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Reassessing the Role of Institutional Quality in Explaining Capital Inflows from 2000 to 2020

Fatimah M. Alshamry

Correspondence: Fatimah M. Alshamry, Saudi Arabia. E-mail: FatimahAlshamry@outlook.com

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Abstract

International capital does not move from rich to poor countries, a fact that has challenged economists for years because this contradicts the neoclassical theoretical assumption that capital is expected to flow from rich to poor countries. In real life, capital inflows to rich countries are higher than capital inflows to poor countries. Researchers found that institutional quality was the main explanation for capital movements from 1970 to 2000. However, no studies have investigated the 2000-2020 period, which spans two decades and includes a major event in the financial markets, the 2008 financial crisis, which could have altered capital inflows. This study thus reexamines the role of institutional quality in explaining foreign capital inflows from 2000 to 2020 using ordinary least squares regression. The results indicate that institutional quality has a positive and significant impact on international capital inflows. Even after two instrumental variable regressions are implemented using the European mortality rate and ultraviolet radiation rate as instruments, institutional quality remains positive and highly significant at the 1% level.

Keywords: capital flows, international economics, lucas paradox, institutions, institutional quality

1. Introduction

The purpose of this study is to investigate the role of institutional quality in explaining international capital inflows from rich to poor countries over the 2000-2020 period. The sample consists of a combination of 98 developed and developing countries, known as the whole world sample.

On the basis of the available literature in this area of study, the importance of international capital flows is increasing. Several governments have implemented capital liberalization policies in previous years, as international capital flows are recognized for enhancing productivity, competitiveness, and efficiency. Financial systems can profit from capital movements, but these flows could also pose threats because of their volatility, volume, and the channels of contagion they might produce. Accordingly, improved knowledge of capital flows is essential for avoiding the materialization of these threats (Alvarez, 2015).

The determinants of international capital flows have become essential topics particularly for developing countries because they are interested in attracting more capital investment. One proposed explanation for capital inflows is the level of institutional quality within a country, demonstrated by effective governance legislation in at least four areas: social, economic, administrative, and political. In the available literature, many studies agree that institutional quality played a major role in influencing capital inflows from 1970 to 2000 (Alfaro et al., 2008; Papaioannou, 2009).

However, for the 2000-2020 period, the shortage in capital inflows from rich to poor countries has not been explained to date. Accordingly, the research question of this paper is as follows: what is the importance of institutional quality in explaining capital inflows from rich to poor countries?

To address this question, a cross-country ordinary least squares (OLS) regression is performed, with per capita capital inflows as the dependent variable and both GDP per capita and institutional quality as main independent variables from 2000 to 2020. Subsequently, a second OLS regression replaces the overall institutional quality index with its 11 subcomponents, treating each component as a separate explanatory variable to identify which aspects of institutional quality most strongly affect capital inflows.

Given the widespread reference to the Lucas paradox—that is, the persistent shortage of investment flows from developed to developing countries—various studies have proposed alternative or indirect explanations (e.g., schooling rates, demographic factors, and natural resources). Hence, an additional OLS regression incorporates

the log of average schooling years, restrictions on capital mobility, and the log of weighted distance (based on GDP) between capital cities, further exploring how these factors may help explain the paradox.

The primary regression results reveal that institutional quality is highly statistically significant ($p < 0.01$), with a positive coefficient of 1.61. Once institutional quality is included, GDP per capita becomes statistically insignificant, suggesting that strong governance and institutions are key to resolving the Lucas paradox for the 2000-2020 period.

To address endogeneity concerns, two two-stage least squares (2SLS) estimations are performed, employing European mortality rates and ultraviolet radiation (UV-R) rates as instrumental variables. Institutional quality remains positive and highly significant in these 2SLS models, with its coefficient increasing relative to OLS estimates. This outcome indicates an even greater influence of institutional quality on international capital allocation, reinforcing the conclusion that robust governance structures drive capital inflows from wealthy countries to poorer ones.

The subsequent sections of this paper are structured as follows. In Section 2, a review of the literature highlights the Lucas paradox and related capital flow puzzles, followed by an examination of changing patterns in global capital inflows. Section 3 details the empirical approach, including data sources, OLS regressions, robustness checks, and instrumental-variable (IV) estimations to address endogeneity. Finally, Section 4 presents the main findings, underscoring the pivotal role of institutional quality in explaining capital inflows from rich to poor nations and offering policy guidance to enhance governance frameworks.

2. Literature Review

2.1 The Lucas Paradox: Bridging Growth Theory and Capital Flow Puzzles

Although growth drew the attention of earlier economists in history, such as Adam Smith, the modern framework of economic growth analysis and the applications of economic models as we know them nowadays were not formed in their current structures until the mid-20th century, when the two articles by Robert Solow, "A Contribution to the Theory of Economic Growth" (1956) and "Technical Change and the Aggregate Production Function" (1957), were published. These are considered the keystones for modern economic growth analysis. Therefore, Solow's model is referred to as the neoclassical growth model (Boianovsky & Hoover, 2009).

Starting from the broader perspective of neoclassical theory, if we assume that different countries produce the same goods with the same constant returns to scale, while the output depends on a homogeneous composition of capital and labor inputs, any variations among these countries in production per worker are driven by differences in capital per worker, as based on the theoretical prediction of neoclassical economic theory. Accordingly, as a result of the law of diminishing returns, the marginal product of capital in less productive economies (poor countries) will exceed the marginal product of capital in more productive countries (rich countries). In turn, this will induce investment injections in poor countries, leading to capital flow from rich countries to poor countries and generating an equal capital–labor ratio. In other words, wages and capital gains will be at the same level across countries, which also implies that poor countries tend to grow faster than rich countries based on neoclassical growth models (Cass, 1965; Koopmans, 1963; Ramsey, 1928; Solow, 1956).

