Can Basel III Instruments Increase the Stability of the Banking Sectors?  
Empirical Study on Palestine Bank Sector

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Abstract. This paper investigates the Palestine banks sector (PBS) after the recent financial crisis in 2008. This paper tries to answer the questions that; How weak economy Withstood the recent financial crisis? How the assets increase on PBS after the financial crisis and the last aggression on Gaza? This phenomena direct attention on bank risk. Thus this paper investigates the effect of bank capital, charter value, information system, “internal/external” control system and market discipline on bank risk on PBS. Therefore, we try to understand that to what extent does Basel III instruments increase the stability of the banking sectors? By using panel data from Palestine over the period 1996-2014. In addition, we use Partial Least Square (PLS) to analysis the sample which includes 172 questionnaires from listed banks. The result shows that there is no relationship among bank capital, charter value, information system and market discipline on bank risk. Our finding shows that the “Information system” is the most important predictor of Bank Risk, with support partly Basel III. Therefore, this study is important not just for Palestine but also to those that have concern of bank risk trying to find a solution to future default.

Introduction

Bank risk management is one of the most important issues for bankers worldwide [1]. The successive banking crises directed the attention of international economic and financial institutions[2, 3]. Since those crises have a negative impact on globalization and since the mentioned countries adopt and encourage the acceleration of financial and economic globalization [4, 5]. Therefore, they studied the reasons of banking crises, especially the largest ones, and then developed appropriate solutions [6, 7]. It turned out that the most effective reasons for banking crises are the increasingly banking risks on one hand, and the bad management of those crises on the contrary[8, 9].

The Palestinian banking sector has demonstrated success and progress, despite the difficulties and the stumbling economy in general in Palestinian territories since the beginning of the uprising in September 2000 up to date. Since the banks were able to maintain its assets, recorded significant increases in assets, and provided a variety of services and products to their clients.

At this moment, this research investigates the effect of bank capital, charter value, information system, “internal/external” control system and market discipline on bank risk. Therefore, this research tries to understand that to what extent does Basel III increase the stability of the banking sector. And though Palestine bank sector haven't applied Basel III, it not affected by the recent financial crisis.

Palestine’s Institutions

This research highlights the current state through analysis the Consolidated balance sheet of banks operating in Palestine over the period 1996-2014. Figure 1 shows the change rating percentage of credit on Palestinian banking sector since 1996.The credit facilities at the end of 2014 was more than (4871) Million USD which means 41.2% from total assets. Moreover, with increased 9.6% compare with the year 2013.
\[ \Delta_i = \left( \frac{(y_{i+1} - y_i)}{y_i} \right) \times 100\% \quad i = 1, 2, 3, \ldots, n \]  \hspace{1cm} (1)

where \( \Delta \) is change on credit, \( y \) is a credit by a year and \( n \) is some years.

Figure 1 shows the credit rating percentage. Figure 2 shows the PBS credit.

Figure 2 shows the credit growth over the period 1996-2014. We can observe the credit grow over the last five years, which means should the Palestinian jurisdiction encourage the banks to increase the capital reserve. Moreover, act to approve Basel III approaches and technique particularly after the recent financial crisis.

Considered capital adequacy one of the most important financial indicator to measure the bank's stability. Therefore, this research investigates Palestinian banking sector capital adequacy. It uses the Consolidated balance sheet of banks operating in Palestine provides from (PMA). Moreover, calculate the capital adequacy according to Basel formula and risk-weighted assets (RWA)[10-12].

\[ C_i = \left( \frac{t_i + t_{II}}{r} \right) \quad i = 1, 2, 3, \ldots, n \]  \hspace{1cm} (2)

where \( C \) is capital adequacy, \( t_i \) is Tier I, \( t_{II} \) is Tier II and \( r \) is Risk-Weighted Assets.

Although the capital adequacy in banking organizations lower than Basel requirement at the end of 2006 (6%). However, it rose 24 percent at the end of December 2014. Figure 1-4 shows the capital adequacy ratio over the period. Also, the figure illustrates the growth of the capital adequacy ratio parallel with assets growth.

