital, and improved social safety. Thus, when two countries have the same income per capita, but one country performs better in any of our three focus sectors, then, we conclude, the better performing country must reveal a relative policy strength in that sector. Our findings suggest that countries with greater revealed policy strengths in public health, human capital and, social safety are more effective in combining market freedom with equitable social development. In fact, we find that it is the revealed policy strengths that drive economic freedom with equitable social development, not the other way around.

## Introduction

Many countries have introduced market liberal reforms, especially since the 1980s and 1990s. Yet, market liberalization has barely translated into more equitable social development. Pre-tax income inequality is on the rise in many countries, and differences among countries are less limited to dynamics than to levels of income inequality.

What separates countries with high economic freedom and equitable social development from countries with high economic freedom and unequitable social development? We try to answer this question in several steps. First, we review the literature regarding the relationship between economic freedom and income equality and social equity, particularly focusing on the history of economic thought. We conclude that the answer to our question must lie in some role of the state, especially with respect to ensuring access to health care, social safety, and education to promote human capital.

Unfortunately, indicators which capture policy effectiveness in these areas are scarce. Long time series are unavailable, and cross-sections suffer from missing observations. We therefore suggest a *revealed policy strength* approach from data sources where data constraints are less severe. From the Institute of Health Metrics and Evaluation (IHME), we infer from data on disease prevalence rates that are indicative of the quality of public health and social safety. Likewise, we use SciMago's citable documents to infer on the quality of the human capital infrastructure. In constructing our three revealed policy strength indices, we are guided by the idea that higher income countries will provide better health care and social safety and promote human capital. We then derive the revealed policy strength index from the link between the performance in the respective area and income per capita.

The three revealed policy strength indices are our main independent variables. Our dependent variable is the interaction term of an index of economic freedom and income equality, our proxy for equitable social development. Using various estimation techniques, we find that the three revealed policy strength indices are individually highly significant, but also highly correlated. To circumvent multicollinearity problems, we combine the three revealed policy strength indices into one indicator, which we call revealed social mobility. Revealed social mobility is highly significant in explaining our dependent variable. We also provide evidence that the causality goes from social mobility to economic freedom with equitable social development, and not vice versa.

Our paper contributes to the discussion of the role of the state in ensuring economic freedom with equitable social development. Yet, while we provide evidence that revealed policy strengths in public health, social safety, and human capital drive market freedom and equitable social development, our paper cannot identify the exact role that government is supposed to play. Theoretically, a revealed policy strength could be the result of efficient regulation or efficient laissez-faire. Similarly, a revealed policy weakness could be the result of inefficient regulation or inefficient laissez faire. We hope that our dataset encourages future research that is more country specific.

The remainder of this paper is organized as follows. In section two we review the relevant literature, especially with regards to the history of economic thought that addresses the role of the state in assuring that economic freedom also leads to equitable social development. We present our data and methodology in section three. In section four we discuss our empirical results. We conclude with a summary of our main findings and an outlook for future research in section five.

## Motivation

Income inequality as a social challenge is as old as political and economic philosophy. Already Aristotle (384 – 322 BC) wrote that:

“[...] democracies are safer and more permanent than oligarchies, because they have a middle class which is more numerous and has a greater share in the government; for when there is no middle class, and the poor greatly exceed in number, troubles arise, and the State soon comes to an end” (Aristotle and Jowett, 1899).

Ancient Greek and later medieval scholastics were largely concerned with balancing human’s nature of self-interest with the perceived need for subordination to the common good of the state (Frost, 1989). The hinge between individualism and subordination was regularly the specification of property rights. Too much private decision-making was feared to undermine citizens’ loyalty to one another, and too little private decision making feared to undermine citizens’ loyalty to the state. As for Aristotle’s understanding of property rights, Mayhew (1993), for example, finds:

“We know that Aristotle believes private property must exist and it must be respected. Although Aristotle does not defend absolute property rights, the limits to the use of property are few, especially when considered in their historical context. So Aristotle is no classical liberal - he is no Lockean - but he is much closer to this than many believe” (Mayhew, 1993).

The struggle for balancing individualism and economic freedom continued into medieval scholastic whose political and economic philosophy shows many structural parallels to ancient Greek philosophy. The only difference is that the monopoly on political and economic wisdom moved from the class of philosophers to the class of churchmen.

The Catholic Church also struggled with private property, holding that private property rights would undermine the formation of Christian virtues and promote lifestyles reigned by the sins of lust, gluttony, greed, laziness, anger, envy, and vanity.

The earthly individuals, including those representing the Church, did not comply much with the heavenly ideals. St. Augustine (354-430 AD) lamented that “two cities have been formed by two loves: the earthly by the love of self, even to the contempt of God; the heavenly by the love of God, even to the contempt of self” (St. Augustine, A., 1871). To align citizens more with Christian values, Europe developed a feudal system in which God presumably appointed the Church as the steward of the earthly riches and to protect the landless peasants from the temptations associated with private property.

Adam Smith (1723-1790) was one of the intellectual spearheads of political and economic enlightenment. As a moral philosopher, he essentially launched an attack on the Catholic Church’s position that private property would undermine Christian virtues. On the contrary, competition would let only those owners of private productive resources pass the selection test of the market who live up to Christian virtues. Smith (1853:1759) wrote:

“The most perfect modesty and plainness, joined to as much negligence as is consistent with the respect due to the company, ought to be the chief characteristics of the

behaviour of a private man. If ever he hopes to distinguish himself, it must be by more important virtues. He must acquire dependants to balance the dependants of the great, and he has no other fund to pay them from but the labour of his body and the activity of his mind. He must cultivate these therefore: he must acquire superior knowledge in his profession, and superior industry in the exercise of it. He must be patient in labour, resolute in danger, and firm in distress. These talents he must bring into public view, by the difficulty, importance, and, at the same time, good judgment of his undertakings, and by the severe and unrelenting application with which he pursues them. Probity and prudence, generosity and frankness, must characterize his behaviour upon all ordinary occasions; and he must, at the same time, be forward to engage in all those situations, in which it requires the greatest talents and virtues to act with propriety, but in which the greatest applause is to be acquired by those who can acquit themselves with honour." (Smith, 1853:1759)

Thus, the moral philosophy of Smith was to argue that competition and private property rights are more effective in spreading Christian virtues than Catholic central planning and moralizing. However, Smith also knew that economic freedom would come under threat if it does not lead to equitable social development, noting that "no society can surely be flourishing and happy, of which the far greater part of the members are poor and miserable" (Smith, 2007).

Smith's philosophy is often misappropriated. Although he is often portrayed as the father of laissez-faire, the term laissez-faire can be found nowhere in his writings. Instead, the term laissez-faire originated in physiocracy. Francois Quesnay (1694-1774) used the sentence "laissez-faire et laissez passer" in the context of frustration with discretionary interventions in agriculture and restricted agricultural trade opportunities, but not to advocate for a zero-role of government in regulating economic affairs in general (Vaggi, 1987).

The term laissez-faire does not rule out public institutions that promote competitive economic activity. Adam Smith was aware of such a role, noting that

"According to the system of natural liberty, the sovereign has only three duties to attend to; three duties of great importance, indeed, but plain and intelligible to common understandings: first, the duty of protecting the society from the violence and invasion of other independent societies; secondly, the duty of protecting, as far as possible, every member of the society from the injustice or oppression of every other member of it, or the duty of establishing an exact administration of justice; and, thirdly, the duty of erecting and maintaining certain public works, and certain public institutions, which it can never be for the interest of any individual, or small number of individuals to erect and maintain; because the profit could never repay the expense to any individual, or small number of individuals, though it may frequently do much more than repay it to a great society" (Smith, 2007).

From Adam Smith's writings, one can easily derive that he saw a role for government in correcting anti-competitive behavior, providing public education, and promoting social safety nets. As for concerns of anti-competitive behavior, Smith famously wrote that "people of the same trade seldom meet together,

even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices” (Smith, 2007).

