



A clear advantage: The benefits of transparency to crisis recovery

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ABSTRACT

Increasing transparency is one of the first and most common recommendations from international financial institutions to policymakers in countries that experience economic crises. Despite the widespread prescription of this elixir, disagreements persist about its efficacy during crises. Much of the existing literature suggests that increasing transparency decreases information asymmetries, increases policy predictability and the credibility of policy commitments, improves the effectiveness of monetary policy, and bolsters public confidence. Each of these effects could plausibly shorten the duration of economic crises. Critics counter, however, that effects of transparency are ambiguous and may increase policy uncertainty, raise volatility, increase the prospect of collectively self-destructive behaviors, and decrease the effectiveness of monetary policy – effects that could prolong crises. These debates persist in part because related empirical research tends to focus primarily on the transparency of central banks and its impact on market expectations regarding short-term interest rates without considering the transparency of national governments and how the availability of credible data about the national economy from sources other than the central bank affects public and market expectations. We argue that greater transparency of national governments – often inferred from, yet independent of, the transparency of central banks – will decrease the duration of inflation and currency crises by providing information about existing economic conditions, increasing the predictability and credibility of national economic policy, and increasing confidence in the efficacy of policy choices by demonstrating the degree to which the policy positions of national politicians and central bankers align. We operationalize government transparency in terms of the government dissemination of credible macroeconomic information using the Hollyer, Rosendorff, and Vreeland (HRV) index. Our analyses of 125 countries from 1980 through 2010 indicate that higher levels of government transparency are strongly correlated with shorter durations of inflation and currency crises and that the level of transparency is negatively correlated with the severity or size of inflation crises.

1. Introduction

Increasing transparency is one of the first and most common recommendations from international financial institutions to economic policymakers in countries experiencing an economic crisis. Despite the widespread prescription of this elixir, disagreements persist about its efficacy during crises. Much of the existing literature suggests that transparency can shape expectations and behavior by decreasing information asymmetries, increasing policy predictability and the credibility of policy commitments, improving the effectiveness of monetary intervention, and bolstering public confidence about future economic conditions. Each of these effects could

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plausibly shorten the duration of economic crises; however, most of the existing research on economic crises focuses on causes of crises or policies that are implemented after a crisis has ended, while little research empirically tests the relationship between transparency and crises duration.¹ On the other hand, critics emphasize that the efficacy of transparency is conditional on the predictability of economic conditions and policy actions, and that evidence of current shocks and predictions of future shocks can raise volatility and increase the prospect of collectively self-destructive behaviors. These effects make managing expectations more challenging and could prolong crises. Empirical tests of these competing arguments remain scarce as the bulk of research on crises focuses on their causes or policies implemented after they have ended rather than how long they last.

These debates also persist in part because much of the empirical research on the efficacy of transparency focuses narrowly on the transparency of central banks and its impact on interest rate expectations rather than considering transparency and its consequences more broadly. One of the principal mechanisms linking central bank transparency and market expectations involves the provision of information by the central bank about economic conditions, the likelihood of future shocks, and the policy responses of central banks to both (Blinder et al., 2001; Eijffinger and Tesfaselassie, 2007; Romer and Romer, 2000). We argue that the availability of credible data about the national economy varies as a function of national politics *in addition to* the inclinations and statutory obligations of central bankers. The dissemination of these data reduces the “uniqueness” of central bank information about economic conditions.

Furthermore, even if central banks are transparent and behave as expected, national politicians can alter economic policy in ways that could prolong crises. For example, they can alter fiscal policy (Gunzinger and Sturm, 2014; Bergman et al., 2016; Merola and Pérez, 2013),² intervene to aid failing firms and sectors in ways that may distort the economy (Grossman and Woll, 2013), contest central bank authority and challenge central bank independence (Bastasin, 2015; Eijffinger and Hoeberichts, 2008; Shambaugh, 2018), or engage in various forms of corruption (Hessami, 2014). Pressure on politicians to engage in these types of activities is likely to be high during economic downturns and crises, making political decisions less predictable and promises less credible. However, given that transparency is positively correlated with policy accountability and predictability for central bankers (De Haan, Eijffinger, and Rybinski, 2007; Lambert, 2004; Reeves and Sawicki, 2007; Muscatelli et al., 2012), it is plausible that government transparency has similar beneficial effects for national politicians. In addition, government transparency has the added benefit of bolstering market confidence by demonstrating the degree to which economic policy decisions by national politicians align with those of their central banks.

We, therefore, posit that the transparency of national governments – often inferred from, yet distinct from, the transparency of central banks – will have a direct effect on the duration of crises due to the availability and dissemination of information about the economy and the impact that the dissemination of this information has on predictability, credibility, and level of confidence in the efficacy of economic policy decisions. This relationship is expected to be strongest in currency and inflation crises, which are highly sensitive to public expectations regarding economic conditions and the behavior of national politicians, and weakest in banking and debt crises, given their more idiosyncratic and systemic nature (Cecchetti et al., 2009).

We demonstrate the theory stated above using the Hollyer, Rosendorff, and Vreeland (HRV) index to measure government dissemination of credible macroeconomic information and test the relationship between government transparency and the duration of inflation and currency crises (Hollyer et al., 2014). In addition to providing an objective indication of government transparency, the HRV index has the advantage of providing larger amounts of country-year data observations during recent economic crises than most existing measures of central bank transparency. Our analyses of 125 countries from 1980 through 2010 indicate that higher levels of government transparency are positively correlated with shorter durations of inflation and currency crises, and that higher levels of transparency are negatively correlated with the severity of inflation crises. As expected, our results suggest no conclusive relationship between transparency and banking and debt crises, which leaves open a possible area for further analysis.³

It is plausible that countries with high degrees of government transparency may be more likely than others to have highly transparent central banks. To differentiate these effects, we analyze the impact of government transparency while controlling for central bank transparency using the Dincer and Eichengreen (2014) central bank transparency index and an artificial central bank transparency variable that backfills the Dincer and Eichengreen data from 1980 to 1997 with the 1998 central bank transparency level. While suggestive, these analyses are constrained by significant data limitations. Our findings suggest that expanding the date ranges for the HRV and Dincer and Eichengreen indices so that the two can be analyzed more thoroughly side by side would be a fruitful avenue for future research.

Our paper proceeds as follows: in section 2, we situate our argument in the context of an ongoing debate about the benefits and potential harms of transparency. In sections 3 and 4, we define our variables and explain our methodology. In sections 5 and 6, we present our findings for inflation and currency crises, respectively. In section 7, we perform a brief analysis of the relationship between transparency and crisis severity, hinting at another fruitful area for further research. In section 8, we conclude by presenting the implications of our study. Finally, the results including the non-backfilled Dincer and Eichengreen (2014) index as a control are presented in section 9 (Appendix A) and results for banking and debt crises using the full set of macroeconomic controls are presented in section 10 (Appendix B).

¹ A notable exception includes Cecchetti et al. (2009). For additional literature on historical crisis trends please see Reinhart and Rogoff (2008, 2009; 2011; 2014), Laeven and Valencia (2010, 2012), Hong and Tornell (2005), and Wilms et al. (2018).

² Fiscal policy is, of course, an input to economic forecasts and as a result central bankers also often communicate intensively on it (Allard et al., 2013). However, fiscal policy uncertainty is likely to be higher during economic crises, when national politicians could face increased pressures to stimulate the local economy or to exercise austerity to constrain excessive expenditure.

³ Preliminary results for our analysis of the relationship between transparency and the duration of banking and debt crises are included in section 10 (Appendix B).

2. The uncertain efficacy of transparency

Does government transparency affect the amount of time it takes a country to recover from an economic crisis? Much of the existing literature suggests that increases in transparency may decrease information asymmetries, increase policy predictability, and improve the credibility of policy commitments, all of which can shorten the duration of an economic crisis. Critics, however, suggest that the effects of greater transparency are more ambiguous and that transparency can raise uncertainty, increase volatility, and encourage behavior that undermines the efficacy of monetary policy. Thus, transparency may increase the duration of crises. This debate remains unresolved in part because there is little empirical research on the impact of transparency during crises, i.e., periods during which economic and political uncertainties are high and credible signals regarding fiscal and monetary policy are particularly salient to investors. Additionally, most of the existing research focuses narrowly on central bank transparency and communication to financial markets without considering the implications of government transparency or the transparency of national economic policy, which are inherently different from and arguably as important as central bank transparency for shaping macroeconomic expectations (Blinder et al., 2008; Blinder, 2007).

One of the principal mechanisms linking transparency and market expectations is the provision of credible information about the nature of the economy (Geraats, 2002; Berardi and Duffy, 2007; James and Lawler, 2010). Indeed, Mervin King, former governor of the Bank of England, argued that if a central bank's policy guidelines are known and its commitments are credible, then news from the central bank should only be about economic developments since information about central bank policy would be boringly predictable (King, 2000; Reeves and Sawicki, 2007). Much of this literature is based on the presumption that the private sector treats central bankers as if they possess superior information about the state of the economy and the likelihood of future shocks (Eijffinger and Tesfaselassie, 2007; Romer and Romer, 2000). Consequently, communication and policy responses by central bankers about the present and future states of the economy are considered to be “one of the most direct and effective tools to influence expectations” (Blinder et al., 2008; De Haan, Eijffinger, and Rybinski, 2007; Kahveci and Odabas, 2016).

Additionally, the provision of economic information serves a variety of positive functions, including decreasing inefficiencies due to asymmetrical information (Geraats, 2014) and increasing the credibility, accountability, and predictability of policymaking by facilitating public monitoring of economic policies (Geraats, 2005; Eijffinger and Hoeberichts, 2002; Sturm and de Haan, 2011; Lyziak et al., 2007). Transparency also has the beneficial impact of improving market signaling and efficiency (Hanson, 2003; Walsh, 2007; Geraats, 2013). This can reduce the inflation bias (Geraats, 2001, 2005; Neuenkirch, 2012) and decrease future average levels of inflation (Geraats, 2009). Transparency may also reduce the risk and impact of future crises by improving monetary policy effectiveness (Islam, 2006; Seyoum and Manyak, 2009; Drabek and Payne, 2002).

While much of the existing literature is in agreement with the idea that central bank transparency has the benefit of aligning the inflation and interest rate expectations of investors with those of the central banks (Chortareas et al., 2003; Geraats, 2001, 2014; Walsh, 2010; Neuenkirch, 2013; Van Der Cruysen and Demertzis, 2007), we believe that this argument is incomplete without considering the role that national governments might play. Government actions shape the political, institutional, and informational environments in which central banks operate. National politicians can alter the amount of privileged information central banks possess and how that information is transmitted to the public. They can also alter the scope and domain of central bank authority and the degree of its independence, appoint central bankers with different proclivities and affect the rate of central banker turnover, and engage in fiscal policy and targeted economic interventions that could undercut the efficacy of monetary policy (Eijffinger and Hoeberichts, 2008; Dreher et al., 2008a; Gunzinger and Sturm, 2014; Bastasin, 2015; Grossman and Woll, 2013; Shambaugh, 2018). Thus, governments play an essential role in bridging (or for less transparent countries, widening) the gap between central bank signals and the expectations of the general public. As the recent experiences of Argentina and Greece demonstrate, national politicians may ignore the guidance of their central bankers and even provide inaccurate national statistics in order to hide the severity of inflation and currency risks. As their behavior suggests, the presence of independent and highly communicative central banks in Argentina and Europe is not always sufficient to “tie the hands” of politicians sufficiently to forestall excessive fiscal expenditure or the misreporting of economic data (Shambaugh, 2018). To the extent that government transparency has comparable benefits regarding the accountability, predictability, and credibility of national politicians and national economic policy as central bank transparency does for central banks, then increased government transparency should help to align politicians and central bankers, bolster public confidence, and shorten the duration of crises.

Critics of central bank transparency, however, argue that effects of economic transparency are ambiguous (James and Lawler, 2010) or are conditioned on the communication styles or the structure of monetary committees (Rozkrut et al., 2007). Transparency may expose potential weaknesses in an economy, bring vulnerabilities to light, and lead to collectively suboptimal behavior. The impact of communication may also be heightened if it involves unanticipated changes in monetary policy (Demiralp et al., 2012). In parallel, if central banker objectives and strategies are known, then the disclosure of current (Jensen, 2002) and future (Eijffinger and Tesfaselassie, 2007) economic shocks can be destabilizing. Cukierman (2002) and Gersbach (2003) show that inflationary expectations become more volatile if the public has better information about economic disturbances. Similarly, Kohn and Sack (2003) show that testimony by Chairman Greenspan affected interest rate expectations. Lamla and Sturm (2013) find that central bank communication, as transmitted by the press, plays a role in setting public interest rate expectations. Reeves and Sawicki (2007) demonstrate that the release of minutes from Bank of England's Monetary Policy Committee meetings increases the variation of short-term sterling futures contracts. Furthermore, transparency may actually exacerbate economic weaknesses during economic crises by undermining the policy predictability of societally responsive politicians. This may create incentives for central bankers to decrease political and private sector accountability, so they can prioritize inflation stabilization over growth and other politically sensitive economic concerns (Jensen, 2002; Tong, 2007; Kool et al., 2011; Vikers, 1998). Ironically, under these conditions private investors may also begin to disregard their own economic

estimates and rely disproportionately on central bank inflation estimates (Morris and Shin, 2002; Tong, 2007; Kool et al., 2011).⁴

The level of transparency may also affect behavior. Geraats (2002) argues that high levels of central bank transparency may not always be optimal. Van Der Crujisen, Eijffinger, and Hoogduin (2010) find that “too much” transparency (or releasing too much economic information) may cause confusion and lead to lower-quality private sector inflation forecasts. In fact, both Cukierman (2009) and Neuenkirch (2013) find that an *intermediate* level of transparency has the most beneficial impact on money market expectations. This highlights the importance of using indices that can measure the degree of transparency rather than treating it dichotomously.

In sum, the literature on central bank transparency provides conflicting propositions about the likely impact of transparency on the duration of economic crises. Unfortunately, most of the empirical research on crisis recovery focuses on growth and stabilization policies that are implemented after a crisis has ended (Takatoshi and Kiyotaka, 2007; Lau and McInish, 2003; Hong and Tornell, 2005; Claessens et al., 2011) rather than focusing on political conditions during a crisis. In particular, despite calls for transparency after the fact, little research has empirically tested the relationship between transparency and *crisis duration*.⁵ Widely used indicators of transparency are also generally limited to a subset of countries or banks over short time periods. Many also rely on subjective surveys rather than objective data. For example, the widely used Fry et al. (2000) indicator analyzes 94 central banks using survey data from 1998. The Eijffinger and Geraats (2006) central bank transparency index includes more years (1998–2002), but only provides data on nine major central banks. The Dincer and Eichengreen index (2014) applies the Eijffinger and Geraats (2006) criteria to over 100 central banks and covers 1998 to 2010. This is one of the most comprehensive central bank transparency indices available, yet it only covers a small number of economic crises. In addition, none of the measures considers government transparency directly; thus, they do not provide as sharp a focus as possible on issues of political uncertainty, the credibility of policy commitments, or the likely efficacy of political decisions.

This study aims to fill this gap in the existing literature by empirically testing the relationship between government transparency and economic crisis recovery.⁶ We argue that greater government transparency, as measured by the HRV index, will decrease the duration of an inflation or currency crisis by providing information about existing economic conditions, increasing the predictability and credibility of economic policy commitments by signaling that the government has nothing to hide from the public, and increasing confidence by demonstrating the degree to which politicians are in synch with their central bankers.

