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Inflation Targeting and Financial Stability: does the quality of institutions matter?

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Non-Technical Summary

Inflation targeting has been blamed by several international specialists and authorities as one of the causes of the recent 2007-2008 financial crisis. On the one hand, governments may have focused too much in maintaining low inflation and may not have perceived the building of financial imbalances that led to the crisis. In this way, they may have been victims of their own success, also known as the "paradox of credibility." On the other hand, there is an alternative theory that states that price stability is a sufficient condition to financial stability. According to this traditional view, when the inflation rate is close to the inflation target, then agents' expectations are anchored, which increases the investment returns' forecast ability. Despite the existence of these two opposing views, there is not much empirical evidence on which one holds for the real world.

Our paper links these two otherwise conflicting views regarding inflation targeting and financial stability by also bringing into the analysis how the national population of countries perceive the quality of their government institutions. To support our empirical findings, we use a comprehensive bank-level data from 66 countries and ask: (a) whether banks from inflation targeting countries benefit from this policy in terms of higher and less volatile profits; and (b) if this result depends on the level of institutional quality of countries. We proxy the quality of government institutions as perceived by the national population using the Transparency International's corruption perception index. We find that inflation targeting relates positively to the financial stability of a country's banking system. We also show an inverse U-shaped relationship between institutional quality and financial stability, which provides empirical evidence on the validity of both theories that link inflation targeting and financial stability.

Sumário Não Técnico

O regime de metas de inflação tem sido culpado por vários especialistas e autoridades internacionais como uma das causas da recente crise financeira de 2007-2008. Por um lado, ao focar somente no controle da inflação, os governos podem não ter percebido o surgimento e desenvolvimento de desequilíbrios financeiros que aumentaram a fragilidade financeira dos países e culminaram na crise. Os governos, portanto, podem ter sido ser vítimas de seu próprio sucesso, fenômeno que é conhecido como o "paradoxo da credibilidade". Por outro lado, a visão macroeconômica tradicional defende que a estabilidade de preços é condição suficiente para a estabilidade financeira. De acordo com esta visão, uma inflação dentro da meta ancora as expectativas dos agentes, aumentando a previsibilidade do retorno de investimentos e diminuindo incertezas financeiras. Apesar dessas visões opostas, não há evidências claras sobre qual delas se aplica ao mundo real.

Nesse trabalho, tentamos ligar essas duas teóricas que, em princípio, seriam conflitantes usando um índice de qualidade das instituições governamentais, o qual é mensurado a partir da percepção da população nacional dos países. Este artigo utiliza dados bancários de 66 países e pergunta: (a) se bancos de países que adotam metas de inflação se beneficiam com maior lucro e menor volatilidade de seus retornos; e (b) se este resultado depende da qualidade das instituições governamentais dos países. Como proxy para qualidade das instituições governamentais, utilizamos o índice de percepção de corrupção calculado pela *Transparency International*. Encontramos que a implementação de metas de inflação está positivamente relacionada à estabilidade bancária daqueles países. Verifica-se também a existência de um relacionamento em formato de U invertido entre qualidade das instituições e estabilidade financeira, o que provê um subsídio empírico para a validez das duas teorias que unem estabilidade financeira e regime de metas de inflação.

Inflation Targeting and Financial Stability: does the quality of institutions matter?

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Abstract

Inflation targeting (IT) has recently been seen as one of the main causes of the authorities' unresponsiveness to the build up of financial imbalances during the recent financial crisis. We take data from banks from 66 countries for the period of 1998-2014 and compare how institutional quality as perceived by the national population impacts financial stability in countries that adopted IT with those that did not. We find that, while banks from IT countries with high quality of institutions do not have their stability significantly enhanced by this policy (the "paradox of credibility"), countries with average levels of quality of institutions seem to benefit from it. In addition, in the estimations, IT and financial stability are negatively associated in countries with low levels of institutional quality, which is consistent with the fact that governments must have at least some trust of their population in order to conduct effective economic policies. This inverted U-shaped relationship between IT and financial stability as function of the institutional quality reflects the two opposing views in the literature regarding this topic.

Keywords: quality of institutions, inflation targeting, financial stability, transparency.
JEL Classification: D40, G21, G28.

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1 Introduction

The quality of institutions gains significant importance during financial crisis (Klomp and de Haan, 2014). Countries with high quality of institutions should be able to formulate policies to deal more effectively with adverse shocks than countries that suffer from low institutional quality. Recent discussion triggered by the financial crisis has pointed inflation targeting (IT) as one important reason for the failure of the government authorities to respond to developing financial imbalances and rising financial instability for several reasons. First, by focusing in achieving the inflation target, governments may have overlooked the situation in the financial market (Blanchard et al., 2010). Second, low and stable inflation coupled with a credible anti-inflationary policy can make it harder for financial imbalances, such as asset bubbles, to show up in inflation indexes. In fact, Amato and Shin (2003) argue that in a model in which agents have imperfect information on the state of the economy (such as inflation), but in which they fully believe in a public signal issued by the government (i.e. high credible signal), agents beliefs might be distorted, since they might put more weight into this public signal than in actual fundamentals. In this case, inflation levels would lose its informativeness about economic (demand and cost) conditions and thus financial imbalances might develop. Therefore, governments can be a victim of their own success, phenomenon of which the literature terms as the "paradox of credibility" (Borio, 2005, 2006; Borio and Lowe, 2002; Montes and Peixoto, 2014). Third, a commitment to low inflation levels makes the economic policy too loose during normal times. Thus, the policy rate approaches the zero lower-bound, reducing the margin for any adjustment on the interest policy rates should any economic downturn arise. We contribute to the literature by evaluating the relationship between IT and financial instability while controlling for quality of institutions.

Notwithstanding this criticism, a traditional view (the Schwartz (1995) hypothesis) argues that periods of unstable price levels can lead to incorrect inferences about the future real returns of investments. This may result in flawed lending/borrowing decisions, increasing loan defaults, compromising the banking system's loan portfolio, and increasing bankruptcies. Inflation targeting improves the predictability of economic policy and reduces the degree of uncertainty about the price level over the long run (the price stability channel). Bordo and Wheelock (1998) argue that among the several financial crises that occurred during the XIX and XX centuries, the most severe financially distressing events occurred after unexpected and substantial disinflation.

Empirical papers that test how the quality of government institutions and inflation targeting in different countries impact financial stability are surprisingly rare.[1] Using

[1] Among the papers that are close to our approach, we highlight Fouejieu (2017), Kim and Mehrotra (2017), and Hove et al. (2017). However, they do not explore the non-linearity between the quality of institutions and the adoption of an IT regime as we propose in this paper.

bank-level data from 66 countries over the period of 1998–2014, and measures of quality of government institutions as perceived by the national population, our paper provides empirical evidence that attempts to bridge this gap in the literature. We employ two measures of quality of institutions: the Corruption Perception Index of the Transparency International, and the Government Effectiveness Index of World Bank's Governance Indicators (WGI). We interact these variables with dummies that flag whether a specific country adopted IT, as defined by the International Monetary Fund[2] in a triple DiD approach. Banks in IT countries (treated) are compared with those in non-IT countries (control) for different levels of quality of institutions. Our benchmark specification controls for time-invariant bank characteristics, and both bank- and country-level controls.

Among the advantages of our proxies to institutional quality are the fact that they are publicly available and are calculated by international trusted institutions. This avoids subjective data mining issues and improves the accountability of the paper. Moreover, these measures are related to the agents' trust in government's communication about their economic policies. We argue that the population of a non-corrupt country put more trust in their government than the population of a highly corrupt country. Thus, we can test whether the IT impact on financial stability depends on the quality of national governments. Intuitively, there must be a lower bound for the trust in the authorities in order for any economic policy to be effective. In addition, we can also test if there is also an upper bound, i.e. when the institutional quality is so high that the benefit to financial stability might not be significant anymore as Amato and Shin (2003) highlight. Finally, we minimize endogeneity concerns because government authorities cannot change these measures in the short term. In addition, since governments cannot easily manipulate agents' perception on corruption nor institutional quality, we believe that our measures are safe from this manipulation.

We find that banks from IT countries perceived as having high quality of institutions are neither more nor less stable than their non-IT counterparts. Thus, trust in the government policies by itself does not appear to increase financial stability of IT countries, which is consistent with Borio and Lowe (2002)'s "paradox of credibility." Second, banks from countries that have institutions perceived as being of low quality seem to underperform under an IT policy. It appears that for an IT policy to have positive spillovers on financial stability, a minimum level of credibility in the government is needed. Third, the price stability channel might lead to a higher financial stability of banks located in countries whose institutions are perceived as having average levels of quality. Thus, the

[2]According to Mishkin (2004) and Heenan et al. (2006), inflation targeting consists of four elements: (i) an explicit CB mandate to pursue price stability as the primary objective of monetary policy and accountability for performance in achieving the objective; (ii) explicit quantitative targets for inflation; (iii) policy actions based on a forward-looking assessment of inflation pressures that considers a wide range of information; and (iv) increased transparency of monetary policy strategy and implementation.

commitment to price stability and the greater transparency and accountability, which are characteristics of an inflation targeter country, relate to lower bank risk-taking for banks in countries that do not have "too much" nor "too little" levels of quality of institutions, as perceived by their population.

A possible concern, as in several other cross-country studies, is the possible existence of unobserved factors correlated with both the quality of institutions and banks' risk-taking that might also explain our results. Ideally, one could control for such reforms by the use of country-year fixed effects. Nevertheless, this is not possible since such fixed effects would be collinear with the interaction between the IT dummy and the quality of institutions measure. We then perform several robustness tests. First, we show that the introduction of country-specific controls - such as GDP per capita, inflation, among other financial depth variables - does not change our results significantly. Second, we also add region-year fixed effects to account for time-varying shocks that are common to neighboring countries and that may be affecting both financial stability and the quality of the institutions. Third, in the spirit of La-Porta et al. (1997, 1998), we also add legal origin-year fixed effects to account for different trends in countries with different legal systems. It is widely accepted that countries with the same legal origin are subject to similar constraints, which may affect their economic and financial development, as well as the functioning of their banking markets. In all these specifications, our results seem to hold satisfactorily.

