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The Prosperity Gate: A Statistical Foundation for the Political Inclusion–Prosperity Relationship

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The Prosperity Gate: A Statistical Foundation for the Political Inclusion–Prosperity Relationship

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Abstract

Is prosperity a reward for democracy, or is democracy the basis of prosperity? The Nobel Prize–winning research of Daron Acemoglu, Simon Johnson, and James A. Robinson postulates the latter. This paper uses a quarter-century of World Bank Governance Indicators as per the new December 2025 definition (WGI25). The country-average WGI25, which we call the Political Inclusion Score, measures the effectiveness of democratic institutions. We postulate a Prosperity Gate, a minimal level of democracy above which wealth accelerates along a Wealth Wave, and a Prosperity Ceiling for those countries below that gate, effectively locking them into a Poverty Brick. We set out four hypotheses about the causal relationship between political inclusion (as a proxy for democracy) and prosperity and test them using a bootstrap causality analysis with 2-, 4-, and 8-year time lags. We find multiple statistically significant causal relationships of political inclusion on prosperity, but only above the minimal political inclusion level of the Prosperity Gate. We find hardly any causality in the reverse direction, limiting hope that prosperity will lead to political inclusion.

1 Acemoglu, Johnson, and Robinson: The Theoretical Foundation

The 2024 Nobel Memorial Prize in Economic Sciences was awarded to Acemoglu, Johnson, and Robinson for their work explaining why some nations are rich and others poor (henceforth AJR). Their answer - set out across two decades of empirical work and synthesized for a general audience in *Why Nations Fail* (2012) - is that the difference lies in institutions, and specifically in whether those institutions are inclusive or extractive.

AJR uses colonial settler mortality as an instrumental variable for present-day institutional quality [3] to address the causality problem: do institutions cause prosperity, or does prosperity cause institutions? Their answer is that the arrow runs predominantly from institutions to prosperity. That is the empirical claim our analysis is designed to re-examine using a different identification strategy: WGI25 panel data with time-lagged hypotheses.

Crucially for our purposes, AJR's qualitative concept of "institutional quality" maps onto a measurable quantity. As Frankel (2024) observes in summarising the Nobel decision [5], the World Bank's Worldwide Governance Indicators offer six dimensions - voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption - that together operationalize the AJR notion of inclusive institutions, and these indicators are highly correlated with national income per capita. This is the bridge from theory to data on which the rest of this paper is built.

2 Measuring Institutional Quality with WGI Data

2.1 The Six Worldwide Governance Indicators

The Worldwide Governance Indicators, published by the World Bank since 1996 and updated annually, aggregate hundreds of underlying perception-based and expert-coded sources into six standardized dimensions of governance quality. Together, they cover the full set of institutional features identified by AJR as inclusive: a voice for citizens (Voice and Accountability), the absence of politically motivated violence (Political Stability), competent public administration (Government Effectiveness), market-friendly rules (Regulatory Quality), equal treatment under law (Rule of Law), and the absence of state capture (Control of Corruption). The 2025 release (covering data through 2024 and published in December 2025, hereafter "WGI25") forms the backbone of this study.

2.2 Why Percentile Ranks, Not Absolute Scores

The WGI 2025 revision introduced an Absolute Benchmark Scale (0–100) intended to make scores comparable across years. We deliberately do not use this absolute scale. Our reasoning is methodological and philosophical.To anchor an absolute "100" is to declare that some currently-known institutional configuration is the apex of human political evolution. We do not believe this can be defended. As David Van Reybrouck argues in *Against Elections* (Gegen Wahlen, 2016) [8], the modern reliance on electoral-representative systems may itself be a form of "democratic fatigue syndrome" rather than an end-state. Van Reybrouck and others suggest that more inclusive futures - sortition, deliberative

bodies, hybrid forms of citizen participation - remain unrealized. Whatever one thinks of these specific proposals, the point stands that we do not yet know how political organization will evolve. An absolute scale that pretends otherwise is a relative scale in disguise.

By using percentile ranks of the WGI dimensions, we side-step this "end-of-history" trap. We measure each country's institutional quality not against an imagined perfection but against the frontier of current global practice. Improvement is defined relative to peers. As a side effect, political inclusion becomes a competition between countries: a nation that stands still while others improve falls in rank. We regard this as a desirable feature, not a bug. It denies the wealthy the comfort of resting on past institutional achievements and treats the pursuit of inclusion as a continuous, comparative race, which it is.

2.3 From Institutional Quality to the Political Inclusion Score (PIS)

Some authors prefer to isolate a single WGI dimension - most often Rule of Law - on the argument that it most directly captures institutional quality. We take the opposite view. Following Pinar (2015) [6], we use the average across all six WGI dimensions as our headline indicator. Pinar's argument is that any single indicator is contaminated by measurement noise and dimension-specific biases, but a composite average serves as a robust proxy for the latent variable of institutional quality. Selecting one dimension assumes we know which one matters most and that we can measure it cleanly. By averaging across all six, we build on data that captures the entire institutional ecosystem rather than any one administrative slice.

We deliberately rename the resulting composite. We call it the Political Inclusion Score (PIS) rather than "institutional quality" for two reasons. First, "institutional quality" is backward-looking and ambiguous: an authoritarian state can have highly developed institutions whose function is to protect political exclusivity. Second, "political inclusion" places the analytical focus where AJR put it, on whether power and opportunity are distributed broadly across the population, or hoarded by an elite. Re-read through the political-inclusion lens, the six WGI dimensions become:

Table 1: WGI dimensions interpreted as political inclusion

Original WGI Indicator	**Political Inclusion Interpretation**
Voice and Accountability	Pluralistic Inclusion - the breadth of political participation
Political Stability	Systemic Continuity - resilience of the inclusive framework
Government Effectiveness	Provisionary Inclusion - the state's capacity to deliver for all
Regulatory Quality	Market-Access Inclusion - absence of elite-captured barriers
Rule of Law	Protective Inclusion - equal legal standing for every citizen
Control of Corruption	Integrity of Inclusion - prevention of extractive rent-seeking

Political Inclusion Score (PIS) = Percentile rank of the per-country WGI average.

