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The Impact of Assets Market and Real Sector Indicators on the Non-Performing Loans (Case of the I.R. of Iran)

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Abstract

This paper applies a dynamic panel model to estimate the impact of real and assets price index on the banks Non-Performing Loans as key soundness indicators. The study focuses on the 31 banks during 2006-13. Results indicate that output growth, asset-composite price and total loans growth exacerbate the NPLs whereas the lags of the NPLs strengthen the current growth of the NPLs. Specifically, Data analysis denotes when the NPLs are unexpectedly exposed to a trigger, the banks would sequentially prefer to reschedule or negotiate with main borrowers in the first period, and then to legally promulgate and claim hair cut in the second period. Moreover, output growth profoundly-reversely influences the NPLs growth as its impact prevail the effect of other explanatory variables. Assets price-composite index as main determining element of assets market condition as anticipated, express a reversal association with the NPLs. The outcome of estimation which also explains the impact of weighted-assets-composite price and output growth on the NPLs denotes the same results as prior estimations.

JEL Classification: G21, G23, G32, F34

Keywords: *NPLs, Real sector, Assets price, Dynamic Panel model*

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1-Introduction

Commercial banks considered as core of financial system to transmit savers' deposits to the borrowers or investors based on the prudential supervision measures which contemporaneously induce economic growth and risk sharing. (Podder and Mamun, 2004 ,Franklin and Elena, 2008)

Banking network was restructured by the central bank of Iran at the institutional, market and instrumental1 levels through privatization of the state-owned banks, enhancement of the inter-bank market as well as implementation of the more prudential supervisory regulations. In this framework, several regulatory steps have been gradually taken via introducing additional measures for capital and provision standards, large exposures, connected lending, off-balance sheet transactions in line with liquidity requirements. Although the Iranian banking network should be enhanced since 2001, state-owned banks were unexpectedly considered malfunctioning mainly because of the rationing facilities, short term loans to the SMEs, lending ceiling, huge investment by the affiliation entities and negative real interest rates as well as mandatory subsidized facilities which have been never refunded by the government. Simultaneously, the private banks' lending capacity has also melted down owing to the mitigation in assets market returns, low liquid investment, high default rate and consequently an accelerated trend in the NPLs.

The Non-Performing Loans (NPLs) are evidently influenced by the two sets of real and financial contingent-composite indicators which are technically calibrated into the different channels. The NPLs are outlined based on the summation of substandard, delinquent, and doubtful loans which is statistically utilized as a ratio of total loans. The real variable is also represented by the output growth which therefore highlights the frequency and intensity of the historical real sector's impact on the banks' lending capacity and consequently the NPLs ratio. The financial composite-indicator is also computed by the weighted-average of foreign exchange rate, stock market price, and housing price index which also reflects financial driving mechanism upon the NPLs ratio.

The NPLs ratio is also recognized as the main indicator of the banks instability which might be evidently influenced by the bubble burst, debt crisis, macroeconomic depression, balance of payments crisis and spill over from the international financial shocks in both developing and developed economies. (Sorge, 2004)

1-The central bank of Iran issued bonds at the national and international level to improve the efficiency of monetary policy for the first time after revolution in 2001-02.

Similarly, the recent financial turmoil in the US which was noticeably driven by the default in subprime loans has revealed the vulnerability of banking soundness indicator against contingent shocks since 2007. Thus, the financial system authorities introduced a new set of supervisory and regulatory framework to enhance the banking system resiliency including through the improvement in banking health have been remarkably enhanced improvement system which means to confirm that lower level of the NPLs suggests a better and sound financial system while higher level of NPLs is a trouble for banks management and regulators

Several regulatory steps have been gradually taken via introducing some new measures for capital and provision requirements, large exposures, connected lending, off- balance sheet articles as well as liquidity requirements. Restructured by the central bank of Iran at the institutional, market and instrumental levels through privatization of the state-owned banks, partial liberalization of the inter-bank market as well as implementation of the more prudent supervisory regulations, the Iranian banking network has continuously moved toward a more competitive environment since 2001 when state-owned banks were considered failing mainly because of the rationing facilities, lending ceiling and deposit interest rates as well as mandatory subsidized facilities.