We focus on the effect of government transparency on inflation and currency crises.⁷ We expect that government transparency will have the greatest impact on inflation and currency crises because these types of crises are highly sensitive to public perception regarding macroeconomic conditions and the behavior of national politicians. Inflation levels and the value of a country's currency are both heavily influenced by expectations regarding fiscal and monetary policy, the predictability and credibility of policy commitments by national leaders, and public confidence in future levels of inflation or in the real value and sustainability of a country's exchange rate. Of the two, we expect the impact of transparency to be strongest in inflation crises given how heavily inflation levels are influenced by public confidence and inflation expectations – so much so that inflation crises often become self-fulfilling prophecies.

3. Data

3.1. Independent variable – government transparency

We operationalize government transparency using the Hollyer, Rosendorff, and Vreeland (HRV) index to measure government dissemination of macroeconomic information (Hollyer et al., 2014). The HRV index is a continuous variable scaled from –10 to 10, with –10 being least transparent and 10 being most transparent. Using a Bayesian item response model, the index predicts the provision or omission of any of 240 World Development Indicators (WDI) when data are reported to the World Bank. The WDI indicators include a wealth of data on monetary and fiscal policy, economic growth, inflation, trade, and investment. These indicators are selected from a wider set of 1265 WDI variables gathered by the World Bank. The HRV index contains 3875 observations for 125 countries from 1980 to 2010.⁸ Summary statistics for the HRV index are included in Table 1A in Appendix A.

The HRV index provides a simple and intuitive way to understand transparency as “how open a country is about its economic condition” (Hollyer et al., 2014). Most of the data used to construct the HRV index are verifiable macroeconomic indicators. For example, the HRV index considers whether or not countries report information to the WDI on current interest rates, capital accounts, unemployment statistics, inflation, credit, capital, the country's foreign and domestic assets, import and export statistics, and various measures of GDP (nominal, per capita, etc.). Greater transparency on this macroeconomic data increases the predictability of fiscal and monetary policies, making each more effective. We expect this to be especially true for macroeconomic factors heavily influenced by expectations, i.e., inflation rates, interest rates, and exchange rates.

We believe the HRV index is a valid measure of our concept of transparency because it measures disclosure of economic data that are

⁴ Note that the assumptions of the Morris and Shin (2002) argument have been criticized by Svensson (2006) and Woodford (2005). For an overview of the discussion surrounding the Morris and Shin (2002) argument, please see Blinder et al. (2008).

⁵ A notable exception includes Cecchetti et al. (2009). For literature on historical crisis trends see Reinhart and Rogoff (2008, 2009; 2011; 2014); Laeven and Valencia (2010, 2012); and Hong and Tornell (2005).

⁶ Van Der Crowe and Meade (2008); Demertzis and Hallett (2007); Chortareas et al. (2003); and Neuenkirch (2013) use data to test the general economic impact of central bank transparency. However, the data used in these studies are rather limited and none of these studies focuses on the effect of transparency during an economic crisis.

⁷ Preliminary results for our analysis of the relationship between transparency and banking and debt crises are included in section 10 (Appendix B).

⁸ The HRV index is limited to countries that existed in a constant form (i.e., did not divide or unify) from 1980 to 2010.

relevant to the causal mechanisms generally believed to link transparency and crisis duration. Since inflation and currency levels are heavily influenced by fiscal as well as monetary expectations, we would expect an increase in government transparency to increase public confidence in the government's willingness and ability to fight crises. While central bank independence and transparency are often used as a proxy for government commitment to fight inflation, the HRV index captures indicators out of the scope of a central bank's purview, including economic information pertaining to trade policy, education policy, manufacturing policy, and other data related to economic policy.

In addition, the HRV index provides a more precise and responsive indicator of transparency than traditional legal and subjective measures of central bank and government transparency. Common measures such as Transparency International's Corruption Perceptions index rely on ordinal rankings devised by experts. Similarly, early versions of central bank transparency measures, such as the Fry et al. (2000) data set, rely on survey responses from central bankers. As a result, these measures rely on the subjectivity of the very staff that they are evaluating. In contrast, the HRV index operationalizes transparency using objective assessments to determine whether economic data are reported to the World Bank, whether the data meet the World Bank's reliability standards, and whether any data are excluded (Hollyer et al., 2014). This further adds to the objective, reliable nature of the HRV index.

Finally, the HRV index includes a wider range of country-year observations without gaps in coverage than other transparency indices. Other widely used indicators of central bank transparency, including the indices created by Fry et al. (2000), Eijffinger and Geraats (2006), and Crowe and Meade (2008), only include information from 94 central banks in 1998, 9 major central banks from 1998 to 2002, and 37 central banks from 1998 to 2006, respectively. Similarly, the Transparency International Corruption Perceptions index is also limited to 1995–2016. The HRV index includes data for 125 countries from 1980 to 2010, thus expanding the domain and timeframe of analysis.

3.2. Dependent variable – crisis duration

We operationalize the existence of an inflation crisis using the Reinhart and Rogoff (2011) definition of “any year when the annual inflation rate is 20% or higher”. Crisis duration is defined as the number of consecutive years that a country experiences an inflation crisis. We operationalize a currency crisis using their definition of “any year where the local currency experiences an annual depreciation rate of 15% or more versus the U.S. dollar (or relevant anchor currency – historically the UK pound, the French franc, the German DM, and presently the euro)” (Reinhart and Rogoff, 2011). Crisis duration is defined as the number of consecutive years a country experiences a currency crisis. The Reinhart and Rogoff (2011) data set contains 67 observations of inflation crises and 184 observations of currency crises that began and ended between 1980 and 2010.⁹

As a robustness check, we rerun our analyses using a variable generated from the Laeven and Valencia (2012) data set. Using Frankel and Rose (1996) definition of a currency crisis, Laeven and Valencia (2012) define the starting year of a currency crisis as the year a country's currency experiences a nominal depreciation against the U.S. dollar of at least 30% if the depreciation rate is also at least 10 percentage points higher than the rate of depreciation in the prior year. We adopt this protocol, use the same start dates, and define the ending year of the crisis as the year when GDP (in constant USD) returns to the GDP level at the starting year of the crisis, truncated at 20 years.¹⁰ Crises in which GDP has not returned to pre-crisis level by 2010 are omitted. This method generates 145 currency crisis observations and is hereafter referred to as Currency Crisis (LV).

Similarly, we use a number of methods to operationalize banking and debt crises. Using the Reinhart and Rogoff (2011) definition of systemic banking crises, a crisis is deemed to have occurred if a country experiences (1) bank runs that lead to the closure, merging, or takeover by the public sector of one or more financial institutions or (2) (if there are no runs) the closure, merging, takeover, or large-scale government assistance of an important financial institution (or group of institutions) that marks the start of a string of similar outcomes for other financial institutions. Systemic banking crisis duration is defined as the number of consecutive years that this occurs in a country. We also use the Laeven and Valencia (2012) data set to generate a second systemic banking crisis variable. The crisis start date is when the country experiences (1) significant signs of financial distress in the banking system (as indicated by significant bank runs, losses in the banking system, and bank liquidations) and (2) significant banking policy intervention measures in response to significant losses in the banking system. We define the systemic banking crisis ending year as the year when GDP (in constant USD) returns to the GDP level at the starting year of the crisis. Crises in which GDP has not returned to pre-crisis level by 2010 are omitted. This method generates 99 systemic banking crisis observations and is hereafter referred to as Systemic Banking Crisis (LV).

Finally, we include three measures of debt crisis duration. The first, using the Laeven and Valencia (2012) definition, defines the starting year of a sovereign debt crisis as the year when a country defaults on debt payments. The ending year of the crisis is the year when GDP (constant 2005 USD) returns to the level of the starting year of the crisis. The second and third measures are based on the Reinhart and Rogoff (2011) definitions of external and domestic debt crises. External debt crisis duration is defined as the number of consecutive years when the government fails to meet a principal or interest payment on the due date (or within the specified grace period), including instances when rescheduled debt is ultimately extinguished in terms less favorable than the original obligation. Domestic debt crisis duration is defined as the number of consecutive years when both an external debt crisis occurs and bank deposits are frozen and/or forced conversions of deposits from dollars to local currency occur. All dependent variables used in this paper are summarized in Table 1.

⁹ Crises that were already occurring in 1980 or that were still occurring in 2010 are omitted because the data do not indicate whether the crisis began before 1980 or ended after 2010.

¹⁰ Measuring crisis duration using GDP and GDP per capita largely yields the same results.

Table 1
Dependent variable summary table.

| Type of Crisis | Data Set | Definition or Criteria |
|------------------------------|----------------------------|---|
| <i>Inflation Crisis</i> | | |
| Inflation Crisis (RR) | Reinhart and Rogoff (2011) | Any year when the annual inflation rate is 20% or higher. Crisis duration is defined as the number of consecutive years a country experiences an inflation crisis. |
| <i>Currency Crisis</i> | | |
| Currency Crisis (RR) | Reinhart and Rogoff (2011) | Any year where the local currency experiences an annual depreciation rate of 15% or more versus the U.S. dollar (or relevant anchor currency – historically the UK pound, the French franc, the German DM, and presently the euro). Crisis duration is defined as the number of consecutive years a country experiences a currency crisis. |
| Currency Crisis (LV) | Laeven and Valencia (2012) | Start Date: Laeven and Valencia use Frankel and Rose (1996)'s approach – a nominal depreciation of the currency against the U.S. dollar of at least 30% that is also at least 10 percentage points higher than the rate of depreciation in the year before. End Date: Year when GDP (constant 2005 USD) returns to level at start year of crisis |
| <i>Banking Crisis</i> | | |
| Systemic Banking Crisis (RR) | Reinhart and Rogoff (2011) | Occurs if (1) bank runs that lead to the closure, merging, or takeover by the public sector of one or more financial institutions or (2) there are no runs, the closure, merging, takeover, or large-scale government assistance of an important financial institution (or group of institutions) that marks the start of a string of similar outcomes for other financial institutions. Crisis duration is defined as the number of consecutive years that this occurs in a country. |
| Systemic Banking Crisis (LV) | Laeven and Valencia (2012) | Start Date: Banking crisis is considered systemic if (1) significant signs of financial distress in the banking system (as indicated by significant bank runs, losses in the banking system, and bank liquidations) and (2) significant banking policy intervention measures in response to significant losses in the banking system End Date: Year when GDP (constant 2005 USD) returns to level at start year of crisis |
| <i>Debt Crisis</i> | | |
| Sovereign Debt Crisis (LV) | Laeven and Valencia (2012) | Start Date: When a country defaults on debt payments. End Date: Year when GDP (constant 2005 USD) returns to level at start year of crisis. |
| External Debt Crisis (RR) | Reinhart and Rogoff (2011) | Any year when the government fails to meet a principal or interest payment on the due date (or within the specified grace period). These episodes include instances in which rescheduled debt is ultimately extinguished in terms less favorable than the original obligation. Crisis duration is defined as the number of consecutive years that this occurs in a country. |
| Domestic Debt Crisis (RR) | Reinhart and Rogoff (2011) | Any year when both an external debt crisis occurs and bank deposits are frozen and/or forced conversions of deposits from dollars to local currency occur. Crisis duration is defined as the number of consecutive years that this occurs in a country. |

4. Methodology

We employ hazard models (survival analysis), count models, and multivariate OLS models to test our hypotheses. We include baseline control variables for the impact of economic output, financial depth and openness, and good governance on economic volatility as used in studies by Dincer and Eichengreen (2014) and Wilms et al. (2018). These include: real GDP per capita, adjusted for purchasing power parity (PPP), and whether the country is a high income or low income country to control for the level of development¹¹; GDP growth rate (annual percentage) to control for the economic strength of the economy; political regime type as measured by the Polity2 index to control for the impact of democracy¹²; the country's real interest rate level at the start of the crisis¹³; and whether the country's exchange rate is fixed or managed by the government.¹⁴

We also control for other economic factors that may affect the duration of a crisis. These include net inflows of foreign direct investments (FDI) as a percent of GDP, the level of exports as a percent of GDP, and the country's current account balance as a percent of GDP, all at the level at the start of the crisis. We recognize that including these variables could create endogeneity problems given that FDI and trade flows are strongly correlated with higher levels of transparency.¹⁵ However, we expect that if this bias occurs, it will likely work against our theory by reducing the apparent impact of transparency on crisis duration. We also include geographic location

¹¹ The income level variables are based on “high” and “low” income designations by the World Bank. “High income” countries are defined as OECD and non-OECD countries with a gross national income per capita above US \$12,475 in 2015.

¹² The Polity2 variable measures democracy on a scale of –10 to 10 with –10 representing autocracy and 10 representing a high level of democracy. Although Polity2 is not statistically significant for most of the models, we include it as a baseline control in order to ensure that the statistical significance of the transparency variable is not driven by level of democracy.

¹³ Real interest rate level at the start of the crisis is included given that Wilms et al. (2018); Cecchetti et al. (2009); and Honohan and Klingebiel (2003) find that lower interest rates suggest a pre-crisis economic boom and as a result lead to larger losses and more severe banking crises.

¹⁴ The “fixed or managed exchange rate” dichotomous variable is based on classifications from Reinhart and Rogoff (2011). The exchange rate regime is considered “fixed or managed” if it is defined as fixed, crawling peg, or managed float. We include fixed or managed exchange rate regimes as a control given that Chortareas et al. (2003) find that the relationship between the amount of information a central bank publishes and inflation volatility does not hold for countries with an exchange rate peg. For more information on how the exchange rate classification is defined, see Ilzetki et al. (2004).

¹⁵ Zhao et al. (2003); Drabek and Payne (2002); Seyoum and Manyak (2009); Gelos and Wei (2002); and Shen and Sliwinski (2015) all suggest that higher levels of transparency are correlated with higher levels of FDI.

variables to account for regional characteristics and contagion effects which may affect the duration of crises.¹⁶ Year dichotomous indicators are also included where possible.¹⁷

Given the potential impact of central bank transparency on crisis duration and the correlation between central bank transparency and government transparency, it would be optimal to include central bank transparency as an additional control. We attempt to do so by using the Dincer and Eichengreen (2014) central bank transparency index, which we find to be one of the most comprehensive data sets available to represent the effect we aim to control for. The Dincer and Eichengreen (2014) data set measures central bank transparency for over 100 central banks from 1998 to 2010 using a scale from 0 to 15, with 0 being the least transparent. The measure is constructed based on the conceptual framework and methodology developed by Eijffinger and Geraats (2006). Using this framework, Dincer and Eichengreen measure central bank transparency by using an objective metric to categorize political, economic, procedural, policy, and operational central bank transparency. These metrics are assigned based on information disclosed through central bank websites, statutes, annual reports, and other published data in order to limit the subjectivity and reporting bias that inevitably come from using survey data completed by central banks. The central bank transparency index is created by taking the sum of these components. Data prior to 1998 are not available because most of the reports used to construct the central bank transparency index are not available online prior to 1998.¹⁸

The HRV index and the Dincer and Eichengreen index are, thus, estimated using different techniques and reflect different underlying phenomena. However, as argued previously and as noted by Dincer and Eichengreen (2014), countries with stronger political institutions and higher levels of government transparency are more likely to also have central banks with higher levels of transparency. Indeed, this is reflected in the fact that the correlation between the HRV index and the Dincer and Eichengreen index is high, though not high enough to suggest problems of multicollinearity ($r = 0.580^{***}$).

