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RESEARCH ARTICLE

Institutional change and persistence: what does the long-run evidence tell us?

Antonio Savoia[1], Kunal Sen[2] and Abrams Mbu Tagem[3]

[1]Global Development Institute, University of Manchester, UK, [2]Univ of Manchester, UK and [3]Wider, Finland
Corresponding author: Antonio Savoia; Email: antonio.savoia@manchester.ac.uk

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Abstract
There is a broad agreement that political and economic institutions matter for long-term development. Yet relatively little is known as to how to adopt good-quality institutions and reform weak institutions, for which one needs to know how they change. This paper provides a systematic econometric investigation of long-run patterns of institutional change, using panel time series methods allowing for different forms of country-specific heterogeneity and cross-section dependence. We focus on variables capturing the quality of four key political and economic institutions over 200 years and 161 countries from the Varieties of Democracy (V-Dem) database: electoral democracy and executive constraints, for political institutions; and the rule of law and property rights, for economic institutions. We test whether institutions change or persist, whether political and economic institutions tend to co-evolve, and whether changes in political institutions cause changes in economic institutions in the long run. We find that political and economic institutions are non-stationary, suggesting that institutional change is more the norm than the exception. We also find that they tend to co-evolve, although this is less evident for property rights, and that long-run causality runs mainly from political to economic institutions. We illustrate the cross-country evidence with discussions on Indonesia and Chile.

Keywords: constraints on the executive; democracy; economic growth; institutional change; institutions; property rights; rule of law

Introduction

There is a broad agreement that institutions matter. Most research has focused on how they affect economic development and long-term economic growth (e.g. Acemoglu and Robinson, 2012), perhaps paying less attention to the consequences for other important development outcomes. Although there is still disagreement on which institutions matter and how (Bardhan, 2005; Hodgson, 2025), there is a convergence of interest on two clusters of institutions: political and economic institutions. Yet relatively little is known as to how to adopt better quality institutions and reform poor-quality institutions, for which one needs to know how they change.

From a theoretical standpoint, there is a compelling argument that institutions are likely to persist over long periods. Institutions feature a self-sustaining set of social interactions and can be considered equilibria in a game-theoretic framework, leading to institutional persistence (Aoki, 2007). If institutional change were to occur endogenously, it would be slow and incremental, rather than through large-scale change. Similarly, following North (1990: Chapter 9), Kingston and Caballero (2009) argue that 'the process of institutional change is also path-dependent because individuals learn, organizations develop, and ideologies form in the context of a particular set of formal and informal rules'. On the

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other hand, after a period of stasis, institutional change is likely to occur, driven by exogenous shifts such as changes in the global economy (Acemoglu and Robinson, 2012) or by how social conflict is resolved (Acemoglu *et al.*, 2005a). Williamson (2000) also argues that inefficient institutions will be replaced by efficient institutions due to the opportunism and bounded rationality of agents. Therefore, as theory provides no clear guidance, the debate on whether institutions persist or change is far from settled.

More evidence in this area is particularly valuable, for three reasons. Firstly, the literature on the origins and evolution of institutions offers some predictions on institutional change, but whether such predictions are reflected in the data is something we do not yet know. For example, are institutions persistent and, if so, to what extent? Are changes permanent or temporary? Is there an equilibrium level of institutions? Secondly, since political institutions and economic institutions both matter for long-term growth, the type and nature of their dynamic interrelationships is an important and understudied question. Do we expect co-movement of political and economic institutions, or are they likely to follow divergent paths? Thirdly, quantitative research has provided very limited evidence. It has mainly focused on explaining institutional variation across countries and, when exploring dynamic aspects, has relied on fairly short temporal variation. Documenting the stylized facts on the dynamics of institutions will therefore provide a useful basis for further research.

Indeed, the empirical literature on institutional change has largely focused on case-study evidence of institutional change drawn from a few selected countries. For example, Acemoglu *et al.* (2005b) show that in 17th-century England, major institutional change occurred in the form of stronger property rights and limits on the monarch's power after the Civil War of 1642 and the Glorious Revolution of 1688. This phenomenon was mostly related to the expansion of Atlantic trade in the 16th and 17th centuries, which led to a powerful economic bourgeoisie that could oppose the absolutist tendencies of the kings. While case-study evidence of the type proposed by Acemoglu *et al.* (2005b) provides nuanced and deep insights into the historical processes and political economy factors that underpin large-scale institutional change in certain country contexts, they do not tell us much about the evolution of political and economic institutions across very different country and regional contexts over long periods. We complement the small-*N* approach of much of the previous empirical literature with a large-*N* analysis, which uses panel data for over 2 centuries for a large number of countries. We also contribute to a thin econometric literature studying various aspects of the dynamics of institutions (e.g. Krieger and Meierrieks, 2016). In particular, our paper is close to O'Reilly and Murphy (2025) and Sobel and Coyne (2011), who explore the dynamic properties of political regime and 'economic freedom' variables. However, our study differs in terms of focus, methods, and objective. It systematically derives and tests a set of hypotheses from the influential literature on the political economy of institutions and economic growth, providing new empirical evidence on whether and how institutions change or persist, whether key political and economic institutions tend to co-evolve, and whether changes in political institutions cause changes in economic institutions in the long run.

To do this, we draw on panel time series methods allowing for cross-sectional dependence to accommodate local and global spillover effects of institutional change, where changes in political and economic institutions in one country can trigger similar changes in neighbouring countries (e.g. Acemoglu *et al.*, 2019 show that democratization episodes in one country can lead to similar episodes in neighbouring countries). We also allow for unobserved heterogeneity at the country level of different forms to account for time-invariant effects related to cultural norms and geography and to accommodate the possibility that the dynamic relationship between institutions may be different in different countries with different economic structures and different levels of economic development. We use variables from the Varieties of Democracy (V-Dem) database capturing the quality of political and economic institutions over 200 years for a sample of 161 countries. Our measures of political institutions are electoral democracy and executive constraints, and our measures of economic institutions are the rule of law and property rights. The empirical analysis addresses the following questions: (1) Do institutions display inertia? if so, are measures stationary? Or do they change and hence are non-stationary? (2) Do political and economic institutions tend to co-evolve? (3) And, if they do, are

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changes in political institutions driving changes in economic institutions? Firstly, therefore, we test whether institutional quality measures are stationary. Secondly, we look at the long-run dynamic relationship between economic and political institutions and hence test for cointegration, providing evidence on whether political and economic institutions are in a long-run equilibrium. We finally assess whether changes in political institutions are likely to cause changes in economic institutions, or whether the causal relationship between the two sets of variables is more likely to be in the opposite direction.

