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Political competition in dynamic economies

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Highlights

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- A new theory of the political implications of investment gains and losses
- Causal evidence of investment edge for large coalition regimes (e.g. democracies)
- Identifies specific ways new economic opportunities cause regime change
- Show how authoritarian regimes force investment flows to specific sectors
- Explains why dictatorships and democracies have very different economies

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MANUSCRIPT SUBMISSION

Political Competition in Dynamic Economies**Abstract**

How does economic opportunity — the set of possible investments in an economy — shape politics, and politics shape investment? We argue that in a world where money is power, political leaders will intervene in the economy if investment returns shift power and threaten their position. Anticipation of such action induces a bias towards investments which vary less and co-vary with the investments of the regime. Leaders will then weigh losses from such intervention and biased allocation, which depends on possible investments' risk and covariance, with the costs of a larger and less vulnerable coalition. We provide casual evidence of this process using the steamship revolution in transport which radically altered economic opportunity in the 19th century. We show that not only do large coalition regimes (e.g. democracies) have an inherent investment edge in high-risk projects, such as new technology and international trade, but that they are more likely to emerge if that is where economic opportunities are.

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Political Competition in Dynamic Economies

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INTRODUCTION

How does changed economic opportunities, such as those generated by technological breakthroughs, impact politics? How do politics shape which of these opportunities are pursued?

I propose a theory of political competition in dynamic economies. I argue that if money and other resources matters in politics, and rulers are willing to intervene in the economy to protect their position, leaders and investors will be concerned about *relative* gains and losses. Defining a regime coalition as those who would keep the leader in office if given the choice, I propose that a concern for relative returns has at least five important implications: (1) investors will not always select the most profitable projects, (2) large coalition regimes will tend to see investors select more profitable investments, (3) the benefits of a large coalition is increasing in the risk and diversity of possible investments, and (4) change in the set of possible investments can cause regime change. In sum, I will theorize and evidence two broad relationships: first, that the size of regime coalitions shape investment allocations, and second, that regimes are shaped by leaders' perception of possible investments — which I call “economic opportunity.”

Understanding how politics interacts with economic opportunity and allocations is crucial. If we do not understand how change in possible economic activity shape politicians' incentives, we are unable to understand the political impact of technological and economic change. Without understanding how politics shape investors' incentives, we are unable to explain why investments may differ by regime. I propose a theory which explore all these relationships. This theory can also help explain at least one facet of technological dynamism itself, by specifying how and when some regimes are able to allocate their resources more efficiently, and in particular, when they are able to invest in risky projects in new sectors: such as technology innovation or international trade.

This paper proceeds in three parts. The first section presents evidence that different political regimes have different economies, that political change brings economic change, and that our explanations of both are incomplete. In the second section, I present a theory centered on how

leaders' choice of coalition size is informed by economic opportunities, and how coalitions, once formed, direct investments to certain sectors. In the third section, I then provide causal evidence of some of the theory's novel predictions, in an investigation spanning the entire process from changed economic opportunities, to new regimes, to changed economies. To do so, I identify and leverage a large shock to countries' economic opportunity — changed global trade patterns due to the invention and spread of steam propulsion — to show that new economic opportunities were better used by larger coalition regimes, and that the failure to take advantage of such economic opportunities led to the expansion of regime coalitions.

DIFFERENT REGIMES, DIFFERENT ECONOMIES

Why does change in politics — without changes in policy — produce massive shifts in economic allocations by private actors? Why are democratic and non-democratic economies so different, even when overall levels of productivity are the same? Could it be that both these differences are symptoms of a deeper political economy story?

Consider South Korea in the late 80s and early 90s, following the move to democracy with the establishment of the Sixth Republic in the summer of 1987. There, between 1985 and 1995, corporate research and development spending increased tenfold, almost doubling as a percentage of GDP. The number of corporate R&D centers went from less than two hundred to more than two thousand (Chung 2007). Yet it was the former military regime's favored candidate which had won the 1987 elections, suggesting continuity in public policy. Or consider Taiwan, where the first direct presidential elections were held in 1996. There, the number of venture capital firms rose from 34 in 1995 to 192 in 2000. The total amount of venture capital invested grew by more than 50 percent *yearly* in both 1996 and 1997, rising from 5.9 to 30.8 billion NT\$ in the 1995-2000 interval (from 200 million to 1 billion USD; Tsai and Wang 2002, p. 10).

The relationship between political regime and resource allocations is not specific to these two. At similar levels of GDP per capita, democracies generally have lower growth volatility, and larger

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high-value added sectors relative to non-democracies (see e.g. Easterly and Pennings 2016; Aghion et al. 2007). This is true if one compares countries within regions, countries before and after democratization, or study manufacturing specifically (as in Cuberes and Jerzmanowski 2009).

As several of these studies stress, such changes and differences cannot be explained by a difference in leaders. As Easterly and Pennings (2016, p. 13) write: “*a higher within-country variance of growth under autocracy than under democracy left open the possibility that it was leader shifts within countries that explains this finding. Our finding does not support this possibility – a great deal of the high within-country variance of growth in autocratic countries is due to idiosyncratic noise rather than shifts in leader quality within autocratic systems.*”

Some argue that these differences stem from entry barriers, as “economic losers” — or those who feel threatened by the *political* consequences of economic change¹ — have an easier time lobbying for protections in non-democratic contexts (Fernandez and Rodrik 1990; Kuznets 1968; Krusell and Ríos-Rull 1996; Parente and Prescott 1999; Acemoglu 2008; Comin and Hobijn 2009; Acemoglu and Robinson 2000). However, explanations based on entry barriers have found little empirical support. Aghion et al. (2007) find that it is true that non-democratic economies see fewer new firms enter high-value-added sectors, but that this cannot be explained by formal barriers to entry (e.g. setting up procedures, registration paperwork). Contrary to their expectation, even when one controls for such entry costs (using data from Djankov et al. 2002) a clear link between political regime and these trends in sectoral composition remains.² It is also puzzling that one does not find more mention of entry barriers being torn down, if they indeed are underlying these massive changes in allocation of resources. For instance, the investigation by Tsai and Wang (2002) of Taiwanese R&D policies in the 80s and 90s does not highlight any policy change after the move to democracy,

¹Londregan (2015) suggest that certain types of productive economic activity, such as R&D, are very hard to distinguish from rebellion, and are hence discouraged in non-democratic settings by leaders. Much work also investigates and theorizes about the political consequences of specific technologies, such as cell phones (Shapiro and Weidmann 2015; Jensen 2007), and the internet (Milner 2006).

²That there even is a clear link between non-democracy and entry barriers to begin with is also not entirely clear: the frequently cited claim (first made in Djankov et al. 2002), is supported by tests using a measure of autocracy, not democracy (specifically, the autocracy index forming just one half of countries Polity scores — the other being the democracy component).

but rather four programs aimed at spurring innovation in new industries established in the decade before. As Aghion et al. (2007, p. 19) conclude, the next steps are: “first, to dig further into the various channels whereby democracy fosters growth in more advanced sectors...”

A stubborn link between investments and regimes also emerges outside studies centered on political economy. Studying investments in innovation at the firm level, Srholec (2011) finds that in developing countries firms were somewhat more likely to launch new product lines when entry barriers are lower, but “expected this variable to play a more prominent role”. Even with this and many other predictors such as taxation levels and strength of contract enforcement, the presence of a democratic regime positively predicted levels of product innovation.

As Shrolec concludes: *“the results call for improving our understanding of the relationship between democracy and innovation, which emerged from the analysis as one of the key connections, but which has arguably not received the attention that it deserves in the recent innovation literature, even though this was a major topic in Schumpeter’s work. [...] More research certainly needs to be done on the complex interplay between governance, democracy and innovation.”*³

In sum, different political regimes tend to have different economies. Our theories are unable to explain these differences. There is thus a need for a theory which can help explain how politics steer allocations of resources into particular sectors. In the next section, I present such a theory, which provides an account of all aforementioned patterns of resource allocation. It also suggests a way in which the emergence of new economic opportunities — new possibilities for investment due to e.g. technological breakthroughs — can bring about regime change.

THEORY: POLITICAL COMPETITION IN DYNAMIC ECONOMIES

Politics tend to take place in dynamic economies: in places where people can invest resources and economic fortunes change. This section present a theory centered on the political implications

³We know that historically, systems in which power is tied to randomization (such as the Republic of Venice) or elections (such as ancient Athens) have tended to be associated with societies of relatively high technological development (e.g. in manufacture of glass and weapons, respectively) and international trade.

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of this fact - and how politics may also shape technological and economic change. It does so by considering what happens when economic opportunities — defined as the set of possible investment — change, and when people invest in certain types of economic opportunities.

This theory seeks to explain only a limited part of these processes. It does not offer any account of the formation of states or their relations with other states. Instead, it assumes that a political entity has a leader who can spend resources to buy the support of a coalition, that a larger coalition is more costly to maintain, and that the leader will stay in office if their coalition has a majority of power in the entity (similarly to the approach pioneered in Bueno De Mesquita et al. 2003). It then further assumes that the leader has implemented all policy as they see fit and thus prefers to not make any further intervention in the economy, that money and other resources brings power, and that the leader wants to control a more productive economy and stay in office.

If this is a static economy, it is straightforward to show that the leader will acquire support from the smallest coalition possible while retaining a majority of power, and give these supporters whatever benefits are marginally better than what they can expect to get for supporting a challenger.

Here, I explore what happens if the resources of these coalition members — and those outside the coalition — can be invested and change.

In a dynamic economy the incentives facing the leader are different. The leader now needs to be concerned with the investment gains and losses of outsiders relative to those in the leader's coalition. If these outsiders do exceedingly well relative to the coalition, political competition (the need to maintain a majority of power to continue to rule) will compel the leader to *intervene* (destroy, impose inefficient taxes, prosecute, reduce subsidies, et cetera).⁴ Those outside the coalition will anticipate this, and shift away from the most productive investments to investments which reduce intervention, to the detriment of the economy and the leader. In setting their coalition, the leader weigh these losses against the costs of maintaining a larger coalition.⁵

⁴“Intervention” is the word I use for interventions in the economy that the leader would prefer not to do. Wintrobe (1998) also stresses dictator's need for such policies to respond to shifts in power. An *ex ante* prohibition of investments which can lead to a need for intervention is also possible, but this would shift allocations more than a policy of interventions, and not change the model's conclusions.

⁵For instance, in deciding whether to establish a legislature, one concern of the leader is the extent to which

This need for intervention in the response to shifts in power or technology connects to a large literature on how institutions and political leaders can block economic change and technological development (see e.g. Mokyr 1990, 1994; Acemoglu and Robinson 2000, 2006), and how certain institutions, often those associated with larger coalitions (or democracy), may be better suited to economic change (North 1982, 1990; North and Weingast 1989; Olson 1993; Przeworski and Limongi 1993; Acemoglu 2008; Acemoglu and Robinson 2012) or emerge in response to it (see e.g. Lipset 1959; Acemoglu et al. 2005; Bueno de Mesquita and Smith 2009; Jha 2012; Boix 2003, 2015).

The novelty of this theory lies in focusing on the characteristics of these economic opportunities — the set of investments which can be made. Specifically, I show that the cost of a small coalition is increasing in the relative profitability of investments which are high in variance, or which covary less with investments of those in the regime coalition. This has at least two important consequences.

First, these types of opportunities will be systematically underused by those outside the coalition, and this allocation bias will be stronger the smaller and weaker the regime coalition is. This links the structure of economies to their politics: "democratic economies" will have an allocative advantage in certain types of activities, and especially in activities characterized by high risk and unclear covariance structures (such as technology innovation).⁶ Their economies will not be colored by a situation in which both the government and the private sector see an advantage in covariant investments which reduce the need for intervention.

Second, a change in the characteristics of economic opportunity might precipitate regime change. If leaders believe that their current coalition makes the need to intervene or allocative bias too great, they might expand their coalition in response. If they believe that risky economic opportunities are less attractive than previously, they might shrink their coalition.⁷

this will facilitate productive investment and reduce need for economic intervention. I return to the cost of larger coalitions below.