In light of the previous prediction, Lucas provided an example that compares the Indian and US economies. If the previous theoretical framework of neoclassical theory is accurate, the Indian marginal product must be 58 times the marginal product of the US. Consequently, all capital should move from the US to India. However, we do not observe any capital flows like this in real life. This puzzle is widely known as the Lucas paradox (Lucas, 1990).

At the intersection of the two fields of international macroeconomics and finance are numerous theoretical puzzles. Obstfeld and Rogoff (2000) discussed six puzzles extensively. The following context will provide a brief explanation for only three of these major puzzles, as they are more closely related to the research question. First, the Feldstein–Horioka puzzle focuses on the positive relationship between savings and investment across Organization of Economic Co-operation and Development (OECD) countries. Second, the home bias puzzle investigates the absence of home country residents' investments in foreign countries. Third, the risk sharing puzzle deals with the lack of consumption growth correlation among different countries.

One common cause of the previous four puzzles, including the Lucas paradox, is the shortage in international capital movement, particularly the deficit in global equity holdings. However, the available literature in this context is limited and inconsistent (Alfaro et al., 2008).

International capital movement, particularly international capital inflows, which refer to the flow of investment capital from one country to another, has been a topic of interest for economists for many years. The relationship

between capital inflows and economic growth has been studied extensively, with research showing that capital inflows can have a positive impact on economic development but also highlighting some of the challenges that come with it.

Recent empirical studies have demonstrated that capital movement can be advantageous for both the source and destination countries by allowing capital to move from places where it is less efficient to countries where it will become more useful, yielding an enhanced allocation for the world's capital (Desai et al., 2009; Reinhardt et al., 2013). Capital flows can boost resource allocation across companies, reduce the costs of finances, accelerate technological innovations, and promote productivity, all of which will increase the total output levels (Bau & Matray, 2023; Larrain & Stumpner, 2017; Li & Su, 2022; Varela, 2018). Additionally, through the transfer of technology, investment in research and development, and competitiveness, foreign direct investment (FDI) inflows improve business productivity. It also helps businesses be more robust in times of crisis (Alfaro & Chen, 2012; Alfaro & Chen, 2018; Gorodnichenko et al., 2010; Guadalupe et al., 2012).

More risk-sharing processes between economies are accomplished through international capital flows, which enable countries to use foreign borrowing and lending in order to finance their domestic consumption (Evans & Hnatkovska, 2014; Islamaj & Kose, 2016; Kalemli-Ozcan et al., 2013; Maggiori, 2017; Rangvid et al., 2016). Not just FDI inflows but also other sources of flows result in a variety of direct and indirect advantages. However, the degree to which a result shows these benefits relies on country characteristics, especially local institutional and financial development.

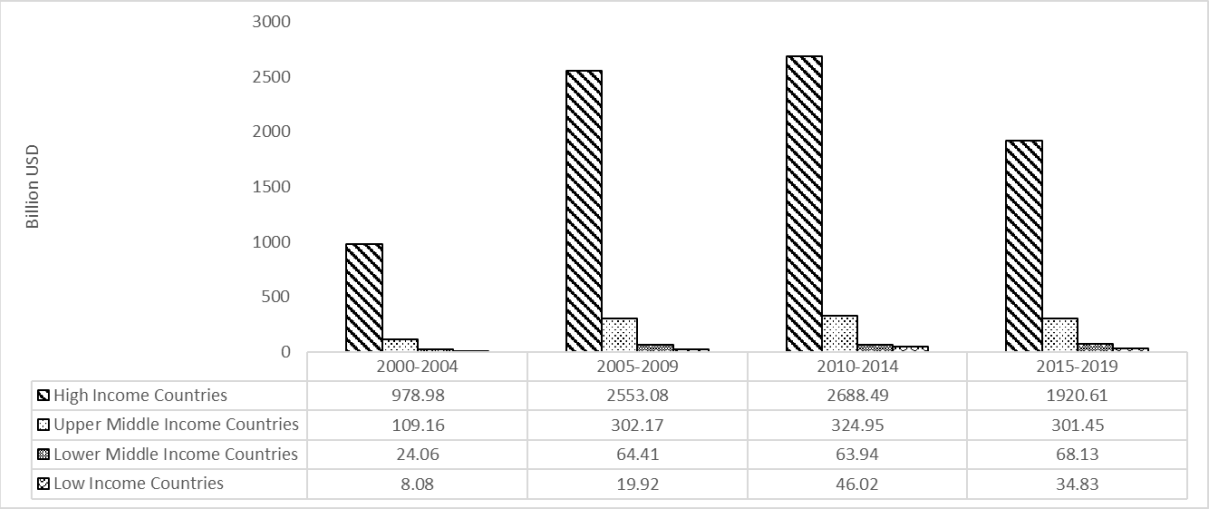
Existing studies highlight the key role of institutions in improving overall income levels, but they indicate little about the precise strategies that can be used to achieve these levels. Alfaro et al. (2008) suggested that institutions could have a positive impact on long-term growth via foreign capital inflows.