The results offer four findings. Firstly, we find that non-stationarity cannot be rejected for measures of the rule of law, property rights, executive constraints, or electoral democracy, implying that institutions change in the long run. This may reflect the possibility that institutions change following the outcome of the distributive conflict between elites or between elites and the people (Acemoglu *et al.*, 2005a). Secondly, we find that economic and political institutions are cointegrated: there is a long-run relationship between the two. While in the short run they can drift apart, this will be temporary because they tend to co-evolve. Thirdly, the existence and nature of a long-run relationship may be different for different types of institutions: evidence of cointegration is strong between the rule of law and measures capturing constraints on executive and electoral democracy – less so when looking at property rights protection and political institutions. Finally, we find that long-run causality runs mostly from political institutions to economic institutions. We illustrate the cross-country results by discussing episodes of institutional change and persistence in Chile and Indonesia.

Institutions matter: but how do they change?

Although a lively debate continues on the extent and significance of their role, political and economic institutions are generally seen as important conditions for long-term development. On political institutions, part of the debate originally focused on whether, and how, political democracy affects economic growth. The literature has seen those arguing that there is an unambiguously positive effect (Acemoglu *et al.*, 2019; Rodrik, 2000) and others arguing for a more nuanced relationship (Bardhan, 1999; Przeworski and Limongi, 1993). The recent empirical literature has challenged the idea that political democracy measures have a large and robust positive effect on economic growth (Eberhardt, 2022; Paldam, 2024; Sen *et al.*, 2017). Rather than looking at democracy as an indistinct body, a promising avenue for current research is 'unpacking' political regimes so as to look at the role of specific types of political institutions (e.g. Boese-Schlosser and Eberhardt, 2023). One such type is institutions that place limits on executive power, which are now regarded as an important driver of long-run economic development. One argument suggests that they are central to building effective states, being capable of providing and funding public goods and services that support economic growth. Executive constraints, for example, create the conditions for investing in fiscal capacity (Besley and Persson, 2011). A second argument suggests that the existence of significant checks and balances on executive power is central to creating *inclusive institutions*, that is institutions that grant economic opportunities to a broad cross section of the population (Acemoglu *et al.*, 2005a).

On economic institutions, the consensus is that property rights protection and following the rule of law are important for igniting growth (e.g. Rodrik, 2000). But, while protected property rights allow agents to secure a return on their investment and observance of the rule of law provides a stable contractual environment for transactions, important questions remain. For example, whose property rights should be protected and how (Chang, 2011)? Acemoglu and Robinson (2019) propose a distinction between *extractive* and *inclusive* institutions. However, while this is another point that sees a broad consensus, there is much less agreement on what *inclusive* (political and economic) institutions means, that is how they can be defined in a way that is conceptually distinct from other types of institutions and that is amenable to measurement.[1]

[1]The rule of law is often seen as a fair and impartial legal framework to resolve disputes. But it goes beyond the narrow economic aspects of providing a stable contractual environment. For example, Haggard and Tiede (2011) argue that the rule of

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Be that as it may, quantitative research has provided many studies on the effects of institutions on economic growth, mostly supportive of the idea that institutions matter (e.g. Acemoglu *et al.*, 2001; Rodrik *et al.*, 2004). There is, however, limited econometric evidence on how institutions change. The literature on the origins and evolution of institutions offers evidence on institutional change, but this is often qualitative and based on case studies.[2] A systematic econometric investigation would therefore complement qualitative accounts and, above all, would be useful to reveal whether any generalizations can be made on patterns of institutional change. Since institutions are long-run phenomena, resulting from historical processes, new econometric evidence in this area would be particularly valuable if it could document the evolution of institutions using measures that show substantial time series variation.[3] But should we expect institutions to change, and how?

Next, we look at what kind of guidance the literature offers. We focus on three questions. Do we see institutional persistence, or do institutions change? If they change, do different types of institutions tend to move together? If they do, do political institutions cause economic institutions, or vice versa?

Institutional persistence and change

Let us start with the possibility of institutional persistence. Acemoglu *et al.* (2005a) observe that countries with inefficient institutions do not reform them: they persist. Why? This may arise because of commitment problems: agents are unable to commit to any compensation for those who stand to lose. 'Bad' institutions can persist because the rich (poor) cannot commit to compensate the poor (rich) after old rules have been replaced with new ones (Acemoglu, 2003; Bardhan, 2005). Taking this further, Acemoglu and Robinson (2008) argue that institutional reforms may be hindered by elites who benefit from existing economic institutions. Political elites who hold power may always have an incentive to maintain the political institutions that give them political power and the economic institutions supporting a distribution of resources that favours them. Therefore, economies may see a persistence of suboptimal economic and political institutions, since the elites who benefit from these institutions would not have any incentives to change them (Acemoglu and Robinson, 2019; Acemoglu *et al.*, 2005a). This implies that institutional measures are stationary and, if a 'shock' occurs, it is reabsorbed after a while. Hence, changes are temporary.

However, although institutions may remain stable for prolonged periods, institutional change can occur. Acemoglu *et al.* (2005a) emphasize *social conflict* explanations of institutional change, where the struggle between 'elites' and the 'people' may lead to change via *de jure* and *de facto* political power. And changes can also occur following major technological, geopolitical, or historical events that can 'accidentally' force institutional change. One mechanism could be a significant alteration of relative prices (Bardhan 1989: Chapter 1). Another could be a colonization strategy (e.g. Acemoglu *et al.*, 2001), such as that of European colonizers, who were likely to set up 'extractive institutions' that were detrimental to economic development in colonies where they did not settle (such as in Africa and Asia), but 'European-like' institutions in colonies where they did settle (such as North America). Finally, the incidence of external conflicts – as argued by Besley and Persson (2011) – stimulates the demand for common-interest public goods (e.g. defence) and, in turn, increases the incentive for groups competing for power to invest in fiscal and legal institutions. Consequently, one would expect to observe non-stationary measures. And 'shocks' may result in permanent changes.

law may also include the security of persons, checks on government, and control of corruption, although in practice rule of law measures have been used in the literature as a proxy of economic institutions.

[2]See Tylecote (2015) and Van Bavel (2015) for accounts and critiques of historical evidence.

[3]Sobel and Coyne (2011) document the dynamic properties of the Freedom House democracy index and various components of the Economic Freedom of the World index. Savoia and Sen (2016) empirically explore the possibility of institutional convergence. One common feature of such studies is that they rely on measures presenting a short temporal dimension.

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The long-run relationship between political and economic institutions

Turning to the second question, assuming institutions are not stationary, do they tend to co-evolve? We see that they could co-evolve because political institutions may tend to support economic institutions. Some democratic attributes, free and fair elections, separation of powers, and political checks and balances, tend to avert rent-seeking and thus prevent political and business elites from predating the economy (see North and Weingast, 1989, when discussing 17th-century England). This may be specifically the case with respect to property rights. According to Acemoglu (2008), property rights can be either 'democratic' or 'oligarchic'. In a democratic society, political power is more equally distributed, and, unlike oligarchic societies, poorer agents have the possibility to prevent the elite from erecting entry barriers and exploiting markets via monopoly power. The case of many developing economies is one where, reflecting the unequal balance of the political and economic power, market-economy institutions have not provided equal access to economic resources for a broad cross section of the population. The type of institutions an economy develops and how they evolve may depend on the distribution of power and resources that a country has, so that a relatively equal distribution of resources can create virtuous cycles where different institutions reinforce each other (see Acemoglu and Robinson, 2019).

