Historical Determinants of Fintech Development: Evidence from Initial Coin Offerings

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Abstract

This paper examines the impact of historical endowment on the Initial Coin Offering (ICO) market. Leveraging a sample of 1,617 hand collected ICOs over 2015-2019 and regressions models, we find that a country's legal origin, disease environment, exposure to slave trade, and proximity to ancient trade routes are important determinants of the total amount of capital raised through ICOs. Further analyses suggest that the impact of historical endowment operates through legal and information sharing institutions. This finding suggests that traumatic shocks in the history plays an important role in shaping current Fintech development through long-run persistence of formal and informal institutions. This research highlights the importance to enlarge the scope of Fintech research and the importance to take institutions into account in relevant policy designs to promote financial development.

Keywords: ICO, fintech, financial development, history, institutions

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1

1. Introduction

An influential body of literature stresses the persistent impact of historical events on the function of modern financial markets (see the reviews of D'Acunto, 2017; Klüppel et al., 2018; Guariglia et al., 2018; Hou et al., 2020). La Porta, et al. (1997), La Porta, et al. (1998) show that British or French legal origin determines the cross-country variations in aggregate measures of financial development. Acemoglu, et al. (2001), Acemoglu, et al. (2002) find that a country's natural endowment can also influence the operation of modern financial markets through institutions imposed by the colonisers during colonization. While this line of work has generated useful insights on the determinants of modern finance, the measures of financial development used in this literature (e.g., the size of the banking sector and stock market capitalization) and the institutions that are partially shaped by historical events have co-evolved over a long period of time. Therefore, interpreting the results of this literature is challenging (Rajan and Zingales, 2003, Rau, 2020).

This paper provides new evidence on the historical determinants of modern finance by studying an emerging, but quickly expanding form of financing—initial coin offerings (ICOs). As an important financing channel for young ventures, ICO allows early stage ventures to raise capital through selling blockchain based digital tokens. According to a rating platform called ICObench, the combined value raised from ICO since its inception (2015) reached $46 billion in May 2019, equivalent to 12% of the value of global private equity market in 2017 (McKinsey Global Private Markets Review 2018). Focusing on this form of financing instrument allows us to circumvent the reverse causality issue, thereby providing new evidence on the history-finance nexus.

Our research is closely related to, but different from, a recent literature that examines the determinants of successful funding raising through ICOs. For example, Hackober and Bock (2021), Ahmad, et al. (2020), An, et al. (2019) find that venture capital investments, expert ratings, insider

2

retention, and founding team's characteristics all contribute to the success of an ICO. The findings of these studies provide a clear message that successful fund raising through ICO critically depends on the quality of the project which manifests itself through different types of signals (e.g., teams characteristics, insider retention, analyst rating, etc.). However, as stated by La Porta, et al. (1998), whether firms can successfully raise external capital also depends on the environment in which they operate. Therefore, the quality of institutions associated with the operating environment of start-ups should also be a critical factor shaping ICO success. Despite its importance, little research studies whether institutions, shaped by historical events, affect the success of ICOs. This paper attempts to fill this gap.

Our empirical analyses are embedded in the legal origin theory and the endowment theory. Beck et al. (2003) find that both the legal origin and a country's disease environment can shape long-run institutions that determine country-level equity and debt market development. We re-examine the theories by focusing on an ICO setting. We first investigate the reduced form relationship between various historical events that are found important for modern financial development and the total fund raised in an ICO. The historical determinants that we consider include a country's legal origin La Porta, et al. (1997), La Porta, et al. (1998), settler mortality (Acemoglu, et al., 2001, Acemoglu, et al., 2002), slave exports (Nunn, 2008), pre-colonial TseTse fly density (Alsan, 2015; An et al., 2021) and political centralization (Michalopoulos and Papaioannou, 2013), and geographic proximity to historical trade routes (Michalopoulos, et al., 2018), all of which are found to have exerted significant influence on the function of modern financial markets. Secondly, we examine the link between legal and information sharing institutions today and the ICO outcome, since the existing literature documents that these institutions are shaped by the historical events.

We find, consistent with existing theories, that the historical events have a substantial influence over the function of the modern financial systems. In terms of mechanisms, we find that these historical events exert impact on modern financial development mainly through legal and information sharing institutions. Specifically, we discover that private property rights protection, contract enforcement and information sharing infrastructures are all significantly, positively associated with the amount of capital raised through ICO. This suggests that institutions are plausible channels that link historical events to modern finance.

