

Economic freedom, pandemics, and robust political economy

Rosolino A. Candela¹ | Vincent Geloso²

¹Mercatus Center at George Mason University, Fairfax, Virginia, USA

²School of Management, Economics and Mathematics, King's University College, London, Canada

Correspondence

Rosolino A. Candela, Mercatus Center at George Mason University, PPE 1A1, Fairfax, VA 22030, USA.

Email: rcandela@gmu.edu.

Abstract

What is the relationship, if any, between economic freedom and pandemics? This paper addresses this question from a robust political economy approach. As is the case with recovery from natural disasters or warfare, a society that is relatively free economically offers economic actors greater flexibility to adapt to pandemics. We argue that societies that are more economically free will be more robust to the impact from pandemics, illustrated by shorter time for economic recovery. We illustrate this relationship by testing how initial levels of economic freedom (at the start of the major influenza pandemics of the 20th century) temper contractions and accelerate recoveries for 20 OECD countries.

KEYWORDS

economic freedom, pandemics, robust political economy

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B51; H12; P52

1 | INTRODUCTION

Since the days of Adam Smith, political economists have emphasized how the institutional conditions that secure economic freedom have also resulted in economic prosperity and human flourishing. Encompassing private property and freedom of contract under the rule of law, this “system of natural liberty” in Smith’s words is the best vehicle for growth and

development. However, the ultimate test of any economic system is not to evaluate its ability to deliver economic prosperity and human flourishing under ideal conditions, but to evaluate its resiliency to unexpected and exogenous shocks, such as natural disasters, political and civil unrest, or, our particular focus here, pandemics.¹ The superiority of any economic system, compared to another, ultimately rests on whether or not such a system not only leaves “room for the unforeseeable and unpredictable” (Hayek, 1960: 29), but also leaves room for individuals to harness their productive capabilities in unforeseen and unpredictable ways to mitigate the negative effects of unexpected shocks. An economic system that is robust to unexpected shocks leaves individuals better prepared to confront such shocks *ex post* than any individual, or group of individuals, within that system could have anticipated *ex ante*.

In this paper, we address the following question: what is the relationship, if any, between economic freedom and pandemics? This paper addresses this question from a *robust political economy* approach. The robustness of a political and economic system refers to its ability to generate economic prosperity in the face of less-than-ideal conditions, in terms of the incentives and knowledge available to both economic and as well as political actors (Boettke and Leeson, 2004, 2006; Leeson and Subrick, 2006; Boettke, 2012; Pennington, 2010). As is the case of recoveries following natural disasters, civil unrest, or warfare, a society that is relatively free economically will exhibit a greater capacity to adjust to a crisis so that the negative consequences of damages will be minimized (in terms of both depth and duration) (Bjørnskov, 2016). The same can be argued with respect to pandemics: economically free societies will be more robust to the impact from pandemics, illustrated by shorter time for economic recovery. We illustrate this relationship by cautiously exploring how economic freedom, at the start of the major influenza pandemics of the 19th and 20th centuries, mitigate the damages caused by a pandemic. We argue that our modest results, based on newly available measures of historical economic freedom, constitute powerful motivation for future research that would expand and refine our findings.

Our paper proceeds as follows. In Section 2, we develop our primary contribution, which is to the literature on robust political economy. This approach has been developed and illustrated by political economists working in the Austrian as well as Public Choice traditions, the intellectual origins of which can be traced back to the critiques leveled by Ludwig von Mises (1920 [1975]; 1922 [1951]) and Hayek (1935 [1975], 1940, 1945) during the Socialist Calculation Debate, namely regarding the impossibility of rational economic calculation under socialism (see also Lavoie, 1985a). In spite of the best intentions, Mises and Hayek argued that central planners, because they operate outside a context of private property, lack the feedback mechanism embodied in market prices, as well as profit and loss signals, to allocate resources to their most valued consumer uses. Thus, states are unable to solve economic problems and are better at solving technical problems (e.g., putting a man in space, winning Olympic medals) that do not say much about human welfare. Private actors, because they are residual claimants in decision-making, in contrast are able to solve economic problems under the institutional conditions of private property, prices, as well as profit and loss signals.

¹Just to be clear, there is an important distinction between an epidemic and a pandemic. According to Honigsbaum (2020: xi), an epidemic “is the rapid spread of infectious disease to a large number of people in a given population within a short period of time. By contrast, a pandemic is an epidemic that has spread across a large region, for instance, multiple countries and continents. This spread may be rapid or may take many months or years.”

The robust political economy approach has already been applied to the poor responses of governments in the face of unexpected shocks such as Hurricane Katrina (Sobel and Leeson, 2006, 2007; Boettke *et al.*, 2007; Chamlee-Wright and Storr, 2010) and to the resiliency of non-political actors in the face of the similar shocks (Boettke *et al.*, 2006; Coyne, 2008; Chamlee-Wright and Storr, 2011; Grube and Storr, 2014; Storr *et al.*, 2015, 2018). A key point from this literature is that the resiliency to shocks of non-political actors was observed *in spite* of government actions hindering the discovery and adoption of economic solutions. In other words, the resiliency of non-political actors existed *in spite* of government interventions. The analogy from hurricane response can easily be mapped onto the topic of the pandemic. If particular societies have grown more robust against pandemics throughout the 20th century, it is because economic freedom has expanded the technical possibilities available to confront pandemics in spite of increasing government intervention to mitigate the negative consequences of unexpected shocks.