Related literature: Previous evidence on the IT–financial stability relationship is scarce. The paper that is closest ours is Fazio et al. (2015). These authors find that: (i) banks from IT countries are, on average, more stable than non-IT banks; (ii) this result holds even in periods of global illiquidity (such as during the 2007-2008 financial crisis); and (iii) systemically important banks from IT countries are also more stable than their non-IT counterparts. Fazio et al. (2015)'s paper, however, does not provide the necessary attention to the role of institutional quality in shaping financial stability in IT and non-IT countries. In fact, inflation targeters were only compared with their non-IT counterparts. This study therefore adds to this literature by differentiating IT countries with respect to levels of quality of their government institutions.

Our paper is related to the literature on government transparency and central bank independence. The literature has empirically shown that central bank transparency has a role in reducing the volatility of inflation (Dincer and Eichengreen, 2014) and the monetary base growth which also leads to a lower inflation (Bodea and Hicks, 2015). In addition, Backus and Driffill (1984) use a reputation model together with a macroeconomic policy game to show that imperfect credibility leads to output loss, since the government would have to be tougher so as to convince the private sector of its commitment. Ruge-Murcia (1995) analyzes a rational expectations model where the government com-

municates an inflation target but may or may not adopt the corresponding fiscal policy. Agents form their estimates from observables – i.e. inflation, output, and public expenditures – as part of their money demand decision. Institutional quality can also be seem as how positive or credible the population see the government. A policy that is conducted by a government with institutions perceived as having low quality can endogenously fail. While these papers focus on the effects of government transparency and central bank independence on price stability, we take this analysis further by showing that the quality of government institutions affects financial stability through the inflation target policy, whose success crucially depends on agents' trust on the government.

The remainder of this paper is organized as follows. Section 2 discusses the data, sources and variables employed in our empirical specification. Section 3 presents the empirical results with the different robustness tests. Finally, Section 4 presents the overall conclusions of the paper.

2 Data and Methodology

In this section, we explain the main empirical model, the variables employed, and their sources. Our main goal is to estimate how the relationship between financial stability and the IT policy changes with a measure of quality of government institutions. To do so, we estimate the following regression:

$$\begin{aligned} \text{Financial Stability}_{ikt} &= \alpha_0 + \alpha_i + \alpha_t + \beta_1 \text{IT}_{kt} + \beta_2 \text{Quality Inst.}_{kt} + \beta_3 \text{Quality Inst.}^2_{kt} \\ &+ \beta_4 \text{IT}_{kt} * \text{Quality Inst.}_{kt} + \beta_5 \text{IT}_{kt} * \text{Quality Inst.}^2_{kt} + \sum_{z=1}^{Z} \gamma_z X_{z,ikt} + e_{ikt}, \end{aligned} \tag{1}$$

where $\text{Financial Stability}_{ikt}$ is a financial stability proxy - explained below - for bank i that operates in country k at period t; IT is a dummy equal to one if the country k is an inflation targeter at period t; Quality Inst. is a proxy for the quality of institutions, and $\text{X}_{z,ikt}$ is a vector of country- and bank-specific controls. Finally, α_i and α_t are bank and time fixed effects, respectively. As explained in the next section, since we consider all banks operating in a particular country as our group variable, then controlling for bank fixed effects embed the country-level fixed effects. Finally, according to the literature, we also employ robust standard errors clustered by country to avoid understated standard errors when the group (banks) is more detailed than the main regressor's level of variation (countries).[3]

[3] See Donald and Lang (2007) and Bertrand et al. (2004) for detailed information.

2.1 Bank-level data

We draw bank-specific balance sheet data from Bankscope, a financial database distributed by BVD-IBCA, and convert these data into US dollars to guarantee accounting uniformity among countries. Initially, the data included the population of unconsolidated financial statements of commercial and specialised credit government banks (that act as commercial banks) in the database (both listed and not listed). The use of unconsolidated financial statements avoids double-counting financial statements, since some banks may control others that are also present in Bankscope. We, therefore, have access to data regarding state-owned, private, and even foreign subsidiaries of banks that operate within each country covered in the database.[4] Finally, mergers and acquisitions are not a problem since from the moment where such operation is realized, the acquired bank stop to report and the acquiring bank incorporates it.

After cleaning the data for periods with missing, negative or zero values for the relevant balance sheet data, and observations with missing country-specific data, the final sample is an unbalanced panel including 5458 banks in 66 countries during the period 1998-2014 (17 years) totaling 159,000 observations. This dataset is among the most representative in the banking literature in terms of the number of years and banks.

We employ this balance-sheet data set to construct our benchmark measure of financial stability for equation (1): the Z-score. Many studies that evaluate bank risk-taking behaviour employ the Z-score as a measure of financial soundness. The literature is vast, encompassing researches prior to the global financial crisis, such as in Boyd and Runkle (1993); Demirguc-Kunt and Huizinga (2010); Laeven and Levine (2009); Mercieca et al. (2007), and also post crisis, such as in Fiordelisi and Mare (2014); Fu et al. (2014). Using data from 2004 to 2012 from U.S. commercial banks, Chiaramonte et al. (2016) find that the Z-score, on average, can predict 76% of bank failures, which highlights the importance of such measure as an indicator of financial soundness.

According to Roy (1952), the Z-score measures how far a specific bank is from insolvency, which takes place when equity is insufficient to cover losses (Equity $<$ Losses). Mathematically, the Z-score is equal to the number of return over assets (ROA) standard deviations a bank's ROA must decrease to exceed its equity ratio. One alternative over using the Z-Score is Adrian and Brunnermeier (2016)'s Δ CoVaR method. This methodology calculates the contribution of a particular bank to the risk of the entire system, while traditional risk measures focus on the risk of individual institutions. Despite these advantages, the Δ CoVaR method is employable only to banks that are listed in their respective countries (see Adrian and Brunnermeier, 2016, who use data of Compustat/CRSP to employ the Δ CoVaR to the US). While this analysis appears to be satisfactory for developed

[4]For instance, Citibank will have one financial statement in the US, related to its operations in that country only; and one financial statement in each country in which it has foreign subsidiaries

economies, it would leave out both state-owned banks and foreign subsidiaries (which are in majority unlisted) that are important for the banking system of emerging economies. For instance, we could not calculate the systemic risk contribution of the big four state-owned banks of China before their IPO (the last bank to go public was the Agricultural Bank in 2010).

As in Laeven and Levine (2009), since the Z-score is skewed, we use its natural logarithm, which is normally distributed, as our proxy for financial stability of a bank:

$$\ln(\text{Z-score}_{it}) = \ln\left(\frac{ROA_{it} + Capital\ Ratio_{it}}{\sigma(ROA)_{i,t:t-3}}\right) \tag{2}$$

This measure is often employed in cross-sectional OLS models in which the mean and standard deviation of ROA for the whole period can be calculated. However, we propose to calculate this measure for each year to maintain the Z-score as a panel variable. We do so by calculating the standard deviation of ROA for each bank using information from the last 4 years (current + previous 3 years) Therefore, rather than eliminating the time dimension of the analysis, this approach reduces the maximum number of periods from 17 to 14.

To deepen our analysis, we also divide the Z-score in its components: one part relates to the returns (Risk-Adjusted ROA - RAROA):[5]

$$\text{RAROA}_{it} = \ln\left(\frac{ROA_{it}}{\sigma(ROA)_{i,t:t-3}}\right); \tag{3}$$

and the other to the volatility of these returns:

$$\text{ROA Volatility}_{it} = \ln(\sigma(ROA)_{i,t:t-3}); \tag{4}$$

Bank balance sheet variables are also included as controls. First, we include the natural logarithm of total assets (SIZE). Another balance-sheet variable is the liquidity ratio, which is liquid assets divided by total assets. We also include the ratio of non-interest income to total income to proxy for banks' nontraditional activities (Lozano-Vivas and Pasiouras, 2010). We add the ratio between total customer deposits and total assets

[5]There is a problem in applying the natural logarithm of the Z-score or the Risk-Adjusted Returns, because these variable can take negative values as well. These negative values are possible when the bank's profitability offsets its capital ratio (in the case of the Z-score), or when the average ROA is negative (in the Risk-Adjusted Returns case), indicating that the bank is near insolvency. To solve this problem, instead of just deleting these observations, we follow Bos and Koetter (2009) who employs an additional independent variable, the negative Z-score/RAR indicator (NZI/NRI). This variable takes the value 1 when the Z-score/RAR ≥ 0 and is equal to the absolute value of the Z-score/RAR when Z-score/RAR < 0. We also alter the Z-score/RAR to take the value 1 when they are negative. Since we delete observations whose dependent variable are in the lower and upper percentile in our benchmark estimations, this problem will only occur in the Risk-Adjusted Profits specifications. The Z-score does not assume negative values from its 1st to 99th percentile.

to proxy for intermediation. Finally, we consider the costs to assets ratio to control for bank's cost performance.

2.2 Country-Level Data

This section explains the country-level variables employed in our empirical specifications. First, we include countries' economic activity as controls. This set of variables includes two indices created by the Heritage Foundation, i.e., property rights and financial freedom[6], the GDP growth, and the consumer price index (CPI) both reported in the World Bank's World Development Indicators (WDI).