3 The Empirical Pattern: WGI vs. Prosperity

3.1 The Inclusion–Prosperity Map

Plotting PIS against average individual income (GDP per capita) for every country in the WGI dataset, oil-rich outliers excluded, using values from 1996 through 2024 as published in December 2025, produces the following picture:

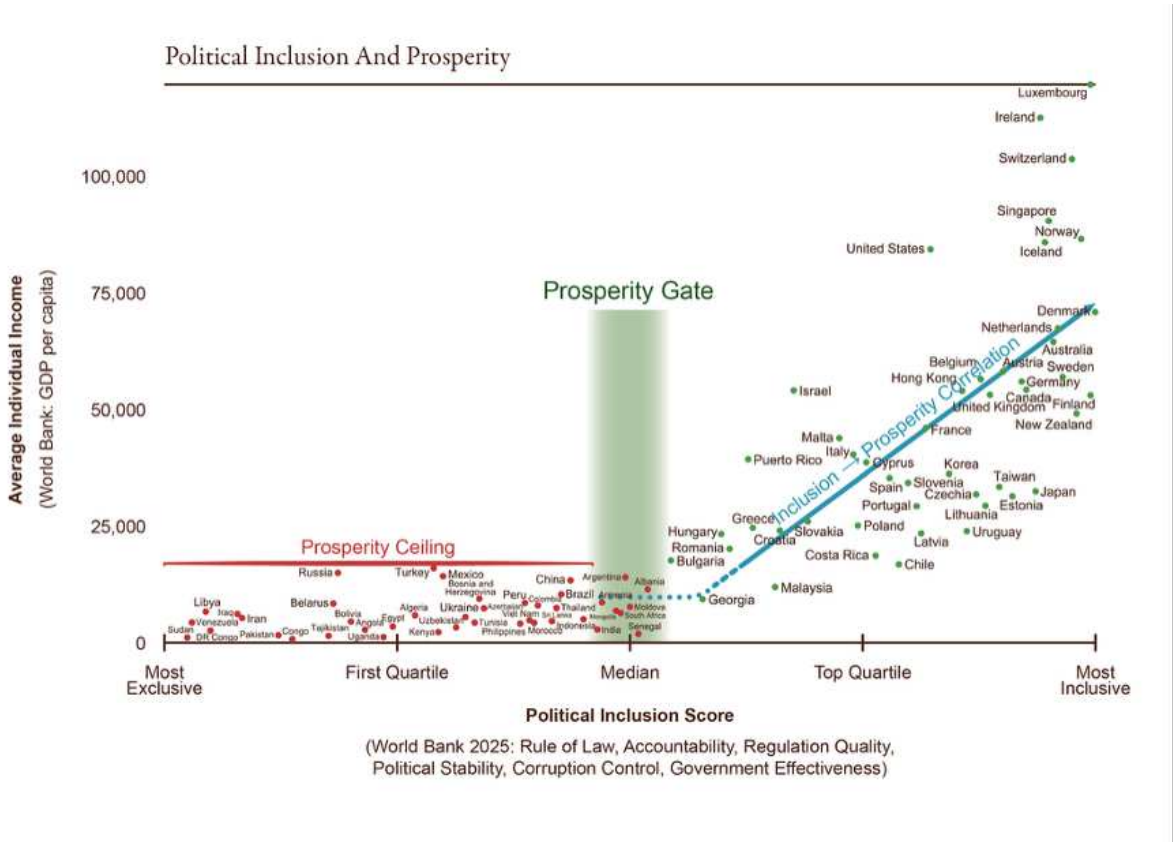


Figure 1: Inclusion–Prosperity Map: Political Inclusion Score vs. GDP per capita (2024)

Each dot represents one country in 2024, as published in December 2025. The horizontal axis is the Political Inclusion Score: each country is positioned at the percentile rank corresponding to its WGI25 average value. The vertical axis is prosperity, measured as average individual income. A heuristic interpretation reveals the following features, each to be tested formally in the analysis section:

(i) Below roughly the median, there is no visible correlation. Countries clustered on the left side of the chart show no clear relationship between their PIS and income levels. High political inclusion at low absolute levels does not, on this picture, translate into wealth.

(ii) Above roughly the median, the relationship becomes strong. A clear positive slope emerges. We call this the Inclusion → Prosperity Correlation, indicated by the blue regression line. The higher the political inclusion, the higher the prosperity.

(iii) There is a hard upper bound on prosperity for low-PIS countries. No country with PIS materially below the median has ever broken through a certain income level.

We mark this empirical bound with a red horizontal line and call it the Prosperity Ceiling. The region beneath it, where two-thirds of country-years are trapped, we call the Poverty Brick.

The threshold at which the Inclusion → Prosperity Correlation kicks in - visually, around the median - we call the Prosperity Gate. These first observations are visual and anecdotal. They are not yet causal claims. They are the basis for the hypotheses we will test in the analysis section.

3.2 The Ex-Soviet Republics: Inclusion as a Better Investment Than Oil

Before formalizing the hypothesis, two natural experiments in the data deserve attention. They are not statistical proofs - they are illustrative cases that motivated the hypotheses we test later. The first natural experiment was the collapse of the Soviet Union in 1991. A set of countries with broadly similar starting incomes, industrial inheritances, and Soviet institutional baggage suddenly chose different constitutional paths. Three of them - Estonia, Latvia, and Lithuania - adopted strongly inclusive constitutions and integrated with European institutions. The other dozen - Russia, Belarus, Moldova, Ukraine, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan - did not; instead, they settled into varying degrees of exclusive rule, several with substantial oil and gas endowments. Three decades later, the WGI panel tells a striking story.

