**An Empirical Investigation Into The Effect Of Explicit Deposit Insurance and Design On The Liability Structure Of Banks**

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**Abstract**

This paper provides insight into the behavior of the banks liability side balance sheet in response to explicit deposit insurance. It is an empirical investigation into the choice of a rational bank maximizing its bank value in terms of deposit and non-deposit liabilities after the implementation of explicit deposit insurance. The paper tests the theory of Wang and Sundaresan, (2014) on how the banks liability is affected because of the safety net. As more countries adopt Explicit Deposit Insurance its impact on bank liability structure is of great important. The study uses commercial bank data from 30 Asian countries over a span of 12 years. It finds that banks lower their leverage ratio as a response to the explicit deposit insurance. Evidence of depositor shifting funds between the types of deposits in the bank as a result of the explicit deposit insurance is also found. It provides evidence of the importance of setting the right coverage in order to prevent the adverse effects that the deposit insurance induces. Design features are found to have an impact the bank liability structure and ultimately bank profitability. The study finds that besides the explicit deposit insurance the bank liability structure is affected by factors like tax expense, bank size, overhead and dividend payout.

**JEL classification code:**

**Keywords:** Bank Liability Structure; Explicit Deposit Insurance; Leverage

**Introduction**

Over the past 2 decades the banking sector has seen an increase in the vigilance by central regulatory authorities. There has been an explosion of bank regulation through the use of explicit deposit insurance in the wake of the financial crises. Global monetary and financial institutions like IMF have taken a leading role in trying to enforce this policy across the developing countries as well. Many Asian countries have finally caught on with the western FDIC and similar European bank deposit insurance systems. Some countries have introduced the explicit deposit insurance safety net while many of them are considering implementing the program. Developing safety nets however is not such a straightforward task and countries have experimented with how to set them up according to their own environment. This boom in the adoption of the explicit insurance scheme over the last 15 years has provided the researching community with an improved and detailed cross-country dataset which this paper exploits to study the effect its implementation and its design features have which have not been available previously for empirical analysis. Literature has over the decades tried to explain the choice of funding by firms trying to optimize their value. The banking model is also faced with a similar choice of funding for its intermediation purposes. Market discipline literature provides evidence of how deposits interest rates and deposit growth is affected by explicit deposit insurance. Although deposit growth has been examined in detailed, how the bank adjusts its leverage and liability structure in response to the policy needs further examination. Since highly leveraged banks have higher risk taking incentives, the explicit deposit insurance if not properly implemented is theorized to lead to an aggravation in the adverse effects of moral hazard.

 This paper investigates bank behavior as it optimizes its leverage and liability ratio as a response to the introduction of explicit deposit insurance and its design features. Theory of Wang and Sundaresan (2014) on bank liability structure and the effect of explicit deposit insurance as an insight into funding choice of banks is tested. Cross country empirical evidence on how funds are shifted between the different funded choices, how the banks balance sheet liability side changes and how deposit insurance design features are affecting them is still not available and are important considerations before the decision to implement the explicit deposit insurance program. This paper tries to fill this gap.

**Literature Review**

 Immense work on deposit insurance was done in the 80s. Among them the Daimond and Dybvig model (1983) on bank runs is a seminal paper that most empirical researches on deposit insurance trace bank to for the banks need for the introduction of deposit insurance to. They suggest that explicit deposit insurance is the only way to prevent a bank run without preventing the bank from performing its role as a liquidity provider. With their downward risk secured with the help of deposit insurance the banks then get involved in undue risk taking. Within 30 years this policy has been introduced in more then 30 countries as a safety net. The next big question that needed to be answered by researchers was how to fairly price deposit insurance. Kane et. (1981) argued against the use of flat rate deposit insurance premiums. They proposed risk rated explicit premium in the context of the FDIC. Robert C. Merton (1974) provided insight into pricing deposit insurance premium by modeling using option pricing.