Figure 3 shows the total assets in Palestine’s banking institutions rose 5.6 percent year on year to 11822.27 USD million at the end of December 2014, which mean the assets are growing year by year. It makes attention to the internal (internal audit) and external (banking supervisor) banking control system to act to increase their reserve. We can also observe the capital adequacy ratio is not stable although it's higher than the requirement in Basel agreements (8%)[11, 13]. Moreover, Figure 4 shows the positive relationship between the assets and credit growth over the period. The total credit in Palestine’s banking institutions rose 9.6 percent year on year to 4871.82 USD million at the end of December 2014. Thus, the total assets increased to 11822.27 USD million.
Research Models

This research investigates the relationship among bank risk (BR) as independent variable and Basel III factors as independent variables following this model:

\[
BR = \alpha + \alpha_1 BC + \alpha_2 CV + \alpha_3 IS + \alpha_4 CS + \alpha_5 MD + \varepsilon
\] (3)

where \(BR\) is bank risk, \(BC\) is bank capital, \(CV\) is Charter value, \(IS\) is the information system, \(CS\) control system, \(MD\) market discipline. In the following text, each variable of Eq. (3) is investigated as dependent variables using sub-models as follows:

\[
BR = \alpha + \beta_1 CGP + \beta_2 RRR + \beta_3 IRI + \beta_4 CRM + \beta_5 MCR + \beta_6 RFR
\]
\[
+ \beta_7 DCP + \beta_8 CMR + \beta_9 SM + \beta_10 IPR + \beta_11 QSE + \varepsilon
\] (4)

\[
BC_i = \alpha + \beta_1 CGC_i + \beta_2 CRP_i + \beta_3 CEC_i + \beta_4 CRG_i + \beta_5 CPA_i + \beta_6 PPA_i
\]
\[
+ \beta_7 ELP_i + \beta_8 EMP_i + \beta_9 DBD_i + \beta_10 CPD_i + \beta_11 SRP + \varepsilon
\] (5)

where CGP is credit risk goals and procedures, RRR is responsible for revising the financial results, IRE is executive credit risk management, MCR is measure and control risks, RFR is revising the financial results regularly, DCP is development of credit policies of the bank, CMR is credit risk management and the responsibility, SM is separates between measuring and controlling credit risk, IPR is identifying and analyzing the potential risks and QSE is qualified staff with sufficient experience, CGC is credit granting criteria, CRP is credit risk policies, CEC is changes to economic conditions, CRG is Credit risk guarantees, CPA is customer’s periodic assessment’, PPA is portfolio periodic assessment’, ELP is the expected losses in the portfolio, EMP is the efficiency of monetary policy, DBD is deal with bad debts, CPD is Credit portfolio diversification, SRP is Sensitive Risk pricing.

\[
CV_i = \alpha + \beta_1 LCR + \beta_2 LNC_i + \beta_3 ICR + \beta_4 LQI_i + \beta_5 DRT + \beta_6 DHS
\]
\[
+ \beta_7 AIT + \varepsilon
\] (6)

\[
IS_i = \alpha + \beta_1 RI_i + \beta_2 CP_i + \beta_3 MDS_i + \beta_4 IIS_i + \beta_5 EMR + \varepsilon
\] (7)

where LNR is local credit rating, LCR is The limited number of customers classified, ICR is internal credit rating systems, LQI is low quality of credit information, DRT is disclosure requirements and transparency, DHS is Develop human capacities and skills, AIT is advanced information technology, RI is reliability of information, CP is credit portfolio, CEC is Data of information management systems, IIS is internal information systems, EMR is Efficiency to manage credit risks.

\[
CS_i = \alpha + \sum_{i=2}^{n} \alpha_i \beta I A_i + \beta_2 XA + \varepsilon
\] (8)

where \(CS\) is dependent variable and both internal control \(IC\) and external control \(EC\) are independents variables. Then we will use sub models to investigate \(IC\) and \(EC\). The sub models as follow:

\[
IA = \alpha + \beta_1 EIA + \beta_2 IIA + \beta_3 ECM + \beta_4 APR + \beta_5 LCR + \beta_6 DWC
\]
\[
+ \beta_7 DCP + \beta_8 DCE + \beta_9 A IR + \varepsilon
\] (9)

\[
XA = \alpha + \beta_1 IER + \beta_2 DEB + \beta_3 NTC + \beta_4 DRI + \beta_5 AAM + \beta_6 MAL
\]
\[
+ \beta_7 CAU + \beta_8 ACA + \beta_9 SRR + \varepsilon
\] (10)

where EIA is effective internal audit, IIA is Independent internal audit, ECM is evaluating credit management, DPR is determines the accuracy of credit portfolio risks, LCR is limiting credit risks,
DWR is determine points of weakness in credit risk, DEP is determining any exceptions in the procedures, DCE is Detecting credit deterioration at an early stage, AIR is Assessment of the level and trends of credit risk, IER is independent evaluation to the bank risk, DEB is determining the efficiency of board members in credit risk management, NTC is necessary review to the types of credit, DRI is depends on the results of the internal audit, AAM is assesses the ability of bank’s management, MAP is monitors the aspects of the credit portfolio, CBU is Control the bank for urgent improvement of credit risk management, ACA is assesses the adequacy of bank capital compared to credit risk, SRR is sets restrictions to limit risks.