The experience of developed, capitalist democracies does suggest that democracy is hospitable to the rule of law, to fair tax systems, and to accountable management of the economy, and that it is associated with property rights protection for all citizens. Gerring *et al.* (2005) argue that democracy has 'historical' effects, meaning that such effects materialize over a long period. The accumulated democratic stock fosters growth by delivering better governance, for example, via effective bureaucracies, opening up markets and institutions to previously excluded groups. In addition, in contexts where electoral accountability is imperfect, constraints to the executive can provide a 'robust control' mechanism to ensure that elites do not subvert the rule of law (Besley and Mueller, 2018). Further, weaker checks and balances on the executive are likely to be associated with more clientelist political systems, along with violations of the rule of law. In such systems, politicians are more likely to lean on law-enforcement authorities to selectively 'adjust' the rules in favour of specific groups of voters or potential voters (Lindberg *et al.*, 2022). Hence, both greater electoral democracy and stronger executive constraints can go hand in hand with stronger rule of law.

Similarly, the idea of democracy delivering broad access to property rights, rather than a narrow one, is appealing. Nevertheless, democratization and property rights do not always go hand in hand. Their relationship is complex. If one is trying to explain the stability and predictability of property rights systems, it is useful to reconsider the role of democratic attributes in relation to the existence and intensity of distributive conflict. As Bardhan (1999) and Przeworski and Limongi (1993) have noted, the poor majority can use the diffusion of political rights to change the distribution, thus threatening the property rights of the rich minority. This can be the case, especially in unequal societies displaying significant income or asset concentration. This implies that agents do not necessarily need political democracy to feel that their investments are secure. Historically, strong protection of property rights has often been granted by autocratic regimes in East Asian economies (e.g. Indonesia), as well as by European fascist regimes. Bardhan (1999) illustrates how, in the South Korea and Taiwan cases, the state was a powerful catalyst for industrialization, being organized as a competent technocratic structure insulated from clientelist ties, while Latin America and India did not have the same type of organization recruiting effective bureaucracies. This implies that, among economic institutions, the rule of law is more likely than property rights to have a long-run relationship with electoral democracy. This is a testable hypothesis, which we will investigate in the empirical analysis later.

The above discussion suggests that there are reasons to expect economies to see both persistence and change in political and economic institutions and that, similarly, these two types of institutions can move together in the long run or one can act as a 'fetter' so that the other displays inertia. Ultimately, as the literature suggests, we may expect different outcomes, and this is an empirical matter.

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Do changes in political institutions cause changes in economic institutions?

If political and economic institutions have a long-run relationship where both co-evolve over time, is the relationship bidirectional or will changes in political (economic) institutions trigger changes in economic (political) institutions? Part of the literature suggests that 'economic freedom', such as greater reliance on free markets and protection of property rights, leads to political freedom (e.g. Boudreaux and Holcombe, 2017; Friedman, 2016; Lawson and Clark, 2010). However, this view has faced vigorous scrutiny (e.g. Bardhan, 2007; Hoff and Stiglitz, 2004), and the extant literature suggests that it is more likely that changes in political institutions will cause changes in economic institutions than the other way around. For example, Acemoglu and Robinson (2019) put forward a theory of why changes in political institutions drive changes in economic institutions. Economic institutions are not distribution-neutral: they not only determine the aggregate growth potential of the economy but also the distribution of resources in the country. This implies that economic institutions are politically determined, as the prevalent power relations will determine which set of economic institutions is more likely to emerge (Sen, 2013). As Acemoglu and Robinson (2019: 24) argue: 'politics drives economics and what leads to transition in economic institutions is change in political institutions, typically through the collective action of those who are excluded by extractive political institutions'. Again, this provides a testable hypothesis, which we will examine later.

Measuring economic and political institutions

Our analysis focuses on measures that have substantial time series variation (as well as covering a large sample of countries). We use the V-Dem dataset, which provides multidimensional and disaggregated data on the measures of institutional quality that capture the core characteristics of economic and political institutions (Coppedge *et al.*, 2020), presenting higher degrees of internal consistency (as shown in Boese, 2019) and hence greater reliability in terms of cross-country and temporal comparisons. One of the major advantages of the V-Dem dataset is that it typically uses 25 experts per country and 5 experts per topic. This addresses a common criticism of institutional quality measures that they are affected by 'coder bias', that is one expert coding many or all institutions of a country may have negative or positive views of institutional functioning and so artificially under-or overrate institutions in different areas.[4] We choose the *Rule of law* and *Property rights* indices to measure economic institutions. And to measure political institutions, we choose the *Executive constraints* and the *Electoral democracy* indices. Time series plots, in the online Appendix, suggest that the series are nonstationary, and bivariate plots show evidence of co-movement between economic and political institutions.

Empirical strategy

To investigate non-stationarity, we employ the 'CIPS' test, a panel unit root test that allows for cross-section correlation. Panel unit root tests are applied to the variable series following the procedure given in Pesaran (2007). The test is based on a standard Augmented Dickey–Fuller (ADF) regression, augmented with cross-section averages of the dependent and independent variables to account for cross-section dependence. We report the *Zt*bar statistic (and its associated *p*-value) for the null hypothesis of non-stationarity in all countries' variable series against the alternative hypothesis of stationarity in some countries' variable series.

To establish whether there is bivariate cointegration between economic and political institutions, a suitable test – one which allows for greater flexibility in cross-sectional dependence – is provided by Gengenbach *et al.* (2009). The test is based on a conditional error correction model (ECM) of the form:

[4]However, V-Dem data are not immune to measurement error introduced by the aggregation procedure used (Gründler and Krieger, 2022).

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$$\Delta EI_{it} = \alpha_i EI_{it-1} + \gamma'_{1i} PI_{it-1} + \gamma'_{2i} f_{it-1} + \sum_{s=0}^{p_i} \pi'_{1is} \Delta PI_{it-s} + \sum_{s=1}^{p_i} \pi'_{is} \Delta EI_{it-s} + \sum_{s=0}^{p_i} \pi'_{3is} \Delta f_{it-s} + \varepsilon_{it} \quad (1)$$