2.2 Changing Patterns of International Capital Inflows

In this study, countries are classified into four groups according to World Bank income categories: high-income, upper middle-income, lower middle-income, and low-income. Each year on July 1, the World Bank revises these classifications based on each country's gross national income (GNI) per capita from the preceding year. The GNI figures are computed using conversion factors derived from the Atlas method and are expressed in US dollars (USD).

Historically, international capital flows represented less than 7% of global GDP in 1998 but rose steadily to approximately 20% by 2007. This rapid expansion ceased in mid-2007 due to the financial crisis. By the end of 2008, these inflows had turned negative as a result of large-scale foreign asset sell-offs. By contrast, trade flows registered a decline for only one quarter—from the third quarter of 2008 to the first quarter of 2009 (Milesi-Ferretti & Tille, 2011).

In the years following the financial crisis, uncertainty in financial markets—particularly regarding international capital investments—remained elevated. As illustrated in Figure 1, each column represents the average international capital inflows for a particular income category over a five-year period. According to this illustration, all country classifications experienced substantial growth in inflows from 2005 to 2009 compared with 2000 to 2004. However, inflows turned negative for many categories during 2015-2019, reflecting the longer-term repercussions of the crisis. Notably, high-income countries consistently attracted larger capital inflows compared to other groups, exemplifying the Lucas paradox: despite being wealthier, they continued to draw in more foreign investment than poorer nations.



	2000-2004	2005-2009	2010-2014	2015-2019
High Income Countries	978.98	2553.08	2688.49	1920.61
Upper Middle Income Countries	109.16	302.17	324.95	301.45
Lower Middle Income Countries	24.06	64.41	63.94	68.13
Low Income Countries	8.08	19.92	46.02	34.83

Figure 1. Average capital inflows per capita

3. Empirical Method

Initially, OLS regression was used as an empirical method to test the effect of institutional quality in explaining international capital inflows. In the second regression, institutional quality was replaced by its 11 subcomponents, which can reveal the strength of each subcomponent compared with the other components of the institutional quality index.

Afterwards, additional explanations of international capital inflows, namely, the log of average years of schooling, restrictions on capital mobility, and the log of distantness, were included. In a previous study (Alfaro et al., 2008), after the addition of these three additional variables to the main regression equation, institutional quality remained positive and significant at the $p < 0.01$ level, while the additional explanations of the Lucas paradox (i.e., the log of average years of schooling, restrictions on capital mobility, and the log of distantness) became insignificant after the inclusion of the institutional quality variable. This shows that institutional quality was the main factor affecting international capital from 1970 to 2000.

The next section includes a robustness check that used additional control variables, such as the log of average trade openness, the corporate tax rate, the log of population, and the inflation rate. Two IV regressions were also performed separately using European mortality rates and UV-R rates as instruments to address the possible endogeneity in the regression results.

3.1 Data

The dataset spans from 2000 to 2020 and includes various variables to analyze the impact of institutional quality on international capital inflows. The dependent variable, Log of Capital Inflows per Capita, represents the sum of equity portfolio inflows and foreign direct investment inflows, divided by the population of each country, sourced from the World Bank's World Development Indicators. The primary independent variable, Institutional Quality, is derived from the International Country Risk Guide (ICRG) composite index, which includes subcomponents such as bureaucracy quality, corruption, and government stability, among others. Additional independent variables include GDP per Capita (Current USD) from the World Bank, Restrictions on Capital Mobility from the IMF's AREAR dataset, Log of Average Years of Schooling from the Barro Lee Educational Attainment dataset, and Log of Distantness, constructed using distance data from CEPII and GDP data from the World Bank.

For robustness checks, variables such as Log of Population, Log of Average Trade Openness, Corporate Tax Rate, and Inflation Rate are included, with data sourced from the World Bank and The Tax Foundation. Instrumental variables used in the analysis include Settler Mortality Rate from The Quality of Government Institute, Log UV Rate from Andersen et al. (2016), and Human Capital from the World Bank's Human Capital Index database. These variables collectively help in understanding the determinants of international capital inflows and addressing potential endogeneity issues in the regression analysis.

Table 1. Descriptive statistics

	Obs	Mean	Std. dev.	Min	Max
OLS Variables					
Log Capital Inflow per Capita	97	5.22	1.69	1.93	9.75
Log GDP per Capita	98	8.60	1.41	6.02	11.21
Institutional Quality	98	5.55	0.85	3.79	7.41
Institutional Quality Subcomponents					
Bureaucracy Quality (L)	98	2.27	1.06	0	4
Corruption (F)	98	2.71	1.09	0.57	5.81
Democratic Accountability (K)	98	4.19	1.41	0.88	6
Ethnic Tensions (J)	98	3.97	1.15	1.86	6
External Conflict (E)	98	9.88	1.04	6.9	12
Government Stability (A)	98	8.06	0.79	6.33	10.36
Internal Conflict (D)	98	9.11	1.25	6.14	11.52
Investment Profile (C)	98	8.59	1.78	2.64	11.71
Law and Order (I)	98	3.66	1.27	1.62	6
Military in Politics (G)	98	3.93	1.55	0.5	6
Religious Tensions (H)	98	4.66	1.24	1	6
Other Explanatory Variables					
Avg. Restrictions on Capital Mobility	98	0.28	0.32	0	0.99
Log Avg. Years of Schooling	85	2.02	0.47	0.37	2.54
Log Avg. Distantness	98	4.38	0.23	4.01	4.97
Robustness Check Variables					
Log Population	98	16.57	1.42	13.53	20.92
Log Trade Openness	97	1.84	0.20	1.42	2.56
Corporate Tax Rate	98	27.71	5.58	13.29	37.28
Inflation Rate	97	6.39	9.40	0.1	75.61
2SLS Variables					
Log Settler Mortality Rate	59	1.45	0.39	0.05	2.07
Log UV Rate	92	5.10	0.55	3.75	5.79
Human Capital	92	0.58	0.14	0.32	0.80

