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INVESTING IN INSTITUTIONS

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Abstract

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. 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 is low. By contrast, economies which are transitioning between a low-growth and high-growth steady state are more likely to see their institutional reforms lose legitimacy during political instability. We operationalize our model by using contract-intensive money as a proxy for the amount of initial investment in growth enhancing institutions. Cross-sectional and panel growth regressions support the predictions of the model. Our results are also robust to controlling for endogeneity of political change and economic growth using instrumental variable approaches.

JEL Classifications: N0, O11, O40,
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I. Introduction

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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 & Levine, 1997), colonial history (Acemoglu, Johnson, & Robinson, 2002), or initial resource endowment (Engerman & Sokoloff, 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.[2] 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 may 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. Rule of law, interpreted as secure property rights and credible third-party enforcement of contracts, did not emerge overnight, or even over the course of decades, in Western Europe.[3] Six centuries separated the Magna Carta from the Glorious Revolution. This, by definition, is not the case with the nations that are the object of study of the development economist. In these states, the move from bad

[1] The 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 (2006) or World Bank (2005). For the argument that good policies are actually more important for growth than good institutions, see La Porta et. al. (2004).
[2] For example, see Easterly & Levine (2003) or Rodrik, Subramanian & Trebbi (2003).
[3] This literature is vast. For the history of how specific countries developed credible third-party enforcement of contract see Greif (2006); Jones (2003); North & Weingast (1988).

political institutions to good is relatively rapid and discontinuous. As such, robust political and economic regimes may be much more difficult to establish, regardless of the presence of some third factor, or deep determinant, being present.

There are many ways for a country to escape poverty (Rodrik, 2008), 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 of behavior adjust so that formal rules are internalized as behavior (North, 1990, p. 366).[4] 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.[5]

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.

[4] For evidence that norms of behavior change more slowly than formal institutions, see Fisman and Miguel (2007) and Miguel, Saeigh, and Satyanath (2008). For evidence that norms do, eventually, come into line with formal institutions, consider the disappearance of the concept 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).

[5] See Boettke, Coyne, and Leeson (2008) for a detailed theoretical discussion of the strength of feedback between formal and informal institutions.

In what follows, we develop a model which 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 nonlinear way on the extent to which the population has already adopted reforms as the norm. In effect, 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 is low. By contrast, economies which are transitioning between a low-growth and high-growth steady state are more likely to see their institutional reforms lose legitimacy during political instability.

In section I 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 II we develop our model. In section III we proxy the population's investment in growth enhancing institutions using Clague et. al.'s (1999) contract-intensive money (CIM) and empirically test the model using cross sectional and panel data on growth for 1960 to 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 (1998) System GMM estimation techniques

in the panel. In section IV 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 which affect the speed with which a population internalizes formal reforms such as the elasticity of capital flows or the degree of heterogeneity in the population.

II. 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.[6] The Polity IV data set contains a large number of political variables. We choose to focus on the "Polity" variable which indicates the degree of autocracy or democracy in a country for a given year.[7]

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*

[6] Further detail on the Polity IV dataset can be found at http://www.systemicpeace.org/polity/polity4.htm.
[7] The 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.

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).

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 wrong-doing, 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.[8]

There are several other data sets available which measure political instability, however, we prefer the Polity extreme event codes for several reasons. First, the Polity data has superior time and country coverage than other sources.[9] 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 PITF data. Adverse regime change is defined in

[8] Rodrik and Wacziarg (2005) employ a similar approach.
[9] For example, the Political Instability Task Force (PITF) Data covers only 1955 to 2007. The data in ICRG/IRIS data on political instability covers barely more than two decades.

PITF as a "six or more point drop" in the Polity data set. That is a move from democracy towards 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 (La Porta 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".[10]

We use data from Maddison 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 five and ten years following the instability relative to the same length of time prior to the instability.[11]

From the sample statistics in table 1 and histograms in figures 1, 2, and 3 a number of points emerge. First is that, on average, during periods of political instability countries tend to experience low growth.[12] The data in table 1 indicates an average annual growth rate of –1.1 percent 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 experienced growth rates of between –7 percent and 9 percent. 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

[10] Indeed, if the coders of the Polity dataset couldn't 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 III that our measure of political instability is superior at capturing uncertainty relative to other possible data sets.
[11] These data are available from http://www.ggdc.net/maddison/.
[12] This is in line with results seen in the literature (see Alesina and Perotti, 1996).

percent faster annually in the five years following the instability relative to the five years prior to the instability,. The ten-year difference indicates a 0.46 percent average annual increase.[13] 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 five year growth regime was between –2.9 percent and 6.2 percent. The comparable range for ten year change in growth regime is –3.3 percent to 4.3 percent. 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 simple model which suggests that the degree to which individuals have invested in growth-enhancing institutions (which we associate with the contract-intensive sector) is one factor which may explain the differential effect of political uncertainty on growth regime. In other words, regime stability depends not only on having good institutions, but also on how much people are vested in those institutions.

III. 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.

[13] The finding that political instability does not have a large effect on growth in the long run is seen in papers such as Levine and Renelt (1992), Campos and Nugent (2000), Haber et al (2003). Our result appears in line with this earlier research.

The model should account for the stylized fact just discussed that not all periods of extreme political instability lead to decreases in growth. More generally, we would like the model to elucidate the feedback that exists between political uncertainty and economic growth. That is, when the future of political institutions responsible for third-party enforcement of contracts is uncertain, how does this affect agent's beliefs about the legitimacy of growth-enhancing institutions? And, how do the decisions of individuals whether or not to accept reforms feed back into the stability (or fragility) of political institutions?