where *EI* can be the rule of law or property rights and, in turn, *PI* can be executive constraints or electoral democracy. The procedure in equation (1) is based on the common correlated effects mean group (CCEMG) estimator (Pesaran, 2006) and extended in Chudik and Pesaran (2015), whereby common factors f are approximated by cross-section averages, including cross-section averages of lagged ΔPI_{it} and ΔEI_{it}, depending on the lag length p_i.[5] The test is for a null hypothesis of no error correction (EC) (hence no cointegration) against an alternative of EC (cointegration). The test statistic $\overline{\tau}^*$ is the average of the t-ratios for $\hat{\alpha}_i$, from country regressions. The individual t-ratios, as well as their averages, have non-standard distributions under the null hypothesis, so Gengenbach *et al.* (2009) provide simulated critical values. The test is run for each CCEMG model with different deterministic terms (neither intercept nor trend; intercept; intercept and trend). Equation (1) models unobserved heterogeneity through country-fixed effect (α_i) and time-varying common factors (f_i), with factor loadings that can differ across countries. The country-specific heterogeneity captured by fixed effects may reflect time-invariant characteristics: social and cultural norms that facilitate or impede the adoption of developmental institutions (Berkowitz *et al.*, 2003; Roland, 2004), or colonial heritage and geographical factors, including natural resource endowment and disease environment (e.g. Acemoglu *et al.*, 2001). The common factors address the presence of strong cross-section dependence: a form of unobserved, time-varying heterogeneity, distinct from weaker forms of dependence (e.g. spatial correlation), which may be a source of endogeneity, leading to biased and inconsistent estimates (see Kapetanios *et al.*, 2011). The common factors can be represented by a combination of a limited number of 'strong' factors and an unlimited number of 'weak' factors (Chudik *et al.*, 2011). The former are global effects, which affect all countries irrespective of their location and (initial) level of institutional development, while the latter are local spillover effects, which may occur through geographic proximity, as well as social or economic interaction.[6] Geopolitical pressures and conflicts (regional or global), economic integration (e.g. trade agreements), pressure from international organizations to reform domestic institutions (e.g. via structural adjustment programmes), and financial crises (regional or global) are examples of common factors that may be at the origin of cross-section dependence and can affect both political and economic institutions. The impacts of these shocks and countries' ability to respond differ across countries.

Apart from allowing us to test for cointegration, the ECM specification enables us to investigate the dynamic relationship between political and economic institutions. In particular, it allows a distinction between short-run and long-run effects and can easily encapsulate feedback effects between the two types of institutions. Moreover, the ECM specification allows us to investigate long-run causality. This is of particular interest here, since economic and political institutions may reinforce each other. If there exists a co-integrating relationship between the two, the Granger representation theorem (Granger, 1988) states that long-run causality must run in at least one direction (equivalent to at least one variable adjusting to maintain an equilibrium relation), and the variables can be represented in the form of a dynamic ECM.

Results

After investigating non-stationarity, this section presents the results regarding the existence of a long-run equilibrium relationship between the variables, its dynamics, and the direction of long-run causality.

[5]We include up to five lags of cross-section averages, following the formula by Chudik and Pesaran (2015): $p = \sqrt[3]{T}$.

[6]For example, Bonhomme and Manresa (2015) find that, even conditioning on GDP, transitions to democracy are correlated within regions. Acemoglu *et al.* (2019) use regional waves in democratization as a source of exogenous variation to estimate the causal effect of democracy on economic growth.

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Table 1. Panel unit root tests

Variable	Electoral democracy		Rule of law		Property rights		Executive constraints	
Lags	*Z*tbar	*p*	*Z*tbar	*p*	*Z*tbar	*p*	*Z*tbar	*p*
Levels: CIPS test with intercept only								
0	−4.98	0.00	3.72	1.00	1.04	0.85	−8.65	0.00
1	−11.25	0.00	−0.33	0.37	1.12	0.87	−9.39	0.00
2	−7.71	0.00	0.86	0.81	1.85	0.97	−6.36	0.00
3	−6.79	0.00	0.84	0.80	1.32	0.91	−5.87	0.00
4	−5.83	0.00	2.02	0.98	2.69	0.996	−3.10	0.00
5	−4.28	0.00	2.30	0.99	2.83	0.998	−1.90	0.03
6	−3.09	0.00	4.02	1.00	3.21	0.999	−0.56	0.29
Levels: CIPS test with intercept & trend								
0	−2.77	0.00	4.91	1.00	2.92	0.998	−5.44	0.00
1	−9.94	0.00	−0.57	0.28	2.81	0.998	−6.67	0.00
2	−5.95	0.00	0.86	0.80	3.58	1.00	−3.07	0.00
3	−4.84	0.00	0.64	0.74	2.87	0.998	−2.81	0.00
4	−4.08	0.00	1.67	0.95	4.43	1.00	0.30	0.62
5	−2.55	0.01	2.21	0.99	4.90	1.00	1.46	0.93
6	−1.05	0.15	4.21	1.00	5.74	1.00	2.96	0.998
Differences: CIPS test with drift								
0	−60.20	0.00	−60.27	0.00	−59.84	0.00	−60.37	0.00
1	−58.98	0.00	−57.69	0.00	−57.66	0.00	−58.47	0.00
2	−54.83	0.00	−52.77	0.00	−53.76	0.00	−54.55	0.00
3	−49.41	0.00	−47.97	0.00	−47.64	0.00	−49.80	0.00
4	−44.94	0.00	−43.05	0.00	−41.78	0.00	−44.55	0.00
5	−40.15	0.00	−38.50	0.00	−37.03	0.00	−39.43	0.00
6	−34.59	0.00	−32.77	0.00	−31.59	0.00	−33.66	0.00

Source: Authors' calculations based on V-Dem data (Coppedge et al., 2020).
Notes: H_0: non-stationarity in all countries' variable series; H_1: stationarity in some countries' variable series.

Unit root tests

Table 1 presents the panel unit root test results. We find that, for variables in levels, non-stationarity cannot be rejected once the ADF equation is augmented with a sufficient number of lags to remove serial correlation and/or a linear trend.[7] Non-stationarity is rejected for all variables in first differences. Echoing Sobel and Coyne (2011), the finding of non-stationarity in levels implies that any shocks to the institutional variables would have persistent effects. Going back to our review of the literature on institutions, our finding that shocks to institutions are permanent, and not temporary, provides some support to explanations of institutional change that highlight the role of social conflict or of 'critical junctures', such as colonization, internal/external conflict, and economic crises in causing permanent shifts in institutions.

[7]This result is weaker for electoral democracy, where the intercept-only specification rejects non-stationarity for all lags, and the test with an intercept fails to reject with a *p*-value of 0.15.

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Table 2. Gengenbach *et al.* (2009) cointegration test

	Test statistic, $\bar{\tau}^*$	10%	5%	1%
Panel A: Rule of law				
Electoral democracy and rule of law				
Model 1	−2.103**	−1.995	−2.065	−2.190
Model 2	−2.729***	−2.458	−2.517	−2.611
Model 3	−2.981**	−2.875	−2.925	−3.010
Executive constraints and rule of law				
Model 1	−2.057*	−1.995	−2.065	−2.190
Model 2	−2.556**	−2.458	−2.517	−2.611
Model 3	−3.006**	−2.875	−2.925	−3.010
Panel B: Property rights				
Electoral democracy and property rights				
Model 1	−1.726	−2.048	−2.133	−2.287
Model 2	−2.327**	−2.530	−2.601	−2.735
Model 3	−2.768***	−2.875	−2.925	−3.010
Executive constraints and property rights				
Model 1	−1.696	−1.995	−2.065	−2.190
Model 2	−2.654***	−2.458	−2.517	−2.611
Model 3	−2.940**	−2.875	−2.925	−3.010

Source: Authors' construction.
Notes: ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. Significance will indicate rejection of the null hypothesis. H_0: no error correction; hence, no cointegration. H_1: error correction; hence cointegration. Models 1, 2, and 3 refer to an ECM without any deterministic terms, with intercept, and with intercept and trend, respectively. Critical values at 10%, 5%, and 1% are obtained from Table 3 of Gengenbach *et al.* (2009). For the results on electoral democracy and property rights (in Panel B), significance is based on the proportion of country-specific error correction terms, across all countries, that are statistically significant.

