

INVESTING IN INSTITUTIONS

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Robust institutional change is difficult to achieve. However, it is more difficult for some countries than others. We use data on 69 countries between 1870 and 2000 to show that political instability does not always affect growth outcomes. We then develop a simple model to explain this fact in which the likelihood that “good” institutions are abandoned during periods of political uncertainty depends on the opportunity cost of doing so. We operationalize our model by using contract intensive money as a proxy for this initial investment in growth-enhancing institutions. Cross-sectional and panel growth regressions support the model’s predictions.

1. INTRODUCTION

THERE IS significant support in the economic history and growth literatures for the idea that “good” institutions lead to higher growth. Unfortunately for policy-makers, “good” is often associated with deeply determined factors, such as ethnic fractionalization (Easterly and Levine, 1997), colonial history (Acemoglu et al., 2001), or initial resource endowment (Sokoloff and Engerman, 2000). It is perhaps unsurprising then, that the instruments of development appear much less effective than the instruments of the authors cited above. Countries that have adopted political and economic reforms, like those associated with the Washington Consensus, have experienced disappointing economic outcomes.¹ The case that good policy is not sufficient for good growth has been made repeatedly in the cross-country growth literature (e.g. Easterly and Levine, 2003, or Rodrik et al., 2004). This raises the question of whether reforms fail to take hold because a country lacks some necessary “deep” factor, or if there is a simpler explanation.

We argue that failures of reform often have less to do with whether or not specific institutional changes are “correct” than with whether or not individuals have had the time to accept them as the norm. There are many

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¹The original Washington Consensus as detailed by Williamson (1990) laid out policies to be encouraged by international aid organizations including fiscal discipline, tax reform, trade liberalization, privatization, and the establishment of secure property rights. For a critique of the Consensus, see Rodrik (2007) or World Bank (2005). For the argument that good policies are actually more important for growth than good institutions, see Glaeser et al. (2004).

ways for a country to escape poverty (Rodrik, 2007), but for any serious institutional change to actually bind on behavior, individuals must accept it as legitimate. North (1990, 1994) points out that formal rules alone do not shape economic performance. It is also necessary that informal norms adjust so that formal rules are internalized as behavior (North, 1990, p. 366).² Public choice issues aside, changing formal institutions can be relatively quick and painless. Informal norms, however, tend to evolve more slowly. Ultimately, the extent to which people adopt (or fail to adopt) institutional changes depends on the feedback from formal rules to informal beliefs.³

Our claim in this paper is that political instability can upset this feedback and destroy the incentives for individuals to internalize political reform. Changes to formal rules can ultimately lead to good rule of law, but only if enough people have “bought in” to the new regime. Along the way to this purchase, however, political instability can upset the positive feedback from formal rules to informal norms. Depending on the severity of the political disturbance, this can either increase the time it takes to reach a stable high growth equilibrium, or plunge an economy back into a low growth regime.

In what follows, we develop a model that illustrates the feedback between formal institutional change and informal beliefs. The model assumes increasing returns to the adoption of “good” institutions and multiple growth equilibria naturally arise from its dynamics. We then introduce exogenous political shocks and show that the stability of the feedback from formal to informal institutions depends in a non-linear way on the extent to which the population has already adopted reforms as the norm. The likelihood that “good” institutions are abandoned during periods of political uncertainty depends on the opportunity cost of doing so. If either many people or very few people have already adopted growth-enhancing reforms, then the likelihood that a representative individual will alter her beliefs in the face of political instability is low. By contrast, economies that are transitioning between a low- and a high-growth steady state are more likely to see their institutional reforms lose legitimacy during political instability.

In section 2, we present evidence that not all periods of extreme political instability have had extreme effects using data on GDP growth and discontinuous political change for 69 countries between 1870 and 2000. In section 3, we develop our model. In section 4, we proxy the population’s investment in the legitimacy of growth-enhancing institutions using Clague et al.’s (1999) contract intensive money (CIM) and empirically test the model

²For evidence that norms of behavior change more slowly than formal institutions, see Fisman and Miguel (2007) and Miguel et al. (2008). For evidence that norms do, eventually, come into line with formal institutions, consider the disappearance of the concept of the “witch” in Western Europe as formal courts of law gradually imposed their authority on outlying regions. This process is described in detail for France by Mandrou (1980) and Soman (1992).

³See Boettke et al. (2008) for a detailed theoretical discussion of the strength of feedback between formal and informal institutions.

using cross-sectional and panel data on growth for 1960–2000. Our empirical results support the model's prediction that countries with intermediate amounts of investment in contract intensive institutions are most likely to suffer low economic growth during periods of political instability. These results are also robust to controlling for the simultaneity of political change and economic growth using instrumental variables in the cross-section regressions and Blundell–Bond (Blundell and Bond, 1998) system generalized method of moments (GMM) estimation techniques in the panel. In section 5, we present cross-sectional evidence that countries with intermediate amounts of investment in quality institutions are also more likely to change political regimes in the aftermath of political instability. We conclude that one requirement for robust institutional change is that the population has “bought in” to the reforms. This raises interesting questions concerning factors that affect the speed with which a population internalizes formal reforms such as the elasticity of capital flows, or the heterogeneity of the population.

2. NOT ALL POLITICAL TURMOIL RESULTS IN TUMULTUOUS GROWTH

To motivate the idea that the growth regimes of some countries are more robust to political uncertainty than others, we look at the growth experiences of 69 countries between 1870 and 2000 during periods of extreme political turmoil. We use the Polity IV dataset from the University of Maryland's Center for International Development and Conflict Management in order to identify these periods. The dataset has annual coded information on regime and authority characteristics for a wide range of countries (all independent states) beginning in 1800.⁴ The Polity IV dataset contains a large number of political variables. We choose to focus on the “Polity” variable that indicates the degree of autocracy or democracy in a country for a given year.⁵

Within the Polity variable, there are three standardized codes for special political circumstances where a state no longer operates properly. The first code, “– 88,” indicates a transition period, the idea being that new polities may be preceded by a *transition period* determined by the executive or legislature. This is a period where new institutions are planned, legally constituted, and established. The second code, “– 77,” indicates an *interregnum* period where the central political authority essentially collapses. Finally, “– 66” indicates a period of *interruption*, where a country is occupied by a foreign power (but where the Polity reestablishes itself once war has come to an end).

⁴Further detail on the Polity IV dataset can be found at <http://www.systemicpeace.org/polity/polity4.htm>

⁵The components of the Polity variable measure the type of formal political institutions enjoyed by the country. – 10 indicates high autocracy while + 10 indicates high democracy. For a detailed list of these components, see the Polity IV code manual.

As an illustration of these codes, consider Uganda's rich recent political history. In 1966, Uganda's leader, Milton Obote, was implicated (along with Idi Amin) in a gold smuggling plot. In order to avoid prosecution, Obote used his executive powers to suspend the constitution and have parliament arrested. After being cleared by the judiciary of wrongdoing, Obote launched a coup against the ceremonial president Edward Mutesa II, thus becoming the sole leader of the country. The years 1966–1967 are coded as – 88 in the Polity dataset. In contrast to Obote's "legal" removal of Mutesa, Idi Amin's forced exile in 1979 by invading Tanzanian forces is coded as – 66. Finally, the years 1985–1986 when, first Obote, and then his successor Tito Okello, were "illegally" deposed are coded as – 77. We use these codes as our indicator of episodes of extreme political instability.⁶

There are several other datasets available, which measure political instability, however, we prefer the Polity extreme event codes for several reasons. First, the Polity data have superior time and country coverage than other sources.⁷ Second, the Polity extreme event codes do a better job capturing what we are interested in than does the "adverse regime change" variable in the political instability task force (PITF) data. Adverse regime change is defined in PITF as a "six or more point drop" in the Polity dataset. That is a move from democracy toward autocracy. This does not necessarily imply uncertainty about the move. By some accounts, autocratic governments can actually do a better job at property rights enforcement than democratic governments (Glaeser et al., 2004). To the extent that we wish to capture uncertainty with regards to future property rights enforcement, the extreme events codes in Polity seem to capture this better than other measures of "rapid political change."⁸

We use data from Maddison (2006) to measure the average annual growth rate of real per capita GDP during the period of political instability, as well as the average annual growth rate of real per capita GDP 5 and 10 years following the instability relative to the same length of time before the instability.⁹

From the sample statistics in Table 1 and histograms in Figures 1–3, a number of points emerge. First is that, on average, during periods of political instability countries tend to experience low growth.¹⁰ The data in Table 1 indicate an average annual growth rate of – 1.1% during episodes of political uncertainty. However, there is a great deal of heterogeneity. According to the standard deviations in Table 1, two-thirds of the countries in the sample

⁶Rodrik and Wacziarg (2005) employ a similar approach.