This high degree of correlation does, however, make differentiating the effects of government and central bank transparency challenging. Unfortunately for our study, these difficulties are compounded by data limitations. While the Dincer and Eichengreen (2014) data set covers 100 countries from 1998 to 2010, the countries included only experience a small number of crisis within that time period. Specifically, there are only 8 inflation crises and 48 currency crises as defined by Reinhart and Rogoff (2011) that began and ended between 1998 and 2010 in the data set. There are only 18 currency crisis observations using the Currency Crisis (LV) measure. The models where the Dincer and Eichengreen (2014) measure is added as a control are included in Appendix A given the significant decrease in number of observations after the variable is added. While beyond the scope of this paper, it would be fruitful for future research to extend the HRV and Dincer and Eichengreen data sets to increase their intersection and make a direct comparison more meaningful.¹⁹ Given these limitations, in addition to comparing the two indices directly, we conduct a plausibility probe using an artificial central bank transparency variable that backfills the Dincer and Eichengreen data from 1980 to 1997 with the 1998 central bank transparency level. This approximation is based on the notion that central bank institutions are sticky and that country-specific differences tend to persist over time.²⁰ As expected, the HRV and backfilled index of central bank transparency remain highly correlated ($r = 0.594^{***}$), but once again the correlation is not high enough to suggest problems of multicollinearity. We recognize that the backfilled variable is not a reliable indicator of central bank transparency and include it simply as a plausibility probe in advance of future research based on the extension of both transparency indicators.

Finally, given concerns that the HRV index may be interpreted as a measure of political integration, we initially included the KOF Globalization index (political globalization) as a control variable to ensure that the HRV index is not picking up this effect. We did not expect the variable to have an impact on crisis duration given that Dreher (2006a; 2006b) and Dreher et al. (2008b) find that political globalization generally has no impact on economic growth, economic policy, or the composition of government spending. The results of our analysis show that the KOF political globalization variable is generally not statistically significant for the inflation and currency crisis duration variables, and that the HRV index usually remains statistically significant when the KOF index is included as a control. These results are included in Appendix C.

4.1. Survival analysis

We begin by using survival analysis to examine the impact of both government and central bank transparency on crisis duration. Survival models estimate “time until failure” or “probability of failure”. In our case, the failure event is a good outcome, namely the end of a crisis.

Survival analysis accounts for the fact that the relationship between transparency and crisis duration may not be linear in nature. We test three different parametric specifications that predict different paths of decay over time: the exponential model, the Gompertz model,

¹⁶ These regional dummies are based on the World Bank geographical regions and include East Asia and Pacific, Eastern Europe, Latin America and Caribbean, Middle East and North Africa, North America, Central and South Asia, and Sub-Saharan Africa.

¹⁷ While controlling for the initial “size” of an economic shock would be helpful in evaluating how much economic recovery was driven by transparency, this is not possible because we also expect the size of the crisis to be influenced by transparency in that more transparent countries should experience less severe crises. Since any proxies for the size of the initial shock would actually measure the size of the crisis, which we expect to be impacted by the level of government transparency as well, controlling for this factor would obscure the very effect we are testing for. We expand on this idea in Section 7, where we examine the relationship between government transparency and inflation crisis size.

¹⁸ For more information on how the central bank transparency index is constructed see “How transparent are central banks?” by Eijffinger and Geraats (2006) and “Central Bank Transparency and Independence: Updates and New Measures” by Dincer and Eichengreen (2014).

¹⁹ We have been in discussions with the authors of each data set. More contemporary estimates are not available and there are specific challenges associated with backdating the Dincer and Eichengreen estimates.

²⁰ One notable shortcoming of this assumption is that while central bank institutions tend to persist in general, several studies have shown that central bank institutions tend to change during times of economic stress, especially during high periods of inflation (Davies et al., 2016; Dreher et al., 2006).

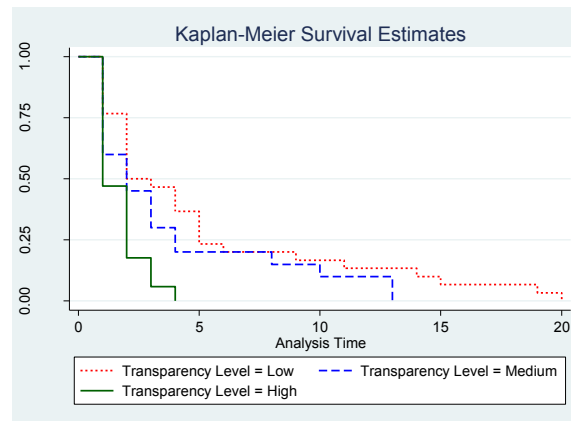


Fig. 1. Graphic simulation of the Kaplan-Meier Survival Estimates over time, separated by countries with high, medium, and low levels of transparency.

and the Weibull model. The exponential survival model assumes a linear baseline model with exponential decay, while the Gompertz and Weibull models assume a non-linear baseline hazard that monotonically increases (or decreases) over time, meaning the probability that the crisis ends increases (or decreases) over time.

The sign of the coefficients indicates whether or not the hazard rate (i.e., the probability that the crisis ends) increases or decreases. A positive coefficient indicates an increasing hazard, meaning that the crisis is *more* likely to end in the next year. The hazard ratio estimates the *probability* that a country will experience a “failure” event, or the probability that the crisis will end in the next year. A hazard ratio greater than 1 means the risk that the crisis ends the next year increases. A hazard ratio equal to 1 means the risk does not change, and a hazard ratio less than 1 means the risk that the crisis ends the next year decreases.

4.2. Count model and OLS regression analysis

To check the robustness of our results, we also test our hypothesis using count models and linear regressions. To analyze the duration of crises, we estimate a zero-truncated negative binomial model in which countries that do not experience a crisis in a particular year are omitted; therefore, all crisis duration years are non-zero integers. Like survival analysis, the zero-truncated negative binomial model allows for the relationship between the independent and dependent variables to change at different points in the count (in this case, at different numbers of years in the crisis). Additionally, unlike the Poisson model, the negative binomial model does not assume that the variance is equal to the mean, which allows the model to account for over-dispersion in the dependent variable. Since the variances of our dependent variables for crisis duration are significantly greater than the means, we choose the zero-truncated negative binomial model over the zero-truncated Poisson model. We report both the significant coefficients and the marginal effects, which show how much a one-unit increase in the HRV index will increase or decrease expected crisis length, where the results are statistically significant.

Finally, we test our hypothesis using a standard linear OLS regression.²¹ While the assumption of linearity may be suspect, the OLS model and the zero-truncated negative binomial model enable us to include year dichotomous indicators that are not analyzed in the survival models and serve as an additional robustness test.

5. Results – inflation crisis

5.1. Survival analysis

Figs. 1 and 2 provide a graphic visualization of the relationship between transparency and inflation crisis duration using the Kaplan-Meier survival and failure estimates. Both figures show that higher-transparency countries have lower survival estimates or higher failure estimates (i.e., the failure event, the crisis ending, has a higher probability of occurring) at each point in time.

Figs. 1 and 2 show a graphic simulation of the Kaplan-Meier Survival and Failure Estimates over time separated by countries with high, medium, and low levels of transparency.

We use three parametric survival models – the exponential model, the Gompertz model, and the Weibull model – to test for the effect of transparency on the duration of inflation crises. Each model is tested three times, the first including only the HRV transparency level, the second including the controls specified above, and the third including both government and backfilled central bank transparency as well as the controls specified above.²² Tables 2 and 3 provide summaries of the results. The HRV coefficient is positive and statistically

²¹ We do not test the relationship between central bank transparency and crisis duration using the zero-truncated negative binomial model due to problems of collinearity in several models given the limited number of observations. Furthermore, where there are no problems of collinearity, the results are consistent with the survival analysis and the linear regressions.

²² Due to data limitations, controls are excluded in the models where central bank transparency is added as a control (Models 3, 7, and 11). Year dichotomous variables are also omitted as controls due to collinearity.

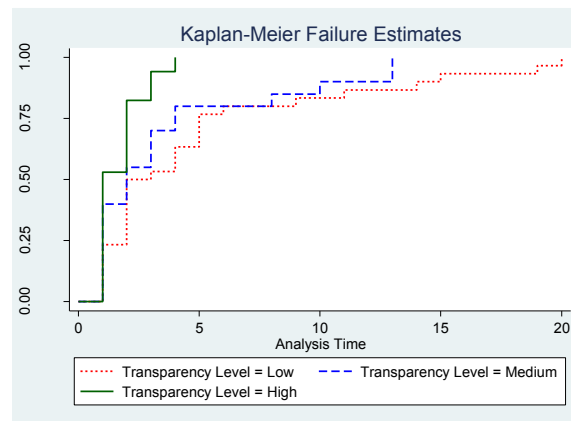


Fig. 2. Graphic simulation of the Kaplan-Meier Failure Estimates over time, separated by countries with high, medium, and low levels of transparency.

significant in all models when considered by itself (Models 1, 4, and 7) and with the full set of controls (Models 2, 5, and 8), suggesting that high levels of government transparency correspond with the likelihood that the crisis will end in the next year. This supports our hypothesis that transparency has substantial benefits for countries experiencing inflation crises. These results lend support for the pro-transparency camp, suggesting that the benefits of transparency in increasing public confidence in the economy and influencing inflation expectations outweigh the negative effects of increased inflation volatility.

The HRV indicator is not significant in models that include the Dincer and Eichengreen central bank transparency index as a control, but as noted above, these models include only 8 cases each and suffer from severe degrees of freedom limitations. These models are included in Table 2A in Appendix A. In models that use the control for the backfilled version of central bank transparency (Models 3, 6, and 9), the HRV transparency coefficient remains significant and positive. We recognize that the backfilled version of central bank transparency is not reliable, but the results suggest that government transparency may continue to have a significant impact on crisis duration when controlling for central bank transparency. Given these limitations, we do not interpret the HRV coefficients where central bank transparency is included as a control.

The hazard ratios for government transparency corresponding to Table 2 are presented in Table 3 (once again, the results including the Dincer and Eichengreen central bank transparency index as a control are shown in Table 3A in Appendix A due to the limited degrees of freedom). The hazard ratios show the probability of a crisis ending in the next year, given that the country had experienced the crisis until year t . The hazard ratios for the HRV variable are statistically significant and greater than 1 for all models, meaning a one-unit increase in the HRV index *increases* the probability that the crisis will end the next year. For the models that include the full baseline specification of controls without backfilled central bank transparency (Models 2, 5, and 8), the ratios are approximately 2–3, meaning that the HRV index *increases* the probability that the crisis will end next year by approximately 2–3 times. In other words, an increase in transparency has a large effect on decreasing inflation crisis duration.

5.2. Additional methods – count model and OLS regression analysis

As a robustness test, we test our hypothesis again using count data analysis and OLS analysis. In these models, our dependent variable is the number of years a country experiences an economic crisis. Any observations where a crisis does not occur are coded as missing; therefore, there are no zero observations and a zero-truncated negative binomial model is used. We include all baseline controls except for current account balance as a percent of GDP and the region and year dichotomous indicators, which are omitted due to collinearity. The results from the count model analysis are shown in Models 1 and 2 of Table 4. Negative binomial model analyses including central bank transparency or backfilled central bank transparency as a control are excluded due to limited data observations and problems of collinearity. Similarly, the linear model including the Dincer and Eichengreen central bank transparency specification has only 8 observations. The results are, consequently, provided in Table 4A in Appendix A.

Models 3–6 present the results from the OLS analysis. The HRV index is negative and statistically significant across all models. Under the negative binomial model, the negative coefficient means that a one-unit increase in the HRV index will decrease the expected number of years a country experiences an inflation crisis by the size of the marginal effect (1.39 years).²³ The OLS models suggest that a one-unit increase in the HRV index will decrease expected inflation crisis duration by anywhere from 2 to 4 years. Overall, the results are consistent with the hypothesis that higher levels of transparency will decrease the length of an inflation crisis.

6. Results – currency crisis

We expect a similar negative relationship between transparency and currency crisis duration because, like inflation levels, currency

²³ The marginal effect is estimated separately and is not shown in the table.

Table 2
Inflation crisis (RR) survival model.

| Dependent Variable: Inflation Crisis Duration (RR) | | | | | | | | | |
|--|-------------|-------------|----------------|-----------|----------------|---------------|-----------|------------------|-----------------|
| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| | Exponential | Exponential | Exponential | Weibull | Weibull | Weibull | Gompertz | Gompertz | Gompertz |
| Government | 0.250*** | 0.620** | 0.928*** | 0.292*** | 1.212*** | 2.824*** | 0.240*** | 1.088*** (0.321) | 2.462*** |
| Transparency (HRV) | (0.0837) | (0.252) | (0.340) | (0.0902) | (0.305) | (0.582) | (0.0878) | | (0.616) |
| CB Transparency (backfilled) | – | | 0.0793 (0.194) | – | | 0.290 (0.253) | – | | 0.336 (0.233) |
| Real GDP per capita (PPP adjusted) | | –0.000226* | –0.000492*** | | –0.000395*** | –0.00141*** | | –0.000391*** | –0.00133*** |
| | | (0.000126) | (0.000190) | | (0.000153) | (0.000302) | | (0.000150) | (0.000340) |
| GDP growth (annual %) | | –0.0153 | –0.0220 | | –0.0386 | –0.104* | | –0.0356 | –0.0475 |
| | | (0.0372) | (0.0416) | | (0.0445) | (0.0545) | | (0.0405) | (0.0469) |
| Democracy (polity2) | | –0.00698 | 0.0109 | | –0.00918 | 0.0304 | | –0.0178 | 0.0673 (0.0607) |
| | | (0.0406) | (0.0529) | | (0.0470) | (0.0694) | | (0.0426) | |
| FDI (net inflows % of GDP) | | 0.0540 | 0.0544 (0.154) | | 0.143 (0.126) | 0.0310 | | 0.0904 (0.117) | 0.0473 (0.193) |
| | | (0.114) | | | | (0.232) | | | |
| Exports (% GDP) | | –0.0141 | 0.0125 | | –0.0231 | 0.0622 | | –0.0257 | 0.0437 (0.0532) |
| | | (0.0249) | (0.0488) | | (0.0291) | (0.0569) | | (0.0276) | |
| Current Account Balance (% GDP) | | 0.000551 | –0.0511 | | –0.000338 | –0.183** | | 0.00696 (0.0396) | –0.111 |
| | | (0.0387) | (0.0612) | | (0.0408) | (0.0740) | | | (0.0674) |
| Real Interest Rate (%) | | –0.00876 | –0.0260 | | –0.0131 | –0.0984*** | | –0.0254 | –0.0797*** |
| | | (0.0158) | (0.0212) | | (0.0178) | (0.0309) | | (0.0182) | (0.0306) |
| Fixed or Managed Exchange Rate | | 0.619 | 0.370 (0.581) | | 0.987* (0.518) | 1.119 (0.732) | | 0.972** (0.489) | 0.597 (0.670) |
| | | (0.453) | | | | | | | |
| High Income | | 2.573 | 0 (0) | | 5.019*** | 0 (0) | | 4.203** (1.747) | 0 (0) |
| | | (1.580) | | | (1.827) | | | | |
| Low Income | | 0.776 | 0.203 (1.798) | | 1.557 (0.997) | 0.183 (1.839) | | 1.262 (0.984) | 0.334 (1.794) |
| | | (0.961) | | | | | | | |
| Region Dummy Variables | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Constant | –4.360*** | –7.967*** | –12.21*** | –5.101*** | –15.73*** | –39.11*** | –4.185*** | –13.90*** | –32.44*** |
| | (1.037) | (2.899) | (4.308) | (1.191) | (3.589) | (8.145) | (1.128) | (3.821) | (8.192) |
| Observations | 67 | 45 | 32 | 67 | 45 | 32 | 67 | 45 | 32 |

Standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Table 3
Inflation crisis (RR) hazard ratios.

| Dependent Variable: Inflation Crisis Duration (RR) | | | | | | | | | |
|--|-------------|-------------|-------------|----------|----------|-----------|----------|----------|-----------|
| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| | Exponential | Exponential | Exponential | Weibull | Weibull | Weibull | Gompertz | Gompertz | Gompertz |
| Government Transparency (HRV) | 1.284*** | 1.860** | 2.530*** | 1.339*** | 3.361*** | 16.836*** | 1.271*** | 2.967*** | 11.724*** |
| | (0.1075) | (0.4694) | (0.8601) | (0.1208) | (1.0260) | (9.7933) | (0.1115) | (0.9539) | (7.2231) |
| CB Transparency (backfilled) | – | – | 1.0830 | – | – | 1.3360 | – | – | 1.3990 |
| | | | (0.2101) | | | (0.3387) | | | (0.3264) |

devaluation is heavily influenced by public expectations and is susceptible to traditional monetary policy measures. At the same time, the effect may be smaller in magnitude given that inflation expectations are expected to be more sensitive to variation in public perceptions than currency values. In order to test our hypothesis, we use the two different measures of currency crisis duration previously described. We use data from [Reinhart and Rogoff \(2011\)](#) as our primary measure and test for robustness using the [Laeven and Valencia \(2012\)](#) variable.