To make this case, in Section 3, we use data from the Historical Index of Economic Liberty (HIEL) in conjunction with excess mortality data and economic growth data in order to measure the economic damages imposed by influenza pandemics since the second half of the 19th century. In Section 4, our results suggest that economic freedom made pandemic-induced economic contractions less deep. In other words, letting private actors try their hand at solving economic problems makes societies less vulnerable to the large unexpected shocks that are pandemics. Our results are tentative and meant to indicate ways for future research to proceed. Section 5 concludes with implications for future research.

2 | INSTITUTIONS, ECONOMIC FREEDOM, AND ROBUSTNESS

In his most recent book, *The Pandemic Century* (2020), medical historian Mark Hongisbaum chronicles the series of pandemics that have gripped the world, from the Spanish Flu of 1918 to the current COVID-19 pandemic, and the processes of containing their spread. In spite of the improvements in epidemiology to understand the causes of infectious diseases, as well as advances in medical technology that resulted in greater preparedness against the spread of infectious disease, nevertheless, they have always taken us by surprise.

From this historical perspective, the question with regard to the future of pandemics is not if we can predict the outbreak of another infectious disease, but how prepared we are to absorb and recover from unanticipated negative consequences. In terms of economic analysis, the distinction is not one regarding the ability to calculate risk, the probability of particular outcome, or a “known unknown.” Rather, the economic analysis of pandemics must be framed in terms of uncertainty, or “a phenomenon that produces overlapping distributions of potential outcomes” (Alchian, 1950, p. 212, fn. 5; see also Knight, 1921), or a “unknown unknown.” The point here is not to sensationalize or otherwise exacerbate the psychological, social, or economic impact of pandemics. Rather, it's the opposite. If we understand that economic analysis begins with human choice in an open-ended world of uncertainty, then our understanding of how alternative institutional arrangements generate different patterns of incentives and knowledge to cope with uncertainty lends itself directly to a robust political economy of pandemics.

As Hayek argues, the roots of robust political economy run deep, tracing its intellectual origins back to classical political economists, such as Adam Smith. As Hayek states this point:

[T]he main point about which there can be little doubt is that Smith's chief concern was not so much with what man might occasionally achieve when he was at his best but that he should have as little opportunity as possible to do harm when he was at his worst. It would scarcely be too much to claim that the main merit of the individualism which he and his contemporaries advocated is that it is a system under which bad men can do least harm. *It is a social system which does not depend for its functioning on our finding good men for running it, or on all men becoming better than they now are, but which makes use of men in all their given variety and complexity, sometimes good and sometimes bad, sometimes intelligent and more often stupid* (emphasis added, Hayek, 1948, pp. 11–12).

Taking their cue from predecessors in classical political economy, Mises and Hayek argued for the productive superiority of a market economy, and simultaneously, against the impossibility of economic calculation under socialism, by relaxing the assumption of omniscience among actors within each system, and assessing systemic patterns of knowledge generated within an institutional framework of capitalism compared to that of socialism.

Under the best-case scenario, Mises and Hayek assumed central planners to be endowed perfect motivation as well as having at their disposal perfect knowledge of all technological possibilities at the point of policy inception (Mises, 1949 [1966]: 696). Nonetheless, outside the context of private property and the ability to exchange the means of production, market pricing in the means of production cannot emerge. Building on the insights of Mises and Hayek, Powell (2005) illustrates the deficiencies inherent to state planning, even of a non-comprehensive nature. Though not framed explicitly in terms of a robust political economy approach, Powell (2005) makes this point implicitly in the context of assessing the causes of sustained economic growth among East Asian countries during the post-WWII era, and the extent to which large increases in GDP per capita can be attributed to state development planning. Given that state development planning is unable to solve the knowledge problem of allocating scarce resources to their most valued consumer uses, as well as the high levels of economic freedom in Hong Kong, Japan, South Korea, and Taiwan, “we can explain East Asia's growth *despite* the existence of some state planning” (emphasis original, 2005, p. 315; see also Lavoie 1985b). Lacking residual claimancy in their decision making, state planners are precluded from the knowledge generated through the market discovery process, knowledge which is not only tacit and dispersed (Hayek, 1945), but *contextual* to a particular time and place (Boettke, 1998. Precluded from such contextual knowledge required to make decisions in real time, central planners can only rely on “historical” information which—especially when an unexpected shock hits the economy—tend to become less relevant. This entails sluggishness and ineffectiveness in responding to shocks.² Once we relax the assumptions of beneficence and omniscience and allow for bureaucratic mismanagement, rent-seeking, and regulatory capture (Tullock, 1965, 1967; Stigler, 1971; Krueger, 1974), the difficulty of how to respond to shocks that require change in resource allocation only grows.

