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# Country Case Studies on Resolving Problem Loans in Asia: Crises, Policies, Institutions, and Market Development

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# Outline

- I. Objective
- II. Literature review
- III. Case studies on Asian NPL resolution measures
- IV. Empirical analysis of Asian NPL resolution measures
- V. Conclusions and policy suggestions

# Objectives

1. Establish a comprehensive case study of NPL reduction policies implemented by selected ASEAN+3 countries during and after the Asian Financial Crisis (AFC).
2. The case study will be instrumental in deriving best practices for NPL reduction policies given concerns of moral hazard, governance, and fiscal cost; constructing a dataset of NPL reduction policy dummy variables that will be used in the empirical analysis.
3. Analyze the effectiveness of Asian NPL reduction policies using a dynamic panel dataset of 78 financial institutions from six Asian countries over the period of 2002-2017.
4. The study contributes to existing NPL reduction literature by analyzing the effects of NPL reduction policies in the ASEAN+3 region – a region that implemented a series of policy mix for NPL reduction at the onset of the AFC.

# Literature review

- Case studies

- Fung et al. (2004) and Cerruti & Neyens (2016) illustrated Asset Management Company (AMC) operations in Asia during the Asian Financial Crisis.
- Bihong (2006), Bing (2005), Danaharta (2006) Fuji & Kawai (2010), He (2004), Kihwan (2006), Kossof (2014), Kovsted et al. (2003), Luo (2016), Okina (2009), Pasadilla (2005), Santiprabhob (2003), Terada-Hagiwara & Pasadilla (2004) illustrated detailed country level experiences in NPL resolution during and after the Asian Financial Crisis (AFC).
- Deloitte (2018, 2019) provided crucial data in present NPL market development in Asia.

- Macroeconomic and bank-specific determinants of NPL

- Salas and Saurina (2002) estimated the macroeconomic and bank-specific determinants of NPL of commercial and savings bank in Spain from 1988 to 1997.
- Louzis, Vouldis, and Metaxas (2012) studied the drivers of NPL Greek's nine largest banks from the first quarter of 2003 to the third quarter of 2009.
- Klein (2013) analyzed NPL determinants in the 135 banks in the Central, Eastern and South-Eastern Europe (CESEE) region from 1998 to 2011.

- Effectiveness of NPL resolution policies

- Consolo et al. (2018) and Wolski (2014) analyzed the effects of insolvency frameworks on NPL reduction.
- Plekhanov and Skrzypinska (2018) sought to capture the (1) effectiveness of NPL reduction policies and (2) cross-border spillover effects of NPL reduction policies
- Balgova, Plekhanov, and Skrzypinska (2017) employed a novel approach to NPL reduction literature to estimate the effects of NPL reduction policies on (1) the likelihood of a sharp drop in NPL; and (2) magnitude of the subsequent NPL reduction conditional on a sharp drop.

# Case studies on Asian NPL resolution

# Case studies on Asian NPL resolution measures

- Case studies on the NPL resolution measures of selected ASEAN+3 countries<sup>1</sup> show the 4 main pillars of NPL resolution implemented in during and after the Asian Financial Crisis (AFC).
  1. Operation of public and private Asset Management Companies (AMC);
  2. Financial sector restructuring and bailout programs;
  3. Insolvency reform and resolution frameworks;
  4. Macroprudential policies and financial supervision

# Operation of public and private AMCs

# AFC: Features of Asian Public AMCs

AMC Feature	China	Indonesia	Japan	Korea	Malaysia	Thailand
<b>Public AMC</b>	Big 4 (Orient, Great Wall, Cinda, Huarong)	IBRA	RCC IRCJ	KAMCO	Danaharta	TAMC
<b>Set up</b>	1999	1998	RCC – 1999 IRCJ – 2003	1962 (Role expanded in 1997)	1998	2001
<b>Governing agency/body</b>	Ministry of Finance, CBRC	Ministry of Finance, Financial sector Policy Committee	RCC – DICJ IRCJ – FSA	Ministry of Finance, Financial Supervisory Commission (FSC),	Bank Negara Malaysia (BNM)	Bank of Thailand (BOT), Financial Institutions Development Fund (FIDF)
<b>Enabling Laws/ Programs</b>	Executive Order via State Council	Presidential Decree	RCC – Financial Revitalization Law IRCJ – Program for Financial Revival	KAMCO Act	Danaharta Act	Royal Decree via TAMC Act
<b>Official Mandate</b>	Restructuring	Restructuring	RCC – NPL collection DICJ – Restructuring	Restructuring/ Rapid Asset Disposition	Restructuring/ Rapid Asset Disposition	Restructuring
<b>Special Power</b>	No explicit power	Special power to seize assets of non-cooperative debtors without court approval	RCC – Assisted by DICJ special powers DICJ – No explicit power	No explicit power	Special power to purchase and resolve NPLs w/o court process	Special power to force debtors to enter into negotiation for loan repayment



