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What Causes Financial Crisis in Asian Countries?

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Abstract

In this paper, we investigate the indicators of financial crisis in Asian countries, focusing more on the impact of corporate governance. Unlike the previous studies such as Johnson et al. (2000) and Acemoglu et al. (2003) that use some fixed measures of corporate governance based on the law in force in a specific year—such as the anti-director right index (ADRI) or the anti-self dealing index (ASDI)—we employ the annual Worldwide Governance Index (WGIs) and the Quality of Governance Index. The regression results, which use the data of 19 Asian countries from 1996 to 2015, and control for country fixed effect and the business cycle, show that the macroeconomic factors appear to have no effect, or a minor effect, on currency depreciation. However, better corporate governance reduces the decline in currency value.

Keywords: Financial crisis; corporate governance; Asian countries; legal system.

JEL code: G01, G18, G38.

1. Introduction

Theoretical and empirical research shows that in the process of development, countries have cyclically experienced financial crisis, and this has created severe socio-economic consequences. Such financial crises have not only affected the original country but have spread their impacts to other relative countries in the region or the world. For decades, the severity of financial crises has urged many academics to study the underlying reasons for financial crises to recognize them early and to prevent and reduce their effects.

Over the last 50 years from the 1970s, various theories have been developed to explain the root causes of different financial crises. As these financial crises differ in many features (including time, place and mechanism), the proposed theories have not completely agreed with each other. Krugman (1979) considers the 1970 Latin America crisis as the inevitable outcome of ongoing fiscal imbalances combined with fixed exchange rates. Krugman's theory claims that international reserves, budget deficit and domestic credit growth are potential crisis-leading indicators. Obstfeld (1994, 1996) points out the weakness in Krugman's explanation and develops his theory that is suitable for the European Monetary System crisis in the early 1990s. Obstfeld (1994, 1996) argues that in the case of the EMS, currency crises still occurred even though governments maintained enough reserves to prevent them. The main idea of Obstfeld's theory is that central banks may rationally choose to abandon the fixed exchange rate regime when the defense of exchange parity becomes too costly. He called it the self-fulfilling feature of crisis. The combined effect of both government's countercyclical policy and investors' self-fulfilling behaviors results in the collapse of a fixed exchange rate peg, which leads to a financial crisis. While Krugman's and Obstfeld's theories seem to be convincing explanations of the 1970 Latin America and the 1990 EMS crises, these are not applicable for the so-called "Asia flu" in 1997, since the indicators of macroeconomic performance (such as budget deficit, domestic credit growth, unemployment and inflation) in Asian nations reveal no serious problems. In order to explain the nature of the Asian crisis, another strand of theory was born and, rather than focusing on fundamental factors, it mainly emphasized moral hazard and imperfect information (Krugman, 1998; Corsetti et al., 1999) or the self-fulfilling nature of the Asian crisis (Chang and Velasco, 1998, 2001). Although this third perspective successfully explains the Asian crisis in 1997, it is not a typical model for currency crisis as Krugman (2001) argues that crises are no longer mainly about monetary policy. Thus, he proposed the developed model, which is based on asset value rather than exchange rate—called the fourth theory. Developed from the three above-mentioned theories, all of the financial crisis studies that mention institutions as a crisis-causing indicator are categorized in the fourth theory (Breuer, 2004). In these studies, corporate governance is focused through various variables, such as legal variables (shareholder rights, shareholder protection, enforcement of contracts), institutional variables (economics and financial regulations, transparency and supervision over the financial system, accountability and government distortions), political variables (democ-

racy, voice, political instability), sociological variables (corruption, trust, culture, ethnicity) and the like. Typical studies in this generation include Johnson et al. (2000) and Acemoglu et al. (2003). According to Johnson et al. (2000), in all emerging markets, there exists a lack of confidence by investors in the financial system; hence, outside investors reassess the tunneling level of managers and controlling investors and adjust the amount of capital provision, leading to the decline of net capital inflows, which in turn result in asset devaluation and the stock market collapse. Besides, the authors claim that corporate governance can be the determining factor in evaluating the severity of fundamental macroeconomic issues. They conclude that managerial agency problems can make countries with weak legal systems vulnerable to the effects of a sudden loss of investor confidence. Acemoglu et al. (2003), although agreeing that macroeconomic performance is worsened prior to a crisis, argue that those distortionary macroeconomic policies are not really the main reasons for an economic crunch, but more probably the symptoms of underlying institutional problems. Also, no specific macroeconomic indicators play the dominant role in determining the effects of institutional differences on crisis severity. In fact, the extent of impacts depends on both microeconomic as well as macroeconomic factors.