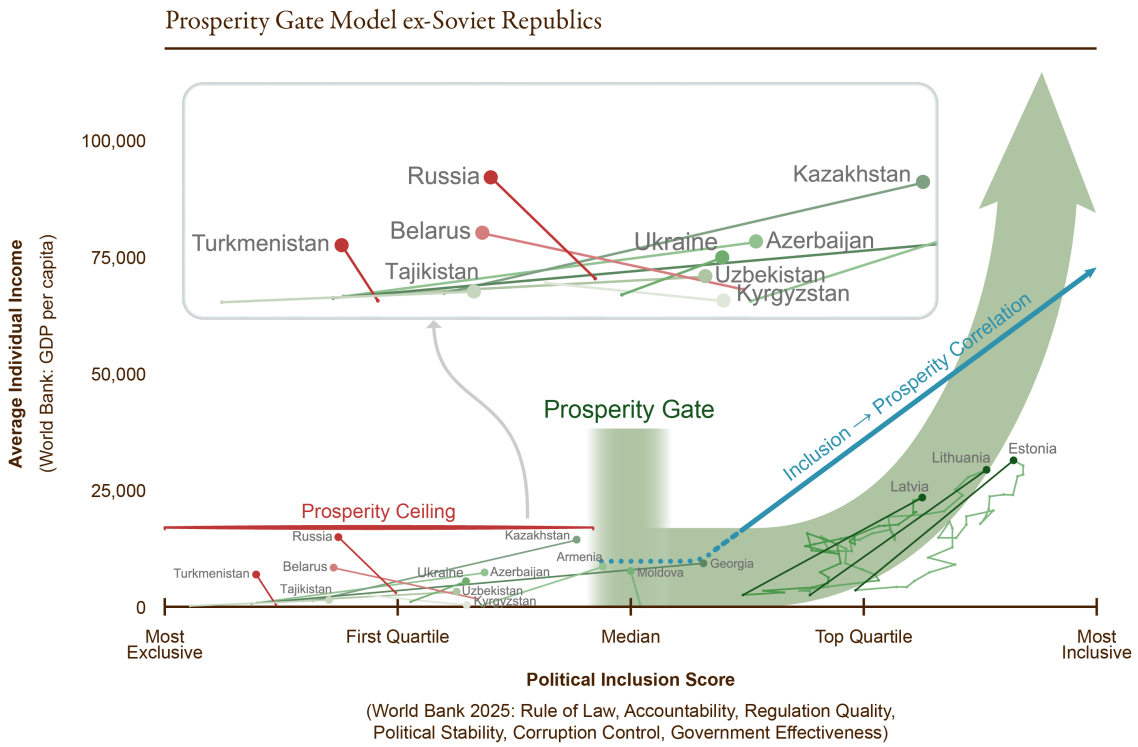


Figure 2: Trajectories of ex-Soviet republics: Baltic vs. exclusive states

The exclusive ex-Soviet republics move sideways across the left side of the chart, below the Prosperity Ceiling in the Poverty Brick area. Their PIS drifts left and right, and their income drifts with it, but none has broken through the Prosperity Ceiling - not even those with substantial hydrocarbon revenues. The Baltic three, by contrast, broke through. Their income today is roughly double that of their politically exclusive ex-Soviet states, despite no oil and despite similar starting points. They face no ceiling: the regression line for the upper half of the chart implies they still have substantial room to grow. The comparison suggests a clear lesson for capital allocation: political inclusion appears to have been a better investment than oil.

This anecdotal evidence motivates the first hypothesis we will later test:

> **H1 (informal):** Above the median level of political inclusion, an increase in political inclusion increases subsequent prosperity.

3.3 The BRICS Countries: A Quarter-Century Stuck Below the Gate

The BRICS - Brazil, Russia, India, China, and South Africa - together represent a substantial share of the world's population and economic activity. For each of them, a path to sustained high-income status would require their PIS to sit, year after year, to the right of the green Prosperity Gate.

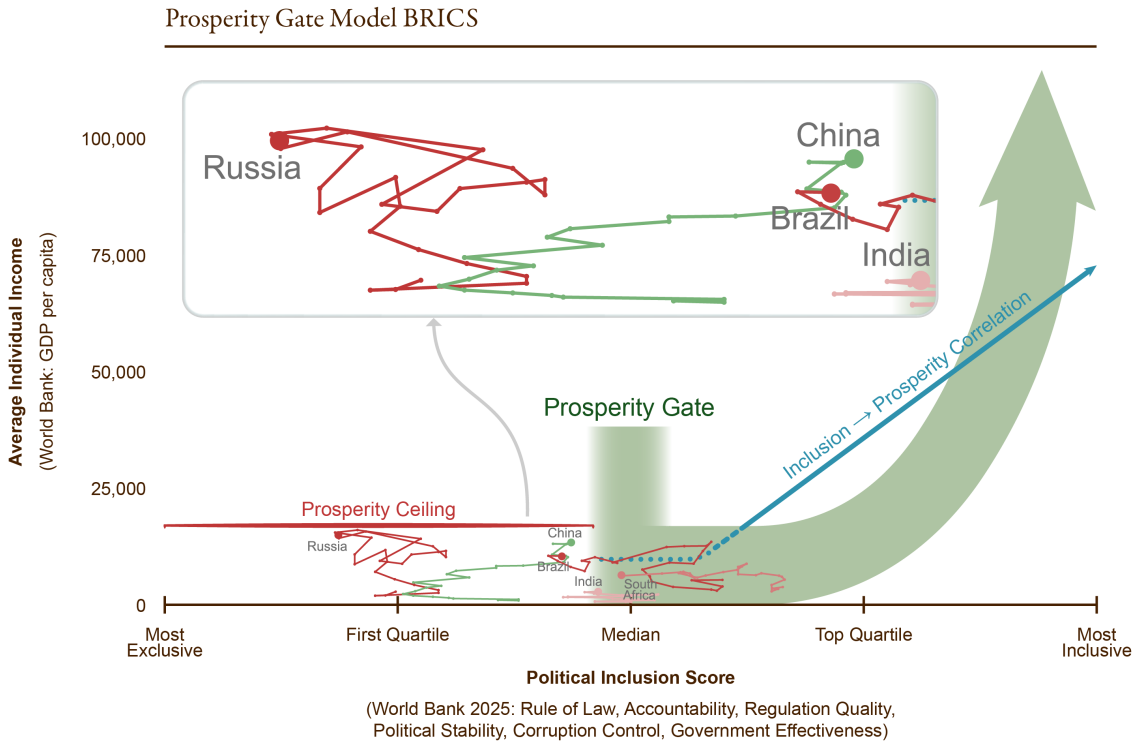


Figure 3: Trajectories of BRICS countries

Twenty-five years of data tell a sobering story. No BRICS country has ever sustained a position firmly to the right of the Prosperity Gate. The single exception was South Africa in 1996, in the immediate post-apartheid moment. From that 1996 peak South Africa has drifted leftward, and today sits almost beneath the Prosperity Ceiling. India, China, and Brazil have even less political inclusion, and Russia is far worse, clearly below the first quartile, far away from ever reaching the Prosperity Gate.

Two BRICS members have substantial unused room under the Ceiling. India and South Africa are poor enough to continue to grow within the Poverty Brick - but only up to the Ceiling, and only without the Wealth Wave dynamic that upper-half countries enjoy. To genuinely catch the developed economies, they would need to cross the Gate.

Another two are in a more precarious position. Russia and China are already close to the Prosperity Ceiling. The pattern in the data - both the AJR historical record and twenty-five years of WGI panel - implies that further sustained income growth at their current PIS is unlikely. Whether China can defy this pattern by transitioning to inclusive growth without political reform is the central question the AJR framework was designed to answer; their answer, broadly, is no. This anecdotal evidence motivates the mirror hypothesis:

> **H2 (informal):** Below the median level of political inclusion, an increase in political inclusion does not, by itself, increase subsequent prosperity.

4 The Prosperity Gate Model

The two natural experiments above, taken together with the master scatter, suggest a fractured rather than linear relationship between PIS and prosperity. We summarise this structure as the Prosperity Gate Model. The model has four components.

4.1 The Prosperity Gate

The Gate is a critical juncture in institutional evolution. As a country's PIS rises through the median, it enters a transitional zone in which the relationship between inclusion and income changes character. Crossing the Gate requires more than rising GDP - it requires the institutionalization of the rule of law, regulatory quality, and voice. In AJR's terms, it is the point at which the risk of expropriation has fallen far enough that large-scale domestic and foreign private investment becomes rational. In our chart, the Gate is the green vertical band at roughly the median percentile rank.

4.2 The Inclusion → Prosperity Correlation

To the right of the Gate, prosperity scales with inclusion. The Poverty Brick ends, the Ceiling lifts, and the blue regression line - the Inclusion → Prosperity Correlation - describes the relationship. The regression line is the empirical statement of the AJR claim that inclusive institutions generate sustained income growth.