In this paper, the hypothesis of "dominant composite financial fluctuations on the NPLs, in line with the real element" is technically examined through a panel data model. Given the fact that, almost 85 percent1 of Iranian banking network revenues are historically originated from the interest earnings, evaluation of the credit risks are undoubtedly required by a panel data model. In this context, the NPLs -as a proxy of credit risks- which are expected to contract interest earnings is technically specified by the panel data model in order to reflect both single and joint impact of each composite indicator.

The rest of the paper is in turn structured as follows: section two reviews the literature of determining components on the NPLs; section three briefly discusses the empirical methodology and section four illuminates the evidence and data analysis; the next section underscores the technical methodology and transition channels; Section six highlights the model estimation and results, and the last section undermines the concluding remarks.

2. Literature review

Banks' financial soundness indicators are empirically exposed to the real and financial sector contingent incidents which are articulately considered in the study. Meanwhile, a mixture of

1 Annual Report, an Assessment of the Iranian Banking Industry (2013).

financial and econometrical approaches is basically reviewed to find a flexible method to calculate the impact of financial and real indicators on the banks NPLs. Henceforth, the literature is comprised of two subcategories including empirical-intuitive analysis and technical discussion.

Keeton and Morris (1987) indicate that the NPLs in 2400 US commercial banks are highly affected by the energy and agriculture sectors defaults due to macroeconomic recession during 1979-85. They also realize that the macroeconomic indicators could evidently explain the loan/ loss deviations by a linear regression methodology in different episodes. Furthermore, financial development which is basically originated from comprehensive progress in the financial markets, regulations, and instruments would ultimately lead to an improvement in flow of funds, output capacity, and institutional-financial soundness indicators specifically the banks' NPLs. In this regard, the classical literature outlines the robust interactions between financial development and output growth as the main driving force of business cycle and consequently output gap (King and Plosser (1984), Bernanke and Gertler (1989), Kiyotaki and Moore (1997) and Bernanke, Gertler and Gilchrist (1998)).

In the recent studies, business cycle which is influenced by the firms' activities is simultaneously considered as the key vehicle of the institutional credit exposure and probability of default through a dynamic global macro econometric model (Pesaran, Schuermann, Treutler and Weiner (2006)).

In the micro level, credit risk is technically illuminated by the macro indicators depending on the state of the Austrian economy both at the level of exposures to non-financial corporations and households. (Caouette et al. 2000). Virolainen (2004) specifies a credit risk dynamics model for Finland by using macroeconomic variables such as economic growth, inter-bank interest rate and the corporate indebtedness level in order to enlighten the banks' credit risk exposure in different intervals.

Louzin, Vouldis and Metaxas (2010) evaluate nine large Greek banks during the 2003-09 and found that economic recession, lending and unemployment rates negatively influence banks' health and specifically the level of NPLs. Accordingly, in another survey, Glen and Mondragón-Vélez (2011) find strong evidence in 22 developed economies during the 1996-2008 that the improvement in loan/loss provisions are obviously-significantly explained by the output growth, private sector leverage and capital shortage in the banking network.

Empirical findings also underline the positive correlation between output growth and institutional credit risks' indicators including probability of default, exposure at default, loss given default, loan loss provision, and the NPLs. In this context, Espinoza and Prasad (2010)

who apply a dynamic panel model over 80 banks for Gulf Cooperation Council during 1995-2008 find that a spark in the interest rate leads to a reduction in the output growth and consequently a rise in the NPLs. Accordingly, the contraction in the output growth raises the NPLs through melting down the inputs 'payoff and shrinking the firms' revenue channels. Meanwhile, the study also underscores the positive relationship between credit growth and NPLs which is technically reconfirmed via utilizing the panel data approach for 26 developed economies during 1998-2009, as banks' loan portfolio is significantly influenced by the macro-financial vulnerabilities (Nkusu 2011). Accordingly, in another survey, Glen and Mondragón-Vélez (2011) find strong evidence in 22 developed economies during the 1996-2008 that the improvement in loan loss provisions are obviously explained by the output growth, private sector leverage and capital shortage in the banking network.