⁶As Schumpeter indeed writes (1934, p. 87): the "reaction of the social environment against one who wishes to do something new [...] may manifest itself first of all in the existence of legal and political impediments."

⁷The discovery of opportunities for export of specific natural resources (e.g. oil or diamonds) provides a natural example of new economic opportunities which are highly covariant — here theorized to bring about regime contraction.

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North (1982) stresses the conflict between maximizing economic output and maximizing rents as a “root cause of the failure of societies to experience sustained economic growth.” (p. 25). Yet it is not the only conflict. As he writes in a later essay, rulers may “wish to promulgate rules on the basis of their efficiency consequences, [but] survival will dictate a different course of action” (North 1989). I show that there in any dynamic economy is a fundamental tension between small coalitions and efficient economic allocations: as long as relative economic success is useful in political competition and leaders wish to stay in office, economically inefficient investments *and* policies will sometimes be pursued.⁸

This theory’s contribution to thinking about the consequences of technological change is restricted to how such change is manifested in the set of economic opportunities. This should in no way suggest that this is the only way technological change influences politics. For instance, changes in the effectiveness of repression technology or changes in technology which lead to economic inequality have enormous political consequences as theorized and evidenced in Boix (2015). Here, these are model parameters, entering through the cost of coalition and the set of investments available to different investors.⁹

There are several ways of thinking about democracies (which have large coalitions) in the context of this theory. Here democracy will be considered through the notion of “democratic regimes” (or a democratic regime spell, as in Svoboda 2012). In such a conception, the regime does not change with e.g. who controls the executive branch, but is rather composed of whichever democratic institutions may exist (a national parliament, prime minister, president, judiciary, a constitution). These institutions, which may include e.g. voting rights, are some of ways in which this ‘leader’ provides supporters with benefits. The regime coalition is composed of all who support democracy over a non-democratic challenger, and are large relative to other forms of government. This ‘leader’ is not restrained from destroying the resources of non-supporters (such as insurgents) to maintain power. All other economic policies are here assumed to be ways to spend or generate disposable

⁸This provides a rationale for industrial policy and massive *government* investments in risky sectors such as innovation in authoritarian regimes approaching the technological frontier.

⁹Similarly, capital mobility (stressed in Boix 2003) enters through intervention cost function, which is assumed monotonic but otherwise left unexplained.

FIGURE 1. Definitions — Leaders, Investors, Regime Coalition, and Intervention

Leader: The entity (person, group) controlling a political unit's ability to tax and intervene in the economy.

Investor: Entity making a decision about where to invest resources and who to support politically. This may be individual investors, but if the above is applicable, may also be families, ethnic groups, and even groups of people with a particular political affiliation.

Regime Coalition: All those who, if given a consequential choice, would keep the leader in power rather than replacing them with the most likely challenger.

Intervention: Actions taken by the leader which (a) lowers resources available to private individuals, and (b) are undertaken at a cost to the leader. The latter follows from the distribution of investment returns considered by investors already incorporating the effects of all other leader policies (such as tax schedules, subsidies, and government contracts).^a

^aIt is tempting to think that the leader may design these latter policies to avoid allocation loss and the need to intervene altogether. This is however impossible: if these policies are to be effective, they must shift allocations away from those which may produce a power differential, but if they shift allocations away from profit-optimal investments, they produce allocation bias.

income according to the leader's preferences (which may change with e.g. which party is in power).¹⁰

In what follows, I make no assumptions about what investments are available to investors, or about who investors are, other than that they are entities (e.g. individuals, families or ethnic groups) who make a decision about who to support and what to invest in.

Players and strategies

¹⁰This is not to say that the theory does not apply *within* democratic regimes, or even other units in which investments are made (such as provinces or even firms). To the degree money matters in politics and leaders are able to intervene in the economy to secure their position, I would expect it to apply to all these levels simultaneously.

¹¹This quantity equates to a sum of resources, such as money, weighted by how they confer influence over the choice of leader. No assumptions are made about how such conversions are made. Support of a group with a sum of such resources equal to more than half thus guarantees that a leader stays in power.

Investors $i \in \{1, \dots, N\}$. All $i \in W_L$ (in regime coalition) **or** $i \in W_C$ (not in regime coalition).

Actions : Buys one investment $j_i \in J_i$. No assumptions are made about the set of possible investment portfolios (J_i), which may be unique to each investor.

Payoff : π_{j_i} , their net investment return.¹¹

L The current leader.

Actions : Selects a subset of investors as members of his coalition (W_L , providing them with benefits worth $h(n)$), and costly intervention level $r \in \mathbb{R}^+$. We define $n \equiv \sum \mathbb{1}\{i \in W_L\}$ and $n_c \equiv \sum \mathbb{1}\{i \in W_C\}$.

Payoff :

$$U_L(g(\sum_i \tilde{\pi}_i) - f(r) - h(n)) \quad (1)$$

if in office and zero otherwise. We assume $U_L(\cdot) > 0$, and that $U_L(\cdot)$, $f(\cdot)$, $g(\cdot)$, $h(\cdot)$ are increasing in their arguments: the leader prefers to stay in office, benefits from investment returns (a more productive economy), while it costs him to intervene and to maintain a larger coalition.

Sequence

1. Leader selects his coalition.¹²
2. Each investor buys one investment portfolio j_i from set of possible investments J_i . Portfolio j_i has gross return $\tilde{\pi}_{j_i}$.
3. Gross return $\tilde{\pi}_{j_i}$ is revealed, observed by L.
4. L sets intervention level $r \in \mathbb{R}^+$. Investors get return:¹³

$$\pi_{j_i} = \begin{cases} \tilde{\pi}_{j_i} - \frac{1}{n_c} * r & \text{if } i \in W_C \\ \tilde{\pi}_{j_i} & \text{if } i \in W_L \end{cases} \quad (2)$$

Investors now have power = π_{j_i}

5. Investors “mechanically” vote with their power, with everyone in the leader’s coalition voting for keeping the leader and everyone else voting for overthrowing the leader. L remains in power if:

$$\sum_{i \in W_L} \pi_{j_i} \geq \sum_{i \in W_C} \pi_{j_i} \quad (3)$$

And otherwise loses power.

Equilibrium

I solve the game through backward induction.

The leader will intervene to stay in power.¹⁴ He therefore sets:

$$\sum_{W_L} \tilde{\pi}_{j_i} = \sum_{W_C} \tilde{\pi}_{j_i} - r \quad \text{If pre-intervention: } \sum_{i \in W_L} \tilde{\pi}_i < \sum_{i \in W_C} \tilde{\pi}_i \quad (4)$$

$$\Rightarrow \text{Leader selects : } r = \max\left(\sum_{W_C} \tilde{\pi}_{j_i} - \sum_{W_L} \tilde{\pi}_{j_i}, 0\right) \quad (5)$$

¹²Modelling this coalition formation in detail is not the focus of this paper (e.g. if those with more or less lucrative investment prospects will join first, which we hope further research may investigate). Rather, it simply is assumed that by providing benefits costing the leader $h(n)$, n investors become part of the regime coalition, that is, will support the leader in stage 5. In other words, we only assume that the leader can entice more investors to join his coalition by giving out more benefits.

¹³For simplicity, I assume that the leader intervenes upon a random non-coalition investors (or equivalently in this setting, that he intervenes upon all equally). Other ways of distributing intervention are possible, but any shift that causes less allocation inefficiency is associated with larger intervention costs, and vice versa.

¹⁴In the discussion section below, I outline a version of the model in which the leader might leave office.

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In selecting their portfolio, investors in the regime's coalition do not need to worry about government intervention. They therefore straightforwardly maximize:

$$\Rightarrow \text{Regime investor } i \in W_L \text{ selects : } \max_j \mathbb{E}[\tilde{\pi}_{j_i}] \quad (6)$$

If all investors are part of the regime coalition, all invest to maximize expected returns. This establishes a natural investment benchmark:

Full Coalition Benchmark: If $N = n$ then all $i \in W_L$

$$\Rightarrow \forall_i \tilde{\pi}_{j_i} = \max_j \mathbb{E}[\tilde{\pi}_{j_i}] \equiv \pi_i^* \quad (7)$$

For investors not part of the government coalition, the incentives are different. They know that if:

$$\sum_{i \in W_L} \pi_{j_i} < \sum_{i \in W_L} \pi_{j_i} \quad (8)$$

The amount by which they are ahead will be taken by the leader. This means that there is a politically induced ceiling on their investment returns:

$$\tilde{\pi}_{j_k} \leq \underbrace{\sum_{W_L} \tilde{\pi}_{j_i}}_{\text{Regime investor returns}} - \underbrace{\sum_{i \neq k \wedge i \in W_C} \tilde{\pi}_{j_i}}_{\text{Other non-regime investment returns}} \quad (9)$$

This means their optimal strategy is:

$$\begin{aligned} \text{Non-regime investor } i \in W_C \text{ selects : } & \max_j \mathbb{E} \left[\tilde{\pi}_{j_i} - r_{j_i} \right] \\ \Leftrightarrow & \max_j \mathbb{E} \left[\tilde{\pi}_{j_i} - \frac{1}{n_c} * \underbrace{\max \left(\sum_{W_C} \tilde{\pi}_{j_i} - \sum_{W_L} \tilde{\pi}_{j_i}, 0 \right)}_{\text{Expected intervention}} \right] \quad (10) \end{aligned}$$

In other words, in maximizing their returns, they consider not just the gross return, but also the expected intervention - both of which depend on the project they select (the latter through the difference in the sum of non-coalition and coalition investors returns).

A special case is one in which political power is static and equal among all. In such an idealized democracy, in which resources give no influence in any way on the choice of leader. In this framework, that would be equivalent to the entire population being "investors", with $Var(\tilde{\pi}_{j_i}) = 0$.¹⁵

The leader will select his coalition with all this information in mind. In making his choice, the leader balances the sum of expected allocation loss and intervention cost with the cost of maintaining a larger coalition.

Intervention loss straightforwardly depends on the expected intervention level, r . We can define allocation loss as the difference between the investments selected and the full coalition benchmark.

$$\text{Allocation loss} = L_A = \sum_i \pi_i^* - \sum_i \tilde{\pi}_i \quad (11)$$

Where π_i^* is full coalition benchmark investments, and $\tilde{\pi}_i$ are investments selected.

Both these types of losses will decrease in the size of the regime coalition by reducing the expected

¹⁵In such a case the leader will in this setup simply select his policy so that just more than half support him, and never have to intervene. Note that the existence of such a context, such as a perfectly democratic citizen assembly, could in the framework presented here itself be the equilibrium of an enclosing game where resources may not be equally distributed and static. In ancient Athens, for instance, democratic assemblies were only available to and supported by elite men. This work focuses on what happens if politically relevant resources can be invested and change.

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intervention necessary to maintain control, and may be written as functions of coalition size.

Remember that we defined:

$$\sum_{i \in W_L} \mathbb{1}_i \equiv n$$

The leader will then in setting his coalition maximize the expression:

$$\Rightarrow \max_n \underbrace{g(\tilde{\pi}(n))}_{\text{Investment returns}} - \underbrace{f(r(n))}_{\text{Intervention costs}} - \underbrace{h(n)}_{\text{Cost of coalition}} \quad (12)$$

With $g(\cdot)$, $\tilde{\pi}(\cdot)$, $h(\cdot)$, $-r(\cdot)$ all being functions increasing in their arguments.

Implications

Implication 1. *Large coalition regimes have an inherent investment edge: allocation loss and intervention cost is diminishing in the size of the regime coalition.*

$$n \rightarrow N \Rightarrow \begin{array}{l} \forall_{i \in W_C} \pi_i \rightarrow \pi_i^* \\ r \rightarrow 0 \end{array} \quad (13)$$

This follows directly from the fact that regime investors — those part of the coalition — do not allocate with possible intervention in mind. More subtly and in addition, the difference in expected return of coalition versus non-coalition investors grows in the former's number, which reduces the rate at which non-coalition investors are willing to trade investment return for other investment characteristics in selecting their portfolio. If all are part of the coalition, there is no allocation loss or intervention, and investments will equal benchmark investments.