# AFC: Features of Asian Public AMCs

AMC Feature	China	Indonesia	Japan	Korea	Malaysia	Thailand
<b>Centralized</b>	Yes	Yes	Yes	Yes	Yes	Yes <sup>1</sup>
<b>Financing</b>	AMC bond, and Govt. and Central Bank contribution	-	RCC – DICJ	KAMCO bonds	Government guaranteed bonds	BOT, FIDF
<b>Source of NPL</b>	4 SOB <sup>3</sup>	Banks with CAR = -25% to 4% SOB	RCC – Mortgage Lending (Jusen) IRCJ – Troubled FI	Troubled Financial Institution (FI)	Troubled FI and SOB	81% are old NPL from decentralized AMC
<b>Asset Selection</b>	47% manufacturing 6% agriculture 16% commercial 7% real estate	84% corporate 9% commercial 7% SME	RCC – Small to Medium firms IRCJ – Large corporations	-	-	-
<b>Pricing</b>	Book value	0. Payment can be considered as the capital injection provided by the government	Market Value RCC – 24.6% ave. IRCJ – 36.0% ave.	Market value (35.2% average transfer price)	1. Value of collateral 2. Percentage of outstanding principal (10% for regular loans)	Market value (34% average transfer price)
<b>Disposition &amp; Resolution</b>	Debt collection, portfolio sales, auctions, joint ventures, debt-for-equity swaps and lease of collateral	Bank restructuring was the main priority resulting to delays in asset disposition and pursuit of shareholders. <sup>4</sup>	Bulk sale, asset securitization and revitalization of firms	Bulk loan resolution, foreclosure, public auctions, loan sales, JV partnerships, rescheduling securitization	Loan restructuring for viable loans. Loan sale for nonviable loans.	Debt restructuring, business reorganization, or dispose/write off the asset and foreclose on the collateral.

# AFC: Features of Asian Public AMCs

	China	Indonesia	Japan	Korea	Malaysia	Thailand
<b>NPL acquisition period</b>	1999-2000 2004	1999-2000	1999-2006	1997-2002	1998-2001	2001-2003
<b>NPL acquisition (LCU billion)</b>	1999 – 1,394.0 2004 – 320.1	391,870.0	9,800.0	111,400.0	47.7 (19.7 acquired NPL + 28 managed for government)	775.8
<b>Peak NPL ratio (year - %)</b>	1999 – 28.5	1998 – 48.6	2002 – 8.1	2000 – 8.9	1998 – 18.6	1998 – 42.9
<b>NPL ratio +5 yrs (year - %)</b>	2004 – 13.2	2003 – 6.8	2007 – 1.5	2005 – 1.2	2003 – 13.9	2003 – 13.5
<b>Sunset clause</b>	No <sup>1</sup>	Yes	RCC – No DICJ - Yes	No	Yes	Yes
<b>Closing date/ Recovery period</b>	-	2004	IRCJ – 2007	2012	2005	2006
<b>Recovery rate (recovery/acq uisition, %)</b>	20.84 (68.6% of portfolio sold) <sup>2</sup>	22 (60% of portfolio sold)	-	43.2 (100% of portfolio sold)	58.0 (96.4% of portfolio sold)	19.4 (~100% of portfolio sold)

# AFC: Asian Private AMC (SPV) Operations

<b>AMC Feature</b>	<b>Philippines</b>	<b>Thailand*</b>
<b>Enabling Laws/ Programs</b>	SPV Act of 2002	Emergency Decree on Asset Management Company, B.E. 2541 (1998)
<b>Set up</b>	2003	1998
<b>Number of private SPVs established</b>	36	12
<b>NPL Acquisition Period</b>	2003-2005 2006-2008	-
<b>NPL acquisition (LCU billion)</b>	119.98	-
<b>Peak NPL ratio (year - %)</b>	2001 – 27.7	1998 – 42.9
<b>NPL ratio +5 yrs (year - %)</b>	2006 – 7.5	2003 – 13.5

