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Inherited Corporate Control, Inequality and the COVID Crisis

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Abstract

Measuring inequality by comparing growth of billionaires' wealth with that of equity markets, I find that inequality grows more rapidly by 23.6 ppt during the COVID crisis and even more in low-income countries where heir billionaires' wealth surges faster than founder billionaires' wealth by 18.0 ppt. However, such increase in inequality from heir billionaires can be reduced by strong financial institutions. Overall, this paper provides causal evidence that crises increase inequality and that they give rise particularly to inequality arising from heir billionaires in countries with weak financial institutions. If the rise of heir billionaires implies the increasing value of political connections, this evidence raises the plausibility that crises put low-income countries deeper in the middle-income trap.

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1. Introduction

The recent COVID crisis has brought about not only wide-spread economic and human capital destruction, but also the unprecedented levels of inequality. It has left individuals and corporations without adequate resources suffering great losses, while those with plenty were able to preserve, if not, advance their status quo. In this paper, I provide empirical evidence on the increased inequality during the COVID crisis around the world. I measure inequality by comparing growth of billionaires' wealth to that of equity markets. The intuition behind this measure is that inequality should increase if billionaires consistently beat the market. Using this measure, I can break down inequality into one from large-scale entrepreneurship (i.e., from founder billionaires) and one from large inherited wealth (i.e., from heir billionaires). The results show that, during the 2020 COVID crisis, inequality indeed increases more rapidly than in the pre-crisis period (2017−2019) by 23.6 ppt. In other words, billionaires' wealth grows significantly faster than the equity markets when the crisis occurs. In addition, inequality during the crisis is higher in lower-income countries where assets of heir billionaires outperform not only the markets but also those of founder billionaires by 18.0 ppt. These results remain quantitatively robust when I measure inequality by comparing growth of billionaires' wealth to that of GDP or GDP per capita.

What allows billionaires to outperform the market? And more importantly, what allows heir billionaires to outperform founder billionaires in low-income countries during the crisis? To answer the first question, note that billionaires are often owners of large corporations or business groups, i.e. a constellation of firms connected through significant ownership and ultimately controlled by a single tycoon or business family. With control over such vast resources, they can exploit their so-called "internal capital markets" to overcome the heightened market frictions such as constrained external financing during a crisis. Several works in the literature are in support of this argument. Notably, Masulis, Pham, Zein, and Ang (2022) show that, compared to freestanding firms, business group affiliates gain significant market share since the start of the 2008−2009 global financial crisis. Such gain enables their stocks to outperform those of similar freestanding firms. Morever, their results are concentrated in a subsample of developing economies, indicating that internal capital markets are beneficial in markets whose external financing is inadequate. Almeida, Kim, and Kim (2015) present empirical evidence along the same line for South Korea; Kuppuswamy and Villalonga (2016) for the United States; Buchuk, Larrain, Prem, and Urzúa Infante (2019) for Chile; and Santioni, Schiantarelli, and Strahan (2019) for Italy.

Answering the second question requires basic results from the family firms and business groups literature. Previous research has consistently found that heir-run firms underper-

form founder-run firms (Mehrotra, Morck, Shim, and Wiwattanakantang, 2013; Bennedsen, Nielsen, Perez-Gonzalez, and Wolfenzon, 2007; Perez-Gonzalez, 2006). This is because heirs to family firms or business groups cannot reliably inherit the entrepreneurial ability from their parents. However, as offspring to successful business parents, they grew up among elite families, allowing them to reliably inherit their parents' connections. Therefore, with low talent but strong family connections, heirs to large business groups are more inclined to invest in political influence rather than innovation and can eventually become adept rent-seekers (Rajan and Zingales, 2004). The COVID crisis presents the opportunities for highly connected heir billionaires to make use of their connections and receive exclusive access to information or financing (Acemoglu, Johnson, Kermani, Kwak, and Mitton, 2016; Faccio, Masulis, and McConnell, 2006), allowing them to magnify the benefits of their internal capital markets. However, such access might be available only in low-income countries whose financial and legal institutions are generally weak (Krueger, 1993). Heir billionaires in these countries can therefore derive considerable value from their connections and outperform both their respective markets and founder billionaires.

Since the rise of heir billionaires may imply the rise of rent-seeking corporations, it is natural to ask what institutions can then curb such rise in times of crisis. Rajan and Zingales (2003) provide a plausible answer to this question. They show that financial institutions are less developed in 1980 than in 1913 because a group of elite incumbents oppose financial development for fear of competition it spurs. In other words, strong financial institutions can lead to more competition and thus reduce the influence of elite incumbents. To test this hypothesis, I follow Beck, Levine, and Loayza (2000) and measure the levels of financial development using a) total market capitalization over GDP, b) private credit over GDP and c) total traded volume over GDP. Then, to extract the exogenous variations in these variables, I instrument them using a country's legal origin[1]. The use of this instrument follows from La Porta, Lopez-de Silanes, and Shleifer (2008) who show that countries with common law origin have stronger outside-investor protection which leads to more developed financial institutions. Consistent with the above hypothesis, I find that countries with stronger financial institutions have significantly lower inequality stemming from heir billionaires during the COVID crisis. Specifically, one-percentage-point increase in total market capitalization (also total traded volume and private credits) over GDP slows the pace of inequality from large inherited wealth by 7.8 (7.9 and 13.0) ppt.

Next, I explore the mechanism through which heirs to large business groups in low-income countries maintain or even increase their firm value in times of crisis. To do so, I analyze

[1]The instrument is an indicator variable equal to one if the country's legal origin is from the United Kingdom (i.e., common law), and zero otherwise.

Thai listed firms during the COVID crisis. Thailand is similar to other developing nations in that its corporate sector is dominated by large family business groups. This allows the corporate control in these countries to concentrate in the hand of a few families (Morck, Wolfenzon, and Yeung, 2005). In Thailand as of 2019, ten families control almost 40% of its total market capitalization. To study how heirs gain their wealth in times of crisis, I conduct a difference-in-differences analysis comparing heir-run firms with founder-run firms around the pandemic. I find that heir-run firms receive more debt and equity financing than founder-run firms, allowing them to maintain their investments during the crisis. These results are concentrated in a sample of firms whose groups' total market capitalizations are in the top quartile. This indicates that only heirs to large firms or business groups have financing advantages over founders of firms of similar sizes, emphasizing the value of connections that heirs in low-income countries possess.

This paper's contributions to the literature are as follows. First, previous studies on inequality and crises employ financial crises as their empirical settings[2]. Although results from such settings are applicable to financial crises in general, they can suffer from endogeneity problems. For example, if financial crises are a result of large credit expansion as in Greenwood, Hanson, Shleifer, and Sørensen (Forthcoming), then the observed heightened inequality may not be caused by the crises themselves, but by the credit expansion instead. This paper uses the COVID crisis which is exogenous to the state of the economy as its empirical setting. Therefore, the results from this paper allow us to correctly conclude that crises indeed *cause* inequality to increase.

Second, I propose a new measure that can break down inequality to one resulted from large-scale entrepreneurship (i.e. founder billionaires) and one from inherited control of large corporations (i.e. heir billionaires). Such property enables us to identify which type of inequality (i.e., large-scale entrepreneurship vs rent-seeking corporations) rises during a crisis. Additionally, unlike conventional inequality measures such as a GINI coefficient and wealth share of the top 1% which face coverage limitations, this measure is simple to compute and therefore able to cover a wide range of countries over a long period of time. Despite its advantages, however, this measure can only indicate changes in inequality as opposed to the levels thereof, which can be important in certain analyses on inequality.

Third, with this measure, I show that crises *cause* inequality to increase and that they give rise particularly to inequality from inherited wealth in countries with weak institutions. Since the rise of heir billionaires indicates the increased value of political influence (Morck, Stangeland, and Yeung, 2000), this result raises the plausibility that crises may put countries with weak institutions deeper in the middle-income trap. This result also sheds light on the

[2]See, for example, Bodea, Houle, and Kim (2021)

heterogeneity of business groups in times of crisis. In particular, previous studies such as Masulis et al. (2022); Buchuk et al. (2019); Santioni et al. (2019) demonstrate the benefits of business groups' internal capital markets in the presence of high market frictions. To do so, these studies examine firms affiliated with business groups in comparison with standalone firms and show that the former survive a crisis better than the latter due to resource allocation within their groups during a crisis. This paper, on the other hand, compares heir-run business groups with founder-run ones and shows that the former survive a crisis better than the latter in low-income countries because of their connections which are highly valuable in these countries.

Finally, this paper reveals a novel channel through which strong financial institutions can mitigate adverse consequences resulted from a crisis. Particularly, strong financial institutions can deter the rise of heir billionaires during a crisis, effectively preventing low-income countries from falling deeper into the middle-income trap. This is because strong financial institutions can relax the external financing constraints (Levine, Lin, and Xie, 2016), allowing enterprises without strong connections to also survive a crisis.

The rest of this paper is organized as follows. Section 2 explains the measure of inequality used in this paper. It then shows the variations of inequality around the world during the COVID crisis as well as the main findings. Section 3 investigates the impact of financial institutions on the rise of heir billionaires during the crisis. Section 4 explores the mechanism through which heirs to large firms or business groups can outperform founders and show the results from the difference-in-differences analysis on Thai listed firms. Finally, section 5 concludes.

2. Inequality during the COVID Crisis

In this section, I explore inequality around the world during the COVID crisis. I demonstrate how inequality is measured in this paper as well as the pros and cons of this measure. I then describe the construction process of the data required for the analysis and report the main findings.

2.1. Measuring Inequality

Conventional measures of inequality such as GINI coefficient and Top 1% share of wealth rely entirely on the wealth distribution. Although these measures can clearly describe the *levels* of inequality, they disregard the sources of wealth that create wealth disparity between the rich and the poor which are crucial from an economic growth perspective. Morck et al.

(2000) document that countries with larger fractions of founder billionaires' wealth over GDP grow more rapidly, while those with larger fractions of heir billionaires' wealth over GDP grow more slowly. Put differently, inequality arising from large-scale entrepreneurship, as represented by founder billionaires' wealth, is positively associated with high economic growth, while inequality arising from inherited control of large corporations, as represented by heir billionaires' wealth, exhibits the opposite.

