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POLICY BRIEF

19-10 Keeping Up with the Future: Upgrading Forecasts of Political Instability and Geopolitical Risk

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July 2019

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Political stability does not guarantee economic growth, but political instability—civil and interstate wars, violent coups, genocides, state collapse—certainly hinders it. Businesses, governments, and international institutions, therefore, have strong reasons to try to anticipate these events. Firms want to know the risks of investing in volatile areas. Governments need to tailor policy and foreign assistance responses to mitigate human suffering and economic contractions. International institutions, such as the International Monetary Fund (IMF) and the World Bank, have their own capabilities to assess economic outlooks but find it useful to know how the private sector assesses the possibility of shocks to both local economies and the global economy.

Following sudden and surprising state failures in Somalia (1991) and Rwanda (1994), the US intelligence community turned to data-driven forecasting to anticipate rapid-onset political crises. For a time, this community had confidence in the models they used to forecast conditions in the countries and political systems that were most prone to becoming unstable.[1] But around the time of the global financial crisis, the crystal ball developed some major cracks.

In 2010 prominent social scientists associated with the Political Instability Task Force—a US government–funded research consortium dedicated to forecasting political instability—published an unclassified and open source data–based model with impressive predictive power.[2] The model accurately forecast 85 percent of instability onsets across the globe between 1995 and 2004 (Goldstone et al. 2010). It analyzed hundreds of variables, ranging from economic to environmental and demographic factors, focusing on four factors:

- infant mortality,
- whether neighboring countries were experiencing instability,
- whether incumbent governments intentionally discriminated and excluded minority ethnic or religious groups, and
- political-institutional factors, particularly weakly institutionalized democracy.

From this analysis, a coherent picture of an "at risk" country emerged: a developing country with high infant mortality, in a neighborhood rife with ongoing conflict, with weak democratic institutions, and high social polarization. In the immediate aftermath of the Cold War, such regimes were numerous, particularly in Africa, Southeast Asia, and the nonindustrial economies of the former Soviet Union. The human costs of these episodes were stark and the local economic consequences disastrous. The global economic impact, however, was muted, because countries afflicted by instability usually had small shares of global GDP and trade.

Policymakers continue to use this model, which affirms a link between weak states and instability. A 2018 report by the US State Department, US Agency for International Development, and US Department of Defense foregrounds

1. Cameron Evers, "The CIA Has a Team of Clairvoyants," *The Week*, July 14, 2016, https://theweek.com/articles/635515/cia-team-clairvoyants.

2. The Political Instability Task Force was previously known as the State Failure Task Force. Hendrix is an affiliate of the Task Force.

the link between state weakness, political instability, and US national security threats, and pending legislation in the US Congress (the Global Fragility Act of 2019) would require the US government to develop a strategy for preventing conflict in "fragile states" (countries with weak government capacity and populations vulnerable to violence).[3]

In the past decade, however, the model stopped working. A recent reanalysis and extension of the model demonstrates that its predictive power declined precipitously in the past decade (Bolsby et al. 2019). This decline reflects more than just the failure to predict the Arab Spring uprisings of 2011. The model also failed to predict onsets of instability in two countries—Mexico and China—that are central to the US and global economies.

The future is a moving target. Forecasting efforts must adjust if they are to remain relevant.

No forecasting model is perfect, but the precipitous decline in the accuracy of this model signals changes in the nature of political instability—and the geopolitical risk that comes with it. Since the global financial crisis, political instability has shifted from emerging-market countries in the developing world to larger, more globally impactful economies. The world economy has been characterized in recent years by major power interventions that hazard contagion toward broader, system-level instability.

This Policy Brief discusses the economic costs and risks associated with episodes of political instability, an important subset of geopolitical risk. It argues that firms, government agencies, and international institutions must update their forecasting and risk assessment efforts to take global factors into account—by, for example, appreciating the impact of economic contractions in major economies on smaller emerging-market economies. The Policy Brief advocates greater use of "ensemble-based" forecasting approaches, which rely on "wisdom of crowds" logic—the notion that 20 forecasts of varying quality are likely to be more accurate than one sophisticated forecast—to produce more accurate forecasts. Risk analyses should incorporate artificial intelligence and machine learning and be continuously updated and validated to ensure relevance, based on perceptions of which countries are prone to political instability.