Implication 2. *Non-regime investors will be willing to trade the highest-return investments for investments with lower returns which reduce intervention. These are investments which reduce the variance of the sum of regime-minus-non-regime investments.*

For a given set of investments, we know by Equation 5 that the leader's intervention will be

equivalent to the sum of regime minus non-regime investments, except left-truncated at zero. The intervention is therefore increasing in both the expectation and variance of this underlying sum.

$$\frac{\delta r}{\delta \mathbb{E}(\sum_{W_C} \tilde{\pi}_{j_i} - \sum_{W_L} \tilde{\pi}_{j_i})} \geq 0 \quad \wedge \quad \frac{\delta r}{\delta \text{Var}(\sum_{W_C} \tilde{\pi}_{j_i} - \sum_{W_L} \tilde{\pi}_{j_i})} \geq 0 \quad (14)$$

The expectation of the sum matters for intervention size. It is however not in itself a source of allocation bias. For non-regime investors, a portfolio with ϵ higher return can at most increase intervention by the leader by ϵ , might sometimes increase it by less (for instance, if the regime does especially well), and is thus preferred to an otherwise identical portfolio with lower-return.

The link between politics and different investment is instead generated by the relationship between the variance of this sum and expected intervention. This makes other characteristics than expected return relevant for investors: their variance and covariance with other investments, particularly those made by the regime.

This possibility of reducing intervention induces a bias towards investments which reduce the variance of sum of non-coalition versus coalition investments. In general, this bias will be towards investments with returns which:

1. Covary with regime investment returns
2. Have lower variance¹⁶
3. Negatively covary with other non-coalition investment returns

This is the case without making any assumptions about the investment opportunities available and how their returns are distributed.¹⁷ If we make assumptions about the distributions of available investments, we can characterize the magnitude of the bias imposed by politics with more precision.

¹⁶There is one exception to the premium on lower variance, namely the case in which the covariance with leader investments is highly positive, covariance with other non-regime investments is highly negative, and both latter sums have high variance. This exception might be relevant to countries with extremely co-variant economies and small coalitions. This model thus generates a politics-based explanation to the resource curse, based on the bias towards regime-covariant high-variance investments under certain conditions.

¹⁷In the limit, we can imagine an economy with two investors, one of which is part of the regime and gets 1 with certainty. Then, the other investor will prefer getting 1 with certainty to any lottery which *can* give less — regardless of the expected return of such a lottery.

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I do so in equations 15-19, illustrating that these trade-offs are sizeable under plausible conditions.

For investment returns which are normally distributed, a common assumption in portfolio theory, we after some derivation find that investors are willing to trade lower return for lower variance at a rate of:

$$\frac{\sigma_p - \rho\sigma_L}{\sqrt{(\sigma_p^2 + \sigma_L^2 - 2\rho\sigma_p\sigma_L)}} * \left(\frac{\phi\left(\frac{-(\mu_p - \mu_L)}{\sqrt{(\sigma_p^2 + \sigma_L^2 - 2\rho\sigma_p\sigma_L)}}\right)}{(N - n) - \Phi\left(\frac{\mu_p - \mu_L}{\sqrt{(\sigma_p^2 + \sigma_L^2 - 2\rho\sigma_p\sigma_L)}}\right)} \right) \quad (15)$$

Wherein σ_p, μ_p is the variance and expected value of the sum of non-regime investor returns, σ_L, μ_L the equivalent for regime investors, ρ the covariance of the two, ϕ, Φ the standard normal density and CDF, and N, n as defined above.

As seen, there will then always be a rate at which non-coalition investors trade expected return for lower or higher variance (the latter only if $\rho\sigma_L > \sigma_p$). In a symmetric setup — in which there are two equally large groups of investors, one of which is part of the regime, and they currently have identical portfolios¹⁸ — the non-coalition investors will then be willing to trade expected return for lower variance at a marginal rate of:

$$\frac{1 - \rho}{\sqrt{2(1 - \rho)}} * \left(\sqrt{2\pi} * (2 - 1) \right)^{-1} \quad (16)$$

If portfolios returns are uncorrelated and there are two investors in the country, this means trading one unit of lower variance for:

$$\left(\sqrt{2} * \sqrt{2\pi} \right)^{-1} \approx 0.28 \quad (17)$$

units of expected return.

We may similarly investigate the correlation/return trade-offs. The marginal rate of substitution

¹⁸We without loss of generality assume their portfolios have variance equal to 1.

for correlation/return is:

$$\frac{\sigma_p \sigma_L}{\sqrt{(\sigma_p^2 + \sigma_L^2 - 2\rho\sigma_p\sigma_L)}} * \left(\frac{\phi\left(\frac{-(\mu_p - \mu_L)}{\sqrt{(\sigma_p^2 + \sigma_L^2 - 2\rho\sigma_p\sigma_L)}}\right)}{(N - n) - \Phi\left(\frac{\mu_p - \mu_L}{\sqrt{(\sigma_p^2 + \sigma_L^2 - 2\rho\sigma_p\sigma_L)}}\right)} \right) \quad (18)$$

With the same symmetrical setup as above, this simplifies to:

$$\frac{1}{\sqrt{2(1 - \rho)}} * \left(\sqrt{2\pi} * (N - n) \right)^{-1} \quad (19)$$

Or if assuming two investors and zero initial correlation, once again 0.28 units of return per unit increase in correlation.¹⁹

Implication 3. *Intervention cost and allocation loss depends on the returns of investments associated with high intervention. It increases in the relative returns of investments with high variance and low-covariance (with regime investments).*

Because non-coalition investors invest with the possibility of intervention in mind, expected allocation loss and intervention costs can be lower than expected intervention in the event of benchmark investments.

$$\mathbb{E}\left(\sum_{W_C} \pi_i^* - \sum_{W_C} \tilde{\pi}_i\right) + \mathbb{E}(r) \leq \mathbb{E}\left(\max\left(\sum_{W_C} \pi_i^* - \sum_{W_L} \pi_i^*, 0\right)\right) \quad (21)$$

The size of allocation loss and intervention costs depend on economic opportunity — the set of investments available. If investments are available which reduce expected intervention to zero, and such investments' returns are sufficiently high, we should expect non-investors to shift to such projects, the need for intervention to be eliminated, and allocation loss to be small. If on the other

¹⁹For completeness, the comparable variance/correlation trade-off is:

$$\frac{\sigma_p - \rho\sigma_L}{\sigma_p\sigma_L} \quad (20)$$

In other words, higher correlation is more desired than lower variance if and only if $\sigma_p\sigma_L > \sigma_p - \rho\sigma_L$.

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hand such alternative investments have much lower returns, there will either be large allocation losses (as non-coalition investor accept much lower returns), high intervention (if they stick to the higher return investments), or some combination of the two.

Implication 4. *Countries with large coalition regimes will better take advantage of high-risk (i.e. variance) opportunities which do not covary with existing investments than countries with small coalitions. This is magnified if those best-positioned to invest are outside the coalition.*

The difference between regimes with small and large coalitions increases in the profitability of high-risk (i.e. variance) and low-regime-covariance investments. The more profitable these are, the larger allocation loss and intervention costs will be, both of which will harm a country's economy. This is especially the case if those who are able to invest in these opportunities are outside the regime coalition. If on the contrary those aligned with the regime are those best positioned to take advantage of the new opportunities, the differences between large and small-coalition regimes will be reduced.

Implication 5. *Changes which make the most profitable investments more risky and less covariant, tends to induce an expansion of regime coalitions. Changes which make the most profitable investments more covariant and less risky, tends to induce a contraction of the regime coalition.²⁰*

Recall that we defined the leader's equilibrium strategy in setting their coalition as:

$$\Rightarrow \max_n \underbrace{g(\tilde{\pi}(n))}_{\text{Investment returns}} - \underbrace{r(-n)}_{\text{Intervention costs}} - \underbrace{h(n)}_{\text{Cost of coalition}}$$

With $g(\cdot)$, $\tilde{\pi}(\cdot)$, $h(\cdot)$, $r(\cdot)$, all being functions increasing in their arguments.

Intervention costs ($f(r(n))$) and allocation losses (the difference between ideal and actual $g(\tilde{\pi}(n))$) are increasing in the relative profitability of especially high-variance and/or low-covariance invest-

²⁰Perceptions of economic opportunity are here key, and it is not necessarily the case that changed economic circumstances are immediately realized by the leader. A tipping point model is here possible: with a large enough economic take-off in one country, neighboring leaders change their perceptions, then coalitions, which in turn transforms their economies, changing more perceptions, and so on.

ments. More importantly, both are now more sensitive to a change in n , as either more or fewer investors depart from non-profit-ideal allocations and/or are more intervened upon.

Let us for instance assume that a new technological breakthrough suddenly make certain investments (such as trade) more profitable than others (agriculture). Let us further assume that these investments are relatively high-risk and lower in covariance than the alternative allocations. Before any adjustments are made by investors or the leader, expected investment returns and intervention remain the same. However, the opportunity cost of existing allocations have shifted. The leader may now be forgoing the higher returns associated with shifting allocation into more productive investments, or must perhaps anticipate costly intervention if these more productive investments are pursued. This is especially the case if those best positioned to exploit these opportunities are outside the coalition.

In other words, $g(\tilde{\pi}(n))$ and $r(n)$ are both larger and steeper in the face of these new economic opportunities. This gives the leader an incentive to enlarge their coalition. A change in economic opportunities, such as those afforded by new possibilities for trade or technological breakthroughs, can thus induce regime change.

There is no reason to believe such pressures always work to enlarge coalitions. Consider for instance if a new economic opportunity that is particularly high-covariance is discovered (such as extracting and exporting oil for the international market). If this makes optimal allocations more covariant than previously, this would suggest a contraction of the regime coalition as the optimal strategy for the leader.

This does not mean that coalitions are determined solely by investment opportunities, or even worse, that their shaping by economic opportunity make them an inconsequential link between these and economic allocations. Leaders pay keen attention to the cost of expanding their coalitions, in comparison to which investment returns and intervention costs likely were marginal for most of human history before the broad emergence of dynamic economies. This function is also far from static: the balance between repression and resistance technology might change, and with it, the cost of any particular coalition.

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In concert, these implications makes the model consistent with more volatile economic growth in non-democracies (which have smaller coalitions), and also more investment in high-value-added sectors, which tend to have more variable returns. It provides the novel suggestion that the emergence of new economic opportunities with *particular characteristics* may facilitate regime change – and that an era of dynamic economies may be an era of democracy, too.

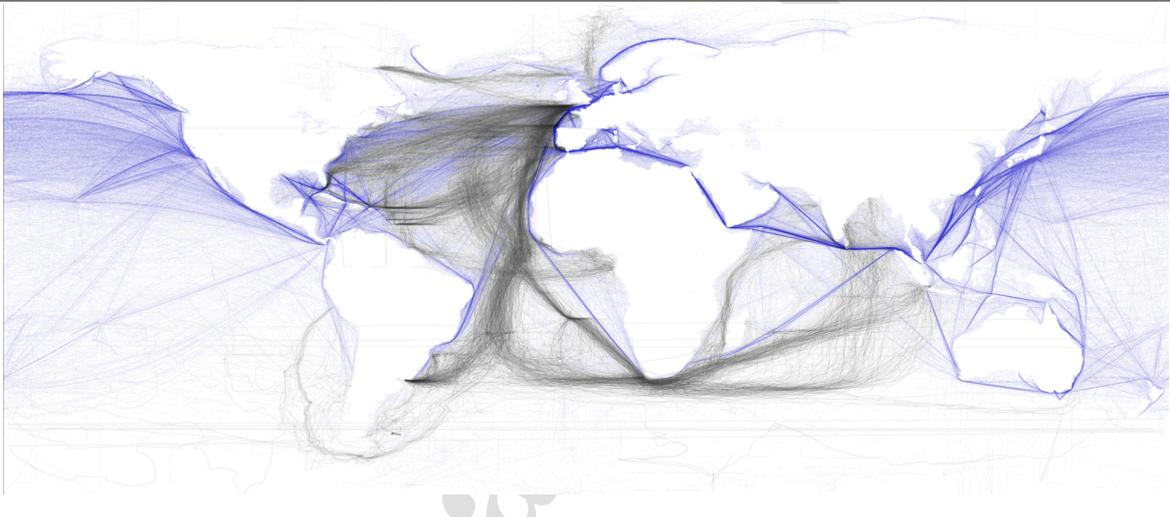
I continue with an empirical investigation of economic opportunity, political regimes, and investment allocations in changing economies.