Among recent work done on deposit insurance the research is by the research department of the World Bank. They developed a cross-country database of deposit insurance programs and their design features that were in place in 178 countries of the world (Demirguc-Kunt and Sobaci, 2002). This database the first of its type allowed empirical research work to be carried out on the effects of deposit insurance. Demirguc-Kunt & Detragiache (2002) carried out an analysis of 61 countries and investigate the effect of deposit insurance on the likelihood of a banking crisis happening. They found that weak institutional environment and deregulated interest rates don't increase the likelihood of deposit insurance increasing the stability of the banking system.

Kunt and Kane (2002) investigated where the deposit insurance works and they found that low institutional and financial development do not do well under the explicit deposit insurance scheme questioning the wisdom of encouraging countries to adopt explicit deposit insurance without improving the supervisory environment. Kunt and Huzinger (2004) carried out a cross-country analysis of how deposit interest rates fall after the implementation of explicit deposit insurance. They however found no evidence of whether the growth rate of deposits increases or decreases after the implementation of the policy. Majority of the empirical work has focused on the market disciplining as a result of the safety net. Kunt Huizinga (2004); Msm Peria (2002); Ikuko Fueda & Masaru Konishi (2007); Murata, K. And Hori, M. (2004); and Vasso Ioannidou, Jan De Dreu (2006) are some of the studies that try to find on market discipline investigating interest rate and deposit growth.

A relatively new stem of studies originated from the seminar paper by Reint, Florien (2009) on bank capital structure. As a result, a theoretical model on the banks liability structure has proposed by Wang and Sundaresan, (2014). They analyze the banks value maximizing liability structure. They investigate the combination of deposit and subordinated debt that is value maximizing for the bank and how the introduction of explicit deposit insurance affects it.

Wang Sundaresan (2014) Model

Wang Sundaresan (2014) optimizes the banks value based on their liability choice. They model the banks choice between deposits and subordinated debt under constraints of bankruptcy.

It incorporates Merton (1974) deposit insurance fair pricing model involving the calculation of probability of default and Leland’s (1994) model maximizing a firm’s value based on debt alone. Including deposit taking function of the bank into the Leland (1994) model results in a value function that they than maximize to find the optimal level deposits and subordinated loans for a value-maximizing bank. Below is a simplification of the Wang Sundaresan (2014) model that forms the theoretical base for the empirical study.

The cost of deposits is defined as C. r is the risk free rate and η is the cost incurred by the bank in providing its services. The subordinated debt C1 costs the bank the risk free rate r plus the spread s for incurring the extra risk where the represents the subordinated debt.

The dividend paid to the equity holders is represented by asset cash flow minus the cost of deposits and subordinated debt after the tax and the insurance cost I represented in equation 3.

The optimal choice for liability structure is based on (C, C1, I) with explicit deposit insurance. In deciding the liability structure of a bank the frictions a bank faces are the risk of default, the cost of deposit insurance and its charter value. In their modeling of the optimal banks liability choice the bank faces three types of defaults: Depositors running, closure by the regulator and the endogenous default.

 Depositor run happens when the value after the liquidation, (1-α) Va, is lesser then the depositswhere α is the liquidation costs.

Va must therefore be more than equal to κD where κ is defined as (1/1- α) forming the threshold for default in terms of asset value.

Regulatory closure happens if the total capital value of the bank falls below 2% of its asset value. They define the total capital is defined as tangible equity plus the subordinated debt.

V-D=2% Va where Va is the threshold when it is closed.

Va = κD with κ>=1 bank closed

When the regulator closes the bank at Va the model assumes that its cost is different from the cost of bankruptcy in case of a bank run and they define it as β. FDIC closure liquidation cost is therefore βVα. When liquidation happens the regulators need to pay the depositors D and if the deposits are more then the liquidation costs the bank loses. To cover for such losses the regulator charges the bank a risk based insurance premium I. The loss the insurance company faces is D-(1-β)Vα if (1-β)V<D otherwise the loss is 0

The third type of default is when the equity holders choose to default which maximizes equity value. This default happens before the bank run or a closure by the regulators. This point of default that maximizes equity is an extension of Leland (1994) for the case of banks and is referred to as endogenous default in the model Vd. Default is triggered when the asset value falls below this level or one of the prior default types occurs.