The future is a moving target. Forecasting efforts must adjust if they are to remain relevant.

3. Alliance for Peacebuilding, "The Global Fragility Act," https://allianceforpeacebuilding.org/globalfragilityact/.

COSTS OF INSTABILITY

In addition to imposing huge human costs, episodes of political instability often deal massive economic blows, including on neighboring countries (Collier et al. 2003, Gates et al. 2012). The impact is rarely offset even when growth resumes (Cerra and Saxena 2008). The average episode of instability is associated with a nearly 5 percent contraction in real GDP per capita within the first three years (figure 1). Other estimates indicate that violent overthrows of democratic governments—abrupt, adverse regime changes—suppress growth by up to 1.3 percent a year for nearly a decade and that violent conflict suppresses foreign direct investment (Braithwaite, Kucik, and Maves 2014; Meyersson 2016).

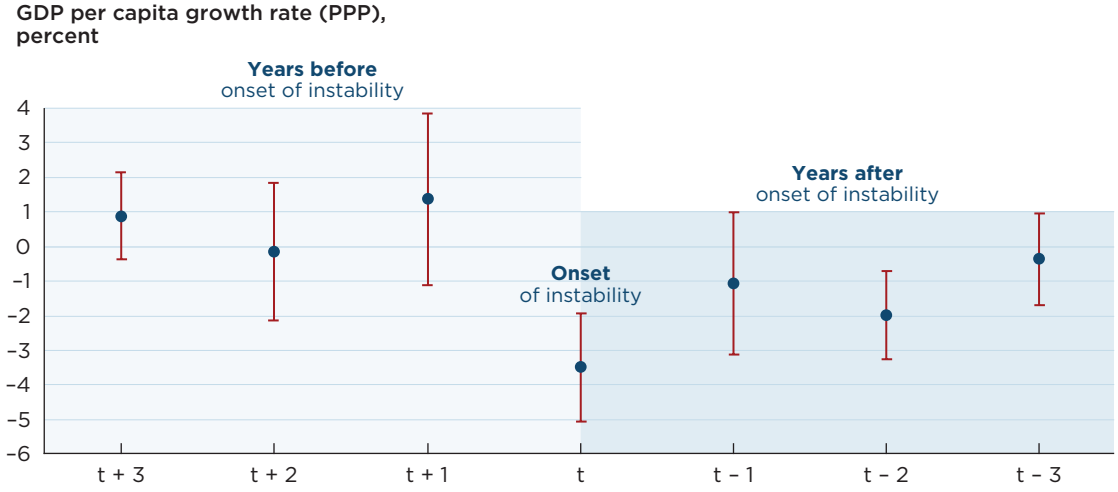
Destruction or flight of human and physical capital is one reason why postconflict countries find it so difficult to restart growth and avoid a recurrence of conflict (Braithwaite, Dasandi, and Hudson 2016). Once a natural disaster subsides, aid and investment tend to flow in. In contrast, in the aftermath of conflict, political uncertainty usually lingers, preventing aid and investment from helping rebuild the lost human and physical capital (Cavallo et al. 2013).

Political instability is rare among fast-growing emerging economies. A report by McKinsey Global Institute (2018) identifies 11 countries that consistently outpaced US growth rates over the last 29 years. Of the 11, only Cambodia (which underwent a coup in 1997) and Ethiopia (which experienced border wars with Eritrea in 1999 and Somalia in 2007) experienced significant episodes of instability, and both episodes were comparatively short-lived or peripheral.