EMPIRICS: FROM SAIL TO STEAM — NEW OPPORTUNITIES, NEW REGIMES, AND CHANGED ECONOMIES

In this section, I leverage a world-wide technological shock that differentially changed the economic opportunities of countries and unfolded over half a century to provide evidence that large-coalition regimes were more responsive to change in economic opportunities, and in particular, that they were superior in utilizing new opportunities characterized by high risk and diverse returns, in line with Implication 4. Furthermore, I show that the opportunity cost of biased allocations — the extent to which countries failed to take advantage of this new technology-granted opportunity — is strongly related to regime change: The larger the mismatch between opportunities and allocations, the greater the probability for coalition expansion through democratic reforms (in line with Implication 5).

Again he is an entrepreneur, his profit entrepreneurial profit... The case of the choice of new trade routes belongs here.

Schumpeter (1934, p. 134)

FIGURE 2. Routes By Sail and Steam

Note: Sample of journeys by sail in 1750-1810 (black) versus shipping routes by modern propulsion (blue). Constructed for this study using ship logs from Spain, France, the Netherlands and the United Kingdom (digitalized by the Climatological Database for the World's Oceans project, some 200 000 positions), and modern propulsion ship routes from Halpern et al. (2008). I leverage the difference in port-to-port distances by sail and steam, with routes for both calculated using dynamic programming, to construct an instrument for trade.

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The first age of globalization was propelled by steam.²¹ The impact of the steamship revolution was however not equal, as Figure 2 shows. Some port-to-port routes were radically shortened, as wind patterns had made travel between them very hard. Other routes hardly changed at all. Using the method and data presented in Pascali (2018), I leverage this difference — that ship propelled by sails rely on wind, whereas those relying on steam do not — to estimate countries' changed economic opportunities.

In brief, Pascali (2018) provides optimal ship paths by sail and steam respectively, constructed using dynamic programming and data on stable wind patterns and water currents.²² These distances are then used in a gravity model of trade in which the extent to which shipping relied on sail or steam is allowed to vary by year, but countries economic mass are held fixed (here set to share of world trade in the first year of the sample). Predicted bilateral trade flows are then summed to the country-year level to construct a proxy for changing economic opportunity. This predicted aggregate trade, assuming gravity-model suggested adjustments to the new steam technology, serves as a measure of a country's economic opportunity for international trade — new possibilities for investment driven by changes in technology at the global level. As good data on actual trade is only available at five-year intervals, the analysis is conducted at this level as well.²³

The empirical analysis is centered on countries' *missed opportunity*: the difference between technology-driven changes in possible trade and the trade that actually took place.²⁴ These new opportunities — international trade and the industries connected to it (i.e. production for export) — were at the time activities associated with more variable returns than comparable non-trade-oriented investments.²⁵

²¹The adoption of steam technology by global shipping companies is estimated, to account for more than half of the increase in trade in the latter half of the 19th century (Pascali 2018, p. 2824).

²²Pascali (2018) documents the process in detail, which I can only briefly summarize here. Routes were verified in select instances using ship logs, such as those in figure 2.

²³Figure 7 depicts the countries-years present in the analysis, which is restricted to sovereign countries with a population above 500,000.

²⁴Because predicted trade is scaled by actual trade (i.e. fitted values of a linear fit of gravity estimates to actual trade), a constant is added so that missed trade never is negative.

²⁵See e.g. Williamson (2013, p. 51-52 and 167-180), who evidences the large price volatility in export commodities relative to domestic manufacturing. The relevant comparison is from the perspective of a non-regime connected investor: will an investment in export-oriented activities rather than e.g. production for

To empirically investigate politics in the context of this theory necessitates drawing lines between observable characteristics of regimes and the coalitions supporting them. I do so through two assumptions:

Assumption 1. *The more effective institutions such as ruling councils or legislature are, the more likely their members are to support the regime.*

This assumption is based on the idea that the leader does not give something for nothing: by ceding some authority, the executive is able to recruit supporters.

Assumption 2. *Members of these institutions tend to be people who are or represent consequential actors in the economy, and make decisions about where to invest.*

This assumption is grounded in the broad relationship between wealth and participation or representation in these institutions.²⁶

These assumptions mean that the more effective institutions such as legislatures are, the more likely it is that the people who can invest in new trade opportunities are part of the coalition.²⁷ Below, I demonstrate a general relationships between such larger coalitions and lower-than-ideal engagement in international trade, for the first time.

I then narrow down theoretical possibilities further through data on the location of regime support. I have argued that by allowing effective institutions to operate, leaders recruited new members to the regime coalition. This made it possible for these individuals to invest without fear of becoming a threat to the regime, and the regime to reap the benefits of economic dynamism. But this suggests that if these people — those well-situated to invest in new trade opportunities — were already part of the coalition, the establishment of these institutions should not matter.

domestic consumption: (a) have more variable returns, and (b) co-vary with regime investments less?

²⁶In this time period in question, this was often formalized in property requirements.

²⁷It is easy to think that the more effective these institutions are, the weaker the leader is, and thus the more likely the leader is to intervene. The two weaknesses are however different: one of policy, the other of position. While it may very well be that a leader is "forced" to concede authority to a legislature out of fear of being overthrown, they do so to strengthen their position. In the event the leader established a parliament because of position weakness, the net effect of this coalition expansion on investment would be less, especially if preceding lost support was among likely investors. This would downward bias the effects here identified.

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Assumption 3. *People in coastal cities were better situated to invest in new trade opportunities.*

I combine this assumption with data on the location of government support from Pemstein et al. (2018), and locations of capital cities. In both cases, I rely on the values in the first year the country appears in the sample. My interest is then in three questions: did regimes with a coalition based in a coastal city have less missed trade? Were efforts to enlarge the regime coalition through governing institutions effective when the preexisting regime coalition did not include coastal cities? Were they *ineffective* when the regime coalition already included coastal cities?

Data and Sources

Actual trade: Log (Trade per capita).

Predicted trade: Log (Trade per capita) as predicted based on trade in 1845 and changes in trade patterns in years following as shipping companies adopt steam technology, differentially shrinking trade distances between countries.^a

Missed opportunity = Predicted trade – Actual trade. The extent to which countries failed to take advantage of new opportunities for trade due to technological change.

Regime Coalition: The effectiveness of institutions such as legislatures or ruling councils on 0-1 scale with 7 levels, from Polity IV (2017).^b

Location of Regime Support: Where the regimes supporters are located (VDem Project - Pemstein et al. 2018).

Other: *Urbanization rate* (Pascali 2018), *Electoral Democracy* (Boix et al. 2013), *indicators for War and Civil War* (Correlates of War Project — Palmer et al. 2019), *Regime Characteristics and Democracy Score* (Polity IV 2017).

The data is an unbalanced panel at the country-year level, present at 5-year intervals (as in Pascali (2018)), with country and year coverage detailed in figure 7. Summary statistics are available in table 1.

^aBoth actual and predicted trade are from Pascali (2018). All trade figures are in pounds sterling.

^bFormally: "...the extent of institutionalized constraints on the decisionmaking powers of chief executives, whether individuals or collectivities. Such limitations may be by any "accountability groups." In Western democracies these are usually legislatures. Other kinds of accountability groups are the ruling party in a one-party state; councils of nobles or powerful advisors in monarchies; the military in coup-prone polities; and in many states a strong, independent judiciary." (Polity IV codebook, p. 24). Originally on 1-7 scale.

The limitations of the data, consonant with that data from the period generally, must be kept in mind when assessing the effects identified. As is always the case, theoretical concepts can only be measured by proxies. Reliability capturing the effectiveness of institutions or the location of regime support is hard even for the recent past, and harder still so far back in time, for instance. The three

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TABLE 1. Summary statistics

Statistic	N	St. Dev.	Min	Median	Mean	Max
Coalitions	616	0.380	0.000	0.333	0.400	1.000
Trade per Capita	434	1.248	0.438	4.542	4.474	7.579
Predicted Trade per Capita	434	0.819	5.196	8.381	8.324	9.843
Missed Opportunity for Trade	434	0.942	0.000	3.934	3.849	6.346
Trade at Baseline	495	1.311	0.438	4.029	3.845	6.821
Missed Opportunity at Baseline	495	0.984	0.722	3.900	3.900	6.181
Urbanization rate	478	0.076	0.000	0.059	0.077	0.380
Civil War	698	0.206	0	0	0.044	1
War	698	0.265	0	0	0.076	1
Year	698	18.727	1845	1875	1875	1905

assumptions motivating the validity of these two proxies as measures of my theoretical concepts are also all necessary to keep in mind. The extent to which effective institutions reflects groups not traditionally engaged in trade, such as the judiciary, are limitations of this study, for instance. On the other hand, this data does aim to capture de facto sharing of authority via institutions such as councils and legislatures, and the validity is thus well-suited under Assumption 1.

I then turn to how missed trade provided an incentive for regime change, testing Implication 5. In particular, I ask: When one accounts for how much a country actually traded and current coalition size, does missed opportunity for trade positively predict coalition expansion? And furthermore: was this relationship stronger if the regime at the time was not based on support from coastal city?²⁸

Estimation Strategy

I first examine if the inclusion of likely investors in the regime coalition were related to better use of new opportunities for risky international trade, in line with Implication 4.

²⁸As detailed in the next section, all regressions account for all systemic effects (such as both missed trade and coalitions growing over time) through a full set of year fixed effects, and regional variation through region fixed effects. All standard errors are double-clustered at the country and year level.

I here estimate equations of the form:

$$\text{Missed opportunity}_{i,t} = a_t + b_1 \text{Coalition}_{i,t} + \vec{c}X_{i,t} + d_r + f \text{Missed opportunity}_{i,t=\min(t)} + \epsilon_{i,t} \quad (22)$$

Wherein, i indexes country, t indexes year, a_t year fixed effects, $\text{Coalition}_{i,t}$ the inclusion of investors in the coalition through effective institutions, $\vec{c}X_{i,t}$ a vector of coefficients and matrix of country-level covariates, d_r region fixed effects, and $\epsilon_{i,t}$ the standard error term. My coefficient of interest is β_1 , which I expect to be negative.

I continue with tests leveraging data on the location of regime support. I here estimate equations of the form:

$$\begin{aligned} \text{Missed opportunity}_{i,t} = & a_t + b_2 \text{Coalition}_{i,t} + b_3 \text{Coastal Support}_i \\ & + b_4 (\text{Coastal Support}_i * \text{Coalition}_{i,t}) + \vec{c}X_{i,t} + d_r + f \text{Missed opportunity}_{i,t=\min(t)} + \epsilon_{i,t} \quad (23) \end{aligned}$$

Wherein Coastal Support_i is defined as:

$$\begin{aligned} \text{Coastal Support}_i \equiv \mathbb{I} \left(\text{Location of regime support}_i = \text{Capital City} \right. \\ \left. \& \text{ Location of Capital City}_i = \text{Coast} \right) \end{aligned}$$

Wherein $\mathbb{I}()$ is the indicator function, both locations are recorded in the country's first year in the sample, and other terms are as per the above expression.²⁹

Three coefficients are here of interest: b_2 , b_3 , and b_4 . I expect large coalitions to have a negative effect on missed trade ($b_2 < 0$), coastal support to have a negative effect on missed trade ($b_3 < 0$), and the effect of large coalitions to be stronger if there is no coastal support ($b_4 > 0$).