In contrast and because they are residual claimants to decision-making, private actors have strong incentives to *learn* from the changes in the context of time and place, expressed through

²See also Storr *et al.* (2021) and Coyne *et al.* (2021) on the context specific nature of knowledge in market and non-market settings, particularly in the context of allocating resources during pandemics. Moreover, Laffont and Tirole (1988) argue something similar in an indirect way. Agents revealing their information now may face stricter targets to meet in future and so they adapt their performance at the present time to ease their future requirements. In terms of regulation design, this entails a strong focus on “historical information” on the part of regulators.

prices (Boettke, 1998, 2018). It is the presence of strongly defined private property rights that generates these incentives. Thus, the large array of tacit, dispersed, and contextual information that exist can be expressed through changes in prices (Hayek, 1945). For our purposes here, we focus on the robustness of market processes to negative unexpected shocks, such as pandemics. In doing so, we adopt a similar intellectual posture as Mises and Hayek by focusing on the *epistemic* properties of alternative institutional arrangements, specifically the context-specific knowledge generated within market settings and non-market settings.

There is a simple way to illustrate the importance of economic freedom to robustness in the face of pandemics. A pandemic causes a change in the demand for certain goods and services such as personal protection equipment, vaccination research, hospital ventilators, food delivery, etc. Consumers' optimal consumption bundles change as a result and this requires the quantity supplied of such goods to adjust in turn. Labor and capital thus move towards industries producing these goods. However, this process is not costless. Labor and capital are not homogenous and cannot be easily moved to new goods. This is why we can expect any pandemic to generate a temporary change in measured output as resources are reallocated. This is combined with the cost of the disease itself: higher levels of mortality, higher levels of risks, higher costs of providing services (e.g., restaurants having to install plexiglass separators). The economic problem thus boils to "how to adapt" to the pandemic.

However, the costliness of adapting can be increased by regulations that distort price signals (and thus make it harder to identify new allocations) or prevent certain entrepreneurial solutions. Government interventions can lengthen and deepen the contraction following a shock by making it costlier to solve the economic problem posed by the pandemic. Thus, it is not only that political actors are unable to find solutions on their own to the economic problem posed, but also that they can positively make it harder to find *any* solution, specifically by undermining the very discovery process through information is generated.

Essentially, our claim amounts to the idea that, in spite of the disruptions from pandemics, economies that are relatively freer will nevertheless recover faster than less free ones and that they will suffer milder contractions. The institutional conditions of economic freedom, namely private property and freedom of contract under the rule of law, generates a context of economic calculation, allowing entrepreneurs, guided by market prices as well as profit and loss signals, to sort from an array of technologically feasible possibilities those which are economic viable, thus generating economic growth.

Two examples can be used to illustrate, on a micro-level, the relationship between economic freedom and robustness. The first is an example that illustrates the adverse effect of limited economic freedom. During the early days of the COVID-19 pandemic, there was a recurrent concern that the disease would cause an increase in the demand for hospital beds. As the treatment of COVID-19 requires a relatively long period of care, hospital beds were expected to be in heavy demand. One study early into the pandemic argued that the number of beds in intensive care units needed to deal with the disease was well in excess of the available number of beds (Moghadas *et al.*, 2020). However, the quantity of beds supplied is not fixed. Hospitals can hire back retired support personnel, extend overtime work, open temporary wards, create partnerships with private clinics to reallocate resources, etc. All of these measures are resource allocation responses to the crisis that lead to an increase in the quantity supplied of beds in ways that are economically efficient. However, in many American states, there were important legal barriers to doing so.

Indeed, 36 American states had Certificate-of-Need (CON) laws at the start of the outbreak. CON laws essentially restrict healthcare facility, equipment, and service expansions without

governmental approvals. Such legal limitations entail that hospitals could not easily adjust to a demand surge for their services during the pandemic. A recent paper by Ghosh *et al.* (2020) shows that mortality rates were higher in states with CON laws than in states without CON laws. Their results held when adjusting for levels of utilization. More importantly, they point out that some states lifted the CON laws temporarily to allow for service expansion. Using a differences-in-differences approach, they found that lives lost to natural causes (i.e., non-COVID related such as septicemia, pneumonia, and diabetes) and to COVID-19 fell by 15 per 100,000 residents on a weekly basis. Given that the cumulative number of deaths in pandemics is related to the extent of economic contractions (Barro *et al.*, 2020; Beach *et al.*, 2020; Geloso and Bologna Pavlik, 2020), their results suggest that CON laws might have seeped through to economic activity on a more macro-level. Taking the sum of all similar interventions that limit the ability of businesses to adjust, and that is a large sum,³ suggests that governments can deepen economic shocks.