Ultimately, we want the model to address the question which motivates this paper: "When reforms fail, is it the rules that have been put in place that are to blame, or, does history play a role?" 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).

A starting point of our model is that individuals have a choice concerning the nexus of institutions they wish to use to structure their transactions. We assume that the decision to invest in the contrac- 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). Furthermore, linking the contract-intensive sector to productive activities 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 (Murphy et al. 1993; Acemoglu, 1995; Mehlum et al., 2003). Our 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.[14]

There is a continuum of agents, each of which 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

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

(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 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 $\left(\frac{1-x}{x}\right)$. An unproductive agent cannot exploit more than one productive agent.

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

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

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

$$\Pi_{U}(x,q) = \min\left\{\frac{1-x}{x}, 1\right\} qA \qquad (2)$$

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 payoff to investing in the contract-intensive sector and the unproductive sector are graphed assuming that property rights are relatively secure (q is less than 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. A more interesting situation occurs when property rights are less secure. In figure 5 we assume that $q > 0.5$. This results in multiple equilibria due to the increasing returns of investing in the contract-intensive sector. There are three equilibria. 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 measure investment in the contract-intensive sector using Clague et al.'s (1999) contract-intensive money (*cim*).[15] *Cim* is defined as (M2-C)/M2, where M2 is a broad measure of the money supply and C is currency held outside of banks. As Clague et al. 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] 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.[17] We use *cim* in the same way

[15] Clague, Keefer, Knack, and Olson (1999).
[16] Clague et al.(1999), p. 188.
[17] Clague et al.(1999), p. 189. This is also how Prados de la Escosura & Sanz-Villarroya (2009) use CIM in their study of Argentina.

as Clague et al., as a proxy for the amount of investment in institutions which support contract-intensive transactions.

Our theoretical framework provides a natural interpretation for the value of output and contract-intensive money. 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 productive agents times the value of their output, or $(1-x)A$.[18] Output increases either as the productivity of the productive agents increases (*A*) or when the number of productive agents increases $(1-x)$. The way individuals choose to hold their income depends on whether they are productive or unproductive. Those in the productive sector use contract-intensive money, 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. That is, $cim = \frac{(1-x)\Pi_{CI}(x,q)}{(1-x)A}$, which simplifies to, $\left[1 - q\min\left\{\frac{x}{1-x}, 1\right\}\right]$. Contract-intensive money decreases as the security of property rights decreases (*q* increases) and increases in the number of agents in the contract-intensive sector (1-*x*).

In order to tell a story about how political instability affects transition, we need to integrate into our model a definition of the transition dynamic as well as specify how political instability affects the payoffs of the players. We follow Gintis (1997) in assuming that in every period an agent observes the payoff of another randomly selected player with probability γ. If the other player's payoff is the same, then the agent does

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

nothing, however, if the other player's payoff is higher, then the agent switches strategies. This leads to a replicator dynamic in which

$$\Delta x_t = x_t(1-x_t)\gamma\left[\Pi_U(x_t,q)-\Pi_{CI}(x_t,q)\right] \qquad (3)$$

In other words, the speed of adjustment depends on the probability that you observe an agent of a different type than yourself $\left[x_t(1-x_t)\right]$, the probability that you look in the first place (γ), and the difference in payoffs between investment in the unproductive and productive sectors $\left[\Pi_U(x_t,q)-\Pi_{CI}(x_t,q)\right]$.[19]

We integrate political instability into this framework by assuming that it decreases the security of property rights 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. Since the variable we use to measure the security of property rights, *q*, is defined as the proportion of production that a successful unproductive entrepreneur can steal, then political instability will increase *q* by an amount proportional to its severity. We let π represent the severity of political instability. During periods of political turmoil the payoff to investing in the contract-intensive sector now becomes

$$\Pi_{CI}(x,q+\pi) = A\left(1-(q+\pi)\min\left\{\frac{x}{1-x},1\right\}\right) \qquad (4)$$

while the payoff to entering the unproductive sector becomes

[19] In addition, Nunn (2007, p. 163) shows that if $x_t = 0$ and the payoff to the unproductive sector is greater than the productive sector, then there must be a small probability that someone switches due to "experimental tendencies."

$$\Pi_U(x, q+\pi) = \min\left\{\frac{1-x}{x}, 1\right\}(q+\pi)A \qquad (5)$$

The theory is now well enough developed for us to analyze the relationship between political instability and growth for countries at various stages of transition (different values for *x*). Recall that output (*Y*) is equal to (1-*x*)*A*. We can decompose this into an equation for growth as

$$\Delta Y = \Delta A \frac{\partial Y}{\partial A} + \Delta x \frac{\partial Y}{\partial x} = \Delta A(1-x) - \Delta x A \qquad (6)$$

Equation (6) 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 according to equation (3). Note that the transition period, during which people are switching into the contract-intensive sector, can last a long time. There are two reasons for this. First, when the economy is close to (x_L) or (x_H), the probability of observing a different type is relatively low. Second, as the economy moves from (x_L) towards (x_H), the net benefit of switching at first shrinks as it becomes easier for unproductive types to find productive types to exploit. Eventually, as the number of productive types increases, however, there are fewer unproductive types exploiting people and the net benefits associated with the contract-intensive sector increase again. 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 down to the solid lines in figure 6.[20] 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 (6) which 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

[20] We 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. As long as π is positive, however, the results described will hold.

achieved a level of participation in the contract-intensive sector greater than (1-x*), then agents continue to switch out of 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 enough, 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*), however, then political instability can has a more pernicious effect on economic growth. For example, a country which is at x_1 in figure 6 when the 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 which 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 equilibrium in the first place. Furthermore, given the geometry of the payoffs and the replicator dynamic described by equation (6), the closer the initial value of x is to the low-growth equilibrium the less likely are individuals to switch. The net benefit to switching is less near x_L and one is less likely to see someone of a different type as x grows larger.