Shajari, Parastoo and Shajari, Houshang (2012) analyze the financial soundness indicators in Iran`s banking system and emphasize on the asset quality measure by the nonperforming loans ratio. Findings of the study indicate that NPLs increase have impact on real part of economy in the concept of credit crunch and bank lending decline when NPLs exceeds a specific level of total loans. The paper also analyzes the relationship between three financial soundness indicators (asset quality, capital adequacy and profitability) and key macroeconomic, bank-specific, and structural variables. The results show that asset quality and capital adequacy are influenced by business cycle and the lending interest rate over two previous years has a negative effect on asset quality. Capital adequacy is affected by short term deposit interest rate and changes in the exchange rate. Profitability fluctuates with inflation rate and NPLs ratio. Biabani, et.al (2012) argue that one of the fundamental problems in banks, finance and credit institutions is Non-performing Loans, because costumers don't reimburse this loans and a lot of part of these loans remain in customers' accounts and this is one of the most important problems in Iran. The study is an assessment of effective factors on Non-Performing Loans (NPLs) for preventing NPLs, increasing possibility of new income and improvement of scheduling power for using resources. Banks documents were investigated for collecting data. Their findings have indicated that all hypotheses except for one were supported which means that there are significant relationships between collaterals, bounced check, credit background of customers, duration of loans payment and average of account quantity with NPLs. Their study proved that relation between having several deposit accounts with NPLs was not supported.

3. Empirical methodology

Time lapse of NPLs is not considered to be precise because it varies among different kinds of financial institutions and depends on the nature of loans. A loan is measured as performing if

paid for principal and interest as per the terms decided at the time of loan funding. However, the NPLs are categorized into three main classifications; Overdue loans which are not reimbursed by borrowers to the banks from more than maturity of two months and less than six months, Deferred loans which are not paid off from more than six months and less than eighteen months, and loans not paid back by lenders above eighteen months which are considered to be doubt loans. Stakeholders have been always naturally monitoring banks for obviously fulfilling their responsibility to provide credit to different economic agents in order to make sure the lending channels are at economic growth disposal as well as they are making profits. Moreover, the stakeholders are worried whether or not banks resources are lent to those economic agents who have proved to be rated as unreliable customers and this consequently results in increasing their loans portfolio risk.

The Non-Performing Loans (NPLs) are evidently influenced by the two sets of real and financial contingent-composite indicators which are technically calibrated into the different channels. The NPLs are outlined based on the summation of substandard, delinquent, and doubtful loans which is statistically utilized as a ratio of total loans. The real determinant is also statistically introduced by the output growth which therefore provides a data set to underscore the frequency and intensity of the historical real fluctuations' impact on the banks' lending capacity and consequently the NPLs ratio. The financial composite-variable is also computed by the weighted-average of stock market price, foreign exchange rate, and housing price index which denotes the impact of financial driving mechanism upon the NPLs ratio.

4.Evidence and Data Analysis

The data set which is historically applied in the study includes the real sector variables, and banks' soundness indicators as well as financial and non-financial markets' indices (2007-13). The data comes from the Central Bank of Iran1 macroeconomic time series and banking network supervision periodic reports. Whereas the real sector data contains output growth, the financial market data comprise of exchange rate, stock market price, and housing price index as well as banks' financial soundness indicators including the NPLs ratio, loans ratios, deposit ratios, investment and securities ratios.

Figure 1 indicates that the assets market have obviously volatized over the past 8 years which motivates investors to transfer financial resources from real to financial sectors. Hence, the capital gain in the financial markets overturn the real sector yield and money market return, so the real sector contracts mainly because of lower investment as well as banks face with higher