We also include variables related to the financial development of the country. This set of variables includes banking market aggregates calculated from the balance-sheet data contained in Bankscope, i.e., (a) the density of deposits (ratio of aggregate deposits to land area) and (b) the ratios of aggregate equity to assets, domestic credit to private sector (as % of GDP) in the WDI, and a banking market concentration measure, i.e. the Herfindahl-Hirschmann Index (HHI).

We also divide countries into 6 major geographical regions according to authors' own research: Africa and Middle East, Eurasia, Latin America, North America, South-East Asia, and Western Europe. We use this classification when we control for regional specific shocks by adding region-year fixed effects in our specifications. In the same fashion, we also classify the countries into 3 different legal origins: English, French and German/Nordic. We follow the classifications of La-Porta et al. (2008, 1997, 1998) and Djankov et al. (2003) and complement this information by checking the CIA World Factbook and additional research.[7] Table 1 lists the countries in our sample, and their respective region and legal origin.

2.3 Inflation Targeting Countries

One of the main independent variable is a dummy variable equal to one if the bank operates in an inflation targeting country k during year t (IT_{kt}). Currently, 26 countries have adopted inflation targets. In addition, 3 other countries have previously adopted this policy but abandoned it after joining the Euro. Table 1 lists these countries as well as

[6] According to La-Porta et al. (1998), stronger creditor protection leads to the better development of the financial market and more favorable financial contracts. On the other hand, strong creditor protection may lead to excessive lending to risky enterprises, increasing the likelihood of financial crises (Houston et al., 2010). Regarding financial liberalization, several papers have shown that it impacts risk, such as Fang et al. (2014) who support the view that liberalizing reforms have had a great positive impact on bank stability of transition economies.

[7] Ex-socialist countries are considered transition economies that are returning to their original legal system, as La-Porta et al. (2008) argument. Therefore, we list these transitional economics according to their original legal origin instead of assigning them to a socialist legal system.

the years in which IT took place. These data were drawn from the IMF website, Roger (2010) and the authors' own research. Note first that after cleaning the bank level data, we remain with 24 countries that adopted IT at any point in time.

2.4 Measures of Quality of Government Institutions

This paper uses the following two measures of quality of institutions available for all the 66 countries in the database:

(i) the Corruption Perception Index of the Transparency International, that tests the perception of public sector corruption in several countries. The higher is this, the more a country's citizens perceive their government as transparent and accountable, i.e., the less corrupt they are in the eyes of their population. This index varies from 0 (more corruption) to 10 (less corruption).

(ii) the Government Effectiveness Index of the WGI from the World Bank. This measure captures perceptions of the quality of public services, of civil services, and of policy formulation and implementation, as well as the extent of the government's commitment to these policies. This index is measured in units of a standard normal distribution, with mean zero and standard deviation of one, running from -2.5 to 2.5. Higher values corresponds to better government effectiveness.

Figures 1 and 2 display the average levels of the corruption perception and the government effectiveness indices of the countries in our sample across 1998–2014, respectively. We observe a significant heterogeneity across countries and a high correlation between both indices. Scandinavian countries that are present in our sample normally show high levels of the corruption perception index, meaning country's citizens perceive their government as highly transparent and accountable. In contrast, countries with low corruption perception indices are not regionally localized and therefore vary worldwide, with representative countries in Africa (Kenya, Nigeria), Europe (Ukraine), South America (Paraguay) and Asia (Bangladesh, Indonesia).

Both of these measures fit our analysis because they reflect the people's skepticism regarding the policies of their own government. As previously discussed, an IT policy will only be successful if agents believe the communication of government authorities and their commitment in following their economic policies. Only this way would inflation expectations be consistent with the economic policy objectives and financial stability would be achieved (Svensson, 2010). On the other hand, Borio and Lowe (2002) argue that too much credibility might actually lead to an undesirable effect in which agents' expectations become decoupled from actual fundamentals (Amato and Shin, 2003), and financial imbalances are harder to identify. As a result, inter-sector price distortions might

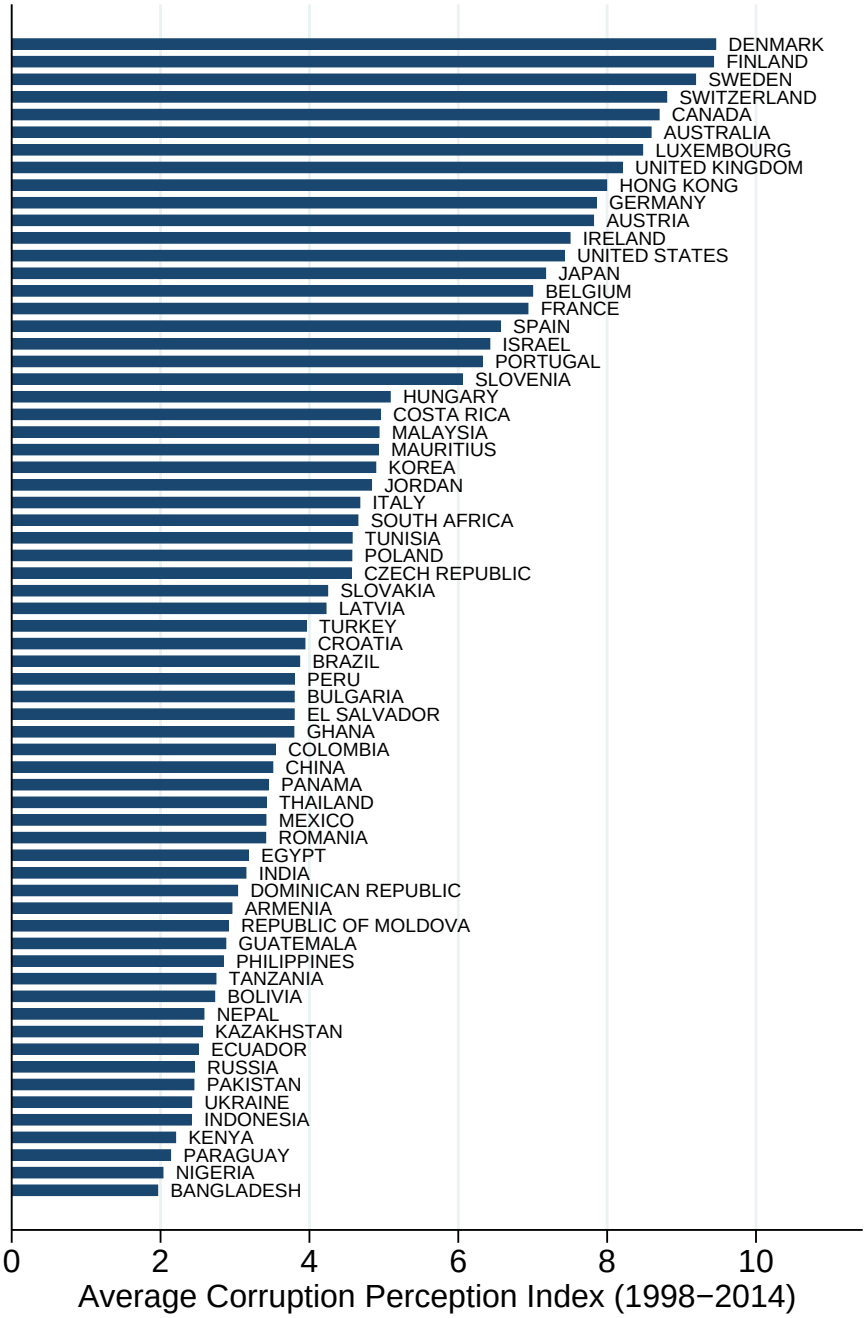

Figure 1: *Average corruption perception index for the 66 counties in our sample across 1998-2014*