4.3 Generating Wealth: The Wealth Wave

Countries that pass the Gate do not climb the regression line in a straight diagonal. They move through the chart in a characteristic shape: first horizontally (gaining inclusion), then vertically (gaining wealth). We call this trajectory the Wealth Wave. The implication is sequencing: inclusion comes first, wealth follows. The reverse path - getting rich first and hoping inclusion follows - is, on this evidence and on AJR's, conspicuously rare. As we put it more bluntly in the earlier essay: don't hope for wealth to create freedom; freedom creates wealth. As inclusion approaches its highest relative levels, average individual income scales toward $100,000 and beyond, propelled by the compounding of stability, education, and innovation.

4.4 Staying Poor: The Poverty Brick and the Prosperity Ceiling

Beneath the Gate, the picture inverts. Power is concentrated, and the incentive structure rewards rent-seeking over innovation. Countries here are trapped in the Poverty Brick, capped from above by the Prosperity Ceiling - currently in the order of USD 15,000–20,000 of average individual income. Even resource-rich states struggle to push through it, because policy volatility and elite capture eat the surplus before it compounds. The Ceiling is not a law of physics; it is the empirical envelope of what extractive institutions, on the historical record so far, have been able to deliver.

5 Research Objective: The Question of Causality

Is prosperity a reward for democracy, or is democracy the basis of prosperity? Following Acemoglu, Johnson, and Robinson, we analyze 25 years of World Bank Governance Indicators (WGI25) to construct a Political Inclusion Score (PIS). We propose a Prosperity Gate: above a minimum PIS, wealth accelerates along a Wealth Wave; below, a Prosperity Ceiling locks countries into a Poverty Brick. Testing four hypotheses via robust bootstrap causality at 2-, 4-, and 8-year lags, we find clear strong statistically significant PIS→prosperity effects, but only above the Gate. Reverse causality—prosperity leading to inclusion—is largely absent, offering little support for the modernization hypothesis.

The Prosperity Gate Model is heuristic and descriptive. It is built from a master scatter and from anecdotal trajectories. Its central claim - that inclusion drives prosperity rather than the other way round - is causal, and a scatter plot cannot establish causation. The objective of this paper is to test that causal claim using time-lagged panel analysis.

5.1 Hypotheses

We test four directional hypotheses, organized as a 2×2 of cause and direction:

H1: $\text{PI}^+ \rightarrow \text{GDP}^+$: An increase in political inclusion produces a subsequent increase in prosperity.

H2: $\text{PI}^- \rightarrow \text{GDP}^-$: A decrease in political inclusion produces a subsequent decrease in prosperity.

H3: $\text{GDP}^+ \rightarrow \text{PI}^+$: An increase in prosperity produces a subsequent increase in political inclusion.

H4: $\text{GDP}^- \rightarrow \text{PI}^-$: A decrease in prosperity produces a subsequent decrease in political inclusion.

H1 and H2 are the AJR claim - institutions cause prosperity. H3 and H4 are the rival "modernization" claims - wealth eventually buys inclusion. The relative strength of H1/H2 vs. H3/H4 is the empirical heart of the paper.

5.2 Methodology

We test each hypothesis using time-lagged panel data. The independent variable is measured over a window of n years; the dependent variable is measured over the subsequent window of n years. We use three lag lengths: $n = 2$, 4, and 8 years. The full WGI25 panel runs from 1996 through 2024 - twenty-eight years of data per country - which gives us multiple non-overlapping windows at each lag length and allows us to check whether the effect strengthens, weakens, or stabilizes as the time horizon grows.

5.3 Data Splits

To isolate the model's structural claim - that the relationship between inclusion and prosperity is different below and above the Gate - we run the analysis on three datasets:

- The full panel (all country-years, all PIS levels).
- Below the Gate - the starting-period PIS is in the 0th–45th percentile range.
- Above the Gate - the starting-period PIS is in the 55th–100th percentile range.

The 45/55 buffer around the median is conservative: it deliberately excludes country-years in the immediate transition zone, so that we are testing the contrast between clearly inclusive and clearly exclusive panels rather than the boundary case.

6 Our Analysis

6.1 Statistical Methodology

6.1.1 Global Regression Analysis

We begin with a simple global analysis to establish the overall relationship between political inclusion (PI) and GDP per capita. Using Pearson correlation and linear regression on the full dataset (1996–2024), we fit a regression line of the form $y = mx + b$, where x is the PI score and y is GDP per capita in USD. The slope m represents the average increase in GDP per unit increase in PI. To see whether this relationship changes over time, we also compute separate regression lines for each year.

6.1.2 Statistical Methods

Correlations are assessed using Pearson's r with two-tailed p-values. For regressions, we use ordinary least squares (OLS) and test slope significance with a t-test at $\alpha = 0.05$. All data processing is done in Python using SciPy, NumPy, Pandas, and Matplotlib.

6.2 Global Regression Results

The following figures present the main findings of this global, non-causal analysis.

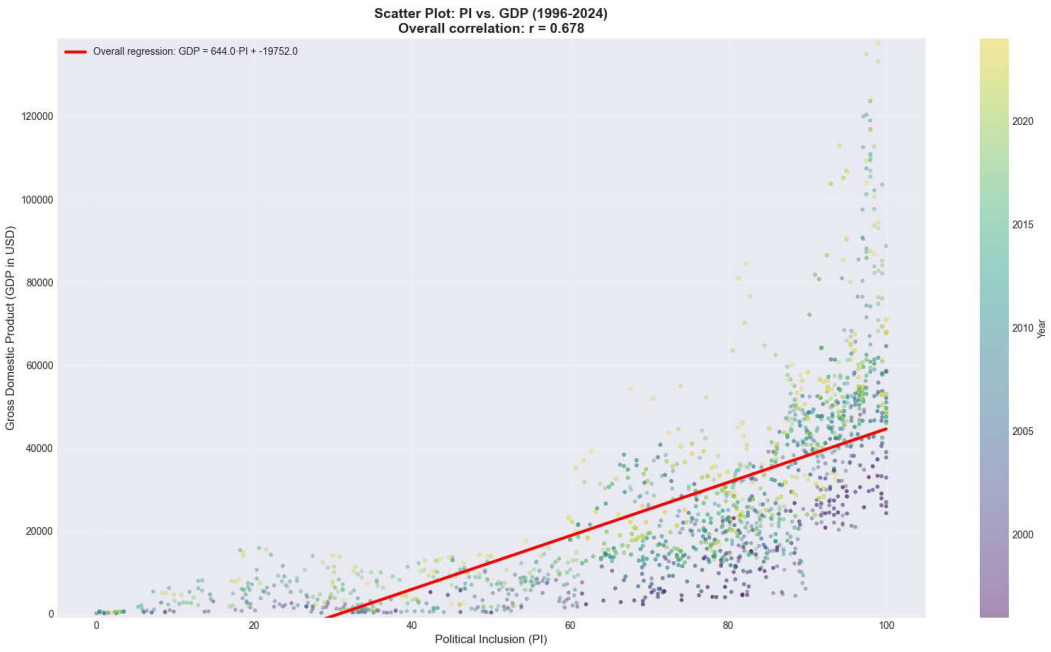


Figure 4: Global relationship between political inclusion and GDP per capita (1996–2024).