To recognize the heterogeneous nature of inequality, I propose the following measure that can account for sources of wealth:

$$\eta = \frac{W_{bil}}{W_{avg}} \tag{1}$$

where η denotes inequality, W_{bil} a billionaire's wealth, and W_{avg} an average investor's wealth. η therefore measures the number of times a billionaire is richer than an average investor. Simple algebra implies that $\Delta \ln(\eta) = \Delta \ln(W_{bil}) - \Delta \ln(W_{avg})$ where $\Delta \ln(\cdot)$ denotes contemporaneous log growth. Since growth of an average investor's wealth can be approximated by growth of an equity market index, $\Delta \ln(W_{mkt})$, we have that

$$\Delta \ln(\eta) = \Delta \ln(W_{bil}) - \Delta \ln(W_{mkt}) \triangleq \Delta W - \Delta MKT. \tag{2}$$

For brevity hereafter, $\Delta \ln(W_{bil})$ and $\Delta \ln(W_{mkt})$ will be denoted by ΔW and ΔMKT respectively. The basic intuition behind this measure is that, if billionaires consistently beat their countries' equity markets, we should observe an increase in inequality in those countries, and vice versa. Because each billionaire can be classified as *founder* or *heir*, an average of $\Delta W - \Delta MKT$ from a group of heir billionaire samples measures a change in inequality that arises from inherited control of large corporations. Likewise, an average of $\Delta W - \Delta MKT$ from a group of founder billionaire samples measures a change in inequality that arises from large-scale entrepreneurship. Using an average of $\Delta W - \Delta MKT$ from a group of heir or founder billionaires is also beneficial in that it reduces the standard error $\Delta W - \Delta MKT$ as the sample size grows larger. This therefore mitigates the concern that $\Delta W - \Delta MKT$ might be a noisy measure because it relies on billionaires' wealth which can fluctuate greatly. Despite its advantages, however, it must be emphasized that $\Delta W - \Delta MKT$ cannot gauge the *levels* of inequality as can GINI coefficient or Top 1% share of wealth. It can only indicate a change in inequality, i.e. whether or not inequality is narrowing or widening for a particular year.

2.2. Data Construction

The analysis in this section requires two datasets, namely, a panel of billionaires' wealth around the world and a panel of macroeconomic variables. I collect panel data of billionaires' wealth from Forbes's lists of billionaires. These lists provide estimates of billionaires' wealth based on their ownership of publicly listed and private firms. As with any estimation, Forbes's estimates contain errors. However, they are likely the most comprehensive and best executed ones available. This is because Forbes started its list in 1987 and has covered over 78 countries and any individual whose wealth is above one billion USD. Bloomberg's lists of billionaires, by comparison, started in 2012 and only cover the top 500 richest people in the world.

Following are the steps I use to construct the billionaire data:

Step 1: Gather the lists of billionaires and classify them as founders or heirs. I gather Forbes' lists of billionaires from 2017 to 2021 and form a panel of billionaire wealth. This panel covers 60 countries and contains over 7,000 billionaire-year observations. I then classify each billionaire in this panel as *founder* or *heir*. A billionaire is classified as *founder* if their family does not own a company or is working- or middle-class. If the information on their family background is not available, I check their career path—a founder billionaire must have started their career as a blue- or white-collar worker. If the information on both their family background and career path are not available, I follow the classification by Forbes. Finally, if the billionaire is not a *founder*, they are classified as *heir*.

Step 2: Assign a country to each billionaire. I assign each billionaire to a country in which they have the most influence. Most billionaires control firms that operate mainly in one country. However, some may control firms with operations in one country but listed or headquartered in another. In such cases, the assigned country is the one in which their main operations are conducted, e.g. where their factories or mines are located.

Step 3: Lag time series of billionaire wealth by one year. It must be noted that when Forbes reports the wealth of a billionaire in 2020, for example, they use the information from 2019 to value their assets. Therefore, the wealth reported in 2020, in fact, reflects the assessment of wealth in 2019. This suggests that the original billionaire wealth from Forbes must be lagged by one year. As a result, this paper's final data of billionaire wealth from 2016 to 2020 are gathered from the original Forbes' lists of billionaires from 2017 to 2021.

Next, to construct the proposed measure of inequality, $\Delta W - \Delta MKT$, I merge a panel of billionaire wealth obtained above with a panel of growth of equity market indices (ΔMKT) and growth of nominal GDP (ΔGDP) and GDP per capita ($\Delta GDPPC$). Data on equity market indices are from Datastream's total market indices which include dividends and other types of payouts. Nominal GDP and GDP per capita are from the World Bank database.

Control variables, which include GDP (GDP), GDP per capita ($GDPPC$), human capital index (HCI) and capital per capita (KPC), are from Penn World Table 10.0 (Feenstra, Inklaar, and Timmer, 2015). Financial institutional variables which include total market capitalization over GDP ($MktCap/GDP$), total traded volume over GDP ($MktVol/GDP$) and domestic credit to private sector over GDP ($Credit/GDP$) are from the World Bank database. Countries' legal origins are from La Porta et al. (2008). Because control and institutional variables are available only until 2019, I use their averages over a pre-crisis period from 2017 to 2019 instead of their time-varying values in the regressions. Table 1 shows the summary statistics of macroeconomic variables in the sample. The final sample covers a wide range of country-level characteristics. For example, the size of the economy as measured by GDP ranges from 0.017 to 20 billion USD (e.g., from Iceland to the United States). The level of economic development as measured by $GDPPC$ ranges from 798 to 111,120 USD (e.g., from Zimbabwe to Singapore).

2.3. Main Findings

The central finding in this section is that inequality between the ultra rich and an average investor is in decline during $2017 - 2019$. However, in 2020 when the COVID crisis occurs, inequality grows more rapidly by 23.6 ppt. Inequality is more severe in lower-income countries which see an increase of 41.3 ppt. Importantly, the additional inequality comes from the surging wealth of heir billionaires. These results suggest that, in times of crisis, billionaires who are often big business group owners use their internal capital markets to overcome frictions and, as a result, outperform the equity markets. Moreover, highly connected heir billionaires receive additional gains over founder billionaires because their connections suddenly become tremendously valuable in countries with weak institutions.

Table 2 reports the summary statistics of growth in billionaires' wealth relative to that of the equity markets around the COVID crisis. Panel A shows the results from the entire sample which include both low- and high-income countries. Before the COVID crisis ($2017-2019$), billionaires on average underperform their respective countries' stock markets. Wealth of both heir and founder billionaires grows significantly more slowly than the markets by 13.8 ppt and 8.9 ppt, respectively. This suggests that inequality between the ultra rich and an average investor is in decline during a pre-crisis period from 2017 to 2019. Furthermore, when comparing heir billionaires with founder billionaires, the former significantly underperform the latter by 4.8 ppt. However, when the COVID crisis occurs in 2020, both heir and founder billionaires significantly outperform the stock markets. Wealth of heir and founder billionaires grows more rapidly than the stock markets in that year by 15.1 ppt

and 17.2 ppt, respectively, indicating a substantial increase in inequality during the crisis. Interestingly, heir billionaires no longer underperform founder billionaires in times of crisis, suggesting that their assets have gained so much value during these times that their performance is now comparable to that of founder billionaires's assets.

To examine where the rise of heir billionaires is more prominent during a crisis, I divide the sample into low- and high-income subsamples. A country is classified as low-income when its $GDPPC$ is below the sample median, otherwise it is classified as high-income. Panel B, Table 2 reports the results from the subsample of low-income countries. Before the pandemic, both heir and founder billionaires underperform the equity markets by 14.3 and 6.6 ppt, respectively. Heir billionaires also significantly underperform founder billionaires by 4.8 ppt. However, when the pandemic takes place in 2020, both heir and founder billionaires significantly outperform the equity markets by 29.4 ppt and 21.9 ppt, respectively. Interestingly, in the low-income subsample, assets of heir billionaires grow significantly more rapidly than those of founder billionaires by 7.5 ppt during a crisis. This result reveals that heir billionaires has a certain advantage over founder billionaires in countries with weak institutions. This advantage is most likely the strong connections heir billionaires possess which allow them to survive a crisis better than founder billionaires. Other alternative explanations will be discussed below in Section 2.4.

Panel C, Table 2 shows the results from the high-income subsample. Inequality in high-income countries narrows in a pre-crisis period from 2017 to 2019. In this period, assets of heir and founder billionaires grow more slowly than the equity markets by 13.5 ppt and 11.3 ppt, respectively. Heir billionaires also significantly underperform founder billionaires by 2.2 ppt. But when the COVID crisis occurs, both heir and founder billionaires outperform the markets by 7.3 ppt and 12.1 ppt, respectively. Interestingly, opposite to the results in the low-income subsample, in high-income countries heir billionaires' asset performance remains below that of founder billionaires during a crisis. Specifically, assets of heir billionaires still grow more slowly than those of founder billionaires by 4.8 ppt. This suggests that, in high-income countries where institutions are strong, connections that heir billionaires possess are not as valuable as in low-income countries. As a result, their underporformance relative to founder billionaires remains unchanged during a crisis.

Although the results in Table 2 can visualize trends in inequality around the COVID crisis in various subsamples, they are univariate tests that do not account for differences across countries and within-country correlations of the variables of interest. To account for

these differences and correlations, I run the following regression:

$$\begin{aligned}\Delta W_{ict} - \Delta MKT_{ct} = \alpha &+ \beta_1 Crisis_t \times LowInc_c \times Heir_i + \beta_2 Crisis_t \times LowInc_c \\ &+ \beta_3 Crisis_t \times Heir_i + \beta_4 LowInc_c \times Heir_i \\ &+ \beta_5 Crisis_t + \beta_6 Heir_i + \beta_7 LowInc_c + \Gamma' \mathbf{X}_c + \epsilon_{ict} \quad (3)\end{aligned}$$

where i, c and t index billionaire, country and year, respectively. $\mathbf{X}$ is a vector of country-level controls including $\ln(GDPPC)$, $\ln(HCI)$, $\ln(KPC)$ and $\ln(GDP)$. Standard errors are clustered at the country level to account for within-country correlations of the dependent variable. All variables are defined in Table A1.

Table 3 displays the results from this regression. Consistent with earlier observations, column (1) reports a significantly positive coefficient on $Crisis$. This indicates that the wealth disparity between the ultra rich and an average investor widens during the COVID crisis. The significantly negative coefficient on $Heir$ suggests that assets of heir billionaires generally underperform those of founder billionaires. However, during the crisis in low-income countries, heir billionaires outperform founder billionaires by up to 18.0 ppt. This is evidenced by the significantly positive coefficient on $Crisis \times LowInc \times Heir$ of 0.180 in column (1).

Certain time-invariant unobservable characteristics specific to each country such as culture or legal environments might also affect the wealth disparity. For example, some culture might disproportionately hold old-moneyed families in high regard, effectively allowing them to remain in power. To control for these characteristics, I replace a vector of controls, $\mathbf{X}$, with country fixed effects[3]. Column (2) reports the results that remain robust to this control. Specifically, the coefficients on $Crisis$ and $Crisis \times LowInc \times Heir$ remain significantly positive, while their magnitudes slightly decrease.