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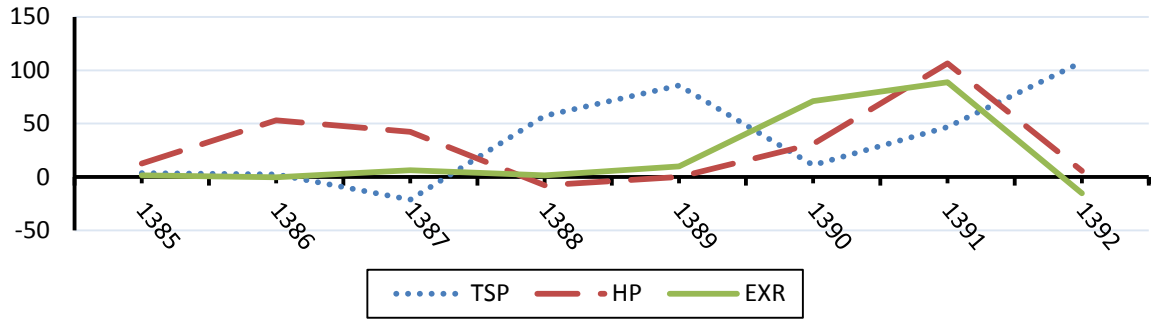
NPLs due to higher return in the assets market than lending rate. The higher NPLs lead to shrinkage in the banks' lending capacity and financial soundness indicators as key component of the macro-financial stability which is against international best practice.

Figure 1- Growth of assets market price



Time asymmetric of shocks causes permanent distortions and high capital flows at the shallow assets market which subsequently exacerbates the fragile assets market although the speculative behavior has been hazardously provoked. In this regard, the long range of time span in the assets market boom brings down the liquid-ability of institutional portfolio so the borrowers are not able to reimburse the loans and consequently the banks NPLs spark. Ultimately, assets market permanent volatility stress real sector through transferring financial resources from real to assets markets as well as accelerating the credit crunch.

Figure 2- Co-movement of NPLs (right axis) and assets prices

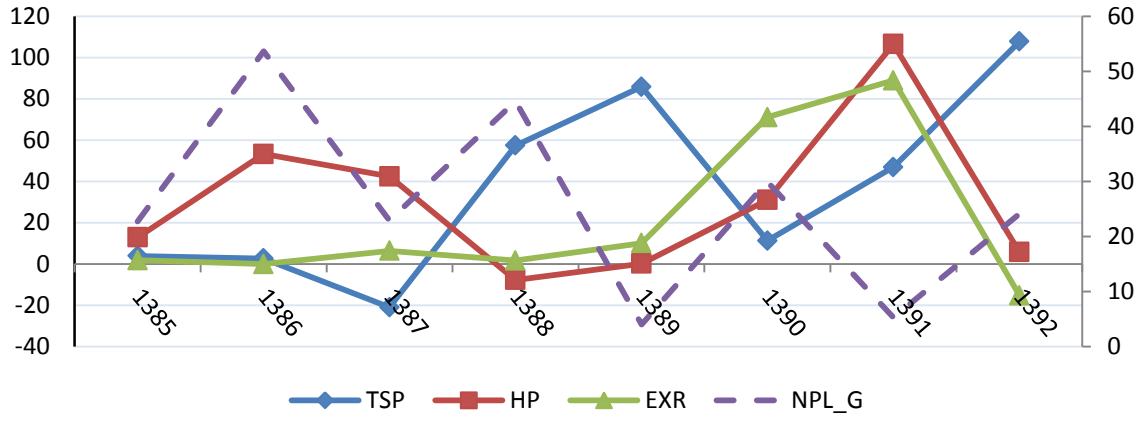


Figure 2 highlights the positive impact of the assets price on the NPLs which remarkably demotivates borrowers to reimburse loans in different episodes, given the repeated revision in the NPLs classification over the past few years. Moreover, the capital market has historically been more susceptible to the contingent indicators.

Figure 3- GDP Growth (right axis) and NPLs

The NPLs fluctuation is factually influenced by a wide variety of legal and behavioral indicators including through an extensive-reschedule articles of the annual state budgets and the intentional-prolonged adoption process of the loans' classification by the banks respectively. Anyhow, the NPLs are statistically affected by the GDP growth volatilities and the assets market fluctuations which trigger the loans reimbursement (Figure 3). Meanwhile, money supply deviations which occasionally stimulate banks' lending capacity via deposits also fluctuates the NPLs. The higher NPLs deviations underscore the dominant impact of assets price incidence on the NPLs than output growth given the fact that the assets prices seem to be more volatile than the GDP growth. Eventually, the output growth contrariwise provokes the NPLs with lag although the simultaneous effect of real and assets markets should be technically characterized which is evaluated in the following sections.