Figure 4 shows the pooled relationship across all years. The Pearson correlation is $r = 0.689$, and the regression slope is $m = 644$ (GDP per capita per PI point). Both indicate a strong positive association: higher political inclusion systematically corresponds to higher GDP per capita. This aligns with the first part of our hypothesis, but does not yet tell us anything about causality or the existence of a threshold.

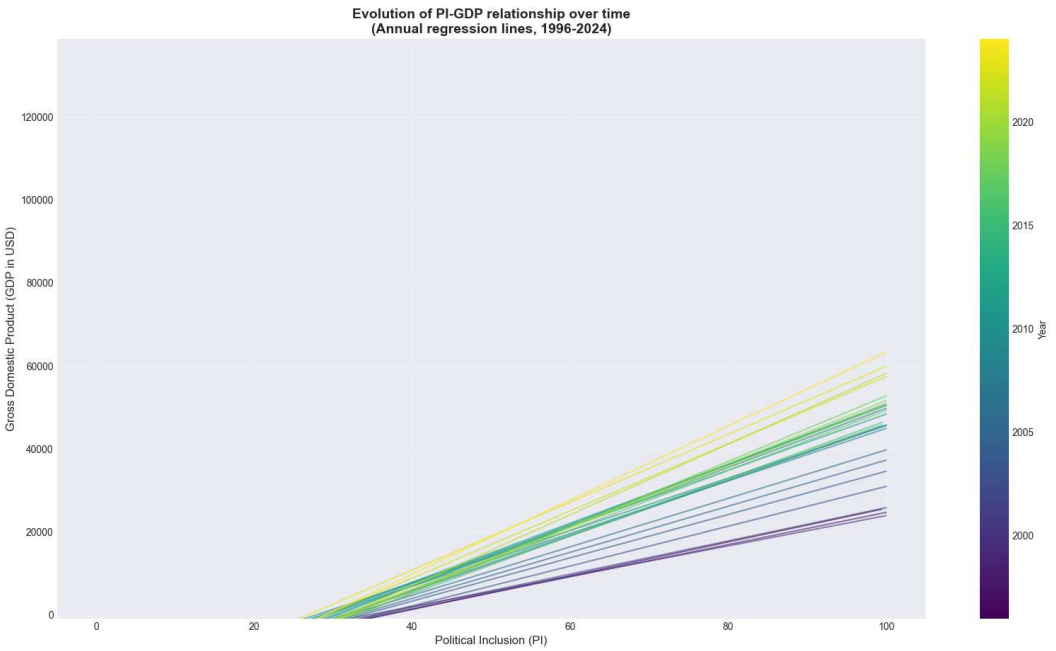


Figure 5: Annual regression lines of GDP per capita on political inclusion (1996–2024).

Figure 5 plots the regression line for each year separately. A notable finding is the increasing steepness of the slopes over time, with a pivot point near low PI values. For countries with PI above 80, the lines are tightly clustered; for those below 50, they fan out and intersect. This suggests that countries with low political inclusion struggle to achieve sustained GDP growth, while those with high inclusion enjoy more stable and increasing growth benefits over the long term. These visual patterns motivate the quantification of the *Prosperity Gate*, above which political inclusion becomes a robust predictor of prosperity.

7 Addressing Causality using Granger-type Analysis and Bootstrapping

Throughout this section, we use the term ***causality*** *to mean* ***Granger-predictability*** *(Granger, 1969 [1]). That is, we test whether past changes in political inclusion help forecast future changes in GDP per capita (and vice versa). This does not imply structural or policy-invariant causation, but it is the strongest empirical claim we can make with observational panel data. For brevity, we simply write 'causality' in the text.*

The global regressions show a strong correlation, but correlation is not causation. Moreover, they do not test whether the effect of political inclusion on GDP changes at a specific threshold. To overcome these limitations, we now turn to a Granger-type causality framework combined with block bootstrapping. This allows us to (i) compare the causal direction and strength above and below that threshold, and (ii) quantify our confidence in the statement that above the Prosperity Gate, $\mathrm{PI}^{+} \rightarrow \mathrm{GDP}^{+}$ is stronger than below.

7.1 Causal Testing Framework

1. **Data Foundation and Notation**
   Let $\mathcal{C}_D = \{c_1, c_2, \ldots, c_N\}$ be the set of countries in the dataset D. In our analysis we have chosen 54 countries from the WGI data that have a full dataset. For the list of countries see Appendix A. For each country c_i we observe time series of political inclusion $PI_{i,t}$ and GDP per capita $GDP_{i,t}$ at discrete, equally spaced time points $t \in \{1, 2, \ldots, T\}$.

2. **Cumulative Percentage Changes**
   For a time window of length w years we compute the cumulative percentage change

$$\Delta^w PI_{i,t} = \frac{PI_{i,t+w} - PI_{i,t}}{PI_{i,t}} \times 100\%,$$
$$\Delta^w GDP_{i,t} = \frac{GDP_{i,t+w} - GDP_{i,t}}{GDP_{i,t}} \times 100\%,$$

   where w is an even integer; we consider windows of $w = 2, 4, 8$ years.

3. **Adaptive Thresholds for Significant Changes**
   Instead of fixed percentile cut-offs, we use distribution-based thresholds, allowed to be asymmetric for positive and negative changes. For the set of all positive changes $\Delta^w PI$ we denote

$$\mathcal{P}_{PI} = \{(i,t) : \Delta^w PI_{i,t} > 0\}, \quad \mathcal{N}_{PI} = \{(i,t) : \Delta^w PI_{i,t} < 0\}.$$

   Let $q^+_{PI}(p)$ be the p-th percentile of the positive changes $\{\Delta^w PI_{i,t} : (i,t) \in \mathcal{P}_{PI}\}$ and $q^-_{PI}(p)$ the p-th percentile of the negative changes $\{\Delta^w PI_{i,t} : (i,t) \in \mathcal{N}_{PI}\}$ (negative values sorted ascending). The thresholds for a "significant" positive or negative change are then

$$\tau^+_{PI} = q^+_{PI}(p), \qquad \tau^-_{PI} = q^-_{PI}(100 - p),$$

   with an analogous construction for $\Delta^w GDP$. The parameter p is a chosen percentile (we use $p = 50$ and $p = 66$). A change in variable $X \in \{PI, GDP\}$ at (i,t) is classified as *significant positive* if $\Delta^w X_{i,t} > \tau^+_X$, *significant negative* if $\Delta^w X_{i,t} < \tau^-_X$, and *neutral* otherwise.