⁷For example, the PITF data cover only 1955–2007. The data in ICRG/IRIS data on political instability cover barely more than two decades.

⁸Indeed, if the coders of the Polity dataset could not identify the nature of the political regime *ex post*, then contemporaries must surely have faced significant uncertainty concerning the path of political change. We provide more evidence in section 3 that our measure of political instability is superior at capturing uncertainty relative to other possible datasets.

⁹These data are available from <http://www.ggd.net/maddison/>

¹⁰This is in line with results seen in the literature (see Alesina and Perotti, 1996).

TABLE 1 FULL SAMPLE STATISTICS

Average growth during political instability	10-year average growth difference	5-year average growth difference
- 1.1 (8.0)	0.46 (3.8)	1.4 (4.8)

Note: Standard deviations in parentheses.

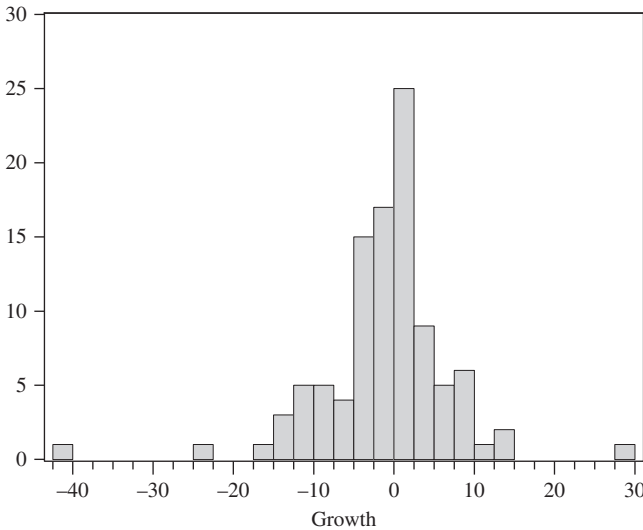


Figure 1. Average growth during period of instability (entire sample).

experienced growth rates of between -7% and 9% . Figure 1 also clearly shows that the growth experience of countries during extreme political uncertainty differs widely.

A second point is that the change in growth regime after political instability experienced by these countries varies widely. As indicated in Table 1, countries grow 1.4% faster annually in the 5 years following the instability relative to the 5 years before the instability. The 10-year difference indicates a 0.46% average annual increase.¹¹ Figures 2 and 3, however, suggest that the averages reported in Table 1 mask a wide variation in growth experiences in the aftermath of political instability. For about two-thirds of the sample, the change in 5-year growth regime was between -2.9% and 6.2% . The comparable range for 10-year change in growth regime is -3.3% to 4.3% .

¹¹The finding that political instability does not have a large effect on growth in the long run is seen in papers such as Campos and Nugent (2002), Haber et al. (2003), Levine and Renelt (1992). Our result appears in line with this earlier research.

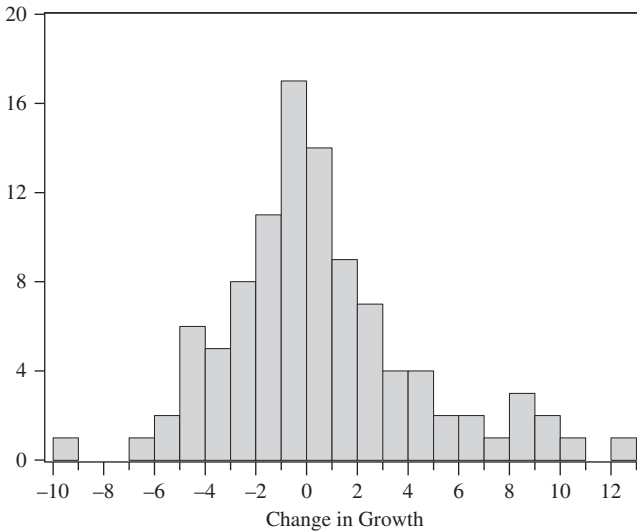


Figure 2. Change in 10-year average growth (entire sample).

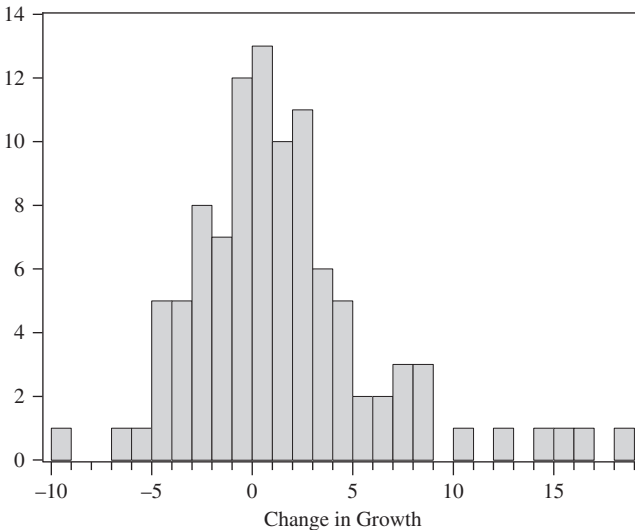


Figure 3. Change in 5-year average growth (entire sample).

It is difficult to take any general conclusions from these data other than that there is no systematic relationship between extreme political uncertainty and growth regime. In the next section, we develop a model that suggests that regime stability depends not only on having good institutions, but also on how much people are vested in those institutions.

3. INVESTING IN INSTITUTIONS

How do we explain the differential growth experiences of countries in the face of extreme political change? In this section, we develop a simple model in which investment in institutions that support secure property rights and impersonal exchange is an increasing function of the amount of investment by others as well as the quality of institutions. Since we live in a world of positive transaction costs, people do not immediately integrate new institutions into their behavior. If I have always lived in a world where corruption is the norm, then I will not stop being corrupt overnight, even if the incentives for corruption have changed. More likely, my decision whether or not to abide by the rule of law will depend on both my perception of how rules have changed and what I observe others doing. This distinction between a change in institutions and a change in people's behavior is important because it can help us understand why countries in transition often take so long to realize the gains from reform (if they ever realize them at all).

Our model accounts for the stylized fact from section 2 that not all periods of extreme political instability lead to decreases in growth. More generally, it elucidates the feedback between political uncertainty and economic growth by focusing on how decisions by individuals to either accept or reject reforms as legitimate feed back into the stability (or fragility) of political institutions.

We start with the assumption that individuals have a choice concerning the nexus of institutions they wish to use to structure their transactions. We further assume that the decision to invest in the contract intensive sector is associated with a decision to engage in "productive" as opposed to "predatory" or "unproductive" activity. This implies that black market or quasi-legal activity that is designed to operate "under the radar" of the government is generally handled in cash whereas productive activity is more profitably undertaken in the contract intensive sector. This interpretation is consistent with Clague et al.'s (1999) original characterization of the contract intensive sector as allowing for greater specialization and economies of scale as well as greater reliance on third-party enforcement of contracts (ultimately through the power of the state).¹²

The model is based on the theoretical framework of Nunn (2007). Our unique innovation is to relate participation in the productive sector to participation in the contract intensive sector (which can be measured using CIM) and then to show how uncertainty arising due to political instability might plausibly affect the growth dynamics of countries in various stages of transition.¹³

¹²Linking the contract intensive sector to productive activities also allows us to invoke a prominent class of models from the development literature in which multiple equilibria arise through the decisions of agents to engage in high value productive activities or to engage in unproductive activities at the expense of the productive entrepreneurs (Acemoglu, 1995; Mehlum et al., 2003; Murphy et al., 1993).