Political changes affect a country's policies on regulation, trade, exchange and interest rates, bond yields, and similar measures. But they typically come with enough warning that affected firms can wind down their investments and operations in a structured manner, as was the case with the Trump administration's reimposition of sanctions on Iran in 2018. In contrast, civil and interstate wars, violent coups, genocides, and state collapse often onset rapidly, with little time for adjustment, and have much more devastating effects. The 2014 annexation of Crimea and the outbreak of armed conflict in eastern Ukraine, for example, imposed large costs, including expropriation of assets, on both multinational and Ukrainian firms in contested areas.

Since the end of the global financial crisis, political risk associated with frictions between and within countries—often referred to as *geopolitical risk*—has reemerged as a key factor driving investment decisions. A 2015 survey by McKinsey found that in just two years, the share of executives identifying geopolitical instability as a very important

Figure 1
Linear regression estimates of effect of political instability on GDP per capita



PPP = purchasing power parity

Note: Onsets are associated with a 3.5 percent contraction the year of onset (*t*), with potentially larger cumulative effects over several years. Episodes of instability are not typically preceded by economic contractions. Error bars are 95 percent confidence intervals for the estimated coefficients. For the regression model on which these estimates are based, see model 1 in table A.1 in appendix A.

factor affecting their businesses doubled.[4] A 2017 Gallup survey found that investors ranked geopolitical risk associated with armed conflicts ahead of political and economic uncertainty as the most significant threat to the investment climate.[5]

Political instability and the attendant geopolitical risk are back on the agendas of major consultancies, investors, and international institutions. Many of these risks are different in nature from the kind of geopolitical risk that predominated during the Cold War, when the major source of friction was between, rather than within, states. Moreover, policy discussions tend to focus on present risks, rather than future risks, which might be more actionable: Assets can be moved, market positions wound down, and government policies can be put in place to address impending crises more proactively. An April 2019 report by JPMorgan calls heightened geopolitical risk "the new normal."[6] The IMF treatment of geopolitical risk in its *World Economic Outlook* focuses on high-visibility events that may perturb stock markets but often do not have lasting effects.[7]

Addressing geopolitical risk requires forecasting conflicts or sources of instability well before they occur. Academics, risk analysts, and portfolio managers have been only partially successful in doing so, because of the changing trends in political instability and issues inherent to forecasting rare events.

BEYOND THE POST–COLD WAR PARADIGM: RECENT TRENDS IN POLITICAL INSTABILITY

After waning in the late 1990s and early 2000s, political instability is now more prevalent than at any time since the end of the Cold War. Largely in response to Somalia's collapse and the Rwandan genocide, the US government began funding the tracking of a "problem set" of major episodes of political instability, including civil wars, abrupt adverse regime changes (coups), and episodes of genocide and politicide. Figure 2 shows the number of these major episodes and the number of smaller-scale civil conflicts since 1990. The end of the Cold War and the concomitant reduction in US and Soviet support for allied regimes in the developing world ushered in a period of significant instability that petered out by the late 1990s.