Overall, Tables 2 and 3 provide causal evidence that crises increase inequality and that inequality rises more in low-income countries where heir billionaires outperform both the equity markets and founder billionaires in times of crisis.

2.4. Robustness

In this section, I demonstrate that the results documented above are robust to different ways of measuring inequality as well as outliers. I then discuss three plausible alternative explanations and argue that the explanation that connections allow heir billionaires to outperform both the markets and founder billionaires in low-income countries is most likely the

[3]In this specification, $LowInc$ is dropped to avoid multicolinearity.

best explanation, although this is open for future research.

2.4.1. Comparing Billionaires' Wealth to GDP and GDP per capita

Measuring inequality by comparing growth of a billionaire's wealth to that of the equity market may raise a concern that growth of the equity market is not representative of growth of an average person's wealth. Thus, it may not be an effective measure of wealth disparity between the rich and an average citizen. To address this concern, I measure inequality by comparing growth of a billionaire's wealth to that of GDP and GDP per capita instead. The rationale behind this measure follows from Piketty (2014). He contends that wealth inequality is set to rise if the net rate of return on capital (r) is greater than the growth rate of output (g). In our setting, r is the rate of return on a billionaire's capital (ΔW), and g the growth rate of GDP or GDP per capita (ΔGDP or $\Delta GDPPC$). Therefore, an increase in $r - g$ indicates the rise in wealth inequality according to Piketty (2014).

Table 4 shows the results in which I rerun Equation (3) but replace the dependent variable with $\Delta W - \Delta GDP$ and $\Delta W - \Delta GDPPC$ where ΔW, ΔGDP, and $\Delta GDPPC$ are contemporaneous log growth of a billionaire's wealth, GDP, and GDP per capita, respectively. The results reported in Table 4 are consistent with those in Table 3. In particular, across all specifications, the coefficients on $Crisis$ are significantly positive with their magnitudes comparable to those in Table 3. This result indicates that inequality heightens substantially during the COVID crisis. Importantly, the coefficients on $Crisis \times LowInc \times Heir$ also remain significantly positive across all specifications, suggesting that heir billionaires outperform both founder billionaires and the economy during a crisis in low-income countries.

2.4.2. Removing Outliers

Since the billionaire sample is relatively small (7,013 billionaire-year observations), one may raise a concern that outliers might be driving the results. To alleviate this concern, I winsorize all continuous variables at the 1^{st} and 99^{th} percentiles, and then rerun Equation (3) with the dependent variable being either $\Delta W - \Delta MKT$, $\Delta W - \Delta GDP$ or $\Delta W - \Delta GDPPC$. Country-level controls are replaced by country-fixed effects to control for time-invariant country-specific unobservable characteristics[4]. Table 5 shows the results that are robust to the winsorization. Specifically, with outliers removed, the coefficients on $Crisis$ and $Crisis \times LowInc \times Heir$ remain significantly positive and their magnitudes are comparable to those in Table 3 whose sample might contain outliers.

[4]Results remain quantitatively robust if country-level controls are used.

2.4.3. Alternative Explanations

In this paper, I draw on Rajan and Zingales (2004) and argue that heir billionaires in low-income countries outperform both the equity markets and founder billionaires during a crisis because of their adept use of connections. However, this may not always be the case. I discuss three plausible alternative explanations as follows [5]. First, billionaires' wealth can fluctuate greatly because it is tied to ownership of their stocks and other assets. Therefore, the rise of heir billionaires in one particular year (i.e., 2020) can merely be a result of such fluctuation which has nothing to do with heir billionaires being highly connected. If this were the case, we should observe that heir billionaires in low-income countries underperform founder billionaires in some years and outperform in other years in a non-crisis period. To test this hypothesis, I conduct the following placebo test by focusing on a non-crisis period from 2017 to 2019 and rerunning Equation (3) where either 2017, 2018 or 2019 is now taken as a crisis year. Table 6 reports the results of this placebo test. In all specifications, the coefficients on $Crisis \times LowInc \times Heir$ are no longer statistically significant. This suggests that, in non-crisis years, heir billionaires in low-income countries do not outperform either founder billionaires nor the markets. This result disproves an argument that wealth fluctuation causes heir billionaires to rise in low-income countries during a crisis.

The second alternative explanation is that founder billionaires may hold riskier assets than heir billionaires. Thus, when the COVID crisis occurs in 2020, their wealth is affected more drastically than that of heir billionaires. This argument suggests that the outperformance of heir billionaires during a crisis is due to the type of assets they hold but not the connections they have. If this were the case, we should observe that heir billionaires in both low- and high-income countries outperform founder billionaires during a crisis. However, the main results in Tables 2 and 3 contradict this argument. Only heir billionaires in low-income countries during a crisis outperform founder billionaires. In fact, they underperform founder billionaires in all other situations, namely, in a non-crisis period in low-income countries as well as in both crisis and non-crisis periods in high-income countries. Overall, even though the argument on the distinct types of assets billionaires hold merits its traction in a subsample of low-income countries, it does not hold in the subsample of high-income countries. Thus, this argument cannot provide a unified explanation to the full sample.

The third and final alternative explanation is that weak institutions in low-income countries allow heir billionaires to gain substantial wealth during a crisis, causing inequality to be more severe in these countries than high-income ones. This argument does find partial support from Tables 2 and 3. That is, inequality does increase more in low-income than

[5] I am grateful to Piti Disyatat, Nuwat Nookhwun and Phitawat Poonpolkul for their valuable comments that lead to the discussion in this section.

high-income countries during a crisis. However, this argument does not always hold. If institutions were the only factor that drove the wealth of heir billionaires instead of their connections, we should observe that wealth of billionaires in countries with the same levels of institutions rises equally, on average. In other words, we should observe that wealth of both heir and founder billionaires in the same country should increase equally. This is not observed in Tables 2 and 3. Wealth of heir billionaires rises more than that of founder billionaires in low-income countries, and the opposite occurs for high-income countries. In sum, the alternative argument on institutions can only explain different levels of inequality between low- and high-income countries during a crisis, but it cannot explain the overall results.

3. Curbing heir billionaires' influence during the crisis

The previous section provides robust evidence that wealth of heir billionaires in low-income countries surges rapidly during the COVID crisis. If the rise of heir billionaires equates the rise of rent-seeking firms, this evidence suggests that crises put these low-income countries deeper in the middle-income trap. It is then natural to ask which institutions can alleviate such predicament in times of crisis. To answer this question, I draw on seminal work by Rajan and Zingales (2003) who document that a small group of business elites oppose the development of financial institutions because they fear the competition that advanced financial institutions can induce. Their result thus implies that strong financial institutions can curb the influence of highly connected incumbents and should stifle their rise in times of crisis. Below, I explain the empirical methodology employed to test this hypothesis and report the main findings.

3.1. Empirical Methodology

To show that strong financial institutions can curb the rise of heir billionaires during the COVID crisis, I run the following regression:

$$\Delta W_{ict} - \Delta MKT_{ct} = \alpha + \beta_1 Crisis_t \times Inst_c \times Heir_i + \beta_2 Crisis_t \times Inst_c + \beta_3 Crisis_t \times Heir_i + \beta_4 Inst_c \times Heir_i + \beta_5 Crisis_t + \beta_6 Heir_i + CountryFE + \epsilon_{ict} \quad (4)$$

where i, c and t index billionaire, country and year, respectively. $Inst$ is a measure of financial development. $CountryFE$ is country fixed effects. All other variables are defined in Table A1. Because the financial development data are available only until 2019, I use their averages

over a pre-crisis period from 2017 to 2019 as their representative values. This variable is therefore time-invariant and country-specific.

With this specification, the effects of financial development on the rise of heir billionaires during the crisis is given by $\beta_3 + \beta_1 Inst_c$. A significantly negative β_1 would imply that more developed financial institutions are associated with smaller increase of heir billionaires' wealth during the crisis. Although it seems straightforward to estimate β_1 using an OLS technique, this coefficient is likely biased because the financial development variable, $Inst$, is endogenous. That is, it can be correlated with other factors that may also contribute to increased inequality during a crisis. For example, if countries with strong financial institutions also have strong legal institutions, we cannot conclusively assert that the rise of heir billionaires in these countries can be curbed by the strong financial institutions, but not strong legal institutions.

To circumvent this endogeneity issue, I follow Beck et al. (2000) and instrument the financial development variable, $Inst$, with an indicator variable equal to one if the country's legal origin is common law, and zero otherwise. The basic intuition behind this instrument is that countries with common-law legal origin have stronger outside-investor protection, resulting in more developed financial institutions (La Porta et al., 2008). For this instrument to be valid, the country's legal origin must a) significantly affect the levels of financial development, and b) affect inequality ($\Delta W - \Delta MKT$) only through the levels of financial development. To test the first criterion, I run first-stage regressions in which the dependent variable is a measure of financial development and the independent variable ($LegalOriginUK$) is an indicator variable equal to one if the country's legal origin is common law, and zero otherwise. For robustness of this test, I use three measures of financial development, namely, total market capitalization over GDP ($MktCap/GDP$), total traded volume of the stock market over GDP ($MktVol/GDP$), and domestic credit to private sector over GDP ($Credit/GDP$). Columns (1) to (3) in Table 7 show that countries with a common-law legal origin indeed have significantly higher levels of financial development. Thus, the first criterion for a valid instrument is met.

To test the second criterion (i.e., the exclusion criterion), we must rely on sound economic reasoning. I argue that, although a country's legal origin was not randomly assigned, it was decided several decades in the past. Therefore, if this variable was correlated with other factors that also contribute to inequality, these factors must be stable over time. In other words, they must be time-invariant and country-specific which can be controlled for by country fixed effects. To illustrate this point, if a country's legal origin was decided based partly on a *tradition* that sustains the elite's influence, this tradition would be considered a different channel than financial development through which the legal origin affects inequality.

However, since tradition is arguably time-invariant and country-specific, its effects can be absorbed by the country fixed effects. Because Equation (4) includes country fixed effects, we can conclude that the second criterion is met. With both identifying criteria met, the endogeneity bias on β_1 in Equation (4) is alleviated. Note that the country fixed effects cannot absorb the exogenous variation of the financial development variable, $Inst$, where it is part of an interaction term, $Crisis \times Inst \times Heir$.