¹³Nunn developed his framework for the purpose of explaining the path dependent nature of development in Africa.

There is a continuum of agents, each of whom can choose to participate in productive activities in the contract intensive sector, or, can choose unproductive activity. The fraction of agents who choose to participate in the unproductive sector is $x \in [0, 1]$. Thus, the fraction of agents in the contract intensive sector is given by $1 - x$. Agents in the contract intensive sector produce A in every period. However, provided an unproductive agent can find a productive agent to steal from, he can expropriate a proportion q of A , where q is determined by the security of property rights in the country (more secure property rights are reflected by a lowering of q). If there are fewer unproductive agents than productive agents, then each unproductive agent is able to find a productive agent to exploit with certainty. However, if $x > 0.5$, then the probability that an unproductive agent finds a target decreases to $(1 - x)/x$. An unproductive agent cannot exploit more than one productive agent.¹⁴

The expected payoff to an agent who invests in the contract intensive sector depends on the security of property rights (q) as well as the number of unproductive agents who might attempt to exploit him (x). That is

$$\Pi_{CI}(x, q) = A \left(1 - q \min \left\{ \frac{x}{1-x}, 1 \right\} \right). \quad (1)$$

The expected payoff to an individual in the non-contract intensive sector is determined by his likelihood of finding an individual to exploit and how much the existing property rights structure allows him to extract. This is given as

$$\Pi_U(x, q) = \min \left\{ \frac{1-x}{x}, 1 \right\} qA. \quad (2)$$

Taking q as exogenous, Nunn (2007) shows formally that a strategy profile of this game is a Nash equilibrium when $x = 0$ and $\Pi_U(x, q) < \Pi_{CI}(x, q)$, or $0 < x < 1$ and $\Pi_{CI}(x, q) = \Pi_U(x, q)$, or $x = 1$ and $\Pi_U(x, q) > \Pi_{CI}(x, q)$. The first two cases are the most interesting and are illustrated in Figures 4 and 5.

In Figure 4, the payoffs to investing in the contract intensive sector and the unproductive sector are graphed assuming that property rights are relatively secure ($q < 0.5$). There is one Nash equilibrium corresponding to high investment in the contract intensive sector at $x_H = 0$. If play begins with $x > 0$, then those in the unproductive sector will eventually switch to the contract intensive sector. Depending on the transition dynamic, this may take a long time.¹⁵ A more interesting situation occurs when property rights are less

¹⁴The assumption that every unproductive agent chooses to exploit a productive agent may be too harsh (e.g. the Amish do not participate in the "traditional" productive sector; nonetheless, few would accuse them of predation on the rest of society). However, with a slight modification to the model, one could assume that some subset of the unproductive agents, Q , choose to expropriate from the productive sector without eliminating the "safety in numbers" accruing to productive members of society which drives the increasing returns to investing in the contract intensive sector.

¹⁵One reasonable transition dynamic is suggested by Gintis (1997), who assumes that in every period an agent observes the payoff of another randomly selected player with probability γ . If

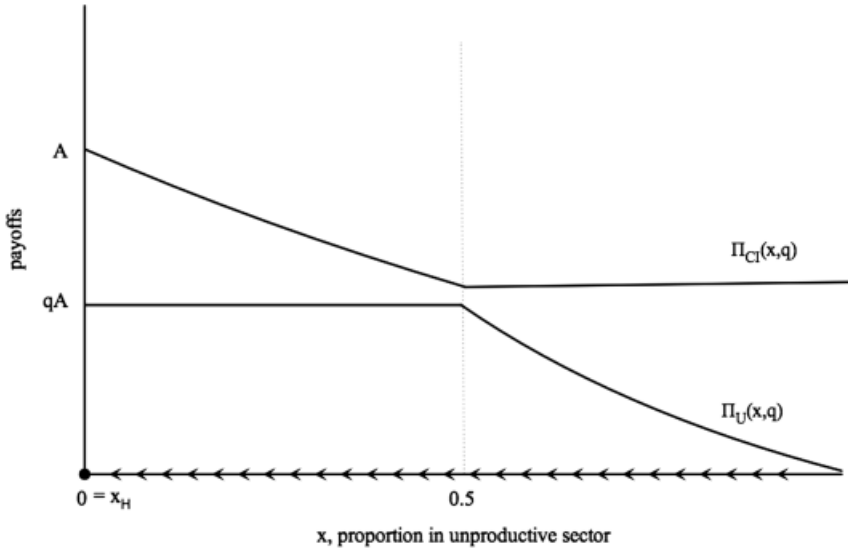


Figure 4. Payoffs when property rights secure ($q < 0.5$).

secure. In Figure 5, we assume that $q > 0.5$. This results in three equilibria due to the increasing returns of investing in the contract intensive sector. One in which everyone invests in the contract intensive sector at x_H , another in which there is more investment in the unproductive sector than in the contract intensive sector at x_L , and an unstable equilibrium at x^* . If the proportion of those in the unproductive sector is less than x^* at the beginning of play, then people switch until they reach the Nash equilibrium at x_H . If the proportion of those in the unproductive sector is greater than x^* at the beginning of play, then people switch until they reach the Nash equilibrium at x_L .

We integrate political instability into this framework by assuming it decreases the security of property rights (increases q) and allows unproductive types to expropriate more resources from the contract intensive sector. Intuitively, when the current political regime is in danger of failing, then it is uncertain whether one will be able to rely on those institutions in the future to enforce contracts. This is good if you expropriate resources for a living, but bad if you produce in the contract intensive sector.

We measure investment in the contract intensive sector using Clague et al.'s (1999) CIM. CIM is defined as $(M2 - C)/M2$, where $M2$ is a broad

the other player's payoff is the same, then the agent does nothing, however, if the other player's payoff is higher, then the agent switches strategies. This leads to a replicator dynamic in which $\Delta x_t = x_t(1 - x_t)\gamma[\Pi_U(x_t, q) - \Pi_{CI}(x_t, q)]$. In other words, the speed of adjustment depends on the probability that you observe an agent of a different type than yourself [$x_t(1 - x_t)$], the probability that you look in the first place (γ), and the difference in payoffs between investment in the unproductive and productive sectors [$\Pi_U(x_t, q) - \Pi_{CI}(x_t, q)$].

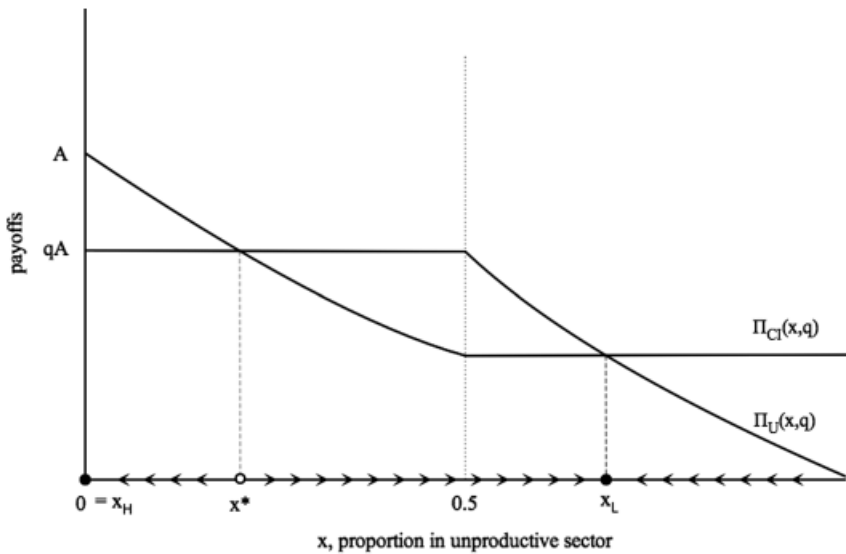


Figure 5. Payoffs when property rights less secure ($q > 0.5$).

measure of the money supply and C is currency held outside of banks. As Clague and colleagues describe it, “[W]here citizens believe that there is sufficient third party enforcement, they are more likely to allow other parties to hold their money in exchange for some compensation, and CIM is correspondingly higher.”¹⁶ We use CIM in the same way as Clague and colleagues, as a proxy for the amount of investment in institutions that support contract intensive transactions.

