

Management of abnormal accruals through the regulatory approach of credit risk: Evidence in the MENA countries' banks before and after the Arab Spring Revolution

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Abstract

This article examines the effect of credit risk and its regulatory measures on accounting manipulation in 202 banks in the 10 MENA countries. Such a deviation from the regulatory requirements may lead managers to smooth the accounting net income, by applying the "fair full value" method as an accounting method.

The purpose of this study is to estimate abnormal accruals using the classical Kothari et al (2005) model and to see their progress before the Arab spring revolution (2000-2010) and after (2011-2014) using the "Difference-in-difference" approach. Second, we propose a linear model, testing the relationship between the abnormal accruals and the credit risk factors.

The results show that after the Spring Arab revolution, banks in the MENA countries changed their attitudes towards credit risk. Possible overcapitalization of banks, leads managers to manipulate the credit portfolios values, in order to divert the risk level downwards and disclose false beliefs to the market, in the presence of the prudential supervision deterioration and information asymmetry towards shareholders despite any the legal restructuring.

1- Introduction

The information transparency and communication of banks, is the main pillars of the prudential regulation declared in Basel 3 in Pillar 3. This pillar has objective to support market discipline through a best accounting information disclosure, which allows dealing manipulation and abnormal accruals. At this stage, IFRS 7 step in to recognize credit risk and its hedging instruments as well as its impact on the accounting result. The banking accounting manipulation affects credit portfolio and its instruments. Such a market value manipulation on credit portfolio will have adversely effects on the net income as well as on the regulatory capital and systematically on the risk level.

The IFRS 7 standard, as recommended by the Basel 3 pillar, aims to publish accounting information by evaluating loans and hedging instruments drawing on the fair value method, following either the mark-to-market approach; either by adopting an internal model specific banks "mark-to-model" approach. These evaluations give rise to unrealized gains and losses explaining the change in cash flow and opening a discretionary field to managers to manipulate. The third pillar has taken into account this factor, but there are several studies have showed its insufficiency to detect the unexpected manipulation given by our study by abnormal accruals.

The accounting accruals foundations, is mainly based on signal and agency theory (Jensen and Meckling, 1976). In fact, the different players in the market do not have the same information about the bank prospects. However, the signal theory assumes that managers disclose only information that will help them to change the minds of investors by trying to show them the bank's financial situation good side leading to asymmetry information between shareholders and managers.

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Theatrically, accounting manipulation is measured by abnormal accruals. The accruals are divided into two categories: normal accruals and abnormal accruals. The total accruals is the accounting adjustments to real cash flow. The accounting manipulation is the subject of the determination of abnormal accruals. This has been defined by several researchers: Jones (1991), showed that the abnormal accruals depend on the physical capital and on the incomes variation. Dechow et al (1995) have developed the above-mentioned model that can negatively affect the net result and give more access to manipulation. Nevertheless, the modified Jones's model (1995) does not take into account the performance factor, which is a key factor in the measurement of accounting manipulation. Kothari et al (2005) raised this problem and added this factor reflecting performance to build a new model.

The accounting manipulations' key factor of credit portfolios and its instruments is the divergence between the regulatory capital ratio and the required standard. Any departure from the regulatory ratio of the required standard systematically opens a discretionary field to managers to manipulate the accounting net income through a manipulation on the regulatory capital and on the credit risk. This theory has been the subject of several studies: Nessim (2003); Warfield and Linsmeier (1992); Beatty and al (1995); Repullo (2007);

For this end, we devoted **section 1** to the underlying theories of credit risk instrument accounting and its manipulation. The purpose of **section 2** is to measure unexpected accounting manipulation in MENA banks before and after the Arab Spring Revolution as well as to explain them in terms of factors emerging from the capital requirement theory in banks of MENA countries. **Section 3** will present the main empirical results. The conclusions and the empirical recommendations will be the subject of **section 4**.