The second example, that of containerization in international trade, illustrates the positive spillovers that economic freedom has in terms of dealing with pandemics. Since the global outbreak of the COVID-19 pandemic, which had begun in December 2019 in Wuhan, China, governments around the world, since March 2020, have ordered lock-downs and business shut downs to mitigate the spread of COVID-19. Since then, significant fear has gripped public officials and business leaders, as well as scholars about the disruption of global supply chains, as a result of policies intended to contain the spread of COVID-19 (see OECD, 2020). Nevertheless, it is quite amazing to see, in spite of the fear of global supply chain disruption, how goods from all over the world still arrive in our supermarkets on a daily basis. How is this the case?

On April 26th, 1956, a refitted WWII oil tanker named the *Ideal-X* set sail from Newark, New Jersey, hauling 58, 30-foot steel containers loaded with cargo bound for Houston, Texas. It was on that voyage that modern containerization was introduced, giving birth to the post-WWII era of globalization that we've experienced since. The father of modern container shipping was a North Carolina truck driver named Malcom McLean. The genius of McLean was not to "invent" something new. Containers, ships, trucks, trains, ports, and cranes, all of which are necessary to transport goods internationally, had already existed for decades prior to 1956. Rather, it was to reorganize and link intermodal transport by land and sea in a way that no one else had realized before. Like any great innovation, container shipping was so obvious after the fact it is incredible that it had not been implemented earlier (see Candela *et al.*, 2020). Prior to containerization, cargo from ships had to be loaded and unloaded by dockworkers, known as longshoremen. Loading time was reduced from days to less than 8 hours on that maiden voyage of the *Ideal-X*, and, according to Levinson (2006: 52), reduced the cost of shipping from \$5.83 per ton in 1956 to 15.8 cents per ton.

What does all of this have to do with the COVID-19 pandemic, the alleged threat to the global supply chain, and the robustness of economic freedom? First, it is misleading to argue that global supply chains need to be "managed" from disruption because international trade is neither planned nor "managed." International trade is the unintended outcome of consumers demanding goods, and suppliers striving to meet those demands through the production and exchange of goods throughout the world. The container is the medium through which the

³A nearly endless list of regulatory and fiscal barriers can be made: restrictions on restaurants selling drinks through smartphone applications, licensing requirements for PPE manufacturers, import duties and quotas on medical equipment and PPE, licensing requirements for medical personnel, legal limitations on online retailers, zoning laws limiting home-based businesses, etc. (Sandefur and Riches 2020).

spontaneous order of trade is facilitated. Moreover, the global division of labor is increasingly based not on the exchange of final goods directly purchased by consumers, but on the exchange inputs produced in one country to be shipped and used as a component in the production of a consumable good in another country (see Irwin, 2002 [2015]). Indeed, this growing interdependence has provoked fear that the pandemic will expose a fragility to the process of production and exchange that characterizes the global economy.

Second, one might object and argue that containerization has been a double-edged sword. By accelerating globalization in the post WWII era, an objection to this positive result of economic freedom is that containerization has also accelerated the spread of infectious disease more rapidly than ever before (see Davies, 2020). Though a legitimate concern, the relationship between economic freedom and its impact on investment, as demonstrated by Gwartney *et al.* (2006), are relevant here, in which they argue that not only do economically freer countries invest more, but also “the investment is more productive—a given amount of investment enhances the growth of per capita GDP by a large amount in countries with better institutions” (2006, p. 267). In the context of containerization and pandemics, such productivity of investment is revealed through two channels. By shifting the labor-intensive stevedoring process to a capital-intensive intermodal process, containerization has mitigated the potential loss of life from pandemics due to direct human contact in cargo transport, thus also mitigating the loss of productivity associated with reductions in labor and human capital that come as a result of death.⁴ However, this substitution of capital for labor in containerization has not only increased productivity in international trade, but also, more importantly, mitigated the necessity to impose harsh restrictions on international trade to deal with a pandemic, thus, in turn, mitigating the fall in measured GDP that would have otherwise occurred if “social distancing” requirements would have forcibly quarantined longshoremen from loading and unloading cargo.

Thus, entrepreneurial innovation has unintended benefits that no one, not even the entrepreneur devising the innovation, can fully anticipate. To put the current fears regarding the global supply chain in perspective, let us imagine a world in which McLean never discovered the containership. Under current quarantines, shutdowns, and other demands for “social distancing,” the labor-intensive nature of global shipping prior to containerization, with the use of longshoremen manually transporting goods from ships to other modes of transport, such as rail or truck, would have been more fragile to such disruption. From this comparative perspective, global supply chains are *more robust* than ever, thanks to the entrepreneurial efforts of Malcom McLean and his pioneering of the containership. Thus, our point here is that the entrepreneurial fruit born from economic freedom prior to COVID-19 has left us better prepared to face its negative consequences in ways that we could never have realized ex-ante. “It precisely because we do not know how individuals will use their freedom,” Hayek states, “that it is so important” (1960: p. 31).