Regarding education and its contribution to reduce inequality and to promote economic development, Smith notes:

“The public can impose upon almost the whole body of the people the necessity of acquiring the most essential parts of education, by obliging every man to undergo an examination or probation in them, before he can obtain the freedom in any corporation, or be allowed to set up any trade, either in a village or town corporate” (Smith, 2007).

Lastly, Smith’s concerns for social safety can be inferred from the following passages:

“Workmen, on the contrary, when they are liberally paid by the piece, are very apt to overwork themselves, and to ruin their health and constitution in a few years” (Smith, 2007)

which is why

“A plentiful subsistence increases the bodily strength of the labourer, and the comfortable hope of bettering his condition, and of ending his days, perhaps, in ease and plenty, animates him to exert that strength to the utmost” (Smith, 2007).

Some may interpret this last quote as a call for a governmentally administered minimum wage, others as an appeal to entrepreneurs to pay efficiency wages, which illustrates how easily Adam Smith’s thoughts may be hijacked by different ideological camps.

Of course, if the objective of economic policy is to “let people do,” there is no reason to assume that the best way of “letting people do” is to have government do nothing. Eventually, anarchy as the most extreme form of laissez-faire is rejected by political enlightenment for good reasons. Moreover, Locke’s proposition that “government has no other end but the preservation of property” (Locke, 1814) does not exclude the protection of “public property” that citizens in democratic and free elections have agreed upon to provide. For example, if Europe wants to provide a system with mandatory health insurance, strong social safety nets and free education, then it does not so because it enjoys wasting money, but because it expects a return on these expenditures. For most Europeans, the most important objective of these public goods is to ensure equitable social development. In fact, Article 3(3) of the European Constitution defines this goal explicitly.

## Literature Review

Adam Smith’s writings indicate that for economic freedom to flourish it must be paired with equitable social development. To achieve equitable social development, he further stipulated the provision of public education and promotion of social safety nets by a government (Smith, 2007). Yet, despite many countries introducing market liberal reforms, not all reforms translated into more equitable social

development. To better understand what separates countries with high economic freedom and equitable social development from those with high economic freedom yet unequitable social development, we concentrate on the provision of certain public goods. Specifically, in line with Adam Smith, John Locke, and the European Model, this section reviews the nexus of (1) economic freedom and (2) income equality and public health, social safety, and human capital.

### Economic Freedom and Public Health, Social Safety, and Human Capital

Generally, a larger role of the government is considered unfavorable for economic freedom. For example, Sharma (2020) shows that government size is the only component of economic freedom that does not have a significant positive effect on health outcomes in Sub-Saharan Africa.

Yet, Callison & Sicilian (2018) plausibly oppose that “given the prominence of individual autonomy as a tenet of economic freedom, an expansion of government-sponsored [health] coverage that severs the link between health insurance and employment could lead to a meaningful improvement in economic freedom, market efficiency, and individual welfare for the affected population.” Meierrieks & Renner (2017) investigate economic freedom and migration and emphasize the importance to “remove institutional barriers [...], particularly with respect to the provision of economic security” to keep high-skilled labor. Alexandrakis & Livanis (2013) analyze the effectiveness of economic performance policies, and conclude that “deregulating business and labor reduces output per worker.” Furthermore, good governance has a positive impact on the relationship between economic freedom and economic performance as measured by total factor productivity, human capital, income per capita, and capital per worker (Emara & Reyes Rebolledo, 2021).

And indeed, the Medicaid expansion in the US is associated with higher economic participation (labor force participation and employment) (Callison & Sicilian, 2018). Considering life expectancy as a public health indicator, the positive relationship identified between economic freedom and life expectancy is noteworthy as well (Stroup, 2007; Lawson et al., 2016; Sharma, 2020). Examining the effects of trade liberalization in South Asian countries, Zakaria et al. (2016) identify a negative relationship between economic freedom and undernourishment. Similarly, economic freedom and infant mortality are found to be negatively related (Stroup, 2007; Sharma, 2020). More specifically, Naanwaab (2018) finds that “for every country whose infant mortality rate is at the 10th percentile, a unit increase on its economic freedom index can be expected to reduce infant mortality by 3.7 deaths per 1,000 live births. For countries at the 90th percentile of infant mortality, it would reduce by 8.9 deaths per 1,000 live births.”

Focusing on the Better Life Index, Graafland (2020) analyzes the relationship between its subcomponents - of relevance being health, safety, jobs, and education - and economic freedom and finds these also to be positively related. In line with Adam Smith, Graafland (2020) finds that “economic freedom is particularly related to well-being in a cultural environment where people and companies exhibit virtues such as self-command, temperance, patience, perseverance, and foresight (prudence).” According to Russel et al. (2020) higher economic freedom is furthermore associated with the extent to which nations meet their citizen’s environmental and social needs.

Additionally, Feldmann (2017) studies the impact of economic freedom on human capital investment. Higher economic freedom increases the return in human capital investment. According to Feldmann (2017) it further allows individuals to keep a larger share of return. Facilitating credit markets also enables individuals to undertake such investments in the first place. Conversely, Kizilakaya et al. (2016)

find that human capital positively impacts economic freedom and Powell & Ryan (2017) associate larger increases in economic freedom with aggregate think tank years. Yet, Satrovic (2019) concludes that contributing to economic freedom is necessary to increase human capital, which in turn decreases the existence of shadow economies.

It remains to be mentioned, however, that higher levels of economic freedom are associated with lower rates of participation in exercise in the US (Hall et al., 2018), higher BMI (Ljungvall, 2013; Lawson et al., 2016), and no impact on COVID-19 death rates (Chen, 2020). Similarly, more education is not necessarily correlated with greater economic freedom (Padilla et al., 2020), and for low-income countries the only conjunction of economic freedom and high-skilled human capital attracts foreign direct investment (Naanwaab & Diarrassouba, 2016).

### Income Equality and Public Health, Social Safety, and Human Capital

Despite an upward trend in income inequality in Norway, the introduction of comprehensive social welfare institutions during the 1950s and 1960 has allowed infant mortality rates to continuously decline (Bütikofer et al., 2021). According to Wu & Chiang (2007) government social expenditure and under-five mortality have a statistically significant negative relation. Similarly, a meta-analysis observes “significant positive associations of infant mortality rates with other indicators of less re-distributive social and economic policy” (Spencer, 2004). Furthermore, nutritional deficiencies are a strong correlate of poverty if not targeted by social policy. In food secure groups, however, enabling upwards socioeconomic mobility by addressing the causes of inequality reduces the risk of self-directed violence in Denmark and suicide in Brazil (Mok et al., 2018; Machado et al., 2015). Yet, substance abuse appears to be quite common among high socioeconomic youngsters in Brazil and low socioeconomic youngsters in European and North American studies (Barros et al., 2018; Sanchez et al., 2013; Guilamo-Ramos et al., 2005; Bauman et al., 2007). According to Josifidis & Supic (2019), investments “in human capital lead to lower inequality, but overinvestments tend to increase income inequality.” Notably, Glomm & Ravikumar (1992) write that “income inequality declines more quickly under public education.”

Generally, income inequality appears to be inversely associated with indicators of public health. In other words, income inequality is a risk factor for adverse health outcomes in general, and for infant mortality in particular. (Hao et al., 2015; Siddiqi et al., 2015; Entholt et al., 2020; Huynh et al., 2005; Kawachi et al., 1997; Kim, 2019; Nkansah-Amankra et al., 2010; Pritchard et al., 2019). Also finding that income inequality is strongly correlated with public health indicators, Kawachi et al. (1997) conclude that “income inequality leads to increased mortality via disinvestment in social capital.” Analyzing these ambiguous dynamics, Curran & Mahutga (2018) observe that “inequality is linked to worse population health in low- and middle-income countries but has no significant harmful effects in high-income countries.” Moreover, reductions in the inequalities in income-related levels of infant mortality have substantially decreased in Brazil and China (Mújica et al., 2014). Lynch et al. (2014) conducted a meta-analysis of studies addressing the link between income inequality and health outcomes. They as well find that “the aggregate and multilevel evidence generally suggests little or no effect of income inequality on health indicators in rich countries” with the US being an exception, being “the country where income inequality is the most consistently linked to population health.” This notion is supported by Haithcoat et al. (2021), who analyze US state and county level data. Notably, “residents of states that have more uniformly high levels of income inequality across space at the county level are more likely to

report below average health, have CVD [cardio-vascular disease] and difficulty concentrating, and lack access to care due to cost” (Haithcoat et al., 2021).