3.2. Main Findings

Columns (4) to (6) in Table 7 report the results from two-stage-least-square (2SLS) regressions in which the financial development variable, $Inst$, is instrumented by the legal origin indicator variable, $LegalOriginUK$. The dependent variable is inequality as measured by growth of a billionaire's wealth less that of an equity market. The coefficient on $Crisis \times Inst \times Heir$ is significantly negative across all specifications. This result is consistent with the above hypothesis that strong financial institutions can limit the rise of heir billionaires during a crisis. The magnitude of the coefficient is also economically significant. In particular, column (4) in Table 7 shows that an increase in heir billionaires' wealth relative to an equity market during the crisis is given by $0.142 - 0.078 \cdot MktCap/GDP$. This relationship indicates that a 2-ppt increase in $MktCap/GDP$ can eliminate the rise of heir billionaires' wealth during the crisis entirely. Using $MktVol/GDP$ and $Credit/GDP$ as a measure of financial development yields similar conclusions.

Overall, the results in this section suggest that strong financial institutions are a powerful tool that can stifle the rise of heir billionaires during a crisis. As a result, they can help prevent low-income countries from falling deeper into the middle-income trap when a crisis takes place.

4. How do heirs gain their wealth in the crisis?

Previous sections show that crises widen the wealth gap between billionaires and an average investor. Such gap is larger in low-income countries where wealth of heir billionaires surges significantly more rapidly than that of founder billionaires. We discussed that the outperformance of heir billionaires in low-income countries is due to their adept use of connections. But how do these connections benefit them in times of crisis? In this section, I use firm-level data from Thailand to examine this mechanism. Thai economy is much like most other developing nations in that control of the corporate sector is concentrated in the hand of few elite families. These families often own business groups, i.e., a constellation of

firms that span across several industries and all are connected through significant ownership. With control of such vast amounts of assets, they can use it to overcome economic frictions that plague their host economies. Or, in contrast, they can use their influence to set up barriers against future competition, putting their host economies in the middle-income trap as a result. Below, I explain the data construction process, the empirical strategy, and the main findings from the analysis of Thai data during the COVID crisis. The results show that heir-run firms receive more short-term debt and equity than do founder-run firms, allowing them to maintain their investments during the COVID crisis.

4.1. Data Construction

The analysis in this section requires data of Thai listed firms, which are obtained from Datastream's Worldscope. To begin the data construction process, I require that the following criteria be met: a) the sample firms must exist in 2019, one year immediately before the COVID crisis which started in February 2020, and b) the following variables are available: market capitalization (Datastream Item: WC08001), total assets (WC02999), date the firm was founded (WC18272) or incorporated (WC07021), total debt (WC03255), long-term debt (WC03251), short-term debt (WC03051), book value of equity (WC05491×WC05301), capital expenditures (WC04601), return on assets (WC08326), sales (WC01001), property plants and equipment (WC02501), and two-digit SIC industry classification (WC07021). This step yields 770 sample firms.

Next, for each of these sample firms, I identify their ultimate controlling shareholder using the ownership data from the Stock Exchange of Thailand. I follow Masulis, Pham, and Zein (2011) and establish the chain of control through 20% voting rights or 10% voting rights if the CEO or Chairman holds these voting rights. In addition, I classify the family as the controlling shareholder if at least two of the founder's descendants is on the board of directors. This last criterion is used to take into account firms with family ownership so dispersed that no family members are in the list of major shareholders. After assigning each firm its ultimate controlling shareholder, I group these firms firms into a) business groups and b) standalone firms. If the ultimate controlling shareholder controls at least two listed firms, firms under his or her control are said to belong to a business group. If he or she controls only one listed firm, this firm is classified as standalone. Additionally, to be consistent with the notion that billionaires control large corporations or business groups, I include in the sample only firms that belong to large business groups or standalone firms whose market capitalizations as of the end of 2019 are larger than the sample median. This step yields 453 firms. Table 8 shows the ten largest family business groups in Thailand by

market capitalization as of the end of 2019. Thirty eight percent of Thailand's total market capitalization is concentrated in the hand of ten business families. This characteristic is commonplace in developing economies, and thus the results derived from this dataset is likely generalizable to other developing economies as well.

The final step is to classify each of these 453 firms as founder-run or heir-run. I classify these firms at the group level; that is, if the ultimate controlling shareholder is founder (or heir), all firms under his control is classified as founder-run (or heir-run). To begin the classification, I investigate the profile of each controlling shareholder in the sample using a Google search engine. The search input is the controlling shareholder's family name and their company name. The ultimate controlling shareholder is classified as founder if they are a first-generation entrepreneur. To verify this, I look for the information on their family backgrounds. A founder must be from a working or middle-class family. If the information on their family backgrounds is not available, I investigate their careers. In particular, a founder must have started their career as an entry-level professional or an entrepreneur. In contrast, if the ultimate controlling shareholder is from a prominent business family, he or she is classified as heir.

Table 9 reports the summary statistics of the sample firms from 2016 to 2019, i.e. four years before the COVID crisis. Before the crisis, heir-run firms in the Thai stock market have lower levels of debt financing ($TotDebt/TotAst$ and $LtDebt/TotAst$) but higher levels of equity financing ($BookEq/MV$) than founder-run firms. Moreover, although they are not significantly larger in size ($\ln(TotAst)$), heir-run firms are older, have lower valuation ($TobinsQ$), lower accounting profits (ROA), and higher levels of tangible assets ($PPE/TotAst$).

4.2. Empirical Methodology

In this section, I explain the methodology used to examine the mechanism through which heirs to large firms or business groups are able to outperform founders during the crisis. It is worth noting that estimating the *causal* effect of heir-run firms on a certain outcome during a crisis can be very challenging. Ideally, it would require an instrument that can reliably extract the exogenous variations of the decision for a firm to be heir- or founder-run. Such instrument, to best of my knowledge, is not available in the literature. Therefore, the best available approach to estimating this effect is to employ a difference-in-differences technique. This technique compares the outcome of heir-run firms to that of founder-run firms around the crisis. Though imperfect, this technique can control for observable differences as pointed out earlier in Table 9 as well as other unobservable time-invariant differences between the

treatment and control groups.

The data used in this difference-in-differences analysis are a panel of the 453 firms obtained in Section 4.1 over a period from 2016 to 2021. The treatment group is a group of heir-run firms, while the control group is a group of founder-run firms. The main regression specification is as follows:

$$y_{it} = \alpha + \beta_1 Crisis_t \times Heir_i + \beta_2 Crisis_t + \beta_3 Heir_i + \Gamma' \mathbf{X}_{it} + IndustryFE + \epsilon_{it} \quad (5)$$

where i and t index firm and year, respectively. y is the outcome variable. $Crisis$ equals one if year ≥ 2020, and zero otherwise. $Heir$ equals one if the firm is classified as heir-run, and zero otherwise. $\mathbf{X}$ is a vector of firm-level controls which include firm size ($\ln(TotAst)$), age ($\ln(1 + Age)$), valuation ($TobinsQ$), return on assets (ROA), sales growth ($SalesGr$), and asset tangibility ($PPE/TotAst$). $IndustryFE$ is industry fixed effects that are based on the two-digit SIC classification. ϵ is an error term which is clustered at a firm level to account for the persistence of the outcome variable.

4.3. Main Findings

Previous research on family business has consistently shown that heirs cannot reliably inherit the entrepreneurial ability from their parents. As a result, heir-run firms underperform founder-run firms (Perez-Gonzalez, 2006; Bennedsen et al., 2007). Because of their low entrepreneurial ability, heirs likely resort to using the connections they inherit from their parents in order to survive the competition (Rajan and Zingales, 2004). These connections suddenly become tremendously valuable in times of crisis as they provide exclusive access to financing that eventually allows their firms to withstand a crisis.

To test this hypothesis, I compare the levels of debt and equity financing as well as investments of heir-run firms with those of founder-run firms. The graphs on the left column in Figure 1 show that heir- and founder-run firms have very similar trends in their levels of total and long-term debt over assets. However, heir-run firms are able to increase their short-term debt when the COVID occurs, while founder-run firms see their short-term debt levels plunge. Furthermore, the top-right graph suggests that heir-run firms are able to maintain their equity financing, while founder-run firms decrease it. Finally, the middle-right graph shows that despite their lower levels of capital expenditures before the crisis, heir-run firms are able to maintain their investments in capital expenditures more effectively than founder-run firms.

While Figure 1 can visualize the differences between heir- and founder-run firms before and after the crisis, it cannot account for both observable and unobservable differences

across the firms. To account for these differences, I estimate Equation (5) and use different measures of financing as the outcome variable. Columns (1) to (3) in Table 10 report the results where the dependent variable is a measure of debt financing. The coefficient on $Crisis \times Heir$ is significantly positive in column (3) where short-term debt over total assets is the dependent variable. Consistent with Figure 1, this result shows that heir-run firms receive more short-term debt financing than founder-run firms during the crisis by 2.1 ppt. Column (4) in Table 10 shows the OLS estimates of Equation (5) where book value over market capitalization is the dependent variable. The coefficient on $Crisis \times Heir$ is significantly positive, suggesting that not only do heir-run firms receive more short-term debt during the crisis than founder-run firms, they also receive more equity financing by 10.6 ppt. With more access to financing, heir-run firms are able to maintain their investments during the crisis. This is evidenced by the results in column (5) where capital expenditures over total assets is the dependent variable. The coefficient on $Crisis$ in this specification is significantly negative, indicating that both heir- and founder-run firms reduce their investments during the crisis. However, the significantly positive coefficient on $Crisis \times Heir$ suggests that the reduction in investments by heir-run firms is less than that by founder-run firms by 0.7 ppt. In other words, more access to financing of heir-run firms allows them to sustain their investments during the crisis more effectively than founder-run firms.

As shown earlier, 38% of Thailand's total market capitalization is controlled by only ten families. Such concentration of corporate control should give large firms or business groups a competitive advantage when it comes to access to financing during a crisis. This implies that only heirs to large business groups have more access to financing than do founders of firms of comparable sizes and that, in contrast, heirs to small business groups should not. To test this hypothesis, I split the sample by group market capitalization. Firms with group market capitalization[6] above the sample median are categorized as firms in large business groups, and the rest are categorized as firms in small business groups. Consistent with this hypothesis, only heir-run firms in large business groups have financing advantages over founder-run firms, and thus are able to maintain their investments more effectively during the crisis. Specifically, these heir-run firms have 3.2 ppt more total debt over assets and 3.0 ppt more short-term debt over assets than founder-run firms. Additionally, they reduce their investments by 0.8 ppt, while their founder-run counterparts reduce their investments by 2.2 ppt during the crisis. In contrast to these results, heir-run firms in small business groups do not have financing advantage over their founder-run counterparts, and thus both types of firms have to reduce their investments by 1.9 ppt during the crisis. These results are robust to winsorizing continuous variables at 1% and 99% levels, as shown in Table A2.