2- Methodology

The purpose of this article is to pose the most complete methods that will be used to measure the abnormal accruals of Tunisian banks, based on the Kothari et al (2005) model. Then, we move on to apply the "Difference in Difference" approach to see the evolution of the accruals between two periods: before the Arab spring revolution (2000-2010) and after (2011-2014). This event is supposed to be critical and determining for MENA countries, in which it has undergone a social and political upheaval that has too much influenced the financial and economic life. During this period, a whole battery of prudential and political regulations were set up to support the democratic process such as the restructuring of public institutions.

Our aim is to know, the negative contributions of this social event, its harmful impacts that lead to the inability to achieve accounting transparency and manipulation. In addition, we aim to explain this phenomena by the effect of prudential mechanisms as credit risk and capital requirement on manipulation that has occurred between the two periods.

1.1 Data

The data that will be adopted in this study is collected from the Bankscope International Database (Van Dijk Electronic Publishing) through balance sheets and the banks statements of earnings, which are extracted from. The selected sample is composed of 202 banks covering 10 countries of the MENA region (United Arab Emirates: 28 banks; Kuwait: 13 banks; Kingdom of Saudi Arabia: 13 banks; Qatar: 11 banks; Lebanon: 48 banks; Jordan: 14 banks; Algeria: 17 banks; Tunisia: 22 banks; Egypt: 25 banks; and Morocco: 11 banks), giving a total of 202 commercial banks during 2000-2011. are obtained from balance sheets and the banks statements of earnings, which are extracted from Bankscope International Database (Van Dijk Electronic Publishing).

1-2 Measurement of accruals before and after Tunisian revolution

The design of the accounting accruals consists to the accounting adjustments. The evaluation of the accounting manipulation of the net income is done by the difference between the total observed accruals and the normal or the anticipated accruals, which represents the discretionary part left to managers. However, the total accruals represent the difference between net income (*NI*) and the operating cash

flow (*OCF*). As far as for normal accruals are concerned, there are the total accruals represented through the modified model of Kothari and al (2005).

The result of the subtraction between the total observed accruals observed (*ACT*) and the total expected accruals (normal) (*ACN*) represents the residue term ϵ_i, t . This residue is the error term of model, which can describe the unexpected accounting manipulation, expressed by the abnormal accruals (*ACAN*).

First, we start to determine the total accruals observed for MENA banks during the years between 2000-2014:

$$ACT = NI - OCF$$

Secondly, we calculate the normal accruals, which are the total expected accruals according to the estimated model of Kothari et al (2005) as follows:

$$\frac{ACT_{i,t}}{TA_{i,t-1}} = \alpha_0 \times \frac{1}{TA_{i,t}} + \alpha_1 \times \frac{FA_{i,t}}{TA_{i,t}} + \alpha_2 \times \frac{(\Delta Turnover_{i,t} - \Delta CCR_{i,t})}{TA_{i,t}} + \alpha_3 \times \frac{RN_{i,t-1}}{TA_{i,t-1}}$$

This model represents the total accruals $ACT_{i,t}$ in terms of the physical capital given by the fixed asset ($FA_{i,t}$), the banking cash income given by the difference between the variation of the bank turnover (interest and commissions received) and the customer debt and the previous net income. All these indicators are expressed as a part of the total previous assets $TA_{i,t-1}$.

Insert table1. About here

We proceed to estimate the last model for the global period from 2000 to 2014, and then we will break down these accruals in two periods to see their evolutions and their related factors. The model was estimated during the ordinary least square (OLS), after checking the Hausman test, which gave us the random effect.

Insert table 2. About here

Once the model has estimated, we proceed to collect the residuals terms of the model, which constitutes the difference between the observed total accruals and the expected total accruals describing the normal accruals. This difference gives the abnormal accruals adjusted by total bank assets.

Insert Graph 1 about here

We note that abnormal accruals stagnated with a slight decline after the Arab Spring Revolution in the MENA countries' banks. This slight decrease can be explained either by corrective or by preventive actions.