3.2 OLS Regression Output and Results Discussion

According to the literature review, countries with reliable institutions can attract more capital because of their safe investment environments and better allocation of capital. As presented in Table 2, before the inclusion of the institutional quality variable, Column 1 shows that the log of GDP per capita had a strongly significant positive coefficient at 1%. This suggests that countries with a higher GDP per capita (rich countries) generated more foreign capital inflows.

Table 2. Log of capital inflows as the dependent variable

Independent Variable	Whole World (1)	Whole World (2)
Log GDP per Capita	0.31***	0.10
	(0.11)	(0.07)
Institutional Quality		1.61***
		(0.12)
R-squared	0.07	0.69
Countries	97	97

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

In other words, this is the literal evidence of the Lucas paradox or the strange high volume of international capital inflows to rich countries. By contrast, after the inclusion of the institutional quality variable, as shown in Column 2, the log of GDP per capita became insignificant, while institutional quality had a positive and strongly significant

coefficient. The takeaway from these results is that institutional quality provided an explanation for the international capital inflows from 2000 to 2020.

In Table 3, institutional quality was replaced by its 11 subcomponents. The most significant element was bureaucracy quality, with a p-value less than 0.01, followed by military in politics, with $p < 0.05$. Most of the institutional quality elements had positive coefficients, which is consistent with the existing literature on the positive correlation between institutional quality and capital inflows.

Surprisingly, external conflict and law and order had negative coefficients. However, as they were not statistically significant, there were no important findings that could be inferred from these two elements.

Another way to interpret the results in Table 3 is as follows. Assuming that bureaucracy quality increased by 1 standard deviation, international inflow per capita was expected to increase by 59.2%. Similarly, if military in politics increased by 1 standard deviation, international capital inflows were expected to go up by 28.89%.

Capital inflows can have multiple explanations. According to Alfaro et al. (2008), average restrictions on capital mobility, the log of average years of schooling, and the log of average distantness provide alternative explanations for international capital inflows. However, from their findings, institutional quality was the main factor that accounted for the capital movements that occurred for 30 years from 1970 to 2000.

Table 3. Log of capital inflows as the dependent variable

Independent Variable	Whole World (1)	Whole World (2)
Log GDP per Capita	0.31***	0.07
	(0.11)	(0.07)
Bureaucracy Quality (L)		0.41***
		(0.16)
Corruption (F)		0.21
		(0.18)
Democratic Accountability (K)		0.03
		(0.12)
Ethnic Tensions (J)		0.08
		(0.09)
External Conflict (E)		−0.16
		(0.11)
Government Stability (A)		0.24*
		(0.16)
Internal Conflict (D)		0.24*
		(0.13)
Investment Profile (C)		0.19*
		(0.10)
Law and Order (I)		−0.05
		(0.14)
Military in Politics (G)		0.25**
		(0.11)
Religious Tensions (H)		0.01
		(0.09)
R-squared	0.07	0.74
Countries	97	97

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

As shown in Column 3, Table 4, the average restrictions on capital mobility had a highly significant negative coefficient. This means that countries with more restrictions on capital flows tended to have less international capital inflows. Moreover, the effect of GDP per capita disappeared after including the variable of restrictions on capital mobility, which means that this variable can provide an explanation for international capital inflows to rich countries.

Column 4 in Table 4 presents the regression output after the inclusion of the log of average years of schooling as an additional explanation for capital inflows. The results show that countries with higher education levels tended to

attract more international capital inflows. This variable had a positive coefficient that was significant at 1%.

Similar to the previous explanatory variable, the GDP per capita became insignificant after the addition of the schooling variable. This means that schooling could be a valid explanation for the high capital inflows that rich countries received.

Column 5 in Table 4 shows that the log of average distantness seemed to be insignificant and did not provide an explanation for international capital inflows. The main observation from Table 4 is that in Column 6, after the inclusion of the institutional quality variable, the average restrictions on capital mobility became insignificant, and the significance level of the log of average years of schooling decreased from $p < 0.01$ to $p < 0.05$. This suggests that institutional quality was the leading explanation for the international capital inflows during the 2000–2020 period.

Table 4. Log of capital inflows as the dependent variable

Independent Variable	Whole World (1)	Whole World (2)	Whole World (3)	Whole World (4)	Whole World (5)	Whole World (6)
Log GDP per Capita	0.31***	0.07	0.19*	0.15	0.31**	0.09
	(0.11)	(0.07)	(0.10)	(0.09)	(0.13)	(0.07)
Institutional Quality		1.61***				1.22***
		(0.12)				(0.14)
Avg. Restrictions on Capital Mobility			−2.71***			−0.18
			(0.45)			(0.33)
Log Avg. Years of Schooling				2.31***		1.04**
				(0.27)		(0.44)
Log Avg. Distantness					−0.06	0.12
					(0.77)	(0.44)
R-squared	0.07	0.69	0.33	0.52	0.07	0.77
Countries	97	97		85	97	85

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

3.3 Endogeniety Problem

The potential for an additional eliminated variable to influence institutional quality and capital inflows could lead to endogeneity in the regression results (Alfaro et al., 2008). Therefore, in this section, a thorough robustness study was implemented, and it negated the biasness assumption.