Commonly, income inequality is also positively associated with variables indicating a lack of or inefficient social safety nets. Provincial economic inequality in Ecuador, for example, has a statistically significant deleterious effect on stunting (Larrea & Kawachi, 2005). For those in the lower income quintile in Denmark and the UK, Page et al. (2014) and Mok et al., (2018) report a higher risk of self-harm for children and adolescents whose parents already experienced low-income levels. Furthermore, low levels of welfare support exacerbates the link between income inequality and cannabis use, especially in anglophone countries (US, UK, Canada, and Australia) (Stevens, 2016).

Lastly, human capital contributes cross-country differences. Poor countries accumulate less human capital than rich countries and a higher human capital stock stimulates physical capital accumulation (Erosa et al., 2010). Similarly, Frank (2009) finds evidence that years of schooling, may Granger-cause income levels. This finding is supported by Hortas-Rico & Rios (2019), who find that local inequality outcomes in Spain are mainly determined by human capital and economic factors such as per capita income and sectoral composition of employment.

Again, some authors find no association between income inequality and public health for the US (Mellor & Milyo, 2003), a positive link between income inequality and public health (Tacke & Waldmann, 2013, Ward & Viner, 2017), a negative relationship between income inequality and deaths related to self-inflicted injuries in developing countries (Huisman & Oldehinkel, 2009), and that greater inequality implies higher human capital accumulation (Chiu, 1998). Yet, a meta-analysis by Subramanian et al. (2003) of studies analyzing the link between income inequality and health finds more negative than positive studies. The ambiguous study results, they argue, are due to type of society analyzed (comparable to the US), sample size of the data (larger samples tend to generate positive results), and units of aggregation (larger units of aggregation tend to generate positive results). Spencer (2004) finds that several studies report a positive relationship after adjusting for a range of variables as well.

The current body of literature largely agrees on a positive relationship of economic freedom and income equality with public health, social safety, and human capital. Yet, research on the direction of the relationship between economic freedom and public health, social safety, and human capital indicators is still ambiguous. In most studies, economic freedom is used as an explanatory variable for public health, social safety, and human capital indicators. Causality tests, however, are yet to be conducted.

## Research Objective

What separates countries with high economic freedom and equitable social development from countries with high economic freedom and unequitable social development? We conclude that the answer to our question must lie in some role of the state, especially with respect to ensuring access to health care, social safety, and education to promote human capital.

Are countries with a stronger policy performance in public health, social safety, and human capital also more successful in combining economic freedom with equitable social development? One problem in answering this question is data availability. While comparable data on economic freedom and, recently, income inequality is readily available for many countries, the same cannot be said for indicators of



public health, social safety, and human capital. For example, series such as public spending in any of those areas as a percentage of GDP or government expenditure is an input factor that does not inform about service quality. On the other hand, output indicators such as infant mortality, social safety adequacy, or educational attainment are often only comparable within a given socioeconomic context. We try to mitigate these problems by proposing a revealed policy strength approach.

Our objective is to contribute to the role of the state in the process of economic liberalization. This discussion is particularly relevant in the context of economic reforms that have occurred since the 1990s. Many argue that while these economic reforms may have stimulated economic freedom and growth, they have not triggered competition and equitable social development. In 2005, the World Bank (2005), reviewing the economic reforms since the 1990s, concludes that “The results of these reforms were unexpected. They exceeded the most optimistic forecasts in some cases and fell well short of expectations in others.” (Zagha & Nankani, 2005)

We hope that our revealed policy strength variables and their use as explanatory variables can help to better predict differences in reform success.

## Data and Methodology

### Data and Sources

This paper tries to identify what separates countries with high economic freedom and equitable social development from countries with high economic freedom and unequitable social development. We use the “Overall Score” from the Heritage Foundation’s (2020) Economic Freedom Dataset to measure a country’s level of economic freedom. To capture equitable social development, we revert to the variable “GINI (pre-tax national income, total population, adults, equal split)” from the World Inequality Database (World Inequality Lab, 2019), as it is an appropriate proxy for social equity as well. Our dependent variable, which we call “Free & Equal”, is an interaction term of economic freedom and GINI.

Our focus explanatory variables are three revealed policy strength indices. We construct them as the link between “GDP per capita, PPP (constant 2017 international \$),” which is our proxy for a country’s level of development, and

- (1) the variable “Infant mortality per 1,000 livebirths” for the *Revealed Public Health Strength*,
- (2) the variables “Nutritional deficiencies,” “Self-harm,” and “Substance abuse” (each as a percentage of the total population) for the *Revealed Social Safety Strength*, and
- (3) the variable “Citable documents,” prorated per million population, from the SCLmago Journal & Country Rank website for the *Revealed Human Capital Strength*.

We also include control variables, which plausibly explain *Free & Equal*: The population share of Catholics, a country’s natural resources rents in percent of GDP, a country’s manufactures and services exports in percent of GDP, level of democracy, and an indicator of conflict. Appendix A.1 summarizes our data and sources.

Our final dataset is a panel consisting of 163 countries. Each country has six five-year average observations beginning in 1991-1995 (1991-1995, 1996-2000, ..., 2016-2020). We opted for a panel with five-year averages to reduce potential bias from countries with many observations relative to countries with fewer observations. Whenever a country does not have at least one observation for economic freedom, GINI, GDP per capita, infant mortality, nutritional deficiencies, self-harm, substance abuse, or citable documents for any of the six time periods, we did not include the country in our sample. In other words, if we could not construct at least one observation for *Free & Equal* (dependent variable) or our focus explanatory variables (*Revealed Public Health Strength*, *Revealed Social Safety Strength*, and *Revealed Human Capital Strength*), we did not include the country in our dataset. Appendix A.2 provides a list of countries included in our dataset.

## Methodology

In this section, we describe the construction of our dependent variable *Free & Equal*, the interaction of economic freedom and equitable social development, and our revealed policy strength indices.

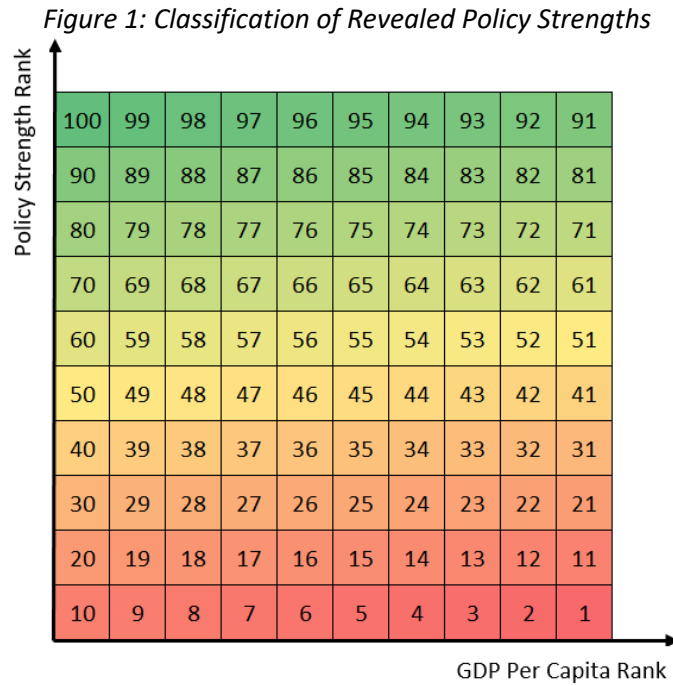
To construct our dependent variable *Free & Equal*, we calculate the percent rank of the Heritage Foundation's *Overall Score* between 1 and 100, where higher percent ranks indicate more freedom. We label the resulting transformation "Free." For the variable *GINI*, we also calculate the percent rank between 1 and 100, but in reverse order, such that higher percent ranks then indicate more equality. We call the resulting transformation "Equal." We then calculate *Free & Equal* as the geometric mean of "Free" and "Equal."