# **Financial sector restructuring and bailout programs**

# AFC: Asian Recapitalization Program

AMC Feature	China	Indonesia	Japan	Korea	Malaysia	Thailand
<b>Enabling Laws/ Programs</b>	Executive Order via State Council	Comprehensive bank sector restructuring and recapitalization program	Financial Revitalization Act, Early Financial Correction Law, Program for Financial Revival	financial sector restructuring program	National Economic Recovery Plan (NERP)	Public sector recapitalization program
<b>Agency</b>	State Council	Government	Deposit Insurance Corporation of Japan (DICJ)	Korea Deposit Insurance Corporation (KDIC)	Danamodal Nasional Berhad (Danamodal)	Financial Institutions Development Fund (FIDF)
<b>Recapitalization Period</b>	1999-2008	1997-200	1997-2006	1997-2003	1998	1998-2002
<b>Amount (LCU billion)</b>	1999 – 270 2003 – 45 2005 – 15 2008 – 130	650,000	Direct injection – 12,400 Monetary grant – 18,900	160,400	6.15	Public – 716.93 Private – 0.71
<b>Recipient Institutions</b>	BoC, ABC, CCB, ICBC	Banks with CAR between -25% to 4%. Exemptions were made for 7 SOBs.	Troubled financial institutions	Troubled banks and other financial institutions	10 insolvent but viable financial institutions	KTB, BBC, BMB, SCIB, FBCB, UB

# **Insolvency reform and resolution frameworks**

# Insolvency Resolution Frameworks in Asia

	AFC legal and regulatory reforms	Current legal and regulatory framework
China		<ul style="list-style-type: none"> <li>•Jun 2007: China implemented its first comprehensive bankruptcy law, Law of the People’s Republic of China on Enterprise Bankruptcy “Bankruptcy Law” (2006). The Bankruptcy Law also introduced provisions for OOCW.</li> <li>•From 2007-2017, PRC introduced specialized liquidation and bankruptcy trial court. As of Feb 2017, there are 73 specialized liquidation and bankruptcy courts in China.</li> <li>•Financial Institution Insolvency: Article 38-39 of Law of the People’s Republic of China on Banking Regulation and Supervision</li> <li>•Recovery and Resolution Planning: CBRC has required the four globally systemically important banks (G-SIB) to prepare and submit recovery plans annually for review, with resolvability assessment being conducted for three.</li> </ul>
Indonesia	<ul style="list-style-type: none"> <li>•Sep 1998: Reform of the court supervised insolvency process, Bankruptcy Act, in September 1998 – introduced measures for debt restructuring and establishment of specialized court for insolvency, Commercial Court.</li> <li>•Sep 1998: Establishment of Jakarta Initiative Task Force (JITF) as facilitator of OOC workouts.<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>•Court procedure: Law No. 37 of 2004 on Bankruptcy and Suspension of Payment (Bankruptcy Law) dated 18-Oct 2004.</li> <li>•Financial Institution Insolvency: Article 17 to 31 of the PPKSK Law (Law No. 9 of 2016 on Prevention and Resolution of Financial System Crisis) and Chapter V of the DIC Law (Law No. 24 of 2004 Concerning Deposit Insurance Corporation)</li> <li>•Recovery and Resolution Planning: OJK Regulation No. 14/POJK.03/2017 on Recovery Plan for Systemic Banks</li> </ul>