6.1. Survival model – currency crisis duration using [Reinhart and Rogoff \(2011\)](#)

Currency crisis duration is measured as the number of consecutive years a country is considered “in a currency crisis” based on the [Reinhart and Rogoff \(2011\)](#) criteria specified in [Table 1](#). The survival estimates without controls (Models 1, 4, and 7), with controls (Models 2, 5, 8), and with backfilled central bank transparency (Models 3, 6, and 9) are summarized in [Table 5](#), and the corresponding hazard ratios are shown in [Table 6](#).²⁴

The government transparency coefficients are positive and statistically significant when no controls are included (Models 1, 4 and 7), and remain positive and statistically significant once the full set of controls are added for the Weibull and Gompertz models (shown in Models 5 and 8). The positive coefficients represent an increasing hazard, meaning an increase in the HRV transparency index increases the probability that the currency crisis will end in the next year. Additionally, the corresponding hazard ratios in [Table 6](#) for the

²⁴ The results including the Dincer and Eichengreen central bank transparency index as a control are shown in [Tables 5A and 6A](#) in [Appendix A](#).

Table 4
Inflation crisis (RR) count model and OLS model.

| Dependent Variable: Inflation Crisis Duration (RR) | | | | | | |
|--|----------------------|------------------------|---------------------|--------------------------|------------------------|--------------------------|
| Variables | (1) | (2) | (3) | (4) | (5) | (6) |
| | Negative Binomial | Negative Binomial | Linear Regression | Linear Regression | Linear Regression | Linear Regression |
| Government Transparency (HRV) | −0.432*** (0.156) | −0.596*** (0.200) | −0.849** (0.362) | −3.481*** (0.764) | −2.737* (1.478) | −4.043*** (0.799) |
| CB Transparency (backfilled) | | – | | – | – | −0.795* (0.435) |
| Real GDP per capita (PPP) | | 0.000222*** (7.59e-05) | | 0.00137*** (0.000349) | 0.000865 (0.000644) | 0.00234*** (0.000423) |
| GDP growth (annual %) | | 0.0236 (0.0352) | | 0.0797 (0.0978) | 0.126 (0.237) | 0.0168 (0.0873) |
| Democracy (polity2) | | 0.00375 (0.0305) | | 0.0718 (0.105) | 0.0614 (0.145) | −0.183 (0.120) |
| FDI (net inflows % of GDP) | | −0.0823 (0.137) | | −0.107 (0.326) | −0.328 (0.794) | −0.230 (0.327) |
| Exports (% GDP) | | 0.00870 (0.0215) | | 0.0574 (0.0643) | 0.0853 (0.118) | −0.00923 (0.116) |
| Current Account Balance (% GDP) | | – | | 0.00936 (0.115) | 0.157 (0.239) | 0.0769 (0.143) |
| Real Interest Rate (%) | | 0.0182 (0.0115) | | 0.110** (0.0451) | 0.123 (0.0711) | 0.0974* (0.0474) |
| Fixed or Managed Exchange Rate | | −1.240*** (0.382) | | −3.070** (1.257) | −3.490* (1.924) | −0.436 (1.249) |
| High Income | | −1.978* (1.026) | | −12.94*** (4.586) | −12.73 (10.14) | – |
| Low Income | | −0.657 (0.622) | | −2.729 (2.888) | 2.577 (7.309) | −2.368 (4.402) |
| Region Dummy Variables | No | No | No | Yes | Yes | Yes |
| Year Dummy Variables | No | No | No | No | Yes | No |
| Constant | 5.522*** (1.929) | 7.717*** (2.272) | 14.26*** (4.489) | 44.36*** (9.065) | 35.06* (18.47) | 50.61*** (10.15) |
| Observations | 67 | 46 | 67 | 45 | 45 | 32 |
| R-squared | | | 0.078 | 0.616 | 0.826 | 0.759 |

Standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Note: Current account balance is omitted in Model 2 due to collinearity. Region and year dichotomous variables are excluded where there are problems of collinearity.

aforementioned statistically significant models are greater than 1, indicating that an increase in the HRV transparency index corresponds with an approximately 15–25% increase in the probability that the crisis will end in the next year. On the other hand, neither the effect of government transparency nor the effect of central bank transparency (whether in the form of the original Dincer and Eichengreen index or the backfilled index) is significant when both are included in the same equation. This suggest that the two measures may be suppressing one another.

6.2. Additional methods – count model and OLS regression analysis

Again, we test our hypothesis using a zero-truncated negative binomial model and OLS analysis as an additional check of robustness. The results are shown in Table 7. As before, the results for the analysis using the Dincer and Eichengreen estimate of central bank transparency are provided in Table 7A in Appendix A. While the direct effect of government transparency on the duration of currency crises is significant and negative as expected (Models 1 and 3), these effects are not robust and become insignificant when the control variables are added. This suggests that the relationship may be non-linear in nature. Furthermore, the backfilled central bank transparency indicator does not have a significant effect on currency crisis duration. Overall, the results provide weak support for our hypotheses. Given the lack of statistical significance once full controls are added, we do not interpret the marginal effect or coefficients.

6.3. Survival model – currency crisis duration using Laeven and Valencia (2012)

In addition to the Reinhart and Rogoff (2011) crisis duration variable, we include a second measure of currency crisis duration created using the start dates in Laeven and Valencia (2012) as a robustness check. Once again, the dependent variable is tested using the exponential, Weibull, and Gompertz models with full baseline specifications. The results in Table 8 suggest that transparency of any kind is insignificant. As above, the results including the Dincer and Eichengreen specification of central bank transparency are included in Table 8A in Appendix A.

7. A brief note on inflation crisis severity

Given the statistically significant effect that government transparency has on decreasing inflation crisis duration, we attempt to further understand the causal mechanisms driving this relationship. According to much of the existing literature, the relationship between transparency and lower inflation crisis duration is driven by clearer market signaling, more effective monetary policy, and greater public confidence in the economy. Specifically, greater transparency is expected to increase domestic confidence in central bank inflation projections, thus reducing the inflation bias and lowering levels of future inflation. If so, government transparency may decrease the duration of an inflation crisis by reducing the level of inflation during the crisis, i.e., by decreasing the size or severity of the inflation crisis.

Table 5
Currency crisis (RR) survival model.

| Dependent Variable: Currency Crisis Duration (RR) | | | | | | | | | |
|---|----------------------|------------------------|------------------------|----------------------|------------------------|------------------------|----------------------|------------------------|------------------------|
| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| | Exponential | Exponential | Exponential | Weibull | Weibull | Weibull | Gompertz | Gompertz | Gompertz |
| Government | 0.141*** | 0.0886 | 0.0365 | 0.228*** | 0.214** | 0.0975 (0.119) | 0.147*** | 0.149* | 0.0574 (0.109) |
| Transparency (HRV) | (0.0321) | (0.0808) | (0.103) | (0.0375) | (0.0916) | | (0.0349) | (0.0848) | |
| CB Transparency (backfilled) | | – | –0.0222 (0.0548) | | – | –0.0507 (0.0570) | | – | –0.0349 (0.0559) |
| Real GDP per capita (PPP) | | 1.11e-05 (2.36e-05) | 8.50e-06 (2.86e-05) | | 2.65e-05 (2.49e-05) | 3.10e-05 (2.94e-05) | | 1.28e-05 (2.40e-05) | 1.68e-05 (2.85e-05) |
| GDP growth (annual %) | | –0.000334 (0.0229) | 0.00488 (0.0239) | | –0.00528 (0.0251) | 0.0139 (0.0264) | | –0.00514 (0.0239) | 0.00544 (0.0251) |
| Democracy (polity2) | | 0.0224 (0.0230) | 0.0321 (0.0241) | | 0.0418 (0.0258) | 0.0798*** (0.0277) | | 0.0269 (0.0239) | 0.0578** (0.0263) |
| FDI (net inflows % of GDP) | | –0.00274 (0.0406) | –0.0165 (0.0533) | | –0.0189 (0.0408) | –0.0871 (0.0567) | | –0.00219 (0.0403) | –0.0362 (0.0546) |
| Exports (% GDP) | | 0.000540 (0.00623) | 0.00166 (0.00712) | | 0.00288 (0.00632) | 0.00813 (0.00744) | | –7.34e-05 (0.00631) | 0.00195 (0.00730) |
| Current Account Balance (% GDP) | | –0.00319 (0.0174) | –0.00231 (0.0206) | | –0.0115 (0.0190) | –0.0208 (0.0223) | | –0.00490 (0.0181) | –0.00657 (0.0211) |
| Real Interest Rate (%) | | 0.000210 (0.00146) | 0.0109 (0.00747) | | 0.000651 (0.00163) | 0.0295*** (0.00831) | | 0.000755 (0.00154) | 0.0245*** (0.00833) |
| Fixed or Managed Exchange Rate | | 0.600** (0.258) | 0.375 (0.302) | | 1.310*** (0.286) | 0.875*** (0.338) | | 1.045*** (0.300) | 0.794** (0.339) |
| High Income | | 0.0372 (0.517) | 0.179 (0.715) | | 0.106 (0.517) | 0.349 (0.725) | | 0.123 (0.519) | 0.230 (0.715) |
| Low Income | | –0.106 (0.357) | –0.0733 (0.394) | | –0.215 (0.408) | –0.0901 (0.456) | | –0.242 (0.379) | –0.239 (0.430) |
| Region Dummy Variables | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Constant | –2.449*** (0.426) | –2.049* (1.117) | –1.149 (1.380) | –3.947*** (0.537) | –4.903*** (1.285) | –3.230** (1.638) | –2.548*** (0.491) | –3.421*** (1.212) | –2.220 (1.493) |
| Observations | 184 | 133 | 102 | 184 | 133 | 102 | 184 | 133 | 102 |

Standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Note: Eastern Europe regional indicator is negative and statistically significant in Models 5, 6, 8, and 9. Latin America & Caribbean regional indicator is negative and statistically significant in Models 5, 6, 8, and 9.

Table 6
Currency crisis (RR) hazard ratios.

| Dependent Variable: Currency Crisis Duration (RR) | | | | | | | | | |
|---|----------------------|--------------------|--------------------|----------------------|---------------------|--------------------|----------------------|--------------------|--------------------|
| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| | Exponential | Exponential | Exponential | Weibull | Weibull | Weibull | Gompertz | Gompertz | Gompertz |
| Government Transparency (HRV) | 1.152*** (0.0369) | 1.0930 (0.0883) | 1.0370 (0.1067) | 1.256*** (0.0471) | 1.239** (0.1134) | 1.1020 (0.1315) | 1.158*** (0.0404) | 1.160* (0.0984) | 1.0590 (0.1155) |
| CB Transparency (backfilled) | | – | 0.9780 (0.0536) | | – | 0.9510 (0.0542) | | – | 0.9660 (0.0540) |

To test this theory, we construct a proxy measure of inflation crisis severity by taking the difference between the inflation level at the starting year of a crisis and the inflation level at the highest point during a crisis. Using government transparency as our independent variable and inflation crisis severity as our dependent variable, we test the relationship between transparency and crisis size across three linear models.

Model 1 analyzes the relationship using the full set of control variables. HRV is statistically significant and negative, suggesting that higher levels of government transparency coincide with lower levels of inflation severity (see Table 9). In Model 2 adds backfilled central bank transparency as a control (the results with non-backfilled central bank transparency as a control are included in Table 9A in Appendix A). Government transparency and the backfilled indicator of central bank transparency are both negative and statistically significant in Model 2, suggesting that the impact of government transparency remains robust when controlling for central bank transparency and that central bank transparency may also have an impact on inflation crisis severity. While these regressions provide only a cursory analysis, the results suggest many possibilities for further research into the relationship between government transparency and the size of inflation crises.

8. Conclusions and suggestions for further research

Our research finds that greater government transparency – as measured in terms of how much credible economic information a

Table 7

Currency crisis (RR) count model and OLS model.

| Dependent Variable: Currency Crisis Duration (RR) | | | | | |
|---|--------------------|-----------------------|--------------------|----------------------|----------------------|
| Variables | (1) | (2) | (3) | (4) | (5) |
| | Negative Binomial | Negative Binomial | Linear Regression | Linear Regression | Linear Regression |
| Government Transparency (HRV) | −0.509*** (0.0998) | −0.215 (0.213) | −0.262*** (0.0616) | −0.192 (0.116) | −0.0571 (0.126) |
| CB Transparency (backfilled) | | – | | – | 0.0456 (0.0712) |
| Real GDP per capita (PPP) | | −0.000114* (6.53e-05) | | −2.49e-06 (3.53e-05) | −6.36e-07 (3.81e-05) |
| GDP growth (annual %) | | −0.0374 (0.0530) | | 0.00549 (0.0333) | −0.00645 (0.0304) |
| Democracy (polity2) | | −0.0209 (0.0489) | | −0.0505 (0.0341) | −0.0707** (0.0317) |
| FDI (net inflows % of GDP) | | 0.177 (0.120) | | −0.0315 (0.0627) | −0.0146 (0.0705) |
| Exports (% GDP) | | −0.0387* (0.0211) | | 0.00343 (0.00958) | 0.00144 (0.00960) |
| Current Account Balance (% GDP) | | 0.0300 (0.0412) | | −0.00372 (0.0244) | −0.0162 (0.0266) |
| Real Interest Rate (%) | | 0.00129 (0.00339) | | −0.00115 (0.00221) | −0.0350*** (0.0106) |
| Fixed or Managed Exchange Rate | | −1.708*** (0.590) | | −1.527*** (0.392) | −1.014** (0.388) |
| High Income | | 1.575 (1.160) | | −0.267 (0.797) | −0.480 (0.947) |
| Low Income | | −0.946 (0.770) | | 0.496 (0.505) | 0.392 (0.489) |
| Regional Dummy Variable | No | No | No | Yes | Yes |
| Constant | −12.72 (483.7) | −12.98 (775.0) | 5.360*** (0.821) | 5.134*** (1.612) | 2.979* (1.673) |
| Observations | 184 | 133 | 184 | 133 | 102 |
| R-squared | | | 0.090 | 0.262 | 0.354 |

Standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Note: Eastern Europe and Latin America & Caribbean regional indicators are positive and statistically significant in Models 4 and 5.