This paper makes several contributions to the literature. First, we speak to the literature on the historical determinants of modern finance (Beck, et al., 2003). We add to this literature by examine the impact of a range of historical factors on the outcome of a new and quickly expanding financial market, that is, the ICO market. By doing so, we add new evidence to the history-finance nexus by circumventing the simultaneity concern often found in this literature.

This paper also speaks to the literature that examines the determinants of ICO outcomes[2]. For example, Howell, et al. (2020) investigate various issuer's characteristics in predicting ICOs' employment, failure, liquidity and trading volume.[3] Our paper is closely related to, but distinct from, this literature by taking an institutional perspective and emphasizing the historical, arguably more exogenous determinants.

2. Data and Research Design

2.1 Measures of ICO characteristics

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[2] For example, see Adhami, et al. (2018), An, et al. (2019), Ante, et al. (2018), Blaseg (2018), Burns and Moro (2018), Feng, et al. (2019), and An and Rau (2021).
[3] Research on similar topics also includes Deng, et al. (2018), Bourveau, et al. (2018), Amihud (2002), Florysiak and Schandlbauer (2019), Amsden and Schweizer (2018), Lyandres, et al. (2018), and Boreiko and Vidusso (2019).

4

Our sample consists 1,617 hand collected ICOs listed on *ICObench* between September 2015 and May 2019. We further collect information on the key ICO characteristics from the official websites and whitepapers. All these variables are widely used and found to be important in raising capital via ICO (An, et al., 2019). Appendix provides detailed definitions and data sources and Table 1 presents summary statistics. The average amount of ICO fundraise is more than 3.5 million US dollars.

[Insert Table 1]

2.2 Measures of historical events

We consider six historical features that are found to be important in the literature. First, Michalopoulos and Papaioannou (2013) find that precolonial political centralization has a positive impact on modern economic growth through institutional development that is conducive to financial and economic transactions. We follow their work and obtain *Jurisdictional hierarchy*, a measure of country-level average precolonial political centralization. Note that we only have data on precolonial political centralization for African countries. Therefore, the number of observations (i.e., ICO projects) is small. Second, in an influential strand of work, Nunn (2008) and Levine, et al. (2017) show that the Africa slave trade has a persistent, deleterious effect on modern financial markets through trust and information sharing institutions. We therefore test the link between *Slave exports*, which equals to the natural logarithm of the total number of slaves exported between 1400 and 1900 normalized by area for each country, and ICO outcomes. In addition, the TseTse fly, which transmits an epidemic disease harmful to human and lethal to livestock, is believed to impede modern economic and financial development. We thus obtain the *TseTse fly index* from Alsan (2015; An et al., 2021) and test its impact on the ICO market. Lastly, we obtain data on historical proximity to ancient trade routes (*Distance to trade routes*), *Common law* and *Settler mortality* from Michalopoulos, et al. (2018), La Porta, et al. (1999),

5

and [Acemoglu, et al. (2001)](). As reported in Table 1, all these measures exhibit a substantial amount of variations in our sample.

2.3 Measures of institutions and macro-economic conditions

We gather data on three important country-level institutions, including the quality of contract enforcement (*Enforcement*), protection of private property rights (*Property rights*), and information sharing institutions (*Private bureau* and *Information sharing*). These variables play a key role in explaining the cross-country variations in financial development and are obtained from [La Porta, et al. (2008)]() and [Djankov, et al. (2007)](), respectively.

In our empirical analysis, we also control for a range of macro-economic conditions that may confound our results, including *Bitcoin price*, *Bitcoin volume*, *GSI*, *ICO ban*, *GDP growth*, *GDP*, *GDP per capita growth* and *Population*. In particular, *GSI* is constructed as the equal weighted average of google search index on four keywords: "Bitcoin", "Blockchain", "ICO", and "Cryptocurrency". We measure this variable at a daily frequency. *ICO ban* is a dummy variable that equals to one if a country banned ICO in our sample period and zero otherwise. All other variables are self-explanatory, and we define them in Table A1 in the appendix.