[6]Note that the group market capitalization of a standalone firm equals its market capitalization.

In summary, this section demonstrates the channel through which highly connected heirs gain their wealth in times of crisis. Heirs are more adept at using their connections than founders and thus are able to receive more financing during the crisis. With more access to financing, heir-run firms reduce their investments less than founder-run firms do. This result is concentrated in a subsample of heir-run firms in large business groups. That is, heirs who control small business groups do not have financing advantage over their founder counterparts.

5. Conclusion

In this paper, I measure inequality as the difference between growth of a billionaire's wealth and that of an equity market and provide causal evidence that the COVID crisis increases wealth disparity between the ultra rich and an average investor. The results show that inequality grows more rapidly by 23.6 ppt as compared to the pre-crisis period. This is because billionaires generally control large corporations or business groups, allowing them to use their internal capital markets to overcome heightened market frictions during the crisis. Unlike evidence from financial crises which suffers endogeneity issues, this evidence is causal or, in other words, free of endogeneity problems because the COVID crisis is exogenous to the state of the economy.

In addition to the above result, I find that crises give rise particularly to inequality arising from inherited control of large corporations in countries with low GDP per capita. This is because heir billionaires, i.e. those who inherited large firms or business groups, are more adept at using their connections than founder billionaires. When the crisis occurs, their connections suddenly become immensely valuable, giving them exclusive access to financing. If the rise of heir billionaires is a proxy for the rise of rent-seeking firms, this evidence raises a plausibility that crises put low-income countries deeper in the middle-income trap.

Strong financial institutions can limit such rise of heir billionaires during the crisis. In support of this assertion, I find that higher total market capitalization over GDP, total traded volume over GDP, or private credit over GDP lowers the inequality arising from heir billionaires during the crisis. This is because strong financial institutions allow innovative firms with less connections to receive necessary financing during the crisis. As a result, connections in countries with strong financial institutions become less valuable, effectively preventing heir billionaires from rising in times of crisis.

References

Acemoglu, D., Johnson, S., Kermani, A., Kwak, J., Mitton, T., 2016. The value of connections in turbulent times: Evidence from the united states. Journal of Financial Economics 121, 368–391.

Almeida, H., Kim, C.-S., Kim, H. B., 2015. Internal capital markets in business groups: Evidence from the asian financial crisis. The Journal of Finance 70, 2539–2586.

Beck, T., Levine, R., Loayza, N., 2000. Finance and the sources of growth. Journal of Financial Economics 58, 261 – 300.

Bennedsen, M., Nielsen, K. M., Perez-Gonzalez, F., Wolfenzon, D., 2007. Inside the family firm: The role of families in succession decisions and performance. The Quarterly Journal of Economics 122, 647–691.

Bodea, C., Houle, C., Kim, H., 2021. Do financial crises increase income inequality? World Development 147, 105635.

Buchuk, D., Larrain, B., Prem, M., Urzúa Infante, F., 2019. How Do Internal Capital Markets Work? Evidence from the Great Recession*. Review of Finance 24, 847–889.

Faccio, M., Masulis, R. W., McConnell, J. J., 2006. Political connections and corporate bailouts. The Journal of Finance 61, 2597–2635.

Feenstra, R. C., Inklaar, R., Timmer, M. P., 2015. The next generation of the Penn World Table. American Economic Review 105, 3150–82.

Greenwood, R., Hanson, S. G., Shleifer, A., Sørensen, J. A., Forthcoming. Predictable financial crises. Journal of Finance .

Krueger, A. O., 1993. Virtuous and vicious circles in economic development. The American Economic Review 83, 351–355.

Kuppuswamy, V., Villalonga, B., 2016. Does diversification create value in the presence of external financing constraints? evidence from the 2007–2009 financial crisis. Management Science 62, 905–923.

La Porta, R., Lopez-de Silanes, F., Shleifer, A., 2008. The economic consequences of legal origins. Journal of Economic Literature 46, 285–332.

Levine, R., Lin, C., Xie, W., 2016. Spare tire? stock markets, banking crises, and economic recoveries. Journal of Financial Economics 120, 81–101.

Masulis, R. W., Pham, P. K., Zein, J., 2011. Family business groups around the world: Financing advantages, control motivations, and organizational choices. Review of Financial Studies 24, 3556–3600.

Masulis, R. W., Pham, P. K., Zein, J., Ang, A. E. S., 2022. Crises as opportunities for growth: The strategic value of business group affiliation. Journal of Financial and Quantitative Analysis p. 1–62.

Mehrotra, V., Morck, R., Shim, J., Wiwattanakantang, Y., 2013. Adoptive expectations: Rising sons in Japanese family firms. Journal of Financial Economics 108, 840 – 854.

Morck, R., Stangeland, D., Yeung, B., 2000. Inherited Wealth, Corporate Control and Economic Growth: The Canadian Disease? University of Chicago Press.

Morck, R., Wolfenzon, D., Yeung, B., 2005. Corporate governance, economic entrenchment, and growth. Journal of Economic Literature 43, 655–720.

Perez-Gonzalez, F., 2006. Inherited control and firm performance. American Economic Review 96, 1559–1588.

Piketty, T., 2014. Capital in the Twenty-First Century. Harvard University Press.

Rajan, R. G., Zingales, L., 2003. The great reversals: the politics of financial development in the twentieth century. Journal of Financial Economics 69, 5 – 50.

Rajan, R. G., Zingales, L., 2004. Saving Capitalism from the Capitalists: Unleashing the Power of Financial Markets to Create Wealth and Spread Opportunity. Princeton University Press.

Santioni, R., Schiantarelli, F., Strahan, P. E., 2019. Internal Capital Markets in Times of Crisis: The Benefit of Group Affiliation*. Review of Finance 24, 773–811.

Figures

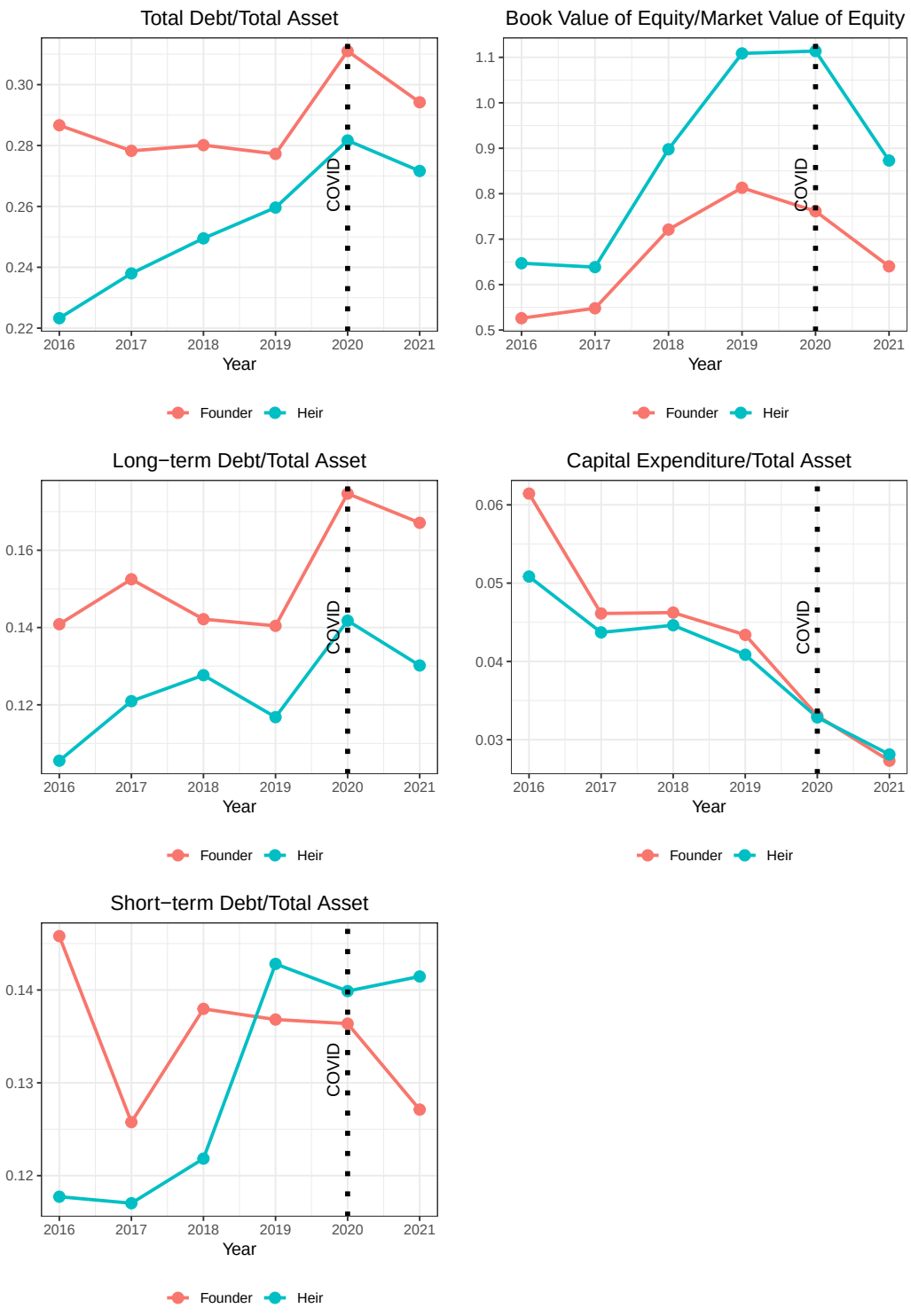

Fig. 1. Financing and Spending of Thai Firms during the COVID Crisis

Tables

Table 1: Summary Statistics of Country-Level Variables

This table shows summary statistics of country-level variables. GDP is real GDP in constant 2017 billion international dollars. $GDPPC$ is real GDP per capita in constant 2017 international dollars. HCI is human capital index whose higher value indicates higher human capital. KPC is real capital per capita in constant 2017 international dollars. $MktCap/GDP$ is end-of-year total capitalization of a country's equity market divided by GDP. $MktVol/GDP$ is total traded volume of a country's equity market divided by GDP. $Credit/GDP$ is domestic credit to private sector divided by GDP. Each variable is averaged over a period from 2016 to 2019, immediately before the COVID crisis. Definitions and data sources of all variables are provided in Table A1.