Although capital inflows and the GDP variables were in per capita terms, which controlled for the size effect, the population variable was included as a control variable, as shown in Table 5. The coefficients of institutional quality did not change much and were still highly significant and positive, indicating that the results were robust and that they were not affected by the population factor.

Table 5. Log of capital inflows as the dependent variable

Independent Variables	Whole World (1)	Whole World (2)	Whole World (3)	Whole World (4)	Whole World (5)	Whole World (6)
Log GDP per Capita	0.31***	0.07	0.09	0.10	0.08	0.11
	(0.11)	(0.07)	(0.07)	(0.06)	(0.06)	(0.07)
Institutional Quality		1.61***	1.56***	1.47***	1.55***	1.61***
		(0.12)	(0.12)	(0.12)	(0.11)	(0.12)
Log Population			-0.11*			
			(0.07)			
Log Trade Openness				1.68***		
				(0.48)		
Corporate Tax Rate					-0.05***	
					(0.02)	
Inflation Rate						0.001
						(0.01)
R-squared	0.07	0.69	0.70	0.73	0.72	0.69
Countries	97	97	97	96	97	96

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

Alfaro et al. (2008), whose study is closest to ours in terms of topic, used average trade openness, corporate tax rate, and inflation rate as additional control variables for their robustness checks. The inflation rate can capture some omitted macroeconomic factors that might affect the regression output. Moreover, higher taxes can negatively affect capital inflows, and the corporate tax rate is added as an extra control variable. Trade openness is also another macro component that is important to include. According to the findings presented in Table 5, even after these four control variables were accounted for, institutional quality remained positive and extremely significant at 1%.

3.3.1 IV-2SLS Estimates – Mortality Rate

It is expected that capital inflows will affect a country's institutional system. Greater investments can encourage the development of the financial system and promote a climate that is favorable to entrepreneurs. Therefore, analysts might tend to allocate new investments to economies with larger capital inflows, which represents another source of biasness and endogeneity in the capital allocation process, or, as mentioned earlier, the biasness in the regression output can be caused by additional unobserved variables (Afaro et al., 2008).

The next method for addressing the endogeneity problem involves performing IV regressions using instruments that are robust to reverse correlation and can take institutional variability in consideration. Many studies have used the European settler mortality rate as an IV for institutions. Acemoglu et al. (2001) suggested that the direction of institutional construction was shaped by the disease environment, beginning with the era of European colonization. The colonizers established either poor- or strong-quality institutions based on population density; areas that had low mortality rates were more urbanized and tended to have stronger institutions. Alternatively, places with higher mortality rates had fewer settlers and hence less strict institutions. As mortality rate was a major determinant of European settlement, settlement was a major factor in shaping old institutions. Somehow, old institutions have a strong correlation with current institutions. In this way, past ratios of European settler mortality rates serve as reliable indicators for the institutions now in place in old colonies.

Table 6. IV regression of capital inflows per capita

Panel A: Two-Stage Least Squares	
Institutional Quality	2.01***
	(0.25)
Log GDP per Capita	0.06
	(0.09)
R-squared	0.67
Panel B: First Stage for Institutional Quality	
Log Settler Mortality	−1.21***
	(0.22)
Log GDP per Capita	−0.01
	(0.06)
R-squared	0.35
Panel C: Ordinary Least Squares	
Institutional Quality	1.66***
	(0.15)
Log GDP per Capita	0.07
	(0.08)
R-squared	0.68
Countries	58

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

Other than their effects on institutional development, mortality rates have not been proven to have an impact on the GDP per capita over the last 100 years, which satisfies the exclusion restriction. In Table 6, the 2SLS method was applied using the log of European settler mortality rate as the instrument for institutions. As expected, the log of settler mortality rate had a negative effect on institutional quality, as shown in Panel B, suggesting that countries with higher mortality rates tended to have a lower institutional quality, which agrees with Acemoglu et al.'s (2001) assumption.

Moreover, after the inclusion of the log of settler mortality rate, the institutional quality remained positive and

strongly significant. The comparison of the OLS coefficients in Panel C and the 2SLS output in Panel A shows that the coefficient of institutional quality increased from 1.66 to 2.01. To identify whether the 2SLS estimates were influenced by a weak IV, the first-stage F-statistic was determined to be 29, which was higher than the threshold of 10. This supports the relevance of using the mortality rate as an instrument in this case.

The European settler mortality rate is a widely used instrument for institutions, but several studies have called attention to its drawbacks. Glaeser et al. (2004) found that the relationship between the disease environment and human capital is stronger than the relationship between the disease environment and institutions. Another study established that human resources and technological capabilities, not institutions, are the factors that account for the impact of European colonization on economic growth (Easterly & Levine, 2016). A study also revealed a serious measurement problem with settler mortality rates, raising concerns about their reliability as instruments (Albouy, 2012).

Furthermore, only 59 countries had available data on settler mortality rates out of the 98 countries in the sample in this study, thereby limiting the sample size.

3.3.2 IV-2SLS Estimates – UV Rate

Using UV-R as an IV can be a good alternative to using the settler mortality rate, according to recent studies (Ang et al., 2018). To formulate this index, Andersen et al. (2016) used daily satellite-based data acquired by NASA.