²⁹If location of regime support is not available, I assume no coastal support. The countries with *Coastal Support* are: Cuba, Denmark, Greece, Liberia, Russia, Sweden, and Uruguay. Results are robust to using location of capital city instead of the combination of support location and capital city location used here. The countries with coastal capitals are: Argentina, Brazil, Cuba, Denmark, the Dominican Republic, Greece, Haiti, Liberia, the Netherlands, New Zealand, Norway, the Ottoman Empire, Peru, Portugal, Russia, Sweden, and Uruguay.

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I next test whether new economic opportunities can bring about changes to the regime coalition, in line with Implication 5. In particular, I test if an increased opportunity cost of having a exclusive coalition makes coalition expansion more likely to occur.³⁰

I here estimate equations of the form:

$$\begin{aligned} \Pr(\text{Coalition}_{i,t} > \text{Coalition}_{i,t-1}) &\propto a_t + b_5 \text{Missed opportunity}_{i,t} + \bar{c}X_{i,t} + d_r \\ &+ f \text{Missed opportunity}_{i,t=\min(t)} + g \text{Trade}_{i,t=\min(t)} \\ &+ h \text{Coalitions}_{i,t-1} + \epsilon_{i,t} \end{aligned} \quad (24)$$

Wherein \propto denotes a logistic link function and $Pr(\cdot)$ probability, and other terms are as per the above expression. The coefficient of interest is here b_5 , which I expect to be positive, indicating that larger missed opportunities are associated with a larger probability of coalition expansion. I also estimate equations of the form:

$$\begin{aligned} \Pr(\text{Coalition}_{i,t} > \text{Coalition}_{i,t-1}) &\propto a_t + b_6 \text{Missed opportunity}_{i,t} + b_7 \text{Coastal Support}_i \\ &+ b_8 (\text{Coastal Support}_i * \text{Missed opportunity}_{i,t}) + \bar{c}X_{i,t} + d_r \\ &+ f \text{Missed opportunity}_{i,t=\min(t)} + g \text{Trade}_{i,t} + \epsilon_{i,t} \end{aligned} \quad (25)$$

I expect steps to enlarge the coalition to be more likely if there is a larger opportunity cost to small coalitions, and thus b_6 to be positive, especially if there is no existing coastal support, meaning b_8 should be negative.³¹

Importantly, I control for baseline levels of missed trade ($\text{Missed opportunity}_{i,t=\min(t)}$) in all specifications — meaning the variation I leverage is not preexisting misfit between actual and predicted trade. This is preferable to a country-fixed effect strategy, which would not identify whether large coalition regimes tended to see a smaller mismatch than small coalition regimes

³⁰In the few cases where effective institutions are scored as "transitional", I follow the Polity convention of linear interpolation (e.g. scores of: 0, transitional, 0.5 are re-coded as: 0, 0.25, 0.5 — see Polity Codebook, p. 17)

³¹Since I condition on missed trade, I have no clear prediction for the independent effect of coastal support (b_7).

over the entire period. Note that the use of region rather than country fixed effects means that non-varying country-specific confounders are not fully excluded, which is an important if necessary limitation of this study. Furthermore, in all regressions a full set of year fixed effects cancel out any systemic variation (such as both missed opportunity and coalition sizes increasing over time). In Equations 24 and 25, g furthermore captures the effect of more or less trade on the likelihood of coalition expansion. This enables me to compare the effects of changed trade with the extent to which opportunities for trade were taken advantage of — here separated concepts. Standard errors are all clustered by both country and year.³²

In the next section, I show that regimes with larger coalitions were better at taking advantage of greater ease in trading. Furthermore, I find that the failure to take advantage of a technology-driven boost to trade was a good predictor of steps to enlarge ruling coalitions — and as a consequence, steps towards more democratic rule.

Results: From Regimes to Allocations

Investors in large-coalition regimes were consistently better able to take advantage of new opportunities for international trade, as shown in Table 2.³³ Their peers in small-coalition regimes consistently invested less (or saw less effect of their investments) in international trade than technological shifts suggested they should, in line with Implication 4. Importantly, this is not driven by any systemic increase in either over time, as all country-invariant confounders are accounted for in a full set of year fixed effects in all models. Furthermore, any regional variation is captured in region fixed effects for all models, nor are results driven by preexisting underperformance in trade relative to expectation, also always controlled for.

In columns (2)-(4), I add controls for trade at baseline, the best proxy for economic development available (urbanization rate in cities with population above 50 000, from Pascali (2018)), and controls for whether the country was at war and civil war. In all cases, the relationship between missed trade

³²As done in Pascali (2018).

³³This table presents estimations of Equation 22.

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and coalition size remains robust and significant at the $p < 0.001$ level.

I plot the magnitude of this relationship in Figure 3. This y-axis of this figure should be interpreted with caution, because the absolute size of missed trade depends on assumptions about what states *could* be trading.³⁴ The figure shows a reduction in missed trade of approximately 25 pounds sterling over the range of coalitions, a 27 percent improvement on median trade in the era.³⁵ In relative terms, missed trade is reduced by about 35 percent over the range of possible coalitions.

I next investigate the relationship between coalitions and missed opportunities conditional on the location of regime support. Estimating Equation 23, I find that (1) large coalitions remained a good predictor of less missed trade, (2) regimes with coalitions based in coastal cities saw less missed trade, *and* (3) that the interaction of the two is positive: larger institutions were effective when pre-existing coalitions were not in coastal cities. Results are shown in Table 3, with the magnitude of this strong interaction effect illustrated in Figure 4.

Results: From New Economic Opportunities To Changed Regimes

I next investigate whether the opportunity cost of small coalitions — the magnitude of missed opportunities — predict regime coalition enlargement, in line with Implication 5. It is to the best of my knowledge the first large-N test of whether a technology shock to opportunities for trade can bring about change in regime coalitions.³⁶

I find that the larger the gap between actual and potential trade, the more likely coalition expansion was. The effect is large, as shown in Figure 5, which visualizes the effects identified in column (1). Here, a one-standard deviation shift in missed trade is associated with a near doubling in probability of coalition expansion. This is also true when war, civil war and economic development

³⁴This figure's y-axis assumes that missed trade was at least positive (i.e. that technology-shift predicted trade at least equalled actual trade). This choice is only consequential for this scale: statistical significance and the amount reduced relative to total missed trade does not depend on this. Under this assumption, the worst performer trades at 5 percent of potential (China in 1860), while the best trades at potential (New Zealand in 1865, 1870).

³⁵Median trade in the sample was 172 pounds sterling per capita, approximately 14,300 in 2018 US dollars.

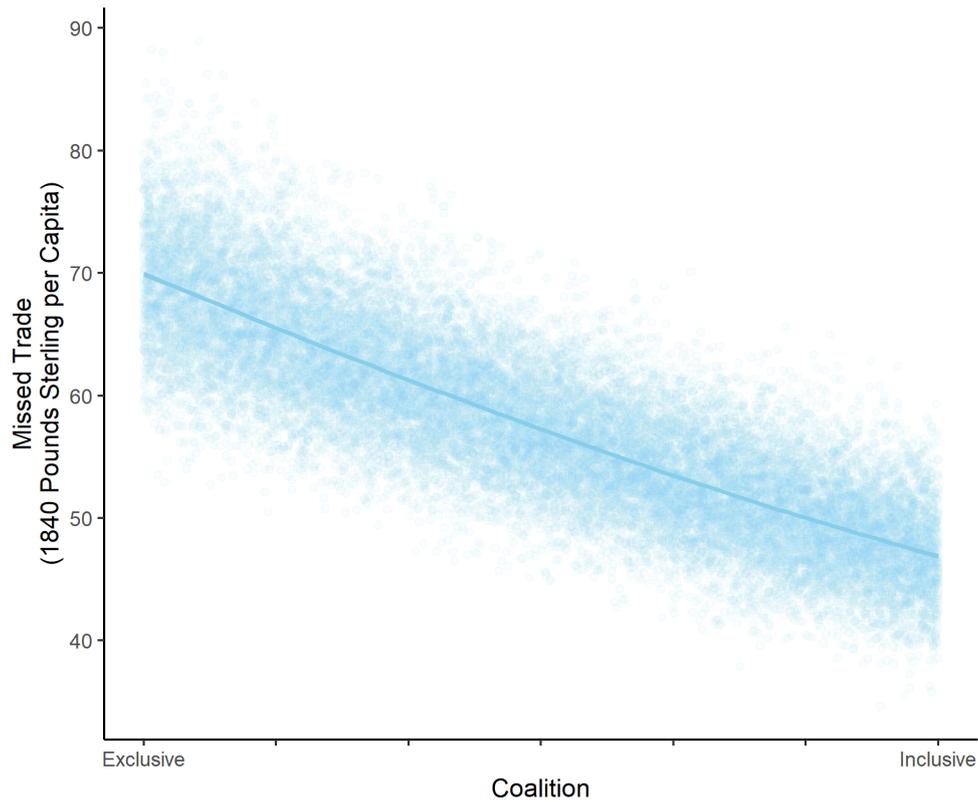
³⁶See also Jha (2012), who considers some specific contexts from a different but related perspective.

TABLE 2. Coalition Size and Missed Economic Opportunity (1845-1905)

	<i>Dependent variable:</i>			
	Missed Opportunity (Technology-Predicted-Trade – Actual Trade)			
	(1)	(2)	(3)	(4)
Coalitions	-0.403*** (0.136)	-0.410*** (0.136)	-0.376*** (0.125)	-0.386*** (0.122)
Trade at Baseline		0.026 (0.198)	0.091 (0.183)	0.083 (0.180)
Economic Development (Urbanization rate, pop >50k)			-1.507** (0.688)	-1.337** (0.661)
Missed Opp. at Baseline, Control	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes
War, Civil War Fixed Effects				Yes
Observations	422	422	417	417
R ²	0.785	0.785	0.796	0.798
Adjusted R ²	0.775	0.775	0.786	0.787

Note: *p<0.1; **p<0.05; ***p<0.01
(OLS with Country and Year-Clustered Standard Errors in Parenthesis)

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FIGURE 3. Large Coalitions and New Opportunities for Trade (1845-1905)

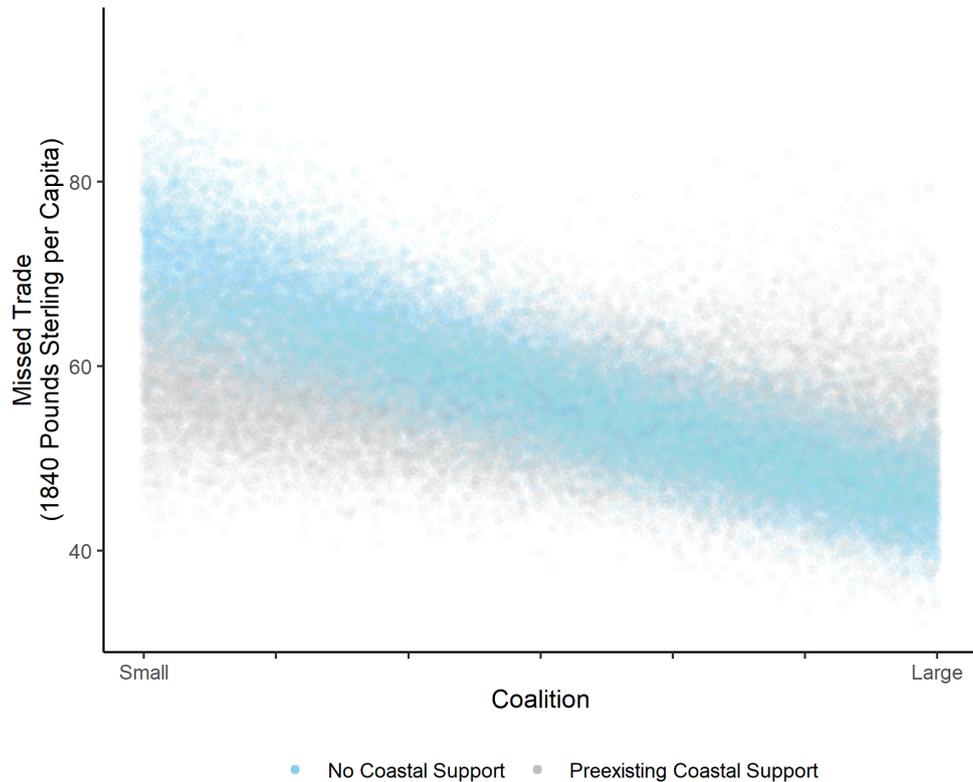
Note: Plots expected level of lower-than-ideal international trade as a function of regime coalitions based on simulations of model (1) in Table 2. Trade was predicted by a gravity model with time-varying distances due to gradual roll-out of steam technology, fitted to actual trade through a linear model with year and region fixed effects. It was then set to be at least equal to actual trade. Missed trade was then calculated as predicted minus actual trade. Regime coalitions are as captured by effectiveness of parliaments or similar governing institutions, with more effective institutions assumed to be related to larger regime coalitions, and in particular, to coalitions which included potential investors. Other predictors included in the model are full sets of year fixed effects, region fixed effects, as well as missed opportunity at baseline. As seen, larger coalition regimes consistently saw their economies better able to take advantage of technology-shock driven new opportunities for trade: larger coalitions have 1/3 less missed trade than fully exclusive coalitions. Median trade per capita was 93 pounds sterling per year in the era.