Figure 4- real (right axis) and financial indicators (%)

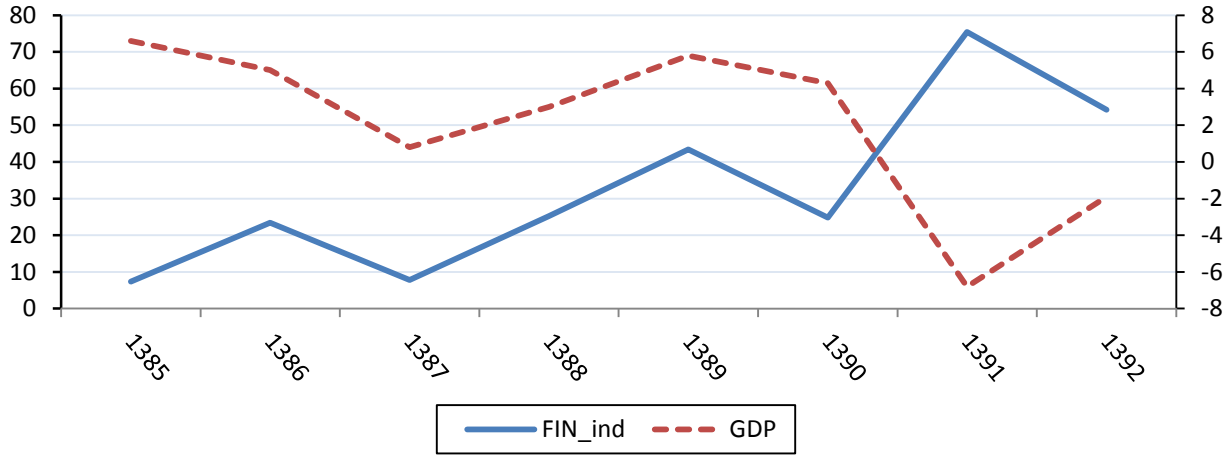
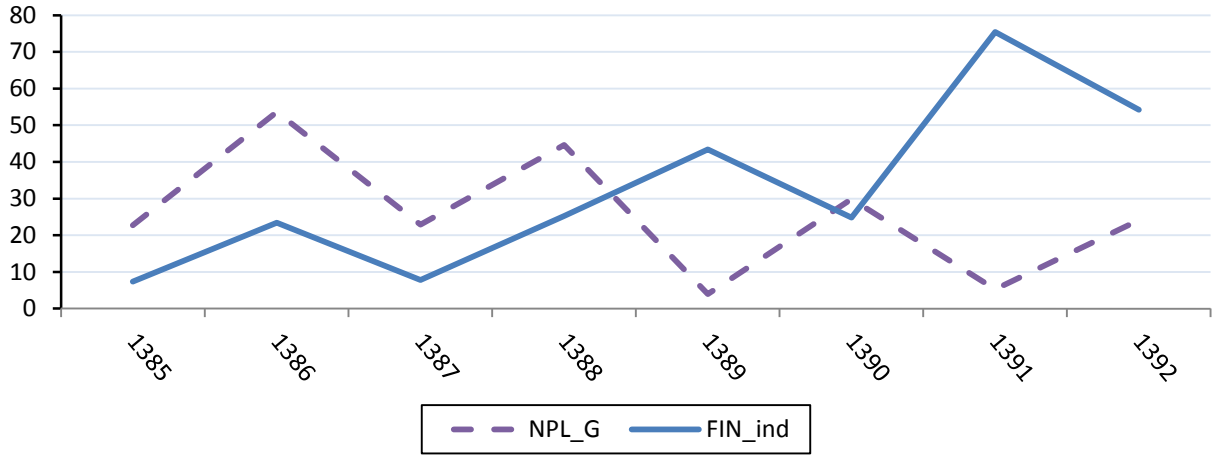


Figure 4 indicates the relationship between the real and financial incidents. The composite-assets market price as a proxy of financial market fluctuations is arithmetically calculated based on the share of every single market in the whole assets markets in 2013 which underlines at about 49.4, 41.6, and 9 percent for stock and housing price as well as foreign exchange markets respectively. The figure 4 indicates that the financial-composite index has significantly faced with different-speculative behavior. Whereas, the NPLs and composite index show the coincident treatment prior 2010, the sequential-disorderly assets market volatilities causes a reversal behavior in the NPLs and composite index post 2010. In other words, the huge assets price uproar motivates borrowers not to reimburse the loans and consequently keep speculative portfolio based on the buoyant market expectations which lead to an upsurge in the NPLs.