Another investigation showed that at 1% level of significance, the UV-R rate by itself can explain around 40% of cross-country fluctuations in institutional quality using data from more than 120 countries. The findings suggest that UV-R is a strong and robust predictor of institutional quality. This is because countries with higher UV-R rates tend to have higher risks of eye disorders, such as cataract, which is known to be the main reason for vision loss. Accordingly, a country's incentives to spend on creating and maintaining institutions are negatively affected by high UV-R rates (Ang et al., 2018). This indicates the relevance of using UV-R as an instrument for institutions.

Table 7. IV regression of capital inflows per capita

Panel A: Two-Stage Least Squares	
Institutional Quality	1.75***
	(0.55)
Log GDP per Capita	0.01
	(0.07)
Human Capital	1.22
	(2.35)
R-squared	0.70
Panel B: First Stage for Institutional Quality	
Log UV-R	−0.44***
	(0.17)
Log GDP per Capita	0.01
	(0.05)
Human Capital	2.93***
	(0.65)
R-squared	0.52
Panel C: Ordinary Least Squares	
Institutional Quality	1.13***
	(0.13)
Log GDP per Capita	0.03
	(0.06)
Human Capital	3.79***
	(0.81)
R-squared	0.77
Countries	92

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

In Table 7, IV regression was implemented using UV-R as an instrument for institutions. The results agree with those of Ang et al. (2018), suggesting the negative impact of UV-R on institutions. As shown in Panel B, the coefficient of the log of UV-R was negative and significant at 1%, reflecting an adverse relationship between institutions and UV-R. Moreover, the institutional quality coefficient seemed highly significant and positive in both the OLS in Panel C and in the 2SLS in Panel A. The coefficient increased from 1.13 to 1.75 after the inclusion of the IV, reflecting the robust and strong effect of institutions on capital inflows.

To ensure that the 2SLS estimates were not driven by the use of a weak instrument, the first-stage F-statistic was reported, and the findings show that the F-statistic for UV-R was 6.8, which was less than the threshold of 10. This suggests that UV-R is not a reliable instrument.

4. Conclusion

This study investigated the role of institutional quality in explaining variations in capital inflows from rich to poor countries over the 2000-2020 period, using a sample of 98 developed and developing nations. On the basis of a cross-country OLS regression, the results demonstrate that higher institutional quality exerts a strong, positive influence on foreign capital inflows, supporting the view that capital tends to move toward environments with robust institutions and well-developed financial systems. As developing economies generally have weaker institutional frameworks than developed ones, they benefit more substantially from improvements in institutional quality, which in turn attract greater capital inflows.

Bureaucracy quality and the degree of military influence in politics emerged as key subcomponents affecting capital inflows at the 1% and 5% significance levels, respectively. Even after controlling for endogeneity, institutional quality remained both positive and highly significant at the 1% level. Notably, the institutional quality coefficient rose from 1.66 to 2.01 when using mortality rate as an instrument, and from 1.13 to 1.75 when using the UV-R rate as an instrument. These findings underscore that transparent and accountable public administration, coupled with political stability, is vital for attracting international investors.

Overall, the results affirm that institutional quality continues to play a decisive role in driving global capital allocation, extending prior insights from the 1970–2000 period through the subsequent two decades (2000-2020). While these findings highlight the importance of strong institutions, targeted policy reforms are equally crucial for maximizing inflows of foreign investment. These reforms include streamlining bureaucracy through administrative simplification and digitalization of government services, enhancing accountability by enforcing anti-corruption measures and strengthening legal frameworks, and limiting military influence in governance through civilian oversight and stable political institutions. Additionally, promoting public-private collaboration—by fostering inclusive policy dialogue and capacity-building among public officials—and advancing financial-sector development—through market liberalization and regulatory strengthening—can further bolster investor confidence. By systematically reinforcing these institutional pillars, especially in countries with historically weaker governance structures, policymakers can cultivate an environment more conducive to attracting and sustaining diverse capital inflows, thereby supporting broader socio-economic objectives such as job creation, economic growth, and long-term development.

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Appendix A. Whole World Sample (98 countries)

Albania (ALB), Algeria (DZA), Angola (AGO), Argentina (ARG), Armenia (ARM), Australia (AUS), Austria (AUT), Azerbaijan (AZE), Bangladesh (BGD), Belarus (BLR), Bolivia (BOL), Brazil (BRA), Bulgaria (BGR), Burkina Faso (BFA), Cameroon (CMR), Canada (CAN), Chile (CHL), Colombia (COL), Congo (COG), Costa Rica (CRI), Cote d'Ivore (CIV), Croatia (HRV), Cyprus (CYP), Czech Rep. (CZE), Denmark (DNK), Dominican Rep. (DOM), Ecuador (ECU), Egypt (EGY), El Salvador (SLV), Estonia (EST), Ethiopia (ETH), Finland (FIN), France (FRA), Gabon (GAB), Gambia (GMB), Germany (DEU), Ghana (GHA), Greece (GRC), Guatemala (GTM), Guinea (GIN), Guyana (GUY), Haiti (HTI), Honduras (HND), Hungary (HUN), India (IND), Indonesia (IDN), Iran (IRN), Israel (ISR), Italy (ITA), Jamaica (JAM), Japan (JPN), Jordan (JOR), Kazakhstan (KAZ), Kenya (KEN), Korea (KOR), Latvia (LVA), Lithuania (LTU), Madagascar (MDG), Malaysia (MYS), Mali (MLI), Mexico (MEX), Morocco (MAR), Mozambique (MOZ), Namibia (NAM), Netherlands (NLD), New Zealand (NZL), Nicaragua (NIC), Niger (NER), Nigeria (NGA), Norway (NOR), Oman (OMN), Pakistan (PAK), Panama (PAN), Papua New Guinea (PNG), Paraguay (PRY), Peru (PER), Philippines (PHL), Portugal (PRT), Russia (RUS), Saudi Arabia (SAU), Senegal (SEN), Sierra Leone (SLE), Singapore (SGP), Slovenia (SVN), South Africa (ZAF), Spain (ESP), Sweden (SWE), Trinidad and Tobago (TTO), Tunisia (TUN), Turkey (TUR), Uganda (UGA), Ukraine (UKR), United Kingdom (GBR), United States (USA), Uruguay (URY), Vietnam (VNM), Zambia (ZMB), Zimbabwe (ZWE).