They define the recovery cost as (1-Φ)Va where Φ is α or β. The payoff function for the default is

Using Merton (1974) definition the model uses assumption of the bank assets following a stochastic Ito’s process shown in equation 7.

dW is a wiener process, σ is the volatility of asset and r is risk free rate. Pb is the probability of default they define as the state price of bankruptcy as a solution taken from Merton (1974). The general solution to the equation is Pb=a1V-λ +a2V-λ ‘ with boundary conditions Pb(Vb)=1 and Lim V->∞ Pb(V)=0.

λ is the positive square root of itos lemma method

 “1/2σ2λ(1+ λ) – (r-δ) λ –r=0”

 Pb=[Vb/V]λ

The positive root is λ=2r/ σ2

The banks liability choice (I, C, C1) effect the value of the bank because it affects the state price and the boundary of when they the bank faces bankruptcy. They start by defining the bankruptcy boundaries first. They start by deriving the bank run asset volume

The equation is derived by using Va= Vb=κD and C=(r- η) D.

The default boundary is defined as Vb that is a maximum of Va or Vd. They prove that when Va = Vd the equity value is maximized. The bank closes before it defaults if the asset value V falls down to Va before Vb.

The equity value is in fact the asset value, which remains after the liabilities, and cost of insurance is deducted.

The general solution for subordinated debt is used along with the boundary conditions for subordinated debt to arrive at equation (11), which represents the subordinated debt, is composed by the coupon payments and the expected return that given there is default.

F is value of the bank the model defines as the sum of total liabilities (deposits and subordinated debt) and equity. The theorem models the bank value by substituting the equity and subordinated debt into the definition of F.

The theorem models the bank value by substituting the equity and subordinated debt and deposit into the definition of F,

The model uses these to maximize the bank value F. Deposit insurance and the deposit servicing cost are important factors that they identify as detrimental to an increase the bank value along with factors like tax saving. The insurance price I is exogenously decided in equation 13. They model I as an endogenous variable the details of which are available in their paper. ω determines whether the insurance premium is fairly priced and equal to 1 if it is.

 The function F is then maximized with respect to C1 and C, which are the costs of subordinated debt and deposits respectfully to get their optimal levels. is the optimal state price of bankruptcy.

Equation 7 and 8 are the optimal levels of deposits and subordinated debt after the insurance is priced endogenously in the model. Dividing them they arrive at the optimal liability ratio. They then go on to quantify the optimal bank leverage quantitatively and come up with their inferences of how the liability and leverage structure is affected by deposit insurance[[2]](#footnote-2).

Their predictions from for the optimal liability structure in response to the Explicit Deposit Insurance safety net is that the leverage ratio (defined as the total liability to total bank assets) increases as the banks engage in riskier business. They predict that over all if there is a lower tax regime lower liability structures is used the decrease in subordinated debt is higher then the increase in the deposits. This is also coming for an n increase in asset value because of the decrease in taxes. They describe the main purpose of the subordinated debt or the non-deposit liability part of the liability structure of the bank is to take advantage of the tax benefit. The subordinated debts of a bank optimizing its liability structure as a result of deposit insurance falls. Over all they predict that total leverage increases and equity falls with the implementation of deposit insurance. The deposits increases and the subordinated debt decrease. They claim that the total leverage ratio if determined by how these to interact with deposit insurance and the tax regime. They hypothesis that the account servicing of the deposits is a vital part of liability structure optimizing.

Using this study as a theoretical bases this study tries to see whether the theoretical behavior of bank optimizing its liability structure in response to deposit insurance is in fact backed by empirical evidence.