TABLE 3. Location of Regime Support, Size of Coalition, and Missed Economic Opportunity (1845-1904)

	<i>Dependent variable:</i>			
	Missed Opportunity (Technology-Predicted-Trade – Actual Trade)			
	(1)	(2)	(3)	(4)
Coalitions	-0.517*** (0.155)	-0.526*** (0.147)	-0.472*** (0.142)	-0.478*** (0.139)
Coastal Support	-0.380*** (0.144)	-0.378** (0.149)	-0.320** (0.143)	-0.316** (0.149)
Coalitions * Coastal Support	0.589*** (0.220)	0.596*** (0.217)	0.422* (0.225)	0.402* (0.235)
Trade at Baseline		0.032 (0.202)	0.074 (0.191)	0.065 (0.188)
Economic Development (Urbanization rate, pop >50k)			-1.265* (0.753)	-1.114 (0.731)
Missed Opp. at Baseline, Control	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes
War, Civil War Fixed Effects				Yes
Observations	422	422	417	417
R ²	0.793	0.793	0.801	0.803
Adjusted R ²	0.782	0.782	0.790	0.791

Note: *p<0.1; **p<0.05; ***p<0.01
(OLS with Country and Year-Clustered Standard Errors in Parenthesis)

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FIGURE 4. Large Coalitions, Location of Regime Support, and New Opportunities for Trade (1845-1905)

Note: Plots expected level of lower-than-ideal international trade as a function of regime coalitions based on simulations of model (1) in Table 3. Trade was predicted by a gravity model with time-varying distances due to gradual roll-out of steam technology, fitted to actual trade through a linear model with year and region fixed effects. It was then set to be at least equal to actual trade. Missed trade was then calculated as predicted minus actual trade. Pre-existing coastal support indicates that the regimes was based on support from people in a coastal capital city in the year the country first entered the data. As seen, large coalitions through effective institutions (x -axis) was only effective in reducing missed trade for regimes not based on a coastal coalition to begin with (blue, $p < 0.001$), and missed trade was generally lower under regimes with preexisting coastal support (gray, $p < 0.001$). For countries without a pre-existing coastal coalition, larger coalitions reduced missed trade by nearly 50 percent.

rates are included as other predictors (column (2)).

Importantly, these models show that the missed trade—coalition expansion link is not driven by realized levels of trade. Trade in the current year is included as a predictor in all models, which in line with predictions show consistently large and statistically significant effects of missed trade, and typically no effect of actual trade or trade at baseline. All models also include coalition size in the preceding year, meaning that results are not confounded by coalition expansion being easier when the coalition size is small, and the relation of the latter to missed trade.

The interaction of missed trade and coastal support provides further evidence for the coalition story. This can be seen in column (3) and (4), wherein I estimate Equation 25. I find that independently, missed trade remains a strong predictor of coalition expansion. But this effect is greatly strengthened when the regime lacks coastal support (the interaction term).

In figure 5 I plot the magnitude of the effect identified in column (1). Coalition expansion happened in eleven of the 43 countries in era. I find that it rapidly increases in probability as one move upward in missed opportunities.

In sum, I have provided evidence that coalition size shapes investment allocations, and that investors in regimes with small coalitions were much worse at exploiting a particular type of economic opportunity (international trade). I have also evidenced that new economic opportunities may have incentivized political change: the larger the discrepancy between potential (i.e. technology-shift predicted) levels of trade and actual trade levels, the more likely a country was to take steps to enlarge governing coalitions through effective institutions.

DISCUSSION

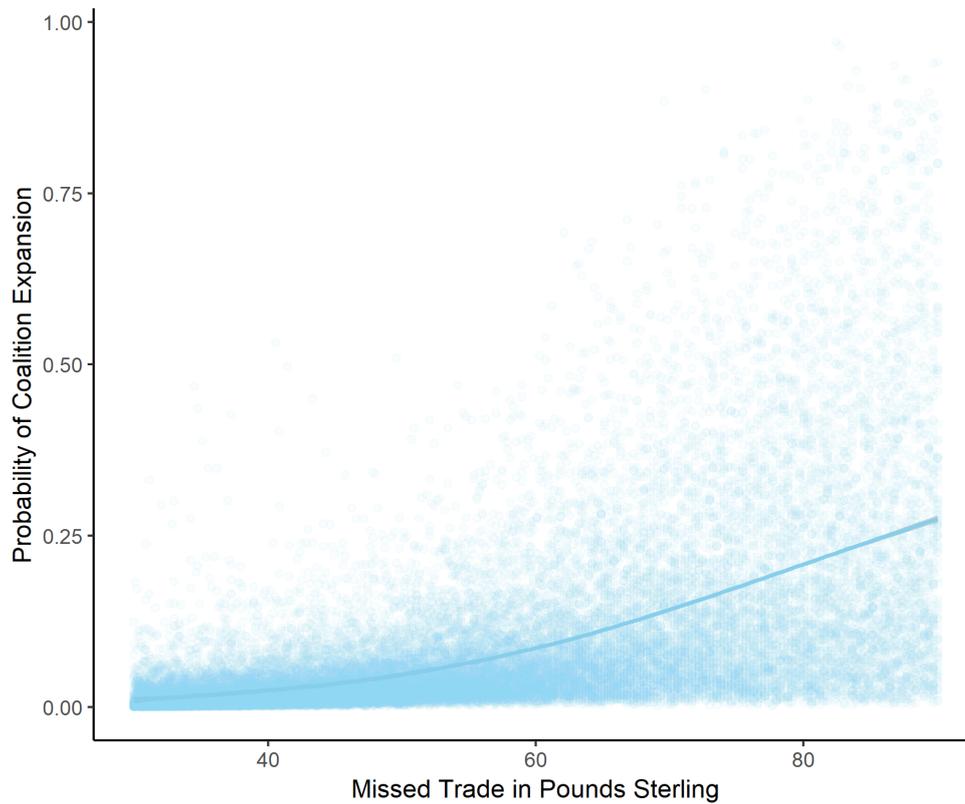
These results suggest that the economic consequences of new trade opportunities were shaped by states' politics. The steamship changed opportunities for trade, and the extent to which these new opportunities were taken advantage of depended on the coalition of regime supporters — and the extent to which these were those who could benefit from new trade. It also suggests that the

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TABLE 4. Location of Regime Support, Size of Coalition, and Missed Economic Opportunity (1845-1904)

	<i>Dependent variable:</i>			
	Coalition Expansion (Coalition _{<i>i,t</i>} > Coalition _{<i>i,t-1</i>})			
	(1)	(2)	(3)	(4)
Missed Trade	3.58** (1.45)	3.87*** (1.48)	2.91* (1.63)	3.12* (1.70)
Trade	3.06 (2.08)	3.84* (2.30)	2.411 (2.33)	3.52 (2.97)
Coastal Support			7.90*** (2.65)	7.04** (3.13)
Missed Trade * Coastal Support			-2.27*** (0.50)	-2.35*** (0.69)
Economic Development (Urbanization rate, pop >50k)		-15.48** (4.93)		-26.93* (13.78)
Trade at Baseline	-1.09 (1.36)	-1.52 (1.39)	-1.12 (1.38)	-1.90 (1.54)
Coalition _{<i>i,t-1</i>}	-0.58 (0.88)	-0.32 (1.14)	-0.71 (0.95)	-0.39 (1.36)
Missed Opp. at Baseline, Control	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Region Fixed Effects	Yes	Yes	Yes	Yes
War, Civil War Fixed Effects		Yes		Yes
Observations	418	413	418	413
AIC	153.58	152.00	152.413	148.33

Note: *p<0.1; **p<0.05; ***p<0.01
(Logistic Regression, Country and Year-Clustered Standard Errors in Parenthesis)

FIGURE 5. New Opportunities for Trade and Coalition Expansion (1845-1905)

Note: Plots probability of coalition expansion as a function of missed trade opportunities based on simulations of model (1) in Table 4, with the year set to 1875 (the mid-point of the sample). This model controls for actual levels of trade, meaning that the relationship is driven by the failure to take advantage of trade opportunities: not higher or lower trade per se. More missed trade is consistently related to a higher probability of regime expansion ($p < 0.05$).

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opportunity cost of missing such new economic opportunities may have been the basis for expanding ruling coalitions.

I have argued that the link between better exploitation of new economic opportunities and politics is through larger regime coalitions. Could it be that my findings are driven by a broader democracy-trade link? I assessed this possibility in multiple ways. In the supplemental materials, I provide replications of all specifications in Table 2 adding an indicator for electoral democracy (from Boix et al. 2013 - Table A4), or adding Polity democracy scores which exclude the contribution of my proxy for coalitions (Table A3).³⁷ In all cases, the effect of coalitions is negative and statistically significant, whereas both broad measures of democracy are uninformative (and point estimates are positive). While encouraging, we should still be worried: electoral democracy was rare in the period, and other components of Polity2 scores correlate strongly with my proxy for coalitions. I therefore leveraged data on the location of regime support to test several more narrow predictions, differentiating my theory from a simple democracy-trade link.

I also investigated if new economic opportunities could bring about regime change, here understood as coalition expansion or contraction. I found that with actual levels of trade accounted for, the magnitude of missed opportunities — the failure to take advantage of new trade opportunities — strongly predicted coalition expansion. In 1875, the midpoint of the sample, a one-standard deviation jump in missed opportunity — with actual trade accounted for — effectively doubled the probability of coalition expansion. New trade opportunities — economic opportunities in risky and new sectors — thus led to steps towards larger coalitions recruited through more effective governing institutions.

Through the provision of new and risky economic *opportunities*, the steamship thus brought about more democratic rule: Coalitions did not expand as a result of the trade undertaken — but the potential thereof and desire to exploit it.

These steps towards larger coalitions were almost always limited. This makes sense, because

³⁷Countries' Polity democracy scores have a number of components, which are aggregated together according to a formula. This latter version of the Polity2 score sets the weight of effective institutions to zero while keeping the contribution of all others components (e.g. openness of political participation) the same.

while democracy is a sufficient condition for eliminating intervention cost and allocation bias, it is not a necessary one — and it may be undesirable given the leaders' other objectives.³⁸ The necessary condition is less stringent: include all who can invest in the regime coalition. If such resources are concentrated in a small number, organizing these into a plutocracy is then also a way to facilitate a dynamic economy.