The model highlights the nonlinear 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 less likely to trigger an abandonment of existing institutions and a consequent decrease in growth. However, if society is not fully vested in the institutions which support contract-intensive exchange, then political instability can prompt flight from investments in "good" institutions that is self-reinforcing. As more individuals abandon the contract-intensive sector, the value of investments in that sector decrease, 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 don't change by much. However, if the country is relatively far along in the transition process, then the effect can be quite severe.

The experiences of three countries included in our data set help illustrate the main results of the model.[21] Figure 7 shows the growth rate and value of contract-intensive money for South Africa during its transition from apartheid to a new constitution. Under apartheid, approximately 85 percent 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 Afrikaaners, 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 which 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 percent of the economy.

[21] Each 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.

This makes South Africa during the late 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 nor 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 Chamarro and the beginning of the period of civil war, the contract-intensive sector constituted about 77 percent of the economy. Once the period of turmoil began, both the value of the contract-intensive money and growth dropped precipitously. In July 1979 the new government of Daniel Ortega signaled a period of greater stability, however, the value of contract-intensive money 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 which 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 when the period of civil unrest began and this was marked by a dramatic decrease in contract-intensive money. This is in sharp contrast to the "high

cim" case of South Africa where contract-intensive money 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 $(-\pi)$ whereas for the high-growth regime the decrease in *cim* is only $\left[-\pi\left(\frac{x}{1-x}\right)\right]$, 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 to countries further along in the transition process, a low-growth country like Ethiopia simply doesn't 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.

III. Explaining Growth During Instability

The model predicts a nonlinear 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 her confidence in those institutions (*q*) and the actions of her fellow citizens (*x*). If individuals lose confidence in formal institutions (*q* increases), then they 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.

Simply stated, the model predicts that low and high amounts of investment in the contract-intensive sector correspond to institutional equilibria that are stable in the face of shocks that temporarily reduce the value of those investments. 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 percent. 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 appendix I. 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 model,

$$(1) \qquad \Delta y_i = \alpha + \beta_1 y_{i,} + \beta_2 CIM_i + \beta_3 CIM^2_i + \gamma' X_i + \varepsilon_i$$

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 five-year averages prior to 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 time varying 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 percent level. Specification (5) shows the IV estimates on CIM and CIM^2. They retain their correct signs and remain significant at the 1 percent level.

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 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 percent

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,

$$(2)\ \Delta y_{it} = \alpha + \beta_1 y_{i\,t-1,} + \beta_2 CIM_{it} + \beta_3 CIM^2_{it} + \beta_4 PI_{it} + \beta_5 CIM_{it} * PI_{it} + \beta_6 CIM^2_{it} * PI_{it} + \gamma' X_{it} + \eta_i + \varepsilon_{it}$$

where for country i at time t, Δy_{it} is the five-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 five-year period, CIM_{it} is the five-year average of contract-intensive money lagged one period, CIM^2_{it} is the five-year average of contract-intensive money squared lagged one period, PI_{it} is an indicator variable of whether there was political instability during a five-year period, and X_{it} is the set of control variables (education, investment, inflation, trade, black-market premium) measured as averages over the five-year period, η_i is an unobserved country-specific fixed-effect, and ε_{it} is the error term.[22]

[22] It 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

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 CIM^2 with political instability are required. These are our variables of interest. The interactions are constructed using the five-year average of CIM and CIM^2 lagged one period.

If we look at the fixed-effects models in specification (5), 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 Generalized Method of Moments 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 use 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 controls 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

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 also include time dummies to ensure this condition is satisfied for our system-GMM estimation.

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 again find that 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.

V. 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 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 it is also in an unstable growth regime? Whereas the last section investigated the feedback from political institutions to economic institutions, this sections 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 (1). Our cross-sectional model is,

(3) $$\Delta\, Polity_i = \alpha + \beta_1\, y_{i,} + \beta_2\, CIM_i + \beta_3\, CIM^2_i + \gamma' X_i + \varepsilon_i$$

The dependent variable is the absolute value of the change in five-year average Polity score after-versus-before the political instability event. So, for example, 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 (1), our main variables of interest are CIM and CIM^2.

What we see from columns 1–3 (OLS, IV, and Robust estimation, respectively) 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 CIM^2 is included in the regression, there is evidence of a nonlinear 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 CIM^2 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 data set 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.

VI. 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 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 don't 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 II. We argue that the robustness of institutions which 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 et al.'s contract-intensive money 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.[23]

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.

[23] The results of Table 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.

One factor which we do not account for, but which 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 in one's own contract-intensive sector to that of another country. This could potentially increase the likelihood that the threshold is crossed which 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's also as difficult as it sounds.