To construct our revealed policy strengths indices, we relate observable outcomes in public health, social safety, and human capital to GDP per capita, utilizing the notion that countries with higher GDP per capita also perform better in any of these three human development policy areas.

Specifically, we calculate the percent rank for *GDP per capita* on a scale from 1 to ten in reverse order, meaning that the country with the highest GDP per capita receives a score of one, and the country with the lowest GDP per capita a score of ten. The *Revealed Public Health Strength* additionally incorporates a transformation of "infant mortality," by ranking all observations in reverse order on a scale from 1 to 10, so that higher values indicate better public health. As for the the *Revealed Social Safety Strength*, we first acknowledge that different levels of economic development correlate with different social safety challenges. Vulnerable segments of society in countries with low GDP per capita are typically more vulnerable to nutritional deficiencies. Yet, as countries' incomes increase, other forms of health risks replace nutritional deficiencies. These health risks often result from substance abuse and self-harm. To capture that differently developed countries have different correlates of social insecurity, we use the prevalence rate of nutritional deficiency, substance abuse, and self-harm, which is greatest. We call this proxy "social safety" and scale it in reverse order between 1 and 10. Higher values accordingly indicate more social safety. Lastly, we prorate the citable documents from SCIMago per million population for our *Revealed Human Capital Strength*. We then rank the citable documents per one million on a scale from 1 to 10, such that higher values indicate again more "human capital."

The idea behind our ranking is to construct a revealed policy strength index in public health, social safety, and human capital between 1 and 100 such that higher values indicate a better revealed policy strength. This idea is illustrated in Figure 1.

Figure 1 displays on the x-axis the GDP per capita rank and on the y-axis the policy strength rank, which could be either public health, social safety, or human capital. Now consider, for example, cell one. This would be a country with the highest GDP per capita rank, but the lowest policy strength. Thus, relative to GDP per capita, a country in cell one reveals the least policy strength. A country in cell ten, on the other hand, performs in terms of policy strength as bad as the country in cell one, but because it has a lower income, the same low policy strength indicates less of a policy failure than what the country in cell one indicates. In line with this logic, a country located in cell one hundred has the best revealed policy strength, because, simply spoken, it accomplishes the most human development in a certain area with the least available resources.



With the help of the ranking of all observations, we can now identify all countries' position in Figure 1 using the simple formula:

$$Revealed\ Policy\ Strength_{ij} = \left( Policy\ Strength\ Rank_{ij} + \frac{GDP\ Per\ Capita\ Rank_j}{10} \right) \times 10 + 1 \quad (1)$$

where

$i = \{Public\ Health, Social\ Safety, Human\ Capital\}$

$j = \text{country/time observation}$

All rank scores are rounded to zero decimals.

We test our hypothesis that countries with higher *Free & Equal* scores have, on average, a greater *Revealed Public Health Strength*, *Revealed Social Safety Strength*, and *Revealed Human Capital Strength* using a panel fixed effects model. Our three independent focus variables, however, are highly collinear and we combine them into one *Revealed Social Mobility Strength* index.

We also include a lagged dependent variable to control for serial correlation on the right-hand side. Although the variable GDP per capita is already included in the construction of the revealed policy strength indices, we include it as an additional variable to control for a country's general level of development. Yet, due to high collinearity with *revealed social mobility strength*, we orthogonalize GDP per capita.

We also control for a country's Manufactures and services export share as a percentage of GDP, Natural Resources Rents as a percentage of GDP, the population share of Catholics, a measure of democracy, and the presence of armed conflict (for data and sources see Appendix A1). Manufactures and services exports, we argue, are indicative of productive economic competitiveness and representative of a spirit of economic freedom, which provide social mobility and economic opportunities. The opposite is true for countries with high natural resource rents, which are often rentier states that curtail individual freedoms and provide fewer economic opportunities outside the extraction of natural resources. We also include the population share of Catholics to control for countries' colonial legacy. In countries where Catholicism is more widespread, land inequality is often greater and liberal economic thoughts have a more difficult stand to shape economic policy. We also include a measure of democracy, arguing that political and economic freedom mutually enforce each other. We also argue that socioeconomic grievances can be more effectively remedied in democracies than in autocracies. Lastly, we control for the presence of armed conflict, which, by definition, replaces freedom by coercion.

Lastly, our dependent variable *Equal & Free* might be simultaneously determined with the revealed policy strengths. We therefore conduct a Hausman test for endogeneity by instrumenting the *Revealed Social Mobility Strength* with the variables *Life Expectancy* and *Natural Resources Rents*. Citizens in countries with high life expectancy likely benefit from good public health, social safety, and educational systems. On the other hand, in countries extracting natural resources, working conditions are often harsh, demand for workers is non-competitive, and productive and diversified economic opportunities scarce. Life expectancy and Natural resources rents therefore indicate to explain our *Revealed Social Mobility Strength* well. Yet there is no immediate reason to assume that decisions to implement economic freedom and institutions for equitable social development simultaneously determine life expectancy and a country's endowment with natural resources rents. Appendix A.3 provides summary statistics of all our variables used in our study, and Appendix A.4 a correlation matrix. We also gladly provide our dataset upon request.

## Empirical Results

### *Some Descriptive Results*

Table 1 shows the ten countries with the highest and lowest *Free & Equal* scores for the 2016-2020 period. Nine of the top ten countries are European; the only non-European country is New Zealand. The 10 countries with the lowest *Free & Equal* scores are all located in Sub-Saharan Africa.

*Table 1: 2016-2020 Top 10 and Bottom 10 Countries in “Freedom with Equitable Social Development”*

Top 10 “Free and Equal” Countries		Bottom 10 “Free and Equal” Countries	
Country	2020 score	Country	2020 score
Switzerland	85.28	Eswatini	39.44
Iceland	84.62	Angola	38.66
Czech Republic	84.32	Zimbabwe	38.21
Sweden	83.86	Namibia	36.01
New Zealand	83.46	Zambia	35.96
Netherlands	82.62	Congo, Rep.	34.55
Norway	81.63	South Africa	34.49
Denmark	81.49	Mozambique	33.02
Ireland	79.36	Sao Tome and Principe	32.08
Finland	79.01	Central African Republic	31.62

Yet, as Table 2 illustrates, many Sub-Saharan African countries have made huge strides in increasing their *Free & Equal* scores. Despite these improvements, their 2016-2020 scores suggests that these countries have mostly moved from low to medium levels of *Free & Equal* scores. Table 2 also shows the countries that have deteriorated the most since the 1991-1995 score.

*Table 2: Top 10 Improving and Deteriorating Countries in “Freedom with Equitable Social Development”*

Top 10 Improving Countries			Top 10 Deteriorating Countries		
Country	2016-2020 score	Change since 1996-2000	Country	2016-2020 score	Change since 1996-2000
Bosnia and Herzegovina	68.53	22.46	Costa Rica	50.57	-4.87
Malawi	43.19	21.68	Sri Lanka	52.80	-4.98
Rwanda	54.01	19.49	Djibouti	46.67	-5.21
Kazakhstan	69.05	18.97	Singapore	76.48	-6.35
Cabo Verde	54.09	17.97	Benin	47.51	-7.05
Azerbaijan	70.01	17.56	India	46.94	-7.90
Angola	38.66	17.49	Bolivia	42.85	-8.42
Georgia	77.48	17.11	Lebanon	42.03	-8.45
Botswana	45.73	16.36	Zambia	35.96	-12.23
Uzbekistan	51.97	15.93	South Africa	34.49	-17.65

The full list includes such advanced economies like Germany, the USA, Japan, and Korea. While many of these countries, especially Germany, pride themselves with an economic philosophy that seeks to combine market freedom with equitable social development, the results suggest that this is much easier said than done. Appendix A.5 provides a world map of the 2016-2020 *Free & Equal* score and Appendix

A.6 a list of countries sorted from greatest positive to greatest negative change between 1996-2000 and 2016-2020.