Our theoretical framework provides a natural interpretation for the value of CIM, output, and growth. The way individuals choose to hold their income depends on whether they are productive or unproductive. Those in the productive sector use CIM, whereas those in the unproductive sector choose to hold more liquid assets. Thus, the value of CIM is equal to the proportion of income received by the productive sector divided by total income, or $[1 - q \min\{x/(1 - x), 1\}]$. CIM decreases as the security of property rights decreases (q increases) and increases in the number of agents in the contract intensive sector ($1 - x$).

Since the only agents adding to production in this model are those in the contract intensive sector, then aggregate output is simply the number of

¹⁶Clague et al. (1999, p. 188). The authors emphasize they are not suggesting that higher CIM causes better economic performance, rather, they argue that higher CIM simply reflects greater reliance on those institutions which are associated with higher growth. Specifically, higher CIM is associated with more impersonal exchange relying on credible third-party enforcement of contracts (p. 189). This is also how Prados de la Escosura and Sanz-Villarroya (2009) use contract intensive money in their study of Argentina.

productive agents times the value of their output, or $(1 - x)A$.¹⁷ We can decompose this into an equation for growth as

$$\Delta Y = \Delta A \frac{\partial Y}{\partial A} + \Delta x \frac{\partial Y}{\partial x} = \Delta A(1 - x) - \Delta x A. \tag{3}$$

Equation (3) says that output growth can stem from two sources. In the steady state, when $\Delta x = 0$, all growth stems from the change in productivity weighted by the proportion of individuals in the contract intensive sector. Out of the steady state, when $\Delta x \neq 0$, growth is also determined by movement into or out of the contract intensive sector. If we focus just on the two steady states illustrated in Figure 5, then we can identify a low growth regime at x_L in which there is low participation in the contract intensive sector and a high growth regime at x_H in which everybody is in the contract intensive sector.

We define a country as “in transition” if it is moving from a low growth equilibrium to a high growth equilibrium. One plausible way this could occur is through reforms that increase the security of property rights (lower q). This scenario is illustrated in Figure 6. A country begins with poor property rights and payoffs to the productive and unproductive sectors described by the solid lines. Assume this country also happens to start in the low growth regime at x_L due to historical reasons. Reformers manage to increase the security of property rights, which results in a shift in the payoffs associated with productive and unproductive activities to the dotted lines. x_L is no longer a steady-state equilibrium and agents start shifting out of the unproductive sector and into the contract intensive sector.¹⁸ During the transition period, the country’s growth rate is somewhere between the growth rates of the low and high equilibria.

An exogenous political shock lowers the probability of effective third-party enforcement of contracts and increases the value of q to $q + \pi$. This shifts the payoffs to being in the productive or unproductive sectors from the dotted lines back to the solid lines in Figure 6.¹⁹ Crucially, the effect of political instability on growth rates depends on what stage of transition the country is in. In a developed country with nobody in the unproductive sector ($x = 0$) instability has no effect on growth. To see why, recall equation (3) that says that growth decreases only if productivity is affected or if individuals shift out of the contract intensive sector $\Delta x > 0$. At $x = 0$, the payoff to the unproductive sector is always less than to the contract intensive sector and nobody switches type. By similar reasoning, so long as a country undergoing a transition has achieved a level of participation in the contract intensive sector greater than $1 - x^*$, then agents continue to switch out of

¹⁷The simplifying assumption of no production in the non-contract intensive sector may be relaxed with no harm to the results of the model.

¹⁸Recall footnote 15 for discussion of the transition dynamic.

¹⁹We assume the decreased security of property results in payoffs the same as in the original equilibrium in order to avoid cluttering Figure 6 with another set of curves.

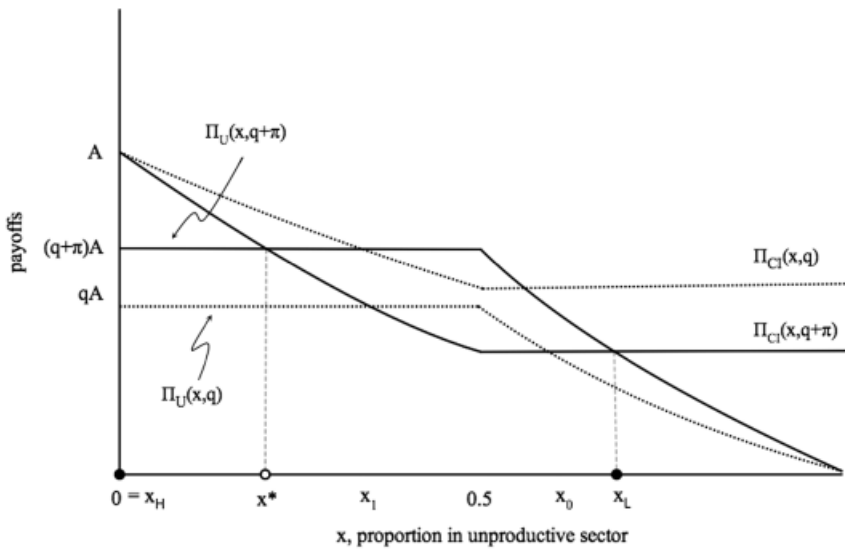


Figure 6. Political instability and transition.

the unproductive sector despite the political instability and growth rates are relatively unaffected (they continue to increase, but at a slower rate than before). The intuition is that if investments in the contract intensive sector are large, then the opportunity cost of switching is high enough to cause people to “ride out” the period of political turmoil.

If a transitioning country’s contract intensive sector is smaller than $1 - x^*$, then political instability has a more pernicious effect on output growth. For example, a country that is at x_1 in Figure 6 when political instability begins will see both the contract intensive sector and, as a consequence, growth rates decline. How much the economy contracts depends on the how quickly individuals exit the contract intensive sector and how far growth rates can fall before reaching the new steady state at x_L . A country that is relatively far along in the transition process, like at x_1 , can shrink quite a bit until the new equilibrium is reached at x_L . By contrast, a country that is less far along in the transition process, such as x_0 is limited in how much it can shrink since it is starting out relatively close to the low growth equilibrium.

The model highlights the non-linear relationship between the amount of initial investment in contract intensive institutions and the stability of an institutional equilibrium. If participation in the contract intensive sector is large enough (x is low enough), then instability is unlikely to trigger an abandonment of existing institutions and a consequent decrease in growth. However, if society is not fully vested in the institutions that support contract intensive exchange, then political instability can prompt flight from investments in “good” institutions that is self-reinforcing. As more individuals

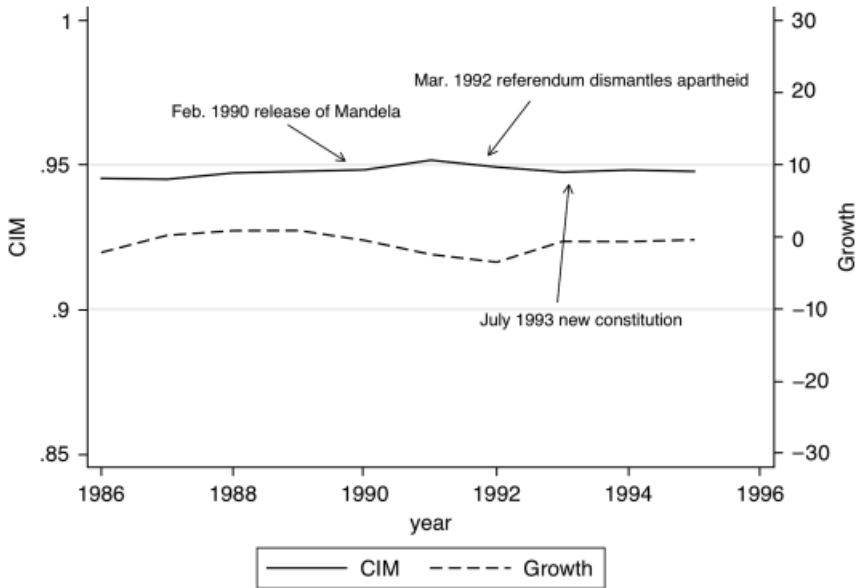


Figure 7. A “high” country: South Africa, 1986–1995.

abandon the contract intensive sector, the value of investments in that sector decreases, thereby prompting more people to switch. The negative effect on growth of this flight depends on how far there is for the economy to fall. If the original equilibrium was close to the new “low investment” equilibrium, then growth rates do not change by much. However, if the country is relatively far along in the transition process, then the effect can be severe.