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Tables and Figures

Table 1: Full Sample Statistics

Average Growth During Political Instability	10 Year Average Growth Difference	5 Year Average Growth Difference
-1.1	0.46	1.4
(8.0)	(3.8)	(4.8)

Standard deviations in parentheses

Figure 1: Average Growth During Period of Instability (Entire Sample)

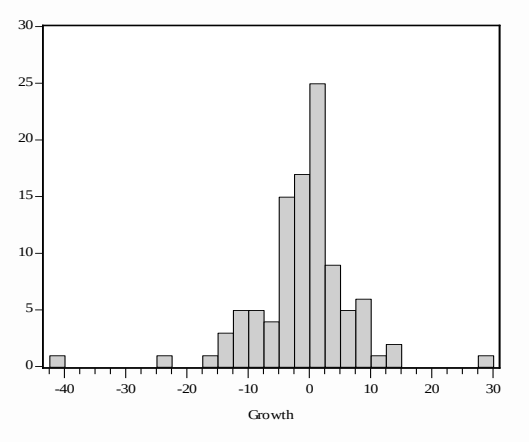


Figure 2: Change in 10 Year Average Growth (Entire Sample)

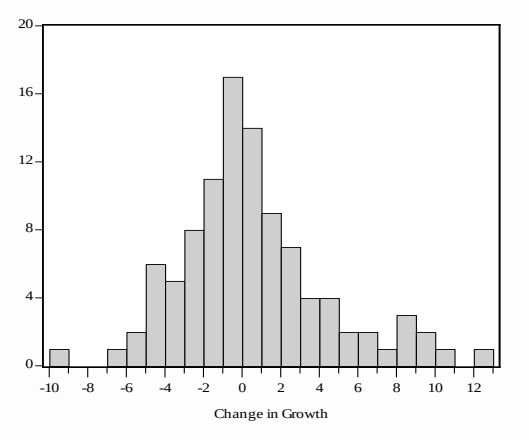


Figure 3: Change in 5 Year Average Growth (Entire Sample)

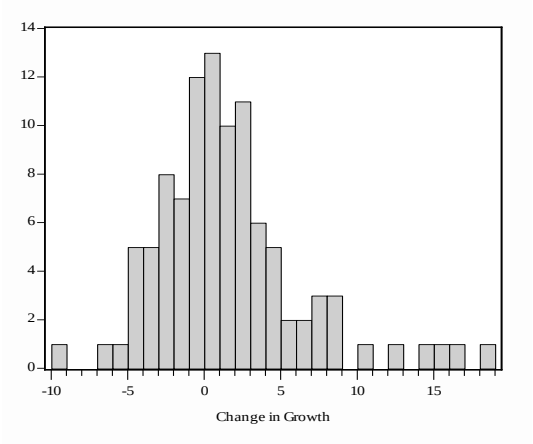


Figure 4: Payoffs When Property Rights Secure (q<0.5)

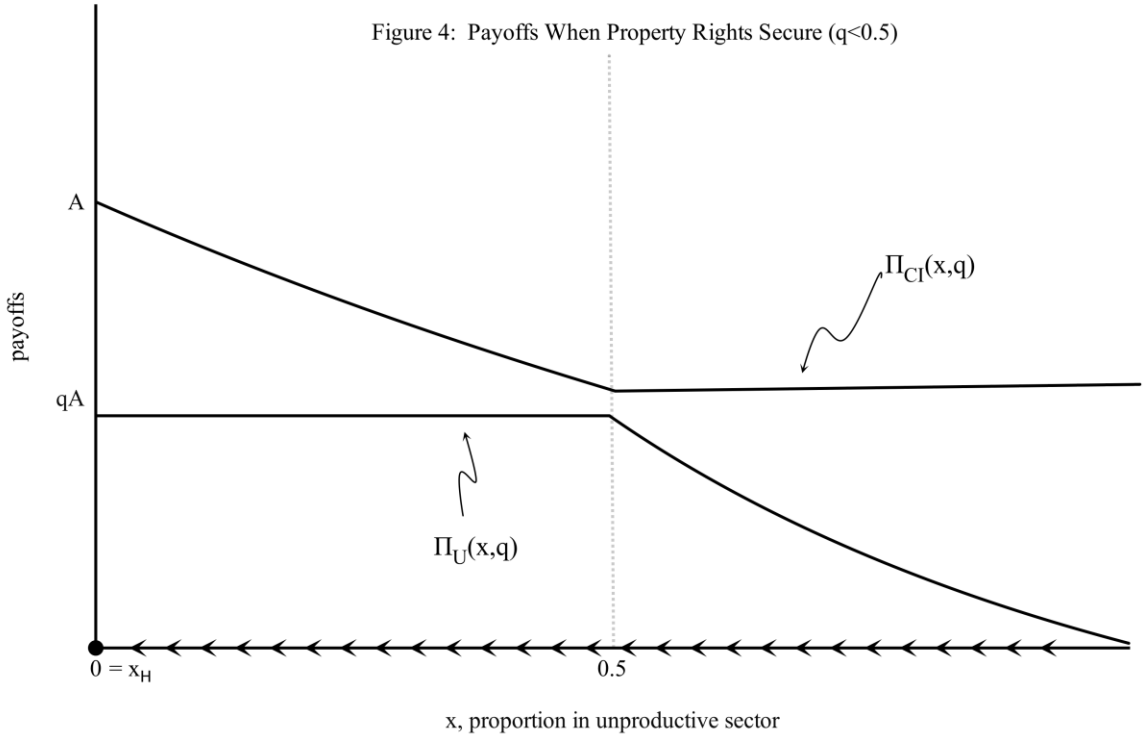


Figure 5: Payoffs when Property Rights Less Secure (q>0.5)