The above quick literature review shows that financial crisis is attributed to a variety of both fundamental and institutional factors. Especially, modern research in the 20th century finds agreement among economists about the importance of the latter as a leading indicator for financial crisis. In this paper, we employ a parametric model to identify the leading indicators for financial crisis, and more specifically, to provide deeper examination of the impact of country-level corporate governance on financial crisis in 19 Asian countries from 1996 to 2015. The model is based on the fourth models of Johnson et al. (2000) and Acemoglu et al. (2003), whose main idea is to find the relationship between the corporate governance variable and the investors' confidence and financial crisis variable. Corporate governance at a country level means the legal institutions for corporate governance at firm level. This terminology also means the effectiveness of mechanisms that minimize agency conflicts involving managers and controlling investors. However, while previous papers measure corporate governance using various "law-in-force" indexes, such as the ADRI anti-director rights index (La Porta et al., 1998) or the ASDI anti-self-dealing index (Djankov, 2008), this study uses the World Governance Indicators (WGIs) by Kaufman (2010). The World Governance Indicators (WGIs) project reports aggregate and individual governance indicators for over 200 countries and territories over the period 1996–2016, for six dimensions of governance, namely: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption. The aggregate indicators are based on several hundred individual variables, taken from 31 existing data sources. The WGIs outweigh the "law-in-force" index in several aspects. First, WGIs are set on the synthesis of various assessments of different stakeholders, including a large number of enterprises, citizens and experts worldwide. The ADRI and

ASDI, in contrast, are based only on the views of attorneys from law firms, which is less credible than the WGIs established by various respondents. The WGIs' report is said to cover many different dimensions of governance other than only private enforcement mechanisms in the ADRI/ASDI. Second, while the WGIs are reported yearly from 1996 to 2015, ADRI is based on laws in force circa 1993 and ASDI is set in 2003. This means that while the "law-in-force" index is kept constant over a long period of time, the WGIs are updated yearly, which addresses the problem of yearly comparison. Sometimes invariant characteristics of country that can drive the results are not captured in previous studies like those of Johnson et al. (2000) and Acemoglu et al. (2003) due to the fixed corporate governance measure. In this study, with the employment of WGIs, we can control the yearly fixed effect, country fixed effect and income fixed effect, and answer the question if corporate governance still explains financial crisis better than macroeconomic fundamentals do, as do the findings of previous studies. Also, because the WGIs are available for more than 200 countries, we can expand the data to more Asian countries and over a longer period, which also covers the Global Crisis in 2007/2008. Our empirical results using the data of 19 countries confirm that corporate governance in the viewpoints of different stake holders, including enterprise, citizen and experts worldwide, explain the currency depreciation better than macroeconomic variables even when we control for the country fixed effect and business cycle effect. Our results are robust when the income fixed effect is controlled or when China is dropped from the sample.

Section 2 and 3 give the model specification and the data collection. In sections 4 and 5, we discuss the regression results and robustness checks. The final section is the conclusion.

2. Model specification

2.1. Definition of financial crisis and financial crisis incidence

On the strand of literature, definitions of financial crisis vary. The measures of crisis can be classified into two groups, discrete and continuous measures.

Kaminsky and Reinhart (1999) define crisis as a situation in which an attack on the currency leads to a sharp depreciation of the currency, a large decline in international reserves, or a combination of the two. A crisis so defined includes both successful and unsuccessful attacks on the currency. With this definition, Kaminsky and Reinhart create the Exchange Market Pressure Index (EMPI) and the country is hit by a crisis if this index is over a specific threshold. However, this approach may have some limitation. Firstly, this measure is very sensible to the chosen threshold. Kaminsky and Reinhart (1999) propose to use $\overline{EMPI} + \rho\sigma$ where $\overline{EMPI}$ is the average of EMPI and σ is its standard deviation, ρ can be 2 or 3. If this threshold is too big, some crises can be missed. In contrast, the small threshold can lead to a higher crisis frequency (see Vo Thi Thuy Anh et al. (2016)). Secondly, recent crises experience a lack of stock market liquidity due to the capital withdrawal of investors rather than an attack on the currency. Finally, this measure requires having monthly data, which is difficult to have for macroeconomic variables.