**Empirical model**

To investigate theory the effect of deposit insurance on the liability structure proposed in Wang and Sundaresan, (2014) the model used is as follows

The model specification of Kunt Huzinger (2004) on market discipline along with the design feature variables used in Kunt Detragiache (2002) investigating bank stability effects because of deposit insurance are used. Both level and change Yict are used.[[3]](#footnote-3). The dependent variable used are the leverage ratio, deposit ratio and its decomposed individual deposit type ratios, short term funding and long term funding. The leverage ratio is defined as the total liabilities to total assets. The total deposit to asset ratio is used to investigate whether the ratio increases. The study decomposed the deposit ratio into three different categories: Term, current and saving deposits. The term deposits are long-term deposits, which are fixed time period deposits. The current deposits are non-interest bearing deposits. Finally the saving deposits are the interest bearing deposits, which can be withdrawn whenever the depositor wants to.

The model also uses dependent variables representing the liabilities based on their maturity to investigate their behavior in response to explicit deposit insurance. For the purpose two ratios are used: Deposits and other Short term funding, and Long term liabilities which is calculated as being the rest of the total liability portion. Ratios are calculated with respect to total assets. The model uses incorporates the design features of deposit insurance proposed by Kunt Detragiache (2002). The model is estimated using pooled OLS within estimation. The cluster robust standard errors are reported to allow for heteroscedastic and correlated error terms within groups. The correlation matrix is shown in table 1.The Variance Inflation Factors are calculated to check for the multicollinearity issue. Table 1a shows the Vif for variable of interest and the mean model vifs.

**Data**

The data is comprised of unbalanced panel of banks from 30 Asian countries with data from 2000-2012. The use of difference in the difference dependent variable reduces the effective number of years by 1 year.

The study uses information of the deposit insurance programs and its design features in Asia from the database created by A Demirgüç-Kunt (2013) as part of the World Bank initiative. The deposit insurance dummy takes a value of 1 if there is explicit insurance provided in the particular country and 0 means that absence of explicit deposit insurance. The lack of explicit deposit insurance the individual implicit deposit insurance is provided by the government.

The explicit deposit insurance program design features are based on how the system is administered, funded, organization structure and coverage that they provide. The explicit deposit insurance programs are run by either as a separate legal entity or as a subsidiary of the central bank. This feature is predicted to have an influence on the policy enforcement of the scheme and have an effect on the disciplining by the depositors. The model uses a 0 or 1 reference with 1 referring to the fact that the deposit insurance scheme is a separate body.

The administration of the explicit insurance scheme is also done either privately publicly or jointly. 0 or 1 dummy are used to specify the type of administration of the scheme. The sample of Asian countries has a larger portion of countries administering the explicit deposit insurance scheme jointly. Either the government also funds the way the explicit deposit insurance scheme, privately or jointly. Binary 0-1 value variables are used in the models that check for the effect on the liability structure.

The source of the bank specific variables is Bankscope Bureau van Dijk. Year-end annual data in dollar terms is used. Market discipline studies Dreu (2006), E Nys (2014), Murata, K. and Hori, M. (2004), Ikuko Fueda & Masaru Konishi (2007) are a few of the studies that investigate the market disciplining done by using lagged bank fundamentals on the dependent variables. In this paper the Kunt, Huzinger (2014)’s model is extended to investigate the effect of explicit deposit insurance and its design on the liability structure of the bank.

Overhead is the banks noninterest expenses to total assets. According to Huzinger Kunt (2004), it can be interpreted as a reflection of differences in the quality of service and bank product composition It can also be interpreted as the cost efficiency measure of a bank reflecting costs that the bank incurs other than interest on its liabilities and for this particular paper as representing the account servicing costs that the bank incurs.

Size is the log of the total asset to Gdp. ROA is used as risk measure in concurrence with the Huzinger (2004) study. Total equity is not used because for the level regression it results in a unity as the study is trying to study the effect on the liability composition ratios. The macroeconomic variables are taken from the IFS database and the World Bank data resource online. Gdp is %age of real Gdp growth. The inflation rate data is also included into the model.

**Estimation Results**

Wang and Sundaresan (2014) classify the liability structure of banks into deposit and subordinated debt forming the total liability for simplicity. For empirical investigation the liability is divided into total deposit liabilities to total bank assets and non-deposit liability to total bank asset ratios. The effect deposit insurance has on the total leverage is also investigated using total liabilities to total asset ratio.