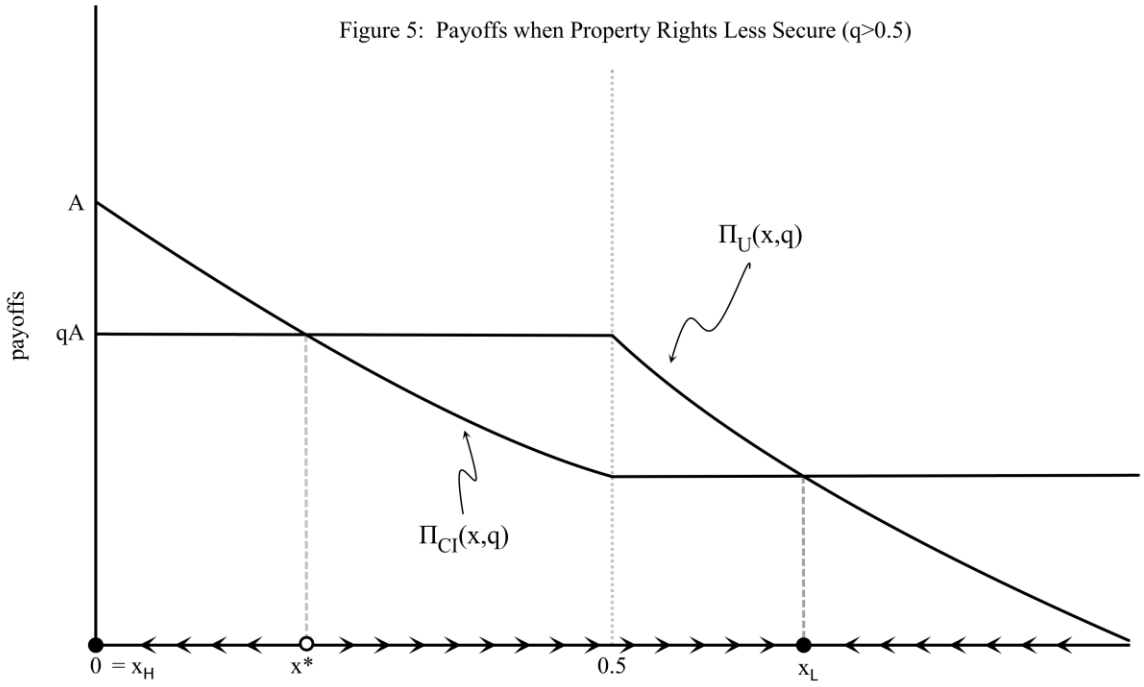


Figure 6: Political Instability and Transition

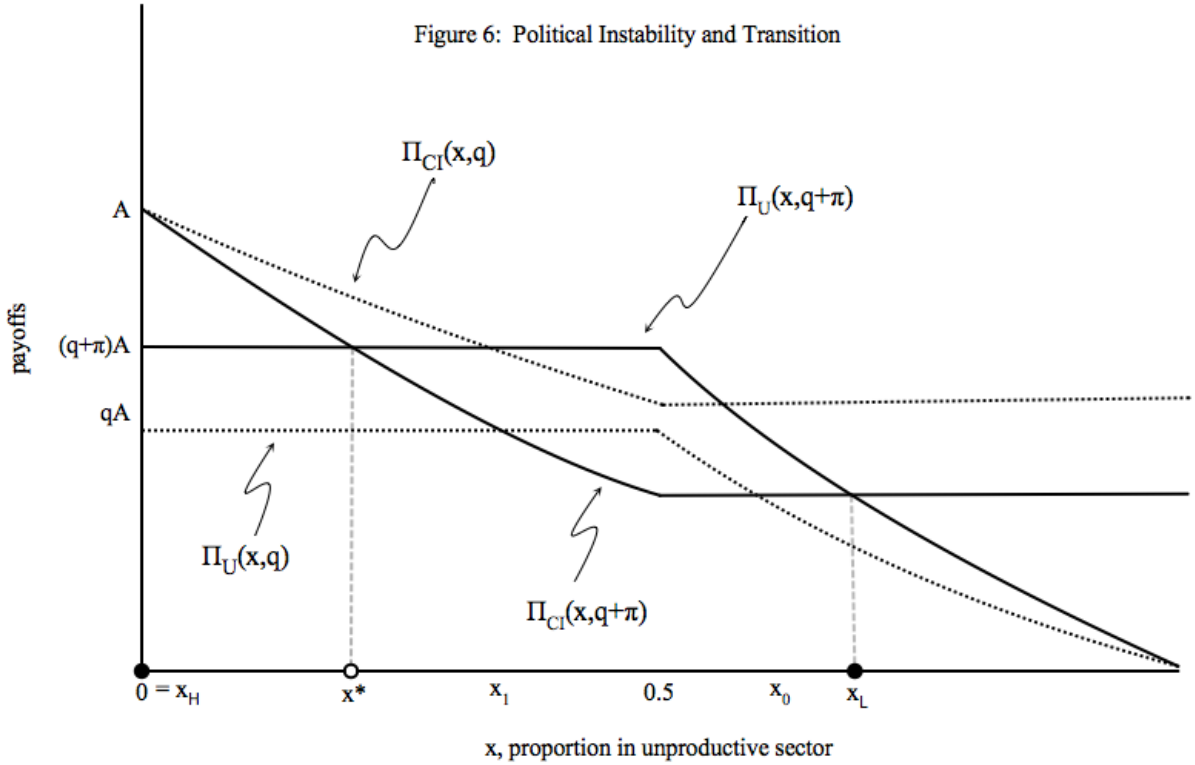


Figure 7: A "High" Country: South Africa, 1986-1995

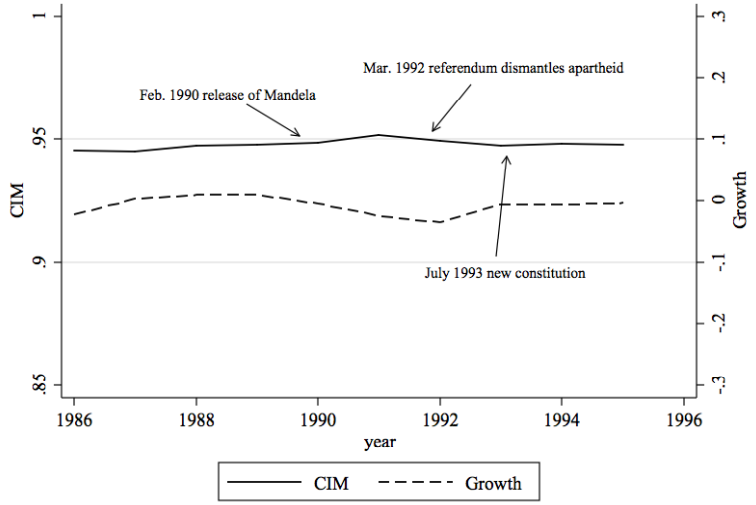


Figure 8: A Country in the "Middle": Nicaragua, 1974-1983

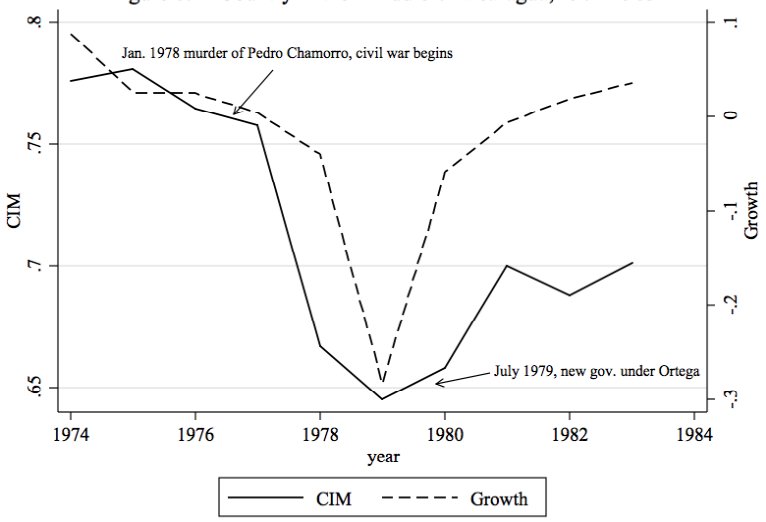


Figure 9: A "Low" Case: Ethiopia, 1970-1978

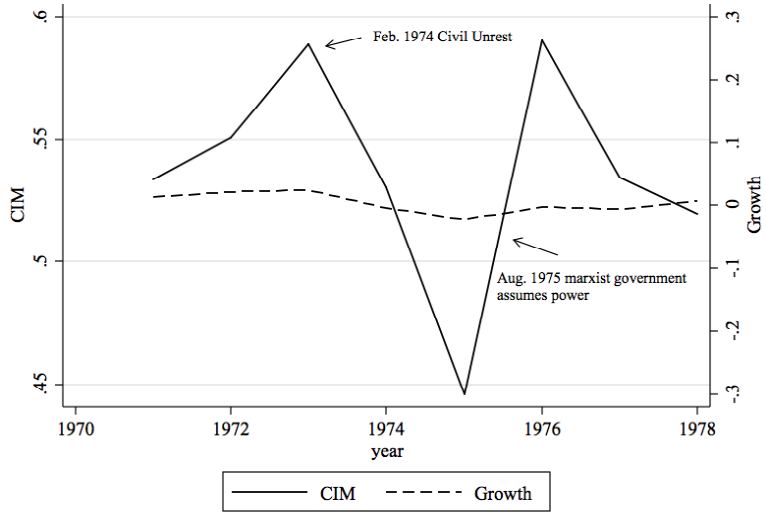


Figure 10: CIM Before Instability

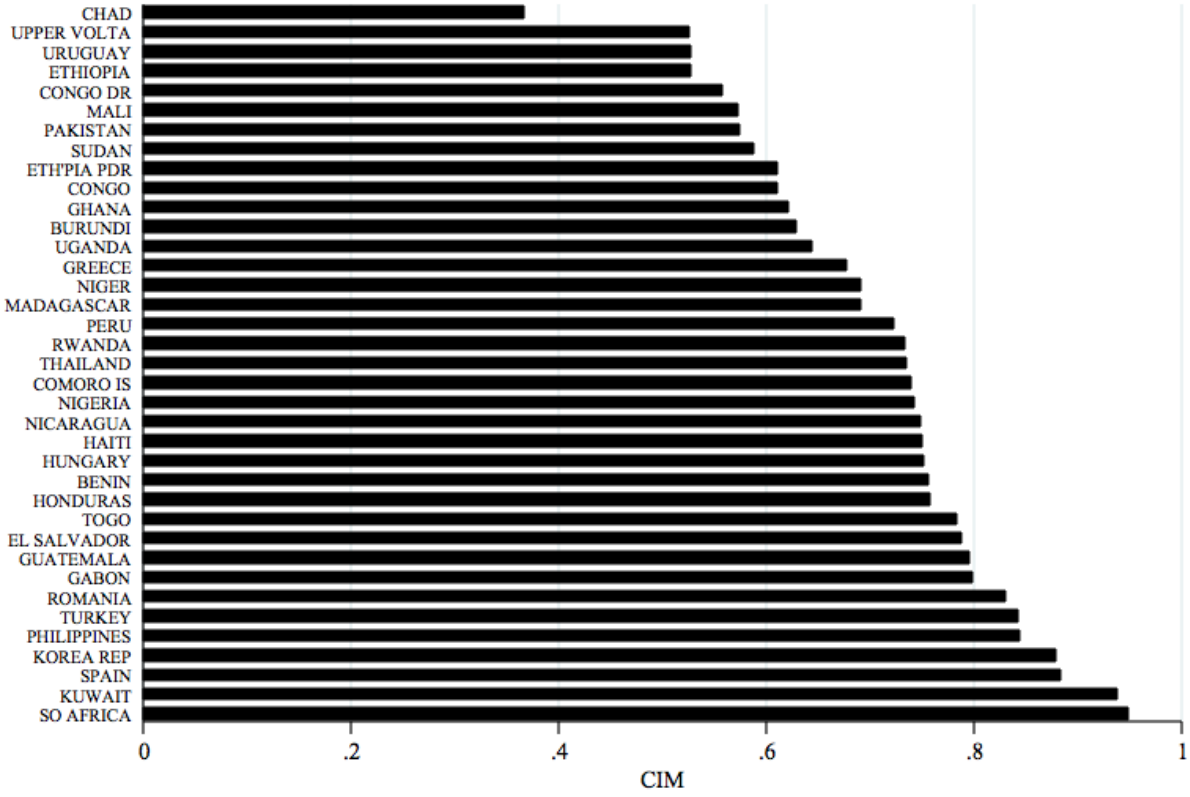


Table 2: Contract-Intensive Money and Alternate Measures of Political Instability

	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. *, **, *** represent 10%, 5%, and 1% significance respectively.