Table 8

Currency crisis (LV) survival model.

| Dependent Variable: Currency Crisis Duration (LV) | | | | | | | | | |
|---|----------------------|----------------------|----------------------|----------------------|--------------------|---------------------|--------------------|--------------------|--------------------|
| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| | Exponential | Exponential | Exponential | Weibull | Weibull | Weibull | Gompertz | Gompertz | Gompertz |
| Government Transparency (HRV) | 0.0119 (0.0562) | 0.124 (0.142) | 0.0920 (0.177) | 0.0154 (0.0572) | 0.376** (0.170) | 0.246 (0.210) | 0.0111 (0.0560) | 0.197 (0.153) | 0.141 (0.191) |
| CB Transparency (backfilled) | – | – | −0.0285 (0.147) | – | – | −0.0119 (0.174) | – | – | −0.0299 (0.159) |
| Real GDP per capita (PPP) | –1.27e-05 (6.01e-05) | –2.07e-05 (0.000100) | –4.50e-05 (6.53e-05) | –8.61e-05 (0.000132) | –0.0490 (0.000114) | –0.00511 (0.000114) | –0.0481 (0.000114) | –0.0481 (0.000114) | –0.0181 (0.000114) |
| GDP growth (annual %) | –0.0219 (0.0283) | –0.0106 (0.0369) | –0.0106 (0.0299) | –0.0106 (0.0474) | –0.0106 (0.0299) | –0.0106 (0.0474) | –0.0106 (0.0299) | –0.0106 (0.0474) | –0.0106 (0.0474) |
| Democracy (polity2) | 0.0256 (0.0231) | 0.00359 (0.0327) | 0.0665*** (0.0249) | 0.00555 (0.0355) | 0.0574** (0.0251) | 0.0574** (0.0251) | 0.0574** (0.0251) | 0.0574** (0.0251) | 0.0574** (0.0251) |
| FDI (net inflows % of GDP) | 0.00879 (0.0784) | 0.0106 (0.101) | –0.00147 (0.0945) | 0.0251 (0.131) | 0.00110 (0.0835) | 0.00110 (0.0835) | 0.00110 (0.0835) | 0.00110 (0.0835) | 0.00110 (0.0835) |
| Exports (% GDP) | 0.00621 (0.00977) | 0.00179 (0.0154) | 0.0208* (0.0111) | 0.00262 (0.0191) | 0.0105 (0.0105) | 0.0105 (0.0105) | 0.0105 (0.0105) | 0.0105 (0.0105) | 0.0105 (0.0105) |
| Current Account Balance (% GDP) | 0.0272 (0.0177) | 0.0488 (0.0447) | 0.0615*** (0.0209) | 0.134** (0.0603) | 0.0534*** (0.0206) | 0.0534*** (0.0206) | 0.0534*** (0.0206) | 0.0534*** (0.0206) | 0.0534*** (0.0206) |
| Real Interest Rate (%) | 0.000488 (0.00433) | 0.000398 (0.00634) | 0.00157 (0.00450) | 0.00110 (0.00719) | 0.00110 (0.00437) | 0.00110 (0.00437) | 0.00110 (0.00437) | 0.00110 (0.00437) | 0.00110 (0.00437) |
| Fixed or Managed Exchange Rate | 0.246 (0.294) | –0.0129 (0.447) | 0.756** (0.325) | –0.186 (0.523) | 0.632* (0.323) | 0.632* (0.323) | 0.632* (0.323) | 0.632* (0.323) | 0.632* (0.323) |
| High Income | 0.277 (0.903) | 0.799 (1.380) | 0.845 (0.938) | 2.182 (1.722) | 0.190 (0.925) | 0.190 (0.925) | 0.190 (0.925) | 0.190 (0.925) | 0.190 (0.925) |
| Low Income | 0.186 (0.483) | –0.0227 (0.817) | 0.733 (0.488) | –0.475 (0.891) | 0.584 (0.503) | 0.584 (0.503) | 0.584 (0.503) | 0.584 (0.503) | 0.584 (0.503) |
| Region Dummy Variables | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Constant | –0.734 (0.661) | –2.988 (1.879) | –2.023 (2.543) | –1.012 (0.679) | –8.771*** (2.353) | –5.079* (3.061) | –0.677 (0.664) | –5.497*** (2.129) | –3.997 (2.834) |
| Observations | 145 | 70 | 43 | 145 | 70 | 43 | 145 | 70 | 43 |

Standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Note: Sub-Saharan Africa regional indicator is positive and statistically significant in Models 2, 5, 6, and 8.

national government releases – is positively correlated with shorter inflation and currency crisis durations. We argue that government transparency affects the duration of inflation and currency crises by providing information about existing economic conditions, increasing the predictability and credibility of national economic policy, and increasing confidence in the efficacy of policy choices by demonstrating the degree to which the policy positions of national politicians and central bankers align.

This study lends empirical support to our argument that countries with higher levels of government transparency recover from crises more quickly than countries with lower levels of government transparency. At the same time, we recognize certain limitations of this study,

Table 9

Transparency and inflation crisis severity (RR).

| Dependent Variable: Inflation Crisis Size (RR) | | |
|--|----------------------|---------------------|
| VARIABLES | (1) | (2) |
| | Model 1 | Model 2 |
| Government Transparency (HRV) | −15.60*** (3.682) | −23.99*** (4.421) |
| CB Transparency (backfilled) | – | −5.030* (2.408) |
| Real GDP per capita (PPP) | 0.00679*** (0.00168) | 0.0134*** (0.00234) |
| GDP growth (annual %) | 0.682 (0.471) | 0.469 (0.483) |
| Democracy (polity2) | 0.00955 (0.507) | −0.889 (0.662) |
| FDI (net inflows % of GDP) | −1.535 (1.569) | −3.443* (1.809) |
| Exports (% GDP) | 0.399 (0.310) | 0.664 (0.640) |
| Current Account Balance (% GDP) | −0.00627 (0.552) | 0.283 (0.790) |
| Real Interest Rate (%) | 0.170 (0.217) | 0.385 (0.263) |
| Fixed or Managed Exchange Rate | −15.25** (6.054) | −6.522 (6.916) |
| High Income | −86.41*** (22.09) | – |
| Low Income | −10.47 (13.91) | −42.91* (24.37) |
| Regional Dummy Variables | Yes | Yes |
| Constant | 180.9*** (43.66) | 282.9*** (56.20) |
| Observations | 45 | 32 |
| R-squared | 0.624 | 0.808 |

Standard errors in parentheses.

***p < 0.01, **p < 0.05, *p < 0.1.

Note: The number of observations for inflation crisis size is smaller than the number of observations for inflation crisis duration due to the fact that inflation level data is not available for Poland prior to 1991.

such as potential problems of omitted variable bias, endogeneity, and reverse causality. Most importantly, it would be ideal to test the effects of government transparency controlling for central bank transparency more thoroughly. While our results are suggestive, they are constrained by the small number of crises that began and ended in the time periods covered by both the HRV and Dincer and Eichengreen data sets. In addition, it is possible that another variable, such as leader competency, affects both transparency and crisis duration or that countries which are more economically stable or have higher incomes may be more inclined to disclose information about their economy to signal economic strength.²⁵ Consequently, while controlling for a country's level of economic development, trade, and investment exposure is important when attempting to isolate the effects of transparency, doing so may create problems of endogeneity.

Despite these limitations, our study expands the scope of existing research by examining crisis duration as opposed to crisis incidence or crisis resolution, and provides support for those who argue that government transparency matters. Our results offer evidence in support of an interesting reduced form finding: that government transparency may play a role in shortening the duration of inflation and currency crises. This finding opens the door to considering how factors that affect political behavior, as well as national policies outside the purview of central banks, might affect market expectations and behavior. It also suggests that transparency may affect other aspects of crises, including the loss of output growth (Wilms et al., 2018). Exploring the nuances of these relationships using the HRV index offers several fruitful avenues for future research. We are confident that the studies which follow will add to the growing evidence that greater government transparency provides a clear advantage.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.ejpoleco.2018.03.002>.

Appendix A

Table 1A

Summary Statistics

| Variable | Observations | Mean | Std. Dev | Min | Max | Data set |
|--------------------------------|--------------|-------|----------|------|-------|---|
| Government Transparency (HRV) | 3875 | 12.18 | 2.30 | 0.13 | 20.98 | Hollyer et al. (2014), positive transformation |
| Central Bank Transparency (DE) | 1011 | 4.88 | 3.26 | 0 | 14.5 | Dincer and Eichengreen (2014) |
| CB Transparency (backfilled) | 2415 | 3.95 | 2.95 | 0 | 14.5 | Dincer and Eichengreen (2014) with backfilled data prior to 1998. |
| Inflation Crisis (RR) | 67 | 3.82 | 4.41 | 1 | 20 | Reinhart and Rogoff (2011) |
| Currency Crisis (RR) | 184 | 1.93 | 2.17 | 1 | 15 | Reinhart and Rogoff (2011) |
| Currency Crisis (LV) | 145 | 1.81 | 1.95 | 1 | 12 | Laeven and Valencia (2012) |
| Systemic Banking Crisis (RR) | 95 | 3.64 | 2.79 | 1 | 14 | Reinhart and Rogoff (2011) |
| Systemic Banking Crisis (LV) | 99 | 2.35 | 2.75 | 1 | 14 | Laeven and Valencia (2012) |
| Sovereign Debt Crisis (LV) | 52 | 2.44 | 2.79 | 1 | 13 | Laeven and Valencia (2012) |
| External Debt Crisis (RR) | 55 | 5.58 | 5.22 | 1 | 19 | Reinhart and Rogoff (2011) |

(continued on next page)

²⁵ For example, Geraats (2009) finds that monetary policy transparency and level of GDP per capita are positively correlated, and Zhao et al. (2003) find that government transparency is positively correlated with higher levels of FDI.

Table 1A (continued)

| Variable | Observations | Mean | Std. Dev | Min | Max | Data set |
|------------------------------------|--------------|---------|-----------|---------|------------|----------------------------|
| Domestic Debt Crisis (RR) | 21 | 3.24 | 3.78 | 1 | 16 | Reinhart and Rogoff (2011) |
| Real GDP per capita (PPP adjusted) | 3601 | 9663.27 | 12,079.36 | 100.89 | 123,263.00 | |
| GDP growth (annual %) | 3652 | 3.43 | 5.69 | −51.03 | 106.28 | |
| Democracy (polity2) | 3782 | 2.00 | 7.14 | −10 | 10 | |
| FDI (net inflows % of GDP) | 3571 | 2.66 | 5.39 | −82.89 | 91.01 | |
| Exports (% of GDP) | 3636 | 33.78 | 23.86 | 2.52 | 241.40 | |
| Current Account Balance (% GDP) | 3201 | −2.53 | 9.69 | −240.52 | 54.67 | |
| Real Interest Rate (%) | 2740 | 7.20 | 21.57 | −97.81 | 789.80 | |

Table 2A

Inflation Crisis (RR) Survival Model

| Dependent Variable: Inflation Crisis Duration (RR) | | | |
|--|-----------------|----------------|----------------|
| Variables | (1) | (2) | (3) |
| | Exponential | Weibull | Gompertz |
| Government Transparency (HRV) | −0.0593 (0.211) | −0.421(0.299) | −0.419(0.315) |
| CB Transparency (Dincer and Eichengreen, 2014) | 0.159(0.206) | 0.717**(0.340) | 0.717**(0.335) |
| Real GDP per capita (PPP adjusted) | − | − | − |
| GDP growth (annual %) | − | − | − |
| Democracy (polity2) | − | − | − |
| FDI (net inflows % of GDP) | − | − | − |
| Exports (% GDP) | − | − | − |
| Current Account Balance (% GDP) | − | − | − |
| Real Interest Rate (%) | − | − | − |
| Fixed or Managed Exchange Rate | − | − | − |
| High Income | − | − | − |
| Low Income | − | − | − |
| Region Dummy Variables | No | No | No |
| Constant | −0.478 (3.007) | 0.0546 (3.419) | −0.493 (3.690) |
| Observations | 8 | 8 | 8 |

Standard errors in parentheses.***p < 0.01, **p < 0.05, *p < 0.1.

Table 3A

Inflation Crisis (RR) Hazard Ratios.

| Dependent Variable: Inflation Crisis Duration (RR) | | | |
|--|-----------------|------------------|------------------|
| Variables | (1) | (2) | (3) |
| | Exponential | Weibull | Gompertz |
| Government Transparency (HRV) | 0.9420 (0.1992) | 0.6560 (0.1962) | 0.6580 (0.2073) |
| CB Transparency (Dincer and Eichengreen, 2014) | 1.1720 (0.2411) | 2.049** (0.6957) | 2.049** (0.6863) |

Table 4A

Inflation Crisis (RR) OLS Model

| Dependent Variable: Inflation Crisis Duration (RR) | |
|--|-------------------|
| Variables | Linear Regression |
| Government Transparency (HRV) | 0.0676(0.212) |
| CB Transparency (Dincer and Eichengreen, 2014) | −0.279(0.214) |
| Real GDP per capita (PPP) | − |
| GDP growth (annual %) | − |
| Democracy (polity2) | − |
| FDI (net inflows % of GDP) | − |
| Exports (% GDP) | − |
| Current Account Balance (% GDP) | − |
| Real Interest Rate (%) | − |
| Fixed or Managed Exchange Rate | − |
| High Income | − |
| Low Income | − |
| Region Dummy Variables | No |
| Year Dummy Variables | No |
| Constant | 2.191(3.144) |
| Observations | 8 |
| R-squared | 0.288 |

Standard errors in parentheses.***p < 0.01, **p < 0.05, *p < 0.1.