Are revealed policy strengths in public health, social safety, and human capital statistically significant explanatory variables of economic freedom with equitable social development?

To test the significance of the *Revealed Public Health Strength*, *Revealed Social Safety Strength*, and *Revealed Human Capital Strength* in explaining *Free & Equal*, we run a panel fixed effects model. We also control for serial correlation by including a lagged dependent variable on the right-hand side. As described above, while our focus variables are revealed policy strengths in public health, social safety, and human capital, we also control for a country's GDP per capita, export shares of manufactures and services, natural resource rents, the population share of Catholics, democracy, and armed conflict.

In Table 3 we show the bivariate regression results of *Free & Equal* against the three revealed policy strengths indicators (Model 3-I to 3-III), then all three revealed policy strengths variables together (Model 3-IV). The results show that the revealed policy strength indices are individually significant with the expected sign (Models 3-I to 3-III). Yet when running all three variables together (Model 3-IV), the *Revealed Social Safety Strength* variable loses its significance, and even flips sign.

Multicollinearity among the revealed policy strength indices is a typical problem when constructing indicators of good policy. In fact, correlation coefficients between individual components of certain broad concepts such as "Economic Freedom" or "Good Governance" of more than  $r > 0.8$  are common. Such high correlations also make sense because broader policy concepts require policy actions on various fronts simultaneously. We therefore reduce this multicollinearity problem by combining the three individual revealed policy strength indices of public health, social safety, and human capital as the geometric mean into a combined *Revealed Social Mobility Strength* index.

Model 3-V shows that *Revealed Social Mobility Strength* is highly significant, in fact more significant than any of the three revealed policy strengths individually.

Table 3: Regression Results using only Revealed Policy Strengths to Illustrate Multicollinearity Problem

DV: Free & Equal	Model 3-I	Model 3-II	Model 3-III	Model 3-IV	Model 3-V
Constant	26.82*** (1.63)	26.42*** (1.88)	27.50*** (1.59)	28.04*** (1.89)	26.24*** (1.64)
Free & Equal (-1)	0.47*** (0.03)	0.50*** (0.03)	0.47*** (0.03)	0.46*** (0.03)	0.46*** (0.03)
Revealed Public Health Strength	0.07*** (0.02)			0.04* (0.02)	
Revealed Social Security Strength		0.05* (0.03)		-0.03 (0.03)	
Revealed Human Capital Strength			0.06*** (0.01)	0.05*** (0.02)	
Revealed Social Mobility Strength					0.10*** (0.02)
Cross-sectional units	162	162	162	162	162
Time series length min	1	1	1	1	1
Time series length max	5	5	5	5	5
n	705	705	705	705	705
p-value of H0: Common intercepts	<0.001	<0.001	<0.001	<0.001	<0.001
p-value F-Test	<0.001	<0.001	<0.001	<0.001	<0.001
R-squared	0.97	0.97	0.97	0.97	0.97
Durbin-Watson	1.43	1.44	1.44	1.43	1.43

Standard errors in parentheses, \*\*\*significant at  $p < 0.01$ , \*\*significant at  $p < 0.05$ , \* significant at  $p < 0.1$ .

In subsequent regressions, we only use the *Revealed Social Mobility Strength* index. To identify the most parsimonious model, we pursue a general-to-specific modelling approach. In Table 4, Model 4-I we run all independent variables together but suspect that the high correlation between the *Revealed Social Mobility Strength* index and GDP per capita could lead to unexpected results.

Therefore, we rerun Model 4-I in Model 4-II with the variable GDP per capita (ln) orthogonalized by the *Revealed Social Mobility Strength* index, meaning that we only include the residuals from regressing GDP per capita (ln) against the *Revealed Social Mobility Strength* index (using also a panel fixed-effects model). We label these residuals with the suffix "orth." This approach leaves the coefficient of GDP per capita (ln) unaffected but rids the right-hand side of any correlation between the two variables. We then conduct an F-Test of all the non-significant variables and identify the most parsimonious model.

Although our focus variable *Revealed Social Mobility Strength* keeps the expected sign, it loses significance when run together with GDP per capita and the control variables. Of course, our *Revealed Social Mobility Strength* index was partly constructed from GDP per capita, and the non-significance is likely attributable to the high correlation with GDP per capita ( $r=0.87$ ). In order to see whether collinearity between GDP per capita and "Revealed Social Mobility Strength" accounts for this non-significance, we re-run Model I with GDP per capita (ln) orthogonalized by "Revealed Social Mobility Strength" (Model II). The results suggest that indeed multicollinearity, not socio-economic non-significance, accounts for the loss of significance of the *Revealed Social Mobility Strength*. We next conduct an F-Test of joint non-significance of all the individually non-significant variables and fail to reject the null hypothesis of joint non-significance. Model III accordingly presents the results of our most parsimonious and preferred model.

Table 4: Regression Results to Identify Most Parsimonious Model

DV: Free & Equal	Model 4-I	Model 4-II	Model 4-III
Constant	14.55** (6.71)	28.4*** (2.59)	27.16*** (1.82)
Free & Equal (-1)	0.45*** (0.03)	0.45*** (0.03)	0.45*** (0.03)
Revealed Social Mobility Strength	0.03 (0.03)	0.12*** (0.03)	0.13*** (0.02)
GDP per capita (ln)	2.02** (0.82)		
GDP per capita (ln) orth.		2.02** (0.82)	1.75** (0.72)
GDP Share of Manufactures and Services Exports (ln)	-0.30 (0.22)	-0.30 (0.22)	
GDP Share of Natural Resources Rents (ln)	-1.83*** (0.48)	-1.83*** (0.48)	-1.63*** (0.44)
Population Share of Catholics (ln)	2.19 (5.55)	2.19 (5.55)	
Democracy (Polity2 Score)	0.05 (0.07)	0.05 (0.07)	
Armed Conflict Total Score	0.27 (0.20)	0.27 (0.20)	
Cross-sectional units	143	143	162
Time series length min	1	1	1
Time series length max	5	5	5
n	597	597	704
p-value of H0: Common Intercept	<0.001	<0.001	<0.001
p-Value F-Test	<0.001	<0.001	<0.001
R-squared	0.97	0.97	0.97
Durbin-Watson	1.4	1.4	1.5

Standard errors in parentheses, \*\*\*significant at  $p < 0.01$ , \*\*significant at  $p < 0.05$ , \* significant at  $p < 0.1$ .

As for the control variables, the only significant variable is “Natural Resources Rents (% GDP),” lending strong support for the well-known rentier state hypothesis. No other control variable is significant, and many carry an unexpected negative sign. In fact, the only non-significant variable that carries the expected positive sign, is the democracy variable. Non-significance and unexpected signs are likely due to multicollinearity, or the result of spurious regression. Eventually, all control variables, except for “Catholics,” show the hypothesized correct sign in the correlation matrix (Appendix A.4)

In sum, we argue that there is strong empirical evidence that revealed policy strengths in the combined areas of public health, social safety, and human capital are drivers of economic freedom with equitable social development. One problem, however, that still needs to be addressed is the possibility of simultaneity. It seems plausible that countries that expand their efforts in the areas of public health, social safety, and human capital do so because the objective is to simultaneously safeguard economic freedom against inequitable social development.

### Is Economic Freedom with Equitable Social Development Simultaneously Determined with Revealed Social Mobility Strengths?