3. Empirical Analysis

3.1 History and ICO success: Reduced form analysis

We start by examining the reduced form relationship between the historical events and ICO outcomes, using the following Ordinary Lease Squares (OLS) model:

$$ICO\ fundraising_{i,c} = \beta_c \times historical\ events_c + \delta_{i,c} \times ICO\ characteristics_{i,c} +$$
$$Controls + \theta \quad (1)$$

6

where our dependent variable, $ICO\ fundraising_{i,c}$, is the natural logarithm of total fund raised in an ICO, i, in country c. $historical\ events_c$ is either one of the six historical measures including *Jurisdictional hierarchy, Slave exports, TseTse fly index, Distance to trade routes, Common law* and *Settler mortality.* We also include ICO project level control variables, such as *Third party verification*, *Pre-sale*, *Fait*, *Bonus*, *Equity* and *Had goal to raise*, and macro-economic confounders, such as *GDP growth*, *Population, GDP per capita growth, Bitcoin price, Bitcoin volume, GSI and ICO ban*. θ represents continental and quarterly fixed effects. We cluster our standard errors at the country-level.

[Insert Table 2]

As reported in Table 2, all historical variables appear in the regressions with statistically meaningful coefficients and the signs are consistent with related theories. For example, in Panel A, *Jurisdictional hierarchy* is positively correlated with the amount of capital raised in ICOs. Since *Jurisdictional hierarchy* is found to facilitate the institutional development that is conducive to financial development, our results are consistent with and add to the existing literature on the positive link between political institutions and development (Michalopoulos and Papaioannou, 2013). In addition, Levine, et al. (2017) find that the slave trade has a negative impact on modern financial development through increasing distrust and impeding information sharing. Consistent with this literature, our result here indicate that the slave trade also has a deleterious impact on the function of the ICO market. The economic magnitudes of our estimates are also large. Consider the estimate in column (5) Panel B, for example. It implies that a one standard deviation increase in the historical slave export is associated with 1.97 standard deviations less of fund raised in an average ICO. This is equivalent to about 42 million USD.

3.2 Institution quality and ICO success

7

Next, we assess the relationship between institution quality and ICO outcomes, using the following OLS model:

$$ICO\ fundraising_{i,c} = \beta_c \times institutions_c + \delta_{i,c} \times ICO\ characteristics_{i,c} + Controls + \theta$$

(2)

where $institutions_c$ is either one of the four measures of institutional quality including *Enforcement*, *Property rights*, *Private bureau* and *Information sharing*. All other variables are the same as in model (1). We present our results in Table 3.

[Insert Table 3]

As shown in Table 3, *Enforcement* and *Property rights* enter all regressions with large, positive coefficients statistically significant at least at 5% level. This is consistent with the literature on institution and finance, which shows that the quality of contract enforcement and private property rights protection are two important factors shaping the operation of modern financial markets (Acemoglu, et al., 2003, Cull and Xu, 2005). The economic magnitudes of our estimates are also large. Consider the coefficients in column (5) Panel A, for example. They suggest that a one standard deviation increase in the quality of contract enforcement (*Enforcement*) is associated with a 0.54 decrease in *ICO fundraising*, which is equivalent to about 1.72 million USD. Regarding measures of information sharing institutions, we only find some suggestive evidence that they facilitate fund raising through ICO. Once we control for *Bitcoin price, Bitcoin volume, GSI and ICO ban* in the regressions, the results are no longer statistically meaningful. This suggests that the information sharing institution may influence ICO outcomes through Bitcoin price and volume.

4. Conclusion

8

In this paper, we provide new evidence on the historical determinants of modern finance by examining ICO outcomes. The existing literature on history and finance mainly focuses on traditional financial markets, which have co-evolved with key economic institutions for a long time, therefore subjecting to simultaneity concerns. Studying the history and finance nexus in the ICO market facilitates us to overcome this issue, since ICO is a newly emerged financing channel.

This study limits the analyses on a few major historical determinants of modern development. We therefore encourage future studies to examine other historical traumatic shocks that had changed the trajectory of the institutions or culture, which in turn shape Fintech adoption and development. In addition, other Fintech indicators are worth to be examined too such as crowdfunding, insurtech, mobile-payment banking, peer-to-peer lending, robo-advising and other applications of artificial intelligence and big data in finance.