Figure 5- NPLs and financial indicators (%)



Financial-composite indicator trend indicates two different behaviors pre and post 2012 (Figure 5) which is obviously resulted from inflationary pressures and economic downturn due to expansionary monetary policy and tough-smart sanctions respectively. The considerable economic downturn which was dramatically associated with a sequential-sizeable spark in the assets market, provoke investors to reallocate financial resources from real to assets market. Therefore, the real sector faces financial drain while assets price boom simultaneously appear post 2012. Incidentally, assets price volatilities have been exacerbated since 2012 which lead to higher the financial market instability.

5. Methodology and transition channels

Three different methodologies are technically used in the study. The impact of composite-real and financial indicators on the NPLs are estimated through an Auto Regressive Distributed Lags (ARDL) model as the variation of the NPLs is specified by two sets of variables including risk factors-real and financial indicators- and the other explanatory variables –total loans ratio, the ratio of term deposit to total deposits, the ratio of investment to assets.

In this context, the composite-real and financial risk factors' weights are calculated based on judgmental-historical evidences and restricted regression model which normalized the relative importance of each coefficient. Furthermore, the abbreviation of variables is specifically introduced in table 1.

Table 1-Variables of the Model Estimation

NPL_R	RATIO OF NONPERFORMING LOANS TO TOTAL LOANS
L1	LAG 1
L2	LAG2
TL_G	GROWTH OF TOTAL LOANS
TD_G	GROWTH OF TOTAL DEPOSITS
HP	HOUSING PRICE GROWTH
ST	STOCK MARKET PRICE GROWTH

6. Model Estimation and Results

Assets price volatilities are statistically recognized as representatives of financial market fluctuations which are also listed based on the frequency and intensity as weights to compute composite indicators for financial sectors during 2006-13.

Equation (1) is estimated based on the dynamic unbalanced panel data for 31 banks during 2006-13. The estimation results indicate that the NPLs have significant-positive relationship with the first lag while it has negative-significant relationship with its second lag (table 3). In other words, data analysis highlights that the banks would sequentially prefer to reschedule or negotiate with main borrowers in the first period, and then to legally promulgate and claim hair cut in the second period in case the NPLs are unexpectedly exposed to a trigger. The summation of first and second lag parameters also-empirically underlines that the historical trend of NPLs has net positive-accumulating impact on its own long run unconditional mean which is in line with the banking network performance. The growth of total loans is statistically-negatively associated with the NPLs due to the reversal impact of total loans on the NPLs ratio denominator provided that the numerator is constant. In this context, the effect of total loans' lags on the NPLs is remarkably considered insignificant.

Theoretically the NPLs are adversely affected by the output growth as a key representative of the economic performance which is considerably-significantly-simultaneously confirmed in the estimation results. Meanwhile, the coefficient of GDP in comparison with the other significant

coefficients such as bank specific variables and assets price reflects a substantial-contemporaneous-dominant effect on the NPLs. Also table 2 shows results of unit root test for panel variables, which denotes that all variables are stationary.

Table 2- Fisher-type unit-root test

variable	Statistic	p-value
npl	321.2	0
tlg	262.5	0
tdg	78.9	0

Housing price as a key assets market indicator expectedly reflects a negative relationship with the NPLs with one period lag owing to the impact of assets market gain on the borrowers' incentive to reimburse the loans which have been already collateralized. Given the fact that, the real estate market is usually considered a profitable option for speculators mainly because of population demography and inflationary environment in Iran, a huge amount of credit facilities and institutional savings are periodically invested in this market which can be conveniently repaid during the buoyant period. Stock market price index which is theoretically influenced by the inflationary pressures and decent corporate performance is recognized as an explanatory determinant to shrink the NPLs ratio and reimburse corporate loans. Sargan test as a metric to measure over-identifying restrictions which examine the correlation between the error terms and instrumental variables underpins the null hypothesis is significantly approved due to the higher P- value.