   Reasoning for adaptive thresholds: Fixed percentage cut-offs (e.g., $\pm 5\%$) would treat a 5% increase in political inclusion as equally 'significant' for a country at the 10th percentile and for one at the 90th percentile. This is problematic for two reasons. First, percentile-ranked PI scores are bounded between 0 and 100; a 5 percentage point move from 10 to 15 is a 50% relative improvement, while the same absolute move from 85 to 90 is only a 5.9% relative change. Second, the distribution of $\Delta^w PI$ differs systematically across regimes: countries below the Prosperity Gate exhibit higher volatility, so a fixed threshold would either be too strict for stable high-PI countries or too loose for volatile low-PI countries. Our adaptive thresholds $\tau^+_{PI} = q^+_{PI}(p)$ and $\tau^-_{PI} = q^-_{PI}(100 - p)$ solve both issues by anchoring significance to the 'empirical distribution of changes within the same dataset' (or bootstrap sub-sample). A change is labelled 'significant' precisely when it ranks among the top p percent of positive changes or the bottom p percent of negative changes. This makes the classification scale-invariant and automatically adjusts to the local volatility of

each regime. As a result, the comparison of transition probabilities $P_{PI\to GDP}$ above and below the Gate is not distorted by mechanical differences in the variability of PI changes.

4. **State Classification and Transition Matrices**
We now define states to capture the dynamics. For each time window $(t, t+w)$ we assign a state vector
$$S_{i,t} = (s_{i,t}^{PI}, s_{i,t}^{GDP}) \in \{+, -, n\}^2,$$
where $s_{i,t}^{PI}$ and $s_{i,t}^{GDP}$ are the classifications from the previous step. To assess Granger-type causality (Granger, 1969 [1]), we introduce a lag l (even number of years). For a fixed lag we construct two transition matrices:
$$P_{PI\to GDP}(l) \;=\; \begin{pmatrix} p_{+\to+} & p_{+\to n} & p_{+\to-} \\ p_{n\to+} & p_{n\to n} & p_{n\to-} \\ p_{-\to+} & p_{-\to n} & p_{-\to-} \end{pmatrix},$$
with
$$p_{a\to b} = \Pr\big(s_{t+l}^{GDP} = b \mid s_t^{PI} = a\big), \qquad a, b \in \{+, n, -\},$$
and analogously $P_{GDP\to PI}(l)$. All probabilities are estimated as observed relative frequencies. The key idea: If $PI \to GDP$ is the dominant causal direction, then the probability of a positive GDP change given a previous positive PI change should be higher than the reverse probability (positive PI change given a previous positive GDP change).

5. **Bootstrap Confidence Intervals for Transition Probabilities**
To account for temporal dependence within each country, we employ a block bootstrap procedure resampling entire country blocks with replacement (subseries approach, Carlstein, 1986 [2]). For a given dataset D (full set or a subset defined by a threshold θ) we generate $B = 1000$ bootstrap samples:

   (a) Draw N countries from $\mathcal{C}_D$ with replacement, keeping each country's entire time series intact.

   (b) For this bootstrap sample compute the transition matrices $P^{(b)}_{PI\to GDP}(l)$ and $P^{(b)}_{GDP\to PI}(l)$ following steps 2–4.

   (c) Repeat (a)–(b) B times.

   From the B replicates we obtain the q% confidence interval for any cell (a, b) as the $(100-q)$th and qth percentiles of the bootstrap distribution. We can do this step for each of the four causal directions.

6. **Definition of the S-Metrics (Dominance Measures)**
For a given candidate threshold θ and a relation $\sim \in \{\leq, >\}$, let $D_{\theta\sim}$ be the subset of the data containing only countries (or observations) with $PI \sim \theta$. For such a subset we complete the steps (1)-(5) and obtain the four confidence intervals that are of primary interest for our hypothesis:
$$I_q^{PI\to GDP}(D_{\theta\sim})_{+,+},\; I_q^{PI\to GDP}(D_{\theta\sim})_{-,-},\; I_q^{GDP\to PI}(D_{\theta\sim})_{+,+},\; I_q^{GDP\to PI}(D_{\theta\sim})_{-,-}.$$

We then define the dominance measures

$$\begin{aligned}
S_+(PI, \theta^{\sim}) &= \inf I_q^{PI \to GDP}(D_{\theta^{\sim}})_{+,+} \; - \; \sup I_q^{GDP \to PI}(D_{\theta^{\sim}})_{+,+}, \\
S_-(PI, \theta^{\sim}) &= \inf I_{0.95}^{PI \to GDP}(D_{\theta^{\sim}})_{-,-} \; - \; \sup I_q^{GDP \to PI}(D_{\theta^{\sim}})_{-,-}, \\
S_+(GDP, \theta^{\sim}) &= \inf I_q^{GDP \to PI}(D_{\theta^{\sim}})_{+,+} \; - \; \sup I_q^{PI \to GDP}(D_{\theta^{\sim}})_{+,+}, \\
S_-(GDP, \theta^{\sim}) &= \inf I_q^{GDP \to PI}(D_{\theta^{\sim}})_{-,-} \; - \; \sup I_q^{PI \to GDP}(D_{\theta^{\sim}})_{-,-}.
\end{aligned}$$

Now, if $S_+(PI, \theta^{\sim}) > 0$, it means that the confidence intervals for the $(+,+)$ transitions do not overlap and the entire PI $\to$ GDP interval lies above the GDP $\to$ PI interval. This is a clear signal that positive PI changes are significantly more likely to be followed by positive GDP changes than vice versa in the subset $D_{\theta^{\sim}}$. A positive $S_-(PI, \theta^{\sim})$ would analogously signal dominance for negative changes. Our hypothesis predicts that for the subset with $PI > \theta$ (above the Prosperity Gate), we should see $S_+(PI, > \theta) > 0$ more clearly than for the subset with $PI < \theta$. The threshold θ itself is chosen as the value where this difference is most pronounced (here we follow prior visual inspection from Figure 5, using $\theta = 45$ for below and $\theta = 55$ for above, leaving a neutral band to avoid overlap).

8 Results

We now apply the above methodology to test our central hypothesis. We compute transition matrices, block bootstrapping (country-wise resampling), and the S-metrics for three time lags: 2, 4, and 8 years. The results are summarised in tables that show, for various confidence levels, whether the causal relationship $\text{PI}^+ \to \text{GDP}^+$ is significantly stronger above the Prosperity Gate than below.