The experiences of three countries drawn from our data help illustrate the main results of the model.²⁰ Figure 7 shows the growth rate and value of CIM for South Africa during its transition from apartheid to a new constitution. Under apartheid, approximately 85% of the population was disenfranchised and faced legal discrimination in virtually all areas of their personal and economic lives. Under growing pressure from the non-white population, young Afrikaners, and the international community, F. W. DeClerk released Nelson Mandela in February 1990. This moment is often associated with the beginning of the end of the apartheid period and the start of the transition to democracy. In March 1992, there was a referendum on dismantling the former government that passed and on July 26, 1993 a new constitution was introduced. As can be seen in Figure 3, before this period of political uncertainty began, the contract intensive sector constituted approximately 95% of transactions. This makes South Africa during the late

²⁰Each of our examples is counted as an “extreme event” in the Polity codes and, therefore, is included in our regressions as an observation of political instability.

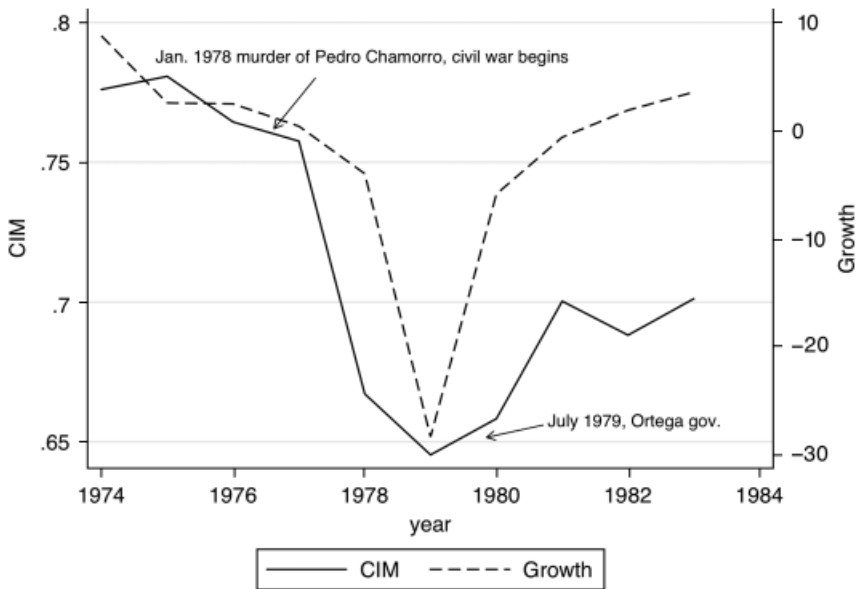


Figure 8. A country in the “middle”: Nicaragua, 1974–1983.

1980s and early 1990s an example of a “high growth” regime according to our model. Also consistent with our model, the political uncertainty associated with the transition to democracy had no visible effects on either the size of the contract intensive sector or on growth rates.

In contrast to countries with high levels of CIM, the model predicts that countries with intermediate initial levels of CIM should experience sharp drops in both the value of CIM and growth during periods of political instability. A good example of such an intermediate country is Nicaragua during the late 1970s and early 1980s around the time that the Sandinistas overthrew the U.S.-backed Somoza government. Figure 8 shows that before the 1978 assassination of the journalist Pedro Chamorro and the beginning of the period of civil war, the contract intensive sector constituted about 77% of the economy. Once the period of turmoil began, both the value of the CIM and growth dropped precipitously. In July 1979, the new government of Daniel Ortega signaled a period of greater stability, however, the value of CIM did not immediately rise to its former level. Rather, consistent with the predictions of the model, CIM gradually increased as individuals started to regain confidence in the contract intensive sector.

The model also predicts that the growth regimes of countries that are initially in a low growth, low CIM, equilibrium will be relatively unaffected by political instability. Such a case is illustrated in Figure 9 for Ethiopia around the time of the overthrow of Emperor Haile Selassie I and the adoption of a military controlled Marxist government. February 1974 is

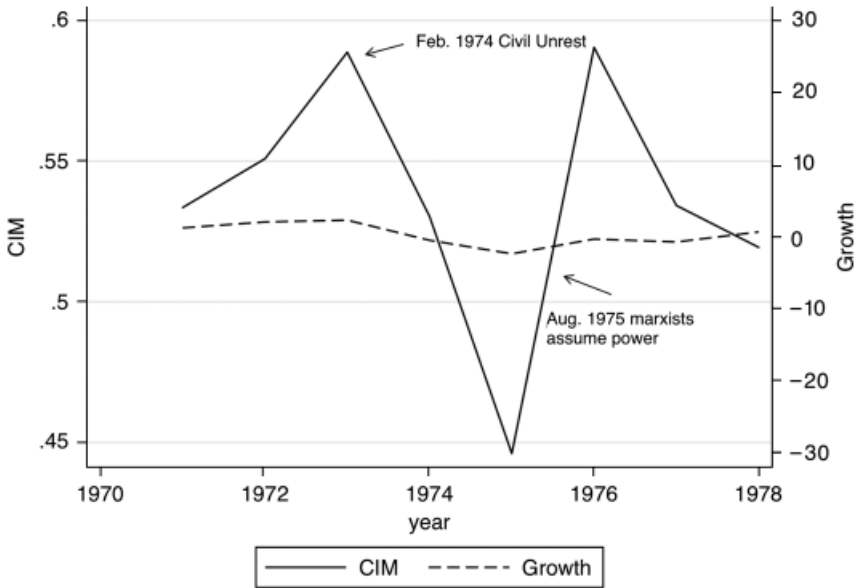


Figure 9. A “low” case: Ethiopia, 1970–1978.

when the period of civil unrest began and this was marked by a dramatic decrease in CIM. This is in sharp contrast to the “high CIM” case of South Africa where CIM did not change during instability. This is consistent with the geometry of payoffs of the model which predicts that the value of CIM for a low growth regime will change by Δq , whereas for the high growth regime the decrease in CIM is only $\Delta q[x/(1-x)]$, where $x < 0.5$. Furthermore, the decrease in growth in Ethiopia was very slight during the period of instability. This is consistent with the original value of x being relatively close to the new steady-state equilibrium. Compared with countries further along in the transition process, a low growth country like Ethiopia in the 1970s simply did not have as much to lose from political instability. Therefore, low growth regimes are somewhat insulated from political instability of the type we are discussing, but not in a good way.

4. EXPLAINING GROWTH DURING INSTABILITY

The model predicts a non-linear relationship between the stability of an institutional equilibrium and the amount of investment in the contract intensive sector. The amount that a representative individual chooses to invest in the contract intensive sector, in turn, depends on both her beliefs concerning those institutions (q) and her beliefs about the actions of her fellow citizens (x). If formal property rights become less certain (q increases), then individuals may start to abandon investments that rely on those institutions

which, in turn, increases the likelihood that more people will follow suit until the economy collapses to a low growth equilibrium. Even if rule of law is restored before the low growth equilibrium is reached (q is reduced), a collapse may still occur if there are not enough investors left in the contract intensive sector (collapse will occur if $x_t > x^*$). Furthermore, even if the economy reverses its decline and people start to re-enter the contract intensive sector, getting back to the original growth regime will take time. Time during which the economy is, again, subject to destabilizing political shocks.