	N	Mean	SD	Min	p25	p50	p75	Max
GDP (const 2017 bil int'l \$)	60	1,830	3,654	17	365	655	1,807	19,847
$GDPPC$ (const 2017 int'l \$)	60	35,798	22,951	798	16,075	33,603	50525	111,120
KPC (const 2017 int'l \$)	60	178,897	120,601	4,758	72,855	189,435	265615	520,821
HCI	60	3.108	0.491	1.904	2.756	3.137	3.435	4.072
$MktCap/GDP$	50	0.962	1.679	0.043	0.302	0.571	1.007	11.689
$MktVol/GDP$	45	0.455	0.857	0.000	0.058	0.105	0.471	5.305
$Credit/GDP$	57	0.905	0.502	0.122	0.496	0.853	1.314	2.238

Table 2: Summary Statistics of Inequality during the COVID Crisis

This table reports the summary statistics of global inequality during the COVID crisis as compared to those three years before the crisis. Inequality is measured by growth of billionaires' wealth relative to growth of their respective countries' equity markets. The data cover a period from 2017 to 2020 where 2020 is the COVID crisis year. ΔH, ΔF, ΔMKT are log growth of heir billionaire's wealth, log growth of founder billionaire's wealth, and log growth of Datastream's total market index, respectively. Log growth is computed as the difference between log value as of the end of current year and that as of the end of last year. Countries are classified as low-income if their $GDPPC$ are less than the sample median, otherwise they are classified as high-income. Numbers in parentheses are p-values for rejecting a null hypothesis of zero coefficient. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

	Before COVID Crisis (2017−2019)			COVID Crisis (2020)			Difference: (Crisis − Before)	
	N	Mean	p-Value	N	Mean	p-Value	Mean	p-Value
Panel A: Entire Sample								
$\Delta H - \Delta MKT$	1,525	−0.138***	(0.000)	569	0.151***	(0.000)	0.289***	(0.000)
$\Delta F - \Delta MKT$	3,466	−0.089***	(0.000)	1,453	0.172***	(0.000)	0.261***	(0.000)
Difference: $(\Delta H - \Delta F)$		−0.048***	(0.000)		−0.021	(0.219)		
Panel B: Low-income countries								
$\Delta H - \Delta MKT$	541	−0.143***	(0.000)	201	0.294***	(0.000)	0.437***	(0.000)
$\Delta F - \Delta MKT$	1,733	−0.066***	(0.000)	754	0.219***	(0.000)	0.284***	(0.000)
Difference: $(\Delta H - \Delta F)$		−0.078***	(0.000)		0.075***	(0.005)		
Panel C: High-income countries								
$\Delta H - \Delta MKT$	984	−0.135***	(0.000)	368	0.073***	(0.000)	0.208***	(0.000)
$\Delta F - \Delta MKT$	1,733	−0.113***	(0.000)	699	0.121***	(0.000)	0.234***	(0.000)
Difference: $(\Delta H - \Delta F)$		−0.022**	(0.045)		−0.048**	(0.021)		

Table 3: Global Inequality during the COVID Crisis

This table reports the results from OLS regressions where the dependent variable is inequality as measured by growth of billionaires' wealth relative to growth of their respective countries' equity markets. Results show that inequality heightens substantially during the COVID crisis, especially inequality that arises from heir billionaires in low-income countries. The data cover a period from 2017 to 2020 where 2020 is the COVID crisis year. ΔW, ΔGDP and $\Delta GDPPC$ are log growth of a billionaire's wealth, log growth of GDP and log growth of $GDPPC$, respectively. Log growth is computed as the difference between log value as of the end of current year and that as of the end of last year. $Crisis$ equals one if year $\geq$ 2020, and zero otherwise. $LowInc$ equals one if the country's $GDPPC$ is below the sample mean, and zero otherwise. $Heir$ equals one if the billionaire is classified as heir, and zero otherwise. All other variables are defined in Table A1. Standard errors are clustered at the country level. Numbers in parentheses are p-values for rejecting a null hypothesis of zero coefficient. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Dependent Variable:	$\Delta W - \Delta MKT$	
	(1)	(2)
$Crisis \times LowInc \times Heir$	0.180**	0.177**
	(0.040)	(0.045)
$Crisis \times LowInc$	0.050	0.047
	(0.551)	(0.577)
$Crisis \times Heir$	−0.028	−0.028
	(0.250)	(0.254)
$LowInc \times Heir$	−0.052	−0.031
	(0.105)	(0.262)
$Crisis$	0.236***	0.236***
	(0.000)	(0.000)
$Heir$	−0.025***	−0.023***
	(0.000)	(0.001)
$LowInc$	0.008	
	(0.803)	
$\ln(GDPPC)$	−0.119***	
	(0.009)	
$\ln(HC)$	0.153*	
	(0.070)	
$\ln(KPC)$	0.062**	
	(0.026)	
$\ln(GDP)$	−0.008	
	(0.158)	
Constant	0.347	−0.239***
	(0.112)	(0.000)
Country FE	No	Yes
R^2	0.136	0.147
N	7,013	7,013

Table 4: Robustness: Comparing Billionaire Wealth with GDP and GDP per capita

This table reports the results from OLS regressions where the dependent variable is inequality as measured by growth of billionaires' wealth relative to growth of their respective countries' GDP and GDP per capita. Results show that inequality heightens substantially during the COVID crisis, especially inequality that arises from heir billionaires in low-income countries. The data cover a period from 2017 to 2020 where 2020 is the COVID crisis year. ΔW, ΔMKT, ΔGDP and $\Delta GDPPC$ are log growth of a billionaire's wealth, log growth of Datastream's total market index, log growth of GDP and log growth of $GDPPC$, respectively. Log growth is computed as the difference between log value as of the end of current year and that as of the end of last year. $Crisis$ equals one if year $\geq$ 2020, and zero otherwise. $LowInc$ equals one if the country's $GDPPC$ is below the sample mean, and zero otherwise. $Heir$ equals one if the billionaire is classified as heir, and zero otherwise. All other variables are defined in Table A1. Standard errors are clustered at the country level. Numbers in parentheses are p-values for rejecting a null hypothesis of zero coefficient. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Dependent Variable:	$\Delta W - \Delta GDP$		$\Delta W - \Delta GDPPC$	
	(1)	(2)	(3)	(4)
$Crisis \times LowInc \times Heir$	0.089***	0.091***	0.091***	0.093***
	(0.006)	(0.006)	(0.005)	(0.005)
$Crisis \times LowInc$	0.053*	0.050*	0.050*	0.047*
	(0.062)	(0.078)	(0.062)	(0.081)
$Crisis \times Heir$	−0.012	−0.013	−0.013	−0.013
	(0.592)	(0.593)	(0.562)	(0.563)
$LowInc \times Heir$	−0.015	−0.004	−0.014	−0.005
	(0.273)	(0.791)	(0.294)	(0.772)
$Crisis$	0.348***	0.348***	0.349***	0.349***
	(0.000)	(0.000)	(0.000)	(0.000)
$Heir$	−0.030***	−0.030***	−0.031***	−0.030***
	(0.000)	(0.000)	(0.000)	(0.000)
$LowInc$	−0.031**		−0.034**	
	(0.025)		(0.013)	
$\ln(GDPPC)$	−0.106***		−0.091***	
	(0.000)		(0.001)	
$\ln(HCI)$	0.071		0.052	
	(0.307)		(0.446)	
$\ln(KPC)$	0.075***		0.062***	
	(0.000)		(0.002)	
$\ln(GDP)$	0.003		0.001	
	(0.394)		(0.703)	
Constant	0.056	−0.234***	0.122	−0.220
	(0.641)	(0.000)	(0.311)	(0.000)
Country FE	No	Yes	No	Yes
R^2	0.246	0.253	0.245	0.251
N	6,893	6,893	6,893	6,893

Table 5: Robustness: Removing Outliers

This table reports the results from OLS regressions where the dependent variable is inequality as measured by growth of billionaires' wealth relative to growth of their respective countries' equity markets, GDP, and GDP per capita. Continuous variables are winsorized at 1 and 99 percentiles to attenuate the effects of outliers. Results show that inequality heightens substantially during the COVID crisis, especially inequality that arises from heir billionaires in low-income countries. The data cover a period from 2017 to 2020 where 2020 is the COVID crisis year. ΔW, ΔMKT, ΔGDP and $\Delta GDPPC$ are log growth of a billionaire's wealth, log growth of Datastream's total market index, log growth of GDP and log growth of $GDPPC$, respectively. Log growth is computed as the difference between log value as of the end of current year and that as of the end of last year. $Crisis$ equals one if year $\geq$ 2020, and zero otherwise. $LowInc$ equals one if the country's $GDPPC$ is below the sample mean, and zero otherwise. $Heir$ equals one if the billionaire is classified as heir, and zero otherwise. All other variables are defined in Table A1. Standard errors are clustered at the country level. Numbers in parentheses are p-values for rejecting a null hypothesis of zero coefficient. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Dependent Variable:	$\Delta W - \Delta MKT$	$\Delta W - \Delta GDP$	$\Delta W - \Delta GDPPC$
	(1)	(2)	(3)
$Crisis \times LowInc \times Heir$	0.166*	0.089***	0.091***
	(0.057)	(0.008)	(0.007)
$Crisis \times LowInc$	0.044	0.046	0.043
	(0.611)	(0.104)	(0.106)
$Crisis \times Heir$	−0.023	−0.006	−0.007
	(0.376)	(0.803)	(0.777)
$LowInc \times Heir$	−0.020	0.002	0.002
	(0.447)	(0.868)	(0.884)
$Crisis$	0.227***	0.337***	0.338***
	(0.000)	(0.000)	(0.000)
$Heir$	−0.023***	−0.029***	−0.029***
	(0.001)	(0.000)	(0.000)
Constant	−0.238***	−0.226***	−0.213***
	(0.000)	(0.000)	(0.000)
Country FE	Yes	Yes	Yes
R^2	0.159	0.275	0.274
N	7,013	6,893	6,893