Table 2 shows the results of the estimation of the level and %age change dependent variable ratios. Consistent with the previous literature the growth dependent variable models seem to exhibit a low fit[[4]](#footnote-4). The level dependent variable models however have a good fit. The first model uses the leverage ratio (Total Liabilities/Total Assets) as the dependent variable. The next models are the decomposition of the leverage into deposit ratios and non-deposit ratios and short-term funding ratio. Short term funding includes the customer deposits and other short term funding according to the Bankscope database.

Insert Table 2 here

Wang and Sundaresan (2014) predict an increase in the level of leverage ratio maintained by banks as a result of explicit deposit insurance. The change leverage model uses the difference term for Total Liabilities/Total Assets as the dependent variable. It represents how the ratios growth rate changes. The paper doesn't find any significant evidence of the effect of explicit deposit insurance on how the leverage grows or shrinks. The deposit insurance dummy has a negative significant sign indicating a decrease of 1.22 % after the implementation of the deposit insurance scheme. Although the result is counterintuitive, some studies indicate an increase in moral hazard as secured deposits induce banks into risky lending. An increase in risky assets would cause the bank to readjust according to the CAR requirements and the banks would have an increase its equity. This would result in a decrease in leverage ratio. The paper finds that the change in leverage is dependent on the deposits ands non-deposits liabilities.

Decomposing the total liability into its determining components as Wang and Sundaresan (2014) specify, evidence shows that deposit insurance results in the non-deposit liabilities ratio to fall and the deposits ratio to increase on the level. Surprisingly both of the ratios are insignificant[[5]](#footnote-5). Since most studies focus on total customer deposits to access market discipline the paper used the same ratio. It finds that in order to capture the effect of explicit deposit insurance its better to see the effect on individual deposits rather than all customer deposits as a whole.[[6]](#footnote-6)

Wang and Sundaresan (2014) predict that in lower tax rate regimes the banks use lower leverage since the decrease in subordinated debt is larger than an increase in deposits. In Asian banks empirical evidence however points to the contrary. The tax expense proxies the tax rate in the models. The study finds strong and significant decrease in the leverage as the tax rate increases.

As tax expenses increase the bank increases their subordinated debt in order to take advantage of the tax advantage debt is accompanied with. The positive sign of the non-deposit liabilities to total asset ratio because of tax expense and the negative impact of increase taxes that the bank faces can be seen in the preceding models of table 1. The effect of tax expense causes a higher level of decrease in deposits than an increase in subordinated debt which ultimately forms the over all direction of the change in leverage. In the Asian countries the deposit ratio level decreases more than the increase in the non-deposit liabilities ratio causing the increasing tax rates to have a negative effect on the banks leverage position.

The Wang and Sundaresan (2014) find that the gains from servicing deposits, which they call, the account service income is detrimental to banks liability structure.

In the model the independent variable Overhead is defined as personal expenses and other non-interest expenses over total asset. Kunt and Huzinger (2004) describe it as an indicator of servicing quality and differences in product mix. The overhead has a positive insignificant effect on the leverage ratio. The growth rate of leverage however is affected at a 10 % significant level. Over all we find that the overhead expenses has no significant effect on the banks liability structure.

 This study does not find any evidence of deposit growth or a change in the level of deposit ratio that banks maintain using total customer deposits. In order to investigate this the deposit ratio is further decomposed into saving deposits term deposits and current deposits. The sample of Asian countries on average have 63 % term deposits, 13 % saving and 24 % current deposits to total customer deposits.

Insert Table 3

The results from table 3 reveal an evident shift from saving and current to long term fixed term deposits. The saving deposits reveal a significant decrease in their saving deposits growth at 5 % significance level. The decomposition of total customer deposits results in evidence that the previous cross country studies have not revealed. The term deposits ratio increases by almost 4.84 % significantly at 5% level. This shift is countered by a decrease of 2.35% in the saving deposits and 2.06% decrease in the current deposits ratio. The total increase is evident from the total deposit increase as is seen in table 1. The banks’ overall response to explicit deposit insurance if the total customer deposits are used in the market discipline analysis is determined by the composition of deposits.