Cointegration

Table 2 reports results of the bivariate cointegration tests between economic institutions and political institutions based on the Gengenbach *et al.* (2009) cointegration test with one lag. Model 1 has no deterministic terms (no intercept or trend), model 2 includes only an intercept, and model 3 includes an intercept and a linear trend. Gengenbach *et al.* (2009) tabulate critical values for different combinations of N (number of countries), T (number of years) and m (number of regressors). Inference is based on comparing the test statistic, $\bar{\tau}^*$, with the simulated critical values: if the absolute value of the test statistic is larger than the absolute value of the simulated critical values, we reject the null hypothesis of no EC (hence no cointegration).

We find a clear rejection of the null hypothesis for electoral democracy and the rule of law and for executive constraints and the rule of law. Similarly, we see evidence of cointegration for executive constraints and property rights and electoral democracy and property rights. This implies that there is a long-run equilibrium between economic and political institutions irrespective of the measure of economic institutions we use. However, the case of electoral democracy and property rights deserves closer scrutiny because, although we find that there is evidence of cointegration, this does not imply that there is always or everywhere a long-run equilibrium between the two variables. We look at the EC terms at the country level, instead of the test statistic $\bar{\tau}^*$, which is calculated as an average from country regressions. The results show that the country-specific EC terms, across all 161 countries, are statistically significant in most cases, but not all (see Appendix Table A3). This means that

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heterogeneity can still be relevant and that a long-run equilibrium between electoral democracy and property rights may not always materialize, depending on the country context. And, ultimately, this offers support to the view that democracy and property rights do not always go hand in hand (e.g. Bardhan, 1999 and Przeworski and Limongi, 1993).

Short-and long-run effects

Next, we focus on the dynamics of the relationship between political and economic institutions. Having found evidence of cointegration, we want to see how economic institutions behave when deviating from the long-run equilibrium. The results are shown in Table 3.

Without exception, EC coefficient estimates are negative and significant, reflecting the fact that political and economic institutions are cointegrated. The EC coefficient captures the adjustment towards the long-run equilibrium, that is what proportion of the disequilibrium in the dependent variable in one period is corrected in the next period. In the case of political institutions constraining the executive power, this means that a deviation in the rule of law or property rights from the long-run equilibrium will be corrected by approximately 14 per cent or 12 per cent in the next period, respectively. A hypothetical shock to executive constraints would bring effects on the rule of law and property rights that are slowly absorbed. Such relatively slow adjustment of economic institutions gives an appreciation of how persistent such institutions are.

ECM estimates also allow us to see how political institutions impact the rule of law and property rights. In addition to the strong evidence of EC, the long-and short-run coefficients of executive constraints and electoral democracy are statistically significant throughout. These estimates represent *average* effects (short-and long-run) across the global sample of countries.[8] Their sign is positive and implies that, after accounting for the presence of heterogeneity across countries due to fixed effects or heterogeneous parameters, both types of political institutions are important to support economic institutions in the short and long run.[9]

There is one remaining concern: the CD test results signal that cross-sectional dependence may still be present. Such concern is to some extent mitigated when using additional tests developed in Juodis and Reese (2022) and Pesaran and Xie (2022), but it cannot be ruled out.[10] Hence, we extend the analysis by including two historical macroeconomic variables: historical Gross Domestic Product (GDP) and trade openness measures. Per capita GDP data are from the Maddison project database (Bolt and van Zanden, 2014). The measure of trade openness is the ratio of the total value of a country's exports and imports (in 2014 US$ millions) and GDP, using data from Barbieri and Keshk (2016), as published in the V-Dem dataset. Table A4, in the Appendix, reports ECM estimates including such

[8]We provide long-run average (LRA) estimates, obtained by averaging ECM coefficients first before computing the LRA. LRA estimates are preferred to average long-run (ALR) estimates, obtained by computing the long-run coefficient in each country before averaging them, since this is more sensitive to outliers.

[9]Two robustness checks confirm our results when using alternative measures of executive constraints. Firstly, we run ECM estimates when using the Polity IV measure of executive constraints (*Xconst*). The results, shown in Table A5, are similar. Secondly, as 4 components (out of 16) of the rule of law measure are in common with the judicial constraints component of our executive constraints measure, we run ECM estimates when excluding that component (i.e. using only the legislative constraints measure) of the executive constraints index. The results (Table A6) are again similar to those in Table 3. Moreover, we replicate results in Table 3 when the sample is pre-and post-1900, because many developing economies enter the sample in 1900 and because V-Dem scoring changes in 1900 (historians code the variables until 1900, then country experts score them after this year). The results are in line with those in Table 3 (see Tables A7 and A8 in the Appendix). Finally, we check if the results on property rights hold when using an alternative variable proxying for property rights protection. Table A9 replaces the *Property Rights* variable with another measure from the V-Dem dataset: *State ownership of economy* (*v2clstown*). The estimates show no significant difference, largely confirming the findings (see Table A9).

[10]The test results for Tables 3, A5 and A6 are mixed. In some cases, they fail to reject the null of weak cross-section independence, mitigating such concern. In other cases, however, they still signal that cross-section dependence may be present. Reassuringly, instead, the different tests largely agree that cross-section dependence disappears once we account for historical GDP and trade openness (see Table A4).

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Table 3. ECM estimates

	Rule of law	Property rights
Panel A: Electoral democracy and economic institutions		
Long run		
Electoral democracy	0.299*** [0.055]	0.206*** [0.054]
Short run		
Electoral democracy	0.283*** [0.028]	0.119*** [0.015]
EC coefficient		
y_{it-1}	−0.138*** [0.009]	−0.097*** [0.008]
t-statistic	−15.27	−11.87
RMSE	0.023	0.023
CD test (*p*-value)	−4.610 (0.000)	−3.708 (0.000)
Observations (*N*)	22,522 (161)	22,639 (161)
Panel B: Executive constraints and economic institutions		
Long run		
Executive constraints	0.456*** [0.061]	0.232*** [0.040]
Short run		
Executive constraints	0.334*** [0.045]	0.110*** [0.014]
EC coefficient		
y_{it-1}	−0.136*** [0.009]	−0.118*** [0.008]
t-statistic	−14.85	−14.75
RMSE	0.020	0.023
CD test (*p*-value)	−4.103 (0.000)	−3.815 (0.000)
Observations (*N*)	22,571 (161)	22,601 (161)

Source: Authors' construction.
Notes: Results based on ECM for 161 countries with the respective economic institutional variables as the dependent variable. The long-run and short-run averages are reported, with standard errors reported below the averages. RMSE is the root mean square error. The CD test is the Pesaran (2015) test distributed $N(0,1)$ under the null of weak cross-section independence (*p*-values reported below). *, **, and *** indicate significance at 10%, 5%, and 1%, respectively.

variables. The statistical significance across specifications of the ECM term supports the hypothesis of cointegration and so confirms our earlier results. Short-and long-run estimates of executive constraints and electoral democracy, representing average effects, are also in this case significant. The noticeable difference is that the cross-sectional dependence test results now do not reject the null of cross-sectional independence.