The continuous measure of financial crisis is proposed by Johnson et al. (2000). This is

the depreciation of the exchange rate or stock market decline. In our paper, similar to Johnson et al. (2000), we use the annual percentage change of the exchange rate as the dependent variable for a number of reasons. Firstly, the discrete measure of financial crisis of Kaminsky and Reinhart (1999) has some limitations as described above. Besides, financial crisis is no longer attributed to currency attack. Secondly, recent papers show that corporate governance explains financial crisis better than macroeconomic factors do (Johnson et al., 2000; Acemoglu et al., 2003). The mechanism through which corporate governance contributes to financial crisis is explained by a simple model derived by Johnson et al. (2000). In the Johnson et al. (2000) model, in a country with weak corporate governance, if there is even a small loss of confidence of investors, they will be less willing to provide their capital due to their reassessment of the likely amount of expropriation by managers (see Johnson et al., 2000). That is why the depreciation of the exchange rate or a fall in the stock price is popularly used as an indicator of financial crisis incidence in the literature (see Obstfeld et al., 2009, 2010), Frankel and Saravelos (2012). Our paper focuses more on the impact of corporate governance on financial crisis than macroeconomic factors. Therefore, we base our model on the model of Johnson et al. (2000), which explains the impact of corporate governance on the exchange rate as an indicator of the incidence of financial crisis. Besides, most of the stock markets in Asian countries are new or emerging ones. Therefore, the stock prices are not very informative and can be affected by asymmetric information. In this case, stock price is not appropriate to be an indicator of crisis incidence.

2.2. Corporate governance measure

"Corporate governance" is a very popular term and is widely used by researchers, policy-makers and scholars. It is defined as the ways in which the suppliers of finance to corporations assure themselves of getting a return on their investment (Shleifer and Vishny (1997). To a large extent, corporate governance is a set of mechanisms through which outside investors protect themselves against expropriation by insiders (La Porta et al. (2000), Johnson et al. (2000)).

The first measure of corporate governance of La Porta et al. (1998), called the Anti-Director Rights Index (ADRI), is widely used recently. This index is then corrected by Spamann (2009) and Djankov et al. (2008). Djankov et al. (2008) constructed a new index of shareholder protection named the Anti Self Dealing Index (ASDI) for 72 countries which, addresses the protection of minority shareholders against self-dealing transactions benefiting controlling shareholders. These indexes are based on the law in force in a specific year. For example, the original ADRI of La Porta et al. (1998) refers to the law in force around 1993-1994 while that of Djankov et al. (2008) used the law in force in 2003. Yet, these measures show some drawbacks. They are all estimated using the information of law in force, which is supposed to be fixed over time. All the information related to government quality is ignored. Therefore, the World Bank in a long-standing research project proposed a new measure of corporate governance in the context of government quality from the view point of non-governmental organisations, commercial business informa-

tion providers, and public sector organisations worldwide (Kaufmann et al., 2010) (see Table 1 for details). The Worldwide Governance Indicators (WGIs) consist of six composite indicators of governance covering over 200 countries since 1996, including Voice and Accountability (VA), Political Stability and Absence of Violence/Terrorism (PV), Government Effectiveness (GE), Regularity Quality (RQ), Rule of Law (RL), and Control of Corruption (CC). These indicators are based on several hundred variables obtained from 31 different data sources, capturing governance perceptions as reported by survey respondents.

In this paper, we use the six dimensions of WGIs as a measure of corporate governance for several reasons. Firstly, unlike these other measures, which are based on the law in force, this measure reflects the quality of government from the point of view of different stakeholders, including a large number of enterprises, citizens, and experts worldwide. Secondly, the WGIs' reports cover many different dimensions of governance other than only private enforcement mechanisms in ADRI/ASDI. Thirdly, WGIs are reported yearly from 1996 to 2015 while ADRI/ASDI are fixed over time. Also, the ADRI/ASDI are only available for a number of countries while World Bank estimate WGIs for more than 200 countries. Besides using separate dimensions of WGIs, like Houqe et al. (2012), we create the quality of government index, which is the aggregate of these six indicators. Time-invariant and unobservable specific characteristics of country can drive the relation between corporate governance or fundamental indicators and financial crisis. Using yearly data allows controlling the year fixed effect, country fixed effect and income fixed effect, which mitigates the bias caused by time-invariant characteristics of country.

2.3. Other control variables

We also control for country characteristics using fundamental variables. They are economy growth (Real GDP Growth), fiscal policy (Government Expenditure Growth), monetary policy (M3 Growth), financial market development (Market Capitalization to GDP) and current account (Term of Trade and Reserve Growth). The definitions of these variables are presented in Table 1.