Low and high amounts of investment in the contract intensive sector correspond to growth regimes that are stable in the face of policy shocks that temporarily reduce the security of property rights. In contrast, it is those states that have a moderate amount of investment in the contract intensive sector that are most likely to experience a dramatic growth regime change because of the unexpected devaluation of those investments.

To investigate the stability of the institutional equilibrium, we consider the effect of political uncertainty on the value of exchange taking place in the economy as proxied by the country's average growth rate during the period of political uncertainty. We again use the extreme event codes from Polity to determine political uncertainty events. If a country is initially in a stable institutional equilibrium (either very high or very low investment in the contract intensive sector), then we expect little impact of political uncertainty on the value of trade. On the other hand, if a country is in an unstable institutional equilibrium (intermediate levels of investment in the contract intensive sector), then political uncertainty may trigger a switch in growth regime as people move their investments from one sector to the other. This switching should show up during the period of instability as a decrease in growth regime.

Table 2 shows that our measure of political instability, the extreme event codes from the Polity database, is better at picking up periods when contract intensive assets lose value than other measures of extreme political change. It reports correlations between various measures of political instability and changes in CIM. p -values are reported in parentheses. Our measure has a negative and significant correlation with CIM, whereas the PITF measure and the measure of weighted internal conflict from the Cross-National Time-Series Database have correlations consistent with zero. The number in brackets gives the elasticity of the change in CIM with respect to instability. For our measure, the average reduction in CIM correlated with political uncertainty is about 5%. We conclude that the Polity extreme event codes are the best approximations to political events that generate unanticipated reductions in investment in the contract intensive sector.

We begin by looking at the stability of growth regime to political uncertainty using cross-sectional data on periods of instability from 1960 to 2000. Descriptive statistics for the variables are contained in the appendix. Figure 10 shows the value of CIM before the onset of political uncertainty in the cross-sectional data broken down by country. We estimate the following

TABLE 2 CONTRACT INTENSIVE MONEY AND ALTERNATE MEASURES OF POLITICAL INSTABILITY

	Change in CIM	Polity extreme codes	CNTS-weighted conflict (s18f2)	PITF adverse regime change
Change in CIM	1			
Polity extreme codes	-0.0805 (0.0499) [-0.05]*	1		
CNTS-weighted conflict (s18f2)	-0.0403 (0.3202) [-0.04]*	0.1300 (0.0005)	1	
PITF adverse regime change	-0.0284 (0.4842) [-0.015]	0.2031 (0.0000)	0.1256 (0.0000)	1

Notes: *p*-values are in parentheses under correlations. Elasticity of coefficient on political instability measure from regression: change in CIM = $b_0 + b_1$ (political instability measure) + ϵ is reported in brackets.

*, **, *** Significance at 10%, 5%, and 1%, respectively.

model:

$$\Delta y_i = \alpha + \beta_1 y_i + \beta_2 CIM_i + \beta_3 CIM_i^2 + \gamma' X_i + \epsilon_i, \tag{4}$$

where Δy_i is the average growth of real GDP per capita over the period of political instability, y_i is initial real GDP per capita before the instability, CIM and CIM^2 represent the amount of investment in the contract intensive sector before the period of political uncertainty, X_i is the set of control variables (length of instability, investment, and trade), and ϵ_i is the error term. Our independent variables are based on 5-year averages before the political instability episode in order to abstract away from any effect the period of instability may have on these variables. CIM and CIM^2 are our variables of interest. The model predicts that the coefficient on CIM should be negative and the coefficient on CIM^2 should be positive.

Column (1) of Table 3 reports the coefficient on CIM without the quadratic term included. It is negative but insignificant. In column (2), we address the possibility that our estimate of β_1 may be biased due to some unobserved factor (e.g. a global financial crisis) that is correlated with both CIM and growth. We instrument CIM using its once lagged value. Our two-stage least squares estimate is also negative and insignificant.

In column (4), we report the coefficient estimates on CIM and CIM^2 . As expected, once a non-linear relationship between investment in the contract intensive sector and growth is allowed for, CIM plays a significant role in mediating the effect of political instability on growth regime. The signs on CIM and CIM^2 have the expected signs and are significant at the 1% level. Specification (5) shows the IV estimates on CIM and CIM^2 . They retain their correct signs and remain significant at the 1% level.

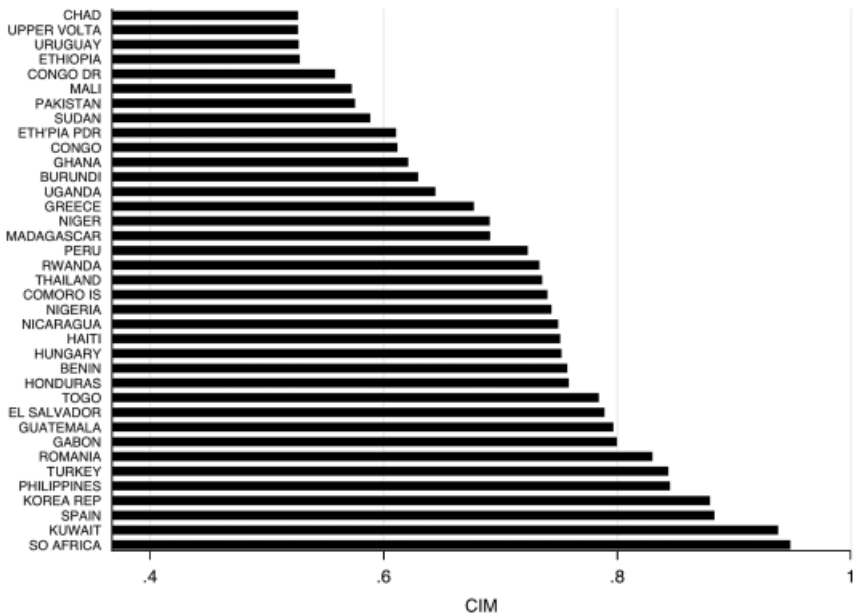


Figure 10. CIM before instability.

TABLE 3 CROSS-SECTION RESULTS ON GROWTH DURING INSTABILITY

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	IV	Robust	OLS	IV	Robust
Dependent variable: growth during instability						
CIM	-0.157	-0.139	-0.037	-2.271***	-1.984***	-1.807***
	(0.155)	(0.181)	(0.051)	(0.503)	(0.679)	(0.327)
CIM ²				1.611***	1.432***	1.230***
				(0.392)	(0.500)	(0.246)
<i>N</i>	33	31	33	33	31	33
<i>R</i> ²	0.23	0.23		0.42	0.42	
Second-stage <i>F</i>	2.93	2.84	8.27	8.74	4.08	14.13
First-stage <i>F</i>		72.85			32.06, 39.45	

Notes: Robust standard errors in parentheses.

***, **, *Significance at 1%, 5%, and 10% levels. All specifications include controls for initial GDP per capita, length of instability, investment, and trade. CIM and CIM² are instrumented with their previous period values in the IV specifications. Shea partial *R*² are checked but not reported for the IV estimates. Intercept coefficients estimated but not reported.