 Liquidity has a positive relationship with both the current and saving deposits. Since the terms deposits are fixed over a longer period the liquid to asset ratio has a negative relationship with it. The Dividend independent variable takes the value of 1 if the dividend gets paid on a particular day. Unlike the Reint Florien (2009) findings the paper does not find any significant effect on the liability and leverage ratios. Size is the total bank assets and we find that larger banks have a larger leverage ratio. The bank size also has a positive effect on the banks deposit ratio.

**The Deposit Insurance Design Effect**

Different countries have experimented with how the insurance scheme is implemented. Kunt and Detragiache (2002) find that the deposit design features have a significant effect on bank stability. To investigate how the design affects the banks liability and leverage ratio this study checks for the effect of coverage, administration, ownership and funding on the individual models.

Insert Table 4

Coverage is about the magnitude rather than the presence of the safety net. It measures maximum amount of deposits the scheme insures. The models use the log of per capital deposits covered. Rather than studying the effect of the introduction of the scheme the amount of the cover is found to have a separate effect. The leverage ratio has a positive relationship with the amount of coverage. Increasing the amount covered increases the deposit ratio of the bank at 5% significance in the level dependent variable model. The non-deposit liabilities to total assets also exhibit a decrease at 10% level. The short-term funds ratio exhibits a positive but insignificant increase. The deposit insurance has been referred to as a double-edged sword. The paper finds that the application of deposit insurance has a negative effect on the leverage but if the coverage were increased it would result in the leverage increasing. Incorrectly setting the coverage would lead to the dreaded moral hazard problem leading to a decrease in capital to asset ratio if a strong regulation enforcement structure is not in place. The effect of coverage per capita on the level of decomposed saving and term deposit ratios is consistent with the total deposit ratio model findings. The result is however not significant for any inference to be made.

Insert Table 5

The deposit insurance scheme is either run a separate legal entity/corporation or by the central banks/regulatory authorities. The deposit insurance dummy alone captures the effect of the insurance scheme its it run as a entity controlled by the central bank or the regulatory authority. The legally separate dummy carries a value of 1 if its separate entity from the influence of the central bank and regulatory bodies and otherwise 0. It is interacted with the deposit insurance dummy. The interaction term is used to capture the effect of how the effectiveness of the deposit insurance scheme varys with the ownership of the deposit insurance shceme. The coefficent captures the use of deposit insurance effect of legally separate insurancing body. If legal separate entities run the safe net programs they have a significantly lower effect on the liability ratios relative to programs run by the central banks or the regulatory bodies. Schemes run by the legally separate bodies reduces the leverage ratio rather than increasing it. This effect is however not significant.

 A similar effect can be seen by their effect on the non deposit ratio. Legally separately owned deposit insurers have lower effect on the non deposit ratio significantly at 10% level. The deposit ratios exhibit a positive effect of government and regulatory owned insurance program results in a significant increase in the deposit ratio. This is derived from the confidence of the depositors on the insuring body. The interaction term carries a significant negative effect and points to an overall negative effect if the explicit deposit insurance is implemented by legally separate bodies. Decomposing the total customer deposits into term and saving deposit ratios reveals a similar effect but at a lower significance level.

Insert Table 6

Globally there are three choices when deciding the funding choice of explicit deposit insurance: government funded, privately funded and jointly funded. However in the Asian countries that are implementing the safety net funding by the government is not used. The majority of Asian countries that have adopted the explicit deposit insurance the choice of funding is in decreasing order of funded jointly and privately. The effect of funding choice on the leverage ratio and the liability ratios is shown in Table 6. The interaction term is used by interacting jointly funded dummy with the deposit insurance 0-1 dummy. The interaction term is interpreted as the effect of using joint funding rather then the privately funded programs.