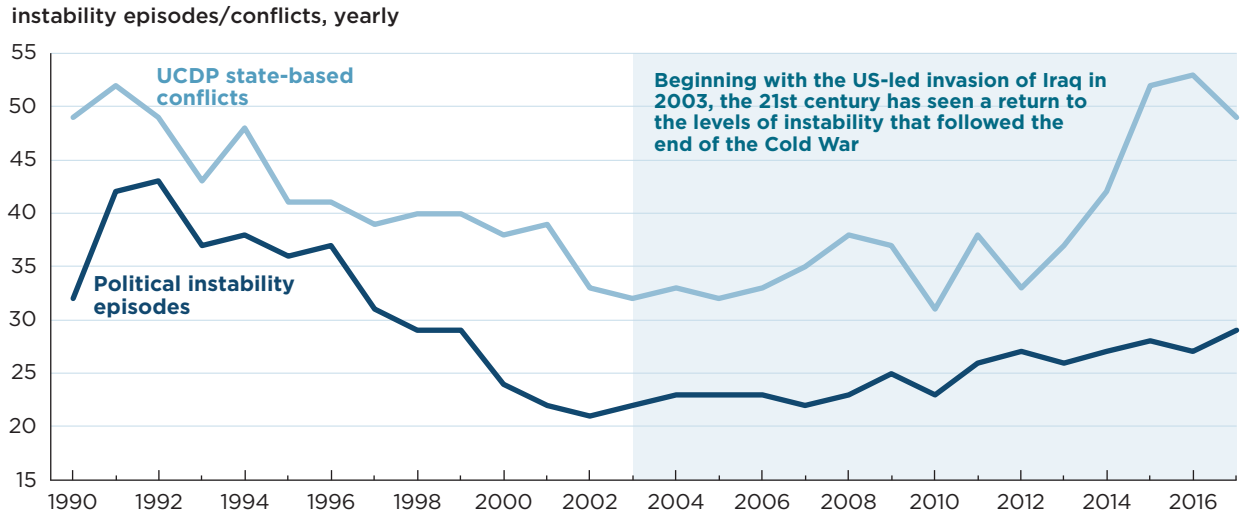
4. McKinsey & Company, "Geostrategic Risks on the Rise," May 2016, www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/geostrategic-risks-on-the-rise.

5. "Wells Fargo/Gallup Survey: Geopolitical Risks Greater Threat to Investments than the Economy, Investors Say," *BusinessWire*, June 13, 2017, www.businesswire.com/news/home/20170613005348/en/.

6. JPMorgan, "Geopolitical Risks on the Rise," April 10, 2019, www.jpmorgan.com/global/research/geopolitical-risk-on-rise.

7. The IMF uses the Geopolitical Risk Index developed by Caldara and Iacoviello (2018), which assesses risk based on monthly news reporting of events like the Paris terror attacks or the San Bernardino shootings in November and December 2015, respectively.

Figure 2
Major episodes of political instability and armed conflicts, 1990–2017



Note: Data are from the Uppsala Conflict Data Project (UCDP) (Pettersson and Eck 2018) and the Center for Systemic Peace (Marshall, Gurr, and Harff 2018).

Beginning with the US-led invasion of Iraq in 2003, the 21st century has seen a return to the levels of instability that followed the end of the Cold War. During this century, important changes have taken place in the nature of these instability events and the contexts in which they are occurring. These changes include three types of moves:

- from the periphery to the core of the world economy,
- from isolated conflicts to conflicts entangling major powers, and
- from a defined "at risk" population to a broader spectrum of countries.

From Periphery to Core

The major episodes of political instability of the 1990s and early 2000s were confined largely to small, developing markets. Between 1992 and 2002, only two episodes—the rebellion in East Timor and separatist conflict in Russia—broke out in large emerging economies.[8] The combined GDP of the 25 countries in which episodes of instability emerged during this period was $2 trillion, with Russia accounting for half of the total.[9] Most episodes of instability occurred in small post-Soviet successor states or the less developed economies of Sub-Saharan Africa and Southeast Asia. These episodes had serious local consequences but minimal ripple effects for the global economy.

Since then, the locus of instability has moved from the periphery closer to the core of the global economy. This process began with the US-led invasion of Iraq in 2003 and accelerated as the global financial crisis took hold in 2007–08. The massive escalation of the drug war in Mexico (2007), the outbreak of separatist conflict in China's Xinjiang Province (2009), and the spread of unrest to oil exporters (Libya and Syria) during the Arab Spring uprisings helped put political instability squarely at the center of the global economy, affecting major US trading partners and suppliers of strategic resources to both the United States and its key allies. Between 2007 and 2017, onsets of episodes of instability occurred in countries with a combined GDP of nearly $8 trillion—four times the figure in the earlier period.