In columns (3) and (5), we use a robust estimation procedure in order to minimize the effect of outliers on our results. The procedure is a form of iterated-weighted least squares in which the weights are inversely proportional to the absolute residuals of an observation. The iteration process

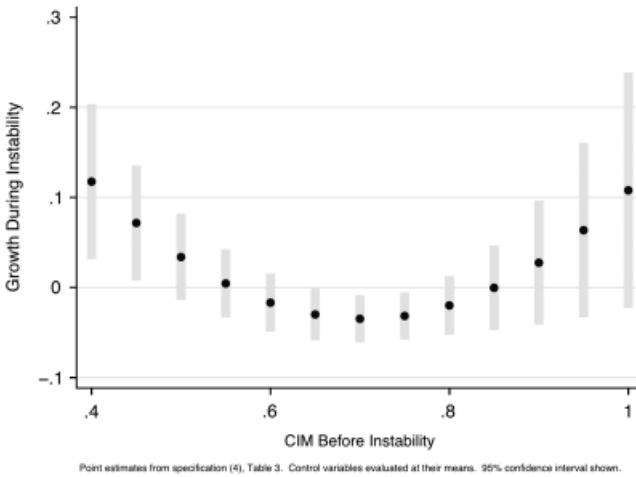


Figure 11. Initial investment in contract intensive sector and instability.

terminates when the maximum change in residuals drops below a specified tolerance limit (Hamilton, 1991). In specification (6), our main results are unchanged when estimated using this procedure.

Figure 11 highlights the sensitivity of those countries only “partly” invested in the contract intensive sector to political instability. We graph the change in growth regime as CIM increases, holding constant the control variables at their means. The 95% confidence interval is also shown around the point estimates. We interpret Figure 11 as indicating one reason why a transition to “good” institutions and growth is so difficult for many countries. The period during which confidence is being built in these institutions is most sensitive to political shocks.

Our cross-section results are encouraging, however, they suffer from small sample size as well as potential endogeneity issues. In particular, we worry about the simultaneity of growth and political instability. We, therefore, adopt a panel framework in which we first estimate a model using fixed effects and, second, apply the Blundell–Bond system GMM estimator to data from 1960 to 2000. We begin by estimating the following fixed-effects model:

$$\Delta y_{it} = \alpha + \beta_1 y_{it-1} + \beta_2 CIM_{it} + \beta_3 CIM_{it}^2 + \beta_4 PI_{it} + \beta_5 CIM_{it} PI_{it} + \beta_6 CIM_{it}^2 PI_{it} + \gamma' X_{it} + \eta_i + \delta_t + \varepsilon_{it}, \quad (5)$$

where for country i at time t , Δy_{it} is the 5-year average log difference of real GDP per capita, y_{it-1} is the logarithm of real GDP per capita at the start of each 5-year period, CIM_{it} is the 5-year average of CIM-lagged one period, CIM_{it}^2 is the 5-year average of CIM^2 -lagged one period, PI_{it} is an indicator variable of whether there was political instability during a 5-year period, and X_{it} is the set of

control variables (education, investment, inflation, trade, and black market premium) measured as averages over the 5-year period, η_i is an unobserved country-specific fixed effect, δ_t are time dummies, and ε_{it} is the error term.²¹

In our cross-section results, we considered growth only during periods of political instability. Here, we consider all years of growth regardless of whether political instability is occurring. Therefore, in order to capture the effect of investment in the contract intensive sector on growth during political instability, the interaction of CIM with political instability as well as CIM² with political instability are required. These are our variables of interest. The interactions are constructed using the 5-year average of CIM- and CIM²-lagged one period.

If we look at the fixed-effects models in specification (5) of Table 4, we see that the signs on the CIM interaction terms are correct, but insignificant. One possible reason why this is the case is because there may be some endogeneity due to a time-varying unobserved variable that would not be controlled for by the fixed effects. As such, in columns (2), (4), and (6), we report estimates using a system GMM approach as suggested by Arellano and Bover (1995) and Blundell and Bond (1998). One part of the system that is estimated is a differenced specification that uses the lagged values of the *levels* of the independent variables as instruments. The other component of the system is a levels equation that uses the lagged *differences* of the independent variables as instruments. This allows us to control for potential endogeneity from both fixed- and time-varying sources.

Specification (2) shows that our measure of political uncertainty, on average, results in negative growth. When we include just a linear interaction term of political instability on CIM in specification (4), there is no relationship between CIM, political instability, and growth. However, consistent with the predictions of our theoretical framework, when we allow CIM to have a quadratic interaction with political instability, we see in specification (6) that again countries with either very high, or, very low investment in the contract intensive sector have robust growth regimes. Countries that have intermediate levels of investment, however, are much more likely to experience a negative change to growth regime due to political instability.

5. THE EFFECT OF INVESTMENT IN CIM ON POLITICAL REGIME STABILITY

Our theoretical model predicts that the robustness of growth regime depends on the amount of investment in contract intensive institutions. The theory makes no explicit prediction, however, as to whether a change in growth

²¹It is worth noting that the Blundell–Bond system GMM estimator requires the covariance between the dependent variable and the country fixed effect be constant across time periods in order to produce consistent estimates. This condition will almost certainly not hold in a context such as ours unless time period dummies are included as independent variables or, equivalently, all of the variables are differenced from their within-period means before the regression. Therefore, our panel regressions include time dummies to ensure this condition is satisfied for our system GMM estimation.

TABLE 4 PANEL RESULTS ON GROWTH DURING INSTABILITY

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS (FE)	System GMM	OLS (FE)	System GMM	OLS (FE)	System GMM
Dependent variable: growth						
Political instability	-0.013** (0.039)	-0.021*** (0.007)	0.035 (0.036)	0.018 (0.040)	0.219 (0.153)	0.369** (0.192)
CIM			-0.025 (0.024)	-0.015 (0.020)	-0.056 (0.114)	0.093 (0.130)
PI × CIM			-0.067 (0.047)	-0.050 (0.053)	-0.596 (0.426)	-1.048** (0.523)
CIM ²					0.027 (0.079)	-0.075 (0.092)
PI × CIM ²					0.370 (0.292)	0.690* (0.021)
<i>N</i>	522	522	445	445	445	445
<i>R</i> ²	0.17		0.08		0.08	
<i>AB</i> test for AR(1) (<i>p</i> -values)		0.000		0.000		0.000
<i>AB</i> test for AR(2) (<i>p</i> -values)		0.725		0.896		0.956
Overid. (<i>p</i> -values)		1.000		1.000		1.000

Notes: Robust standard errors in parentheses.

***, **, *Significance at 1%, 5%, and 10% levels. All specifications include controls for initial GDP per capita, education, investment, trade, inflation, and black market premium. Intercept coefficients estimated but not reported. Time dummies are included in all specifications but not reported.

regime is associated with political change. Nonetheless, the model does show that political instability can cause agents to switch from being productive to unproductive types, thereby undermining the legitimacy of contract intensive institutions. It does not require a leap of imagination to push this argument one step further and argue that, the more individuals switch out of the contract intensive sector, the more likely it is political regime change will occur. That is the question we investigate in this section. Is a country more likely to experience a change in political institutions as a result of political uncertainty if they are also in an unstable growth regime? Whereas the last section investigated the feedback from political institutions to economic institutions, this section closes the loop by looking at the feedback from the economic sector back to political institutions.

Our empirical approach is based on cross-sectional regressions similar to equation (4). Our cross-sectional model is

$$\Delta Polity_i = \alpha + \beta_1 y_i + \beta_2 CIM_i + \beta_3 CIM_i^2 + \gamma' X_i + \varepsilon_i. \tag{6}$$

The dependent variable is the absolute value of the change in 5-year average Polity score after vs. before the political instability event. Hence, for example,

TABLE 5 CROSS-SECTION RESULTS ON CHANGE IN ABSOLUTE VALUE OF POLITY SCORE

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	IV	Robust	OLS	IV	Robust
Dependent variable: absolute value of change in polity – before/after instability						
CIM	-0.706 (8.116)	6.648 (7.496)	-0.299 (8.769)	89.293** (39.723)	135.851*** (53.500)	90.580 (57.644)
CIM ²				-68.593** (31.014)	-100.31*** (38.510)	-69.946 (43.42)
<i>N</i>	33	31	33	33	31	33
<i>R</i> ²	0.26	0.20		0.34	0.26	
<i>F</i> -statistics	3.83	2.30	1.75	7.72	3.69	1.81
Second-stage <i>F</i>		72.85			32.06, 39.45	

Notes: Robust standard errors in parentheses.