Our findings have two important implications. Firstly, during traumatic shocks, such as the current Covid-19 pandemic, governments need to consider the long-term consequences of public policies. Many intrusive policies such as indiscriminate lockdowns, border restriction that limits overseas citizens to return their home country, intentional disclose of personal information of these tested positive, the spread of mass surveillance, as well as propaganda and misinformation, could erode social capital and weaken checks and weakens balances of government power (Hou et al., 2020). These policy responses to COVID-19 will be at the expense of long-term Fintech development. Secondly, the results suggest that Fintech platforms need to take into account the cultural and institutional legacy of historical events, e.g. mistrust to finance or weak private property right protection, when operate internationally and develop strategies to overcome these obstacles. For example, Africans exhibit low trust as a result of the history of slave trade, and convincing them to adopt a new way of doing financial transactions is therefore not easy. The success of M-PESA was attributed to the trust relation between

the customers and Safaricom, which had operated in Kenya since 1997 and taken 70% of the market share, and to the well-respected president of Safaricom, Michael Joseph, in the community (Morawczynski and Miscione, 2008). For ICOs, high quality disclosure, timely communications with investors, collaboration with trustworthy local partners and registration in places with strong rule of law and better investors protection will be helpful to cope with the adverse conditions.

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Table 1: Summary Statistics

This table presents the summary statistics of our sample. All variable are defined in Appendix 1.

	Observation	Mean	Median	S.D.	Min	Max
Initial Coin Offering Characteristics						
ICO fundraising	1617	15.09	15.38	1.90	5.63	22.16
Third party verification	1617	0.46	0.00	0.50	0.00	1.00
Pre-sale	1617	0.46	0.00	0.50	0.00	1.00
Fiat	1617	0.15	0.00	0.36	0.00	1.00
Bonus	1617	0.31	0.00	0.46	0.00	1.00
Equity	1617	0.03	0.00	0.17	0.00	1.00
Hard goal to raise	1617	0.83	1.00	0.38	0.00	1.00
Cryptocurrency development						
Bitcoin price	1611	7.13	6.79	3.18	0.23	15.29
Bitcoin volume	1611	6.15	5.45	3.71	0.02	22.48
GSI	1611	22.31	18.81	13.01	1.50	62.10
ICO ban	1617	0.01	0.00	0.12	0.00	1.00
Country level variations						
Jurisdictional hierarchy	25	2.50	2.69	0.45	1.71	4.00
Slave exports	47	0.51	0.40	3.73	-2.30	8.82
Tse Tse fly index	25	-0.80	-1.02	1.14	-1.88	0.81
Distance to trade routes	979	0.47	0.07	0.73	0.00	2.74
Common law	1605	0.56	1.00	0.50	0.00	1.00
Settler mortality	951	0.04	0.02	0.15	0.00	2.00
Enforcement	1068	7.85	8.50	1.23	3.50	8.94
Property rights	1571	4.25	5.00	1.12	1.00	5.00
Private bureau	1402	0.77	1.00	0.42	0.00	1.00
Information sharing	1402	0.89	1.00	0.31	0.00	1.00
Macro-economic development						
GDP growth	1613	2.96	2.56	1.85	-0.30	9.76
GDP	1613	26.99	27.10	2.30	18.92	30.37
GDP per capita growth	1613	1.96	1.29	1.71	-3.25	9.20
Population	1613	16.79	16.91	2.12	10.49	21.01

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Table 2: Historical Determinants and Total ICO Fund Raised

This table presents regressions of the relationship between ICO fundraising and historical factors. The dependent variable is *ICO fundraising*, which is the natural logarithm of total amount of ICO fundraise in US dollars of each project. All variable are defined in Appendix 1. Standard errors are clustered at the country level and *p*-value are in brackets. ***, **, * denote significance levels at 1%, 5% and 10% respectively.