In Mexico the economic impact of violence in 2018 was estimated at $268 billion, about 24 percent of the country's GDP (Institute for Economics and Peace 2019). But the effects have not been limited to Mexico. Mexico's drug war has made US firms wary of investing in Mexico.[10] The Arab

8. At the time, Indonesia was the world's 17th-largest economy in purchasing power parity terms. The next-largest economy to experience an instability onset during the period was Egypt (the Islamic fundamentalist terror campaigns that began in 1992), at the time the world's 48th-largest economy. Setting aside these two economies, the combined GDP of affected countries was $172 billion, or slightly less than the GDP of Ireland in 2000.

9. The separatist wars in Chechnya and Dagestan (onset 1994) were brutal and destructive, but they occurred in regions that accounted for just 1.1 percent of current Russian GDP. Most of the fighting occurred in Chechnya (which contributed just 0.2 percent of GDP) (Russian Federal State Statistics Service 2018).

10. Nacha Cattan, "Is Violence in Mexico Affecting Foreign Investment? No, Say Recent Reports," *Christian Science Monitor*, August 8, 2011, www.csmonitor.com/World/Americas/Latin-America-Monitor/2011/0808/Is-violence-in-Mexico-affecting-foreign-investment-No-say-recent-reports;

Spring uprisings helped fuel a massive spike in global energy markets. The lasting legacies of these conflicts—including rising Saudi-Iranian tensions over Iran's involvement in Syria and Yemen—continue to destabilize global markets.

Global trade integration means that the effects of political instability on trade and global supply chains are greater than they once were. Trade disruption is now not just a problem solved by diversifying suppliers but rather a pervasive threat to firms' standard operating procedures. Political instability reduces logistics performance, which is vital to ensuring efficient supply chains (Arvis et al. 2014. Wong and Tang 2018).

From Isolated Conflicts to Major Power Interventions

Many of the episodes of instability of the post–Cold War era were marked by limited, one-sided external engagement from major powers. Between 1992 and 2002, only three instability onsets—in Bosnia and Herzegovina in 1992, Kosovo in 1998, and Indonesia in 1997—provoked major or regional power interventions.

In contrast, more recent episodes of instability have resulted in much more extensive and potentially volatile major power entanglements, partly as a result of declining US hegemony relative to a reascendant Russia. Nowhere is this clearer than in Syria, where the conflict has drawn in France, Russia, the United Kingdom, and the United States, as well as Iran, Saudi Arabia, and Turkey. Similar dynamics are evident in Yemen, albeit on a smaller scale, and Russia dispatched roughly 100 troops and materiel to Venezuela in 2019 amidst that country's ongoing political crisis.

From "At Risk" Countries to a Broader Spectrum of Countries

The episodes of instability of the 1990s and early 2000s were largely confined to countries that fit the profile of the Goldstone et al. model: developing countries with high infant mortality, in bad neighborhoods, with weak democratic institutions and high social polarization.

In contrast, recent episodes of instability have broken out in longstanding autocracies (Egypt, Libya, and Syria), a democracy and member of the Organization for Economic Cooperation and Development (Mexico), and an industrial former Soviet republic (Ukraine). Many countries that were presumed to have been inoculated against political instability have seen it come to pass. The "at risk" population has expanded considerably, to include countries once considered stable, such as China. This change is reflected in the 2019 Fragile States Index, which notes that fragility now touches some of the world's richest countries, including Qatar and Spain (Fund for Peace 2018). No model or suite of models has emerged to explain these recent outbreaks.

WHY IS FORECASTING POLITICAL INSTABILITY SO DIFFICULT?

Forecasting political instability is challenging for three main reasons. First, geopolitical instability is still comparatively rare: Between 1956 and 2015, instability onsets occurred in just 1.6 percent of country-years (Bolsby et al. 2019). Forecasting rare events is very different from forecasting outcomes like bond yields or inflation rates, which are affected by factors that have been well understood for decades. In these forecasts, recent past values are useful in predicting future values. In contrast, political episodes of instability represent sharp breaks from the recent past. Forecasting these episodes is akin to forecasting financial crises, which are notoriously difficult to predict.