Appendix B. IV regression using the European mortality rate sample (59)

Algeria (DZA), Angola (AGO), Argentina (ARG), Australia (AUS), Bangladesh (BGD), Bolivia (BOL), Brazil (BRA), Burkina Faso (BFA), Cameroon (CMR), Canada (CAN), Chile (CHL), Colombia (COL), Congo (COG), Costa Rica (CRI), Cote d'Ivore (CIV), Dominican Rep. (DOM), Ecuador (ECU), Egypt (EGY), El Salvador (SLV), Ethiopia (ETH), France (FRA), Gabon (GAB), Gambia (GMB), Ghana (GHA), Guatemala (GTM), Guinea (GIN), Guyana (GUY), Haiti (HTI), Honduras (HND), India (IND), Indonesia (IDN), Jamaica (JAM), Kenya (KEN), Korea (KOR), Madagascar (MDG), Malaysia (MYS), Mali (MLI), Mexico (MEX), Morocco (MAR), New Zealand (NZL), Nicaragua (NIC), Niger (NER), Nigeria (NGA), Pakistan (PAK), Panama (PAN), Papua New Guinea (PNG), Paraguay (PRY), Peru (PER), Senegal (SEN), Sierra Leone (SLE), Singapore (SGP), South Africa (ZAF), Trinidad and Tobago (TTO), Tunisia (TUN), Uganda (UGA), United Kingdom (GBR), United States (USA), Uruguay (URY), Vietnam (VNM).

Appendix C. IV regression using the UV-R rate sample (94)

Albania (ALB), Algeria (DZA), Angola (AGO), Argentina (ARG), Armenia (ARM), Australia (AUS), Austria (AUT), Azerbaijan (AZE), Bangladesh (BGD), Belarus (BLR), Bolivia (BOL), Brazil (BRA), Bulgaria (BGR), Burkina Faso (BFA), Cameroon (CMR), Canada (CAN), Chile (CHL), Colombia (COL), Congo (COG), Costa Rica (CRI), Cote d'Ivore (CIV), Croatia (HRV), Czech Rep. (CZE), Denmark (DNK), Dominican Rep. (DOM), Ecuador (ECU), Egypt (EGY), El Salvador (SLV), Estonia (EST), Ethiopia (ETH), Finland (FIN), France (FRA), Gabon (GAB), Gambia (GMB), Germany (DEU), Ghana (GHA), Greece (GRC), Guatemala (GTM), Guinea (GIN), Guyana (GUY), Haiti (HTI), Honduras (HND), Hungary (HUN), India (IND), Indonesia (IDN), Iran

(IRN), Israel (ISR), Italy (ITA), Japan (JPN), Jordan (JOR), Kazakhstan (KAZ), Kenya (KEN), Korea (KOR), Latvia (LVA), Lithuania (LTU), Madagascar (MDG), Malaysia (MYS), Mali (MLI), Mexico (MEX), Morocco (MAR), Mozambique (MOZ), Namibia (NAM), Netherlands (NLD), New Zealand (NZL), Nicaragua (NIC), Niger (NER), Nigeria (NGA), Norway (NOR), Oman (OMN), Pakistan (PAK), Panama (PAN), Papua New Guinea (PNG), Paraguay (PRY), Peru (PER), Philippines (PHL), Portugal (PRT), Russia (RUS), Saudi Arabia (SAU), Senegal (SEN), Sierra Leone (SLE), Slovenia (SVN), South Africa (ZAF), Spain (ESP), Sweden (SWE), Tunisia (TUN), Turkey (TUR), Uganda (UGA), Ukraine (UKR), United Kingdom (GBR), United States (USA), Uruguay (URY), Vietnam (VNM), Zambia (ZMB), Zimbabwe (ZWE).