Table 5A

Currency Crisis (RR) Survival Model.

| Dependent Variable: Currency Crisis Duration (RR) | | | |
|---|---------------------|---------------------|---------------------|
| VARIABLES | (1) Exponential | (2) Weibull | (3) Gompertz |
| Government Transparency (HRV) | -0.00334 (0.246) | 0.326 (0.311) | 0.321 (0.311) |
| CB Transparency (Dincer and Eichengreen 2014) | -0.0125 (0.104) | -0.190 (0.119) | -0.188 (0.119) |
| Real GDP per capita (PPP) | 2.92e-06 (4.21e-05) | 2.54e-05 (4.32e-05) | 2.52e-05 (4.31e-05) |
| GDP growth (annual %) | 0.000859 (0.0407) | -0.0397 (0.0448) | -0.0391 (0.0448) |
| Democracy (polity2) | -0.0118 (0.105) | -0.253** (0.127) | -0.249* (0.128) |
| FDI (net inflows % of GDP) | 0.0332 (0.120) | 0.307** (0.135) | 0.304** (0.135) |
| Exports (% GDP) | 0.00405 (0.0279) | 0.0404 (0.0349) | 0.0399 (0.0348) |
| Current Account Balance (% GDP) | -0.00254 (0.0554) | -0.00985 (0.0641) | -0.00989 (0.0640) |
| Real Interest Rate (%) | -0.00576 (0.0186) | -0.0918*** (0.0264) | -0.0907*** (0.0266) |
| Fixed or Managed Exchange Rate | 0.0813 (0.592) | 1.491* (0.787) | 1.473* (0.788) |
| High Income | 0.140 (1.343) | 2.646* (1.541) | 2.612* (1.543) |
| Low Income | 0.0817 (0.829) | 1.465 (1.015) | 1.445 (1.015) |
| Region Dummy Variables | Yes | Yes | Yes |
| Constant | -0.138 (3.229) | -5.697 (4.096) | -9.653** (4.359) |
| Observations | 41 | 41 | 41 |

Standard errors in parentheses.***p < 0.01, **p < 0.05, *p < 0.1. Note: Eastern Europe regional indicator is negative and statistically significant in Models 2 and 3.

Table 6A

Currency Crisis (RR) Hazard Ratios

| Dependent Variable: Currency Crisis Duration (RR) | | | |
|---|-----------------|-----------------|-----------------|
| Variables | (1) | (2) | (3) |
| | Exponential | Weibull | Gompertz |
| Government Transparency (HRV) | 0.9970 (0.2450) | 1.3850 (0.4315) | 1.3780 (0.4289) |
| CB Transparency (Dincer and Eichengreen, 2014) | 0.9880 (0.1026) | 0.8270 (0.0983) | 0.8290 (0.0986) |

Table 7A

Currency Crisis (RR) OLS Model.

| Dependent Variable: Currency Crisis Duration (RR) | |
|---|----------------------|
| VARIABLES | Linear Regression |
| Government Transparency (HRV) | 0.0115 (0.0830) |
| CB Transparency (Dincer and Eichengreen 2014) | 0.0153 (0.0355) |
| Real GDP per capita (PPP) | -3.75e-06 (1.43e-05) |
| GDP growth (annual %) | -0.00183 (0.0137) |
| Democracy (polity2) | 0.0124 (0.0355) |
| FDI (net inflows % of GDP) | -0.0454 (0.0414) |
| Exports (% GDP) | -0.00531 (0.00932) |
| Current Account Balance (% GDP) | 0.00333 (0.0190) |
| Real Interest Rate (%) | 0.00671 (0.00616) |
| Fixed or Managed Exchange Rate | -0.103 (0.198) |
| High Income | -0.161 (0.453) |
| Low Income | -0.0910 (0.277) |
| Regional Dummy Variable | Yes |
| Constant | 1.106 (1.096) |
| Observations | 41 |
| R-squared | 0.416 |

Standard errors in parentheses.***p < 0.01, **p < 0.05, *p < 0.1.

Table 8A

Currency Crisis (LV) Survival Model.

| Dependent Variable: Currency Crisis Duration (LV) | | | |
|---|----------------|----------------|----------------|
| Variables | (1) | (2) | (3) |
| | Exponential | Weibull | Gompertz |
| Government Transparency (HRV) | 0.0213 (0.134) | 0.109 (0.160) | 0.100 (0.156) |
| CB Transparency (Dincer and Eichengreen, 2014) | 0.0132 (0.148) | 0.0667 (0.188) | 0.0615 (0.183) |
| Real GDP per capita (PPP) | – | – | – |
| GDP growth (annual %) | – | – | – |
| Democracy (polity2) | – | – | – |
| FDI (net inflows % of GDP) | – | – | – |
| Exports (% GDP) | – | – | – |
| Current Account Balance (% GDP) | – | – | – |
| Real Interest Rate (%) | – | – | – |
| Fixed or Managed Exchange Rate | – | – | – |

(continued on next page)

Table 8A (continued)

| Dependent Variable: Currency Crisis Duration (LV) | | | |
|---|---------------|---------------|----------------|
| Variables | (1) | (2) | (3) |
| | Exponential | Weibull | Gompertz |
| High Income | – | – | – |
| Low Income | – | – | – |
| Region Dummy Variables | No | No | No |
| Constant | –0.428(1.615) | –2.358(1.846) | –3.399*(1.930) |
| Observations | 18 | 18 | 18 |

Standard errors in parentheses.***p < 0.01, **p < 0.05, *p < 0.1.

Table 9A

Transparency and Inflation Crisis Severity (RR).

| Dependent Variable: Inflation Crisis Size (RR) | |
|--|----------------|
| Variables | Model 1 |
| Government Transparency (HRV) | 0.809 (3.670) |
| CB Transparency (Dincer and Eichengreen, 2014) | –5.224 (3.700) |
| Real GDP per capita (PPP) | – |
| GDP growth (annual %) | – |
| Democracy (polity2) | – |
| FDI (net inflows % of GDP) | – |
| Exports (% GDP) | – |
| Current Account Balance (% GDP) | – |
| Real Interest Rate (%) | – |
| Fixed or Managed Exchange Rate | – |
| High Income | – |
| Low Income | – |
| Regional Dummy Variables | No |
| Constant | 17.62 (54.29) |
| Observations | 8 |
| R-squared | 0.309 |

Standard errors in parentheses.***p < 0.01, **p < 0.05, *p < 0.1.10.

Appendix B. Banking and debt crises.

We expect the relationship between systemic banking crises and debt crises to be weak. Much of the existing literature on the topic (Cecchetti et al., 2009; Reinhart and Rogoff, 2008; Honohan and Klingebiel, 2003) suggests that systemic banking crises and debt crises are unique and often caused by idiosyncratic events, deeper systemic economic problems, or another type of crisis. As a result, understanding the impact of government transparency during these crises may require accounting for a number of financial indicators such as level of leverage in the banking system or other global economic factors, all of which obfuscate the beneficial impacts of government transparency. We include a preliminary test of the relationship between government transparency and banking and debt crisis duration below, fully recognizing that our analysis is preliminary given the complex nature of these crises. To measure systemic banking crisis duration, we use two dependent variables, one from the Reinhart and Rogoff (2011) data set and one from the Laeven and Valencia (2012) data set. For the debt crisis duration analysis three dependent variables are used: one from the Laeven and Valencia (2012) data set and two from the Reinhart and Rogoff (2011) data set. Results from the banking crisis survival analysis, zero-truncated negative binomial model, and the OLS models are summarized in Tables 10 and 11. The debt crisis duration results are presented in Tables 12 and 13. We recognize that several of the models have a very limited number of observations and therefore coefficients cannot be interpreted due to degrees of freedom limitations. Nevertheless, we include these models as plausibility probes. With the exception of select models where Systemic Banking Crisis (RR) is the dependent variable, the results, as expected, generally lack statistical significance across the transparency variables. This suggests that neither higher levels of government transparency nor higher levels of central bank transparency are associated with shorter systemic banking crisis or debt crisis durations. This is most likely because banking crisis and debt crisis durations may be driven by a large range of idiosyncratic domestic and international factors, and therefore recovery is not as directly influenced by public confidence. It may also be that the macroeconomic controls which are appropriate for inflation and currency crises are inappropriate or insufficient for banking and debt crises. It is possible, for example, that controlling for additional microeconomic variables such as level of leverage in the financial system, level of fiscal spending, or occurrence of a currency crisis prior to or during the banking/debt crisis would help further isolate the impact of transparency (Wilms et al., 2018). While this is out of scope for our paper, we believe these initial results may prove a valuable foundation for further research. Once again, in an attempt to differentiate between government and central bank transparency, we include the results of banking and debt crisis analysis adding central bank transparency as a control variable. The results are severely limited by the number of observations, making it difficult to draw any conclusions about the impact of central bank transparency on crisis duration. The analysis is limited to 11 systemic banking crises observed during the time period – 9 if the Laeven and Valencia (2012) measure is used – and a maximum of 9 debt crises due to the limited number of crises in the years covered by the central bank transparency data set. We attempt to compensate for these limitation by substituting in the backfilled central bank transparency data, but overall, the results are inconclusive. Given data limitations, we do not delve into the reasons for these possible relationships, but instead pose these questions to the academic community as possible avenues for further research.

Table 10A
Systemic Banking Crisis Survival Models

| Dependent Variable: Banking Crisis Duration | | | | | | | | | | | | |
|---|------------------------------|-------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------------|--------------------------|--------------------------|----------------------------|----------------------------|
| Variables | Systemic Banking Crisis (RR) | | | | | | | | | | | |
| | (1) Exponential | (2) Exponential | (3) Exponential | (4) Exponential | (5) Weibull | (6) Weibull | (7) Weibull | (8) Weibull | (9) Gompertz | (10) Gompertz | (11) Gompertz | (12) Gompertz |
| Government Transparency (HRV) | 0.109* (0.0625) | 0.121 (0.145) | −0.232 (0.231) | 0.0902 (0.164) | 0.160*** (0.0617) | 0.310* (0.165) | −0.960*** (0.345) | 0.246 (0.196) | 0.169*** (0.0627) | 0.354** (0.168) | −0.842*** (0.324) | 0.310 (0.198) |
| CB Transparency (Dincer and Eichengreen 2014) | — | — | −0.0174 (0.0864) | - | - | - | −0.0196 (0.0790) | - | - | - | −0.0254 (0.0777) | - |
| CB Transparency (backfilled) | - | - | - | 0.135 (0.0843) | - | - | - | 0.293*** (0.0999) | - | - | - | 0.303*** (0.0987) |
| Real GDP per capita (PPP) | −3.58e−05 (3.82e−05) | −3.58e−05 (3.82e−05) | −3.58e−05 (3.82e−05) | −7.94e−05* (4.49e−05) | −7.94e−05* (4.49e−05) | −7.33e−05* (4.27e−05) | −7.33e−05* (4.27e−05) | −0.000175*** (5.55e−05) | −7.36e−05* (4.23e−05) | −7.36e−05* (4.23e−05) | −0.000169*** (5.42e−05) | −0.000169*** (5.42e−05) |
| GDP growth (annual %) | −0.0101 (0.0312) | −0.0101 (0.0312) | −0.0101 (0.0312) | 0.0605 (0.0473) | 0.0605 (0.0473) | −0.0436 (0.0318) | −0.0436 (0.0318) | 0.110** (0.0554) | −0.0482 (0.0322) | −0.0482 (0.0322) | −0.0482 (0.0322) | 0.0804 (0.0526) |
| Democracy (polity2) | −0.00158 (0.0309) | −0.00158 (0.0309) | −0.00158 (0.0309) | 0.0283 (0.0352) | 0.0283 (0.0352) | −0.00918 (0.0324) | −0.00918 (0.0324) | 0.0532 (0.0375) | −0.00261 (0.0329) | −0.00261 (0.0329) | −0.00261 (0.0329) | 0.0437 (0.0387) |
| FDI (net inflows % of GDP) | 0.0447 (0.0536) | 0.0447 (0.0536) | 0.0447 (0.0536) | −0.0366 (0.105) | −0.0366 (0.105) | 0.106* (0.0575) | 0.106* (0.0575) | −0.0670 (0.122) | 0.107* (0.0554) | 0.107* (0.0554) | 0.107* (0.0554) | −0.0790 (0.127) |
| Exports (% GDP) | 0.00465 (0.00587) | 0.00465 (0.00587) | 0.00465 (0.00587) | 0.0133 (0.00931) | 0.0133 (0.00931) | 0.00960 (0.00596) | 0.00960 (0.00596) | 0.0299*** (0.0110) | 0.0115* (0.00592) | 0.0115* (0.00592) | 0.0115* (0.00592) | 0.0342*** (0.0114) |
| Current Account Balance (% GDP) | 0.0318 (0.0339) | 0.0318 (0.0339) | 0.0318 (0.0339) | 0.0405 (0.0484) | 0.0405 (0.0484) | 0.0555 (0.0367) | 0.0555 (0.0367) | 0.0983* (0.0513) | 0.0556 (0.0371) | 0.0556 (0.0371) | 0.0556 (0.0371) | 0.0876* (0.0525) |
| Real Interest Rate (%) | −0.00133 (0.00793) | −0.00133 (0.00793) | −0.00133 (0.00793) | 0.0128 (0.0102) | 0.0128 (0.0102) | −0.00637 (0.00896) | −0.00637 (0.00896) | 0.0294** (0.0118) | −0.00801 (0.00836) | −0.00801 (0.00836) | −0.00801 (0.00836) | 0.0225** (0.0114) |
| Fixed or Managed Exchange Rate | −0.155 (0.364) | −0.155 (0.364) | −0.155 (0.364) | −0.373 (0.468) | −0.373 (0.468) | −0.281 (0.384) | −0.281 (0.384) | −0.799 (0.574) | −0.514 (0.384) | −0.514 (0.384) | −0.514 (0.384) | −0.789 (0.601) |
| High Income | 0.460 (0.715) | 0.460 (0.715) | 0.460 (0.715) | 0.394 (0.891) | 0.394 (0.891) | 1.016 (0.752) | 1.016 (0.752) | 0.994 (0.935) | 0.990 (0.739) | 0.990 (0.739) | 0.990 (0.739) | 0.734 (0.921) |
| Low Income | 0.119 (0.595) | 0.119 (0.595) | 0.119 (0.595) | 0.454 (0.733) | 0.454 (0.733) | 0.260 (0.634) | 0.260 (0.634) | 0.871 (0.851) | 0.412 (0.650) | 0.412 (0.650) | 0.412 (0.650) | 0.961 (0.840) |
| Region Dummy Variables | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes |
| Constant | −2.710*** (0.825) | −2.851 (1.971) | 3.070 (3.343) | −3.214 (2.197) | −4.090*** (0.875) | −6.675*** (2.317) | 12.23*** (4.551) | −7.911*** (2.721) | −3.922*** (0.880) | −6.887*** (2.339) | 9.861** (4.090) | −8.632*** (2.807) |
| Observations | 95 | 70 | 11 | 51 | 95 | 70 | 11 | 51 | 95 | 70 | 11 | 51 |
| Standard errors in parentheses | | | | | | | | | | | | |

*** p<0.01, ** p<0.05, * p<0.1

Note: Latin America & Caribbean regional indicator is positive and statistically significant in Models 4, 6, 8, 10, 12. Eastern Europe regional indicator is positive and statistically significant in Models 8 and 12.