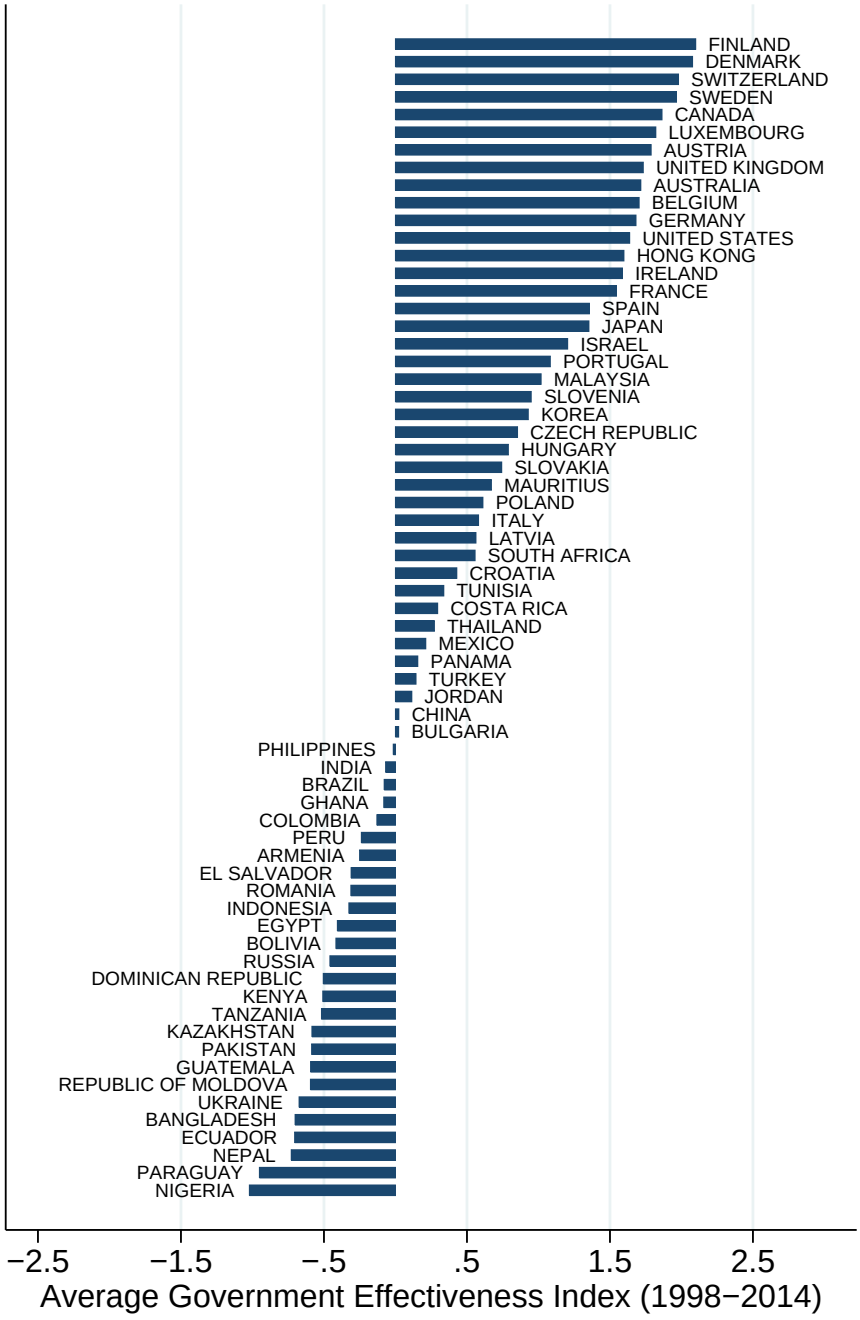

Figure 2: *Average government effectiveness index for the 66 counties in our sample across 1998-2014*

emerge, such as bubbles in the household sector without agents' and authorities realizing it.

Besides the clear implications of corruption on the trust in the institutions, one can also argue that corruption and inflation are linked (Al-Marhubi, 2000). First of all, there seems to be a negative correlation between tax revenue and corruption (Ghura, 1998; Imam and Jacobs, 2007; Tanzi and Davoodi, 2000). Thus, the government of a corrupt country would have to resort to seignorage (inflation tax) as a source of revenue. In addition, by reducing revenues and increasing public spending, corruption leads to large fiscal deficits, with inflationary consequences. Therefore, an IT country with high level of corruption would not be seen by its society as a country that would really works towards meeting the inflation target.

3 Empirical Results

In this section, we present the main results of the paper. First, Figure 3 presents scatter plots of the averages of our measures of financial stability against the average of our measure of quality of institutions, i.e. the corruption perception index, for the countries in our sample. Note that higher values of the perception index reflect in lower corruption. The format of the scatter plots for IT countries (in green) appears to suggest an inverse U-shaped relationship between financial stability and corruption perception. With the exception of 3 countries in the upper left corner, low and high values of the corruption perception index are usually those with lower Z-score and RAR, but higher $\sigma(ROA)$, i.e. higher fragility. Countries with average levels of the quality of institutions appear to have, on average, higher stability. Also, note that for every corruption perception index value, the average financial stability level of IT countries appear to be always higher than the average financial stability of non-IT countries.

A concern with the evidence provided above is that there can be several different economic, regulatory, and bank-specific factors that explain this variation in financial stability, and that could also explain the quality of institutions measure. To address this concern we also estimate Equation (1) by controlling for bank and time fixed effects, as well as several bank- and country-level factors that can be potentially correlated with both quality of institutions and bank financial stability. In the regressions, we test whether the marginal effect of IT on financial stability is a quadratic function of the corruption perception index. Appendix A presents an alternative specification in which we interact the IT dummy with the log of the corruption perception index to verify if the quality of institutions is monotonically increasing but at decreasing rates with respect to financial stability. Therein, we show that the interaction between the IT dummy and the log of corruption perception index is statistically insignificant.

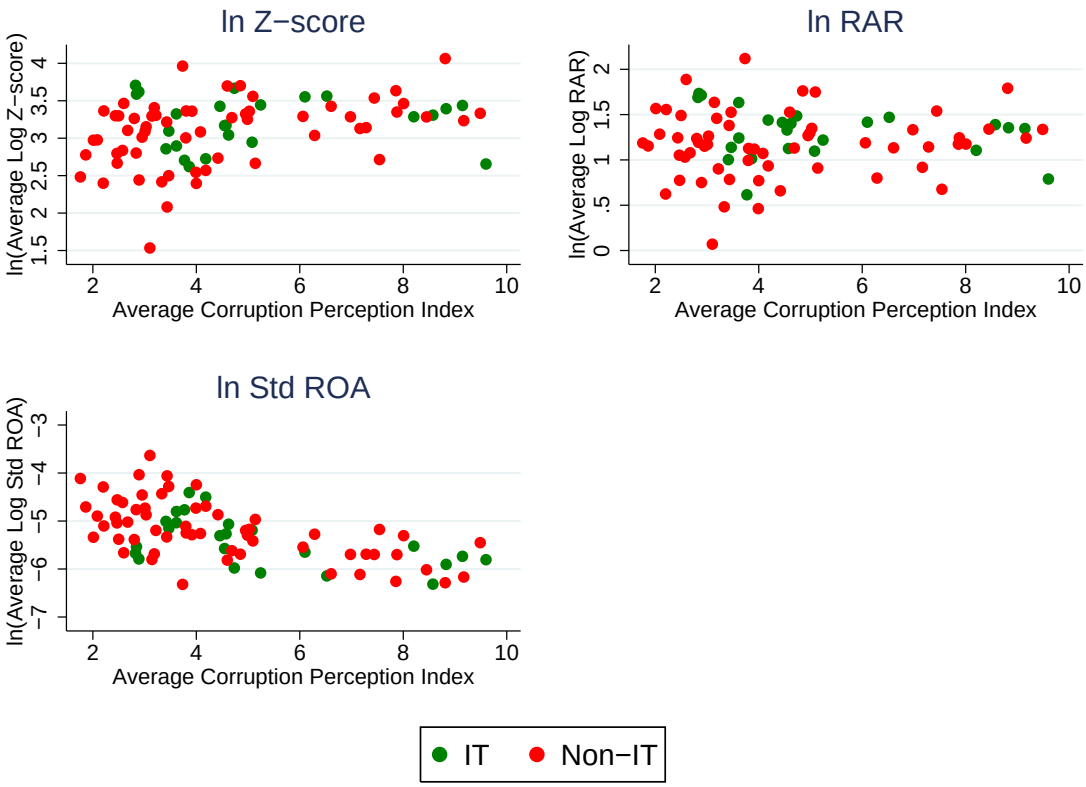

Figure 3: *Scatter plots of average stability measures against average corruption perception index for IT and non-IT countries*

In all the following tables, column [1] provides the results with bank fixed effects and bank-level controls. Column [2] adds country-level controls, both economic and financial. Columns [3] and [4] include region-year and legal-year fixed effects to the previous specification, respectively. Finally, column [5] considers region-legal-year fixed effects. In all specifications, we drop observations in which the dependent variable is higher than the 99th percentile and lower than the 1st percentile to avoid the effect of outliers.[8]

Tables 2 to 4 show the results employing Z-score, RAROA, and $\sigma(ROA)$ as dependent variables, respectively, and the Corruption Perception Index as our quality of institutions variable. Note that both the Z-Score and RAROA are directly proportional to stability while $\sigma(ROA)$ is inversely proportional. We can show that, in all columns of Tables 2 and 3, the interaction of IT and Corruption Perception is positive and significant and the interaction between IT and Quality Inst.^{2} is negative, and only not significant at 10% level in column [3] in Table 3. In addition, Table 4 shows a negative and significant coefficient for IT_{kt}*Quality Inst._{kt} and positive and significant coefficient for IT_{kt}*Quality Inst.^2_{kt}, which is consistent with the results above, since the dependent variable in Table 4 is inversely proportional to financial stability.

Interestingly, these results mean that the relationship between IT and stability is inversely U-shaped with respect to the corruption perception: in countries with average levels of corruption, inflation targeting appears to be more beneficial. Despite not being able to reject the null of a linear relationship between IT and financial stability as function of quality of institutions in column [2] of Tables 2 and 3, the fact that nonlinearity reappears in column [5] of these tables reassures us of the robustness of our tests.

Even though the coefficients are significant in most of the cases, one should consider significance of the marginal effect $\frac{\partial Fin.Sta.}{\partial IT} = \beta_1 + \beta_4 \text{Quality Inst.}_{kt} + \beta_5 \text{Quality Inst.}^2_{kt}$ for different levels of $\text{Quality Inst.}_{kt}$. Figures 4 to 6 plot these marginal effects and the 95% confidence bounds, calculated using the delta method, for all the specifications in Tables 2 to 4. The marginal effect of IT on financial stability is significant and positive (negative) for values of the corruption perception index between approximately 3 and 6 in Figures 4 and 5 (Figure 6). In contrast, for countries with extremely high corruption levels (i.e., low corruption perception index), the marginal effect seems to be negative (positive) and significant in some of the graphs of Figures 4 and 5 (Figure 6). For counties with a low perception of corruption, i.e. a high corruption perception index, the marginal effect is also negative (positive) in all specification, and significant in some of the cases for very high levels of the index.

Overall, banks from IT countries with low levels of corruption are not more stable

[8] Overall results do not change if we keep these observations extreme observations. These results are available upon request.