Appendix D. Country Categories Based on Income Groups

Table D1. Country Classifications

Rich Countries		Poor Countries	
High Income	Upper Middle Income	Lower Middle Income	Low Income
Australia	Albania	Algeria	Burkina Faso
Austria	Argentina	Bangladesh	Ethiopia
Canada	Armenia	Bolivia	Gambia
Chile	Azerbaijan	Cameroon	Guinea
Croatia	Belarus	Congo, Rep.	Madagascar
Cyprus	Brazil	Cote d'Ivoire	Mali
Czechia	Bulgaria	Egypt, Arab Rep.	Mozambique
Denmark	Colombia	El Salvador	Niger
Estonia	Costa Rica	Ghana	Sierra Leone
Finland	Dominican Republic	Haiti	Uganda
France	Ecuador	Honduras	
Germany	Gabon	India	
Greece	Guatemala	Indonesia	
Hungary	Guyana	Iran, Islamic Rep.	
Israel	Jamaica	Kenya	
Italy	Jordan	Morocco	
Japan	Kazakhstan	Nicaragua	
Korea, Rep.	Malaysia	Nigeria	
Latvia	Mexico	Pakistan	
Lithuania	Namibia	Papua New Guinea	
Netherlands	Panama	Philippines	
New Zealand	Paraguay	Senegal	
Norway	Peru	Tunisia	
Oman	Russian Federation	Ukraine	
Portugal	South Africa	Vietnam	
Saudi Arabia	Turkey	Zambia	
Singapore		Zimbabwe	
Slovenia			
Spain			
Sweden			
Trinidad and Tobago			
United Kingdom			
United States			
Uruguay			

Appendix E. The International Country Risk Guide (ICRG) subcomponents

Government Stability: This refers to a government's abilities to carry out its declared program(s) and to stay in office. The average yearly rating is from 0 to 12, where a higher score means a lower risk.

Investment Profile: This is an assessment of the factors affecting the risk to investment that are not covered by other political, economic, and financial risk components. It is the sum of three subcomponents, each with a

maximum score of 4 points and a minimum score of 0. A score of 4 points means a very low risk, while a score of 0 means a very high risk. The subcomponents are contract viability/expropriation, profit repatriation, and payment delay.

Internal Conflict: This refers to political violence in a country and its actual or potential impact on governance. The average yearly rating is from 0 to 12, where a higher score means a lower risk.

External Conflict: This is an assessment of the risk to the incumbent government by foreign action, ranging from nonviolent external pressure (diplomatic pressures, withholding of aid, trade restrictions, territorial disputes, sanctions, etc.) to violent external pressure (cross-border conflicts and all-out war). The average yearly rating is from 0 to 12, where a higher score means a lower risk.

Corruption: This is an assessment of corruption within a political system. The average yearly rating is from 0 to 6, where a higher score means a lower risk.

Military in Politics: This refers to protection from the military's involvement in politics. The average yearly rating is from 0 to 6, where a higher score means a lower risk.

Religious Tensions: These refer to protection from religious tensions in society. The average yearly rating is from 0 to 6, where a higher score means a lower risk.

Law and Order: The law subcomponent is an assessment of the strength and impartiality of the legal system, while the order subcomponent is an assessment of the popular observance of the law. The average yearly rating is from 0 to 6, where a higher score means a lower risk.

Ethnic Tensions: These refer to the degree of tension within a country attributable to racial, nationality, or language divisions. The average yearly rating is from 0 to 12, where a higher score means a lower risk.

Democratic Accountability: The average yearly rating is from 0 to 6, where a higher score means a lower risk. In general, the highest number of risk points is given to alternating democracies, while the lowest number of risk points is given to authoritarian regimes.

Bureaucracy Quality: The institutional strength and quality of the bureaucracy are shock absorbers that tend to minimize revisions of policy when governments change. The average yearly rating is from 0 to 4, where a higher score means a lower risk.

Appendix F. Data

Table F1. Data sources and descriptions

Variable	Description	Source
Log of Capital Inflows per Capita	The sum of equity portfolio inflows and foreign direct investment inflows, divided by the population of the country, averaged over the sample period	World Bank Data, World Development Indicators
Institutional Quality	The International Country Risk Guide composite index for 2000–2020, averaged over the sample period	The Political Risk Services Group https://www.prsgroup.com/explore-our-products/icrg/
GDP per Capita (Current USD)		World Bank Data, World Development Indicators
Restrictions on Capital Mobility	The mean value of four dummy variables: 1) exchange arrangements: separate exchange rates for some or all capital transactions and/or some or all invisibles, 2) restrictions on payments for current transactions, 3) restrictions on payments for capital transactions, and 4) surrender or repatriation requirements for export proceeds	International Monetary Fund, Annual Report on Exchange Arrangements and Exchange Restrictions, AREAR Dataset: https://www.elibrary-areaer.imf.org/Pages/Home.aspx

Log of Average Years of Schooling	Log of average years of secondary, higher, and total schooling in the total population	Barro Lee Educational Attainment: http://www.barrolee.com/
Log of Distantness	Variable constructed as the weighted average of the distance in thousand kilometers from the capital city of a particular country to the capital cities of other countries using the total GDP shares of the other countries as weights, averaged across the sample period	Distance data are from CEPII, Research and Expertise on the World Economy: http://www.cepii.fr/CEPII/en/ Total GDP data from World Bank Data, World Development Indicators
Population		World Bank Data, World Development Indicators
Log of Average Trade Openness	Logged value of the sum of exports and imports of goods and services, measured as a share of the GDP	World Bank Data, World Development Indicators
Corporate Tax Rate		The Tax Foundation: https://taxfoundation.org/publications/corporate-tax-ratesaround-the-world/
Inflation Rate		World Bank Data, World Development Indicators
Settler Mortality Rate		The Quality of Government Institute: https://datafinder.qog.gu.se/dataset/ajr
Log UV Rate		Andersen et al. (2016): https://www.jstor.org/stable/26160242
Human Capital	The Human Capital Index database	The World Bank: https://datacatalog.worldbank.org/search/dataset/0038030