We test the possibility of simultaneity by instrumentalizing Revealed Social Mobility Strength by the variables Life expectancy and Natural resources rents (% of GDP). We argue that in countries with higher



life expectancy, people are better safeguarded against disease and life's adversaries, and provided with more lifetime opportunities that encourage the accumulation of human capital. In countries with high natural resource rents, working conditions are often harsh, demand for workers is concentrated among few firms, and productive and diversified economic opportunities are scarce, undermining public health, preventing the provision of effective social safety systems, and discouraging investments in human capital.

Thus, both *Life expectancy* and *Natural Resources Rents* seem relevant in explaining our *Revealed Social Mobility Strength* index. At the same time, decisions to implement economic freedom and institutions for equitable social development do not simultaneously determine life expectancy and a country's endowment with natural resources rents. Eventually, many socialist countries had high levels of life expectancy, social safety, and human capital before their collapse, but no economic freedom.

Appendix A.6 shows the regression when instrumentalizing the *Revealed Social Mobility Strength* indicator - once using OLS and once using a panel-fixed effects model. The R-squared are 0.75 (OLS) and 0.97 (Panel) (Appendix A.6, Table A). We then include the residuals from either specification in a regression of our preferred model (Table 4, Model 4-III), which we run again once as OLS and once as a panel. In either specification we fail to reject the null hypothesis of no simultaneity (Appendix A.6, Table B).

We therefore conclude that *Revealed Social Mobility Strength* is indeed causal in promoting economic freedom with equitable social development. Referencing again the above-mentioned socialist countries, we conclude that countries with high levels of social mobility cannot be confined permanently in a system that deprives citizens of economic freedom because of high levels of public health, social safety, and human capital. Yet, the results moreover suggest that without policy efforts to strengthen social mobility, economic freedom with equitable social development will not necessarily prevail.

### Short Run Dynamics

Our data set does not allow for testing whether the variables *Free & Equal* and *Revealed Social Mobility Strength* have a long run equilibrium relationship. Theoretical plausibility suggests that they do. A reduction in the *Free & Equal* score will ultimately trigger responses to increase again social mobility because they will be demanded through the political decision-making process. Similarly, an increase in the *Free & Equal* score reduces the need for policies targeted at increasing social mobility because they become politically less necessary.

If one accepts a long-run equilibrium relationship between *Equal & Free* and *Revealed Social Mobility* we can at least estimate an error correction model to inform about the time it takes for a shock to be absorbed. For this purpose, we store the residuals from our preferred model (Table 4, Model 4-III) and use its first lag as an explanatory variable in a regression of the first differences. The regression results are summarized in Appendix A.7. We run the error correction model as a panel fixed-effects model and, because the null hypothesis of a common intercept cannot be rejected, as a random effects model.

The results suggests that the error correction term carries the expected negative sign and is once -0.48 (panel fixed effects) and once -0.58 (panel random effects). These results indicate that if we assume a long run equilibrium relationship, any shock to *Free & Equal* will be absorbed within two periods. With respect to policy relevance, a shock on *Free & Equal* induced by an increase in *Revealed Social Mobility Strength* will show results quickly.

Such a result does not necessarily seem far-fetched. To see this, recall that the *Revealed Social Mobility Strength* index was constructed, among others, from public health metrics related to social vulnerability. Consider, for example, the case of social safety policies that successfully reduce food insecurity. How long will it then take before a food insecure person on the lower rungs of the income ladder will be able to climb up some rungs? Then, the error correction model would suggest, it would take approximately two periods, which implies 10 years total.

A final aspect associated with short-run dynamics is the question of short-run causality. In the short run, does *Free & Equal* cause *Revealed Social Mobility Strength*, or *Revealed Social Mobility Strength* cause *Free & Equal*, or is the causality mutual? Given the limitations of our dataset, we can conduct a Granger causality test with only one lag. The results, which are summarized in Appendix A.8, suggest that the causality goes indeed from “Revealed Social Mobility” to “Free and Equal.”

## Conclusion

Motivated by arguments brought forward throughout the history of economic thought, this paper analyzes if countries with a stronger policy performance in public health, social safety, and human capital are also more successful in combining economic freedom with equitable social development.

For this purpose, we propose a revealed policy strength approach, operating under the assumption that higher income countries provide better health care and social safety and promote human capital. For each of the three areas we derive a revealed policy strength index from the link between a country’s performance in the respective area and its per capita income. For example, if a country has a policy strength rank lower than would be predicted by its per capita income, the country’s revealed policy strength is lower. Yet, if a country has a policy strength rank higher than what its per capita income would predict, the country’s revealed policy strength is higher.

To test our hypothesis that countries that promote economic freedom with equitable social development have, on average, a stronger performance in the areas of public health, social safety, and human capital, we build a panel dataset and run fixed-effects models. As our dependent variable we use the interaction term of economic freedom and GINI Free & Equal and our focus explanatory variables are the three revealed policy strength indices, namely Revealed Public Health Strength, Revealed Social Safety Strength, and Revealed Human Capital Strength.

Despite data limitations, this paper provides evidence that revealed policy strengths in the areas of public health, social safety and human capital drive market freedom and equitable social development. To circumvent potential simultaneity between the three revealed policy strength indices, we further combine the three indices to one Revealed Social Mobility Strength index, which is indeed indeed causal in promoting economic freedom with equitable social development. We thus conclude that there must be some role of the state in ensuring high levels of health care, social safety, and human capital. Yet, we cannot identify the exact role a government should play. Ultimately, a revealed policy strength could be the result of efficient governmental regulations or efficient laissez-faire.

With this research we want to contribute to the discussion of the role of the state in ensuring economic freedom with equitable social development. Our revealed policy strength approach may further allow to

better predict social reform process outcomes and guide market liberalization such that it translates into more equitable social development.

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## Appendix A.1: Data and Sources of Series Used to Construct our Dependent and Independent Variables and as Control Variables

Variable Name	Description & Source
Index of Economic Freedom, overall score	Heritage Foundation (2021), 2021 Index of Economic Freedom (link: <a href="https://www.heritage.org/index/">https://www.heritage.org/index/</a> , accessed: July 1, 2020)
Gini Coefficient	World Inequality Database (online), Data (link: <a href="https://wid.world/data/">https://wid.world/data/</a> , accessed: July 1, 2021).
GDP per capita, PPP (constant 2017 international \$)	World Bank (online), Development Indicators Database (link: <a href="https://databank.worldbank.org/source/world-development-indicators">https://databank.worldbank.org/source/world-development-indicators</a> , accessed: August 1, 2021)
Infant mortality per 1,000 livebirths	Global Burden of Disease Collaborative Network (online). Global Burden of Disease Study 2017 (GBD 2017) Health-related Sustainable Development Goals (SDG) Indicators 1990-2030. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2018. [Variable: Indicator 3.2.1: Under-5 mortality rate (probability of dying before the age of 5 per 1,000 livebirths)]
Nutritional Deficiencies (% of population)	Institute of Health Metrics (online), Global Health Data Exchange, <a href="http://ghdx.healthdata.org/gbd-results-tool">http://ghdx.healthdata.org/gbd-results-tool</a> (accessed: August 1, 2021).
Self-Harm (% of population)	
Substance Abuse (% of population)	
Citable Documents per Million Population	SciMago Journal & Country Rank (online). Citable Documents in all Subject Areas per Million Population (link: <a href="https://www.scimagojr.com/countryrank.php">https://www.scimagojr.com/countryrank.php</a> , accessed: August 1, 2021). Population data taken from World Bank (online), World Development Indicators Database.
Catholics (% Population)	Maoz, Z., & Henderson, E. (2019, August 13). World Religion Project Global Religion Dataset (Association of Religious Data Archives, World Religion Project: National Religion Dataset, link: <a href="https://www.thearda.com/Archive/Files/Descriptions/WRPNATL.asp">https://www.thearda.com/Archive/Files/Descriptions/WRPNATL.asp</a> , accessed: August 1, 2021).
Natural Resources Rents	Series: Total natural resources rents (% of GDP), Source: World Bank (online), Development Indicators Database (link: <a href="https://databank.worldbank.org/source/world-development-indicators">https://databank.worldbank.org/source/world-development-indicators</a> , accessed: August 1, 2021)
Manufacturing and services export (% GDP)	Calculated from World Bank Development Indicator Database using the variables Merchandise exports by the reporting economy (current US\$), Manufactures exports (% of merchandise exports), Service exports (BoP, current US\$), and GDP (current US\$).
Polity 2 Score	An indicator of democracy ranging from -10 (least democratic) to +10 most democratic. Source: Marshall and Gurr (2020), POLITY5, Political Regime Characteristics and Transitions, 1800-2018 (link: <a href="https://www.systemicpeace.org/inscrdata.html">https://www.systemicpeace.org/inscrdata.html</a> , accessed: July 1, 2020).
Armed Conflict Total Score	Taken from "Major Episodes of Political Violence Dataset," series ACTOTAL (armed conflict total score). Source: Marshall (2019), Major Episodes of Political Violence (MEPV) and Conflict Regions, 1946-2018 (link: <a href="https://www.systemicpeace.org/inscrdata.html">https://www.systemicpeace.org/inscrdata.html</a> , accessed: July 1, 2020).
Life Expectancy	Life expectancy at birth, total (years), Source: World Bank (online), Development Indicators Database (link: <a href="https://databank.worldbank.org/source/world-development-indicators">https://databank.worldbank.org/source/world-development-indicators</a> , accessed: August 1, 2021)