Hence, we pass to apply the difference-in-difference approach, which consists of two groups for two periods: a 'control group' for banks that are not affected by the revolution and a 'treatment group' affected by the revolution respectively before and after revolution.

The 'treatment group' as described below is composed by 43 Tunisian and Egyptian banks, but the 'control group' is composed by 159 banks for the rest of countries. This period is divided into a period before revolution from 2000 to end of 2010 and a period after revolution from 2011 to 2014.

For this end, we are generating, as preconized by Card and Krueger (1994), three variables: a dummy variable noted by 'time' describing the revolution event which take 0 before revolution (from 2000 to end of 2010) and 1 from 2011 to 2014, another dummy variable noted by 'treated' indicating 1 for the banks concerned

by revolution (43 banks) and 0 for banks not concerned (159 banks), and finally a combined variable noted by 'DID' which is the product between time and treated.

Through these three variables, we are able to capture the effect of revolution on the efficiency of MENA banks that (which) are affected and not affected before and after Arab revolution. To avoid a multicollinearity problem, we are using only the variable DID.

Likewise, this last approach can be applied for the case of financial crisis of 2007-2009 but, according to Laeven & Valencia (2012), the sample used in our study don't contain any country that affected by the said crisis.

Insert table 3. About here

We conclude that the abnormal accruals have significantly decreased after the spring Arab revolution, which show that auditors and regulators have increased their power over bank accounting, which has resulted in a lowering of accounting manipulation. This action can be preventive for fear of the revolutionary contagion effect that set off in Tunisia leading to abnormal accruals stagnation accompanied by a slight decrease. The negative sign of Diff-in-Diff (-52.09) demonstrates this result with a significance at the level of 1%. This fall of abnormal accruals related to revolution can be explained by several regulatory and prudential factors including the credit risk and capital requirement theory.

2.3 Effect of credit risk instruments factors on abnormal accounting accruals

After estimating the abnormal accruals, we adopt a simple linear model, in which we regress the regulatory factors related to credit risk contributing to the favorable development of abnormal accruals of banks in the MENA Zone.

In the growth period, the manipulation of the net accounting income increased with the manipulation of unrealized capital gains on loans, which increase in turn the regulatory capital requirement. This action leads banks to take more risk in the credit supply. On the other hand, in the recession period, unrealized losses will show a non-real decrease of operating result, which makes managers more risk-averse, and go to distribute less credit in order to meet the regulatory standards. Therefore, to have a best amplification of economic cycles, we will break down the period into two sub-periods: a period before the Arab spring revolution (2000-2010) and a period after (2011-2014).

The divergence between the regulatory capital ratio and the threshold required by the prudential authorities leads to arbitrage opportunities in terms of credit supply and risk taking (Repullo, 2007), which gives managers a discretionary space to manipulate the value of regulatory capital and credit portfolio. (Nessim (2003), Warfield and Linsmeier (1992), Beatty and al (1995).

We are approximate this last factor by an indicator named by capital requirement index "*CARINDEX*", that take value from 0 to 8, and can tell us whether the capital requirement level is respected to cover credit risk and satisfy the capital requirement threshold. The high values of the index reflect good capital rigor, indicating that the capital requirement is much higher than the required threshold, which should certainly have a negative effect on abnormal accruals.

Two-research current of accounting manipulation in terms of credit risk, were evoked: the first current directly affects the net income through the manipulation of unrealized capital gains / losses. The second is indirect; it involves the manipulation of the credit portfolio value and consequently affect the net income.