Table 10B
Systemic Banking Crisis Survival Models

| Dependent Variable: Banking Crisis Duration | | | | | | | | | | | | |
|---|------------------------------|-------------------------|----------------------|------------------------|--------------------|--------------------------|--------------------|------------------------|---------------------|-------------------------|--------------------|------------------------|
| Variables | Systemic Banking Crisis (LV) | | | | | | | | | | | |
| | (13) Exponential | (14) Exponential | (15) Exponential | (16) Exponential | (17) Weibull | (18) Weibull | (19) Weibull | (20) Weibull | (21) Gompertz | (22) Gompertz | (23) Gompertz | (24) Gompertz |
| Government Transparency (HRV) | 0.0204 (0.0605) | 0.0756 (0.155) | −0.0856 (0.165) | −0.0423 (0.234) | 0.0329 (0.0617) | 0.129 (0.155) | −0.265 (0.167) | −0.136 (0.284) | 0.00736 (0.0605) | 0.0997 (0.155) | −0.303* (0.177) | 0.0564 (0.257) |
| CB Transparency (Dincer and Eichengreen 2014) | | - | −0.00822 (0.0859) | - | | - | 0.0257 (0.0910) | - | | - | 0.0585 (0.0944) | - |
| CB Transparency (backfilled) | | - | | −0.265 (0.181) | | - | | −1.007*** (0.264) | | - | | −0.578*** (0.221) |
| Real GDP per capita (PPP) | | −5.27e−05 (5.01e−05) | | 2.17e−05 (8.55e−05) | | −0.000103* (5.38e−05) | | 1.96e−05 (9.85e−05) | | −7.08e−05 (5.17e−05) | | 2.78e−05 (9.31e−05) |
| GDP growth (annual %) | | 0.0528* (0.0276) | | 0.0776* (0.0410) | | 0.113*** (0.0317) | | 0.277*** (0.0588) | | 0.0784*** (0.0304) | | 0.144*** (0.0481) |
| Democracy (polity2) | | 0.0271 (0.0293) | | 0.0410 (0.0460) | | 0.0588* (0.0315) | | 0.122** (0.0598) | | 0.0429 (0.0304) | | 0.113** (0.0570) |
| FDI (net inflows % of GDP) | | −0.00545 (0.0660) | | 0.0683 (0.122) | | −0.0240 (0.0759) | | 0.286* (0.164) | | −0.0173 (0.0692) | | 0.181 (0.149) |
| Exports (% GDP) | | 0.0135 (0.00833) | | −0.00558 (0.0148) | | 0.0275*** (0.00908) | | −0.00719 (0.0170) | | 0.0195** (0.00876) | | −0.00755 (0.0166) |
| Current Account Balance (% GDP) | | 0.0442* (0.0252) | | 0.0183 (0.0570) | | 0.0937*** (0.0292) | | 0.0529 (0.0678) | | 0.0589** (0.0270) | | 0.0168 (0.0634) |
| Real Interest Rate (%) | | −0.00721 (0.00618) | | 0.0109 (0.0130) | | −0.0159** (0.00660) | | 0.0281* (0.0147) | | −0.00940 (0.00638) | | 0.0192 (0.0143) |
| Fixed or Managed Exchange Rate | | −0.539 (0.349) | | −0.309 (0.477) | | −1.148*** (0.394) | | −1.406** (0.564) | | −0.778** (0.373) | | −0.778 (0.506) |
| High Income | | 0.618 (1.165) | | 0.568 (1.709) | | 1.199 (1.244) | | 3.954 (2.613) | | 0.890 (1.213) | | 1.679 (2.160) |
| Low Income | | −0.109 (0.556) | | −0.771 (0.922) | | −0.176 (0.612) | | −2.462* (1.301) | | −0.0979 (0.581) | | −1.432 (1.180) |
| Region Dummy Variables | No | No | No | No | No | No | No | No | No | No | No | No |
| Constant | −1.101 (0.736) | −1.816 (2.085) | 0.751 (2.299) | 0.321 (3.178) | −1.412* (0.773) | −3.368 (2.105) | 1.659 (2196) | 0.785 (3.967) | −0.826 (0.753) | −2.415 (2.079) | 1.271 (2.160) | −1.524 (3.588) |
| Observations | 99 | 64 | 9 | 37 | 99 | 64 | 9 | 37 | 99 | 64 | 9 | 37 |
| Standard errors in parentheses | | | | | | | | | | | | |

*** p<0.01, ** p<0.05, * p<0.1.

Note: Latin America & Caribbean regional indicator is positive and statistically significant in Models 18 and 22. Eastern Europe regional indicator is positive and statistically significant in Models 18 and 20.

Table 11a
Systemic Banking Crisis - Count Model and OLS Model

| Dependent Variable: Systemic Banking Crisis Duration (RR) | | | | | | |
|---|-----------------------|------------------------|-----------------------|------------------------|-----------------------|--------------------------|
| Variables | (1) Negative Binomial | (2) Negative Binomial | (3) Linear Regression | (4) Linear Regression | (5) Linear Regression | (6) Linear Regression |
| Government Transparency (HRV) | −0.150** (0.0675) | −0.151 (0.0972) | −0.445** (0.181) | −0.387 (0.315) | 0.371* (0.163) | −0.316 (0.306) |
| CB Transparency (Dincer and Eichengreen 2014) | | - | | - | 0.0448 (0.0610) | - |
| CB Transparency (backfilled) | | - | | - | | −0.448** (0.173) |
| Real GDP per capita (PPP) | | 4.05e−05 (2.52e−05) | | 9.74e−05 (8.45e−05) | | 0.000202** (8.60e−05) |
| GDP growth (annual %) | | 0.00626 (0.0251) | | −0.00780 (0.0768) | | −0.158* (0.0905) |

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Table 11a (continued)

| Dependent Variable: Systemic Banking Crisis Duration (RR) | | | | | | |
|---|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Variables | (1) Negative Binomial | (2) Negative Binomial | (3) Linear Regression | (4) Linear Regression | (5) Linear Regression | (6) Linear Regression |
| Democracy (polity2) | | −0.000278 (0.0222) | | −0.00792 (0.0720) | | −0.0832 (0.0740) |
| FDI (net inflows % of GDP) | | −0.0374 (0.0471) | | −0.102 (0.122) | | 0.113 (0.196) |
| Exports (% GDP) | | −0.00861 (0.00546) | | −0.0211 (0.0142) | | −0.0479** (0.0183) |
| Current Account Balance (% GDP) | | −0.0422 (0.0262) | | −0.0964 (0.0799) | | −0.105 (0.104) |
| Real Interest Rate (%) | | −0.000119 (0.00614) | | 0.00174 (0.0164) | | −0.0299 (0.0196) |
| Fixed or Managed Exchange Rate | | 0.235 (0.260) | | 0.844 (0.830) | | 1.165 (0.867) |
| High Income | | −0.530 (0.518) | | −1.106 (1.655) | | −0.243 (1.845) |
| Low Income | | −0.124 (0.342) | | −0.509 (1.214) | | −1.699 (1.307) |
| Region Dummy Variables | No | Yes | No | Yes | No | Yes |
| Year Dummy Variables | No | No | No | No | No | No |
| Constant | 2.995*** (0.879) | 3.259** (1.333) | 9.465*** (2.385) | 9.120** (4.365) | −4.055 (2.353) | 10.94** (4.183) |
| Observations | 95 | 70 | 95 | 70 | 11 | 51 |
| R-squared | | | 0.061 | 0.301 | 0.467 | 0.511 |

Standard errors in parentheses *** p<0.01, ** p<0.05, *p<0.1.

Note: Regional and year dummies are excluded where problems of collinearity arise.

Table 11B

Systemic Banking Crisis - Count Model and OLS Model

| Dependent Variable: Systemic Banking Crisis Duration (LV) | | | | | | |
|---|-----------------------|------------------------|-----------------------|------------------------|------------------------|-------------------------|
| Variables | (7) Negative Binomial | (8) Negative Binomial | (9) Linear Regression | (10) Linear Regression | (11) Linear Regression | (12) Linear Regression |
| Government Transparency (HRV) | −0.0434 (0.123) | 0.260 (0.300) | −0.0456 (0.163) | −0.494 (0.649) | 0.145 (0.127) | −0.0634 (0.353) |
| CB Transparency (Dincer and Eichengreen 2014) | | - | | - | 0.0111 (0.0616) | - |
| CB Transparency (backfilled) | | - | | - | | 0.666** (0.268) |
| Real GDP per capita (PPP) | | 7.96e−05 (9.02e−05) | | 9.12e−05 (0.000174) | | −6.86e−05 (0.000127) |
| GDP growth (annual %) | | −0.101* (0.0587) | | −0.267** (0.106) | | −0.166** (0.0661) |
| Democracy (polity2) | | −0.0847* (0.0468) | | −0.00457 (0.120) | | −0.163** (0.0694) |
| FDI (net inflows % of GDP) | | 0.0676 (0.126) | | 0.108 (0.265) | | −0.214 (0.177) |
| Exports (% GDP) | | −0.0141 (0.0182) | | −0.0107 (0.0340) | | 0.0145 (0.0227) |
| Current Account Balance (% GDP) | | - | | 0.0443 (0.122) | | −0.0134 (0.0858) |
| Real Interest Rate (%) | | 0.0102 (0.0119) | | 0.0670 (0.0592) | | −0.0291 (0.0198) |
| Fixed or Managed Exchange Rate | | - | | 1.830 (1.407) | | 0.830 (0.763) |
| High Income | | −1.588 (2.050) | | 0.740 (3.808) | | −1.146 (2.327) |
| Low Income | | 0.987 (0.780) | | 2.621 (2.405) | | 2.138 (1.376) |
| Region Dummy Variables | No | No | No | Yes | No | Yes |
| Year Dummy Variables | No | No | No | Yes | No | No |
| Constant | −19.67 (244.2) | −19.03 (3,018) | 2.903 (1.987) | 3.965 (8.907) | −0.428 (1.742) | 2.250 (4.772) |
| Observations | 99 | 72 | 99 | 64 | 9 | 37 |
| R-squared | | | 0.001 | 0.607 | 0.205 | 0.676 |

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Note: Regional and year dummies are excluded where problems of collinearity arise.

Table 12A

Debt Crisis Survival Model

| Dependent Variable: Sovereign Debt Crisis (LV) | | | | | | | | | | | | |
|--|------------------|------------------------|-------------------|--------------------|------------------|------------------------|-------------------|--------------------|------------------|------------------------|-------------------|--------------------|
| Variables | (1) Exponential | (2) Exponential | (3) Exponential | (4) Exponential | (5) Weibull | (6) Weibull | (7) Weibull | (8) Weibull | (9) Gompertz | (10) Gompertz | (11) Gompertz | (12) Gompertz |
| Government Transparency (HRV) | 0.115 (0.101) | −0.251 (0.366) | −0.153 (0.373) | 0.133 (0.115) | 0.144 (0.104) | −0.602 (0.388) | −0.438 (0.447) | 0.152 (0.119) | 0.100 (0.104) | −0.482 (0.402) | −0.398 (0.443) | 0.111 (0.121) |
| CB Transparency (Dincer and Eichengreen 2014) | | - | 0.111 (0.430) | - | | - | 0.706 (0.777) | - | | - | 0.556 (0.726) | - |
| CB Transparency (backfilled) | | - | | −0.0854 (0.128) | | - | | −0.0939 (0.129) | | - | | −0.0770 (0.128) |
| Real GDP per capita (PPP) | | 5.24e−05 (0.000117) | | | | 0.000136 (0.000145) | | | | 0.000125 (0.000132) | | |
| GDP growth (annual %) | | 0.0629 (0.0750) | | | | 0.113 (0.109) | | | | 0.0911 (0.0872) | | |

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Table 12A (continued)

| Dependent Variable: Sovereign Debt Crisis (LV) | | | | | | | | | | | | |
|--|--------------------|---------------------|------------------|-------------------|---------------------|----------------------|------------------|--------------------|-------------------|----------------------|------------------|-------------------|
| Variables | (1) | (2) | (3) | (4) | (5) | (6) Weibull | (7) | (8) | (9) | (10) | (11) | (12) |
| | Exponential | Exponential | Exponential | Exponential | Weibull | | Weibull | Weibull | Gompertz | Gompertz | Gompertz | Gompertz |
| Democracy (polity2) | | 0.0563 (0.0506) | | | | 0.171** (0.0836) | | | | 0.109* (0.0646) | | |
| FDI (net inflows % of GDP) | | 0.249 (0.295) | | | | 0.647* (0.383) | | | | 0.489 (0.353) | | |
| Exports (% GDP) | | 0.00986 (0.0237) | | | | 0.0247 (0.0246) | | | | 0.00125 (0.0251) | | |
| Current Account Balance (% GDP) | | 0.0367 (0.0319) | | | | 0.0894** (0.0400) | | | | 0.0635* (0.0384) | | |
| Real Interest Rate (%) | | 0.00400 (0.0183) | | | | 0.00382 (0.0217) | | | | 0.000373 (0.0199) | | |
| Fixed or Managed Exchange Rate | | 0.233 (0.972) | | | | 0.699 (1.391) | | | | 0.470 (1.155) | | |
| High Income | | - | | | | - | | | | - | | |
| Low Income | | 0.512 (1.265) | | | | 0.939 (1.412) | | | | 0.798 (1.294) | | |
| Region Dummy Variables | No | Yes | No | No | No | Yes | No | No | No | Yes | No | No |
| Constant | -2.228* (1.189) | 1.371 (4.503) | 1.498 (6.307) | -2.277 (1.439) | -2.763** (1.265) | 3.469 (4.587) | 2.398 (7.845) | -2.610* (1.535) | -1.973 (1.254) | 3.575 (4.823) | 1.713 (7.665) | -1.930 (1.545) |
| Observations | 52 | 23 | 4 | 28 | 52 | 23 | 4 | 28 | 52 | 23 | 4 | 28 |

Standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Note: The Sovereign Debt Crisis (LV) dependent variable observations decrease from 52 to 23 when adding controls because all observations are "low income" countries and real interest rate and current account data is not available for several of the countries.