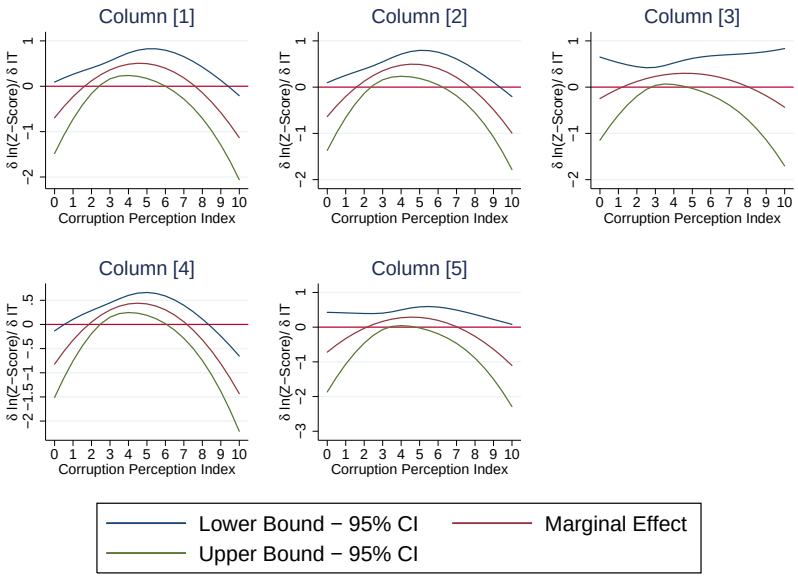

Figure 4: *Effect of IT on the Financial Stability for different values of the Corruption Perception Index - Graphical representation of Table 2. The red and green lines are the 95% confidence interval bands.*

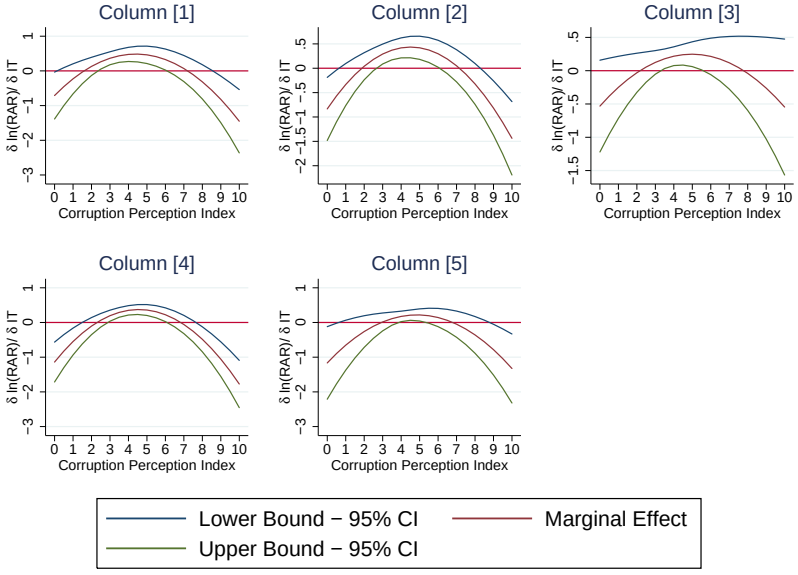

Figure 5: *Effect of IT on RAROA for different values of the Corruption Perception Index - Graphical representation of Table 3. The red and green lines are the 95% confidence interval bands.*

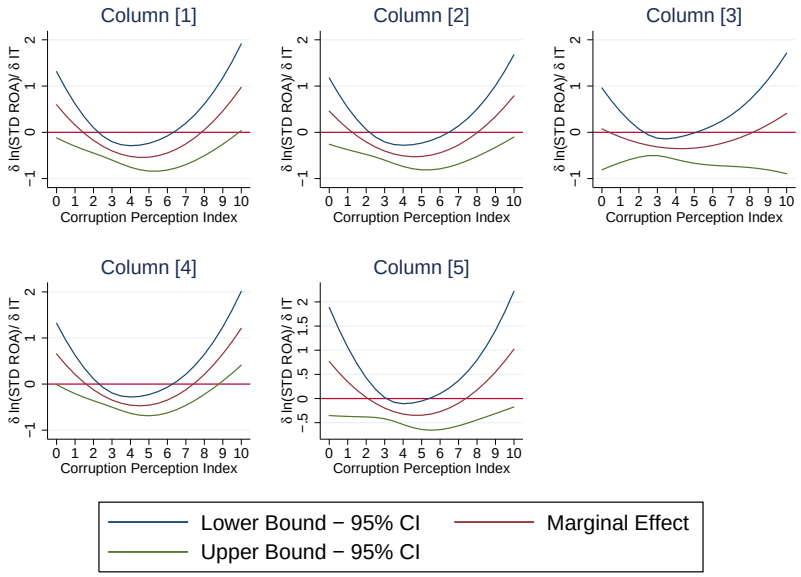

Figure 6: *Effect of IT on ROA Volatility for different values of the Corruption Perception Index - Graphical representation of Table 4. The red and green lines are the 95% confidence interval bands.*

than their counterparts. In fact, the marginal effect of IT on financial stability is negative for values of the index higher than 8, even though the effect is not always significant. In addition, IT does not appear to enhance stability for banks in countries with low level of institutional quality, i.e., high corruption. This means that both the lack and the excess of institutional quality also impair the functioning of the price stability channel of financial stability. Only banks from countries whose quality of institutions is not too high nor too low seem to benefit from targeting inflation in terms of a higher Z-score.

The non-positive effect of IT on stability for high levels of institutional quality may be explained by the "paradox of credibility" of inflation targeting as stated by Borio and Lowe (2002) and also modeled by Amato and Shin (2003). IT countries that achieve low and stable inflation, together with a high institutional quality of their government, are less likely to identify signs of unsustainable price bubbles. According to Amato and Shin (2003), this is because of the inflation index loses its informativeness about the true state of the economy and agents and authorities may not realize the building up of financial imbalances and price distortions. In this case, the building up of financial imbalances would be only discovered when it is too late for authorities to reverse it, i.e. when financial stability would already be undermined.

3.1 Robustness Test - Government Effectiveness Index

We also present an additional test where we employ WGI's government effectiveness index instead of the corruption perception. These variables, even though highly

correlated with each other, may measure slightly different aspects of institutional quality as discussed in the data section. Tables 5 to 7 show the results of the coefficients for the Z-score, RAROA, and $\sigma(ROA)$ specifications, respectively.

First of all, one can note that the coefficient signs show an inverted U-shaped relationship between financial stability and IT as function of the government effectiveness index. However, the interaction between IT and Gov. Effect.[2] is not significant at 10% significance level in collumns (2) and (5), i.e. when we compare countries in the same geographical region.

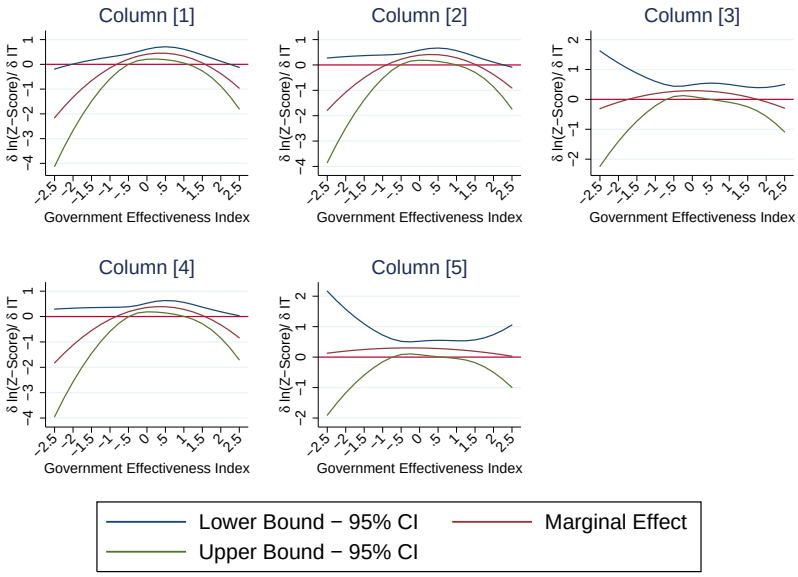

Figure 7: *Effect of IT on the Financial Stability for different values of the Government Effectiveness Index - Graphical representation of Table 5. The red and green lines are the 95% confidence interval bands.*

When we look at the marginal effect of IT on financial stability for different levels of Gov. Effect. - Figures 7 and 8 - one can see by the confidence bounds that the marginal effect is only significant for average values of Gov. Effect., as in the previous case with the corruption perception index. Therefore, even though U-shaped relationship appears to be less strong than in the benchmark case in terms of statistical significance, the overall result is quite similar from the ones presented in our benchmark regression.