The first stream of research is characterized by a level of regulatory capital ratio lower than that required: Nessim (2003) showed that in American banks, the extent of the accounting manipulation

increases when the banking performance decreases and the amount of its regulatory capital is below the required threshold. Based on the Repullo (2007) study, we conclude that this negative spread leads banks to increase their funds through the shares and subordinated debt issuance, which increases the required profitability shareholder. To avoid the capital cost, such manipulation of unrealized capital gains / losses take place, which reflect on the annual net income and systematically on regulatory capital. Managers will overstate the unrealized capital gains to boost the net income, which will have a positive effect on regulatory capital growth. This hidden capital increase, leads banks to take more risk generating more default loans.

In the same context, if banks have regulatory capital higher than that required by the authorities, banks will increase their credit supply by taking risk. Managers, at this level, to escape from power control can manipulate the real value of credit portfolio in order to reduce the non-performant loans and consequently showing a low-level of credit risk. (Warfield and Linsmeier, 1992); Beatty and al, 1995).

For this end to reelect simultaneously the effect of credit risk and supply loans on abnormal accruals, we are adopting the share of non-performant loans, as measure of credit risk "**CRISK**" and the amount of credit supply "**CS**" adjusted by the natural logarithm.

The Pillar 2 of the Basel 3 regulations requires prudential and supervision mechanisms to reduce credit risk and to avoid any possible slippage on the accounting information and financial results. We are taking this factor in our model as a variable detecting the official power of the supervisory authorities "**OPSA**" that take a value from 1 to 14 reflecting the action level of authorities against fiscal overtaking and accounting fraud.

On the other hand, the pillar 2 of the Basel 3 dispositive require the information transparency between managers, shareholders and public in order to promote market discipline. The information is about the publication of capital requirement, non-performant loans, ownership structure and the net income. All These factors have an important effect on accounting manipulation. Hence, asymmetric information lead manager to manipulate all these factors to show a good financial situation of banks. We are taking an index named by the information transparency "**INFO**" that takes a value ranging between 0 and 8; the higher values of this index indicate a strong market discipline and a demanding private banking supervision regarding the disclosure of financial or other information.

Landsman and Wahlen (1995) have shown that the accounting manipulation increases the equity and the net income volatility without affecting the risk premium of investors. Hodder, Hopkins and Wahlen (2006) have shown that the global net income volatility using the "*full fair value*" approach is the least contributing to the accounting manipulation since it explain better the economic risk than the historic approach. In this sense, we are two dummy Indicator of earnings and equity manipulation: **VNI** and **VEQ**. Both are measured by the standard deviations of the current result and the equity for two periods (n = 2) from balance sheet.

The model thus constructed takes the following form:

$$\begin{aligned}
 \text{Abnormal accruals}_{i,t} &= \alpha_0 + \alpha_1 \text{CARINDEX}_{i,t} + \alpha_2 \text{CRISK}_{i,t} + \alpha_3 \text{CS}_{i,t} + \alpha_4 \text{OPSA}_{i,t} \\
 &+ \alpha_5 \text{INFO}_{i,t} + \alpha_6 \text{VNI}_{i,t} + \alpha_7 \text{VEQ}_{i,t} + \varepsilon_{i,t}
 \end{aligned}$$

Insert table.5 about here

3. Main Results

After the “Arab spring revolution”, the regulatory capital requirement (**CARINDEX**) has changed effect on accruals in MENA countries banks, to become positive. Which shows, that before revolution, accounting manipulation was the consequence of banking undercapitalization (when the regulatory capital ratio is below the required standard). As far as, after this event, banking overcapitalization leads to manipulation (when the regulatory ratio is above the required standard).

Before the revolution, the volatility of equity (**VEQ**) was significantly negative, unlike the post-revolution period when it lost its significance. In addition, the volatility of the net income (**VNI**) kept the same effect, which remained, significant and positive. Based on the results of Landsman and Wahlen (1995) and Hodder and al (2006) who used the equity and the net income volatility as a manipulation index, we show that the accounting manipulation before revolution was based both on the net income and the equity. As far as, after revolution, manipulation became only in term of equity.