The Venetian Republic and ancient Athens may at times have been such hybrid systems. Here, the democratic ideal of an inclusive coalition was to some extent met, but only within a subset of the population (election among native and free adult males, randomization among male nobility listed in the *Libro d'oro*, respectively).

Most countries we think of as long-standing democracies were also such hybrid regimes until relatively recently, with the largest expansion — including women — only coming early in the 20th century. Empires with colonies further concentrated resources and influence by geography and ethnicity. This theory suggests that beyond changes in the cost of repression, such expansion should come when excluded groups have resources and opportunities for investing them. The way in which democracy emerged in many countries — from councils among the elite, to parliaments for a larger elite, to voting among those with some set property, to voting among all males, to voting for all adults — may thus in part reflect adjustments to new sets of economic opportunity.³⁹

Future work should explore if and how these and other hypothesized processes were manifested in particular contexts, augmenting the evidence provided here and refining the theory as necessary. For existing work, this theory might also enable useful reinterpretation. For instance, Jha (2015) provides evidence that "new opportunities" to invest in overseas joint stock companies consolidated support for parliamentary supremacy in the lead-up to England's Civil War. Jha argues that this was because such overseas investments were more exposed to executive discretion. This theory

³⁸Expanding the coalition does not necessarily mean full democratization, as the evidence from this era show, even if democracy without a large coalition seems impossible. It is also useful to note that trade in this era was often predicated on depriving people in other countries of political agency through colonization.

³⁹I also suggest that a concentration of investable resources in fewer people may make leaders shrink coalitions, and coalitions being more sensitive to such concentration the more dynamic — high risk, new sectors — the economy is.

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would in contrast highlight the importance of these investment's covariance structure. It would suggest that new economic opportunity that was both more risky and highly co-variant with other non-monarchy investments (as they were joint companies) could only lead to one of two equilibria: either a combination of more intervention and those outside the regime foregoing such opportunities, or expansion of the regime coalition (for instance through the granting of parliamentary privileges).

To expand coalitions is effective through two channels, both of which may be pursued separately through policies not examined here. First, the coalition of the leader becomes more or less powerful as the coalition size changes, reducing (or increasing) the likely need for intervention. Leaders — though always at some cost — can however increase their security through means other than enlarging their coalitions, for instance by hiring mercenaries, building a stronger security apparatus, or importing advanced weaponry.⁴⁰

Second, enlarging the coalition means more people can invest without worries of political consequences. But one may also attempt to ensure the regime coalition includes those best-positioned to invest without increasing its size. For instance, new (or changed perceptions of) opportunities for international trade may make the support of an entrepreneurial class more important, and that of agricultural interests less.

Jiang Zemin's June 2001 decision to let entrepreneurs join the Communist Party of China may be thought of as such a shuffling of the Chinese regime coalition. China joined the World Trade Organization in December that year, and the decision to let entrepreneurs be party members is commonly seen as a pragmatic adaption to changed economic circumstances. By taking this step, Jiang enabled many of those well-positioned to take advantage of new economic opportunities to become part of the regime, and courted their support. Yet this reduced regime support in other segments of the population, with strong opposition from orthodox leftists, evidenced in publications such as *Zhanlue yu Guanli* and *Zhongliu*, which were shut down after printing critiques. Even the Chinese Academy of Social Sciences, a research institution under the Chinese State Council, reported that a consequence of the policy was a weaker party base among workers and farmers

⁴⁰Within the model, this would be captured by an increase in returns of the investments available to the leaders coalition.

(see Dickson 2003, p. 20).⁴¹ The rationale suggested by this theory is straightforward: to facilitate productive investment by these entrepreneurs, and to preempt the need for intervention in the economy to secure continued rule.

Three possible extensions of the theory are useful to suggest here. We may first imagine that the leader get some payoff from leaving office, or some has upper limit on intervention capacity. Straightforwardly, one would then have a model with not just reform (coalition expansion or contraction), but also revolution (new leaders). Second, we could make this an (infinitely) repeated game. This opens up for interesting coordination strategies among non-coalition investors, who could agree to bias their investments even more than previously (which would favor them collectively but lowers one-off individual returns). There is also the possibility, within such a game, of the ruler acting decisively with high cost in the first round to take control of all investable resources.⁴² Finally, one could complicate the "leader" construct. For instance, one could instead of a leader have majority rule within the regime coalition. Then, all members of the coalition would in their calculations about whether to intervene include the possibility of being part of the next coalition, which if high could make costly intervention have less appeal.

This theory makes the case that as long as leaders want to stay in power, more democratic countries — countries under a regime with wide support in the population — have an inherent investment edge. This is the case even if the leader prefers not to intervene and a more productive economy — a "root cause" of autocratic failure to produce growth thus removed.⁴³ Three points provide important context for this claim. First, I also claim and evidence that coalition size is in part determined by the set of economic opportunities available. This means a democracy-growth link (or lack thereof) is no evidence for or against such an investment edge because investment opportunities

⁴¹Here, the exclusivity of party membership can be thought of as a benefit previously provided in exchange for regime support.

⁴²This could be a starting point from which to think about the emergence of calls for/attempts at the abolition of private property, and related revolutionary doctrines. This theory provides a reason why such calls would be more likely to emerge in the context of a dynamic economy.

⁴³Some may argue that a leader only concerned with growth would give up office rather than intervene. But a leader which is completely unwilling to use control of the state to secure their position is not an *autocratic* leader.

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in democracies and non-democracies are likely to differ. Second, it is tempting to believe that this hinges on the sequence of the game, on the fact that the leader can intervene *before* the political benefits of good investments are realized. A sequence in which the leader cannot intervene after returns are realized would however simply compel the leader to intervene before investments are made — through banning investments which enable to possibility of them losing office. All effects would remain. Third, it seems plausible that a clever tax system could be set up to avoid a situation in which the leader has a minority of power. But unless this is the otherwise preferred policy of the leader, this just another form of intervention — a costly policy undertaken to eliminate the possibility of losing power.

With evidence presented from the 19th and early 20th century, we may ask if this theory is relevant to modern economies.⁴⁴ A novel theoretical prediction is that democratic economies should be more diversified, and that democratization should be associated with diversification. In appendix figures 6 and 8 I investigate this using export composition data from 1985 onwards, using the economic complexity index due to Hidalgo and Hausmann (2009).⁴⁵ In line with this prediction and controlling for e.g. income, all systemic time-variant effects, country region and size, democracies have much more diverse economies ($p < 0.001$), and countries diversify post-democratization ($p < 0.01$).

The ability of the my theory to provide the prediction and explanation of such a novel relationship is encouraging. It suggests its utility as a way to think about political competition in the dynamic economies of our own time.

⁴⁴With regards to international trade in the modern era, it applies to the extent that international trade is high risk and low in covariance with other (especially regime) investments. While true in the 19th century this may be less the case today.

⁴⁵To construct this index, Hidalgo and Hausmann utilized United Nations data to assess the diversity of a country's export categories and the complexity of the goods exported (a technical definition of the mathematical procedure used to generate these values is provided in Hausmann et al. 2014, Box 2.2).

CONCLUSION

I contribute a framework for understanding the politics of investment in dynamic economies. I show that this framework can be used to better understand well-established empirical patterns in comparative political economy, and evidence several novel relationships in line with theoretical predictions.

The picture established is one in which a small regime coalition leads to investment bias: away from investments which may disrupt the balance of power and thus necessitate costly regime intervention. Both bias and the need for intervention is increasing in the extent to which the most profitable investments are high variance and low in covariance with regime investments.

This conception does not see leaders as oblivious to this implication. Rather, leaders make their decisions about coalition size with these concerns in mind. An important implication is thus that in attempting to establish a link between democracy (large coalitions) and income, one must account for a country's economic opportunities: democracy is in part a function of particular economic circumstances.

At the same time, this framework suggests that conditional on any set of economic opportunities, democracies have an inherent investment edge: investors in these countries are not biased by political considerations. The importance of this is increasing in the extent to which the most profitable investments are in areas high in risk and low in covariance with other investments: the two characteristics typically associated with investments in technology innovation and new technology. This suggest an answer to why almost all societies at the technological frontier are democracies - and why those that are not often see the need for massive *government* investments in technology and innovation (such as China is engaged in today).

I also provide a theory that can guide predictions of which countries have "stable sovereigns" who do not interfere with private investments for private purposes. This framework suggests that in non-democratic regimes must consider not just the investment in question, but rather the broader political and economic landscape — how well the regime is doing relative to everyone else.

Anonymised Author(s)

REFERENCES

- Acemoglu, Daron (2008). Oligarchic versus democratic societies. *Journal of the European Economic Association* 6(1), 1–44.
- Acemoglu, Daron , Simon Johnson, and James Robinson (2005). The rise of Europe: Atlantic trade, institutional change, and economic growth. *American economic review* 95(3), 546–579.
- Acemoglu, Daron and James A. Robinson (2000). Political losers as a barrier to economic development. *American Economic Review*, 126–130.
- Acemoglu, Daron and James A. Robinson (2006). Economic backwardness in political perspective. *American Political Science Review* 100(1), 115–131.
- Acemoglu, Daron and James A. Robinson (2012). *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. New York: Crown Business.
- Aghion, Philippe , Alberto F. Alesina, and Francesco Trebbi (2007). Democracy, Technology, and Growth. *NBER Working Paper* (w13180).
- Boix, Carles (2003). *Democracy and Redistribution*. New York: Cambridge University Press.
- Boix, Carles (2015). *Political Order and Inequality*. New York: Cambridge University Press.
- Boix, Carles , Michael Miller, and Sebastian Rosato (2013). A Complete Data Set of Political Regimes, 1800–2007. *Comparative Political Studies* 46(12), 1523–1554.
- Bueno de Mesquita, Bruce and Alastair Smith (2009). Political survival and endogenous institutional change. *Comparative Political Studies* 42(2), 167–197.
- Bueno De Mesquita, Bruce , Alastair Smith, Randolph M. Siverson, and James D. Morrow (2003). *The Logic of Political Survival*. Cambridge, Mass.: The MIT Press.
- Chung, Sungchul (2007). Excelsior: The Korean Innovation Story. *Issues in Science and Technology* 24(1), 63–69.

- Comin, Diego and Bart Hobijn (2009). Lobbies and technology diffusion. *The Review of Economics and Statistics* 91(2), 229–244.
- Cuberes, David and Michael Jerzmanowski (2009). Democracy, diversification and growth reversals. *The Economic Journal* 119(540), 1270–1302.
- Dickson, Bruce J. (2003). *Red capitalists in China: The party, private entrepreneurs, and prospects for political change*. Cambridge University Press.
- Djankov, Simeon , Rafael La Porta, Florencio Lopez-de Silanes, and Andrei Shleifer (2002). The regulation of entry. *The Quarterly Journal of Economics* 117(1), 1–37.
- Easterly, William and Steven Pennings (2016). Shrinking dictators: how much economic growth can we attribute to national leaders. *Development Research Institute Working Paper 94*.
- Fernandez, Raquel and Dani Rodrik (1990). Why is trade reform so unpopular? On status quo bias in policy reforms. Technical report, National Bureau of Economic Research.
- García-Herrera, Ricardo , Günther P. Können, Dennis A. Wheeler, Maria R. Prieto, Philip D. Jones, and Frits B. Koek (2005). CLIWOC: A climatological database for the world’s oceans 1750–1854. *Climatic Change* 73(1-2), 1–12.
- Halpern, Benjamin S. , Shaun Walbridge, Kimberly A. Selkoe, Carrie V. Kappel, Fiorenza Micheli, Caterina D’Agrosa, John F. Bruno, Kenneth S. Casey, Colin Ebert, Helen E. Fox, Rod Fujita, Dennis Heinemann, Hunter S. Lenihan, Elizabeth M. P. Madin, Matthew T. Perry, Elizabeth R. Selig, Mark Spalding, Robert Steneck, and Reg Watson (2008). A global map of human impact on marine ecosystems. *Science (New York, N.Y.)* 319(5865), 948–952.
- Hausmann, Ricardo , César A. Hidalgo, Sebastián Bustos, Michele Coscia, Alexander Simoes, and Muhammed A. Yildirim (2014). *The Atlas of Economic Complexity: Mapping Paths to Prosperity*. MIT Press.
- Hidalgo, César A. and Ricardo Hausmann (2009). The building blocks of economic complexity. *Proceedings of the National Academy of Sciences* 106(26), 10570–10575.