2.4. Model

The model used in this paper is the following:

$$Y_{it} = C_i + \Sigma\alpha_t Year_t + \beta_0 + \beta_1 Y_{it-1} + \beta_1 Gov_{it} + \Sigma\beta Control_{it-1} + \varepsilon_{it} \quad (1)$$

where Y_{it} is yearly percentage change in nominal exchange rate of country i in year t. C_i and α_t are country and year fixed effects respectively. Gov_{it} is the corporate governance variable which can be a dimension of WGIs or the quality of government index of country I in year t. The six dimensions of WGIs are somehow highly correlated to each other (see Table 3) so we put them separately in the regressions. The control variables are economy growth (Real GDP Growth), fiscal policy (Government Expenditure Growth), monetary policy (M3 Growth), financial market development (Market Capitalization to GDP) and current account (Term of Trade and Reserve Growth). To reduce the causality effect between the dependent variable and fundamental and corporate governance variables that may drive the regression results, the lag of a dependent variable is

Table 1: Variable description

Variable	Description
Dependent Variables	
Exchange change (%)	Percentage change of exchange rate
Independent Variables	
Macroeconomic variables	
Real GDP Growth (%)	The real economic growth rate
Government Expenditure Growth	The growth rate of government expenditure
M3 Growth	The growth rate of broad money
Term of Trade	The ratio of export prices of a country to import prices
Market Capitalization to GDP (%)	The percentage of GDP represented by stock market capitalization
Reserves Growth (%)	The percentage change of a country official reserves
Corporate Governance Variables*	
Voice and Accountability (VA)	Perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media
Political Stability and Absence of Violence/Terrorism (PV)	Perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.
Government Effectiveness (GE)	Perceptions of the quality of public services, the quality of the civil service and the degree of its dependence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies
Regulatory Quality (RQ)	Perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development
Rule of Law (RL)	Perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence
Control of Corruption (CC)	Perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests
Quality of Government (QG)	Aggregate of six WGIs dimensions above.

Note: The definition these variables are cited from Kaufmann et al. (2010).

used as a control variable. Also, the impact of fundamental variables on exchange rate can be lagged. That is the reason why all the control variables are in one lag.

Because there are country time-invariant characteristics that may make the regression results biased, we also control for country fixed effect. To capture the business cycle that may affect the exchange rate, year fixed effect is added in the regression.

For the robustness check, we run different regressions. First, since the financial market development, which can be a main indicator of capital flow, is well related to the income level, we control for income level fixed effect. The sample is classified into 4 groups by the IMF

Table 2: Statistics description

Variable	No of Obs	Mean	Standard Deviation	Min	Max	Skewness	Kurtosis
Exchange change (%)	380	3.281	11.742	-24.278	123.601	4.402	37.043
Real GDP Growth (%)	368	-0.378	7.550	-51.092	14.089	-3.373	20.116
Government Expenditure Growth	374	5.389	6.347	-15.372	51.926	2.076	15.940
M3 Growth	377	7.901	12.405	-58.164	56.526	-0.941	8.970
Term of Trade	380	98.708	30.627	19.838	254.343	2.129	11.266
Market Capitalization to GDP (%)	352	89.753	168.793	0.101	1086.340	4.398	23.682
Reserve Growth (%)	380	10.786	19.477	-65.916	93.444	-0.032	5.298
Voice and Accountability (VA)	323	-0.295	0.653	-1.687	1.109	0.000	2.650
Political Stability and Absence of Violence/Terrorism (PV)	323	-0.507	0.978	-2.806	1.343	0.0573	2.190
Government Effectiveness (GE)	323	0.238	0.821	-1.043	2.431	0.923	2.920
Regulatory Quality (RQ)	323	0.167	0.797	-1.095	2.262	0.950	3.252
Rule of Law (RL)	323	0.062	0.774	-1.025	1.894	0.744	2.497
Control of Corruption (CC)	323	-0.057	0.903	-1.488	2.417	1.261	3.677
Quality of Government	323	-0.065	0.739	-1.180	1.604	0.897	2.749

Note: Corporate governance variables like VA, PV, GE, RQ, RL, CC and Quality of Government are not available in 1997, 1999 and 2001.

including low income, lower middle income, higher middle income and high income (see Appendix 1). Second, among Asian countries, China is quite different in terms of size and economic development. So, we drop China out of the sample and check if the results are robust.

3. Data

Our sample consists of 19 Asian markets: Armenia, Bangladesh, China, Hongkong SAR – China, India, Indonesia, Japan, Jordan, Republic of Korea, Lebanon, Malaysia, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Turkey and Vietnam which are classified into 4 income groups by the IMF.