Moreover, the credit risk own up two significant adverse effects before and after the spring Arab. It was positive then it became negative: Before the spring Arab, the credit supply increase caused a credit risk raise. After this social event, the credit supply leads to mitigate the managers risk taking. This result seems perfectly logical since banks offers more credit to economy when they are undercapitalized.

As for the regulatory and disciplinary factors, we note that the institutional legal quality (**JURID**) as well as the control and the prudential supervision by the public authorities (**OPSA**) and the informational transparency (**INFO**) make reduce the accounting manipulation in MENA countries banks. The deterioration of these disciplinary factors encourages managers to have more discretion to hide information from the public and shareholders. After the spring Arab revolution, all legal reform allows managers to open a manipulation fields due to a decrease in prudential supervision or to an increase in asymmetric information.

This last finding, can lead us to draw these conclusions:

Before the Spring Arab revolution, in the case of banking under-capitalization, MENA banks think to overcapitalize to reach the required authorities regulatory capital (8% for banks that practice Basel I and Basel II; and 10.5% for banks that apply Basel III). This capitalization could be to the detriment of the unrealized gains and losses manipulation. Such a probable manipulation has a direct impact on the equity, shown by the positive effect of their volatility on accruals. These false beliefs of banking capitalization will push managers to take risk and grant more credits to economy in order to convince the financial community a good financial health of banks.

On the other hand, the banking overcapitalization reduces the chances of manipulation in the sense that the capital holding gives more confidence to the MENA countries banks to manage their credit supply by rationing it to solvent borrowers, which make a lower credit risk level. Nissim (2003) has demonstrated this situation for US banks.

After the revolution, MENA countries banks changed their behavior towards manipulation in terms of capitalization and credit risk. Banking undercapitalization no longer encourages managers to

manipulate the accounting result because it make only reduce the credit supply in order to recapitalize by more risk taking. In contrast, when banks overcapitalized by far exceeding the capital required by the authorities, there will be more chance to adjust their credit portfolios by manipulating their real values and showing them less failing.

This manipulate increase of credit value shows a false low credit risk. This is can be subsequently reflected on the net income without affecting the equity value. This hypothesis has been validated as the case of Warfield and Linsmeier (1992); Beatty and al (1995) for Japanese banks.

4. Conclusion

The accounting manipulation, in terms of credit risk and its regulatory measures is based on two main theories: the first advocates banking overcapitalization when the regulatory capital held exceeds the required capital by authorities; and the second one explains the situation of undercapitalization and their consequences for manipulation in terms of risk and credit supply.

We were empirically adopt the Kothari and al (2005) model as the main measure of abnormal accruals to identify accounting manipulation in two sub-periods: a period before the Arab Spring Revolution and a period after. Based on the "difference-in-difference" approach, we have seen a decrease in these accruals, which may confirm the banking prudence that limits the banking overcapitalization through the legal restructuring and informational transparency against credit risk taking.

We also noted that after the Arab spring revolution, despite the likely legal restructuring for a fear of revolutionary contagion, the MENA countries banking overcapitalization gives managers more discretionary space to manipulate results with the authorities control loosely and information asymmetry. Therefore, a sash manipulation may affect the credit portfolios values giving false low credit risk levels.

MENA countries Banks must strengthen the prudential supervisory system in order to have a greater informational transparency, which guarantees them better credit risk management, in order to prevent them from avoiding any accounting manipulation of net income or of regulatory capital either in the case of banking under or over-capitalization.