Table 6: Robustness: Placebo Test

This table reports the results from OLS regressions where the dependent variable is inequality as measured by growth of billionaires' wealth relative to growth of their respective countries' equity markets. The data cover a non-crisis period from 2017 to 2019. ΔW, ΔGDP and $\Delta GDPPC$ are log growth of a billionaire's wealth, log growth of GDP and log growth of $GDPPC$, respectively. Log growth is computed as the difference between log value as of the end of current year and that as of the end of last year. $Crisis$ equals one if year is either 2017, 2018, or 2019, and zero otherwise. $LowInc$ equals one if the country's $GDPPC$ is below the sample mean, and zero otherwise. $Heir$ equals one if the billionaire is classified as heir, and zero otherwise. All other variables are defined in Table A1. Standard errors are clustered at the country level. Numbers in parentheses are p-values for rejecting a null hypothesis of zero coefficient. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Dependent Variable:	$\Delta W - \Delta MKT$					
Placebo Crisis Year:	2019		2018		2017	
	(1)	(2)	(3)	(4)	(5)	(6)
$Crisis \times LowInc \times Heir$	-0.040	-0.042	0.063	0.060	-0.040	-0.042
	(0.525)	(0.508)	(0.179)	(0.196)	(0.525)	(0.508)
$Crisis \times LowInc$	-0.003	-0.005	-0.010	-0.009	-0.003	-0.005
	(0.952)	(0.929)	(0.690)	(0.729)	(0.952)	(0.929)
$Crisis \times Heir$	0.013	0.014	-0.005	-0.004	0.013	0.014
	(0.508)	(0.461)	(0.865)	(0.877)	(0.508)	(0.461)
$LowInc \times Heir$	-0.040	0.011	-0.077***	-0.023	-0.040	0.011
	(0.314)	(0.677)	(0.007)	(0.353)	(0.314)	(0.677)
$Crisis$	-0.003	-0.004	0.294***	0.294***	-0.003	-0.004
	(0.875)	(0.869)	(0.000)	(0.000)	(0.875)	(0.869)
$Heir$	-0.024**	-0.030**	-0.019	-0.025**	-0.024**	-0.030**
	(0.038)	(0.013)	(0.199)	(0.035)	(0.038)	(0.013)
$LowInc$	0.029		0.033		0.029	
	(0.497)		(0.168)		(0.497)	
$\ln(GDPPC)$	-0.030		-0.024		-0.030	
	(0.558)		(0.636)		(0.558)	
$\ln(HC)$	-0.071		-0.101		-0.071	
	(0.535)		(0.374)		(0.535)	
$\ln(KPC)$	0.027		0.029		0.027	
	(0.460)		(0.434)		(0.460)	
$\ln(GDP)$	0.004		0.004		0.004	
	(0.631)		(0.594)		(0.631)	
Constant	-0.083	-0.242***	-0.233	-0.325***	-0.083	-0.242***
	(0.760)	(0.000)	(0.389)	(0.000)	(0.760)	(0.000)
Country FE	No	Yes	No	Yes	No	Yes
R^2	0.012	0.035	0.204	0.228	0.012	0.035
N	4,991	4,991	4,991	4,991	4,991	4,991

Table 7: Curbing the Rise of Heir Billionaires during the COVID Crisis

This table reports the results from 2SLS regressions where the dependent variable is inequality as measured by growth of billionaires' wealth relative to growth of their respective countries' equity markets. Different measures of financial development, namely, $MktCap/GDP, MktVol/GDP$ and $Credit/GDP$, are used in different specifications. Measures of financial development are instrumented by $LegalOriginUK$ which equals one if the country's legal origin is from the UK, and zero otherwise. Results suggest that strong financial institutions curb the rise of inequality from inherited wealth during the COVID crisis. The data cover a period from 2017 to 2020 where 2020 is the COVID crisis year. ΔW and ΔMKT are log growth of a billionaire's wealth and Datastream's total market index. Log growth is computed as the difference between log value as of the end of current year and that as of the end of last year. $Crisis$ equals one if year $\geq$ 2020, and zero otherwise. $LowInc$ equals one if the country's $GDPPC$ is below the sample mean, and zero otherwise. $Heir$ equals one if the billionaire is classified as heir, and zero otherwise. $MktCap/GDP$ is end-of-year total capitalization of a country's equity market divided by GDP. $MktVol/GDP$ is total traded volume of a country's equity market divided by GDP. $Credit/GDP$ is domestic credit to private sector divided by GDP. Numbers in parentheses are p-values for rejecting a null hypothesis of zero coefficient. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

	First-Stage Regression			Second-Stage Regression		
Dependent Variable:	$\frac{MktCap}{GDP}$	$\frac{MktVol}{GDP}$	$\frac{Credit}{GDP}$	$\Delta W - \Delta MKT$		
Institutional Variable: $[Inst]$				$\left[\frac{MktCap}{GDP}\right]$	$\left[\frac{MktVol}{GDP}\right]$	$\left[\frac{Credit}{GDP}\right]$
	(1)	(2)	(3)	(4)	(5)	(6)
$LegalOriginUK$	1.412*	0.853**	0.498*			
	(0.064)	(0.031)	(0.073)			
$Crisis \times [Inst] \times Heir$				−0.078**	−0.079*	−0.130*
				(0.013)	(0.080)	(0.075)
$Crisis \times [Inst]$				−0.017	−0.028	−0.057
				(0.245)	(0.315)	(0.229)
$Crisis \times Heir$				0.142***	0.104*	0.187*
				(0.004)	(0.069)	(0.059)
$[Inst] \times Heir$				0.009	0.008	0.022
				(0.665)	(0.745)	(0.568)
$Crisis$				0.281***	0.292***	0.341***
				(0.000)	(0.000)	(0.000)
$Heir$				−0.038	−0.035	−0.055
				(0.238)	(0.289)	(0.302)
Constant	0.651***	0.760***	1.109***	−0.260***	−0.263***	−0.260***
	(0.000)	(0.003)	(0.000)	(0.001)	(0.001)	(0.001)
Country FE	No	No	No	Yes	Yes	Yes
R^2	0.126	0.183	0.209	0.127	0.140	0.152
N	6,372	6,163	6,741	6,372	6,163	6,741

Table 8: Ten Largest Family Business Groups in Thailand by Market Capitalization

This table reports the ten largest family business groups in Thailand by market capitalization. Data are as of the end of 2019, immediately before the COVID crisis started.

Family	Group	Group Market Cap (%Total Market Cap)
Chearavanont	CP	8.445
Ratanavadi	GULF	5.928
The Royal Family	SCB Bank and SCG	5.355
Prasattongosoth	Bangkok Airways and Bangkok Dusit Medical Services	3.475
Sirivadhanabhakdi	TCC, Fraser & Neave, and ThaiBev[1]	2.658
Asavabhokhin	Land and Houses	2.651
Chirathivat	Central	2.466
Lamsam	Kasikorn Bank	2.270
Sophonpanich	Bangkok Bank	2.265
Kanjanapas	BTS and Bangkok Land	2.114
	Total	37.627

Data as of end of 2019

[1]This firm is listed in Singapore stock exchange and is therefore excluded in the sample.

Table 9: Summary Statistics of Characteristics of Thai Firms before the COVID Crisis

This table shows the summary statistics of characteristics of Thai firms in a period from 2016 to 2019, four years before the COVID crisis. The sample includes all Thai firms that either belong to business groups (i.e. a group of at least two listed firms ultimately controlled by a single family) or have market values as of the end of 2019 above the sample median. This sample is divided into two subsamples—heir-run and founder-run firms. *TotDebt* is total debt. *LtDebt* is long-term debt. *StDebt* is short-term debt. *BookEq* is book value of equity. *CAPX* is capital expenditures. *PPE* is property, plants and equipment. *TotAst* is total assets. *MV* is market value of equity. *Age* is firm age. *TobinsQ* is the sum of debt value and equity value divided by total assets. *ROA* is return on assets defined as net income over total assets. *SalesGr* is sales growth. Currency unit of all variables is THB. Data are from Datastream. The last two columns provide mean differences between the two subsamples along with their p-values. p-Values are probability levels of rejecting the null hypothesis of zero means. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

	Heir-run Fims			Founder-run Firms			Difference (Heir - Founder)	
	N	Mean	SD	N	Mean	SD	Mean	p-Value
$TotDebt/TotAst$	650	0.243	0.212	730	0.280	0.208	−0.037***	0.001
$LtDebt/TotAst$	650	0.118	0.140	730	0.144	0.146	−0.026***	0.001
$StDebt/TotAst$	650	0.125	0.139	730	0.137	0.139	−0.011	0.136
$BookEq/MV$	650	0.832	0.678	730	0.657	0.556	0.175***	0.000
$CAPX/TotAst$	650	0.045	0.054	730	0.049	0.059	−0.004	0.170
$TotAst$ (bil THB)	650	78.558	413.037	730	33.411	97.655	45.146***	0.007
$\ln(TotAst)$	650	15.78	1.665	730	15.830	1.623	−0.050	0.576
Age (years)	650	35.74	20.130	730	28.125	15.500	7.615***	0.000
$\ln(1 + Age)$	650	3.415	0.700	730	3.207	0.643	0.208***	0.000
$TobinsQ$	650	1.606	1.693	730	2.033	1.597	−0.428***	0.000
ROA	650	0.048	0.084	730	0.061	0.088	−0.013***	0.005
$SalesGr$	650	0.138	0.742	730	0.249	2.142	−0.111	0.190
$PPE/TotAst$	650	0.358	0.267	730	0.322	0.246	0.036**	0.010

Table 10: Financing and Spending of Thai Firms during the COVID Crisis

This table shows the results from a difference-in-differences analysis of Thai firms in a period from 2016 to 2021. The results suggest that, during the COVID crisis, heir-run firms have more access to short-term debt and equity financing as compared to founder-run firms. This allows them to sustain their capital expenditures during the crisis. The entire sample includes all Thai firms that either belong to business groups (i.e. a group of at least two listed firms ultimately controlled by a single family) or have market values as of the end of 2019 above the sample median. Each firm is classified as either heir-run or founder-run. *Crisis* is equal to 1 if year $\geq$ 2020, and 0 otherwise. *TotDebt* is total debt. *LtDebt* is long-term debt. *StDebt* is short-term debt. *BookEq* is book value of equity. *CAPX* is capital expenditures. *PPE* is property, plants and equipment. *TotAst* is total assets. *MV* is market value of equity. *Age* is firm age. *TobinsQ* is the sum of debt value and equity value divided by total assets. *ROA* is return on assets defined as net income over total assets. *SalesGr* is sales growth. Currency unit of all variables is THB. Data are from Datastream. Industry classifications follow 2-digit SIC codes. Standard errors are clustered at the firm level. Numbers in parentheses are *p*-values for rejecting a null hypothesis of zero coefficient. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