Table 12B

Debt Crisis Survival Model

| Dependent Variable: Domestic Debt Crisis (RR) | | | | | | | | | | | | |
|---|---------------------|-------------------------|-------------------|--------------------|---------------------|-------------------------|---------------------|--------------------|--------------------|-------------------------|--------------------|--------------------|
| Variables | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) |
| | Exponential | Exponential | Exponential | Exponential | Weibull | Weibull | Weibull | Weibull | Gompertz | Gompertz | Gompertz | Gompertz |
| Government Transparency (HRV) | 0.160 (0.124) | 0.0616 (0.513) | -0.778 (1.021) | 0.0696 (0.159) | 0.192 (0.128) | 0.816** (0.409) | -6.320** (3.130) | 0.116 (0.164) | 0.151 (0.132) | 0.677 (0.430) | -9.584* (4.903) | 0.0792 (0.165) |
| CB Transparency (Dincer and Eichengreen 2014) | | - | 0.171 (0.157) | - | | - | 1.366** (0.656) | - | | - | 1.425** (0.717) | - |
| CB Transparency (backfilled) | | - | | 0.254** (0.118) | | - | | 0.344** (0.134) | | - | | 0.263** (0.124) |
| Real GDP per capita (PPP) | | -3.57e-05 (0.000187) | | | | -0.000305 (0.000221) | | | | -0.000219 (0.000213) | | |
| GDP growth (annual %) | | -0.0378 (0.0649) | | | | 0.0874 (0.0814) | | | | 0.0925 (0.0795) | | |
| Democracy (polity2) | | - | | | | -0.191** (0.0955) | | | | -0.123 (0.0895) | | |
| FDI (net inflows % of GDP) | | -0.0458 (0.198) | | | | -0.0641 (0.149) | | | | -0.0711 (0.144) | | |
| Exports (% GDP) | | -0.0452 (0.0473) | | | | -0.0507* (0.0284) | | | | -0.0319 (0.0268) | | |
| Current Account Balance (% GDP) | | 0.154 (0.217) | | | | 0.102* (0.0566) | | | | 0.0680 (0.0532) | | |
| Real Interest Rate (%) | | - | | | | - | | | | - | | |
| Fixed or Managed Exchange Rate | | -0.891 (1.726) | | | | -2.658*** (0.824) | | | | -1.998** (0.848) | | |
| High Income | | - | | | | - | | | | - | | |
| Low Income | | 2.811 (5.640) | | | | -0.995 (1.558) | | | | -0.438 (1.531) | | |
| Region Dummy Variables | No | Yes | No | No | No | No | No | No | No | No | No | No |
| Constant | -3.155** (1.586) | -1.766 (3.419) | 10.47 (15.50) | -2.801 (1.893) | -3.798** (1.747) | -7.624** (3.668) | 84.39** (42.22) | -4.181* (2.169) | -3.006* (1.763) | -6.558 (4.024) | 131.0* (66.99) | -3.011 (2.089) |
| Observations | 21 | 19 | 4 | 16 | 21 | 19 | 4 | 16 | 21 | 19 | 4 | 16 |

SStandard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Table 12C

Debt Crisis Survival Model.

| Dependent Variable: External Debt Crisis (RR) | | | | | | | | | | | | |
|---|----------------------|-------------------------|---------------------|-------------------------|----------------------|-------------------------|---------------------|-------------------------|----------------------|-------------------------|---------------------|-------------------------|
| Variables | (25) Exponential | (26) Exponential | (27) Exponential | (28) Exponential | (29) Weibull | (30) Weibull | (31) Weibull | (32) Weibull | (33) Gompertz | (34) Gompertz | (35) Gompertz | (36) Gompertz |
| Government Transparency (HRV) | 0.237** (0.101) | 0.204 (0.186) | -0.0509 (0.163) | 0.225 (0.229) | 0.260** (0.104) | 0.150 (0.181) | -0.183 (0.163) | 0.118 (0.213) | 0.275*** (0.105) | 0.147 (0.181) | -0.288 (0.194) | 0.0985 (0.210) |
| CB Transparency (Dincer and Eichengreen 2014) | - | - | 0.229 (0.157) | - | - | - | 0.710*** (0.235) | - | - | - | 0.639*** (0.240) | - |
| CB Transparency (backfilled) | - | - | - | 0.0163 (0.135) | - | - | - | -0.0257 (0.123) | - | - | - | -0.0278 (0.120) |
| Real GDP per capita (PPP) | - | -6.00e-05 (0.000103) | - | -0.000151 (0.000150) | - | -0.000134 (9.55e-05) | - | -0.000239 (0.000147) | - | -0.000127 (9.61e-05) | - | -0.000181 (0.000140) |
| GDP growth (annual %) | - | -0.00297 (0.0279) | - | -0.0414 (0.0372) | - | -0.0160 (0.0278) | - | -0.0585* (0.0350) | - | -0.0159 (0.0282) | - | -0.0475 (0.0346) |
| Democracy (polity2) | - | - | - | - | - | 0.0248 (0.0254) | - | 0.0819** (0.0358) | - | 0.0232 (0.0254) | - | 0.0652* (0.0341) |
| FDI (net inflows % of GDP) | - | 0.353* (0.190) | - | 0.357 (0.277) | - | 0.388** (0.198) | - | 0.822*** (0.275) | - | 0.359* (0.193) | - | 0.643*** (0.247) |
| Exports (% GDP) | - | -0.0156 (0.0142) | - | -0.00574 (0.0363) | - | -0.0262* (0.0140) | - | 0.0316 (0.0315) | - | -0.0264* (0.0142) | - | 0.0275 (0.0319) |
| Current Account Balance (% GDP) | - | 0.0640* (0.0376) | - | 0.113* (0.0626) | - | 0.101*** (0.0380) | - | 0.106* (0.0554) | - | 0.0975** (0.0384) | - | 0.0872 (0.0546) |
| Real Interest Rate (%) | - | - | - | - | - | - | - | - | - | - | - | - |
| Fixed or Managed Exchange Rate | - | -0.247 (0.386) | - | -0.444 (0.482) | - | 0.162 (0.380) | - | -0.453 (0.439) | - | 0.192 (0.385) | - | -0.329 (0.444) |
| High Income | - | - | - | - | - | - | - | - | - | - | - | - |
| Low Income | - | -0.382 (0.850) | - | -0.914 (1.070) | - | 0.173 (0.617) | - | -1.119 (0.820) | - | 0.177 (0.618) | - | -0.841 (0.788) |
| Region Dummy Variables | No | Yes | No | Yes | No | No | No | No | No | No | No | No |
| Constant | -4.566*** (1.232) | -3.179 (2.260) | -0.909 (2.206) | -3.128 (2.756) | -5.039*** (1.363) | -2.798 (2.173) | -2.881 (2.230) | -3.207 (2.601) | -5.255*** (1.358) | -2.594 (2.160) | -1.257 (2.036) | -2.718 (2.542) |
| Observations | 55 | 47 | 9 | 32 | 55 | 45 | 9 | 32 | 55 | 45 | 9 | 32 |

Standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Table 13
Debt Crisis Linear Models.

| Variables | Dependent Variable: Sovereign Debt Crisis (LV) | | | | Dependent Variable: Domestic Debt Crisis (RR) | | | | Dependent Variable: External Debt Crisis (RR) | | | |
|---|--|-----------------------|-----------------------|-----------------------|---|------------------------|-----------------------|-----------------------|---|------------------------|------------------------|------------------------|
| | (1) Linear Regression | (2) Linear Regression | (3) Linear Regression | (4) Linear Regression | (5) Linear Regression | (6) Linear Regression | (7) Linear Regression | (8) Linear Regression | (9) Linear Regression | (10) Linear Regression | (11) Linear Regression | (12) Linear Regression |
| Government Transparency (HRV) | −0.240 (0.273) | 0.870 (1.315) | 0.273 (0.498) | −0.398 (0.422) | −0.572 (0.519) | −1.784 (1.741) | 2.456 (0.891) | −0.372 (0.666) | −1.064** (0.484) | −1.148 (0.900) | 0.197 (0.173) | −1.079 (0.940) |
| CB Transparency (Dincer and Eichengreen 2014) | - | - | −0.153 (0.489) | - | - | - | −0.377 (0.140) | - | - | - | −0.537** (0.190) | - |
| CB Transparency (backfilled) | - | - | - | 0.252 (0.395) | - | - | - | −0.771 (0.526) | - | - | - | −0.457 (0.345) |
| Real GDP per capita (PPP) | −0.000347 (0.000393) | - | - | - | - | 0.000349 (0.000666) | - | - | - | 0.000199 (0.000476) | - | 0.000673 (0.000583) |
| GDP growth (annual %) | −0.239 (0.240) | - | - | - | - | −0.0865 (0.213) | - | - | - | 0.136 (0.116) | - | 0.148 (0.0927) |
| Democracy (polity2) | −0.159 (0.162) | - | - | - | - | 0.255 (0.258) | - | - | - | 0.0518 (0.147) | - | −0.196 (0.134) |
| FDI (net inflows % of GDP) | −0.633 (1.034) | - | - | - | - | 0.207 (0.613) | - | - | - | −0.516 (0.755) | - | −0.465 (0.759) |
| Exports (% GDP) | 0.0316 (0.0836) | - | - | - | - | 0.168 (0.153) | - | - | - | 0.111 (0.0942) | - | 0.0642 (0.106) |
| Current Account Balance (% GDP) | −0.0961 (0.103) | - | - | - | - | −0.557 (0.637) | - | - | - | −0.535*** (0.169) | - | −0.485*** (0.147) |
| Real Interest Rate (%) | −0.0160 (0.0600) | - | - | - | - | - | - | - | - | −0.0103 (0.0365) | - | 0.0122 (0.0460) |
| Fixed or Managed Exchange Rate | 0.0908 (2.903) | - | - | - | - | 6.395 (4.757) | - | - | - | 2.609 (1.726) | - | 4.411*** (1.337) |
| High Income | - | - | - | - | - | - | - | - | - | - | - | - |
| Low Income | −2.427 (4.016) | - | - | - | - | −10.39 (16.13) | - | - | - | −0.906 (2.993) | - | 0.842 (2.924) |
| Region Dummy Variables | No | Yes | No | No | No | Yes | No | No | No | Yes | No | Yes |
| Constant | 5.250 (3.214) | −6.163 (16.14) | −1.919 (8.010) | 6.639 (4.977) | 10.47 (6.616) | 23.18 (12.60) | −33.39 (13.53) | 10.76 (8.175) | 18.55*** (5.935) | 14.96 (11.27) | 1.744 (2.348) | 13.30 (12.01) |
| Observations | 52 | 23 | 4 | 28 | 21 | 19 | 4 | 16 | 55 | 33 | 9 | 25 |
| R-squared | 0.015 | 0.534 | 0.404 | 0.044 | 0.060 | 0.769 | 0.934 | 0.202 | 0.084 | 0.567 | 0.583 | 0.824 |

Standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Note: The Sovereign Debt Crisis (LV) dependent variable observations decrease from 52 to 23 when adding controls because all observations are "low income" countries, therefore real interest rate and current account data is not available for several of the countries.

Appendix C. Results including the KOF index as a control**Table 14**
Inflation Crisis (RR) Survival Model with KOF Index

| Dependent Variable: Inflation Crisis Duration (RR) | | | |
|--|----------------------|------------------------|------------------------|
| VARIABLES | (1) Exponential | M Weibull | (3) Gompertz |
| Government Transparency (HRV) | 0.660** (0.258) | 1.362*** (0.329) | 1.178*** (0.338) |
| Political Globalization (KOF) | −0.0150 (0.0171) | −0.0352* (0.0197) | −0.0216 (0.0178) |
| Real GDP per capita (PPP adjusted) | −0.000195 (0.000128) | −0.000356** (0.000148) | −0.000370** (0.000151) |
| GDP growth (annual %) | −0.0252 (0.0402) | −0.0602 (0.0517) | −0.0512 (0.0452) |
| Democracy (polity2) | −0.0175 (0.0429) | −0.0313 (0.0521) | −0.0308 (0.0452) |
| FDI (net inflows % of GDP) | 0.0714 (0.117) | 0.187 (0.135) | 0.121 (0.124) |
| Exports (% GDP) | −0.0177 (0.0257) | −0.0312 (0.0308) | −0.0318 (0.0287) |
| Current Account Balance (% GDP) | 0.00502 (0.0409) | 0.0141 (0.0440) | 0.0170 (0.0427) |
| Real Interest Rate (%) | −0.0105 (0.0162) | −0.0201 (0.0186) | −0.0302 (0.0190) |
| Fixed or Managed Exchange Rate | 0.576 (0.453) | 0.890* (0.500) | 0.917* (0.484) |
| High Income | 2.318 (1.603) | 4.897*** (1.846) | 4.094*** (1.779) |
| Low Income | 0.926 (0.985) | 1.990* (1.061) | 1.489 (1.020) |
| Region Dummy Variables | Yes | Yes | Yes |
| Constant | −7.641** (2.982) | −15.74*** (3.794) | −13.82*** (3.937) |
| Observations | 44 | 44 | 44 |

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 15
Currency Crisis (RR) Survival Model with KOF Index

| Dependent Variable: Currency Crisis Duration (RR) | | | |
|---|---------------------|---------------------|---------------------|
| Variables | (1) Exponential | (2) Weibull | (3) Gompertz |
| Government Transparency (HRV) | 0.0942 (0.0921) | 0.216** (0.103) | 0.151 (0.0957) |
| Political Globalization (KOF) | −0.00115 (0.00907) | −0.000719 (0.0102) | −0.000641 (0.00953) |
| Real GDP per capita (PPP) | 1.17e−05 (2.40e−05) | 2.64e−05 (2.53e−05) | 1.30e−05 (2.45e−05) |
| GDP growth (annual %) | −0.000651 (0.0232) | −0.00566 (0.0253) | −0.00563 (0.0241) |
| Democracy (polity2) | 0.0226 (0.0242) | 0.0404 (0.0279) | 0.0258 (0.0255) |
| FDI (net inflows % of GDP) | −0.00215 (0.0409) | −0.0184 (0.0412) | −0.00211 (0.0407) |
| Exports (% GDP) | 0.000320 (0.00654) | 0.00272 (0.00672) | −0.000102 (0.00662) |
| Current Account Balance (% GDP) | −0.00285 (0.0179) | −0.0113 (0.0194) | −0.00501 (0.0186) |
| Real Interest Rate (%) | 0.000191 (0.00147) | 0.000641 (0.00163) | 0.000739 (0.00155) |
| Fixed or Managed Exchange Rate | 0.597** (0.261) | 1.297*** (0.288) | 1.038*** (0.302) |
| High Income | 0.0366 (0.517) | 0.107 (0.518) | 0.123 (0.519) |
| Low Income | −0.0803 (0.462) | −0.227 (0.547) | −0.254 (0.504) |
| Region Dummy Variables | Yes | Yes | Yes |
| Constant | −2.046* (1.119) | −4.844*** (1.286) | −3.394*** (1.213) |
| Observations | 131 | 131 | 131 |

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Eastern Europe regional indicator is negative and statistically significant across all models. Latin America & Caribbean regional indicator is negative and statistically significant in Models 2 and 3.

Table 16
Currency Crisis (LV) Survival Model with KOF Index

| Dependent Variable: Currency Crisis Duration (LV) | | | |
|---|----------------------|----------------------|----------------------|
| VARIABLES | (1) Exponential | (2) Weibull | (3) Gompertz |
| Government Transparency (HRV) | 0.102 (0.156) | 0.313* (0.181) | 0.150 (0.165) |
| Political Globalization (KOF) | 0.00363 (0.0108) | 0.0113 (0.0117) | 0.00822 (0.0109) |
| Real GDP per capita (PPP) | −1.65e−05 (6.13e−05) | −5.23e−05 (6.59e−05) | −2.06e−05 (6.39e−05) |
| GDP growth (annual %) | −0.0176 (0.0311) | −0.0320 (0.0349) | −0.0379 (0.0327) |
| Democracy (polity2) | 0.0263 (0.0231) | 0.0668*** (0.0247) | 0.0587** (0.0251) |
| FDI (net inflows % of GDP) | 0.00141 (0.0814) | −0.0239 (0.0980) | −0.0175 (0.0873) |
| Exports (% GDP) | 0.00691 (0.00989) | 0.0228** (0.0110) | 0.0120 (0.0105) |
| Current Account Balance (% GDP) | 0.0267 (0.0178) | 0.0598*** (0.0212) | 0.0529** (0.0209) |
| Real Interest Rate (%) | 0.000459 (0.00434) | 0.00191 (0.00456) | 0.00119 (0.00440) |
| Fixed or Managed Exchange Rate | 0.253 (0.295) | 0.762** (0.327) | 0.643** (0.324) |
| High Income | 0.324 (0.917) | 0.992 (0.958) | 0.303 (0.944) |
| Low Income | 0.128 (0.515) | 0.576 (0.520) | 0.461 (0.534) |
| Region Dummy Variables | Yes | Yes | Yes |
| Constant | −2.870 (1.910) | −8.484*** (2.373) | −5.273** (2.150) |
| Observations | 70 | 70 | 70 |

Standard errors in parentheses.

***p<0.01, ** p<0.05, * p<0.1

Note: Middle East & North Africa, Central and South Asia, and Sub-Saharan Africa regional indicators are positive and statistically significant in Models 2 and 3.

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