	(1)	(2)	(3)	(4)	(5)
			ICO fundraising		
Panel A:					
Jurisdictional hierarchy	2.576***	2.250***	3.307***	5.953**	15.643***
	[0.000]	[0.002]	[0.002]	[0.010]	[0.002]
ICO characteristics	No	No	Yes	Yes	Yes
Macro-economic development	No	No	No	Yes	Yes
Cryptocurrency development	No	No	No	No	Yes
Continental and quarterly FE	No	Yes	Yes	Yes	Yes
Country coverage	8	8	8	8	8
Intercept	8.102***	8.897***	3.450**	0.451	-20.089**
	[0.000]	[0.000]	[0.039]	[0.977]	[0.046]
R-square	0.280	0.390	0.620	0.706	0.975
Observation	25	23	23	23	23
Panel B:					
Slave exports	-0.177**	-0.187***	-0.213**	-0.902***	-0.996**
	[0.019]	[0.005]	[0.010]	[0.000]	[0.011]
ICO characteristics	No	No	Yes	Yes	Yes
Macro-economic development	No	No	No	Yes	Yes
Cryptocurrency development	No	No	No	No	Yes
Continental and quarterly FE	No	Yes	Yes	Yes	Yes
Country coverage	10	10	10	10	10
Intercept	14.762***	14.737***	14.836***	10.763**	12.994***
	[0.000]	[0.000]	[0.000]	[0.016]	[0.006]
R-square	0.121	0.243	0.293	0.486	0.540
Observation	47	45	45	45	45
Panel C:					
Tse Tse fly index	-0.646*	-0.716**	-0.686	1.664	16.182**
	[0.064]	[0.024]	[0.231]	[0.634]	[0.039]
ICO characteristics	No	No	Yes	Yes	Yes
Macro-economic development	No	No	No	Yes	Yes
Cryptocurrency development	No	No	No	No	Yes
Continental and quarterly FE	No	Yes	Yes	Yes	Yes
Country coverage	8	8	8	8	8
Intercept	14.011***	13.929***	13.329***	44.658***	69.972*
	[0.000]	[0.000]	[0.001]	[0.009]	[0.058]
R-square	0.112	0.314	0.457	0.608	0.932
Observation	25	23	23	23	23
Panel D:					
Distance to trade routes	-0.352***	-0.404***	-0.400***	-0.328***	-0.366***
	[0.000]	[0.000]	[0.000]	[0.008]	[0.004]
ICO characteristics	No	No	Yes	Yes	Yes

14

Macro-economic development	No	No	No	Yes	Yes
Cryptocurrency development	No	No	No	No	Yes
Continental and quarterly FE	No	Yes	Yes	Yes	Yes
Country coverage	59	59	59	58	58
Intercept	15.173***	15.197***	15.103***	10.727***	9.502***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
R-square	0.019	0.063	0.076	0.091	0.097
Observation	979	975	975	972	972
Panel E:					
Common law	0.371**	0.468***	0.474***	0.397***	0.404***
	[0.011]	[0.001]	[0.000]	[0.003]	[0.002]
ICO characteristics	No	No	Yes	Yes	Yes
Macro-economic development	No	No	No	Yes	Yes
Cryptocurrency development	No	No	No	No	Yes
Continental and quarterly FE	No	Yes	Yes	Yes	Yes
Country coverage	83	83	83	82	82
Intercept	14.873***	14.816***	14.568***	12.444***	12.344***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
R-square	0.009	0.066	0.078	0.090	0.091
Observation	1605	1595	1595	1592	1592
Panel F:					
Settler mortality	-1.170***	-0.594***	-0.432***	-0.496***	-0.510***
	[0.000]	[0.001]	[0.005]	[0.009]	[0.008]
ICO characteristics	No	No	Yes	Yes	Yes
Macro-economic development	No	No	No	Yes	Yes
Cryptocurrency development	No	No	No	No	Yes
Continental and quarterly FE	No	Yes	Yes	Yes	Yes
Country coverage	36	36	36	36	36
Intercept	15.278***	15.256***	14.846***	14.236***	14.542***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
R-square	0.009	0.094	0.110	0.112	0.113
Observation	951	945	945	945	945

Table 3: Institutions and Total ICO Fund Raised

This table presents regressions of the relationship between ICO fundraising and institution proxies. The dependent variable is *ICO fundraising*, which is the natural logarithm of total amount of ICO fundraise in US dollars of each project. All variables are defined in Appendix 1. Standard errors are clustered at the country level and *p*-value are in brackets. ***, **, * denote significance levels at 1%, 5% and 10% respectively.