	Debt Financing			Equity Financing	Investment
Dependent Variable:	$\frac{TotDebt}{TotAst}$	$\frac{LtDebt}{TotAst}$	$\frac{StDebt}{TotAst}$	$\frac{BookEq}{MV}$	$\frac{CAPX}{TotAst}$
	(1)	(2)	(3)	(4)	(5)
$Crisis \times Heir$	0.017	−0.004	0.021**	0.106*	0.007*
	(0.169)	(0.682)	(0.026)	(0.068)	(0.087)
$Heir$	−0.034*	−0.020*	−0.014	−0.019	−0.002
	(0.079)	(0.066)	(0.329)	(0.711)	(0.656)
$Crisis$	0.013	0.020***	−0.007	0.019	−0.020***
	(0.126)	(0.004)	(0.281)	(0.632)	(0.000)
$\ln(TotAst)$	0.043***	0.038***	0.006	−0.005	0.000
	(0.000)	(0.000)	(0.149)	(0.763)	(0.756)
$\ln(1 + Age)$	−0.024*	−0.015*	−0.009	0.129***	−0.007***
	(0.089)	(0.083)	(0.326)	(0.000)	(0.002)
$TobinsQ$	−0.003	−0.002*	−0.001	−0.085**	0.003***
	(0.184)	(0.072)	(0.724)	(0.043)	(0.000)
ROA	−0.474***	−0.132***	−0.342***	−0.450	0.052***
	(0.000)	(0.005)	(0.000)	(0.394)	(0.000)
$SalesGr$	−0.00010***	−0.00004***	−0.00007***	−0.00002	−0.000005
	(0.000)	(0.000)	(0.001)	(0.508)	(0.248)
$PPE/TotAst$	0.208***	0.133***	0.076**	0.015	0.093***
	(0.000)	(0.000)	(0.012)	(0.912)	(0.000)
Constant	−0.296***	−0.363***	0.068	0.389	0.035***
	(0.002)	(0.000)	(0.271)	(0.182)	(0.010)
Industry FE	Yes	Yes	Yes	Yes	Yes
R^2	0.437	0.512	0.252	0.269	0.341
N	2,153	2,153	2,153	2,153	2,153

Table 11: Concentrated Corporate Control and Disproportionate Access to Financing

This table shows the results from a difference-in-differences analysis of Thai firms in a period from 2016 to 2021. Regressions are run on two subsamples—firms in large business groups in Panel A, and firms in small business groups in Panel B. Large business groups have their market values (i.e., sum of their affiliates' market values) as of 2019 above the sample median. The rest are categorized as small business groups. Note that the group size of a freestanding firm is equal to its market value. The results found in Table 10 are concentrated only in a subsample of large business groups. The entire sample includes all Thai firms that either belong to business groups (i.e. a group of at least two listed firms ultimately controlled by a single family) or have market values as of 2019 above the sample median. Each firm is classified as either heir-run or founder-run. $Crisis$ is equal to 1 if year $\geq$ 2020, and 0 otherwise. $TotDebt$ is total debt. $LtDebt$ is long-term debt. $StDebt$ is short-term debt. $BookEq$ is book value of equity. $CAPX$ is capital expenditures. $TotAst$ is total assets. MV is market value of equity. Controls include $\ln(TotAst)$, $\ln(1+Age)$, $TobinsQ$, ROA, $SalesGr$, and $PPE/TotAst$ whose definitions are given in Table A1. Currency unit of all variables is THB. Data are from Datastream. Industry classifications follow 2-digit SIC codes. Standard errors are clustered at the firm level. Numbers in parentheses are p-values for rejecting a null hypothesis of zero coefficient. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

	Debt Financing			Equity Financing	Investment
Dependent Variable:	$\frac{TotDebt}{TotAst}$	$\frac{LtDebt}{TotAst}$	$\frac{StDebt}{TotAst}$	$\frac{BookEq}{MV}$	$\frac{CAPX}{TotAst}$
	(1)	(2)	(3)	(4)	(5)
Panel A: Subsample of Firms in Large Business Groups					
$Crisis \times Heir$	0.032*	0.001	0.030**	0.146*	0.014**
	(0.086)	(0.919)	(0.027)	(0.053)	(0.011)
$Heir$	−0.040	−0.041**	0.001	0.025	−0.006
	(0.159)	(0.028)	(0.964)	(0.683)	(0.290)
$Crisis$	0.002	0.012	−0.010	0.082**	−0.022***
	(0.881)	(0.282)	(0.204)	(0.012)	(0.000)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
R^2	0.473	0.535	0.341	0.413	0.385
N	1,070	1,070	1,070	1,070	1,070
Panel B: Subsample of Firms in Small Business Groups					
$Crisis \times Heir$	0.004	−0.009	0.013	0.076	−0.001
	(0.791)	(0.503)	(0.287)	(0.341)	(0.864)
$Heir$	−0.025	0.002	−0.027	−0.078	0.002
	(0.372)	(0.894)	(0.222)	(0.306)	(0.672)
$Crisis$	0.021*	0.024***	−0.003	−0.073	−0.019***
	(0.051)	(0.006)	(0.759)	(0.321)	(0.000)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
R^2	0.489	0.505	0.307	0.301	0.362
N	1,083	1,083	1,083	1,083	1,083

Appendix A. Appendix

Table A1: Variable Definitions and Data Sources

Variable	Definition
$Heir$	In the analysis of billionaire wealth during the COVID crisis, this variable is equal to 1 if a billionaire is classified as an heir, and 0 if classified as a founder. In the analysis of Thai firms during the COVID crisis, this variable is equal to 1 if the firm is run by an heir, and 0 if run by a founder.
$Crisis$	An indicator variable equal to 1 if year $\geq$ 2020, and 0 otherwise.
ΔW	Log growth of a billionaire's wealth defined as log difference between a billionaire's wealth at the end of the current year and that at the end of last year. Source: Forbes.
ΔH	Log growth of an heir billionaire's wealth defined as log difference between a heir billionaire's wealth at the end of the current year and that at the end of last year. Source: Forbes.
ΔF	Log growth of a founder billionaire's wealth defined as log difference between a founder billionaire's wealth at the end of the current year and that at the end of last year. Source: Forbes.
ΔMKT	Log growth of an equity market index defined as log difference between the value of Datastream total market index at the end of the current year and that at the end of last year. Source: Datastream.
ΔGDP	Log growth of nominal GDP defined as log difference between nomial GDP at the end of the current year and that at the end of last year. Source: World Bank.
$\Delta GDPPC$	Log growth of nominal GDP per capita defined as log difference between nomial GDP per capita at the end of the current year and that at the end of last year. Source: World Bank.
GDP	Real GDP in billion constant 2017 international dollars averaged over a period from 2016 to 2019. Source: PWT 10.0.
$GDPPC$	Real GDP divided by population in constant 2017 international dollars averaged over a period from 2016 to 2019. Source: PWT 10.0.
HCI	Human Capital Index which ranges from 1 to 5 and is averaged over a period from 2016 to 2019. A higher value indicates higher human capital. Source: PWT 10.0.
KPC	Real Capital per capita in constant 2017 international dollars averaged over a period from 2016 to 2019. Source: PWT 10.0.
$LowInc$	An indicator variable equal to 1 if a country's $GDPPC$ is less than the sample median, and 0 otherwise.
$MktCap/GDP$	End-of-year total capitalization of a country's equity market divided by GDP. The values are averaged over a period from 2016 to 2019. Source: World Bank.
$MktVol/GDP$	Total traded volume of a country's equity market divided by GDP. The values are averaged over a period from 2016 to 2019. Source: World Bank.
$Credit/GDP$	Domestic credit to private sector divided by GDP. The values are averaged over a period from 2016 to 2019. Source: World Bank.

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Variable	Definition
$TotDebt$	Total debt in THB (Datastream Item: WC03255). Source: Datastream.
$LtDebt$	Long-term debt in THB (WC03251). Source: Datastream.
$StDebt$	Short-term debt and current portion of long-term debt in THB (WC03051). Source: Datastream.
$BookEq$	Book value of equity in THB (WC05491×WC05301). Source: Datastream.
$CAPX$	Capital expenditures in THB (WC04601). Source: Datastream.
$TotAst$	Total assets in billion THB (WC02999). Source: Datastream.
MV	Market value of equity in THB (WC08001). Source: Datastream.
Age	The difference between the current year and the year company was founded (WC18272). If year company was founded is unavailable, use the year company was incorporated instead (WC07021). Source: Datastream.
$TobinsQ$	Tobin's q is market value of the firm divided by its replacement costs and is approximated by (total assets − book value of equity)+market value of equity all divided by total assets. ((WC02999−WC05491×WC05301+WC08001)/WC02999). Source: Datastream.
ROA	Return on assets defined as net income over total assets (WC08326). Source: Datastream.
$SalesGr$	Log growth of sales defined as log difference between sales of the current year and that of the last year (WC01001). Source: Datastream.
PPE	Property, plants, and equipment in THB (WC02501). Source: Datastream.

Table A2: Removing Outliers: Concentrated Corporate Control and Disproportionate Access to Financing during the Crisis

This table replicates the results in Table 11 with all variables winsorized at 1% and 99% levels to attenuate the effects of outliers. The results remain robust to winsorization. Controls include $\ln(TotAst)$, $\ln(1+Age)$, $TobinsQ$, ROA, $SalesGr$, and $PPE/TotAst$. All variables are defined in Table A1. Standard errors are clustered at the firm level. Numbers in parentheses are p-values for rejecting a null hypothesis of zero coefficient. ***, ** and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

	Debt Financing			Equity Financing	Investment
Dependent Variable:	$\frac{TotDebt}{TotAst}$	$\frac{LtDebt}{TotAst}$	$\frac{StDebt}{TotAst}$	$\frac{BookEq}{MV}$	$\frac{CAPX}{TotAst}$
	(1)	(2)	(3)	(4)	(5)
Panel A: Subsample of Firms in Large Business Groups					
$Crisis \times Heir$	0.029*	0.003	0.026**	0.152***	0.013**
	(0.094)	(0.837)	(0.026)	(0.005)	(0.010)
$Heir$	−0.039	−0.041**	0.001	0.012	−0.005
	(0.161)	(0.023)	(0.955)	(0.820)	(0.304)
$Crisis$	0.004	0.012	−0.009	0.036	−0.019***
	(0.778)	(0.278)	(0.248)	(0.224)	(0.000)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
R^2	0.496	0.546	0.345	0.511	0.413
N	1,070	1,070	1,070	1,070	1,070
Panel B: Subsample of Firms in Small Business Groups					
$Crisis \times Heir$	0.005	−0.009	0.013	0.040	−0.003
	(0.757)	(0.505)	(0.279)	(0.401)	(0.571)
$Heir$	−0.026	0.002	−0.028	−0.101	0.003
	(0.358)	(0.896)	(0.195)	(0.122)	(0.578)
$Crisis$	0.018	0.024***	−0.007	−0.015	−0.019***
	(0.132)	(0.005)	(0.524)	(0.612)	(0.000)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
R^2	0.488	0.509	0.310	0.499	0.378
N	1,083	1,083	1,083	1,083	1,083