3 | DATA AND METHODOLOGY

Our depiction of robust political economy proposes that institutions can offer flexibility to firms and consumers in ways that result in greater resilience to changing constraints imposed by the pandemic, specifically by adjusting the pattern of resource allocation to such constraints. Thus,

⁴For example, between 1970 and 1986 alone, the number of longshoremen employed in the Port of New York fell from 30,000 to 7400 (Talley, 2000: p. 946, fn. 6).

what we must find is a meaningful measure that reflects the flexibility afforded to economic actors. In that respect, economic freedom data constitute a near ideal measure. Since the 1990s, the Fraser Institute has published estimates of economic freedom known as the Economic Freedom of the World (EFW) index. The EFW index is the most commonly used in the literature largely because it has fewer arbitrary features than others (such as the Heritage Foundation's index of economic freedom) and measures five aspects of economic freedom: regulation, size of government, sound money, property rights, and openness to international trade. Consequently, it is frequently used as a proxy for institutions that provide economic actors with such flexibility (Hall and Lawson, 2014). And this is well evidenced by the fact that innovation and entrepreneurship are positively associated with economic freedom (Sobel *et al.*, 2007; Wiseman and Young, 2013; Zhu and Zhu, 2017; Wagner and Bologna Pavlik, 2020). For our purposes, high levels of economic freedom would approximate high levels of flexibility necessary for consumers and firms to adapt to pandemics.

However, economic freedom has not been used extensively in the robust political economy literature. While it is frequently invoked (Leeson and Subrick, 2006; Boettke *et al.*, 2007), with a few notable exceptions, it has never been used econometrically-speaking to make the case that economic freedom makes economies more robust to shocks. The main exceptions are Bjørnskov (2016) and Geloso and Bologna Pavlik (2020). Bjørnskov (2016) used the Fraser Institute's Economic Freedom of the World (EFW) index to study the effect of 212 macroeconomic crises in 175 countries from 1993 to 2010. He found that recessions were milder and shorter-lived with higher levels of economic freedom. Geloso and Bologna Pavlik (2020) for their part found—using a different data set of economic freedom for the distant past—that economic freedom mitigated the damages caused by the pandemic of 1918. Both of these exceptions suggest that economic freedom serves to make economies better able to cope with exogenous shocks—including pandemics. There is thus value from expanding their work to more cases of pandemics—which is what we aim to do in this paper by considering the economic damages caused by pandemics over time.

Since the 1850s, there have been six influenza pandemics (present pandemic excluded) according to Beveridge (1991) and the CDC: in 1857–58, 1889–90, 1918–20, 1957–59, 1968–70 and 2009–10. Unfortunately, the EFW has decadal estimates only before 2000 and it does not extend further back than 1950 (Murphy and Lawson, 2018). Fortunately, and in response to the coverage limitations of the EFW, Prados de la Escosura (2016) generated the Historical Index of Economic Liberty (HIEL), which covers 21 OECD countries annually between 1850 and 2007.⁵ That data set is ideally suited for the purposes of testing the effect of different pandemic-events on economic growth. The HIEL is similar to the EFW with respect to four of its components (regulation, property rights, international trade, and sound money), but it does not include a size of government component.⁶ This allows us to set up the following econometric specification:

$$CGDP_{c,p} = \beta_0 + \beta_1 EDR_{c,p} + \beta_2 HIEL_{c,p} + \beta_3 X_{c,p} + \beta_4 V_c + \beta_5 V_p + \epsilon_{c,p}$$

⁵Because it ends in 2007, we extended Prados de la Escosura's HIEL to 2010 by using the movements of the EFW (without the size of government component) for those years.

⁶It is worth pointing out that some find that the indexes are improved by *removing* the size of government (Ott, 2018). This is consistent with the claims of scholars like Higgs (1987) and Coyne and Hall (2018) that the size of government is a very poor indicator of the overall scale and scope of government.

where the subscripts c and p refer to country and pandemic-event. We use a pandemic-event approach because of the limited nature of the HIEL data over a period of more than 150 years. $CGDP$ is the average rate of growth of GDP during a pandemic.⁷ We use the average rate of growth because the contraction in GDP gives us an idea of the depth of the damages caused by a pandemic.⁸ EDR is the excess death rate calculated as the crude death rate during the pandemic divided by the crude death rate during last pre-pandemic year.⁹ By computing EDR this way, we standardize excess mortality to circumvent the problem posed by some countries having higher levels regardless of whether they are suffering through a pandemic.¹⁰ EDR is meant to capture the economic damages caused by each pandemic on economic growth. For the first two pandemics (1857–58; 1889–90), some countries offer no demographic data in order to create EDR so that we have an unbalanced sample. However, excluding both of these pandemics does not alter our results. As we are using growth rates, we must control for the initial level of income before a pandemic which is our variable X . The reason for using initial level of income is related to our use of the average growth rate during a pandemic. We expect poorer countries to exhibit faster growth by virtue of standard growth models. We also included the level of urbanization as a control for the ability of the disease to spread.¹¹ Our main variable of interest is $HIEL$ —the aforementioned Historical Index of Economic Liberty. That variable is expressed as its average value in c during each p . The remaining terms are country-fixed effects, pandemic-fixed effects and the residuals. We should note that we use pandemic-fixed effects because some of the pandemics were quite tame in comparison to others. For example, the 2009–10 flu pandemic was relatively minor in comparison with all the others and it occurred at the beginning of the recovery from the 2007 to 08 recession thus it is one of pandemic episode with few countries exhibiting negative growth rates. Before, we proceed, we must mention two issues. The first is the possibility of endogeneity. For example, a country with an initially high EDR may enact more severe policies to bring down the EDR to the level of less affected countries. Furthermore, governments could step-in and try to stimulate economic activity in response to the pandemic. Thus, the relation between EDR and $CGDP$ is not straightforward. However, there are two answers to this issue. The first is most of the pandemic-events we use involved little to no government responses (generally referred to as non-pharmaceutical interventions—see Markel *et al.*, 2007; Barro *et al.*, 2020). The pandemics of the 19th century that we include included no strong responses of government. The pandemic of 1918 occurred in