## Appendix A.2: Countries Included in Dataset (sorted by region)

### East Asia and the Pacific

Australia  
Brunei Darussalam  
Cambodia  
China  
Indonesia  
Japan  
Korea, Rep.  
Lao PDR  
Malaysia  
Mongolia  
Myanmar  
New Zealand  
Papua New Guinea  
Philippines  
Singapore  
Thailand  
Timor-Leste  
Vietnam

### Eastern Europe & Central Asia

Albania  
Armenia  
Azerbaijan  
Belarus  
Bosnia and Herzegovina  
Bulgaria  
Croatia  
Czech Republic  
Estonia  
Georgia  
Hungary  
Kazakhstan  
Kyrgyz Republic  
Latvia  
Lithuania  
Moldova  
Montenegro  
North Macedonia  
Poland  
Romania  
Russian Federation  
Serbia  
Slovak Republic  
Slovenia  
Tajikistan  
Turkmenistan  
Ukraine  
Uzbekistan

### Latin America & the Caribbean

Argentina  
Bahamas, The  
Belize  
Bolivia  
Brazil  
Chile  
Colombia  
Costa Rica

Dominican Republic  
Ecuador  
El Salvador  
Guatemala  
Guyana  
Haiti  
Honduras  
Jamaica  
Mexico  
Nicaragua  
Panama  
Paraguay  
Peru  
Suriname  
Trinidad and Tobago  
Uruguay

### Middle East and North Africa

Algeria  
Bahrain  
Djibouti  
Egypt, Arab Rep.  
Iran, Islamic Rep.  
Iraq  
Israel  
Jordan  
Kuwait  
Lebanon  
Libya  
Malta  
Morocco  
Oman  
Qatar  
Saudi Arabia  
Tunisia  
United Arab Emirates  
Canada  
United States  
South Asia  
Afghanistan  
Bangladesh  
Bhutan  
India  
Maldives  
Nepal  
Pakistan  
Sri Lanka

### Sub Saharan Africa

Angola  
Benin  
Botswana  
Burkina Faso  
Burundi  
Cabo Verde  
Cameroon  
Central African Republic  
Chad  
Comoros

Congo, Dem. Rep.  
Congo, Rep.  
Cote d'Ivoire  
Equatorial Guinea  
Eswatini  
Ethiopia  
Gabon  
Gambia, The  
Ghana  
Guinea  
Guinea-Bissau  
Kenya  
Lesotho  
Liberia  
Madagascar  
Malawi  
Mali  
Mauritania  
Mauritius  
Mozambique  
Namibia  
Niger  
Nigeria  
Rwanda  
Sao Tome and Principe  
Senegal  
Seychelles  
Sierra Leone  
South Africa  
Sudan  
Tanzania  
Togo  
Uganda  
Zambia  
Zimbabwe

### Western Europe

Austria  
Belgium  
Cyprus  
Denmark  
Finland  
France  
Germany  
Greece  
Iceland  
Ireland  
Italy  
Luxembourg  
Netherlands  
Norway  
Portugal  
Spain  
Sweden  
Switzerland  
Turkey  
United Kingdom

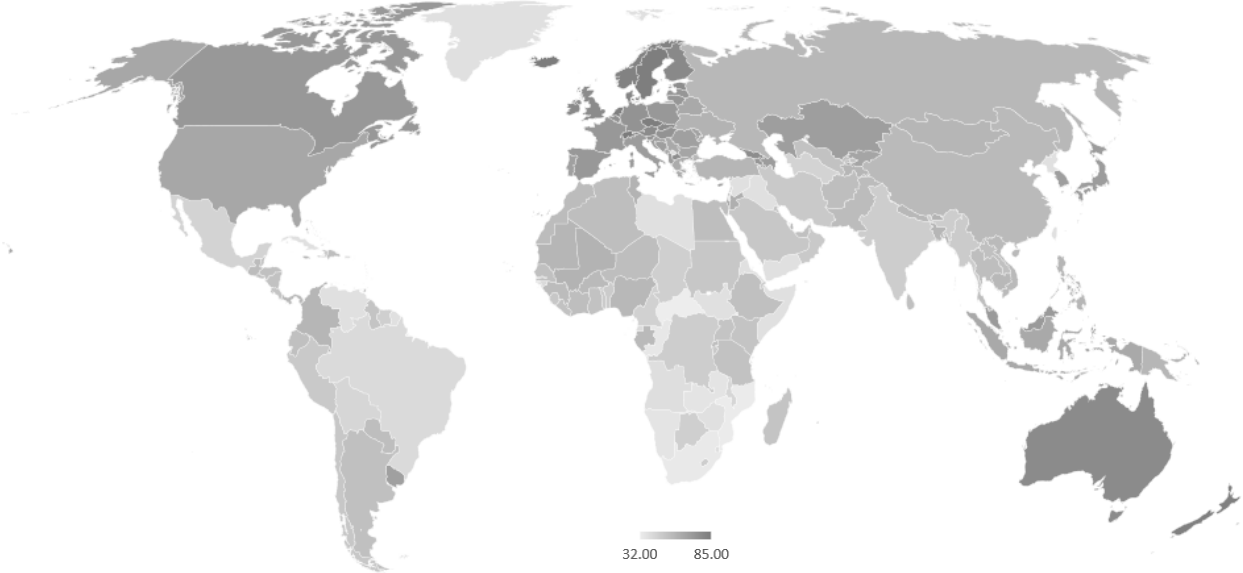
### Appendix A.3: Descriptive Statistics

Variable	n	Mean	Median	Min.	Max.	S.D.	IQR
Free & Equal	874	56.31	54.05	6.66	87.39	13.06	17.97
Revealed Public Health Strength	964	50.86	53.00	6.00	94.00	23.99	43.00
Revealed Social Safety Strength	964	50.77	51.00	6.00	94.00	24.20	44.00
Revealed Human Capital Strength	808	50.56	51.00	4.00	93.00	24.07	44.00
Revealed Social Mobility Strength	808	51.75	51.23	10.48	93.00	23.16	41.15
GDP per Capita	964	17,487	9,945	465	112,630	19,406	22,338
Manufactures and Services Export Share	782	132	18	1	35,864	1,603	26
Natural Resource Rents	966	7.43	2.58	0.00	81.95	10.97	8.98
Catholics	970	0.28	0.11	0.00	0.97	0.32	0.54
Polity	911	3.62	6.00	-10.00	10.00	6.29	11.00
Armed Conflict Total Score	916	0.60	0.00	0.00	8.80	1.44	0.00
Life Expectancy	978	68.28	70.84	28.18	84.16	9.86	14.46