8.1 Interpretation Aids

The abbreviations used in the tables are:

- PI = Political Inclusion
- GDP = Prosperity = GDP per capita
- $+$ = significant increase, $-$ = significant decrease, by state classification in section 2.1 with $p = 50, 66$
- *Yes* = statistically significant causal relationship at the given confidence level (based on non-overlapping bootstrap confidence intervals for the corresponding transition probability), i.e. $S > 0$.
- *No* = not significant (i.e. $S \leq 0$ or confidence intervals overlap).

We remind the reader of our main statement that we try to quantify:

"For countries above the Prosperity Gate, an increase in Political Inclusion leads to an increase in GDP, whereas this is not the case for countries below the Prosperity Gate."

8.2 Main Result: 95% Confidence Level

We focus on the 95% confidence level with $p = 50$ as the standard for statistical significance. Table 2 shows the results. Other configurations of (p, q) are in the Appendix.

Table 2: Significant causal relationships at 95% confidence level ($p = 50$).

Causality	Entire Data Set			Below Gate (PI<45)			Above Gate (PI>55)		
	2y	4y	8y	2y	4y	8y	2y	4y	8y
$PI^+ \to GDP^+$	**Yes**	**Yes**	**Yes**	No	No	No	**Yes**	**Yes**	**Yes**
$PI^- \to GDP^-$	No	No	No	No	No	No	No	No	No
$GDP^+ \to PI^+$	No	No	No	No	No	No	No	No	No
$GDP^- \to PI^-$	No	No	No	No	No	No	No	No	No

Interpretation: At the 95% confidence level, the pattern is clear:

- **Above the Prosperity Gate (PI>55):** Positive changes in political inclusion significantly increase the probability of subsequent positive changes in GDP per capita for lags of 2, 4, and 8 years. The reverse direction ($GDP^+ \to PI^+$) is never significant above the gate.
- **Below the Prosperity Gate (PI<45):** No significant effect from PI^+ to GDP^+ appears for any lag.

These findings support the existence of a Prosperity Gate.

8.3 Confidence Bounds for the Main Statement

To assess the robustness of our central finding—that above the Prosperity Gate an increase in Political Inclusion (PI) causes an increase in GDP per capita—we re-ran the analysis at multiple confidence levels (100%, 97.5%, 90%, 85%) and for two significance percentile definitions ($p = 50$ and $p = 66$). The full tables are reported in the Appendix (Tables 3–7 for $p = 50$ and 8–12 for $p = 66$). Here we summarize the bounds, always focusing on the comparison 'above gate' vs. 'below gate'.

For $p = 50$ (median-based thresholds).

- **2-year lag:** The effect $PI^+ \to GDP^+$ above the gate is significant at confidence levels up to 97.5% but disappears at the maximum (100%) bootstrap range.
- **4-year lag:** The effect remains positive in all bootstrap replicates (i.e., the dominance measure S_+ is positive in every resample). This is the most robust finding.
- **8-year lag:** Significance holds at 95% confidence but vanishes at 97.5%.
- Below the gate, no significant $PI^+ \to GDP^+$ effect appears at any lag or confidence level.

For $p = 66$ (more restrictive thresholds).

- The 4-year lag above the gate remains significant across all bootstrap replications (full range).
- The 2-year and 8-year effects are not robust: they fail to reach significance at 95% confidence or higher.
- Below the gate, again no significant effect emerges.

Taken together, the statement

"For countries above the Prosperity Gate, an increase in Political Inclusion leads to an increase in GDP, whereas this is not the case for countries below the Prosperity Gate."

is best supported for a **4-year time lag**. Under both $p = 50$ and $p = 66$, the 4-year effect above the gate is positive in every bootstrap sample (i.e., the lower bound of the bootstrap confidence interval for S_+ lies above zero). For the 2-year and 8-year lags the evidence is weaker and depends on the choice of p and the confidence level. The effect is consistently absent below the gate.

In addition, we observe with moderate confidence (85–90%) that below the Prosperity Gate a long-term (8-year) causal direction from GDP^+ to PI^+ emerges. This effect is not visible at shorter lags, suggesting that below the Gate, prosperity may slowly foster political inclusion, but not vice versa.

8.4 Hypotheses Testing Results and final remarks

H1: $\text{PI}^+ \to \text{GDP}^+$ (Increase in political inclusion causes subsequent prosperity). Supported only above the Prosperity Gate. The most robust evidence is for a 4-year lag (positive in all bootstrap samples). For 2- and 8-year lags the evidence is weaker and not robust to alternative thresholds. Below the Gate, no support is found. Conclusion: a minimum level of political inclusion is required for prosperity effects.

H2: $\text{PI}^- \to \text{GDP}^-$ (Decrease in political inclusion causes subsequent decrease in prosperity). No statistical evidence in either regime. Non-significance does not imply absence of an effect; our method may lack power to detect negative changes, or the adaptive threshold may classify too few negative changes as "significant". We cannot draw policy conclusions from this null result.

H3: $\text{GDP}^+ \to \text{PI}^+$ (Increase in prosperity causes subsequent increase in political inclusion). Weak support below the Gate and only for the 8-year lag (85–90% confidence). This effect is not robust to higher confidence levels or to $p = 66$. Above the Gate, no significant reverse causality is found. The common expectation that economic growth automatically leads to democratization is not supported by our data in the short- to medium-term.

H4: $\text{GDP}^- \to \text{PI}^-$ (Decrease in prosperity causes subsequent decrease in political inclusion). No statistical evidence. Anecdotal cases (e.g., countries in the Poverty Brick) suggest possible deterioration, but our bootstrap analysis does not confirm a systematic pattern.

In summary, our analysis of World Bank Governance Indicators provides statistical evidence that political inclusion drives prosperity once the 'Prosperity Gate' is surpassed.

However, it also indicates that wealth rewards are not immediate and may span more than an administration's term. This limits the appeal to include more constituents in new policies in the rich world and may explain why democracy is a slow process.

In less democratic countries below the Prosperity Gate, the lack of a causal link between political inclusion and subsequent wealth gains may explain why so little is done to improve it. The fruits of democracy are simply too high to reach.

The only glimmer of hope for countries below the Prosperity Gate is our finding that increased wealth may eventually lead to greater political inclusion, one of the justifications for admitting China to the World Trade Organization in 2001. However, China remains below the Prosperity Gate, with limited immediate financial incentive to improve political inclusion to the level of wealthier countries. They first need to pass the Prosperity Gate.

A List of Countries Included in the Analysis

The following 54 countries with complete WGI25 time series (1996–2024) were used in the panel analysis. Duplicates have been removed, and the list is sorted alphabetically.