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APPENDIXS

Table.1.1 annual statistic descriptive (abnormal accruls model)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
TUR	270870.9	247188.2	188523.2	189823.7	210235.3	296286.3	395290.4	478886.5	449690.3	398415.9	404772.6	402573.9	415790.4	436883	484647.3
CDEBT	1768056	1744388	1810337	1896789	2251375	2609772	3169269	4224082	5042408	5047880	5287160	5441175	5716484	6269061	6890395
NI	57946.92	60185.81	60515.37	64423.29	83683.83	133439.8	162739.3	182289.6	152539.8	142218.5	161083.3	170529.1	180512.2	189343.4	217100.8
TA	3993315	3957792	4149828	4264238	4736943	5219405	6376297	8336709	9123457	9391617	9930406	1.01e+07	1.05e+07	1.14e+07	1.24e+07
ACT	-314101.6	-187664.3	-236882.7	-287432.7	-389562.1	-376023.7	-461152.6	-745743.2	-777241.3	-825328.4	-986850.7	-1004402	-1144379	-1250541	-1308017
IMMO	55601.73	53545.62	54076.7	49567.97	54590.16	59998.63	78656.5	101255	116397.8	119052.7	127606.2	124180.4	118298	126433.9	134283.9

Table.1.2 Banking statistic descriptive (abnormal accruls model)

Variable	ALG	EAU	EGY	JOR	KSA	KW	LIB	MOR	QAT	TUN	Global
TUR	137733.5	519227.2	313059.8	354118.7	1024774	537906.2	184860.4	470491.2	547201.2	92727.49	
CDEBT	1928193	8069418	1710826	3293007	1.42e+07	7164858	916267.4	5683796	7694058	1198363	-782029.4
NI	67631.64	213402.7	64425.89	124709.3	573383.2	199272.4	37560.49	164443.2	289730	16832.57	8335748
TA	4881730	1.25e+07	4603813	7570387	2.52e+07	1.29e+07	3244239	1.09e+07	1.24e+07	1710178	99583.1
ACT	-914632.1	-1164676	-353093.8	-996362.8	-1725585	-1225705	-585433.1	-735893.1	-555273.6	-80829.82	374907.5
IMMO	68214.92	117857.7	36018.7	89120.78	259317.9	277926	44193.95	188829	86725.52	34105.78	4397102

Table.2 Model of accruls measures

$\frac{ACT_{i,t}}{TA_{i,t-1}}$	Coef.	Z-statistic	P>z
$\frac{1}{TA_{i,t}}$	-30321.2***	-186.28	0.000
$\frac{IMMO_{i,t}}{TA_{i,t}}$	0.0000357*	1.81	0.096
$\frac{(\Delta TUR_{i,t} - \Delta CDEB_{i,t})}{TA_{i,t}}$.1063982***	1988.14	0.000
cons	-1.03645***	-120.19	0.000

*** means that the variable is statistically significant at the 1% level.

** means that the variable is statistically significant at the 5% level.

* means that the variable is statistically significant at the 10% level.

Graph.1 Abnormal accruls

Mean of abacc



Tab.3.1. abnormal accruals period and groups for difference and difference approach

Period	Cost efficiency		
	Before	After	Total
Control	908	535	1443
Treated	469	230	699
Total	1377	765	2142

Source : Author's calculations (Stata.13)

Tab.3.2 Outcome of difference in difference to abnormal accruals

Outcome var.	Abnormal accruals
Before revolution	
Control	-16.566
Treated	35.176
Diff (T-C)	51.742* (1.73)
After Revolution	
Control	-1.798
Treated	-2.146
Diff (T-C)	-0.348** (-2.01)
Diff-in-Diff	-52.09** (-2.02)

Source : Author's calculations (Stata.13)

R-square: 0.00* Means and Standard Errors are estimated by linear regression **Inference: *** p<0.01; ** p<0.05; * p<0.1

Table.4. descriptive statistic of credit risk factors

Variable	Before revolution		After revolution	
	Obs	Mean	Obs	Mean
Abnormal_accruals	1377	1.056897	765	-1.902416
CRISK	1404	.0979198	775	.107867
CARINDEX	1404	4.480057	775	4.363871
CS	1404	13.63477	775	14.08816
OPSA	1404	13.24858	775	13.1871
INFO	1404	6.14886	775	6.181935
JURID	1404	.4958671	374	.5132361
VEQ	1404	43.38803	775	.2070898
VNI	1373	19.7289	769	2.330156