3.2 Comments on Alternative Interpretations

One might be worried that our results are due to some unobserved/uncontrolled factor that explains both quality of institutions and bank risk-taking, a problem known as endogeneity. Note however, that this alternative explanation may not be due to some time invariant bank- or country-specific factor, since we control by bank fixed effects. In

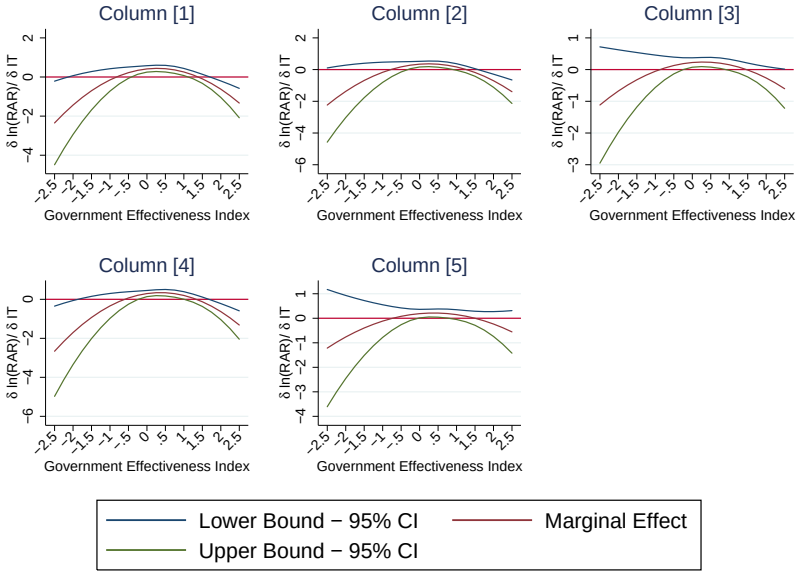

Figure 8: *Effect of IT on RAROA for different values of the Government Effectiveness Index - Graphical representation of Table 6. The red and green lines are the 95% confidence interval bands.*

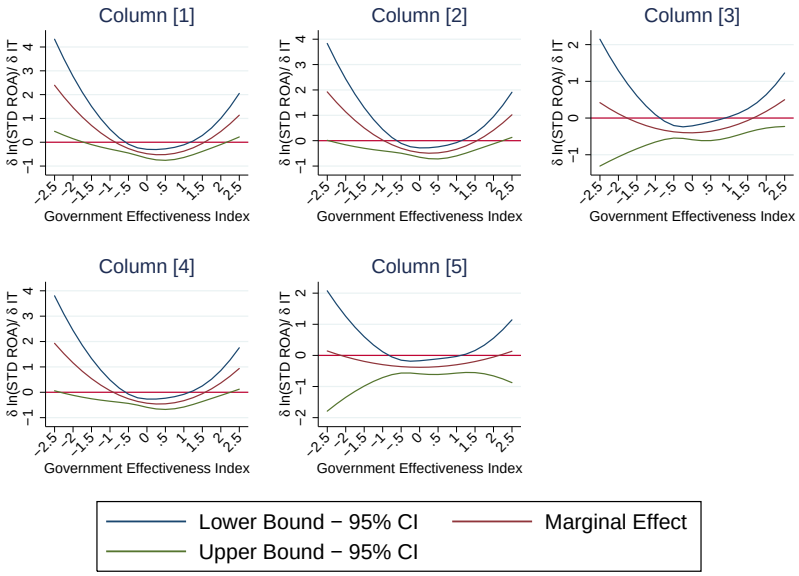

Figure 9: *Effect of IT on ROA Volatility for different values of the Government Effectiveness Index - Graphical representation of Table 7. The red and green lines are the 95% confidence interval bands.*

addition, it cannot be an alternative story that is actually correlated with country time-varying economic or financial development indicators, since we also control for them and the results seem to hold. Finally, it cannot be some time-varying region- or legal origin-specific explanation as well.

In fact, the only alternative explanation might be a time-varying bank- or country-specific factor that is not correlated with economic and financial development variables. For instance, the population of one country could suddenly become more pessimistic regarding both the government and the economy, which would increase their perceived corruption at the same time as depressing the financial stability in a systematic manner. Due to the lack of data for most countries in our database, we cannot test this hypothesis empirically by also controlling for a variable that reflect the confidence of the population. We, however, believe this alternative explanation is unlikely to be the case. Our results, therefore, appear to be the most reasonable inference about the relationship between financial stability and the IT policy as a function of quality of institutions.

4 Conclusion

This paper presents new evidence on the relationship between IT and financial stability. Several specialists have recently blamed IT as being too focused on reducing inflation instead of also paying attention to asset prices. We take data from banks of 66 different countries for the period of 1998-2014 and compare how institutional quality as perceived by the national population impacts financial stability in countries that adopted IT with those that did not. In this cross-country analysis, we find an inverted U-shaped relationship between IT and financial stability as function of the institutional quality.

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A Alternative specification

Tables 8 to 10 present alternative specifications in which we interact the IT dummy with the log of the corruption perception index. This specification tests whether the IT-financial stability relationship is a log function of the corruption perception index, instead of a quadratic function as found in our main specifications. Note that our main result is not inconsistent with the fact that the relationship is actually increasing but at lower rates in a log fashion. Both explanations require the first derivative of financial stability over corruption to be positive, and the second derivative to be negative. Table 8 to 10, however, appear to disprove this alternative explanation: the interaction of IT with the log of the

corruption index is positive in Tables 8 and 9, and negative in Table 10, but they are not significant. Thus, even though the sign of the coefficient might suggest a log relationship between IT and financial stability as a function of our quality of institutions proxy, this relationship is not statistically significant for our sample of countries. This suggests that our main inverse-U shaped result indeed appears to be a more suitable fit to the empirical data.

Table 1: *Countries, Regions, Legal Origins and Adoption of Inflation Target*

Country	Region	Legal Origin	IT?	Adoption	Country	Region	Legal Origin	IT?	Adoption
GHANA	Africa/ME	English	Yes	2007	HUNGARY	Eurasia	German	Yes	2001
ISRAEL	Africa/ME	English	Yes	1997	POLAND	Eurasia	German	Yes	1998
KENYA	Africa/ME	English			SLOVAKIA	Eurasia	German	Yes	2005 to 2008
NIGERIA	Africa/ME	English			SLOVENIA	Eurasia	German		
SOUTH AFRICA	Africa/ME	English	Yes	2000	BOLIVIA	Latin America	French		
TANZANIA	Africa/ME	English			BRAZIL	Latin America	French	Yes	1999
EGYPT	Africa/ME	French			COLOMBIA	Latin America	French	Yes	1999
JORDAN	Africa/ME	French			COSTA RICA	Latin America	French		
MAURITIUS	Africa/ME	French			DOMINICAN REPUBLIC	Latin America	French		
TUNISIA	Africa/ME	French			ECUADOR	Latin America	French		
TURKEY	Africa/ME	French	Yes	2006	EL SALVADOR	Latin America	French		
AUSTRALIA	East Asia	English	Yes	1993	GUATEMALA	Latin America	French	Yes	2005
BANGLADESH	East Asia	English			MEXICO	Latin America	French	Yes	2001
HONG KONG	East Asia	English			PANAMA	Latin America	French		
INDIA	East Asia	English			PARAGUAY	Latin America	French		
MALAYSIA	East Asia	English			PERU	Latin America	French	Yes	2002
NEPAL	East Asia	English			CANADA	North America	English	Yes	1991
PAKISTAN	East Asia	English			UNITED STATES	North America	English		
THAILAND	East Asia	English	Yes	2000	IRELAND	West Europe	English		
INDONESIA	East Asia	French	Yes	2005	UNITED KINGDOM	West Europe	English	Yes	1992
PHILIPPINES	East Asia	French	Yes	2002	BELGIUM	West Europe	French		
CHINA	East Asia	German			FRANCE	West Europe	French		
JAPAN	East Asia	German			ITALY	West Europe	French		
KOREA	East Asia	German	Yes	2001	LUXEMBOURG	West Europe	French		
ARMENIA	Eurasia	French			PORTUGAL	West Europe	French		
KAZAKHSTAN	Eurasia	French			SPAIN	West Europe	French	Yes	1993 to 1998
MOLDOVA	Eurasia	French			AUSTRIA	West Europe	German		
ROMANIA	Eurasia	French	Yes	2005	DENMARK	West Europe	German		
RUSSIA	Eurasia	French			FINLAND	West Europe	German	Yes	1995 to 1998
UKRAINE	Eurasia	French			GERMANY	West Europe	German		
BULGARIA	Eurasia	German			LATVIA	West Europe	German		
CROATIA	Eurasia	German			SWEDEN	West Europe	German	Yes	1993
CZECH REPUBLIC	Eurasia	German	Yes	1997	SWITZERLAND	West Europe	German		

Table 2: *Corruption Perception Index + IT_{kt}: Z-score Equation*

This table presents the fixed-effects regression of a measure of financial stability (the natural log of the Z-score) against a set of control variables, a dummy of inflation targeting and a variable that measures the corruption perception of a country. Higher values for this index mean lower corruption. This variable was taken from Transparency International. The subscript t refers to years, i to banks, and k to countries. Country-specific controls include Financial Depth controls include the density of deposits, the equity to assets ratio (aggregated), the HHI of assets, and the domestic credit provided to the financial sector (as % of the GDP), the GDP cycle (derived from HP filters of each country's log of GDP), the consumer price index (CPI) the Financial Freedom Index and the Property Rights Index. We also include balance sheet variables such as $SIZE_{ikt}$, Liquidity Ratio and Cost To Assets ratio. In all estimations, the upper and lower percentiles of the dependent variable are not considered. Robust standard errors clustered by country in parentheses.
**** p<0.01, ** p<0.05, * p<0.1

VARIABLES	(1) ln(Z-score$_{ikt}$)	(2) ln(Z-score$_{ikt}$)	(3) ln(Z-score$_{ikt}$)	(4) ln(Z-score$_{ikt}$)	(5) ln(Z-score$_{ikt}$)
IT_{kt}	-0.695*	-0.636*	-0.248	-0.822**	-0.719
	(0.401)	(0.373)	(0.458)	(0.351)	(0.585)
IT_{kt}*Quality Inst.$_{kt}$	0.521***	0.487***	0.237	0.560***	0.439*
	(0.176)	(0.166)	(0.197)	(0.152)	(0.239)
IT_{kt}*Quality Inst.$^2_{kt}$	-0.057***	-0.052***	-0.026	-0.062***	-0.048**
	(0.016)	(0.015)	(0.019)	(0.014)	(0.022)
Quality Inst.$_{kt}$	-0.193	-0.107	0.120	-0.034	0.046
	(0.190)	(0.135)	(0.114)	(0.115)	(0.146)
Quality Inst.$^2_{kt}$	0.030*	0.020*	-0.005	0.018*	0.016
	(0.017)	(0.011)	(0.011)	(0.011)	(0.015)
Bank FE	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes
Country Controls		Yes	Yes	Yes	Yes
Region x Year FE			Yes		
Legal Origin x Year FE				Yes	
Region x Legal Origin x Year FE					Yes
Observations	98,458	98,458	98,458	98,458	98,458
R-squared	0.575	0.577	0.582	0.579	0.585