⁷This means, for example, that we took the growth rate for country i during 1857 and 1858 (the first pandemic in our panel) and averaged those two rates to get the “pandemic-event” growth rate. The GDP data are taken from the Maddison Project Database (see Bolt and Van Zanden, 2014; Inklaar *et al.*, 2018).

⁸It can also give us an idea of the duration, albeit very imperfectly. The aforementioned work of Bjørnskov (2016) selected countries whose growth rate fell below 0.2% on a per capita basis and measured duration by the number of consecutive years in which growth remained negative. He also measured recovery time by the number of years needed to return to pre-crisis levels. In his case, the dependent variable is time. In our case, the dependent variable is the extent of the contraction. However, if the recovery started during a pandemic-event, the average growth rate will capture the rebound to some degree. Many of the years in pandemic-event that had a negative growth rate in the first year were followed by years of positive growth. Unfortunately, the state of the data does not allow us to decompose the duration and depth as the data used by Bjørnskov (2016) does.

⁹The mortality data is taken from Mitchell (1983, 1998, 2003) who provided crude death rates (see more below).

¹⁰However, the use of nonstandardized measures where the ratio is expressed in differences in deaths per 100,000 only strengthens the results we show below. While we do believe that our strategy is better because the crude mortality rate captures much more than pandemic-deaths, there is a reasonable case to be made that amplitudes (in deaths per 100,000) is a relevant indicator too.

¹¹That data is extracted from the Clio-Infra database.

TABLE 1 Descriptive statistics

Variables	(1) N	(2) Mean	(3) SD	(4) min	(5) max
Initial income per capita (log)	117	9.170	0.955	7.292	11.31
Average growth rate during pandemic	117	2.538	4.961	-9.639	29.75
HIEL during pandemic	117	7.789	1.503	1.261	9.439
Excess mortality	114	1.048	0.114	0.895	1.621
Urban	126	0.297	0.115	0.046	0.695
Number of countries	21	21	21	21	21

wartime and governments made sizable effort to censor information as a result (Geloso and Bologna Pavlik, 2020). Responses to the 1957–58 and 1968–70 influenza pandemics were also minimal or inexistent (Henderson *et al.*, 2009; Honigsbaum, 2020). In none of these pandemic-events did government enact measure of economic stimulus. The one exception is the pandemic of 2009–10. In that case, there were strong government responses that occurred simultaneously with stimulus plan rollouts in multiple countries. Thus, and this is our second answer to this concern, the use of pandemic-event fixed effect may account for this particular oddity. To be sure, we will also provide results without the 2009–10 pandemic. The second issue is that our HIEL data confined us to a small number of countries. These countries are, when compared with EFW data, some of the freest countries in the world and also some of the richest. This entails that we are analyzing the effect of economic freedom at the very top of the distribution. Within that group, the variances in economic freedom and income are somewhat limited, which makes it hard to extrapolate to other countries with lower levels of economic freedom and lower levels of income. However, as we point out in the discussion section, this reinforces confidence in the importance of our results. It also allows to highlight where future research should try to head. Table 1 illustrates the descriptive statistics. The number of countries used in our is the maximum number of countries for which we have both economic freedom data and mortality data at each of the pandemic-episodes. This arrives at a maximum of 21 countries over six pandemic episodes.

4 | RESULTS

In Table 2, we produce the results from our panel regression. Robust standard errors are used for both estimations. Specifications (1) and (2) are identical with the exception that the dependent variable is either the average change in GDP per capita during a pandemic or the average change in total GDP during a pandemic. Unsurprisingly and in conformity with findings of the economic effects of pandemics (Keogh-Brown *et al.*, 2010; Barro *et al.*, 2020; Geloso and Bologna Pavlik, 2020), excess mortality slows down economic growth. The effect is only significant at the 10% level. However, that significance level and the size of the coefficient are probably due to the fact that we were constrained to use excess mortality using crude death rates. During a pandemic, individuals adjust their behavior to minimize infection risks which entails that they may reduce their mortality risks from different causes. For example, during lockdowns, fewer people drive their vehicles such that road fatalities fall. The use of the crude death rates