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
ABACC	-1.8002	-1.79499	-1.82648	174.8439	-169.952	-1.77279	-1.79638	-1.78671	3.491423	9.972543	18.84736	-2.33543	-1.76842	-1.76615	-1.76999
RISK	.0971185	.1033247	.1261715	.1133437	.0935491	.0771342	.0798318	.0769897	.0996276	.1066882	.1102315	.110409	.1142278	.1127469	.0943295
CARINDEX	4.561798	4.589474	4.591837	4.47619	4.537815	4.59375	4.607407	4.645833	4.320513	4.266667	4.3	4.313187	4.377551	4.38191	4.378788
INFO	12.2809	12.31579	12.35714	13.69524	13.76471	13.73438	13.71852	13.70833	13.19231	13.17576	13.14706	13.14835	13.17347	13.21608	13.20707
OPSA	6.011236	5.989474	5.989796	6.247619	6.151261	6.171875	6.177778	6.159722	6.192308	6.206061	6.194118	6.197802	6.183673	6.170854	6.176768
JURID	.4988923	.4747085	.4678036	.4630828	.4608446	.5108075	.5199446	.5118961	.5014657	.5053873	.508725	.5130343	.5134273		
VEQ	124.4286	118.9216	.8132425	1.834562	1.353657	2.735815	5.68177	3.159471	6.385204	7.3251	4.913441	2.046086	1.839342	2.442283	2.960357
VNI	34.70593	32.60513	.2811498	.3061031	.3846128	.3865936	201.2707	188.63	.5951195	.5841615	.3061491	.1999457	.1800646	.232223	.2151488

	ALG	EAU	EGY	JOR	KSA	KW	LIB	MOR	QAT	TUN
ABACC	16.72688	-1.879243	40.93248	-1.770376	2.515423	-1.783	-34.05383	-1.661127	-1.312089	-1.347786
RISK	.0672985	.0509987	.2274161	.1093467	.0224674	.060089	.1157284	.0724607	.0333752	.1181269
CARINDEX	4.568421	5	2.012158	4.461538	4.293785	5.514085	5.362416	6	2.696721	5
INFO	13.75263	14	14.1459	10.88757	13.48588	9.485915	14.68456	13.10577	10.41803	13
OPSA	4.673684	8	7.282675	5.159763	6.169492	7.380282	5.105145	5.884615	7	5
JURID	.3467131	.5572424	.4610768	.5596494	.4585136	.5937442	.4530598	.5223158	.5956256	.5737095
VEQ	1.238164	.9400811	8.425554	132.1474	.7542746	7.548201	2.119608	.410279	.5454444	7.224355
VNI	.4161719	.2696662	165.1434	35.84425	.2231412	.4903328	.608231	.2810292	.2839919	.4114553

Table.5 Estimation credit risk factors on abnormal accruals

Abnormal_accruals	Before Revolution			After revolution		
	Coef.	z	P>z	Coef.	z	P>z
CRISK	21.99336***	3.21	0.005	-1.661243***	-3.02	0.007
CS	1.329862**	2.06	0.013	.1334067**	2.94	0.048
CARINDEX	-7.644633***	-3.62	0.003	.2363986***	3.86	0.001
OPSA	-4.191725**	-2.41	0.025	-.0772166**	-2.42	0.045
INFO	5.087843**	2.35	0.028	.3681538***	-3.87	0.003
JURID	-2.023642**	-2.01	0.037	4.302737***	3.72	0.000
VEQ	.0014687**	-2.09	0.026	.4178243**	2.52	0.050
VNI	.0007269***	-3.02	0.005	.0069275***	-3.25	0.001
cons	36.84622*	1.73	0.094	-.5089815*	-1.87	0.074

*** means that the variable is statistically significant at the 1% level.

** means that the variable is statistically significant at the 5% level.

* means that the variable is statistically significant at the 10% level.