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Table 4. Weak exogeneity tests

	GM	*p*-value	Mean $\widehat{\theta_i}$	*t*-stat
Electoral democracy				
Electoral democracy to rule of law	−2.136**	0.033	−0.143	−13.992
Rule of law to electoral democracy	*−0.313*	*0.754*	*0.033*	*3.958*
Electoral democracy to property rights	−1.801*	0.072	−0.095	−11.007
Property rights to electoral democracy	*0.480*	*0.631*	*0.018*	*2.476*
Executive constraints				
Executive constraints to rule of law	−1.635	0.102	−0.121	−11.177
Rule of law to executive constraints	0.483	0.629	0.051	3.486
Executive constraints to property rights	−2.272**	0.023	−0.141	−12.379
Property rights to executive constraints	0.247	0.805	0.031	3.323

Source: Authors' construction.
Notes: we report the GM statistic from Canning and Pedroni (2008). GM is the group mean statistic, which is the average of the country-specific *t*-ratios on the disequilibrium term and is distributed *N*(0,1). The null hypothesis is of 'no causal impact' and is interpreted as the political institutions variable not having a long-run causal impact on the economic institutions variable. The rows in italic are for 'reverse causality': where causality runs from economic institutions to political institutions. We also report the robust $\hat{\theta}_i$ and its associated *t*-statistic. A high *t*-statistic on the average $\hat{\theta}_i$ is expected for the equations with economic institutions as a dependent variable: that is the rows not in italics. Conversely, a low *t*-statistic is expected in the 'reverse causality' equations.

Causality tests

Table 4 presents tests for the direction of long-run causality. The group mean (GM) test allows us to ask whether the long-run causal effect is zero, on average, for the panel. The test statistic is for the null of 'no long-run causal impact', which in our case can be interpreted as the variable not adjusting to maintain long-run equilibrium. While primary interest is in the GM statistic, we also report the robust $\hat{\theta}_i$ estimate and its associated *t*-statistic. At best, the panel robust $\hat{\theta}_i$ complements the GM statistic. A combination of a high *t*-statistic on the average $\hat{\theta}_i$ coefficients and a low *t*-statistic (below 1.96) in the 'reverse causality' equations can be interpreted as evidence of a long-run causal relationship from political to economic institutions.

There is clear evidence that long-run causality runs from constraints on the executive to property rights and from electoral democracy to the rule of law. In contrast, we find very little evidence that causality runs from economic to political institutions. In sum, the results favour the hypothesis that causality runs from political to economic institutions. However, we cannot rule out the possibility of bidirectionality. The lack of clear evidence of causality, in weak exogeneity tests, running from economic to political institutions, may not imply the absence of any significant long-run causality; it may rather reflect the presence of pervasive heterogeneity across countries, where a feedback effect from economic to political institutions may or may not materialize depending on context-specific conditions.

Institutional persistence and change in Chile and Indonesia

The cases of Chile and Indonesia complement the above cross-country evidence. Both countries are important emerging economies reliant, to a significant extent, on natural resources. And both are ex-colonies that have made significant economic progress since independence. But Indonesia is often cited as a case of growth with equity, while Chile is characterized by persistent structural inequalities. And this makes their comparison illustrative of how social conflict can affect institutional change.

Indonesia was under Dutch colonial rule all through the 18th century and the first half of the 19th century. During this period, Indonesia was a mixed plantation and peasant export economy with a dominance of plantation exports (Lal and Myint, 1996). Colonial economic policy was based on the

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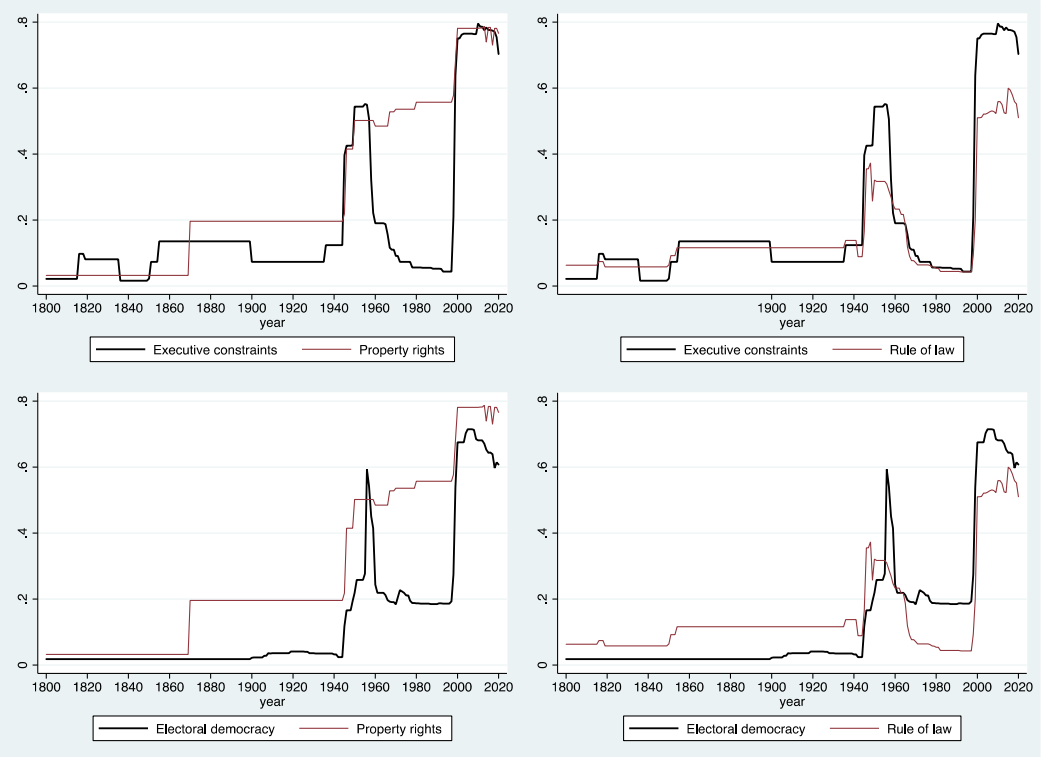


Figure 1. Political and economic institutions in Indonesia.
Source: authors' construction using V-Dem data (Coppedge *et al*., 2020).

maximum extraction of revenues from export crops (Lewis, 2007). Commitment to property rights was practically non-existent and the rule of law was weak under the colonial administration. As is evident from Figure 1, institutional quality was very low for both economic and political institutions, with hardly any change from the beginning of 18th century to the mid-19th century.