$$NPL_{it} = \alpha + \beta_0 NPL_{it-1} + \beta_1 NPL_{it-2} + \beta_2 \sum_{j=1}^{k} BS_{jt} + \beta_4 HP_{t-1} + \beta_5 ST_t + \beta_6 GDP_t + \varepsilon_{it} \quad (1)$$

Table 3- results of panel model for individual asset prices

variable	coef.	std.Err	Z	p-value
L1.NPL	0.3	0.06	4.72	0
L2.NPL	-0.19	0.07	-2.63	0.008
TLG	-0.1	0.01	-5.36	0
L1.TLG	0.01	0.02	0.66	0.51
L2.TLG	0.006	0.01	0.57	0.57
TD_G	-0.00002	0.00004	-0.74	0.46
GDP	-1.31	0.45	-2.9	0.004
L1.HP	-0.1	0.03	-2.7	0.007
ST	-0.1	0.02	-3.52	0
Cons	33.8	6.4	5.28	0

sargan test

Chi2(12)	= 17.04066
Prob > chi2	= 0.148

The dynamic unbalanced panel data is applied to estimate Equation (2). The coefficient of GDP as an indicator of real sector indicator technically underscores a negative-significant impression on the NPLs while the estimated coefficient is lower than the same coefficient in table (4). Moreover, expectedly, the composite-assets price reflects a negative-significant effect with delay on the NPLs as well.

$$NPL_{it} = \alpha + \beta_0 NPL_{it-1} + \beta_1 NPL_{it-2} + \beta_2 \sum_{j=1,i=1}^{k,n} BS_{jt-i} + \beta_4 GDP_t + \beta_5 FIN\_IND_{t-1} + \varepsilon_{it} \quad (2)$$

Table 4- results of model estimation for weighted- composite-asset prices

variable	coef.	std.Err	Z	p-value
L1.NPL	0.35	0.06	5.2	0
L2.NPL	-0.16	0.08	-1.79	0.07
L2.TD_G	-0.00002	0.00005	-0.37	0.71
GDP	-0.6	0.28	-2.14	0.03
L1. Fin_ind	-0.2	0.06	-2.88	0
Cons	27.5	5.8	4.7	0

sargan test

Chi2(12) = 14.04066

Prob > chi2 = 0.18

7- Concluding remarks

The impact of output growth and financial-composite indicators on the NPLs are statistically examined in this study. The composite-assets market incidents and output growth are respectively introduced by the weighted average of stock price index, foreign exchange and housing price as well as GDP.

The estimation results underlines that the previous periods of NPLs have significant-sinusoidal impact on the present growth of NPLs. Data analysis also implies that the banks would sequentially prefer to reschedule or negotiate with main borrowers in the first period, and then to legally promulgate and claim hair cut in the second period in case the NPLs are unexpectedly exposed to a trigger. The long run unconditional mean of the NPLs has been positively-expectedly built up. Additionally, output growth profoundly-reversely influences the NPLs growth as its impact supersedes the role of other explanatory variables.

Stock price index and housing price as main determinants of assets market stance expectedly pinpoint a negative relationship with the NPLs mainly because of the assets market gain impact on the loans reimbursement incentive. The outcome of estimation which also explains the impact of weighted-assets-composite price and output growth on the NPLs denotes the same results as prior estimations.

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Appendix:

Fisher-type unit-root test for **td_g**
Based on Phillips-Perron tests

Ho: All panels contain unit roots — Number of panels = **30**
Ha: At least one panel is stationary — Avg. number of periods = **5.10**

AR parameter: **Panel-specific** — Asymptotics: **T -> Infinity**
Panel means: **Included**
Time trend: **Not included** — Cross-sectional means removed
Newey-West lags: **1** lag

		Statistic	p-value
Inverse chi-squared(**46**)	P	**78.8531**	**0.0018**
Inverse normal	Z	**-4.3679**	**0.0000**
Inverse logit t(**114**)	L*	**-4.0686**	**0.0000**
Modified inv. chi-squared	Pm	**3.4252**	**0.0003**

P statistic requires number of panels to be finite.
Other statistics are suitable for finite or infinite number of panels.