Data of exchange rates and the macroeconomic variables are collected from the Global Financial Development Database 2017 and the Popular Indicators Database of IMF. For governance variables, we used the published data on WGIs from the World Bank. The data cover a 20-year period from 1996 to 2015. Statistical description of variables is presented in Table 2.

4. Regression results

It can be seen from the Table 4 macroeconomic variables, including economy growth (Real GDP Growth), fiscal policy (Government Expenditure Growth), monetary policy (M3 Growth), financial market development (Market Capitalization to GDP) and current account (Term of Trade and Reserve Growth), appear to have no or minor effects on the variations of exchange rates. Specifically, lag of the exchange rate is positively significant at 1%. This result confirms that crisis is persistent. M3 Growth and Term of Trade have a negatively significant impact on exchange rate depreciation while market capitalization to GDP is positively significant in some regressions. These results are

Table 3: Correlation

This table demonstrates Pearson correlation of all variables. The dependent variable is annual percentage change in exchange rate. Independent variables are alternative country-level governance indicators namely voice accountability (VA), political stability and absence of violence/terrorism (PV), governance effectiveness (GE), regulatory quality (RQ), rule of law (RL) and control of corruption (CC) and quality of government (QG) and other control variables such as real GDP growth, government expenditure growth, broad money growth (M3 growth), term of trade, market capitalization to GDP and reserves growth.

	Exchange change	Real GDP Growth	Government Expenditure Growth	M3 Growth	Term of Trade	Market Capitalization to GDP	Reserve Growth	VA	PV	GE	RQ	RL	CC	QG
Exchange change	1.00													
Real GDP Growth	-0.43[a]	1.00												
Government Expenditure Growth	-0.08	0.09[c]	1.00											
M3 Growth	-0.35[a]	0.18[a]	0.25[a]	1.00										
Term of Trade	-0.18[a]	0.27[a]	0.04	0.12[b]	1.00									
Market Capitalization to GDP	-0.26[a]	0.33[a]	-0.12[b]	-0.15[a]	0.08	1.00								
Reserve Growth	-0.29[a]	0.10[c]	0.11[b]	0.50[a]	0.13[a]	-0.07	1.00							
VA	-0.02	0.002	-0.27[b]	-0.27[a]	-0.06	0.43[a]	-0.13[b]	1.00						
PV	-0.14[b]	0.35[a]	-0.17[a]	-0.04	0.24[a]	0.52[a]	-0.06	0.33[a]	1.00					
GE	-0.26[a]	0.32[a]	-0.17[a]	-0.17[a]	0.28[a]	0.80[a]	-0.132[b]	0.53[a]	0.73[a]	1.00				
RQ	-0.19[a]	0.26[a]	-0.25[a]	-0.04[a]	-0.30[a]	0.69[a]	-0.11[b]	0.54[a]	0.69[a]	0.89[a]	1.00			
RL	-0.15[a]	0.24[a]	-0.21[a]	-0.22[a]	0.22[a]	-0.11[b]	0.70[a]	0.59[a]	0.75[a]	0.89[a]	0.87[a]	1.00		
CC	-0.14[b]	0.23[a]	-0.20[a]	-0.20[a]	0.20[a]	0.70[a]	-0.13[b]	0.53[a]	0.75[a]	0.88[a]	0.85[a]	0.94[a]	1.00	
QG	-0.15[a]	0.25[a]	-0.25[a]	-0.20[a]	0.24[a]	0.71[a]	-0.14[b]	0.64[a]	0.80[a]	0.92[a]	0.91[a]	0.96[a]	0.94[a]	1.00

Note: [a] significant at 1%, [b] significant at 5%, [c] significant at 10%.

not surprising because currency will depreciate more when the monetary mass expands and the export price over import price increases. However, Voice and Accountability, Political Stability, Governance Effectiveness, Control of Corruption and Quality of Government take a part in explaining the depreciation of currency value, even when country fixed effect and business cycle are controlled. These results are consistent with Johnson et al. (2000) who conclude that corporate governance explains the extent of exchange rate depreciation better than do standard macroeconomic measures. A possible explanation is that in countries with weak corporate governance, agency conflict is a big problem and controlling shareholders or managers of companies can steal assets, firms' earnings, and cover their theft without breaking any rules (Johnson et al., 2000). If weak-corporate-governance countries suffer from an adverse shock, investors' confidence will quickly turn sour, which reflects in the exchange rate expropriation and damages the entire economy. Specifically, the fact that a country's citizens are able to be involved in their government's election as well as having freedom of expression, freedom of association and a free media, which is measured by the Voice and Accountability Index, allows reduced asymmetric information and therefore improves investors' protection. Therefore, if this index is higher (better), agency problems are less serious, and the investors will withdraw less capital when there is a sudden loss in confidence. Also, it is not surprising to have a negative relationship between political stability/government effectiveness and financial crisis because political conflicts can increase the current crisis and