Table 3: *Corruption Perception Index + IT_{kt}: RAROA Equation*

This table presents the fixed-effects regression of a measure of profitability (the natural log of the risk-adjusted return on assets (RAROA)) against a set of control variables, a dummy of inflation targeting and a variable that measures the corruption perception of a country. Higher values for this index mean lower corruption. This variable was taken from Transparency International. The subscript t refers to years, i to banks, and k to countries. Country-specific controls include Financial Depth controls include the density of deposits, the equity to assets ratio (aggregated), the HHI of assets, and the domestic credit provided to the financial sector (as % of the GDP), the GDP cycle (derived from HP filters of each country's log of GDP), the consumer price index (CPI) the Financial Freedom Index and the Property Rights Index. We also include balance sheet variables such as $SIZE_{ikt}$, Liquidity Ratio and Cost To Assets ratio. In all estimations, the upper and lower percentiles of the dependent variable are not considered. Robust standard errors clustered by country in parentheses.
**** p<0.01, ** p<0.05, * p<0.1

VARIABLES	(1) $\ln(RAROA_{ikt})$	(2) $\ln(RAROA_{ikt})$	(3) $\ln(RAROA_{ikt})$	(4) $\ln(RAROA_{ikt})$	(5) $\ln(RAROA_{ikt})$
IT_{kt}	-0.710**	-0.834**	-0.531	-1.139***	-1.165**
	(0.345)	(0.330)	(0.352)	(0.293)	(0.533)
IT_{kt}*Quality Inst.$_{kt}$	0.543***	0.562***	0.313**	0.663***	0.569***
	(0.151)	(0.136)	(0.134)	(0.113)	(0.188)
IT_{kt}*Quality Inst.$^2_{kt}$	-0.062***	-0.062***	-0.031**	-0.073***	-0.059***
	(0.014)	(0.013)	(0.013)	(0.011)	(0.016)
Quality Inst.$_{kt}$	-0.257	-0.223*	0.015	-0.136	-0.079
	(0.179)	(0.130)	(0.096)	(0.106)	(0.103)
Quality Inst.$^2_{kt}$	0.034**	0.028**	-0.002	0.022**	0.017
	(0.015)	(0.010)	(0.009)	(0.009)	(0.010)
Bank FE	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes
Country Controls		Yes	Yes	Yes	Yes
Region x Year FE			Yes		
Legal Origin x Year FE				Yes	
Region x Legal Origin x Year FE					Yes
Observations	99,450	99,450	99,450	99,450	99,450
R-squared	0.593	0.595	0.601	0.598	0.603

Table 4: *Corruption Perception Index + IT_{kt}: σ(ROA) Equation*

This table presents the fixed-effects regression of a measure of ROA Volatility (the natural log of σ(ROA)) against a set of control variables, a dummy of inflation targeting and a variable that measures the corruption perception of a country. Higher values for this index mean lower corruption. This variable was taken from Transparency International. Country-specific controls include Financial Depth controls include the density of deposits, the equity to assets ratio (aggregated), the HHI of assets, and the domestic credit provided to the financial sector (as % of the GDP), the GDP cycle (derived from HP filters of each country's log of GDP), the consumer price index (CPI) the Financial Freedom Index and the Property Rights Index. We also include balance sheet variables such as $SIZE_{ikt}$, Liquidity Ratio and Cost To Assets ratio. In all estimations, the upper and lower percentiles of the dependent variable are not considered. Robust standard errors clustered by country in parentheses.
**** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)
VARIABLES	$\ln(\sigma(ROA)_{ikt})$	$\ln(\sigma(ROA)_{ikt})$	$\ln(\sigma(ROA)_{ikt})$	$\ln(\sigma(ROA)_{ikt})$	$\ln(\sigma(ROA)_{ikt})$
IT_{kt}	0.596	0.459	0.075	0.655*	0.767
	(0.365)	(0.365)	(0.451)	(0.339)	(0.571)
IT_{kt}*Quality Inst.$_{kt}$	-0.491***	-0.425***	-0.200	-0.501***	-0.471*
	(0.158)	(0.160)	(0.197)	(0.147)	(0.237)
IT_{kt}*Quality Inst.$^2_{kt}$	0.053***	0.046***	0.023	0.056***	0.050**
	(0.014)	(0.015)	(0.019)	(0.014)	(0.022)
Quality Inst.$_{kt}$	0.206	0.108	-0.093	0.031	-0.012
	(0.176)	(0.134)	(0.134)	(0.124)	(0.164)
Quality Inst.$^2_{kt}$	-0.028*	-0.018	0.005	-0.016	-0.018
	(0.016)	(0.011)	(0.013)	(0.011)	(0.016)
Bank FE	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes
Country Controls		Yes	Yes	Yes	Yes
Region x Year FE			Yes		
Legal Origin x Year FE				Yes	
Region x Legal Origin x Year FE					Yes
Observations	99,472	99,472	99,472	99,472	99,472
R-squared	0.606	0.607	0.611	0.609	0.614

Table 5: *Government Effectiveness Index + IT_{kt}: Z-score Equation*

This table presents the fixed-effects regression of a measure of financial stability (the natural log of the Z-score) against a set of control variables, a dummy of inflation targeting and a variable that measures the government effectiveness of a country. **The higher is this last variable, the more effective is a country's government.** The variable ranges from -2.5 to 2.5 and it was taken from the World Governance Indicators (WGI). Country-specific controls include Financial Depth controls include the density of deposits, the equity to assets ratio (aggregated), the HHI of assets, and the domestic credit provided to the financial sector (as % of the GDP), the GDP cycle (derived from HP filters of each country's log of GDP), the consumer price index (CPI) the Financial Freedom Index and the Property Rights Index. We also include balance sheet variables such as $SIZE_{ikt}$, Liquidity Ratio and Cost To Assets ratio. In all estimations, the upper and lower percentiles of the dependent variable are not considered. Robust standard errors clustered by country in parentheses.
**** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)
VARIABLES	$\ln(\text{Z-score}_{ikt})$	$\ln(\text{Z-score}_{ikt})$	$\ln(\text{Z-score}_{ikt})$	$\ln(\text{Z-score}_{ikt})$	$\ln(\text{Z-score}_{ikt})$
IT_{kt}	0.410***	0.386***	0.293***	0.357***	0.301***
	(0.104)	(0.101)	(0.101)	(0.087)	(0.113)
IT_{kt}*Gov. $Effect._{kt}$	0.239	0.176	0.003	0.198	-0.020
	(0.153)	(0.169)	(0.165)	(0.173)	(0.160)
IT_{kt}*Gov. $Effect._{kt}^2$	-0.315***	-0.278**	-0.095	-0.270**	-0.035
	(0.114)	(0.118)	(0.112)	(0.121)	(0.126)
Gov. $Effect._{kt}$	0.355***	0.359***	0.420***	0.396***	0.486**
	(0.102)	(0.097)	(0.154)	(0.127)	(0.194)
Gov. $Effect._{kt}^2$	0.181*	0.137*	-0.074	0.123	-0.114*
	(0.096)	(0.080)	(0.076)	(0.075)	(0.064)
Bank FE	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes
Country Controls		Yes	Yes	Yes	Yes
Region x Year FE			Yes		
Legal Origin x Year FE				Yes	
Region x Legal Origin x Year FE					Yes
Observations	98,729	98,729	98,729	98,729	98,729
R-squared	0.575	0.577	0.582	0.579	0.585

Table 6: *Government Effectiveness Index + IT_{kt}: RAROA Equation*

This table presents the fixed-effects regression of a measure of profitability (the natural log of the risk-adjusted return on assets (RAROA)) against a set of control variables, a dummy of inflation targeting and a variable that measures the government effectiveness of a country. **The higher is this last variable, the more effective is a country's government.** The variable ranges from -2.5 to 2.5 and it was taken from the World Governance Indicators (WGI). The subscript t refers to years, i to banks, and k to countries. Country-specific controls include Financial Depth controls include the density of deposits, the equity to assets ratio (aggregated), the HHI of assets, and the domestic credit provided to the financial sector (as % of the GDP), the GDP cycle (derived from HP filters of each country's log of GDP), the consumer price index (CPI) the Financial Freedom Index and the Property Rights Index. We also include balance sheet variables such as $SIZE_{ikt}$, Liquidity Ratio and Cost To Assets ratio. In all estimations, the upper and lower percentiles of the dependent variable are not considered. Robust standard errors clustered by country in parentheses.