Table 3: Cross-section Results on Growth During Instability

Dependent Variable: Growth During Instability

	(1) OLS	(2) IV	(3) ROBUST	(4) OLS	(5) IV	(6) ROBUST
CIM	-0.157 (0.155)	-0.139 (0.181)	-0.037 (0.051)	-2.271*** (0.503)	-1.984*** (0.679)	-1.807*** (0.327)
CIM^2				1.611*** (0.392)	1.432*** (0.500)	1.230*** (0.246)
N	33	31	33	33	31	33
R^2	0.23	0.23		0.42	0.42	
Second Stage F	2.93	2.84	8.27	8.74	4.08	14.13
First Stage F		72.85			32.06, 39.45	

Notes: Robust standard errors in parentheses. ***, **, * indicates significance at 1, 5, and 10 percent levels. All specifications include controls for initial GDP per capita, length of instability, investment, and trade. CIM and CIM^2 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.

Table 4: Panel Results on Growth During Instability

Dependent Variable: Growth During Instability

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS (FE)	SYS GMM	OLS (FE)	SYS GMM	OLS (FE)	SYS GMM
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)
N	522	522	445	445	445	445
R^2	0.17		0.08		0.08	
AB Test for AR(1) (p-values)		0.000		0.000		0.000
AB Test for AR(2) (p-values)		0.725		0.896		0.956
Overid. (p-values)		1.000		1.000		1.000

Notes: Robust standard errors in parentheses. ***, **, * indicates significance at 1, 5, and 10 percent 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.

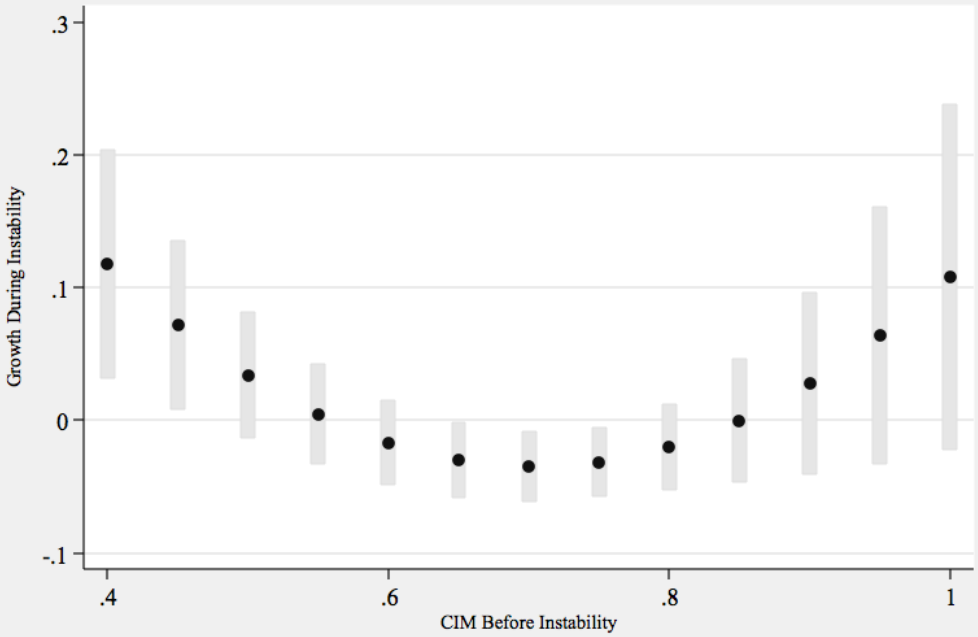
Table 5: Cross-section Results on Change in Absolute Value of Polity Score