\[ MD = \alpha + \beta_1 SP + \beta_2 PFR + \beta_3 AAL + \beta_4 APA + \beta_5 MMR + \beta_6 TSR + \epsilon_i \]  

(11)

where DP is disclosure policy, PER is periodic financial performance reports, AAL is assessing the assets and liabilities of the bank, APA is accounting policies applied, MMR is applied methods in managing and measuring credit risk, TSR is periodic disclosure includes type and size of credit risk.

Result

<table>
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<th>Bankris</th>
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<th>Develop</th>
<th>IntCont</th>
<th>ExContr</th>
<th>MarketD</th>
<th>InExCon</th>
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<td>InExCon</td>
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<td>0.684</td>
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Table 1. Path coefficients.

Average R-squared (ARS)=0.511, P<0.001
Average adjusted R-squared (AARS)=0.503, P<0.001

Average block VIF (AVIF)=1.013, acceptable if <= 5, ideally <= 3.3
Average full collinearity VIF (AFVIF)=Inf, acceptable if <= 5, ideally <= 3.3
Tenenhaus GoF (GoF)=0.358, small >= 0.1, medium >= 0.25, large >= 0.36
Symposon's paradox ratio (SPR)=0.857, acceptable if >= 0.7, ideally = 1
R-squared contribution ratio (RSCR)=0.996, acceptable if >= 0.9, ideally = 1
Statistical suppression ratio (SSR)=1.000, acceptable if >= 0.7
Nonlinear bivariate causality direction ratio (NLBCDR)=0.714, acceptable if >= 0.7

Figure 5. Model fit and quality indices.
Structural equation modeling (SEM) using the partial least squares (PLS) method was used to answer the research questions. In an external model, PLS analysis is used to estimate latent variables (LVs) based on the shared variance of observed variables, using the principal-component weights of the observed variables. The shift in each indicator indicates the extent of its influence on a given LV, resulting in the best possible combination of weights for predicting the LV while accounting for observed variables (Tsethlikai, 2010). We first assumed that all of the hypothesized relations were linear, and used the software package SmartPLS to test the model using standard linear PLS analysis.

As shown in Figure 5 and Table 1, the results suggest that development information system is the most important predictor of bank risk (13.7%). Our results show that there is no relationship among bank capital, charter value, control system, market discipline and bank risk. We also find support for develop information system (p < 0.01), is negatively moderated the bank risk. Findings shows that internal/external control system is negatively related to bank risk (p < 0.05). The results are shown in Figure 5. The \( R^2 \) value of 0.03 indicates that the theoretical model explained a substantial amount of the variance in Bank Risk. In addition, the model accounted for 3% of the variance in RE. As the \( R^2 \) of a dependent variable must be at least 10% to ensure meaningful interpretation, the theoretical model demonstrated substantive explanatory power. Figure 1 depicts the final structural model. The path coefficients can be taken as standardized beta weights, each of which was estimated after controlling for the effects of all of the other paths. To determine whether each path was significant, bootstrapping resampling Efron & Gong, was performed. The PLS parameters of a series of random subsamples of the total sample were repeatedly tested until significance could be estimated from the convergent finding.

**Conclusion**

This paper investigates PBS through Basel III factors, which is bank capital, charter value, information system, internal/external control system and market discipline on bank risk. The analysis results answer the research questions, which is demonstrate how weak economy can withstand in critical condition particularly after the recent financial crisis. In addition, PBS assets increase through the critical time, which means it has strong confidant’s public. Even though PBS haven’t applied Basel III, it still has ability to face any default. Thus this study tries to highlight the most important factors on bank risk. The results showed that bank risk is negative related to develop information system and internal/external control system, but no relationship among bank capital, charter value, and market discipline.

In general, the finding of this research that the information and control systems are affects the bank risk. The information system is playing a very significant rule in bank risk. Therefore, the result answers the research questions through support partial to Basel III and make attention to information system. Thus, this study important to all that have concern of bank risk and tries to find a solution to any future default.

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**References**