Table 4: Impact of macroeconomic indicators and corporate governance on financial crises

This table reports regressions of financial crises on alternative country-level governance indicators namely voice accountability (VA), political stability and absence of violence/terrorism (PV), governance effectiveness (GE), regulatory quality (RQ), rule of law (RL) and control of corruption (CC). Dependent variable is annual percentage change of exchange rate. Column (2) to (8) present fixed effect estimations for different governance factors as individual. Regressions specify year fixed effect and country fixed effect. Besides corporate governance variables, other control variable used in regressions are lag of dependent variable and lag of GDP growth, broad money growth, government expenditure growth, term of trade, market capitalization of GDP and reserves growth. All variables are winsorized at 1% and 99%.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		VA	PV	GE	RQ	RL	CC	QG
Corporate Governance		-10.97[a]	-3.539[b]	-7.490[c]	5.559	-0.157	-6.130[c]	-1.117[a]
		(2.502)	(1.494)	(3.998)	(3.717)	(3.747)	(3.261)	(4.130)
Exchange Change	0.029	0.280[a]	0.304[a]	0.273[a]	0.264[a]	0.271[a]	0.267[a]	0.291[a]
	(0.079)	(0.0903)	(0.0939)	(0.0933)	(0.0936)	(0.0940)	(0.0933)	(0.0928)
Real GDP Growth	-0.107	0.176	0.169	0.141	0.0915	0.101	0.169	0.186
	(0.128)	(0.120)	(0.126)	(0.125)	(0.124)	(0.124)	(0.128)	(0.126)
Government Expenditure Growth	0.027	-0.120	-0.114	-0.107	-0.074	-0.093	-0.097	-0.126
	(0.087)	(0.091)	(0.094)	(0.094)	(0.095)	(0.095)	(0.094)	(0.094)
M3 Growth	-0.255[a]	-0.280[a]	-0.290[a]	-0.291[a]	-0.304[a]	-0.296[a]	-0.305[a]	-0.291[a]
	(0.055)	(0.054)	(0.055)	(0.056)	(0.056)	(0.056)	(0.056)	(0.055)
Term of Trade	-0.234[a]	-0.159[a]	-0.155[a]	-0.134[a]	-0.132[a]	-0.138[a]	-0.143[a]	-0.152[a]
	(0.048)	(0.047)	(0.048)	(0.048)	(0.048)	(0.048)	(0.048)	(0.048)
Market capitalization to GDP	0.010	0.015[b]	0.0099	0.0109[c]	0.00747	0.00835	0.0093	0.013[c]
	(0.0063)	(0.0063)	(0.0063)	(0.0065)	(0.0063)	(0.0067)	(0.0063)	(0.0064)
Lag of Reserve Growth	-0.039	-0.035	-0.014	-0.024	-0.023	-0.022	-0.027	-0.022
	(0.032)	(0.031)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)
Constant	27.19[a]	17.31[a]	19.45[a]	22.29[a]	17.43[a]	19.58[a]	20.30[a]	20.86[a]
	(5.802)	(4.746)	4.852)	(5.086)	(5.092)	4.916)	(4.889)	(4.858)
Observations	318	273	273	273	273	273	273	273
R-squared	0.494	0.592	0.568	0.565	0.562	0.558	0.565	0.572
Number of Countries	19	19	19	19	19	19	19	19
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: [a] significant at 1%, [b] significant at 5%, [c] significant at 10%.