Second, forecasters, or at least the organizations that fund them, are attempting to forestall—or at least respond proactively to—the outcomes they are trying to forecast. For example, the Political Instability Task Force is funded by the Central Intelligence Agency, an organization tasked with anticipating and responding to potential threats to US national security. Because many of the actions designed to do so are covert, they are hard to observe and thus virtually impossible to integrate systematically into forecasting efforts. Similarly, portfolio managers make decisions about investments, capital flows, and foreign exchange holdings that have the potential to radically increase the risk to which they are ostensibly responding. Investor responses to the 1997 Asian financial crisis, particularly capital flight and withdrawal of credit, helped catalyze the instability events in Cambodia and Indonesia that year.

Third, like generals preparing to fight the last war, forecasters are often prisoners of the recent past. The Goldstone et al. model did a good job of forecasting the type of political instability events that were common in the decade after the end of the Cold War. There are obvious reasons why forecasters would be more interested in calibrating on the recent, rather than distant, past: Investors are interested in what markets are doing *now* and in the near future, and recency bias is a pervasive feature of human psychology. A forecaster in 2019 calibrating a model on data from the 1970s might be laughed out of the room. But there is little reason—at least on the basis of prevailing evidence—that such a model would be inherently less useful than one calibrated on more recent data. If the current geopolitical landscape is one marked

Associated Press, "Cartel Violence Deterring U.S. Businesses from Opening in Mexico," May 16, 2011, www.foxnews.com/world/cartel-violence-deterring-u-s-businesses-from-opening-in-mexico.

by a return to Cold War-esque major power competition between the United States and China, then the brief post-Cold War period of US hegemony may not be a useful guide for thinking about the future.

WHAT CAN BE DONE TO IMPROVE FORECASTING?

The nature and magnitude of geopolitical risk is changing more rapidly than the ability to anticipate it, with increasingly severe consequences for firms, fund managers, governments, and international institutions. What can be done to improve the forecasting of instability?

First, forecasters need to be mindful of the broader global context. Most efforts at assessing geopolitical risk look at particular countries or economies in isolation or look only at nearby effects, such as an armed conflict in a neighboring country. Much less attention has been paid to global factors.

Changes in the international system—the end of the Cold War, the US-led invasion of Iraq and the instability it ushered in across the Middle East, and the global financial crisis—have altered the dynamics of geopolitical risk. As US-China competition heats up and Russia reemerges as a major power, these dynamics are once again being altered. As a practical matter, this suggests forecasters reemphasize system-level factors in their forecasts. For example, the reason so many poor, weakly institutionalized regimes fell in the early 1990s was because the United States, the Soviet Union, and their respective allies got out of the business of propping up friendly but weak regimes. At a more conceptual level, it suggests governments and investors should be wary of monomaniacally tracking events in particular countries, lest they miss the forest for the trees.

Second, forecasters need to take an ensemble-based approach to modeling geopolitical risk. Rather than seeking a single model capable of accurately forecasting geopolitical risk, it may be more fruitful to develop multiple models, each reflective of different perspectives on what might drive political instability, and then use "wisdom of the crowds" logic to combine insights across models (or to compare model results against results generated by analysts using more case-based methodologies). Ensemble-based approaches have been used to forecast certain types of political instability, especially irregular regime changes and coups (Beger, Dorff, and Ward 2014; Ward and Beger 2017). A corollary is that policymakers and portfolio managers should be wary of any single model-based approach to forecasting rare, idiosyncratic events.

Third, forecasters should leverage artificial intelligence and machine learning—but recognize the potential downsides of doing so. Machine learning techniques—often referred to in business circles as *predictive analytics*—leverage massive increases in computing power and data to build complex mathematical models that can, under certain circumstances, generate highly accurate forecasts of complex, rare phenomena, including political instability (Schrodt, Yonamine, and Bagozzi 2013; Guo, Gleditsch, and Wilson 2018). However, there are potential pitfalls to using artificial intelligence and machine learning. Accurate forecasts are useful, but policymakers and risk analysts generally want to know "why"? Machine learning techniques may be highly predictive, but like ensemble-based techniques, their results can be hard to interpret and use to help identify useful policy levers (Hegre et al. 2017; Ward and Beger 2017). Machine learning techniques can yield highly accurate forecasts within a sample; they can perform less well out of sample because of overfitting, or making an overly complex model to fit idiosyncrasies and randomness in the data, treating random noise as meaningful and predictive. This problem is especially vexing when the number of positive cases from which to "learn"—like political instability—are few (Japkowicz and Stephen 2002).