TABLE 2 Results of panel OLS regression with fixed effects

Variables	(1) Without EDR	(2) Fixed effects	(3) Without country fixed effects	(4) Without 2009–10 pandemic
HIEL during pandemic	1.599*** (0.423)	1.578*** (0.408)	1.529*** (0.408)	1.794*** (0.369)
Initial income per capita (log)	-4.696*** (1.485)	-4.973*** (1.505)	-3.646*** (0.772)	-5.274** (1.997)
Urbanization rate	1.378 (6.059)	-0.0533 (5.728)	-2.223 (3.308)	8.250 (5.918)
Excess mortality		-7.826* (4.070)	-7.634* (4.417)	-7.573* (4.359)
Observations	109	109	109	88
R-squared	0.563	0.584	0.529	0.555
Number of countries	21	21	21	21
Country FE	Yes	Yes	No	Yes
Pandemic FE	Yes	Yes	Yes	Yes

Note: Country-clustered standard errors in parentheses.

* $p < .1$.

** $p < .05$.

*** $p < .01$.

captures some of that adjusting behavior and thus is imperfect. In contrast, Barro *et al.* (2020) and Geloso and Bologna Pavlik (2020) used mortality directly from the pandemic of 1918 which allowed them to create a direct measure of the intensity of the pandemic.

However, the level of economic liberty (HIEL) during a pandemic is positive.¹² An extra point in the HIEL index (which is on 10), increases economic growth during a pandemic episode by between 1.53 and 1.79 percentage points.¹³ The effect is significant at the 1% level in all specifications. Finally, the level of income at the onset of each pandemic is negative, as is to be expected from standard growth economics (Barro and Sala-i-Martin, 2004). The effect is also significant at the 1% level. It should be pointed out that the data we possess, which is limited in scope and scale, is biased against us. The countries for which we have economic freedom data are generally in the top end of the world's income distributions. Thus, when we provided our estimations, we were using a zone with a limited amount of variance. Had we been able to

¹²We also tried the method used by Gwartney *et al.* (2006: p. 262) to use a recursive estimation approach. They estimated that economic freedom increased both economic growth and investment. However, investment also increases growth. Thus, they first estimated the effect of economic freedom on investment rates and they then used the predicted values of investment to see how economic freedom affected growth through investment. We tried the same for excess mortality as economic freedom could reduce the economic damages from a pandemic through reducing excess mortality. However, there is no effect of economic freedom on excess mortality.

¹³We also tried to exclude the pandemics of 1857–58 and 1889–90 because of missing excess mortality data. This has the effect of balancing the panel. When those are excluded, the effect of HIEL remain significant.

include poorer countries, it is reasonable to infer that our results would have been stronger than those depicted. This is because studies that use economic freedom as right-hand variable tend to find larger effects of economic freedom on least developed countries (see notably Gwartney *et al.*, 2006 for an example).¹⁴ Any efforts to extend the data set of economic freedom to other countries for which we have mortality data would only, in our view, confirm and reinforce the results depicted above. As such, our findings appear to confirm the intuition that economic freedom provided flexibility to economic actors during pandemics from 1850 to 2010. Socioeconomic systems are complex phenomena. When they are hit by shocks like pandemics whose features are initially uncertain, there is a need to experiment to discover information. There is thus a normal adaptation process even though it is costly in terms of living standards—as testified by the coefficients for excess mortality in Table 2. Given that formulation, it is unsurprising to find that economic freedom limits those costs. Firms and consumers can adjust with fewer barriers—that is, fewer costs—to their efforts. Firms that invent or manufacture products that consumers desire more in a pandemic can more easily hire labor and capital from other firms and expand production of said goods rapidly. This lessens the shock imposed by the pandemic—as our HIEL during pandemics variable shows.

However, we do wish to be cautious in this interpretation as our data is limited. This limited our ability to use other econometric strategies to assess the mitigating effect of economic freedom. For comparison, consider the aforementioned work of Geloso and Bologna Pavlik (2020). They added GDP per capita for all HIEL countries between 1901 and 1929 and added the deaths from the 1918 flu pandemic as an exogenous shock. They then interacted deaths with HIEL and found that the interaction term mitigated the effect of the pandemic. The absence of mortality data for some countries in the first pandemics (1857–58, 1889–90), the quality of the mortality data (based on crude death rates rather than cause-specific death rates), and the limited international scope of the HIEL data made such a replication effort difficult.¹⁵ As such, our setup only captures the effect of economic freedom net of the effect of mortality in each pandemic. However, as we will point out in the next section, there are ways forward to expand the literature.

5 | DISCUSSION AND CONCLUSION

Our argument above probably downplays the effect of economic freedom in generating robustness. Indeed, while our econometric setup was limited by data constraints, the results we find are a powerful motivation for future research and it is worth exploring why. First, our setup merely allows us to state that, net of the effect of mortality, economic freedom increases economic growth during pandemic-events. In order to improve this result, the most evident solution would be to await the production of complete economic growth and excess mortality data

¹⁴This is only magnified by the shape of the relation between mortality and income (Preston, 1975; Bloom and Canning, 2007). At low levels of development, a small increase in income yields a substantial reduction in mortality. At higher levels of development, a larger increase in income is needed to yield the same reduction. The rich countries in our sample are thus expected to have limited variance in terms of excess mortality during a pandemic. In contrast, poorer countries are expected to suffer larger swings in excess mortality during a pandemic. Consequently, we also expect poor countries to suffer more heavily from a pandemic. By being forced to limit ourselves to relatively rich countries, we are losing large variations between excess mortality (as a proxy for a pandemic's destructiveness) and economic contraction.