# Insolvency Resolution Frameworks in Asia

	<b>AFC legal and regulatory reforms</b>	<b>Current legal and regulatory framework</b>
Japan	<ul style="list-style-type: none"> <li>•1999: Civil Rehabilitation Law (1999) replaces Composition Law (1927). The new law is debtor friendly in nature.</li> <li>•2001: establishment of out-of-court workout (OOCW) guidelines.</li> <li>•2003: Reform of Corporate Reorganization Proceedings in 2002, which amended the previous version in 1967.</li> </ul>	<ul style="list-style-type: none"> <li>•2007: Establishment of Turnaround Alternative Dispute Resolution (Turnaround ADR) as OOCW for medium and large companies.</li> <li>•2013: Establishment of Regional Economy Vitalization Corporation of Japan (REVIC) as OOCW for SMEs.</li> </ul>
Korea	<ul style="list-style-type: none"> <li>•Feb 1998: reform of the court-based insolvency system and revised the bankruptcy law.</li> <li>•Jul 1998: Start of Korea's out-of-court restructuring program.</li> <li>•2000: introduced the Corporate Restructuring Promotion Law (effective until 2005) to efficiently dispose of and reduce the NPLs of financial institutions.</li> <li>•Mar 2001: introduced a pre-packaged bankruptcy system that allowed creditors to negotiate out-of-court settlement with borrowers prior submission to court.</li> </ul>	<ul style="list-style-type: none"> <li>•Court procedure: Debtor Rehabilitation and Bankruptcy Act (DRBA)</li> <li>•Out-of-court procedure: Corporate Restructuring Promotion Act (CRPA)</li> </ul>



# Insolvency Resolution Frameworks in Asia

	<b>AFC legal and regulatory reforms</b>	<b>Current legal and regulatory framework</b>
Malaysia	<ul style="list-style-type: none"> <li>•Schemes of Arrangement<sup>2</sup></li> <li>•1998: Establishment of Out-of- Court Workout framework, Corporate Debt Restructuring Committee (CDRC)</li> </ul>	<ul style="list-style-type: none"> <li>•Court procedure: Companies Act (2016)</li> <li>•Financial Institution Insolvency: by Bank Negara Malaysia (BNM) under the Financial Services Act 2013 or Perbadan Insurans Deposit Malaysia (PIDM) under the Malaysia Deposit Insurance Corporation Act 2011 (MDICA).</li> </ul>
Thailand	<ul style="list-style-type: none"> <li>•1998: Reform of the Thai Bankruptcy Act<sup>3</sup></li> <li>•1998: Establishment of Corporate Debt Restructuring Advisory Committee (CDRAC).<sup>4</sup></li> <li>•1999: Establishment of specialized Bankruptcy Court with sole jurisdiction over liquidation and rehabilitation cases</li> </ul>	<ul style="list-style-type: none"> <li>•Financial Institution Insolvency: Chapter 5 and 6 of the Financial Institutions Business Act (FIBA) B.E. 2551 (2008)</li> </ul>

# Out-of-Court Restructuring Schemes in Asia

Country	Indonesia	Korea, Republic of	Malaysia	Thailand
<b>Initiative / Coordinator</b>	Jakarta Initiative Task Force (JITF)	Corporate Restructuring Coordination Committee (CRCC)	Corporate Debt Restructuring Committee (CDRC)	Corporate Debt Restructuring Advisory Committee (CDRAC)
<b>Basic approach</b>	Forum for negotiations, time-bound mediation Procedures	Forum for Negotiations	Forum for Negotiations of large debt cases (MYR50 mm)	Forum for facilitation, superseded by contractual approach (debt or creditor agreements)
<b>Resolution of inter-creditor disputes</b>	No special procedure	Possibility to have loan of opposing creditor purchased; arbitration committee consisting of private experts	Nothing special, apart from persuasion by central bank	Three-person panel to attribute differences, but any concerned creditor can opt out
<b>Default structure for failure to reach agreements</b>	Refer uncooperative debtor to government for bankruptcy Petition	Foreclosure, liquidation through court Receivership	Foreclosure, liquidation or referral to asset management company with super-administrative Powers	If less than 50 percent support the proposed workout, debtor-credit agreement obliges creditors to petition court for collection of debts
<b>Performance</b>	Facilitated the debt restructuring process of 117 cases amounting to \$29.7 billion. 96 cases (\$20.6 billion) were brought to completion with \$16.3 billion reaching legal recourse	By end-2000, CRCC facilitated the workout process between 8 major creditor banks and 64 major corporate groups.	By the time of its closure on July 2002, CDRC has helped in resolving 57 cases with a total debt outstanding of MYR45.8 billion.	By the end of CDRAC's operations on 1 October 2006, it facilitated the debt restructuring process of 11,655 cases amounting to THB1.5 trillion <sup>18</sup>