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

VARIABLES	(1) $\ln(RAROA_{ikt})$	(2) $\ln(RAROA_{ikt})$	(3) $\ln(RAROA_{ikt})$	(4) $\ln(RAROA_{ikt})$	(5) $\ln(RAROA_{ikt})$
IT_{kt}	0.414***	0.343***	0.224***	0.297***	0.190**
	(0.084)	(0.091)	(0.076)	(0.081)	(0.089)
IT_{kt}*Gov. $Effect._{kt}$	0.203	0.168	0.103	0.269	0.132
	(0.171)	(0.196)	(0.158)	(0.195)	(0.199)
IT_{kt}*Gov. $Effect._{kt}^2$	-0.361***	-0.345***	-0.173*	-0.366***	-0.172
	(0.112)	(0.119)	(0.092)	(0.115)	(0.122)
Gov. $Effect._{kt}$	0.087	0.107	0.114	0.098	0.084
	(0.074)	(0.100)	(0.112)	(0.106)	(0.132)
Gov. $Effect._{kt}^2$	0.256***	0.216***	0.016	0.197***	0.024
	(0.076)	(0.071)	(0.059)	(0.061)	(0.048)
Bank FE	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes
Country Controls		Yes	Yes	Yes	Yes
Region x Year FE			Yes		
Legal Origin x Year FE				Yes	
Region x Legal Origin x Year FE					Yes
Observations	98,729	99,730	99,730	99,730	99,730
R-squared	0.575	0.595	0.601	0.597	0.603

Table 7: *Government Effectiveness Index + IT_{kt}: σ(ROA) Equation*

This table presents the fixed-effects regression of a measure of ROA Volatility (the natural log of σ(ROA)) against a set of control variables, a dummy of inflation targeting and a variable that measures the government effectiveness of a country. **The higher is this last variable, the more effective is a country's government.** The variable ranges from -2.5 to 2.5 and it was taken from the World Governance Indicators (WGI). The subscript t refers to years, i to banks, and k to countries. Country-specific controls include Financial Depth controls include the density of deposits, the equity to assets ratio (aggregated), the HHI of assets, and the domestic credit provided to the financial sector (as % of the GDP), the GDP cycle (derived from HP filters of each country's log of GDP), the consumer price index (CPI) the Financial Freedom Index and the Property Rights Index. We also include balance sheet variables such as $SIZE_{ikt}$, Liquidity Ratio and Cost To Assets ratio. In all estimations, the upper and lower percentiles of the dependent variable are not considered. Robust standard errors clustered by country in parentheses.
**** p<0.01, ** p<0.05, * p<0.1

VARIABLES	(1) $\ln(\sigma(ROA)_{ikt})$	(2) $\ln(\sigma(ROA)_{ikt})$	(3) $\ln(\sigma(ROA)_{ikt})$	(4) $\ln(\sigma(ROA)_{ikt})$	(5) $\ln(\sigma(ROA)_{ikt})$
IT_{kt}	-0.482***	-0.468***	-0.402***	-0.430***	-0.382***
	(0.094)	(0.094)	(0.096)	(0.083)	(0.107)
IT_{kt}*Gov. Effect.$_{kt}$	-0.251*	-0.181	0.016	-0.198	-0.002
	(0.147)	(0.152)	(0.153)	(0.152)	(0.147)
IT_{kt}*Gov. Effect.$^2_{kt}$	0.360***	0.310***	0.138	0.298***	0.083
	(0.116)	(0.113)	(0.100)	(0.108)	(0.121)
Gov. Effect.$_{kt}$	-0.347***	-0.350***	-0.413***	-0.404***	-0.464**
	(0.106)	(0.093)	(0.147)	(0.118)	(0.193)
Gov. Effect.$^2_{kt}$	-0.154	-0.110	0.084	-0.091	0.119*
	(0.097)	(0.078)	(0.073)	(0.069)	(0.063)
Bank FE	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes
Country Controls		Yes	Yes	Yes	Yes
Region x Year FE			Yes		
Legal Origin x Year FE				Yes	
Region x Legal Origin x Year FE					Yes
Observations	98,729	99,750	99,750	99,750	99,750
R-squared	0.575	0.605	0.608	0.606	0.610

Table 8: *Alternative Explanation: Is the IT-stability relationship a log function of the corruption perception index?*

This table presents the fixed-effects regression of a measure of financial stability (the natural log of the Z-score) against a set of control variables, a dummy of inflation targeting and a variable that measures the corruption perception of a country. Higher values for this index mean lower corruption. This variable was taken from Transparency International. We interact the log of the Corruption Index with the IT variable to understand whether the effect of IT on financial stability is increasing, but at a lower rate as the index increases. The subscript t refers to years, i to banks, and k to countries. Country-specific controls include Financial Depth controls include the density of deposits, the equity to assets ratio (aggregated), the HHI of assets, and the domestic credit provided to the financial sector (as % of the GDP), the GDP cycle (derived from HP filters of each country's log of GDP), the consumer price index (CPI) the Financial Freedom Index and the Property Rights Index. We also include balance sheet variables such as $SIZE_{ikt}$, Liquidity Ratio and Cost To Assets ratio. In all estimations, the upper and lower percentiles of the dependent variable are not considered. Robust standard errors clustered by country in parentheses.
**** p<0.01, ** p<0.05, * p<0.1

VARIABLES	(1) $\ln(\text{Z-score}_{ikt})$	(2) $\ln(\text{Z-score}_{ikt})$	(3) $\ln(\text{Z-score}_{ikt})$	(4) $\ln(\text{Z-score}_{ikt})$	(5) $\ln(\text{Z-score}_{ikt})$
IT_{kt}	0.093	0.119	0.061	0.144	-0.052
	(0.316)	(0.287)	(0.264)	(0.350)	(0.490)
IT_{kt}*Ln(Corruption Perception)$_{kt}$	0.227	0.203	0.199	0.091	0.213
	(0.280)	(0.245)	(0.223)	(0.295)	(0.375)
Ln(Corruption Perception)$_{kt}$	0.197	0.210	0.387**	0.155	0.361*
	(0.251)	(0.193)	(0.151)	(0.181)	(0.216)
Bank FE	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes
Country Controls		Yes	Yes	Yes	Yes
Region x Year FE			Yes		
Legal Origin x Year FE				Yes	
Region x Legal Origin x Year FE					Yes
Observations	98,458	98,458	98,458	98,458	98,458
R-squared	0.574	0.576	0.579	0.582	0.585

Table 9: *Alternative Explanation: Is the IT-stability relationship a log function of the corruption perception index? RAROA Equation*

This table presents the fixed-effects regression of a measure of financial stability (the natural log of the RAROA) against a set of control variables, a dummy of inflation targeting and a variable that measures the corruption perception of a country. Higher values for this index mean lower corruption. This variable was taken from Transparency International. We interact the log of the Corruption Index with the IT variable to understand whether the effect of IT on financial stability is increasing, but at a lower rate as the index increases. The subscript t refers to years, i to banks, and k to countries. Country-specific controls include Financial Depth controls include the density of deposits, the equity to assets ratio (aggregated), the HHI of assets, and the domestic credit provided to the financial sector (as % of the GDP), the GDP cycle (derived from HP filters of each country's log of GDP), the consumer price index (CPI) the Financial Freedom Index and the Property Rights Index. We also include balance sheet variables such as $SIZE_{ikt}$, Liquidity Ratio and Cost To Assets ratio. In all estimations, the upper and lower percentiles of the dependent variable are not considered. Robust standard errors clustered by country in parentheses.
**** p<0.01, ** p<0.05, * p<0.1

VARIABLES	(1) $\ln(RAROA_{ikt})$	(2) $\ln(RAROA_{ikt})$	(3) $\ln(RAROA_{ikt})$	(4) $\ln(RAROA_{ikt})$	(5) $\ln(RAROA_{ikt})$
IT_{kt}	0.324	0.237	0.072	0.057	-0.129
	(0.395)	(0.391)	(0.353)	(0.334)	(0.512)
IT_{kt}*Ln(Corruption Perception)$_{kt}$	0.061	0.086	0.143	0.095	0.203
	(0.311)	(0.286)	(0.251)	(0.248)	(0.365)
Ln(Corruption Perception)$_{kt}$	0.175	0.132	0.274*	-0.016	0.150
	(0.311)	(0.254)	(0.150)	(0.153)	(0.148)
Bank FE	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes
Country Controls		Yes	Yes	Yes	Yes
Region x Year FE			Yes		
Legal Origin x Year FE				Yes	
Region x Legal Origin x Year FE					Yes
Observations	99,450	99,450	99,450	99,450	99,450
R-squared	0.565	0.568	0.572	0.578	0.580

Table 10: *Alternative Explanation: Is the IT-stability relationship a log function of the corruption perception index? σ(ROA) Equation*

This table presents the fixed-effects regression of a measure of financial fragility (the natural log of the σ(ROA)) against a set of control variables, a dummy of inflation targeting and a variable that measures the corruption perception of a country. Higher values for this index mean lower corruption. This variable was taken from Transparency International. We interact the log of the Corruption Index with the IT variable to understand whether the effect of IT on financial stability is increasing, but at a lower rate as the index increases. The subscript *t* refers to years, *i* to banks, and *k* to countries. Country-specific controls include Financial Depth controls include the density of deposits, the equity to assets ratio (aggregated), the HHI of assets, and the domestic credit provided to the financial sector (as % of the GDP), the GDP cycle (derived from HP filters of each country's log of GDP), the consumer price index (CPI) the Financial Freedom Index and the Property Rights Index. We also include balance sheet variables such as $SIZE_{ikt}$, Liquidity Ratio and Cost To Assets ratio. In all estimations, the upper and lower percentiles of the dependent variable are not considered. Robust standard errors clustered by country in parentheses.
**** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)
VARIABLES	$\ln(\sigma(ROA)_{ikt})$	$\ln(\sigma(ROA)_{ikt})$	$\ln(\sigma(ROA)_{ikt})$	$\ln(\sigma(ROA)_{ikt})$	$\ln(\sigma(ROA)_{ikt})$
IT_{kt}	-0.148	-0.204	-0.144	-0.313	0.093
	(0.322)	(0.298)	(0.252)	(0.338)	(0.485)
IT_{kt}*Ln(Corruption Perception)$_{kt}$	-0.217	-0.173	-0.171	-0.013	-0.276
	(0.274)	(0.247)	(0.212)	(0.291)	(0.373)
Ln(Corruption Perception)$_{kt}$	-0.091	-0.129	-0.303*	-0.065	-0.286
	(0.221)	(0.175)	(0.175)	(0.206)	(0.240)
Bank FE	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes
Country Controls		Yes	Yes	Yes	Yes
Region x Year FE			Yes		
Legal Origin x Year FE				Yes	
Region x Legal Origin x Year FE					Yes
Observations	99,472	99,472	99,472	99,472	99,472
R-squared	0.605	0.607	0.609	0.611	0.613