¹⁵We did make an attempt but all coefficients were returned as not statistically significant, even the excess mortality coefficient.

during the present COVID-19 pandemic. Once these data are available, they could be interacted with the EFW index while controlling for the stringency of government health policy responses.¹⁶ The use of interaction terms, such as in Geloso and Bologna Pavlik (2020)'s study of the 1918 pandemic, could then be employed for the outbreak of COVID-19. Another way forward would be to attempt to construct estimates of cause-specific mortality in other pandemic events. Currently, there are only estimates for a wide (more than 30) number of countries during the 1918, 1957–59 and 2009–10 pandemics. Creating estimates for the 1968–70 pandemic would at the very least allow for a full treatment of the second half of the 20th century during which there are estimates of EFW for a large array of countries (Murphy and Lawson, 2018). Second, we essentially assumed that there were no cross-national spillovers from economic freedom. In any case, the data did not permit us to deal with such a possibility. Yet, there are no reasons to make this assumption and everything points to *positive* spillovers. In order to observe positive spillovers, consider the origins of the robust political economy literature in the debates over the possibility of economic calculation under socialism. In those debates, market socialist economists eventually conceded that prices would serve to inform central planners in socialist economies. Murray Rothbard, picking up on this argument, pointed out that this meant that socialist economies while “experiencing enormous difficulties and wastes in planning” could “vaguely approximate some sort of rational pricing of producers' goods by extrapolating from that market” (Rothbard, 1962: p. 831). Essentially, free economies spilled over by making socialist economies less inefficient. The same could apply to pandemics as the freedom to trade and to travel exposes individuals recurrently to low virulence pathogens. Because these pathogens share features with higher virulence pathogens, cross-immunity can be built through exposure to low-virulence pathogens. In turn, this reduces the likelihood of a serious pandemic event caused by a high-virulence pathogen (Thompson *et al.*, 2019). However, the reduction in likelihood is largely driven by those in freer economies. The spillover is thus that while less free economies are more vulnerable when a pandemic happens, the likelihood of a pandemic happening (and exposing their vulnerabilities) is reduced thanks to freer economies.¹⁷ Consequently, another way forward for researchers would be to expand the HIEL data set to other countries during the 19th and 20th centuries to open the door for using spatial econometric. Such a strategy would make it possible to control for the level of economic freedom of a country's neighbors and thus capture the spillover effect. Third, an extension of the HIEL data set (or of the EFW) to earlier points in time and to more countries (i.e., low-income countries) would also strengthen our results. Indeed, during earlier pandemics, medical knowledge was more limited and it circulated at a slower pace. During those pandemics, we can reasonably expect that the effect of the diseases would have been greater.¹⁸ Thus, the effect of economic freedom in mitigating the disease's effect would have been relatively greater. Similarly, given the marginally decreasing effect of income on health, we can expect to better capture the effect

¹⁶For example, OurWorldInData.org produces a stringency index that codifies the different policies of governments across the world (e.g., curfews, lockdowns, school closures, gathering limits).

¹⁷Future research could tackle this question by using the numerous documented cases of outbreaks that did not become pandemics. Indeed, there are numerous documented outbreaks in the 20th century that could have turned into pandemics but were successfully controlled. The time difference between each case of near-pandemic in each country could be taken as a dependent variable to be explained by economic freedom in countries in neighboring countries.

¹⁸This appears to be the case. Comparing the estimates of the economic damages of the different pandemics over time suggests a downward trend for affected countries. This is combined with a secular trend in favor of smaller death rates (Beveridge, 1991; Viboud *et al.*, 2005, 2016; Miller *et al.*, 2009; Keogh-Brown *et al.*, 2010; Barro *et al.*, 2020; Geloso and Bologna Pavlik, 2020; Velde, 2020).

of economic freedom on poorer individuals. All of the points above should be understood as a call to (intellectual) arms. Indeed, the relationship between institutions and the robustness of economies in the face of extreme shocks like pandemics has only been thinly studied. The main impediment, as the literature on robust political economy shows, is not that the theory is weak. Quite the opposite given that many scholars (e.g., Boettke *et al.*, 2007; Skarbek, 2014) have used microcosms to illustrate its importance to understand economic resilience. The impediment is the lack of data to properly appreciate the empirical importance of allowing economic agents the room to experiment with solutions to major and unexpected economic problems. Our results provide a glimpse at the potential for providing an image to replace a thousand words. Given the institutional vacuum that numerous scientists have assumed in proposing their preferred policy response to COVID-19 (Geloso and Murtazashvili, 2020a, 2020b), we cannot think of a more pressing task for scholars to undertake in the wake of our first empirical effort.

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