Anonymised Author(s)

- Jensen, Robert (2007). The Digital Divide: Information (Technology), Market Performance, and Welfare in the South Indian Fisheries Sector. *The Quarterly Journal of Economics* 122(3), 879–924.
- Jha, Saumitra (2012). Sharing the Future: Financial Innovation and Innovators in Solving the Political Economy Challenges of Development. In *Institutions and Comparative Economic Development*, pp. 131–151. Springer.
- Jha, Saumitra (2015). Financial Asset Holdings and Political Attitudes: Evidence from Revolutionary England. *The Quarterly Journal of Economics* 130(3), 1485–1545.
- Krusell, Per and José-Víctor Ríos-Rull (1996). Vested Interests in a Positive Theory of Stagnation and Growth. *The Review of Economic Studies* 63(2), 301–329.
- Kuznets, Simon (1968). *Toward A Theory Of Economic Growth*. New York: W. W. Norton & Company.
- Lipset, Seymour Martin (1959). Some Social Requisites of Democracy: Economic Development and Political Legitimacy. *The American Political Science Review* 53(1), 69–105.
- Londregan, John B. (2015). The transparency curse: Private information and political freedom. *Research in Economics* 69(3), 412–438.
- Milner, Helen V. (2006). The digital divide: The role of political institutions in technology diffusion. *Comparative Political Studies* 39(2), 176–199.
- Mokyr, Joel (1990). *The Lever of Riches: Technological Creativity and Economic Progress*. New York: Oxford University Press.
- Mokyr, Joel (1994). Cardwell's Law and the Political Economy of Technological Progress. *Research Policy* 23(5), 561–574.
- North, Douglass C. (1982). *Structure and Change in Economic History*. New York London: W. W. Norton & Company.
- North, Douglass C. (1989). Institutions and economic growth: An historical introduction. *World development* 17(9), 1319–1332.

- North, Douglass C. (1990). *Institutions, Institutional Change and Economic Performance*. New York: Cambridge University Press.
- North, Douglass C. and Barry R. Weingast (1989). Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England. *The Journal of Economic History* 49(4), 803–832.
- Olson, Mancur (1993). Dictatorship, Democracy, and Development. *The American Political Science Review* 87(3), 567–576.
- Palmer, Glenn , Vito D’Orazio, Michael R. Kenwick, and Roseanne W. McManus (2019). Updating the Militarized Interstate Dispute Data: A Response to Gibler, Miller, and Little. *International Studies Quarterly*.
- Parente, Stephen L. and Edward C. Prescott (1999). Monopoly Rights: A Barrier to Riches. *The American Economic Review* 89(5), 1216–1233.
- Pascali, Luigi (2018). The wind of change: Maritime technology, trade and economic development. *American Economic Review*.
- Pemstein, Daniel , Kyle L. Marquardt, Eitan Tzelgov, Yi-ting Wang, Joshua Krusell, and Farhad Miri (2018). The V-Dem Measurement Model: Latent Variable Analysis for Cross-National and Cross-Temporal Expert-Coded Data. SSRN Scholarly Paper ID 3167764, Social Science Research Network, Rochester, NY.
- Przeworski, Adam and Fernando Limongi (1993). Political Regimes and Economic Growth. *The Journal of Economic Perspectives* 7(3), 51–69.
- Schumpeter, Joseph Alois (1934). *The Theory of Economic Development: An Inquiry Into Profits, Capital, Credit, Interest, and the Business Cycle*. Transaction Publishers.
- Shapiro, Jacob N. and Nils B. Weidmann (2015, March). Is the Phone Mightier Than the Sword? Cellphones and Insurgent Violence in Iraq. *International Organization* 69(02), 247–274.
- Srholec, Martin (2011). A multilevel analysis of innovation in developing countries. *Industrial and Corporate Change* 20(6), 1539–1569.

Anonymised Author(s)

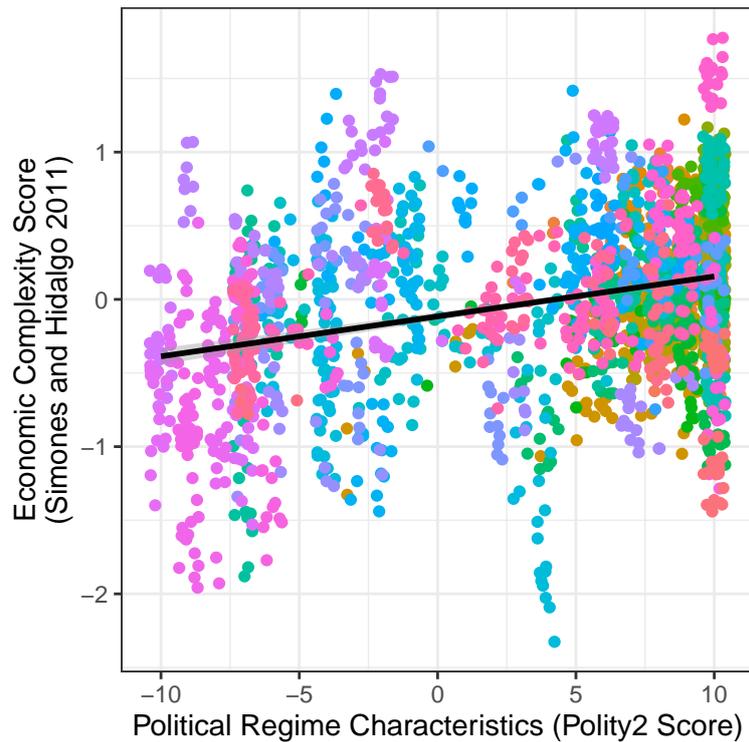
Svolik, Milan W. (2012). *The Politics of Authoritarian Rule*. Cambridge: Cambridge University Press.

Tsai, Kuen-Hung and Jiann-Chyuan Wang (2002). An Examination of Taiwan's Innovation Policies and R&D Performance. In *Science, Technology and Innovation Conference, Harvard University*, pp. 23–24.

Williamson, Jeffrey G. (2013). *Trade and Poverty: When the Third World Fell Behind*. Cambridge, Mass.: The MIT Press.

Wintrobe, Ronald (1998). *The Political Economy of Dictatorship*. Cambridge, UK ; New York, NY: Cambridge University Press.

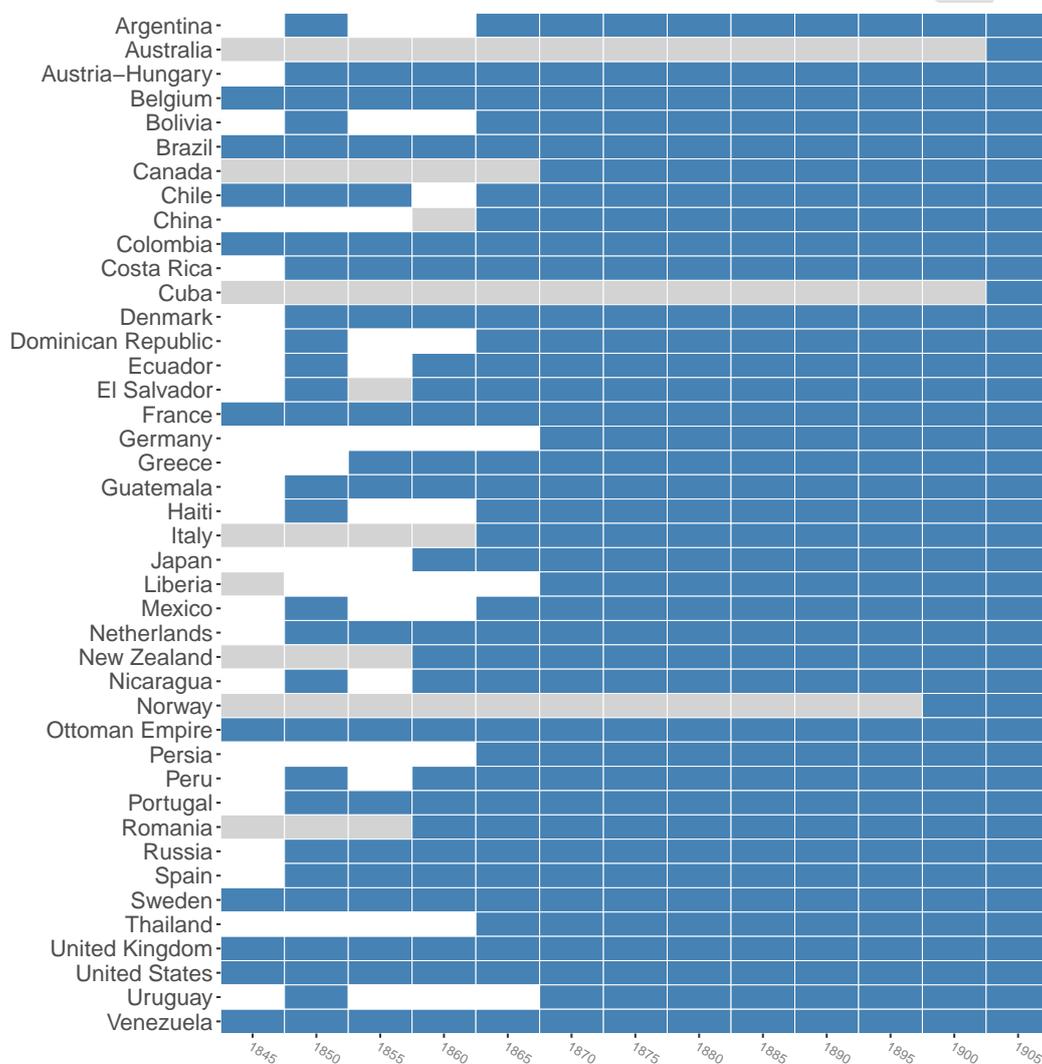
APPENDIX

FIGURE 6. Political Regime and Diversity of Exports

Note: The relationship between Political Regime Characteristics and Economic Complexity Scores (based on exports), once income and population size are controlled for, as well as time effects. In technical terms, this plots the residuals (dots) of a pooled country-year regression of GDP per capita and population on the economic complexity index, with region and year fixed effects, versus Polity2 scores. Points are colored by country, and straight line is linear regression fit ($p < 0.001$). At similar levels of income, democracies have substantially more diversified economies.

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FIGURE 7. Country and Year Coverage



Note: Blue indicates observation in country-year (with light-blue indicating missing observation of country trade per capita), while grey cells are cells of country-years which did not exist, or for which the country was not independent (these are therefore excluded from the analysis). Note that this requirement excludes the territories Cape of Good Hope, Ceylon, Dutch East Indie, Finland, British Possessions in India, and the Philippines from the analysis (these were included in the analysis by Pascali). I follow the Correlates of War convention of including the Austrian Empire (-1867) and Austria-Hungary (1867-1918) as one unit, and similarly Prussia (-1870) and Germany (1871-) as one unit.

FIGURE 8. Regime Change and Diversity of Exports

Note: The relationship between change in Political Regime Characteristics and Economic Complexity Scores over time. Plots estimates of a regression model with 90 and 95 percent confidence intervals. The regression model includes Log (GDP per capita), Log (Population), indicators for war and civil war, as well as a full set of country and year fixed effects. As seen, a change in political regime characteristics in year 0 is associated with a later restructuring of the economy, with first a decrease in complexity and then an increase - consistent with a reallocation of resources towards a more diverse set of sectors starting in the years after democratization. Grey line is less smooth. N = 1963.

I am unaware of any conflict of interest applying to this work.

All the best,
Sondre Ulvund Solstad,
17 November 2022

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