# Macroprudential policies and financial supervision

# Selected National and Regional Policy Responses to the AFC

- Prudential policies: caps on LTV ratio (HKG [2000–2001], KOR [2002–2006], PHI [2002], PRC [2004–2006], SIN [2005], THA [2003]); caps on DTI (HKG [2000], KOR [2005–2006], PRC [2004]); housing-related countercyclical capital requirements (IND [2004], KOR [2002], MAL [2005]); five-tier loan classification and loan-loss provisioning (IND [2005–2006], KOR [2002], PHI [2000–2001], PRC [2002]); consumer loan measures (THA [2004–2005]); limits to forward foreign currency contracts offered to nonresidents (INO [2001]); limits on net open currency position (KOR[2006]); limits to short-term borrowing by banks (INO [2005])
- Other policy measures: strengthening financial supervision and resolution mechanisms: measures/mechanisms to resolve nonperforming loans (via AMCs) (INO, KOR, MAL, PRC, THA); capital account liberalization (KOR)—lifting regulations on capital inflows (1998–1999), developing local foreign exchange market (2002), relaxing controls on overseas investments (2005, 2006)

# Selected National and Regional Policy Responses to the GFC

- **Prudential policies:** caps on LTV ratio (HKG [2009–2013], IND [2010, 2013], INO [2012–2013], KOR [2008–2012], MAL [2011], PRC [2007–2011], SIN [2010–2013], TAP [2010], THA [2009]); caps on DTI (HKG [2010–2013], KOR [2007–2012], SIN [2013], TAP [2010, 2014]); special stamp duty on properties sold (HKG [2010], SIN [2010]); restrictions on foreign exchange derivatives (KOR [2010]); withholding tax on foreign investor’s interest income from bond investment (KOR [2011]); levy on noncore foreign currency liabilities to reduce capital flow volatility (KOR [2011]); housing-related countercyclical capital requirements (HKG [2013], IND [2010], MAL [2011], THA [2010–2012]); loan-loss provisioning (IND [2008–2010], PRC [2010]); consumer loan measures (INO [2012], SIN [2013], THA [2007]); countercyclical capital requirements (IND [2008], MAL [2011], PRC [2010]); minimum holding periods (INO [2010])

# Empirical analysis of NPL resolution measures

# Data

- The paper uses panel data of (1) NPL resolution measure data from various sources including the case studies developed in conjunction with this report; (2) individual bank-level indicators derived from S&P Global, and (3) macroeconomic indicators from The World Bank's World Development Indicators.
- Due to data restrictions the sample only covers the annual frequency from **2002-2017** of **seventy-eight (78) financial institutions** from **six Asian countries (Table 1)**.

**Table 1: Number of Banks in Sample**

Country	Banks
People's Republic of China (PRC)	5
Indonesia	4
Japan	48
Republic of Korea (ROK)	1
Malaysia	8
Thailand	12
<b>TOTAL</b>	<b>78</b>

# Data

- Based on the case studies we test three main NPL resolution measures: (1) bank capital injection/bailout (BBO) provided by the government, central banks or deposit insurance companies; (2) NPL purchase conducted by public asset management companies (AMC); and (3) episodes of macro-prudential tightening and increased banking supervision.<sup>1</sup>
- Based on existing NPL literature (e.g. see Balgova et al. (2017), Klein (2013), Louzis et al. (2012), and Salas et. al (2002)), we also used two main factors in explaining the NPL ratio in Asian banks as control variables.
  1. First are **external factors** such as macroeconomic indicators that affect a debtor's capacity to repay their loan obligations. Owing from previous studies, we use GDP growth, unemployment rate, inflation rate, and exchange rate depreciation as our macroeconomic control variables.
  2. Second are **internal factors** such as bank-level indicators that reflects a banks efficiency and risk management, which influences bank NPL levels. Based on the cited literature, we used the following bank-level indicators: return-on-equity (ROE), equity-to-assets ratio (EA), loans-to-assets (LA) ratio, and loan growth rate as bank-level control variables.



# Methodology and model

- We estimate the dynamic panel data model

$$y_{i,t} = \alpha_0 y_{i,t-1} + \beta_1 BI_{i,t} + \beta_2 BI_{i,t-1} + \beta_3 MI_t + \beta_4 RSN_t + \beta_5 RSN_{t-1} + u_{i,t}$$

Where  $y_{i,t}$ , denotes the logit transformation of the non-performing loan ratio (NPLR) of bank  $i$  at year  $t$ .