The Japanese occupation of Indonesia in 1942 effectively ended Dutch colonial rule. The Dutch attempted to re-establish colonial authority in 1945, leading to an armed struggle for independence. Indonesia gained independence in 1949, with nationalist forces led by Sukarno coming to power. The adoption of the Constitution in 1945 set out the basic principles of an independent Indonesian state and provided for the limited separation of executive, judicial and legislative powers. Consequently, all measures of institutional quality improved during this period, as observed in Figure 1.

In the 1950s, Sukarno followed a policy of Guided Democracy, which was characterized by a personalized Presidential system of governance (*Ibid.*) with few checks on executive power. At the same time, Sukarno initiated radical policies of wholesale nationalization of foreign-owned assets and intensely inward-looking economic policies which had a disastrous effect on export orientation, leading to dwindling foreign reserves. In addition, there were deep macroeconomic imbalances leading to hyperinflation and economic decline in the first half of the 1960s (Hill, 1996). In October 1965, there was a military coup against the Sukarno government and the coming of power of Major-General Suharto.

With the establishment of the 'New Order' government of Suharto, there was an emphasis on sound macroeconomic management and orthodox economic policies, and economic growth quickly rebounded (Hill, 1996). However, constraints on the executive and commitment to the rule of law remained weak, and the oil boom of the 1970s led to the availability of resources 'to sustain the political

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institutions and patronage networks of Indonesia's rulers and their own personal enrichment' (Robison and Hadiz 2004: 53).

With the fall in oil prices in the first half of the 1980s, there was a need to mobilize new sources of investible resources from the private sector as well as to develop export industries, particularly in the manufacturing sector (Rosser, 2002). In a series of reform packages beginning in the mid-1980s, the Indonesian government deregulated trade and financial regimes, relaxed foreign investment restrictions, and opened a range of former state monopolies to private investment (Hill, 1996). The deregulation process seemed to have further entrenched the emerging 'politico-business' oligarchies, and patron–client networks that sustained these oligarchies (Robison and Hadiz 2004). Thus, the families that owned domestic conglomerates as well as the politico-business class in Indonesia moved into the sectors of the former state monopolies such as banking, finance, and infrastructure (Sen, 2014). These families also successfully concentrated their presence in sectors that were largely untouched by deregulation such as natural resource industries and domestic trading monopolies. In addition, they diversified their sources of funds from oil revenues to largely unregulated commercial bank loans and equity in international capital markets. Finally, they preserved their authority over the 'strategic gatekeeping institutions of the state', ensuring that they maintained control over the allocation of rents (Robison, 1986). In this way, the patron–client networks that were there been politico-bureaucrats and oligarchic capitalists since the early years of the Suharto regime were significant strengthened in the 1980s to the early 1990s (as we can see from Figure 1, measures of institutional quality had fallen to their pre-independence levels by the 1990s). All through this period, there was further entrenchment of patron–client networks and 'the harnessing of the state to the unconstrained interest of this privileged group of oligarchies' (Robison and Hadiz 2004: 11)

In July 1997, with the collapse of the Thai baht, capital outflows from Indonesia led to a large decline in the value of the Indonesian rupiah and a generalized financial crisis in East Asia. With the higher cost of external borrowing, there was widespread bankruptcies and debt defaults of oligarchs favoured by the Suharto regime and a sharp fall in economic activity. An IMF stabilization programme was introduced in October 1997; however, the financial crisis continued unabated, and by January 1998, the vast number of companies listed in the Indonesia stock exchange were technically insolvent (Lewis, 2007). The crisis came to a head with ongoing student protests, and General Suharto finally resigned.

The late 1990s saw a period of political instability and widespread institutional stagnation in Indonesia. In 1999, the first election after the collapse of the New Order government was held, and a multiparty coalition took power under the leadership of Wahid. However, persistent problems with the economy coupled with weak leadership led to the removal of Wahid and the advent of Megawati, the daughter of Sukarno, to the Presidency, in 2001. She quickly introduced far-reaching political decentralization laws, as well as other institutional reforms, such as Central Bank independence, an independent electoral commission, a fully elected parliament and the provision of the direct election of the President from 2003. Constraints on executive and electoral democracy improved significantly over this period, as well as the adherence to property rights and the rule of law. This is reflected in the sharp increase in these measures (see Figure 1).

A feature of the evolution of economic and political institutions in Indonesia is that both these sets of institutions have co-evolved, and their movements up or down have followed important moments in Indonesia's economic and political history, as discussed above. The one discrepancy is when the commitment to property rights remained at a high level after the New Order government came to power in 1965 till its collapse in 1998, even though the constraints to executive, electoral democracy and the rule of law deteriorated in this period. This can be explained by the pro-market and pro-business orientation of the Suharto regime and a credible commitment to property rights in the New Order era, all through the 1970s and 1980s, a period when Indonesia grew rapidly (Hill, 1996). This supports the evidence from the cross-country econometrics in the previous section that, among economic institutions, property rights is less likely to co-evolve with political institutions.

The case of Chile illustrates well how social conflict may change institutions and how they persist in response to a demand for institutional reforms. After a period of political instability preceding and

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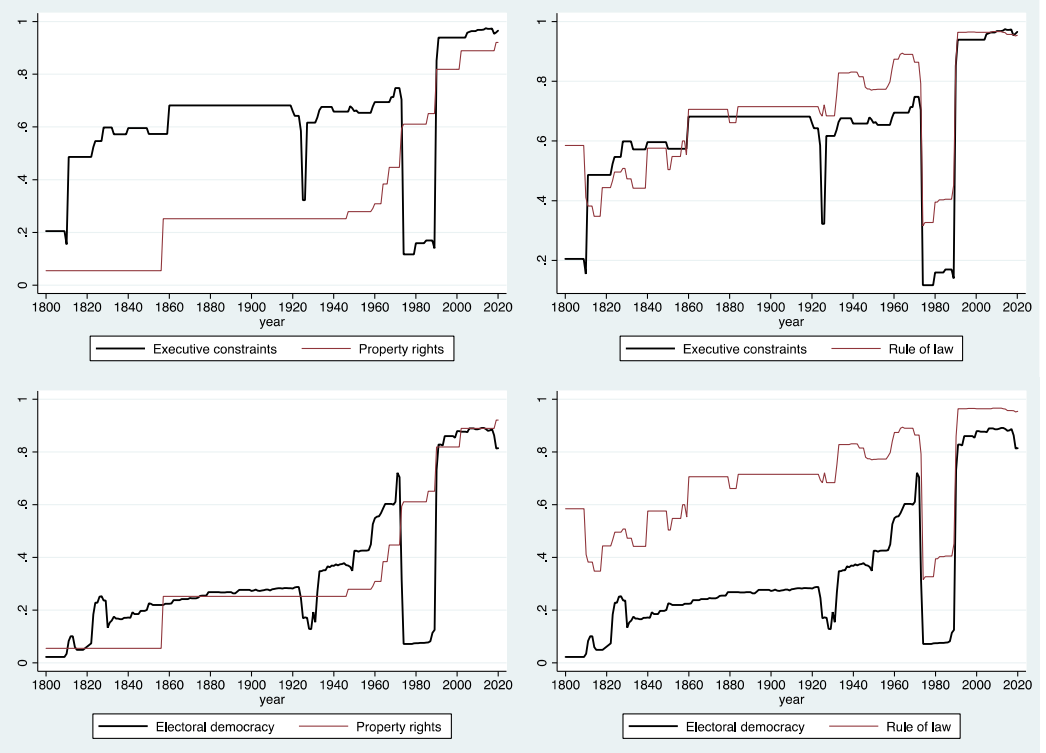