	(1)	(2)	(3)	(4)	(5)
			ICO fundraising		
Panel A:					
Enforcement	0.176***	0.249***	0.230***	0.261***	0.437**
	[0.009]	[0.005]	[0.009]	[0.005]	[0.011]
ICO characteristics	No	No	Yes	Yes	Yes
Macro-economic development	No	No	No	Yes	Yes
Cryptocurrency development	No	No	No	No	Yes
Continental and quarterly FE	No	Yes	Yes	Yes	Yes
Country coverage	41	41	41	41	40
Intercept	13.812***	13.242***	13.288***	12.840***	14.989***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.001]
R-square	0.013	0.093	0.100	0.104	0.112
Observation	1068	1059	1059	1059	1056
Panel B:					
Property rights	0.210***	0.232***	0.222***	0.239***	0.161**
	[0.000]	[0.000]	[0.000]	[0.000]	[0.041]
ICO characteristics	No	No	Yes	Yes	Yes
Macro-economic development	No	No	No	Yes	Yes
Cryptocurrency development	No	No	No	No	Yes
Continental and quarterly FE	No	Yes	Yes	Yes	Yes
Country coverage	76	76	76	76	75
Intercept	14.192***	14.100***	13.920***	13.766***	12.595***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
R-square	0.015	0.070	0.080	0.082	0.087
Observation	1571	1562	1562	1562	1559
Panel C:					
Private bureau	0.439**	0.484**	0.447**	0.480**	0.029
	[0.013]	[0.013]	[0.019]	[0.011]	[0.907]
ICO characteristics	No	No	Yes	Yes	Yes
Macro-economic development	No	No	No	Yes	Yes
Cryptocurrency development	No	No	No	No	Yes
Continental and quarterly FE	No	Yes	Yes	Yes	Yes
Country coverage	69	69	69	69	68
Intercept	14.750***	14.713***	14.431***	14.212***	9.650***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
R-square	0.009	0.068	0.079	0.080	0.093
Observation	1402	1393	1393	1393	1390
Information sharing	0.610***	0.689***	0.655***	0.661***	0.065
	[0.000]	[0.000]	[0.001]	[0.000]	[0.822]
ICO characteristics	No	No	Yes	Yes	Yes

Macro-economic development	No	No	No	Yes	Yes
Cryptocurrency development	No	No	No	No	Yes
Continental and quarterly FE	No	Yes	Yes	Yes	Yes
Country coverage	69	69	69	69	68
Intercept	14.545***	14.473***	14.176***	13.973***	9.567***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
R-square	0.010	0.069	0.080	0.081	0.093
Observation	1402	1393	1393	1393	1390

Appendix 1: Variable Description

Variable Name	Description	Source
Initial Coin Offering Characteristics		
ICO fundraising	The natural logarithm of total amount of ICO fundraise in US dollars for each ICO project.	ICO bench: https://icobench.com/.
Third party verification	A dummy variable that equals to one if an ICO project has been verified by Know Your Customer (KYC) or Whitelist, and zero otherwise. KYC refers to the verification processes that requires the disclosure of an applicant's identification (e.g., passport, driver's license, etc.) as well as a photo in which the applicant holds his/her ID. Whitelist is an independent party that provides verifiable information on upcoming ICO projects that have higher potential value to investors.	Ibid.
Pre-sale	A dummy variable equals one if the ICO project offers a pre-sale before ICO and zero otherwise.	Ibid.
Fiat	An indicator that equals one if an ICO project accepts fiat currencies in the token sale and zero otherwise.	Ibid.
Bonus	An indicator that equals one if an ICO project offers bonus/discount for early investors and zero otherwise.	Ibid.
Equity	An indicator that equals one if an ICO project issues equity type of tokens and zero otherwise. Equity type of tokens represent a conventional security that is recorded and exchanged on a blockchain to reduce transaction costs and create a record of ownership.	Ibid.
Hard goal to raise	An indicator that equals one if an ICO project set an amount of fund that need to raise through ICO and zero otherwise.	Ibid.
Cryptocurrency development		
Bitcoin price	The monthly average of closed price of Bitcoin (in 1,000 USD) in Coordinated Universal Time (UTC time).	https://coinmarketcap.com/currencies/bitcoin/
Bitcoin volume	The trading volume of Bitcoin (in million USD) in each month.	Ibid.
GSI	Google search index. The equal weighted average of google search index on four keywords: "Bitcoin", "Blockchain", "ICO", and "Cryptocurrency".	Google
ICO ban	A dummy variable that equals to one if a country banned ICO and zero otherwise.	https://www.loc.gov/law/help/cryptocurrency/world-survey.php#_ftn501
Country level variations		
Jurisdictional hierarchy	A pre-colonial political institution measure from Murdock's (1967) "Jurisdictional Hierarchy beyond the Local Community Level" index.	Murdock's (1967)