## Regressors:

- BI: a vector of bank-level indicators [return-on-equity (ROE), equity-to-assets ratio (EA), loans-to-assets (LA) ratio, and loan growth rate as bank-level control variables]
- MI: a vector of macroeconomic indicators [GDP growth, unemployment rate, inflation rate, and exchange rate depreciation as our macroeconomic control variables]
- RSN: a vector of dummy variables which take a value of one if a corresponding NPL resolution framework is implemented during the current year. We use AMC purchase, bank bailout, and macroprudential policies as our main variables of interest.

# Summary Statistics

**Table 2: Summary Statistics of Control Variables**

Variable	Observations	Mean	Std. Dev.	Min	Max
NPL ratio (%)	1,248	4.8796	5.4322	0.324	93.606
GDP growth (%)	1,170	3.9127	5.8498	-7.4149	25.2549
Unemployment (%)	1,248	3.7237	1.4083	0.4900	8.0600
Inflation (%)	1,248	1.2101	2.1568	-1.3528	13.1087
Exchange rate depreciation (%)	1,170	-0.2500	8.3255	-12.5074	22.3211
Return on equity (%)	1,248	-0.7015	132.1986	-4306.764	76.3291
Earnings-to-assets (%)	1,248	6.9649	4.0797	-11.8310	42.4246
Loans-to-assets (%)	1,248	64.4542	12.6598	11.3786	185.6251
Loan growth rate (%)	1,170	8.5581	25.3982	-58.1459	516.1056

# Results: Effectiveness of NPL resolution measures (Bank Variable: ROE)

Variable	OLS (1)	FE (2)	2-step Diff. GMM (3)
Log of NPL ratio (t-1)	0.82447*** (0.01454)	0.69096*** (0.0189)	0.78066*** (0.06276)
<i>Macroeconomic variables</i>			
GDP Growth	-0.01047*** (0.00356)	0.0023 (0.0045)	-0.00151 (0.00628)
Unemployment rate	-0.00889 (0.00973)	0.04766** (0.02088)	0.06613* (0.03822)
Inflation rate	0.01355 (0.00905)	-0.01804 (0.01151)	-0.01643 (0.01475)
Exchange rate	-0.0004 (0.00201)	0.00004 (0.00201)	-0.00007 (0.00289)
<i>Bank-level variables</i>			
Return on equity (t-0)	-0.00017*** (0.00007)	-0.00022*** (0.00006)	-0.00023*** (0.00007)
Return on equity (t-1)	-0.0001 (0.00007)	-0.00016** (0.00006)	-0.00016*** (0.00004)
<i>Intervention variables</i>			
AMC purchase (t-0)	0.0853** (0.03999)	0.09697** (0.04585)	0.07286 (0.05463)
AMC purchase (t-1)	-0.03258 (0.03865)	-0.05097 (0.04167)	-0.0781* (0.04124)
Bank bailout (t-0)	0.07226* (0.03821)	0.08746* (0.04927)	0.09917 (0.08658)
Bank bailout (t-1)	-0.08415** (0.03357)	-0.06424 (0.03987)	-0.07837 (0.05333)
_cons	-0.59604 (0.07508)	-1.46424 (0.09824)	
Observations	1,170	1,170	1,092
Number of Banks	78	78	78
Number of Instruments			74
A-B AR(1) test p-value			0.009
A-B AR(2) test p-value			0.168
Hansen test p-value			0.259

# Results: Effectiveness of NPL resolution measures (Bank Variable: LOANS)

Variable	OLS (1)	FE (2)	2-step Diff. GMM (3)
Log of NPL ratio (t-1)	0.84728*** (0.01428)	0.69077*** (0.0192)	0.80408*** (0.04822)
<i>Macroeconomic variables</i>			
GDP Growth	-0.01011*** (0.00338)	0.0034 (0.00409)	-0.00157 (0.00577)
Unemployment rate	0.0009 (0.0093)	0.05237*** (0.01931)	0.08186** (0.03593)
Inflation rate	0.02479 (0.00872)	-0.00305 (0.01072)	-0.00339 (0.01783)
FX rate depreciation	-0.003 (0.00185)	-0.0018 (0.00182)	-0.00367 (0.00248)
<i>Bank-level variables</i>			
Loan growth rate (t-0)	-0.00546*** (0.00036)	-0.00488*** (0.00036)	-0.00527*** (0.00174)
Loan growth rate (t-1)	0.00048 (0.00035)	0.00021 (0.00034)	0.00021 (0.00036)
<i>Intervention variables</i>			
AMC purchase (t-0)	0.12811*** (0.03643)	0.13771*** (0.0422)	0.09469* (0.05037)
AMC purchase (t-1)	-0.03802 (0.03505)	-0.03191 (0.03801)	-0.08573* (0.04578)
Bank bailout (t-0)	0.02901 (0.03639)	-0.01748 (0.04741)	0.0241 (0.0598)
Bank bailout (t-1)	-0.06627** (0.03294)	-0.09385** (0.04073)	-0.10379** (0.04936)
_cons	-0.68378*** (0.07223)	-1.41921*** (0.0946)	
Observations	1092	1092	1014
Number of Banks	78	78	78
Number of Instruments			72
A-B AR(1) test p-value			0.000
A-B AR(2) test p-value			0.794
Hansen test p-value			0.099