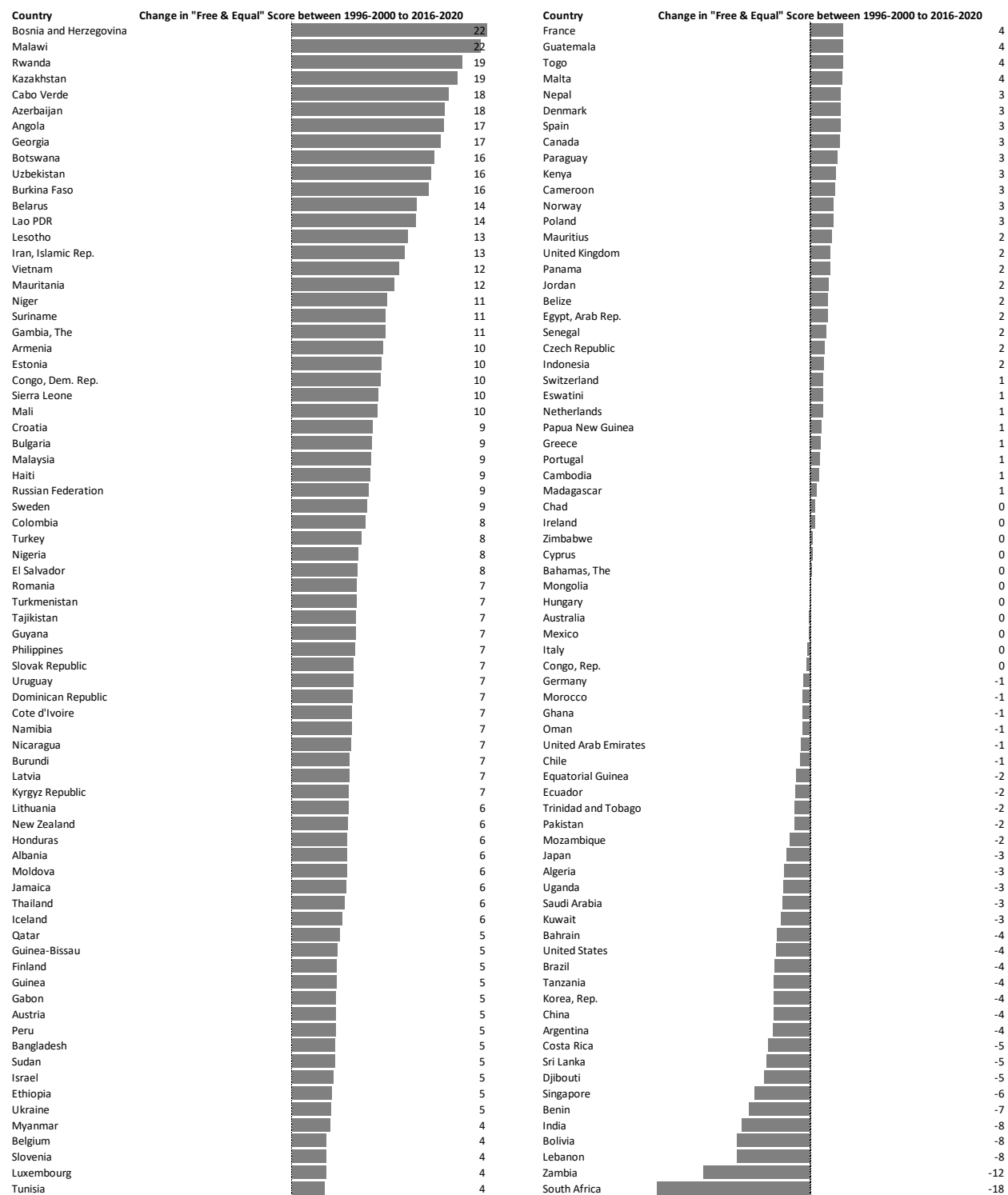
## Appendix A.4: Correlation Matrix

	Free & Equal	Revealed Public Health Strength	Revealed Social Security Strength	Revealed Human Capital Strength	Revealed Social Mobility Strength	GDP per Capita (ln)	Manufactures and Services Export Share (ln)	Natural Resource Rents (ln)	Catholics (ln)	Polity	Armed Conflict Total Score	Life Expectancy
Free & Equal	1.00											
Revealed Public Health Strength	0.75	1.00										
Revealed Social Safety Strength	0.63	0.85	1.00									
Revealed Human Capital Strength	0.73	0.86	0.77	1.00								
Revealed Social Mobility Strength	0.75	0.95	0.93	0.93	1.00							
GDP per Capita (ln)	0.65	0.86	0.77	0.81	0.87	1.00						
Manufactures and Services Export Share (ln)	0.45	0.56	0.43	0.48	0.53	0.47	1.00					
Natural Resource Rents (ln)	-0.53	-0.53	-0.45	-0.46	-0.51	-0.36	-0.58	1.00				
Catholics (ln)	0.00	0.11	0.21	0.00	0.11	0.11	0.12	-0.21	1.00			
Polity	0.44	0.44	0.41	0.39	0.42	0.31	0.28	-0.57	0.37	1.00		
Armed Conflict Total Score	-0.23	-0.26	-0.23	-0.23	-0.26	-0.26	-0.23	0.14	-0.06	-0.12	1.00	
Life Expectancy	0.68	0.91	0.78	0.76	0.86	0.82	0.47	-0.49	0.12	0.39	-0.23	1.00

**Appendix A.5: 2016-2020 Average “Free & Equal” Score**



## Appendix A.6: Changes in "Free & Equal" Score Between 1996-2000 and 2016-2020



## Appendix A.7: Hausman Test of Endogeneity

Table A: Instrumentalization of “Revealed Social Mobility Strength”

DV: Revealed Social Mobility Strength	OLS	Panel FE
Constant	-97.70*** (3.72)	-58.61*** (3.81)
Life Expectancy	1.95*** (0.05)	1.56*** (0.05)
Natural Resource Rents (ln)	-2.14*** (0.41)	1.60*** (0.60)
R-Squared	0.75	0.97

Standard errors in parentheses, \*\*\*significant at  $p < 0.01$ , \*\*significant at  $p < 0.05$ , \* significant at  $p < 0.1$ .

Table B: Hausman Test

DV: Free & Equal	OLS	Panel FE
Constant	5.655*** (0.820)	27.180*** (1.872)
Free & Equal (-1)	0.905*** (0.015)	0.449*** (0.030)
Revealed Social Mobility Strength	0.021** (0.01)	0.132*** (0.027)
Revealed Social Mobility Strength Residual	-0.006 (0.014)	0.001 (0.036)
GDP per Capita orthogonalized	-0.467** (0.231)	1.757** (0.749)
Natural Resources Rents (ln)	-0.335** (0.145)	-1.629*** (0.437)
R-Squared	0.93	0.97

Appendix Table A.7: Error Correction Model

DV: $\Delta$ Free & Equal	Panel FE	Panel RE
Constant	0.84*** (0.12)	0.84*** (0.13)
$\Delta$ GDP per capita orthogonalized	0.86 (0.77)	0.82 (0.65)
$\Delta$ Natural Resources Rents (ln)	-1.1** (0.44)	-1.08** (0.42)
Free & Equal Residual (-1)	-0.48*** (0.06)	-0.58*** (0.05)
Cross-sectional units	159	159
Time series length min	1	1
Time series length max	4	4
N	540	540

### Appendix A.8: Granger Causality

	DV: $\Delta$ "Free & Equal"	DV: $\Delta$ "Revealed Social Mobility Strength"
Constant	0.42** (0.20)	3.82*** (0.23)
$\Delta$ Free & Equal(-1)	0.20*** (0.04)	-0.08* (0.04)
$\Delta$ Revealed Social Mobility Strength(-1)	0.07* (0.04)	0.002 (0.04)
Cross-sectional units	158	159
Time series length min	1	1
Time series length max	3	3
n	448	450
R-squared	0.06	0.01