Table 5: Impact of macroeconomic indicators and corporate governance on financial crises, controlling for income fixed effect

This table reports regressions of yearly percentage change of exchange rate on alternative country-level governance indicators namely voice accountability (VA), political stability and absence of violence/terrorism (PV), governance effectiveness (GE), regulatory quality (RQ), rule of law (RL) and control of corruption (CC) and quality of government. Column (2) to (8) present fixed effect estimations for different governance factors as individual. Regressions specify year fixed effect, country fixed effect and income fixed effect. Control variable used in regressions are lag of dependent variable and lag of GDP growth, broad money growth, government expenditure growth, term of trade, market capitalization of GDP and reserves growth.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		VA	PV	GE	RQ	RL	CC	QG
Corporate Governance		-10.97[a]	-3.539[b]	-7.490[c]	5.559	-0.157	-6.130[c]	-1.117[a]
		(2.502)	(1.494)	(3.998)	(3.717)	(3.747)	(3.261)	(4.130)
Lag of Exchange Change	0.029	0.280[a]	0.304[a]	0.27[a]	0.26[a]	0.27[a]	0.26[a]	0.291[a]
	(0.079)	(0.090)	(0.094)	(0.093)	(0.094)	(0.094)	(0.093)	(0.093)
Real GDP Growth	-0.107	0.176	0.169	0.141	0.0915	0.101	0.169	0.186
	(0.128)	(0.120)	(0.126)	(0.125)	(0.124)	(0.124)	(0.128)	(0.126)
Government Expenditure Growth	0.027	-0.120	-0.114	-0.107	-0.074	-0.093	-0.097	-0.126
	(0.087)	(0.091)	(0.094)	(0.094)	(0.095)	(0.095)	(0.094)	(0.094)
M3 Growth	-0.255[a]	-0.280[a]	-0.29[a]	-0.29[a]	-0.30[a]	-0.29[a]	-0.30[a]	-0.29[a]
	(0.055)	(0.054)	(0.055)	(0.056)	(0.056)	(0.056)	(0.056)	(0.055)
Term of Trade	-0.234[a]	-0.159[a]	-0.15[a]	-0.13[a]	-0.13[a]	-0.13[a]	-0.14[a]	-0.152[a]
	(0.048)	(0.047)	(0.048)	(0.048)	(0.048)	(0.048)	(0.048)	(0.048)
Market capitalization to GDP	0.01	0.015[b]	0.009	0.011[c]	0.007	0.008	0.009	0.013[c]
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)
Reserve Growth	-0.039	-0.035	-0.015	-0.024	-0.023	-0.022	-0.027	-0.022
	(0.032)	(0.031)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)
Constant	27.19[a]	17.31[a]	19.45[a]	22.29[a]	17.43[a]	19.58[a]	20.30[a]	20.86[a]
	(5.802)	(4.746)	(4.852)	(5.086)	(5.092)	(4.916)	(4.889)	(4.858)
Observations	318	273	273	273	273	273	273	273
R-squared	0.494	0.592	0.568	0.565	0.562	0.558	0.565	0.572
Number of countries	19	19	19	19	19	19	19	19
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Income FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: All variables are winsorized at 1% and 99%. [a] significant at 1%, [b] significant at 5%, [c] significant at 10%.

cause sharp economic slowdowns (see Kim and Conceição, 2010). Government effectiveness has a positive impact on economic growth (Md Rafayet et al., 2017). Regulatory quality, rule of law and control of corruption are different measure dimensions of governance that are highly correlated to investor protection. When investor protection is better, investors will be less fearful of expropriation of insiders such as managers and controlling shareholders. Therefore, the fall in asset prices due to loss in investors' confidence will be less.

In conclusion, using another measure of corporate governance and controlling for country fixed effect and business cycle, our results highlight the contribution of corporate governance to financial crisis in Asian Countries from 1996 to 2015. These results are in the same line as the findings of previous empirical works like that of Johnson et al. (2000) which is successful in explaining the "flu crisis" in Asian countries in 1996-1997. Our findings recommend that the institutional environment in different aspects play a very crucial role in financial crisis in Asian countries. Therefore, improving the institutional environment, especially the quality of government, such as by increasing the involvement of citizens in elections, policies, reducing political conflict, improving government effectiveness, rule of law and control of government, should be the priority of governance procedures and activities.

5. Robustness check

As discussed above, income level is well correlated to the financial market development. In a well-developed financial market, stock market liquidity is high and investors, especially foreign ones, will more easily invest or withdraw their capital. To mitigate this fact, we add income level fixed effect in the model. The regression results are robust. Better corporate governance reduces the depreciation of exchange rate (see table 5).

We further examine whether our finding is persistent if we exclude China, which is quite different from the other countries in the sample in terms of size and economic system from the sample (see Table 6). Macroeconomic variables show no correlation to the exchange rate change, apart from money growth, while corporate governance has a negative impact on currency depreciation.