Fourth, forecasters need to constantly update—or at least validate—their approaches. There is little glory for academics in constantly updating and revalidating published models, but there is ample reward for policymakers and portfolio managers in doing so. Even if the exercise simply makes clear that an approach has stopped working and no replacement has emerged, it will at least tell risk managers what they don't know and possibly spur them to begin looking for clues to how the drivers of geopolitical risk have changed.

These recommendations apply to the forecasting of political instability—not its effects on the global or national economies. Integrating geopolitical instability into macroeconomic forecasting models is difficult. Models are generally well-equipped to address policy changes like tariffs, which alter relative prices. They are not helpful for forecasting the effects of events like Brexit or President Trump's radical changes to US trade policy, because episodes of instability have broad effects that operate through various channels (deterred investment, declining labor force participation and productivity, capital flight, destruction of physical and human capital) that are extraordinarily difficult to foresee but potentially extremely consequential.

After decades on the periphery of the global economy, political instability and geopolitical risk have returned to the center. Responding to this changing risk profile creates a host of challenges for policymakers and firms. Acknowledging this changing risk profile—and developing better tools to predict major episodes of instability—will allow both policymakers and firms to plan with greater confidence.

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APPENDIX A
REGRESSION ESTIMATES

Table A.1 reports the regression results used to estimate the values reported in figure 1 (the combined onset model). The data are from Bolsby et al. (2019), available at the Harvard Dataverse.[11] Data on instability onsets are from the Center for Systemic Peace (Marshall, Gurr, and Harff 2018). The outcome of interest is growth of GDP per capita (in purchasing power parity). Models 1 and 3 are estimated using ordinary least squares regression with robust standard errors clustered on countries. Models 2 and 4 are estimated using the Arellano-Bond dynamic panel estimator. Year and country fixed effects are not shown. Temporal leads of onset are included to demonstrate that instability onsets are associated with growth contractions but not systematically preceded by them.

Table A.1
Regression results

Variable	(1) Ordinary least squares with fixed effects	(2) Arellano-Bond estimator	(3) Ordinary least squares with fixed effects	(4) Arellano-Bond estimator
$Onset_{t+3}$			0.009 (0.006)	0.011* (0.007)
$Onset_{t+2}$			−0.001 (0.010)	0.004 (0.010)
$Onset_{t+1}$			0.014 (0.013)	0.023* (0.013)
$Onset_{t}$	−0.035*** (0.008)	−0.036*** (0.009)		
$Onset_{t-1}$	−0.011 (0.010)	−0.015 (0.010)		
$Onset_{t-2}$	−0.020*** (0.006)	−0.020*** (0.006)		
$Onset_{t-3}$	−0.004 (0.007)	−0.002 (0.007)		
GDP per capita growth$_{t-1}$	0.195*** (0.036)	0.134*** (0.038)	0.204*** (0.035)	0.140*** (0.037)
GDP per capita$_{t-1}$	−0.037*** (0.011)	−0.069*** (0.015)	−0.040*** (0.012)	−0.073*** (0.017)
Population$_{t-1}$	−0.023 (0.015)	−0.041** (0.018)	−0.029 (0.018)	−0.048** (0.021)
Constant	0.368*** (0.105)	0.914*** (0.231)	0.396*** (0.123)	0.989*** (0.265)
Observations	8,395	8,395	7,931	7,931
R-squared	0.099		0.102	

Note: Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

11. Available at https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/XMGVO2.