Fisher-type unit-root test for **tl_g**
Based on Phillips-Perron tests

Ho: All panels contain unit roots — Number of panels = **30**
Ha: At least one panel is stationary — Avg. number of periods = **5.10**

AR parameter: **Panel-specific** — Asymptotics: **T -> Infinity**
Panel means: **Included**
Time trend: **Not included** — Cross-sectional means removed
Newey-West lags: **1** lag

		Statistic	p-value
Inverse chi-squared(**46**)	P	**262.5250**	**0.0000**
Inverse normal	Z	**-5.7497**	**0.0000**
Inverse logit t(**114**)	L*	**-12.7028**	**0.0000**
Modified inv. chi-squared	Pm	**22.5743**	**0.0000**

P statistic requires number of panels to be finite.
Other statistics are suitable for finite or infinite number of panels.

Fisher-type unit-root test for **npl_r**
Based on augmented Dickey-Fuller tests

Ho: All panels contain unit roots — Number of panels = **30**
Ha: At least one panel is stationary — Avg. number of periods = **5.10**

AR parameter: **Panel-specific** — Asymptotics: **T -> Infinity**
Panel means: **Included**
Time trend: **Included**
Drift term: **Not included** — ADF regressions: **1** lag

		Statistic	p-value
Inverse chi-squared(**44**)	P	**321.2258**	**0.0000**
Inverse normal	Z	**-9.4047**	**0.0000**
Inverse logit t(**79**)	L*	**-20.8904**	**0.0000**
Modified inv. chi-squared	Pm	**29.5524**	**0.0000**

P statistic requires number of panels to be finite.
Other statistics are suitable for finite or infinite number of panels.

Arellano-Bond dynamic panel-data estimation — Number of obs = **74**
Group variable: **code** — Number of groups = **22**
Time variable: **year**
Obs per group: min = **1**, avg = **3.363636**, max = **4**

Number of instruments = **22** — Wald chi2(**9**) = **1260.70**
Prob > chi2 = **0.0000**

One-step results

npl_r	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
npl_r						
L1.	.2993712	.0628423	4.76	0.000	.1762026	.4225399
L2.	-.1868119	.0709699	-2.63	0.008	-.3259103	-.0477134
tl_g						
--.	-.1018991	.018997	-5.36	0.000	-.1391326	-.0646657
L1.	.0138692	.0211158	0.66	0.511	-.027517	.0552555
L2.	.0065793	.0115993	0.57	0.571	-.0161548	.0293134
td_g	-.0000276	.0000373	-0.74	0.460	-.0001007	.0000456
gdp						
L1.	-1.310543	.4521881	-2.90	0.004	-2.196816	-.4242707
hp						
L1.	-.1007756	.0373554	-2.70	0.007	-.1739908	-.0275604
st	-.1048392	.0298106	-3.52	0.000	-.163267	-.0464114
_cons	33.82252	6.406771	5.28	0.000	21.26548	46.37956

Arellano-Bond dynamic panel-data estimation Number of obs = 74
Group variable: **code** Number of groups = 22
Time variable: **year**

Obs per group: min = 1
avg = 3.363636
max = 4

Number of instruments = 21 Wald chi2(8) = 526.72
Prob > chi2 = 0.0000

One-step results

npl_r	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
npl_r						
L1.	.349854	.067301	5.20	0.000	.2179466	.4817615
L2.	-.1580719	.0883675	-1.79	0.074	-.3312689	.0151252
tl_g						
L2.	-.0007553	.0139354	-0.05	0.957	-.0280682	.0265576
td_g	-.0000209	.0000568	-0.37	0.713	-.0001323	.0000905
gdp						
--.	-.6049304	.2821741	-2.14	0.032	-1.157981	-.0518792
L1.	.0003276	.2071816	0.00	0.999	-.4057408	.4063961
fin_ind						
L1.	-.0489392	.0406829	-1.20	0.229	-.1286763	.0307979
--.	-.1960972	.0686036	-2.86	0.004	-.3305577	-.0616366
_cons	27.50741	5.853554	4.70	0.000	16.03466	38.98016