Dependent Variable: Absolute Value of Change in Polity – Before/After Instability

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	IV	ROBUST	OLS	IV	ROBUST
CIM	-0.706	6.648	-0.299	89.293**	135.851***	90.580
	(8.116)	(7.496)	(8.769)	(39.723)	(53.500)	(57.644)
CIM^2				-68.593**	-100.31***	-69.946
				(31.014)	(38.510)	(43.42)
N	33	31	33	33	31	33
R^2	0.26	0.20		0.34	0.26	
F-stat	3.83	2.30	1.75	7.72	3.69	1.81
Second Stage F		72.85			32.06, 39.45	

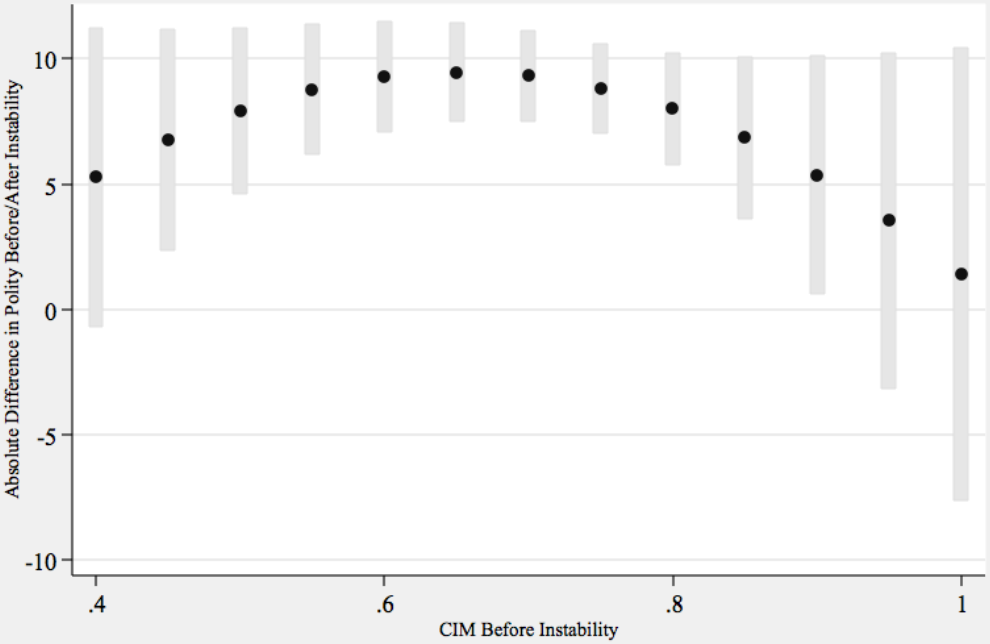
Notes: Robust standard errors in parentheses. ***, **, * indicates significance at 1, 5, and 10 percent levels. All specifications include controls for initial GDP per capita, length of instability, investment, and trade. CIM and CIM^2 are instrumented with their previous period values in the IV specifications. Shea Partial R^2 are checked but not reported for the IV estimates. Intercept coefficients estimated but not reported.

Figure 11: Initial Investment in Contract Intensive Sector and Instability



Point estimates from specification (4), Table 3. Control variables evaluated at their means. 95% confidence interval shown.

Figure 12: Initial Investment in Contract Intensive Sector and Political Change in the Long Run



Point estimates from specification (4), Table 5. Control evaluated at their means. 95% confidence interval.

Appendix I: Data Descriptions and Summary Statistics

Data Descriptions

Variable	Measure	Source
growth	constructed as log difference of real GDP per capita (*rgdpch*)	PWT 6.1
Initial GDP per capita	real GDP per capita at beginning of each 5 year period (*rgdpch*)	PWT 6.1
schooling	average years of schooling in the total population 25+ (*tyr*)	Barro and Lee (2000)
trade openness	sum of exports and imports to GDP (*openc*)	PWT 6.1
inflation	constructed as log difference of CPI (*fp.cpi.totl)*	World Development Indicators
investment	Investment share of real GDP (*ki)*	PWT 6.1
black market premium	ratio of black market exchange rate and official exchange rate minus 1	Data underlying Beck, Levine and Loayza (2000) and Beck and Levine (2004). Original source is Pick's Currency Yearbook.
political instability	dummy variable constructed for polity code of -66, -77, or -88	Polity IV Database
CIM	Contract-intensive money: ratio of non-currency component of M2 to total M2.	IFS

Summary Statistics for Cross Sectional Data

Variable	Mean	Standard Dev.	Min	Max
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	3677.05	4381.81	515.83	25380.74
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

Summary Statistics for Panel Data Used in System GMM

Variable	Mean	Standard Dev.	Min	Max
Growth	0.0178	0.0303	-0.1151	0.1576
Initial GDP	6146	6135	321	34372
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
PI1	0.0836	0.2770	0	1
CIM	0.7601	0.1581	0.2113	0.9841