# Results discussion

- Results illustrated in the previous slides confirms previous literature that both bank level variables and macroeconomic conditions affect NPL movement: (1) *Rising unemployment results to a significant positive relationship with NPL growth; and (2) ROE and Loan growth exhibits a significant negative relationship with NPL movement.*
- Other tested macro and bank-level indicators did not produce a significant relationship with movement of bank-level NPL ratio.
- On our main variables of interests, the **1-year lag of AMC operations**, using both ROE and Loan growth rate as bank-level indicators, exhibited a **significant negative relationship with bank-level NPL ratios.**
- Though **1-year lag of bank bailouts**, using Loan growth rates as a bank-level indicator, resulted to a **significant relationship with bank-level NPL ratios.**
- Macro-prudential tightening is statistically insignificant with NPL movement and shortens the dataset to 2002-2013 due to data availability constraints.

# Conclusion and policy suggestions

# Conclusion and Policy Suggestions

- Empirical results validate the success of public AMC operations found in our case studies. **Public AMCs established at the onset of the crisis were the key players in Asian NPL resolution efforts** by giving banks an option to sell their NPLs to a readily accessible market or forced these banks to offload problematic assets.
- While AMCs were the key players during the crisis, the analysis has also shown that financial sector restructuring played a key role in reducing NPLs. Moreover, case studies show that legal, regulatory and institutional reforms pushed by the government were instrumental in creating an enabling environment for AMC operations.
- Another key factor is AMC governance and independence. Case studies have shown that lack of independence and political inconsistencies can greatly hamper an AMCs recovery operations in countries studied.
- Due to time-period restrictions (2002-2017), most of our analysis is restricted to periods where most AMCs established at the onset of the AFC are at the tail end of its NPL acquisition period or its sunset date.<sup>1</sup>
- These results suggests that the **continued operations of public AMCs** – such as the ones operating in PRC, Japan, ROK, and Thailand – contributed to a significant decrease in bank-level NPL ratios during periods of relative banking stability by **providing a readily accessible market for NPL transactions.**

# Conclusion and Policy Suggestions

- Efficient NPL market will lower the financial instability and eventually decrease tax payers' burden in time of crisis. It will help enhance positive macro-financial effects, and will help transform non-performing assets into performing assets.
- However, in most of the countries in Asia, NPL markets do not exist or do not function well. For example, in Indonesia, NPL market development is hampered by an unfavorable regulatory environment. State-owned banks, which own the majority of NPLs in the Indonesian are restricted in their ability to dispose of NPLs at a discount due to regulatory burdens.<sup>1</sup>
- The Asian experience has shown us that developing NPL markets is a challenge that requires a holistic policy effort to build necessary financial market infrastructure, address legal and institutional weaknesses, and review and revise supervisory guidelines and regulatory standards to facilitate NPL markets.
- Best practices in reducing NPLs from the Asian case studies shows that:
  1. Legal, regulatory and institutional NPL resolution framework and institutional capacities: keys
  2. Specific country policy options meeting the tailormade situations: should be considered. There is no one size fits all option: AQR, Recapitalization; AMCs; bailouts; insolvency; financial infrastructure; collateral system; etc.
  3. Long standing concerns such as moral hazard, fiscal cost, and governance of AMCs setup: should be addressed with a part of comprehensive and holistic NPL approach.
  4. NPL resolutions policies should consider NPL market development as part of financial market development framework for Asian DMCs from the start of designing of the policy.
  5. The roles of policies and markets should be considered appropriately depending on the country context.