18

Slave exports	The natural logarithm of the total number of slaves exported between 1400 and 1900 normalized by area for each country.	Nunn (2008)
Tse Tse fly index	The standardized value of the fly's steady-state population derived from insect growth modelling, gridded climate data and geospatial data for each country.(	Alsan, (2015)
Distance to trade routes	The country average distance to pre-600 CE trade routes. CE: Great-circle distance from the nearest trade route before 600 CE averaged across the centroids of each 0.5 by 0.5 decimal degrees cell that fall within a country or ethnic group in thousand kilometres.	Michalopoulos et al., (2018)
Common law	A dummy variable that equals to one for British legal origin and zero otherwise.	La porta et al. (1999)
Settler mortality	The annualized deaths per thousand European soldiers in European colonies in the early 19th century.	Acemoglu et al. (2001)
Enforcement	The enforceability of contracts.	La porta et al. (2008)
Property rights	The property rights index.	Ibid.
Private bureau	A dummy variable that equals one if the private bureau operates in 2003. A private bureau is defined as a private commercial firm or non-profit organization that maintains a database on the standing of borrowers in the financial system, and its primary role is to facilitate exchange of information amongst banks and financial institutions. Private credit reporting firms, which collect information from public sources but not banks and financial institutions, operate in several other countries but are not considered here. The variable is constructed as at January for every year from 1978 to 2003.	Djankov et al. (2007)
Information sharing	A dummy variable that equals one if information sharing operates in 2003.	Ibid.
Macro-economic development		
GDP growth	The average growth rate of GDP for each country over the period 2005 through 2015.	World Bank
GDP	The natural logarithm of average GDP (in USD) over the period 2005 through 2015 for each country adjusted for purchasing power parity (PPP).	Ibid.
GDP per capita growth	The average growth rate of GDP per capita for each country over the period 2005 through 2015.	Ibid.
Population	The natural logarithm of average of total population for each country over the period 2005 through 2015.	Ibid.

Appendix 2: Supplemental Discussion

Our empirical analyses are embedded in the legal origin theory and the endowment theory. As emphasized by La Porta et al. (1998, 1999), countries differ in their legal origins which were spread by Europeans in the 19th century through conquest and colonization. Different legal origins, in turn, are associated with varying quality of institutions such as laws that protect outside investors and enforce contracts. As the functioning of financial markets, including ICOs, critically depends on the quality of these laws, we predict that legal origin is an important predictor of ICO success. The endowment theory, on the other hand, emphasizes that a country's natural endowment, such asnatural resources and the disease environment, attract different types of colonization strategies. Different colonization strategies are in turn associated with varying quality of institutions. In places with high exposure to disease that made it difficult for colonizers to settle, for example, institutions tend to be extractive, unprotective of private property rights, and sustain low level of trust (Acemoglu et al., 2001, 2002; An et al., 2021). The different types of institutions, as the theory predicts, have a bearing on the function of modern finance, including ICO.

To perform the analyse, we collect the data from *ICObench* and whitepapers, and construct a number of variables. *ICO fundraising* is the natural logarithm of the total amount of US dollars raised in an ICO. Following the ICO literature, we use this variable to measure ICO success (An, et al., 2019, Fisch, 2019, Mollick, 2014) . *Third party verification* is an indicator that equals to one if an ICO project's information has been verified by a third party such as Know Your Customer (KYC) or Whitelist, and zero otherwise.[4] *Pre-sale* is a dummy variable that equals one if the ICO project offers a pre-sale before ICO and zero otherwise. *Fiat* is an indicator that equals one if an ICO project accepts fiat currencies in token sale and zero otherwise. *Bonus* equals one if an ICO project offers bonus/discount for early investors and zero otherwise. *Equity* is an indicator that equals one if an ICO project issues equity type tokens and zero otherwise. Equity token represents a record of ownership and is very similar to the conventional securities but is recorded and exchanged on a blockchain to reduce transaction costs. Lastly, *Hard goal to raise* is an indicator that equals one if an ICO project has set a minimum target of fund to be raised, and zero otherwise.

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[4] KYC refers to the verification processes that requires the disclosure of an applicant's identification (e.g., passport, driver's license, etc.) as well as a photo in which the applicant holds his/her ID. Whitelist is an independent party that provides verifiable information on upcoming ICO projects that have higher potential value to investors.