***, **, *Significance at 1%, 5%, and 10% levels. All specifications include controls for initial GDP per capita, length of instability, investment, and trade. CIM and CIM² are instrumented with their previous period values in the IV specifications. Shea partial *R*² are checked but not reported for the IV estimates. Intercept coefficients estimated but not reported.

if a country's average Polity score was -3 before the political instability and 5 afterwards, then our dependent variable would take on the value of 8 . Again as in equation (4), our main variables of interest are CIM and CIM².

What we see from columns (1)–(3) (OLS, IV, and Robust estimation, respectively) of Table 5 is that the inclusion of CIM linearly does not have a significant impact on the degree to which a country's polity changes over the course of a political instability event. However, once CIM² is included in the regression, there is evidence of a non-linear and significant relationship between CIM and political regime stability, as suggested by our theory. Specifically the coefficient for CIM is positive and significant in columns (4) and (5) (and marginally significant in column (6) with a *p*-value of 0.13) while the CIM² term is negative and significant (and again marginally significant in column (6) with a *p*-value of 0.12). These results are consistent with the idea that countries with an intermediate level of investment in contract intensive institutions are more likely to experience regime change as a result of political instability.

Figure 12 uses the estimates from specification (5) to plot the estimated effect of CIM on the absolute value of change in political regime. Given the fact that the standard deviation of the absolute value of Polity in our dataset is about five points, the effect of CIM appears very strong. For a country with initial CIM of about 0.7, political instability causes about an eight-point change in Polity score.

6. CONCLUSIONS

We began this paper with the observation that an absence of the deep determinants of growth, which are emphasized in the cross-country growth

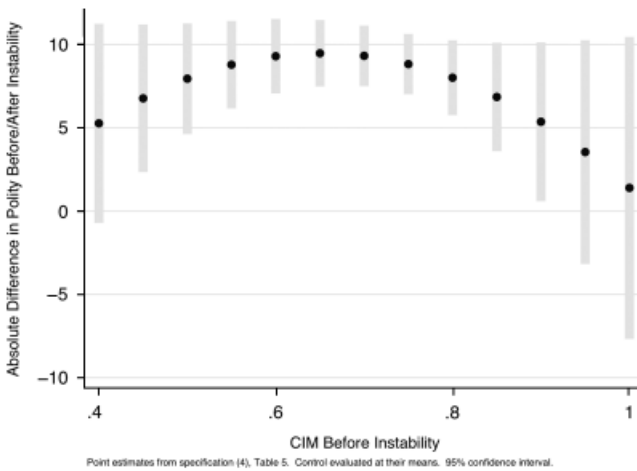


Figure 12. Initial investment in contract intensive sector and political change in the long run.

literature, may not be a sufficient explanation for why institutional reform succeeds or fails in a country. Instead, we suggest that in a world where people do not immediately alter their beliefs concerning the legitimacy of alternative institutions, then political instability can have a first-order effect on the likelihood that reforms succeed or not. This is a surprising prediction because not all countries are sensitive to political turmoil, as we show in section 2. We argue that the robustness of institutions that encourage impersonal exchange (such as secure property rights and credible third-party enforcement of contracts) critically depends on their legitimacy, as measured by the amount of investment in them. We proxy this investment using Clague and colleagues's CIM and test the prediction of our model that so-called "transition" economies are particularly susceptible to political uncertainty. Our empirical results show that there is a non-linear relationship between contract intensive investments and growth during instability and are robust to controls for potential endogeneity due to both time-invariant and time-varying factors.²²

The effect of political instability on growth and long-run political change depends crucially on the extent to which a country is invested in the contract intensive sector. One factor that we do not account for, but that our model and results suggest should be important, is the ease with which individuals can shift their investments from the contract intensive sector to other areas. In particular, global capital flows may lower the cost of shifting investments

²²The results of Tables 3–5 have been tested for outliers and re-estimated. These results with outliers excluded are supportive of the story emerging from the main results and can be obtained by contacting any of the authors.

in one's own contract intensive sector to that of another country. This could potentially increase the likelihood that the threshold is crossed that leads people to abandon contract intensive investment in their own country and, as a consequence, undermine political changes intended to support impersonal exchange. This implication is in stark contrast to theories, which predict that highly elastic capital flows "punish" countries with poor institutions. Our results suggest that in order for good institutions to persist, there may be a role for limiting this type of competition. More generally, our results suggest that further research is needed on the interaction between formal institutions and informal norms of behavior. Far from moving in lockstep, we find that, even with extremely simple assumptions about how individuals update their beliefs, the resulting growth path can be unstable. Changing hearts and minds is just as important as changing laws; unfortunately it is also as difficult as it sounds.

APPENDIX: DATA DESCRIPTIONS AND SUMMARY STATISTICS

TABLE A1 DATA DESCRIPTIONS

Variable	Measure	Source
Growth	Constructed as log difference of real GDP per capita (<i>rgdpch</i>)	Heston et al. (2002), <i>PWT 6.1</i>
Initial GDP per capita	Real GDP per capita at beginning of each 5-year period (<i>rgdpch</i>)	Heston et al. (2002), <i>PWT 6.1</i>
Schooling	Average years of schooling in the total population 25+ (<i>tyr</i>)	Barro and Lee (2000)
Trade openness	Sum of exports and imports to GDP (<i>openc</i>)	Heston et al. (2002), <i>PWT 6.1</i>
Inflation	Constructed as log difference of CPI (<i>fp.cpi.totl</i>)	World Bank (2006), <i>World Development Indicators</i>
Investment	Investment share of real GDP (<i>ki</i>)	Heston et al. (2002), <i>PWT 6.1</i>
Black market premium	Ratio of black market exchange rate and official exchange rate minus 1	Data underlying Beck and Levine (2004) and Beck et al. (2000). Original source is <i>Pick's Currency Yearbook</i>
Political instability	Dummy variable constructed for polity code of -66, -77, or -88	Marshall and Jaggers (2002), <i>Polity IV Database</i>
CIM	Contract intensive money: ratio of non-currency component of <i>M2</i> to total <i>M2</i>	International Monetary Fund (2005), <i>International Financial Statistics</i>

TABLE A2 SUMMARY STATISTICS FOR CROSS-SECTIONAL DATA

Variable	Mean	Standard deviation	Minimum	Maximum
Growth during instability	-0.0089	0.0671	-0.2260	0.1708
Absolute value of change in polity	8.2621	5.1673	0.6000	18
Length of instability	1.672131	1.121328	1	5
Initial GDP	3,677.05	4,381.81	515.83	25,380.74
CIM	0.7189	0.1295	0.3676	0.9480
Trade openness	0.5163	0.2732	0.1236	1.3368
Investment	0.1302	0.0947	0.0096	0.3655
Growth during instability	-0.0089	0.0671	-0.2260	0.1708

TABLE A3 SUMMARY STATISTICS FOR PANEL DATA USED IN SYSTEM GMM

Variable	Mean	Standard deviation	Minimum	Maximum
Growth	0.0178	0.0303	-0.1151	0.1576
Initial GDP	6,146	6,135	321	34,372
Education	4.5897	2.8293	0.042	12.179
Trade openness	0.5949	0.3303	0.0874	2.424
Inflation	0.1403	0.2864	-0.0305	3.446
Investment	0.1575	0.0861	0.0102	0.4393
Black market premium	0.6144	5.1878	-0.0525	109.9
PII	0.0836	0.2770	0	1
CIM	0.7601	0.1581	0.2113	0.9841

ACKNOWLEDGMENTS

We would like to thank our editor and two referees from *Economics and Politics* for their extensive and helpful comments. For reading drafts and offering comments, we also owe a debt of gratitude to Peter Boettke, Dan Bogart, Christa Brunnschweiler, Janice Compton, Arthur Denzau, Hikmet Gunay, Ross Hanig, Eric Hilt, Talan Iscan, Ivan Jeliakzov, Phil Keefer, Douglass North, John Nye, John Olson, Wayne Simpson, Steven Yamarik, as well as seminar participants at Northwestern University and the University of Guelph. The usual disclaimer applies.

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