Figure 2. Political and economic institutions in Chile.
Source: authors' construction using V-Dem data (Coppedge *et al*., 2020).

following independence in 1818, Chile has seen initial, albeit partial, improvements in political and economic institutions, lasting from the 1830s until the 1860s. In particular, this was a period that saw little democratic improvement, as politics was largely dominated by the conservative forces of the Chilean oligarchy. But it saw a compromise among the members of the oligarchy, and a new constitution was achieved as a result (1833), which remained the basis of Chilean political life until 1925 (see Collier and Sater, 2004, Chapter 3).[11] In particular, the period during 1851–1861, also as a result of increased economic prosperity, saw the emergence of a liberal faction within the ruling elites, which tried to reduce the privileges of landowners and the church. Figure 2 shows that, moving together, the executive constraints index and the rule of law significantly improved during this period.

This is followed by a prolonged period of institutional stasis, from the 1860s to the mid-1920s, where political and economic institutions scores show little change. However, during this period, an emerging middle class and, importantly, the diffusion of socialist ideals and labour movements became forces generating pressure for institutional reforms (see Collier and Sater, 2004, Chapters 4 and 5). In particular, the period between 1891 and 1920 saw the formation of new political parties expressing the political instances of the middle and working classes (see Chapter 2 in Solimano and Zapata-Román, 2024). The reforms, however, did not touch the economic power of the traditional oligarchy. The period between 1924 and 1932 sees numerous cabinet changes, the introduction of a new, more progressive constitution increasing presidential powers (in 1925 and lasting until 1973) and, in 1927, General Carlos Ibáñez del Campo's dictatorship (1927–1931). This is the first of two major episodes of political and institutional regression in Chilean history. This period sees a major drop in the executive

[11]Collier and Sater (2004: 54) argue that the conservative settlement in Chile 'was a fusion of colonial authoritarianism with the outward forms of republican constitutionalism'.

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constraints score (and political democracy), but much less for the rule of law (and no change in property rights protection).

The three decades after 1930 saw, unique in Latin America, a period of electoral democracy which often had the support of Marxist parties, albeit erratic. It was a period of multiparty governments based on multi-class alliances, which simultaneously pursued industrial growth and social reform. But they ultimately failed to offer economic modernization and social justice, with lasting consequences for Chile's political development until the coup which brought down the government of Salvador Allende in 1973 (see Chapters 3 and 4 in Bethell 1993, and Chapter 2 in Solimano and Zapata-Román, 2024). This second and most severe episode of institutional regression illustrates how the demand for political and social change can be met by repression and how *de jure* and *de facto* political power operate in this context. As Acemoglu *et al.* (2005a) explain, Allende was empowered, under the Chilean Constitution, with a great deal of *de jure* political power. But the military, led by General Pinochet and favoured by a situation of economic turbulence, was able to over-ride formal political institutions by using brute force, a form of *de facto* political power.

This same episode of Chilean history also illustrates why the relationship between democracy and property rights can be a complex one. The advent of Pinochet's dictatorship was a response to Allende's democratic election, which was perceived as a threat to existing private property rights. Pinochet's dictatorship saw the collapse of democratic political institutions, reflected in the V-Dem scores on political democracy and on executive constraints, but a simultaneous increase in the protection of private property rights. Using *de facto* power, the military was able to reverse the economic policies and economic institutions chosen by the Allende government (including land reform and mass nationalization of industry) and then implement their own preferred set of economic institutions emphasizing private property rights. But *de facto* power is transitory, linked in the Chilean case to the first oil shock and the economic recession of the 1970s that made the coup possible, and cannot be sustained indefinitely. Hence, in 1980, the Pinochet regime wrote a new constitution so as to consolidate the new set of economic institutions preferred by the elite in power, making the threat of socialism in Chile unlikely by under-representing urban areas, where the left was strong, in favour of conservative rural areas. In this way, the prospect of a return to democracy became less threatening to Chilean elites (see Acemoglu and Robinson, 2006).

Conclusions

This paper provides historical panel time series evidence on institutional change for a global sample of countries using V-Dem variables. All regions are on a long-run upward trend: institutional quality across four key measures of the quality of political and economic institutions has historically improved everywhere since 1800. We also find for the same four measures that non-stationarity cannot be rejected. This implies that institutions change in the long run. Furthermore, we find evidence supporting the existence of a long-run equilibrium relationship between political and economic institutions. This is particularly evident for the rule of law, but less so for property rights, pointing to the possibility that the dynamic relationship between economic and political institutions may also be heterogeneous. Finally, we find that long-run causality runs mainly from political to economic institutions. We illustrate the cross-country econometric results also with two short case studies on Indonesia and Chile.

Our paper has four key implications for the literature on institutional change. Firstly, it shows that institutional persistence is not as common as has often been portrayed in the literature: institutions do change, and institutional change may well be the norm rather than institutional stasis, at least in the long term. Secondly, the fact that political and economic institutions co-evolve suggests that they may have strong complementarities (Hall and Gingerich, 2009): changes in one set of institutions can have far-reaching effects on another set of institutions. Thirdly, our finding of a closer co-movement of electoral democracy with the rule of law than with property rights suggests that not all institutions move together, and that movement may depend on country-specific contexts. Finally, our finding of

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long-run causality from political to economic institutions complements the argument of Acemoglu and Robinson (2019): that inclusive economic institutions are unlikely to emerge in contexts where political institutions remain extractive in nature. Therefore, economic reforms that keep an extractive political equilibrium in place are unlikely to succeed in bringing about inclusive economic development (Acemoglu *et al*., 2005a). A question for future research is whether the general improvement in institutional quality documented here has also translated into a reduction of differences in institutional quality across countries, that is whether there has been long-run convergence.

Supplementary material. The supplementary material for this article can be found at https://www.wider.unu.edu/sites/default/files/Publications/Working-paper/PDF/wp2024-39-online-appendix.pdf.

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