 Relative to privately funded schemes the study finds that the jointly funded schemes reduce the decreasing effect of deposit insurance on the leverage. This effect is significant and with both the cases the effect is negative on the leverage ratio. These results are reflected in the model that tests for the effect of funding choice on the short term funding as well. The effect of total deposit ratio is not significant at 10% level to make an inference and decomposing the total deposit ratio into its determinant ratios reveals the same effect. The saving deposit ratios exhibit a negative reaction to deposit insurance. If the deposit insurance scheme is funded jointly the effect is reduced to only 1% decrease rather than the 5% decrease if not funded jointly.

Insert Table 7

The administration of the explicit deposit insurance scheme is either done officially privately or jointly. In Asian countries implementing deposit insurance the majority of countries are administered officially. The least number of countries are administered privately. The effect of the type of administration is reported in Table 7. The models reported use interaction terms of the administration type with the deposit insurance dummy. Relative to countries administered officially the effect of jointly and privately administration has a more significant effect on the leverage ratio. The privately administered scheme has a more significant effect on the leverage decreasing the leverage the most at 1 % significance level. The non-deposit ratio falls more under joint administration.

Intuitively speaking the government guarantee instills more confidence within the depositors and should have a positive effect on deposit ratio. The effect of type of administration is most prominent with the deposit ratio. The jointly administered deposit insurance increases the deposit ratio where as those insurance programs that are administered privately result in a reduction in the total deposits to asset ratio. Jointly administered deposit insurance however a stronger effect on the deposit ratio of banks indicating improved ability to generate confidence of deposits using joint administration. Decomposing the total customer reveals that the effect of deposit insurance is more with jointly administered schemes compared to both the privately and officially administered schemes.

**Conclusion**

The effect of explicit deposit insurance on the banks liability structure was analyzed in the paper and found evidence to support the Wang and Sundaresan (2014) theory on banks liability structure. The cumulative effect of deposit liabilities and non-deposit liabilities determines the overall direction of the leverage ratio. For Asian banks analyzed in this study it is found that the leverage ratio maintained by the banks falls after the implementation of the deposit insurance scheme. This result is counter to what Wang and Sundaresan (2014) predict about the leverage ratio increasing. According to the theory the predicted the deposit ratio increases however the decrease of non-deposit liabilities ratio is higher. In line with previous studies the effect of the explicit deposit insurance on deposit growth however is not significant. However on decomposing the total customer deposits into its different types, the paper finds evidence of an increase in deposit growth of term deposits as a result of explicit deposit insurance is found. Current and Saving deposit ratios fall. It finds evidence of shift of deposit liabilities from short-term deposit liabilities to long term fixed deposits. In the Asian banks on average 60 % of the deposits are term deposits so the total customer deposits increase over all.

The paper also finds evidence of tax expense on the banks liability structure as is hypothesized by Wang and Sundaresan (2014). The deposit ratio is found to have a negative relationship with the tax expense as the tax expenses increase the banks responds by increasing its debt liabilities. The paper finds that the design features have significant effect on the banks liability structure. Evidence stresses that the coverage per capita has a positive relationship with the leverage ratio. Allocating the right amount of coverage for the deposit insurance program is essential as it determines how the leverage of bank is determined and not exposing the bank to undue risk. In implementing explicit deposit insurance schemes the choice of who owns the program, the funding source and the administration of the program all have implications on the banks leverage and financing mix used by the bank.

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**Tables**

















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2. For more in-depth details see Wang and Sundaresan (2014) [↑](#footnote-ref-2)
3. Reint Florien (2010) use market and book value (1-Capital/Asset) to define leverage in their study testing capital structure theories of nonfinancial firms on banks [↑](#footnote-ref-3)
4. Demirguc-Kunt, Asli, and Harry Huizinga. (2004) , S Park (1995), Murata, K. and Hori, M. (2004) all use %age deposits as dependent variables and exhibit low R-squared values. [↑](#footnote-ref-4)
5. Kunt and Huzinger (2004) also no evidence of growth in deposits as evidence of market disciplining [↑](#footnote-ref-5)
6. See Vasso Ioannidou and Jan de Dreu \* (2006) for detail on using saving deposits for market discipline empirical studies on deposit growth [↑](#footnote-ref-6)