6. Conclusion

The previous studies like those of Johnson et al. (2000) and Acemoglu et al. (2000) using fixed measures of corporate governance such as ADRI and ADSI, which are based on law-in-force, are successful in explaining the crisis in Asian countries in 1996-1997. However, the fixed ADRI and ADSI do not allow the controlling country fixed effect and business cycle which may make the results biased. Also, these two indexes are only available for certain countries. In this paper, using the corporate governance measure WGIs of World Bank, with the control for country fixed effect and business cycle and the data of 19 countries from 1996-2015, we find that the better corporate governance reduces the currency depreciation. In cross-country regressions, corporate governance variables are more likely to explain more of the variation in exchange rates than do macroeconomic variables. These results are robust while concerning income fixed effect and changing the sample countries. This study once again stresses that governance quality is an important determinant of crises.

Table 6: Impact of macroeconomic indicators and corporate governance on financial crises, dropping China

This table reports regressions of financial crises on alternative country-level governance indicators namely voice accountability (VA), political stability and absence of violence/terrorism (PV), governance effectiveness (GE), regulatory quality (RQ), rule of law (RL) and control of corruption (CC) and quality of government (QG). Dependent variable is percentage change of exchange rate. Columns (2) to (8) present estimations for different governance factors as individual. Regressions specify year fixed effect, country fixed effect and income fixed effect. China is dropped from the sample. Control variable used in regressions are lag of dependent variable and GDP growth, broad money growth, government expenditure growth, term of trade, market capitalization of GDP and reserves growth.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		VA	PV	GE	RQ	RL	CC	QG
Corporate Governance		-10.58[a]	-3.52[b]	-7.650[c]	5.628	-0.074	-5.398	-1.073[b]
		(2.584)	(1.534)	(4.153)	(3.857)	(3.865)	(3.417)	(4.253)
Lag of Exchange Change	0.0295	0.283[a]	0.307[a]	0.278[a]	0.270[a]	0.274[a]	0.273[a]	0.294[a]
	(0.082)	(0.094)	(0.097)	(0.097)	(0.097)	(0.097)	(0.097)	(0.096)
Real GDP Growth	-0.114	0.174	0.169	0.146	0.092	0.100	0.163	0.185
	(0.133)	(0.125)	(0.130)	(0.130)	(0.128)	(0.129)	(0.134)	(0.131)
Government Expenditure Growth	0.042	-0.101	-0.092	-0.083	-0.050	-0.069	-0.076	-0.103
	(0.091)	(0.095)	(0.098)	(0.098)	(0.099)	(0.100)	(0.098)	(0.098)
M3 Growth	-0.25[a]	-0.28[a]	-0.29[a]	-0.29[a]	-0.31[a]	-0.29[a]	-0.31[a]	-0.29[a]
	(0.057)	(0.056)	(0.057)	(0.057)	(0.058)	(0.058)	(0.058)	(0.057)
Term of Trade	-0.24[a]	-0.16[a]	-0.15[a]	-0.13[a]	-0.13[b]	-0.14[a]	-0.14[a]	-0.15[a]
	(0.051)	(0.050)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)
Market capitalization to GDP	0.011	0.014[b]	0.01	0.011[c]	0.007	0.008	0.009	0.013[c]
	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Reserve Growth	-0.037	-0.032	-0.012	-0.022	-0.02	-0.021	-0.024	-0.02
	(0.033)	(0.032)	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)
Constant	27.22[a]	31.67[a]	32.27[a]	22.21[a]	16.77[a]	19.24[a]	20.08[a]	21.00[a]
	(6.118)	(5.260)	(5.402)	(5.362)	(5.399)	(5.174)	(5.152)	(5.127)
Observations	299	257	257	257	257	257	257	257
R-squared	0.504	0.598	0.577	0.573	0.571	0.566	0.571	0.579
Number of countries	18	18	18	18	18	18	18	18
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Income FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: All variables are winsorized at 1% and 99%.

Appendix 1: Country list

No.	Country	IMF code	Income Group
01	Armenia	911	Lower middle income
02	Bangladesh	513	Lower middle income
03	China	924	Upper middle income
04	Hong Kong SAR, China	532	High income
05	India	534	Lower middle income
06	Indonesia	536	Lower middle income
07	Japan	158	High income
08	Jordan	439	Upper middle income
09	Korea, Rep.	542	High income
10	Lebanon	446	Upper middle income
11	Malaysia	548	Upper middle income
12	Nepal	558	Low income
13	Pakistan	564	Lower middle income
14	Philippines	566	Lower middle income
15	Singapore	576	High income
16	Sri Lanka	524	Lower middle income
17	Thailand	578	Upper middle income
18	Turkey	186	Upper middle income
19	Vietnam	582	Lower middle income

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