- Afghanistan
- Argentina
- Australia
- Austria
- Azerbaijan
- Belarus
- Belgium
- Brazil
- Bulgaria
- Canada
- Chile
- China
- Croatia
- Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Hungary
- India
- Iran (Islamic Republic of)
- Ireland
- Israel
- Italy
- Japan
- Korea, Republic of
- Latvia
- Lithuania
- Luxembourg
- Malta
- Mexico
- Netherlands
- Norway
- Poland
- Portugal
- Puerto Rico
- Romania
- Russia
- Serbia
- Singapore
- Slovakia
- Slovenia
- Spain
- Sweden
- Switzerland
- Taiwan
- Tanzania (Mainland)
- United Kingdom
- United States
- Uzbekistan
- Viet Nam

B Detailed Tables for Additional Confidence Levels

The following tables show the significant causal relationships for confidence levels of 100%, 97.5%, 90%, and 85%. They are provided for completeness; the main text summarises the essential findings.

B.1 Tables for $p = 50$

Table 3: Significant causal relationships at 85% confidence level ($p = 50$).

Causality	Entire Data Set			Below Gate (PI<45)			Above Gate (PI>55)		
	2y	4y	8y	2y	4y	8y	2y	4y	8y
$PI^+ \to GDP^+$	**Yes**	**Yes**	**Yes**	No	No	No	**Yes**	**Yes**	**Yes**
$PI^- \to GDP^-$	No	No	No	No	No	No	No	No	No
$GDP^+ \to PI^+$	No	No	No	No	No	**Yes**	No	No	No
$GDP^- \to PI^-$	No	No	No	No	No	No	No	No	No

Table 4: Significant causal relationships at 90% confidence level ($p = 50$).

Causality	Entire Data Set			Below Gate (PI<45)			Above Gate (PI>55)		
	2y	4y	8y	2y	4y	8y	2y	4y	8y
$PI^+ \to GDP^+$	**Yes**	**Yes**	**Yes**	No	No	No	**Yes**	**Yes**	**Yes**
$PI^- \to GDP^-$	No	No	No	No	No	No	No	No	No
$GDP^+ \to PI^+$	No	No	No	No	No	No	No	No	No
$GDP^- \to PI^-$	No	No	No	No	No	No	No	No	No

Table 5: Significant causal relationships at 95% confidence level ($p = 50$).

Causality	Entire Data Set			Below Gate (PI<45)			Above Gate (PI>55)		
	2y	4y	8y	2y	4y	8y	2y	4y	8y
$PI^+ \to GDP^+$	**Yes**	**Yes**	**Yes**	No	No	No	**Yes**	**Yes**	**Yes**
$PI^- \to GDP^-$	No	No	No	No	No	No	No	No	No
$GDP^+ \to PI^+$	No	No	No	No	No	No	No	No	No
$GDP^- \to PI^-$	No	No	No	No	No	No	No	No	No

Table 6: Significant causal relationships at 97.5% confidence level ($p = 50$).

Causality	Entire Data Set			Below Gate (PI<45)			Above Gate (PI>55)		
	2y	4y	8y	2y	4y	8y	2y	4y	8y
$PI^+ \to GDP^+$	**Yes**	**Yes**	**Yes**	No	No	No	**Yes**	**Yes**	No
$PI^- \to GDP^-$	No	No	No	No	No	No	No	No	No
$GDP^+ \to PI^+$	No	No	No	No	No	No	No	No	No
$GDP^- \to PI^-$	No	No	No	No	No	No	No	No	No

Table 7: Significant causal relationships at maximum bootstrap range (all replications) ($p = 50$).

Causality	Entire Data Set			Below Gate (PI<45)			Above Gate (PI>55)		
	2y	4y	8y	2y	4y	8y	2y	4y	8y
$PI^+ \rightarrow GDP^+$	**Yes**	**Yes**	No	No	No	No	No	**Yes**	No
$PI^- \rightarrow GDP^-$	No	No	No	No	No	No	No	No	No
$GDP^+ \rightarrow PI^+$	No	No	No	No	No	No	No	No	No
$GDP^- \rightarrow PI^-$	No	No	No	No	No	No	No	No	No

B.2 Tables for $p = 66$

Table 8: Significant causal relationships at 85% confidence level ($p = 66$).

Causality	Entire Data Set			Below Gate (PI<45)			Above Gate (PI>55)		
	2y	4y	8y	2y	4y	8y	2y	4y	8y
$PI^+ \rightarrow GDP^+$	**Yes**	**Yes**	No	No	No	No	**Yes**	**Yes**	No
$PI^- \rightarrow GDP^-$	No	No	No	No	No	No	No	No	No
$GDP^+ \rightarrow PI^+$	No	No	No	No	No	**Yes**	No	No	No
$GDP^- \rightarrow PI^-$	No	No	No	No	No	No	No	No	No

Table 9: Significant causal relationships at 90% confidence level ($p = 66$).

Causality	Entire Data Set			Below Gate (PI<45)			Above Gate (PI>55)		
	2y	4y	8y	2y	4y	8y	2y	4y	8y
$PI^+ \rightarrow GDP^+$	**Yes**	**Yes**	No	No	No	No	No	**Yes**	No
$PI^- \rightarrow GDP^-$	No	No	No	No	No	No	No	No	No
$GDP^+ \rightarrow PI^+$	No	No	No	No	No	**Yes**	No	No	No
$GDP^- \rightarrow PI^-$	No	No	No	No	No	No	No	No	No

Table 10: Significant causal relationships at 95% confidence level ($p = 66$).

Causality	Entire Data Set			Below Gate (PI<45)			Above Gate (PI>55)		
	2y	4y	8y	2y	4y	8y	2y	4y	8y
$PI^+ \rightarrow GDP^+$	No	**Yes**	No	No	No	No	No	**Yes**	No
$PI^- \rightarrow GDP^-$	No	No	No	No	No	No	No	No	No
$GDP^+ \rightarrow PI^+$	No	No	No	No	No	No	No	No	No
$GDP^- \rightarrow PI^-$	No	No	No	No	No	No	No	No	No

Table 11: Significant causal relationships at 97.5% confidence level ($p = 66$).

Causality	Entire Data Set			Below Gate (PI<45)			Above Gate (PI>55)		
	2y	4y	8y	2y	4y	8y	2y	4y	8y
$PI^+ \rightarrow GDP^+$	No	No	No	No	No	No	No	**Yes**	No
$PI^- \rightarrow GDP^-$	No	No	No	No	No	No	No	No	No
$GDP^+ \rightarrow PI^+$	No	No	No	No	No	No	No	No	No
$GDP^- \rightarrow PI^-$	No	No	No	No	No	No	No	No	No

Table 12: Significant causal relationships at maximum bootstrap range ($p = 66$).

Causality	Entire Data Set			Below Gate (PI<45)			Above Gate (PI>55)		
	2y	4y	8y	2y	4y	8y	2y	4y	8y
$PI^+ \rightarrow GDP^+$	No	No	No	No	No	No	No	**Yes**	No
$PI^- \rightarrow GDP^-$	No	No	No	No	No	No	No	No	No
$GDP^+ \rightarrow PI^+$	No	No	No	No	No	No	No	No	No
$GDP^- \rightarrow PI^-$	No	No	No	No	No	No	No	No	No

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